Town of Manlius

Virtual Planning Board Agenda
August 10th, 2020
6:30PM

1. Zoom Planning Board Meeting Instructions - August 10, 2020

   Documents:

   ZOOM PLANNING BOARD MEETING INSTRUCTIONS AUGUST 10, 2020.PDF

2. Pledge Of Allegiance

3. Chris Bollinger - 7137 East Genesee Street, Fayetteville, NY 13066 - Public Hearing - Site Plan Amendment - Roofed Porch And Deck - 7137 East Genesee Street, Fayetteville, NY 13066 Tax Map # 085.-07-11.0

   Documents:

   7137 EAST GENESEE ST. - BOLLINGER - ZBA DECISION DOCUMENT.PDF
   7137 EAST GENESEE STREET - BOLLINGER - SITE PLAN AMENDMENT.PDF

4. Falck Renewables - One Bridge Street, Suite 11, Irvington, NY 15033 - 8507 Green Lakes Road, Fayetteville, NY 13066 - Continued Public Hearing - Special Permit & Site Plan - Solar Array - Tax Map # 082.-02-15.1

   Documents:

   8507 GREEN LAKES SPECIAL PERMIT APPLICATION COMPILED 04142020.PDF

5. Falck Renewables - One Bridge Street, Suite 11, Irvington, NY 10533 - 5062 North Eagle Village Road , Manlius, NY 13104 - Continued Public Hearing - Special Permit & Site Plan - Solar Array - Tax Map # 098.-01-15.0

   Documents:

   5062 NORTH EAGLE SPECIAL PERMIT APPLICATION COMPILED 04142020.PDF

6. Sarah Williams - Village Groomer - 3370 Oran Gulf Road, Manlius, NY 13104 - Continued Public Hearing - Special Permit And Site Plan - Dog Grooming - 8064 East Genesee Street, Fayetteville, NY 13066 - Tax Map # 090.-01-10.2

   Documents:

   8064 EAST GENESEE STREET - COVER LETTER.PDF
   8064 EAST GENESEE STREET - SITE PLAN APPLICATION.PDF
   8064 EAST GENESEE STREET - SK-1 SURVEY.PDF
   8064 EAST GENESEE STREET - SK-2 - PICTURES.PDF
   8064 EAST GENESEE STREET - SPECIAL PERMIT APPLICATION.PDF
   8064 EAST GENESEE STREET SK1 AND SK2 SIGNED COPIES.PDF
   8064 EAST GENESEE STREET - RESPONSE TO QUESTIONS BY PLANNING BOARD.PDF

7. 5538 North Burdick Street, LLC - 125 E. Jefferson Street, Syracuse, NY 13202 - Continued Public Hearing - Site Plan - Dental Office - 5538 North Burdick Street, Fayetteville, NY 13066 - Tax Map # 086.-02-07.1

   Documents:

   5338 NORTH BURDICK ST SITE PLANS.PDF
   5538 N. BURDICK STREET - GML RESOLUTION - SITE PLAN.PDF
   5538 NORTH BURDICK ST ARCH PLANS.PDF
   5538 NORTH BURDICK STREET - DISCLOSURE STATEMENT.PDF
   5538 NORTH BURDICK STREET - FULL EAF - PART 1_SIGNED .PDF
   5538 NORTH BURDICK STREET - OCWEP SANITARY COORDINATION.PDF
   5538 NORTH BURDICK STREET - SANITARY CAPACITY.PDF
   5538 NORTH BURDICK STREET - SIGNED SITE PLAN APPLICATION.PDF
   5538 NORTH BURDICK STREET - SWPPP_20014 MBM BURDICK ST DENTAL OFFICE.PDF
   5538 NORTH BURDICK ST-SIGNED COPY.PDF
   5538 NORTH BURDICK STREET - ZBA DETERMINATION.PDF

8. Woodland Hills Subdivision (Hoag Lane), 201 Solar Street, Syracuse, NY 13204 - SEQR Determination - 21-Lot Subdivision - 5290-5320 Hoag Lane, Fayetteville, NY 13066 Tax Map # 104.-01-39.2

   Documents:

   HOAG LANE - L-100 - SUBMITTED 07-30-20.PDF
   MILLER ENGINEERS RESPONSE - 07-29-20 - HOAG LANE (1).PDF
   2020_06_16-EMAIL CORRESPONDENCE COPIES.PDF
   HOAG LANE 5-ACRE PERMIT PROJECT NARRATIVE_17061.PDF
   2020_06_15 - TOBIN EARTHWORK LETTER.PDF
   FINAL SLOPE STABILITY ANALYSES HOAG LANE BERM.PDF
   HOAG LANE EARTHWORK REPORT.PDF
   WETLAND_REPORT.PDF
   2020_06_16-RESPONSE LETTER_MILLER_20191218.PDF
   2020_06_16-RESPONSE LETTER_SUTPHEN_20200428.PDF
   2019_12_16_KFA_HOAG_LEAF_4_REVISIONS.PDF
   SWPPP_17061 HOAG LANE.PDF
   HOAG_SURVEY.PDF
   L-001 TITLESHEET_37050.PDF
   L-100 SITE PREPARATION PLAN.PDF
   L-101 EROSION CONTROL PLAN AND SWPPP.PDF
   L-102 CONSTRUCTION STAGING 1 PLAN.PDF
   L-103 CONSTRUCTION STAGING 2 PLAN.PDF
   L-104 CONSTRUCTION STAGING 3 PLAN.PDF
   L-105 CONSTRUCTION STAGING 4 PLAN.PDF
   L-106 CONSTRUCTION STAGING 5 PLAN.PDF
   L-107 CONSTRUCTION STAGING 6 PLAN.PDF
   L-108 CONSTRUCTION STAGING 7 PLAN.PDF
   L-200 GRADING AND DRAINAGE PLAN.PDF
   L-201 SHADESLOPE.PDF
   L-202 CUT FILL ROAD STUDY PLAN.PDF
   L-300 UTILITIES PLAN.PDF
   L-400 LAYOUT PLAN.PDF
   L-401 PLANTING PLAN.PDF
   L-500 DETAILS PLAN.PDF
   L-501 SAN_DETAILS PLAN.PDF
   L-502 POND PROFILES.PDF
   L-503 EXCAVATION BACKFILLING DETAILS_37050.PDF
   L-504 PLAN SECTIONS.PDF

L-600 ROAD PROFILE.PDF
L-700 CONVENTIONAL SITE PREP PLAN.PDF
L-701 CONVENTIONAL SWPPP PLAN.PDF
L-702 CONVENTIONAL GRADING PLAN.PDF
L-703 CONVENTIONAL SHADESLOPE PLAN.PDF
L-704 CONVENTIONAL UTILITIES PLAN.PDF
L-705 CONVENTIONAL LAYOUT PLAN.PDF
L-800 SPECIFICATIONS.PDF
L-801 SPECIFICATIONS.PDF
L-900 BASINS.PDF
L-901 SAMPLE ARCHITECTURE.PDF

9. Other Business
10. Adjournment

Town of
MANLIUS
New York

August 10, 2020

Virtual Planning Board Meeting

Instructions to attend the August 10th virtual Planning Board meeting:

The easiest way to join is to go to our website www.TownOfManlius.org and click on the link that is located on the homepage. You can also watch on our Facebook page by searching for "Town of Manlius"

Enter the meeting url web address as listed below:

https://us02web.zoom.us/j/87109720340?pwd=cFVNYXJqVTJxQVJmMFFlSFE3T0VZQT09

Password to join when prompted:

Password: 176468

Enter your email address and name and join the meeting!

Join by telephone by dialing the number below:

(929) 436-2866

When prompted to enter the Webinar ID, use the number below followed by #

Webinar ID: 871 0972 0340

Press # again to skip the personal id and enter the password below followed by #

Password: 176468

TOWN OF MANLIUS
ZONING BOARD OF APPEALS
CASE DECISION DOCUMENT

Name & Address of Applicant: Chris Bollinger

Address of Variance: 7137 E Genesee St., Fayetteville

Tax Map #: 085.-07-11.0

Date of Variance Hearing: July 16, 2020

Request: 6' front yard variance.
Applicant has 34' *requesting 6'* to meet the required 40.
Project: Remove existing deck, replace with roofed porch.

Approved: V Approved with conditions: ____ Not Approved ____

Conditions Imposed: No

Deborah Witzel, ZBA Clerk

7.16.20 Copy of decision given to Planning & Development
Date

Expected Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

RECEIVED
JUN 26 2020
By _____

DATE: 6.17.20

Name of Project: Front Porch

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 7137 E Genesee St

Type of Project:

○ Division of Land ○ Subdivision ○ Accessory Use ○ Zone Change ○ Site Review ☒ Other _____

Developer: Chris Bollinger Phone: 315 436.0888

Address: 7137 E Genesee St Zip: 13066

Tax Map Number(#)/s: 085.-07-11.0

Present Zoning: _____ Desired Zoning: _____

Total Acreage: .19 Total Number of Lots: 1

Property Owner/s: TBG. LLC Phone: 315.436.0888

Address: 7137 E Genesee St Zip: 13066

Tax Map#(s): 085.-07-11.0 Owner's Signature: _____

Printed Name: Christopher N Bollinger

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Use next page for additional known property owners' information

Planning Board Meeting Date Assignment: July 13, 2020

Fee: ⊕ 100 Paid: _____ Per: ○ Credit/Debit Card ○ Check ○ Cash

Planning Board - Initial

ORIGINAL

617.20
Appendix B
Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

Chris Bollinger

Name of Action or Project:
Front Porch

Project Location (describe, and attach a location map):
7137 E Genesee St

Brief Description of Proposed Action:
Replace existing porch with a new porch

Name of Applicant or Sponsor:	Telephone: 315 436 0888
Chris Bollinger	E-Mail: Chris@TheBollingerGroup.net

Address:
7137 E Genesee St

City/PO:	State:	Zip Code:
Fayetteville	NY	13066

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☒	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☒	☐

3.a. Total acreage of the site of the proposed action? .19 acres
b. Total acreage to be physically disturbed? .003 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? .19 acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☒ Commercial ☐ Residential (suburban)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): Professional
☐ Parkland

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	NO	YES	N/A
5. Is the proposed action, a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	☑	☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐	
b. Are public transportation service(s) available at or near the site of the proposed action?	☐	☑	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☑	☐	
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies:	☐	☑	
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	☑	☐	
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	☑	☐	
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	☑	☐	
b. Is the proposed action located in an archeological sensitive area?	☑	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☑	☐	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	☑	☐	
14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: ☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional ☐ Wetland ☐ Urban ☐ Suburban			
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐	
16. Is the project site located in the 100 year flood plain?	☑	☐	
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☐ NO ☐ YES	☑	☐	
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☐ NO ☐ YES			

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	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☑	☐

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Christopher N Bollinger Date: 6.17.20

Signature: _____

STOP

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☐	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☐	☐
3. Will the proposed action impair the character or quality of the existing community?	☐	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☐	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☐	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☐	☐
7. Will the proposed action impact existing: a. public / private water supplies?	☐	☐
b. public / private wastewater treatment utilities?	☐	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☐	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☐	☐

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	No, or small impact may occur	Moderate to large impact may occur
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☐	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☐	☐

Part 3 - Determination of significance. The Lead Agency is responsible for the completion of Part 3. For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.

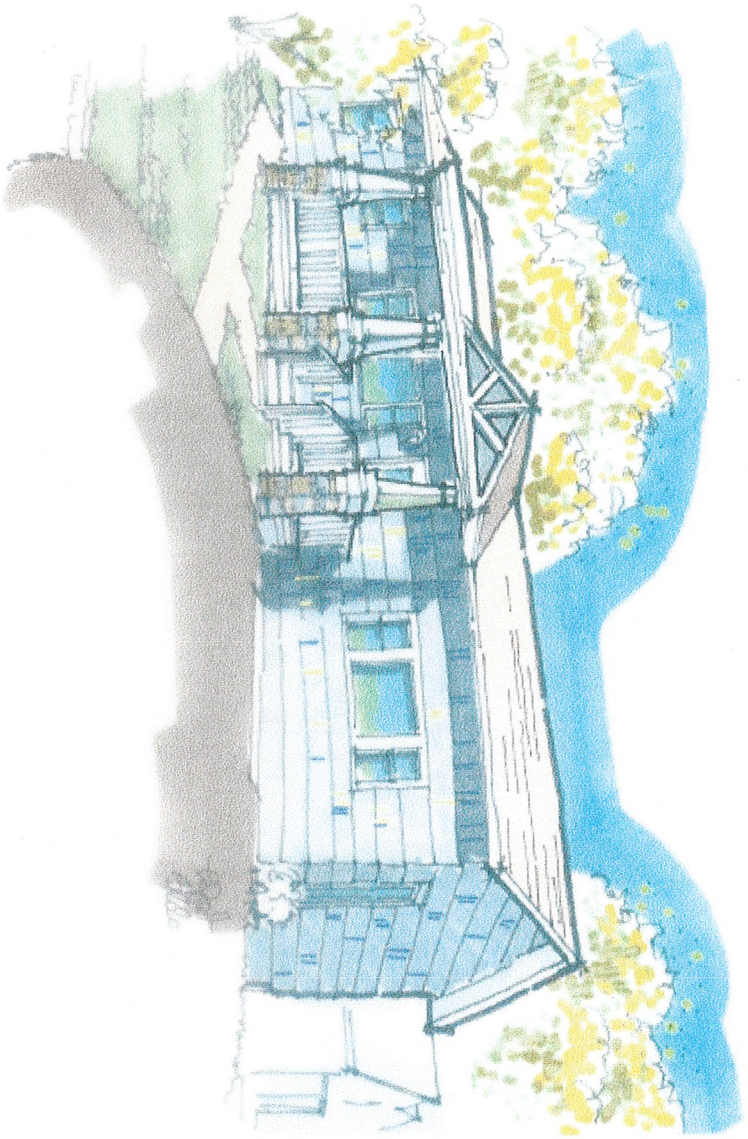
☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

Name of Lead Agency	Date
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (if different from Responsible Officer)

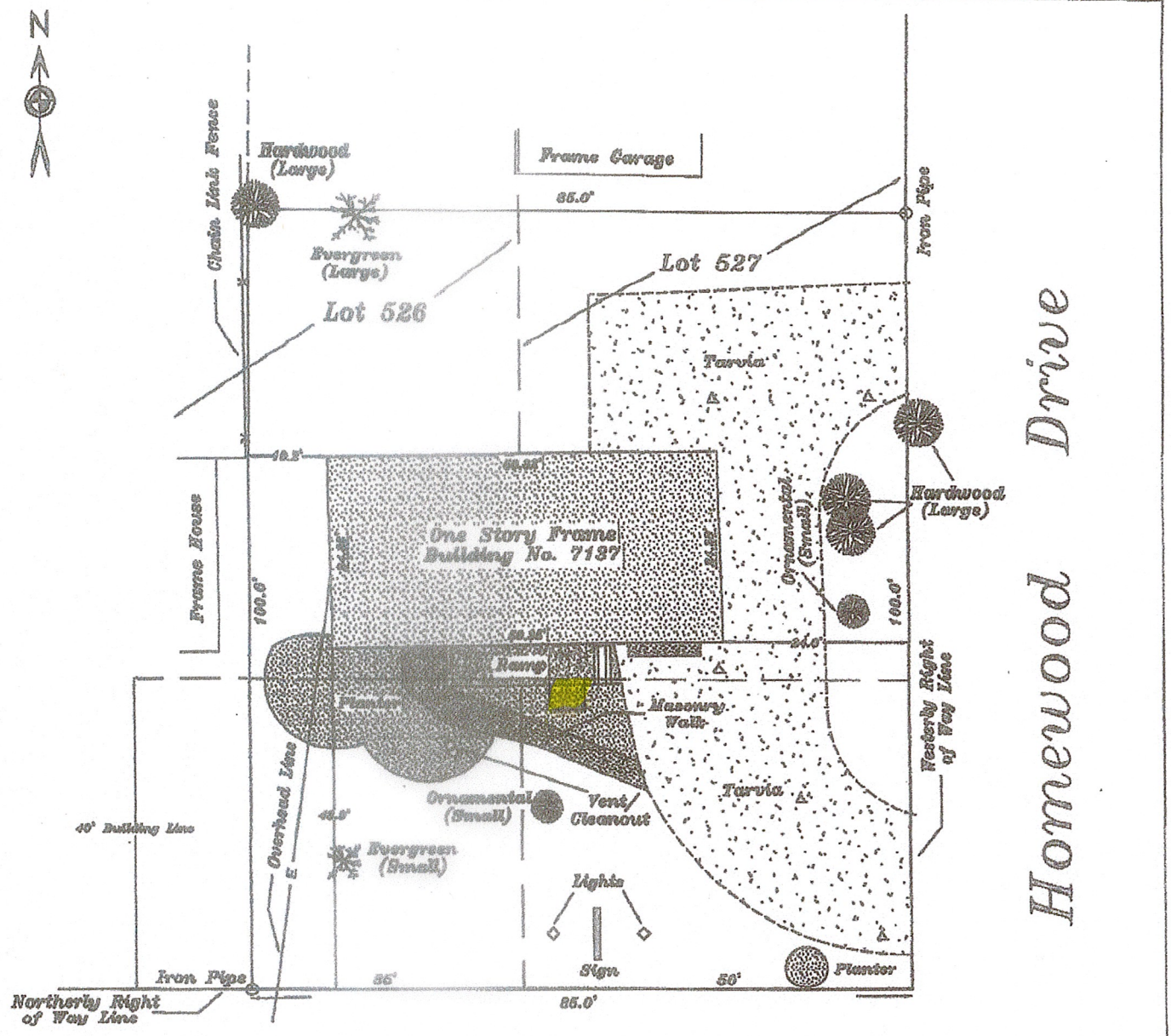
PRINT

ORIGINAL

7137 E. Genesee St



ORIGINAL



Michael J. McCully
Land Surveying PLLC
5875 Fieldstone Drive
Cazenovia New York 13035
Phone : (315) 440-5096

I hereby certify that this map was made from an actual survey and same is correct.

M.J. McCully NYSLLS 50696

STATE OF NEW YORK
MICHAEL J. McCULLY
No. 050696
LICENSED LAND SURVEYOR

Location Survey on Part of Lots 526 and 527 of Homewood. Map# 2019.

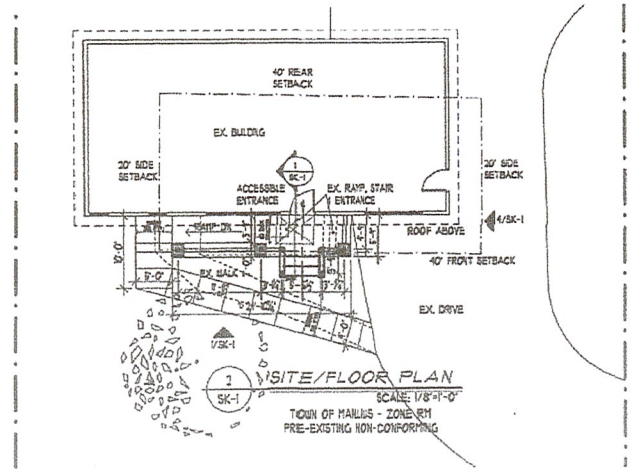
Known as No. 7137 East Genesee Street, Town of Manlius, County of Onondaga, State of New York.

Drawn by: MJM | Scale: 1"= 20'

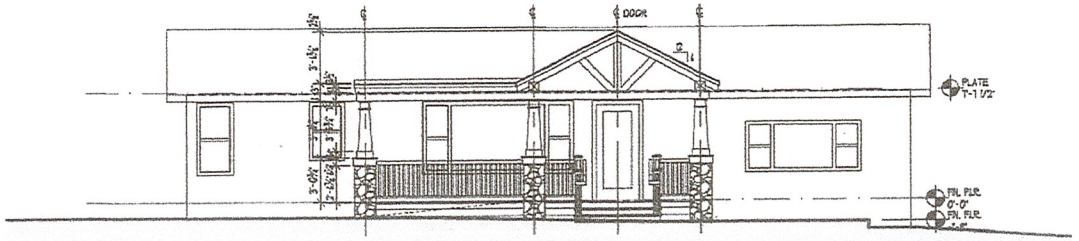
Date(s): 04-17-16

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of Section 7209,Subdivision 2 of the New York State Education Law. Only copies from the original of this survey marked with an original of the land surveyor's inked seal or his embossed seal shall be considered to be valid true copies. Certifications shall run only to the person or entities for whom the survey is prepared and are not transferable to subsequent persons or entities. Copyright 2016, Michael J. McCully Land Surveying, all rights reserved.

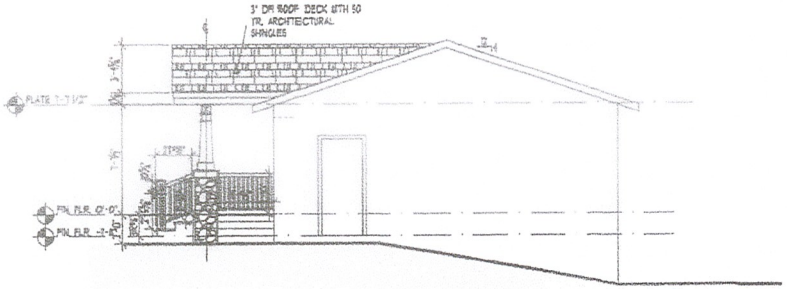
ORIGINAL



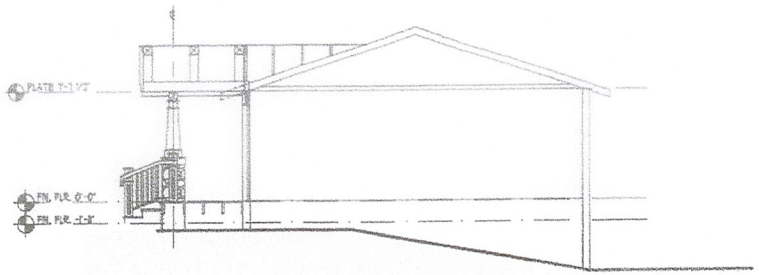
1 SK-1 SITE/FLOOR PLAN
SCALE: 1/8"=1'-0"
TOWN OF MARLBORO - ZONE: RM
PRE-EXISTING NON-CONFORMING



1 SK-1 SOUTH ELEVATION
SCALE: 1/4"=1'-0"



4 SK-1 EAST ELEVATION
SCALE: 1/4"=1'-0"



3 SK-1 CANOPY SECTION
SCALE: 1/4"=1'-0"

ORIGINAL

TOWN OF MANLIUS
SPECIAL PERMIT APPLICATION
(Original or Renewal)

DATE: April 16, 2020 Tax Map # 082-02-15.1

I Jonathan Koch , as applicant relative to property located at 8507 Green Lakes Road, Manlius (Fayetteville), New York, hereby request/apply for issuance of a **SPECIAL PERMIT** from the Town of Manlius Town Board as required by the Town of Manlius Code, submit the following application and documentary evidence and/or information, including comprising the Exhibits in support of this request and certify that it is correct, true and accurate to the best of my/our knowledge and after reasonable due diligence and investigation. I further knowledge and agree that should any such evidence or information be later determined as false or not credible in any material respect, any special permit issued/renewed based thereon may be determined by the Town Board as void from the start or revocable.

Applicant's Signature

A 1 Owner(s) of property: JRT Properties LLC

A 2 Status (Owner, Lessee) of each applicant: An affiliated entity of Falck Renewables, which has the option to lease the property

A 3 Present Zoning of Property: Restricted Agricultural

A 4 Present Use of Property (describe in detail as best as reasonably possible- add additional pages as needed): The property located at 8507 Green Lakes Road, Manlius, New York was being utilized as farm land through the end of the 2016 growing season. Most recently, the area of the proposed solar project was used as a corn field. The project site is currently vacant land.

A 5 Describe property condition at present: The project site consists of vacant land. The Site is located within a rural area and is bounded by wooded area to the north and south; farmland and wooded area to the east; and Pool's Creek, farmland, wooded area, and an agricultural warehouse to the west. The proposed project site occupies approximately 23.4 acres of the larger 147 acre parcel.

B 1 Proposed use of property: EF NY CDG 002, LLC (an affiliate of Falck Renewables) proposes the development of approximately 23.4 acres of a larger 146-acre parcel of private land in Onondaga County into a ground-mounted photovoltaic (PV) solar energy generating facility (Green Lakes Solar). The proposed project would be capable of delivering about 5,000 kilowatts (kW) of alternating electric current (AC) to the electrical power grid, which is sufficient to provide renewable energy to approximately 600 households. The PV panels proposed for this project are similar to solar panels utilized for typical residential roof top installations and would be placed on a racking system either pile driven or screw mounted to the ground surface. The PV project will be directly interconnected to, and provide energy to, National Grid's local

electric distribution grid via either underground or overhead electrical service. Prior to utility interconnection, direct current (DC) electrical power generated by the solar panels will be transformed to AC power and modified as necessary to connect to National Grid's electrical power supply. The project would also include an equipment pad, a gravel access road and would be surrounded by a chain-linked security fence.

B 2 Anticipated number of employees, guests, customers on property: The PV project, after construction is completed, will not require continuous supervision, maintenance or support. The PV Arrays are monitored using a GPS/Telemetry system and maintenance personnel would respond to indications that the arrays were not functioning properly. Landscaping, mowing, and snow removal would occur on an as-needed basis.

B 3 Hours of Proposed Operation:

During Construction:		During Operations:	
Monday – Friday	7 a.m. – 5 p.m.	Monday – Friday	Daylight Hours
Saturday	N/A	Saturday	Daylight Hours
Sunday	N/A	Sunday	Daylight Hours
Holidays	N/A	Holidays	Daylight Hours

B 4. Anticipated Automobile Parking: The proposed PV project includes an access road to provide ingress/egress and temporary parking during construction and for maintenance personnel. There is no designated parking area.

B 5. Parking Area Buffer/Screening: Automobile parking is prohibited on the project site except for temporary parking for maintenance personnel.

B 6. Anticipated Vehicle Traffic Volume/Flow: Traffic impacts are generally limited to the construction period which lasts approximately three months for a 5,000 kW ground mounted solar project. Once the facility is operational, traffic is typically limited to less than 10 visits per year to monitor operation and provide facility maintenance.

B 7. Proposed Site Lighting: In general, lighting is not required for the proposed solar energy project. Security for the solar energy project is provided by security fencing.

B 8. Anticipated noise sources, known decibel levels: Electrical inverters, which convert power from DC to AC, and associated electrical equipment can generate noise at a solar energy site. The low him of the electrical equipment is not generally heard at distances greater than 100 feet from the electrical equipment. The proposed inverter is located more than 100 feet from the nearest property line. Noise can also be generated during periodic mowing and trimming of the facility during operation.

B 9. Landscape:

a) Existing landscaping: The project area consists of a mixture of cultivated crops and pastureland, the northern portion of the Site is bordered by hardwood forest to the north and northwest, cultivated farm fields to the south, and Green Lakes Road to the west.

b) Proposed landscaping: The Project area will have approximately 50 rows of solar panels. The height of the solar panels are typically seven to ten feet above the ground surface. The project site would also include an equipment pad, a gravel access road and

would be surrounded by a chain-linked security fence. The proposed security fencing is located more than 50 feet from Green Lakes Road.

B 10. Proposed Signage: Signs demarcating the solar energy facility will be located on the security fence and no larger than 24 inches in diameter.

B 11. Level of municipal and other services required to support the proposed activity (i.e., water supply sanitary sewage facilities): The PV project will be directly interconnected to, and provide energy to, National Grid's local electric distribution grid via either underground or overhead electrical service. No municipal water supply or sanitary sewage services will be required.

B 12.

Specific Requirements:	**Town Code (District) Requirements:**	**Proposal:**
Parking Spaces	Not Specified	N/A
Lot Coverage	Not Specified	~15%
Front Yard Setback	40	50 feet min.
Side Yard Setback	20	50 feet min.
Rear Yard Setback	40	50 feet min.
Maximum Height of Building	Not Specified	7-10 feet

EXHIBITS TO SPECIAL PERMIT APPLICATION:

1. Detailed site plan of any proposed construction anticipated (attach as Exhibit "A"). The Town Board requires that drawings be certified by the appropriate design professional, i.e. a licensed engineer, architect, or surveyor, and include, except as may be permitted at #10 below, at time of application such detail as required per Town Zoning Code §155-28A(1)(13) for site plan submission.

2. Survey Map (Exhibit "B") Certified by a licensed surveyor within two years of date of application. Survey should show all existing state of facts, improvements, structures, easements, rights-of-way, appropriations, landscape features, encroachments and existing pavement on site. Any survey map last redated prior to 60 days before the application filing date shall be accompanied by an affidavit from the applicant, owner or occupant, i.e. someone with personal knowledge, that the survey map accurately shows the state of facts of the survey map as of the date of the application filing or if it does not the affidavit should describe any change features.

3. Legal description of proposed site (Exhibit "C"). The legal description must be in a form sufficient to follow the legal description on the survey map submitted.

4. Drainage, SWPPP if applicable, sanitary sewer, water service plans and specifications for proposed site (certified by a licensed professional engineer). Attach as Exhibit "D" and as applicable, numbered sub-exhibits e.g. "D-1", "D-2" etc.

5. Environmental Assessment Form (Exhibit "E"). A short environmental assessment form(see attached form) may be provided with any application for an unlisted action, however acceptance of same shall not be deemed a waiver by the Town of its right to require a long EAF with appropriate documentary substantiation of answers provided (including without limitation #6 following). For Type One Actions a long EAF must be submitted at time of application.

6. Freshwater Wetlands Letter. Pursuant to 6 NYCRR 663.4(a), where the application involves conduct of regulated activity on freshwater wetlands or adjacent areas, the applicant must obtain either a permit or letter of permission from the DEC or the authorized local government having jurisdiction over the wetland. Any delineation such determination is based on shall likewise be provided. Attach as Exhibit "F" and as applicable, with numbered sub-exhibits.

7. Professional Fees Reimbursement Agreement (Exhibit "G").

8. Disclosure Affidavit. The applicant shall submit an affidavit attesting it has reviewed General Municipal Law §809 and is familiar with the provisions contained therein, that no state officer, or any officer or employee of the County of Onondaga or Town of Manlius has any interest in the person, partnership or association owning the premises subject of the application or making such application, and that no other violation of §809 shall result from such application (Exhibit "H").

9. Filing and Professional Review Fees. At the time of application filing, applicant shall submit $100.00 in the form of cash or check payable to the Town of Manlius for Special Permit filing or renewal fees. Site Plan filing and Professional Review fees must be paid per Town Code Fee Schedule prior to commencement of Planning Board advisory review.

10. NOTE: THE ABOVE ARE NOT INTENDED AS AN EXHAUSTIVE LISTING OF THE APPLICATION REQUIREMENTS. THE APPLICANT SHALL BE RESPONSIBLE FOR FAMILIARIZING ITSELF WITH ALL TOWN CODE ZONING, SITE PLAN REVIEW, AND SPECIAL PERMIT REQUIREMENTS, AND THE REQUIREMENTS OF OTHER INVOLVED AND PERMITTING AGENCIES INCLUDING RELATIVE TO SEQRA, GENERAL MUNICIPAL LAW SECTION 239 REVIEW, STATE/COUNTY DOT, DOH AND THE LIKE.

11. THE FOREGOING NOTWITHSTANDING IT IS ACKNOWLEDGED THAT UPON INITIAL APPLICATION CERTAIN OF THE ABOVE MAY NOT, WITHOUT INITIAL INPUT FROM THE TOWN BOARD OR PLANNING BOARD, BE REASONABLY CAPABLE OF FINAL

COMPLETION, AND ACCORDINGLY MAY BE WAIVED OR SUCH REQUIREMENTS RELAXED TEMPORARILY AND UNTIL SUFFICIENT SPECIFIC DIRECTION FROM THE RESPECTIVE BOARDS HAS BEEN GIVEN. AT TIME OF SUBMISSION THE APPLICANT SHALL SPECIFICALLY REFERENCE ANY SUCH REQUEST(S) AND ITS REASON(S) FOR SAME IN A DETAILED ENCLOSURE LETTER DESCRIBING THE SUBMISSION AND EXHIBITS.

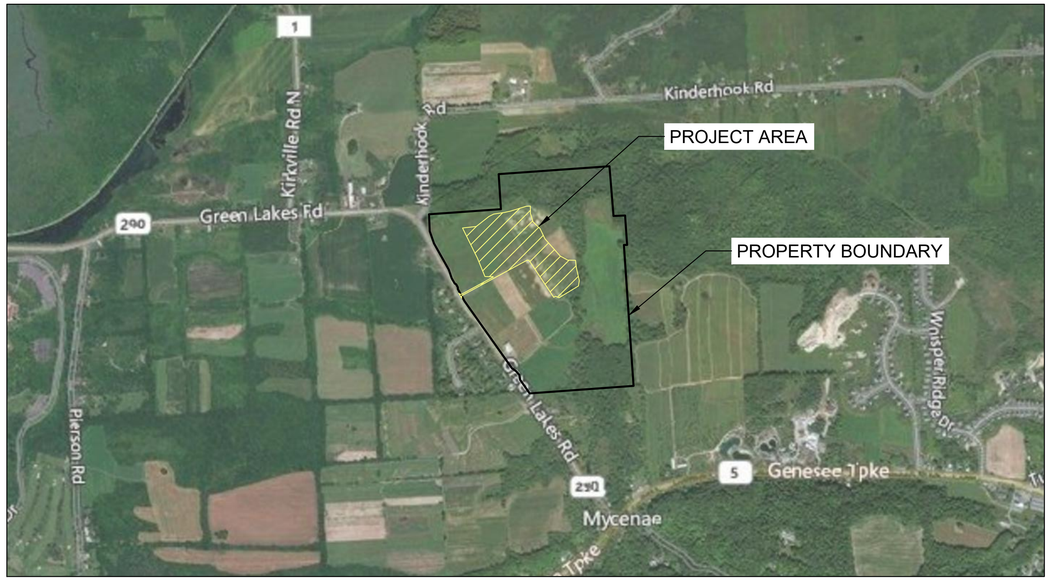
RENEWAL APPLICATIONS SHALL REQUIRE ONLY SUCH OF THE FOREGOING INFORMATION AND EXHIBITS AS ARE DEEMED NECESSARY FOR CONSIDERATION OF A RENEWAL PERMIT INVOLVING NO MATERIAL CHANGES FROM OR VIOLATIONS UNDER THE PRIOR ISSUED SPECIAL PERMIT.

APPLICATIONS SHALL BE SUBMITTED IN BOUND TABBED BOOKLET FORM WITH A COVER LETTER, TABLE OF CONTENTS REFERENCING EXHIBITS, AND LEGIBLE 11"by 17" MINIMUM DRAWINGS FOLDED TO LETTER SIZE THEREIN. TWENTY COPIES SHALL BE DELIVERED TOGETHER WITH SEVEN(7) FULL SIZE PRINTS OF ALL DRAWINGS. SUBSEQUENT SUBMISSIONS OF MINOR MODIFICATIONS MAY BE SUBMITTED IN THE SAME MANNER WITH A LETTER REFERENCING THE SPECIFICS OF THE SUBSTITUTION, HOWEVER IF NUMEROUS OR MATERIAL IN NATURE ENTIRE REPLACEMENT SUBMISSIONS MAY BE REQUESTED.

Exhibit A

SITE PLAN

FALCK RENEWABLES
GRUPPOFALCK



LOCATION MAP
SCALE 1"=1000'

PROJECT DEVELOPER

FALCK RENEWABLES NORTH AMERICA
DEVELOPMENT SERVICES &
CONSTRUCTION MANAGEMENT, LLC
1 BRIDGE STREET
IRVINGTON, NEW YORK 10533
+1 (914) 340-4740

PROJECT SCOPE

THIS PERMITTING PACKAGE PROVIDES DRAWINGS AND DETAILS FOR THE INSTALLATION OF A SOLAR PHOTOVOLTAIC SYSTEM IN THE STATE OF NEW YORK. THIS DRAWING SET IS FOR DISCRETIONARY PERMITTING PURPOSES ONLY, NOT FOR CONSTRUCTION.

CIVIL ENGINEER

TETRA TECH
ENGINEERING CORPORATION, P.C.
CERT #0015490
3136 SOUTH WINTON RD, SUITE 303
ROCHESTER, NEW YORK 14624
(585) 417-4009

APPLICABLE CODES & STANDARDS

- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- NFPA 855 (REFERENCE ONLY)
- 2015 INTERNATIONAL BUILDING CODE (IBC) AND NEW YORK AMENDMENTS
- 2015 INTERNATIONAL FIRE CODE (IFC) AND NEW YORK AMENDMENTS
- 2016 NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL
- 2015 NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
- 2016 TOWN OF MANLIUS NEW YORK SOLAR ZONING CODE

PROPERTY OWNER

CHARLES L. HAFNER
8507 GREEN LAKES ROAD
MANLIUS, NY 13066

GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

DISCRETIONARY PERMITTING

DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
C-001	CIVIL TITLE SHEET
C-101	EXISTING CONDITIONS
C-201	SITE PLAN
C-202	EROSION & SEDIMENT CONTROL PLAN
C-401	SITE DETAILS
C-402	FENCE & GATE DETAILS
C-403	EROSION & SEDIMENT CONTROL DETAILS

PROJECT SUMMARY	
PARCEL NUMBER	82.-2-15.1
PARCEL ACREAGE	APPROX. 147.5 ACRES
ZONING CLASSIFICATION	RESTRICTED AGRICULTURAL (R-A)
FRONT SETBACK	50 FT MIN.
REAR SETBACK	50 FT MIN.
SIDE SETBACK	50 FT MIN.
PROJECT AREA	23.4 ACRES (INCLUDES ACCESS ROAD)
LATITUDE/LONGITUDE	43.0596°/-75.9379°
SYSTEM SIZE (DC)	7.87 MW
SYSTEM SIZE (AC)	5.00 MW
ROW SPACING	24.9 FT (CENTER TO CENTER)
TREE CLEARING	0.00 ACRES
ROAD LENGTH	±2,265 FT
PERIMETER FENCE LENGTH	±4,960 FT
SILT FENCE LENGTH	±2,910 FT

NOT FOR CONSTRUCTION

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TETRA TECH
TETRA TECH ENGINEERING CORPORATION, P.C.
CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

STAMP:



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GREEN LAKES ROAD SOLAR PROJECT
8507 GREEN LAKES ROAD MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
CIVIL TITLE SHEET

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	FLOODPLAIN DATA	04/13/2020	KMG

DATE:	03/05/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-001

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LEGEND

- PROPERTY LINE (APPROX.)
- ZONING SETBACKS
- 500 EXISTING TOPO (5 FT CONTOURS)
- EXISTING FENCE
- EXISTING FIRE HYDRANT
- SURVEY CONTROL POINT
- EXISTING TREE LINE
- NYSDEC WETLAND
- 100' NYSDEC WETLAND BUFFER
- EXISTING UTILITY POLE
- OHU OHU EXISTING OVERHEAD ELECTRIC
- GAS GAS EXISTING NATURAL GAS LINE
- EXISTING CULVERT
- 100 YEAR FLOODPLAIN
- REGULATORY FLOODWAY

GENERAL NOTES:

1. CONTOUR DATA AND EXISTING CONDITIONS INFORMATION OBTAINED FROM SURVEY BY THEW ASSOCIATES, PLLC DATED MARCH 18, 2020. THIS DATA IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83)(2011) NEW YORK CENTRAL ZONE, US FOOT AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEIOD 12B, US FOOT.
2. TREE LINES SHOWN HEREON ARE APPROXIMATE. SOURCE: GOOGLE EARTH.
3. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
4. ORTHOIMAGERY OBTAINED FROM NYS GIS CLEARINGHOUSE, 2018 ONE FOOT FOUR BAND CENTRAL ZONE INDEX.

NOT FOR CONSTRUCTION

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WWW.FALCKRENEWABLES.COM

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ROCHESTER, NY 14623

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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
EXISTING CONDITIONS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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B	FLOODPLAIN DATA	04/13/2020	KMG

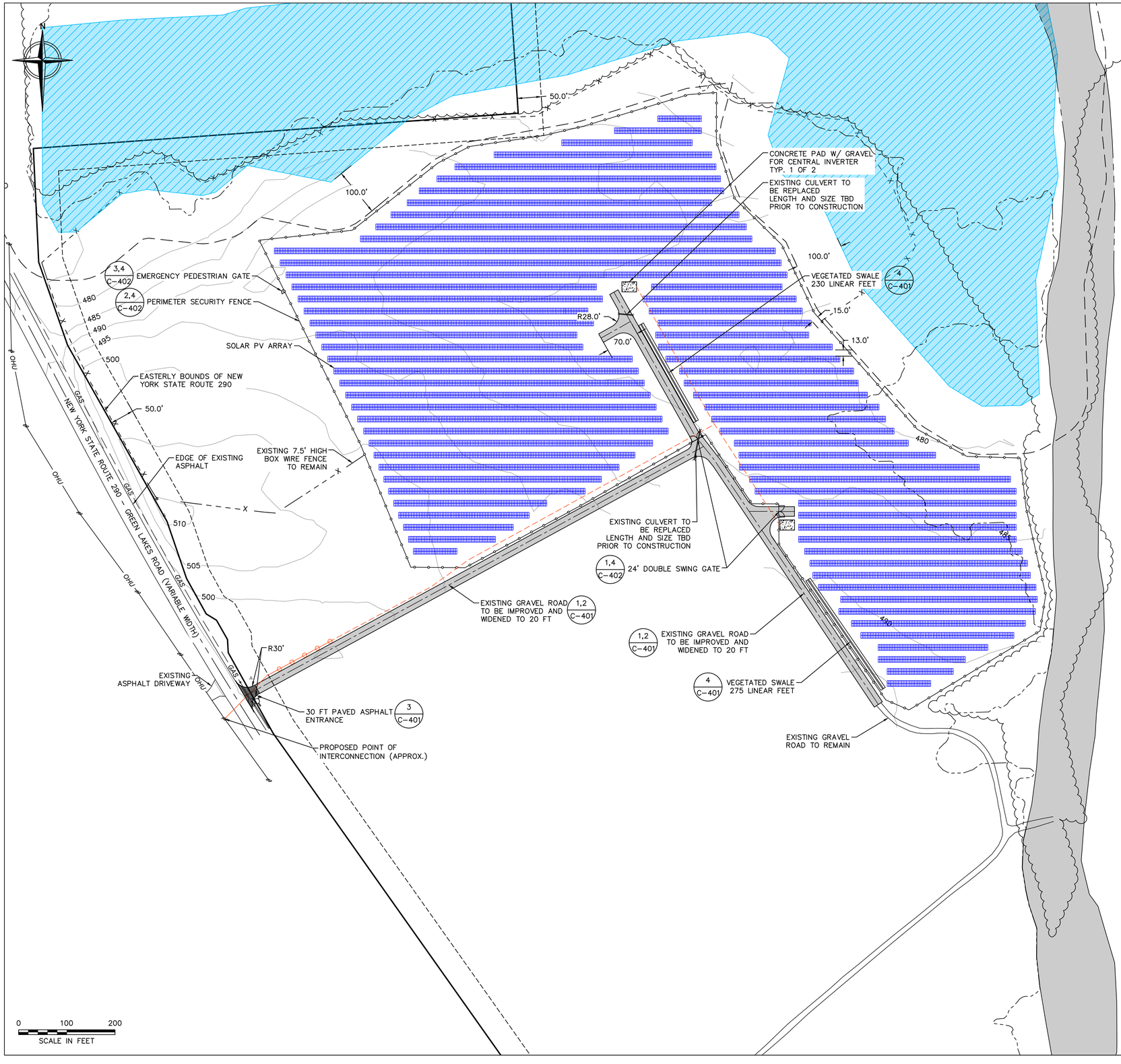
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DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-101

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LEGEND

- PROPERTY LINE (APPROX.)
- ZONING SETBACKS
- 500 EXISTING TOPO (5 FT CONTOURS)
- EXISTING FENCE
- EXISTING FIRE HYDRANT
- SURVEY CONTROL POINT
- EXISTING TREE LINE
- NYSDEC WETLAND
- 100' NYSDEC WETLAND BUFFER
- EXISTING UTILITY POLE
- OHU OHU EXISTING OVERHEAD ELECTRIC
- GAS GAS EXISTING OVERHEAD ELECTRIC
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED UTILITY POLE
- PROPOSED CULVERT
- PROPOSED PAVED ASPHALT APRON
- 100 YEAR FLOODPLAIN
- REGULATORY FLOODWAY

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3. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
4. MAINTAIN MINIMUM 2 FOOT DISTANCE BETWEEN GROUND ELEVATION AND BOTTOM OF SOLAR PANEL. DISTANCE BETWEEN GROUND ELEVATION AND TOP OF SOLAR PANEL NOT TO EXCEED 20 FEET.
5. PERMANENT PAVED ASPHALT ENTRANCE TO BE DESIGNED IN ACCORDANCE WITH NYSDOT.

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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
SITE PLAN

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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B	FLOODPLAIN DATA	04/13/2020	KMG

DATE:	03/05/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

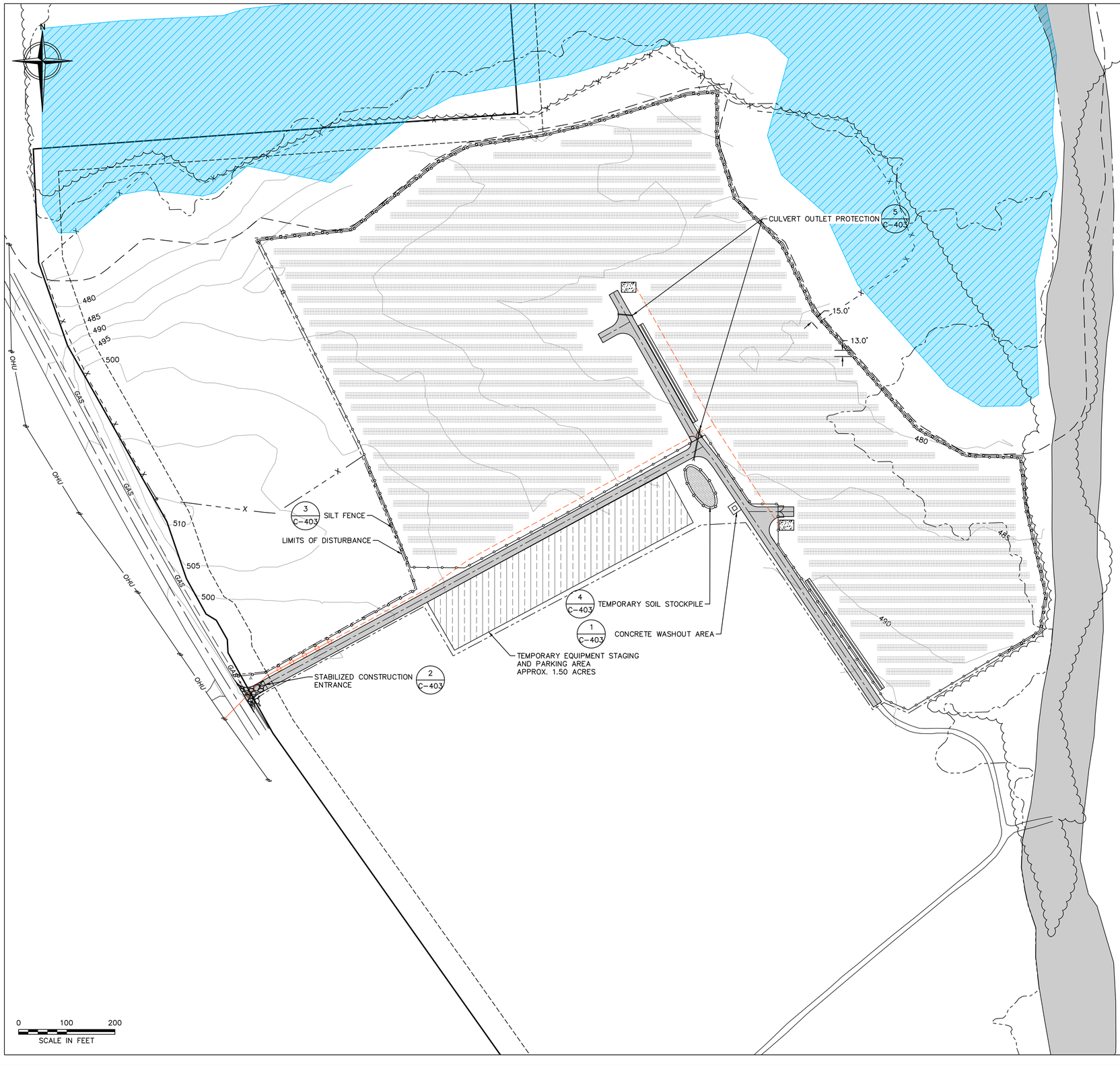
SCALE:
AS SHOWN

SHEET NO.:
C-201

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LEGEND

- PROPERTY LINE (APPROX.)
- ZONING SETBACKS
- 500 EXISTING TOPO (5 FT CONTOURS)
- EXISTING FENCE
- EXISTING FIRE HYDRANT
- SURVEY CONTROL POINT
- EXISTING TREE LINE
- NYSDEC WETLAND
- 100' NYSDEC WETLAND BUFFER
- EXISTING UTILITY POLE
- OHU EXISTING OVERHEAD ELECTRIC
- GAS EXISTING OVERHEAD ELECTRIC
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED UTILITY POLE
- TEMPORARY EQUIPMENT LAYDOWN AREA
- TEMPORARY SOIL STOCKPILE AREA
- PROPOSED SILT FENCE
- LIMITS OF DISTURBANCE
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CULVERT
- PROPOSED CONCRETE WASHOUT AREA
- 100 YEAR FLOODPLAIN
- REGULATORY FLOODWAY

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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
EROSION & SEDIMENT CONTROL PLAN

SHEET SIZE:
ARCH "D"
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0 ½" 1"

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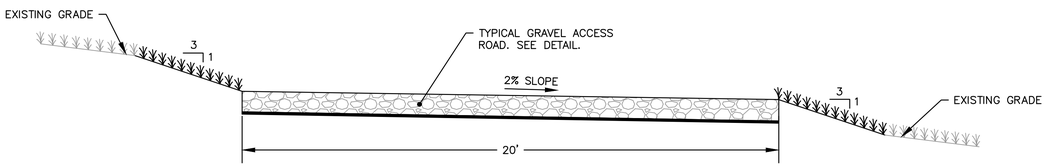
DATE:	03/05/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-202

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TYPICAL ACCESS ROAD

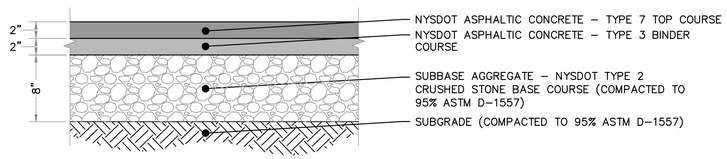
DETAIL 1 / C-401

SCALE: NTS

TYPICAL GRAVEL ACCESS ROAD SECTION

DETAIL 2 / C-401

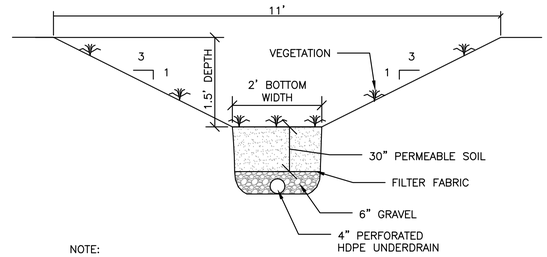
SCALE: N.T.S.



PAVED ASPHALT ROAD SECTION

DETAIL 3 / C-401

SCALE: N.T.S.



NOTE:

1. PERMEABLE SOIL SHALL CONSIST OF A MINIMUM OF 6 INCHES OF TOPSOIL OVERLYING A 50/50 MIX OF TOPSOIL AND SAND.
2. GRAVEL SHALL BE AASHTO M-43 SIZE NO. 57.

TYPICAL VEGETATED SWALE

DETAIL 4 / C-401

SCALE: N.T.S.

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GREEN LAKES ROAD
SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
SITE DETAILS

SHEET SIZE:
ARCH "D"
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0 ½" 1"

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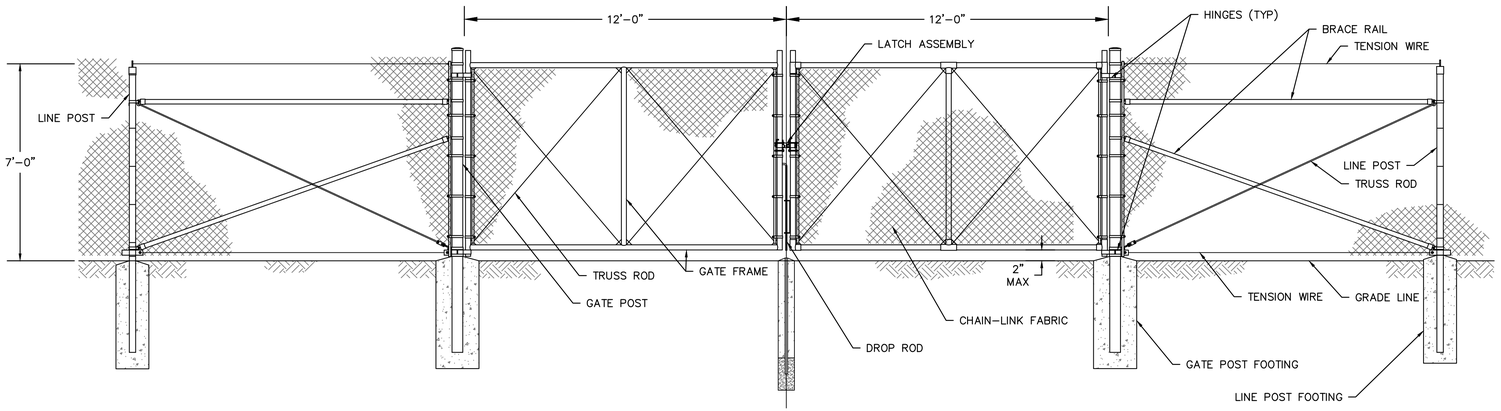
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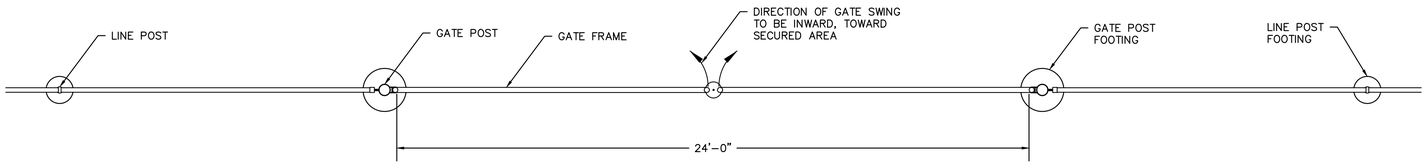
SCALE:
AS SHOWN

SHEET NO.:
C-401

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ELEVATION



PLAN VIEW

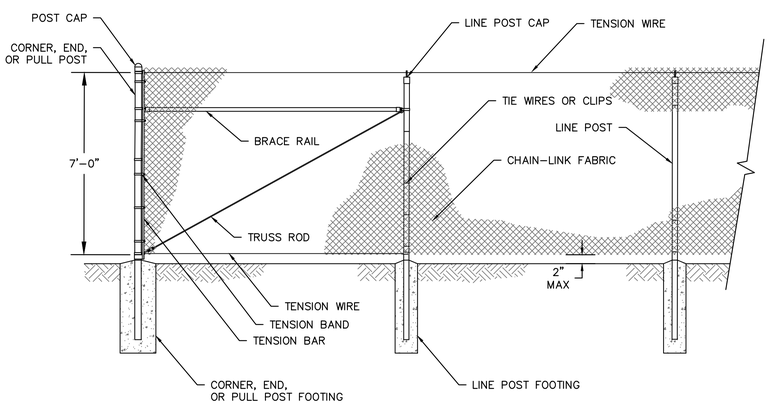
TYPICAL 24' DOUBLE SWING ACCESS GATE

DETAIL 1 / C-402

SCALE: NTS

FENCE & GATE NOTES:

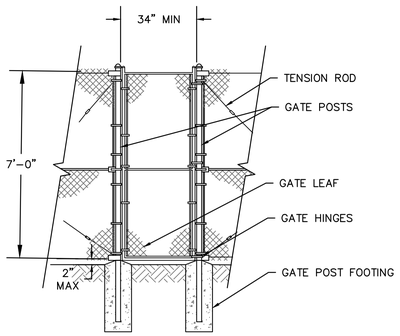
1. SIZE AND DIMENSIONS OF THE FENCE AND GATE COMPONENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE CHAIN-LINK FENCE MANUFACTURER SPECIFICATIONS UNLESS OTHERWISE NOTED ON THIS DRAWING.
2. GROUNDING AND BONDING OF THE SECURITY FENCE SYSTEM SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), AND ALL OTHER APPLICABLE STATE AND LOCAL CODE REQUIREMENTS.
3. DOUBLE SWING GATE TO OPEN INWARD, TOWARD SECURED AREA AS SHOWN ON THE SITE PLAN.
4. INSTALL WIRE TIES, RAILS, POSTS, AND BRACES ON THE SECURE SIDE OF THE FENCE ALIGNMENT. PLACE CHAIN-LINK FABRIC ON THE OPPOSITE SIDE OF THE SECURE AREA.
5. DESIGN AND INSTALL GATE, LINE, CORNER, END, AND PULL POST CONCRETE FOOTINGS, AS REQUIRED, PER APPLICABLE CODES AND CHAIN-LINK FENCE MANUFACTURER SPECIFICATIONS.
6. TOP SELVAGES TO BE TWISTED, BOTTOM SELVAGES TO BE KNUCKLED.
7. SIGNAGE SHALL BE AS REQUIRED BY CODE WITH DETAILS INCLUDING FACILITY NAME, OWNER, AND CONTACT PHONE NUMBER. WARNING SIGNAGE TO BE PLACED AT BASE OF ALL PAD-MOUNTED TRANSFORMERS AND SUBSTATIONS.



TYPICAL SECURITY PERIMETER FENCE

DETAIL 2 / C-402

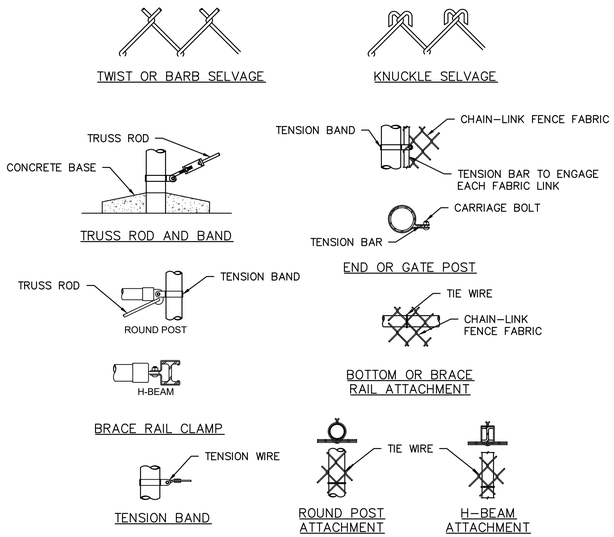
SCALE: NTS



TYPICAL EMERGENCY PEDESTRIAN GATE

DETAIL 3 / C-402

SCALE: NTS



TYPICAL CHAIN LINK FENCE FASTENING

DETAILS 4 / C-402

SCALE: NTS

NOT FOR CONSTRUCTION

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TETRA TECH
TETRA TECH ENGINEERING CORPORATION, P.C.
CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

STAMP:



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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
FENCE & GATE DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	FLOODPLAIN DATA	04/13/2020	KMG

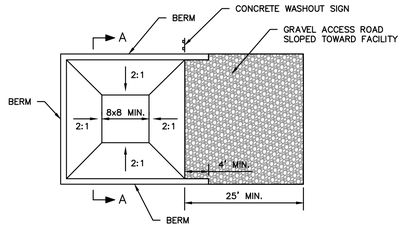
DATE:	03/05/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

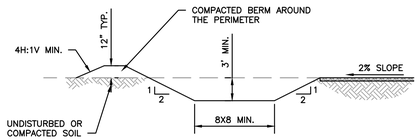
SCALE:
AS SHOWN

SHEET NO.:
C-402

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PLAN



SECTION A-A

CONCRETE TRUCK WASHOUT AREA NOTES:

1. LOCATE THE FACILITY A MINIMUM OF 100 FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAMS AND OTHER SURFACE WATER.
2. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCEPT FOR THE ACCESS ROAD.
3. PROVIDE A GRAVEL ACCESS ROAD TO FACILITY THAT IS SLOPED DOWN TO FACILITY.
4. SIGNS SHALL BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOAD IS DISCHARGED.
5. ALL WASHOUT FACILITIES SHALL BE LINED TO PREVENT LEACHING OF LIQUIDS INTO THE GROUND. THE LINER SHALL BE PLASTIC SHEETING HAVING A MINIMUM THICKNESS OF 10 MILS WITH NO HOLES OR TEARS, AND ANCHORED BEYOND THE TOP OF THE PIT WITH AN EARTHEN BERM, SAND BAGS, STONE, OR OTHER STRUCTURAL APPURTENANCES EXCEPT AT THE ACCESS POINT.
6. PREFABRICATED WASHOUT FACILITIES CAN BE USED BUT THEY MUST CAPTURE AND CONTAIN CONCRETE WASH AND BE SIMILARLY SIZED AS SHOWN ABOVE AND LOCATED AS NOTED ABOVE.
7. WASH WATER IS ESTIMATED TO BE 7 GALLONS PER CHUTE AND 50 GALLONS PER HOPPER OF A PUMP TRUCK AND/OR DISCHARGING DRUM.

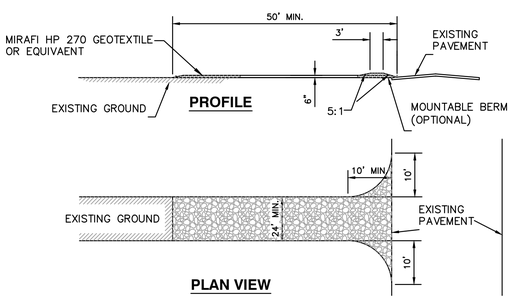
MAINTENANCE:

1. ALL FACILITIES MUST BE INSPECTED DAILY.
2. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.
3. EXCESS ACCUMULATED RAINWATER OVER HARDENED CONCRETE SHALL BE PUMPED TO A STABILIZED AREA, SUCH AS A GRASS FILTER STRIP.
4. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE FACILITY IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF-SITE AT A PERMITTED C&D LANDFILL. NO ONSITE DISPOSAL WILL BE ALLOWED.
5. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE FACILITY.
6. INSPECT PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

CONCRETE WASHOUT

DETAIL 1 / C-403

SCALE: N.T.S.



PLAN VIEW

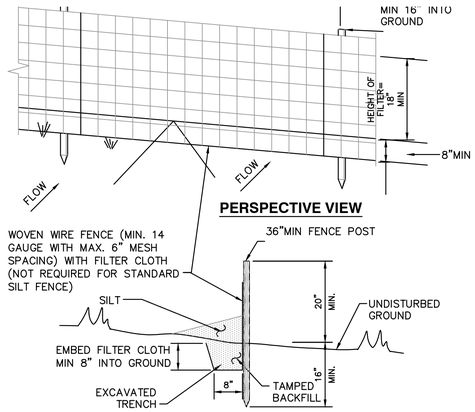
STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. THICKNESS – NOT LESS THAN SIX (6) INCHES.
3. WIDTH –TWENTY (20) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY FOUR FEET (24) FOOT IF SINGLE ENTRANCE TO SITE.
4. LENGTH – AS REQUIRED, BUT NOT LESS THAN 50'.
5. GEOTEXTILE – PLACE OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – CLEAN WHEELS TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PROVIDE WEEKLY INSPECTION AND NEEDED MAINTENANCE.

STABILIZED CONSTRUCTION ENTRANCE

DETAIL 2 / C-403

SCALE: N.T.S.



SECTION

SILT FENCE NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL.
4. PERFORM MAINTENANCE AS NEEDED AND REMOVE MATERIALS WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. USE SILT FENCE WHERE EROSION COULD OCCUR IN THE FORM OF SHEET EROSION.
6. DO NOT USE SILT FENCE WHEN A CONCENTRATION OF WATER IS FLOWING TO THE BARRIER AND SOIL CONDITIONS DO NOT ALLOW FOR PROPER KEYING OF FABRIC, OR OTHER ANCHORAGE, TO PREVENT BLOWOUTS.
7. THE TYPE OF SILT FENCE SHALL NOT EXCEED THE MAXIMUM SLOPE LENGTH AND MAXIMUM FENCE LENGTH REQUIREMENTS SHOWN IN THE FOLLOWING TABLE.

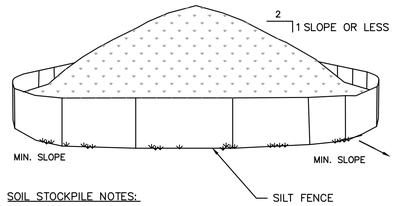
SLOPE	STEEPNESS	SLOPE LENGTH/FENCE LENGTH (FT)		
		STANDARD	REINFORCED	SUPER
<2%	<50:1	300/1500	N/A	N/A
2-10%	50:1 TO 10:1	125/1000	250/2000	300/2500
10-20%	10:1 TO 5:1	100/750	150/1000	200/1000
20-33%	5:1 TO 3:1	60/500	80/750	100/1000
33-50%	3:1 TO 2:1	40/250	70/350	100/500
>50%	>2:1	20/125	30/175	50/250

8. STANDARD SILT FENCE DOES NOT REQUIRE WOVEN WIRE FENCE. SUPER SILT FENCE REQUIRES CHAIN LINK FENCE IN-LIEU OF WOVEN WIRE FENCE AND THE POSTS MUST BE STANDARD CHAIN LINK FENCE POSTS AND BE DRIVEN 3 FEET INTO THE GROUND.

SILT FENCE

DETAIL 3 / C-403

SCALE: N.T.S.



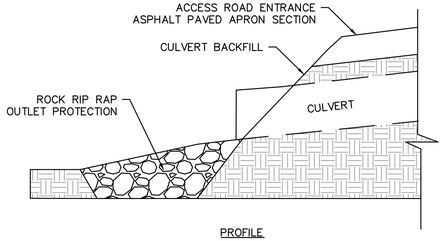
SOIL STOCKPILE NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1V:2H.
3. UPON COMPLETION OF SOIL STOCKPILING, SURROUND EACH PILE WITH SILT FENCING, THEN STABILIZE WITH VEGETATION OR COVER THE STOCKPILE IN ACCORDANCE WITH THE SITE SPECIFIC SWPPP.
4. SEE DETAILS FOR INSTALLATION OF SILT FENCE.
5. STOCKPILE HEIGHT SHOULD GENERALLY NOT EXCEED 20 FEET.

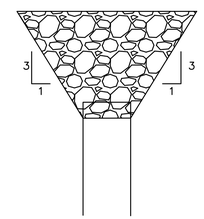
TEMPORARY SOIL STOCKPILE

DETAIL 4 / C-403

SCALE: N.T.S.



PROFILE



PLAN VIEW

NOTES:

1. RIP-RAP APRON DIMENSIONS WILL VARY DEPENDING UPON THE GRADING CONFIGURATION.
2. STONE RIP-RAP SHALL BE PLACED ON NON-WOVEN GEOTEXTILE HAVING A THICKNESS OF 60 MILS (MIN.), GRAB STRENGTH NO LESS THAN 120 LBS: AND SHALL CONFORM TO ASTM D-1777 AND ASTM D-1682.

CULVERT OUTLET PROTECTION

DETAIL 5 / C-403

SCALE: N.T.S.

NOT FOR CONSTRUCTION

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TETRA TECH
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CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD MANLIUS, NY 13066

PROJECT NUMBERS: 194-7119

SHEET TITLE: EROSION & SEDIMENT CONTROL DETAILS

SHEET SIZE: ARCH "D" 24" X 36" (610 x 914)

0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	FLOODPLAIN DATA	04/13/2020	KMG

DATE:	03/05/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE: DISCRETIONARY PERMITTING

SCALE: AS SHOWN

SHEET NO.: C-403

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Exhibit B

SURVEY MAPS

Now or Formerly
Property of
Oliver Paul Mabie
Liber 4830 - Page 759

Tax Parcel No. 082.-02-17.1

Approximate Property Line

5' High Page Wire Fence

Property of
Charles L. Hafner
Liber 2829 - Page 191

Tax Parcel No. 082.-02-15.1

County Route 257 - State Route 290

New York State Route 290 - Green Lakes Road (variable width)

Gravel Road

Edge of Gravel

Edge of Asphalt

Power Pole

Mailbox "9465"

Gas Test Pipe

Asphalt Driveway

Gravel Area

"40 MPH" Zone

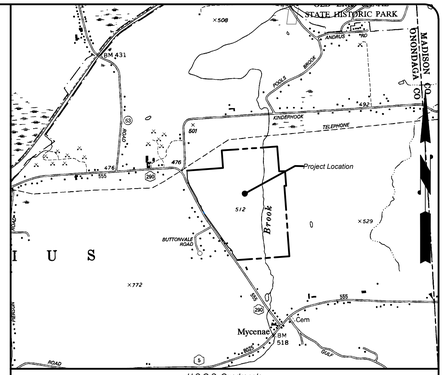
CP-1
N: 1,115,148.77'
E: 992,214.10'
Elev: 510.60'
5/8-inch rebar with a 1 1/4-inch orange plastic cap marked "THEW BASELINE"

CP-2
N: 1,114,810.84'
E: 992,493.87'
Elev: 497.91'
5/8-inch rebar with a 1 1/4-inch orange plastic cap marked "THEW BASELINE"

Site Benchmark No. 1
Elev. 500.80'

E 992,200
N 1,115,800
E 992,700
N 1,115,800
E 993,200
N 1,115,800
E 992,200
N 1,114,800
E 992,700
N 1,114,800
E 993,200
N 1,114,800

Match to Sheet 2



U.S.G.S. Quadrangle
Manlius, New York
Not to Scale

General Notes:

1. This survey is referenced horizontally to the North American Datum of 1983, 2011 adjustment (NAD83/2011), projected on the New York State Plane Coordinate System (Central Zone) and vertically to the North American Vertical Datum of 1988 (NAVD88).
2. North arrow as shown indicates Grid North referenced to NAD83/2011, projected on the New York State Plane Coordinate System (Central Zone).
3. The reference horizontal and vertical control station is a GPS Continuously Operating Reference Station (CORS). Designated as "North Syracuse CORS ARP" (CORS ID: NYNS), NYNS was established by the New York State Department of Transportation in 2011. Elevation 433.84 feet.
4. The property lines shown hereon are approximate and should not be relied upon. The location of the property lines were derived from record documents (i.e. deeds, filed maps, and tax maps).
5. Location of spot elevation is indicated by the tick "+" mark located adjacent to the elevation.
6. The subsurface utilities shown hereon are of Quality Level "C" as defined by the American Society of Civil Engineers (ASCE) in the "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data". The subsurface utilities shown hereon are based on physical evidence located during the field survey and existing utility drawings. The surveyor further does not warrant or certify that the subsurface utilities are in the exact location indicated although he does certify that they are depicted as accurately as possible from the information available. This surveyor has not physically located the subsurface utilities.
7. Elevations and contours shown reference the North American Vertical Datum of 1988 (NAVD88-Geoid12B).
8. Contours shown hereon were generated from a Digital Terrain Model utilizing AutoCAD Civil 3D Land Surveying and Engineering software.
9. The information shown hereon is based on an instrument survey completed on March 9, 2020.

Tax Parcel Number:

Town of Manlius, Onondaga County, New York
Section 82. Block 2 Lot 15.1.

Deed References:

Gilbert S. Button and Dorothy A. Button
to
Charles L. Hafner
Liber 2829 - Page 191
Dated: 10. September 1980
Recorded: 15. October 1980

Reference Drawings:

1. Acquisition Map No. 91, Parcel Nos.145, 163 & 173, Onondaga County, Sheets 1-7. Prepared by Fisher Associates and Bryan A. Merritt, LS.
2. "East Syracuse - Chittenango State Highway No. 555", designated as Map No. 91 Parcel Nos. 145, 163, & 173. Sheet 2 of 7, and is on file at the New York State Department of Transportion Office (Region 3), located in Syracuse New York.
3. "Map Showing Existing Topography, 8507 Green Lakes Road, SunEdison Project No. NY-14-0035", dated February 10, 2016, prepared by Thew Associates PE-LS, PLLC, and is distinguished as Drawing No. UK566B-01-16.

Project Control:

CP-1

CP-1 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-1 is located 63.3 feet easterly of the centerline of Green Lakes Road, 14.2 feet northerly of a concrete highway monument, and 37.7 feet southerly of a break in a wire fence.
N: 1,115,148.77'
E: 992,214.10'
Elev: 510.60'

CP-2

CP-2 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-2 is located 47.9 feet easterly of the centerline of Green Lakes Road, 49.4 feet northwesterly of a fire hydrant, and 70.9 feet southerly of a concrete highway monument.
N: 1,114,810.84'
E: 992,493.87'
Elev: 497.91'

Benchmarks:

Site Benchmark No. 1: Chiseled "X" on the most northeasterly bonnet bolt of the hydrant located on the easterly side of New York State Route 28 and being approximately 1287.0 feet southeasterly from the centerline intersection of New York State Route 28 with Kinderhook Road. Elevation = 500.80'

Legend:

- Approximate Property Line
- Centerline of Road
- Edge of Gravel
- Wire Fence
- Found Concrete Highway Monument
- Fire Hydrant
- Waterline
- Natural Gas Line
- Sign
- RCP — Reinforced Concrete Pipe
- HDPE — High-Density Polyethylene
- + 499.1 — Spot Elevation
- MH / PIN / FEE — Highway Appropriation Map Reference
- Liber 2829 - Page191 — Deed Book and Page

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

REV	DESCRIPTION	DATE

PROJECT NUMBER: CK4025-03-20

DRAWN: JLS
CHECKED: JST
SCALE: 1" = 50'
DATE: 03/18/2020

Map Showing Existing Topography
8507 Green Lakes Road
Proposed Green Lakes Solar
Sheet 1 of 2

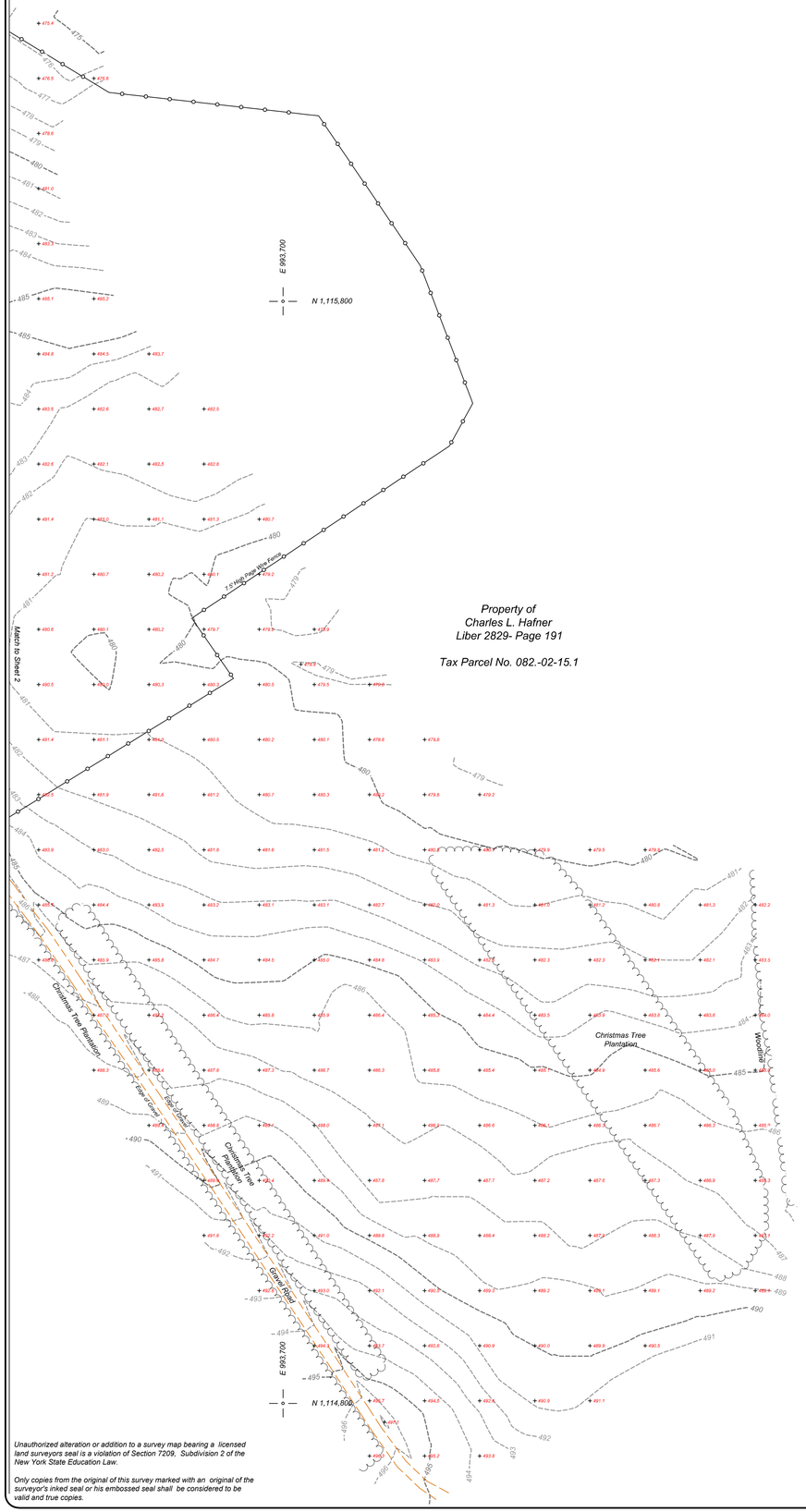
Town of Manlius
County of Onondaga
State of New York

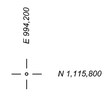
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F: 315/386-1012
9478 River Road
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F: 315/797-1957

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Only copies from the original of this survey marked with an original of the surveyor's inked seal or his embossed seal shall be considered to be valid and true copies.

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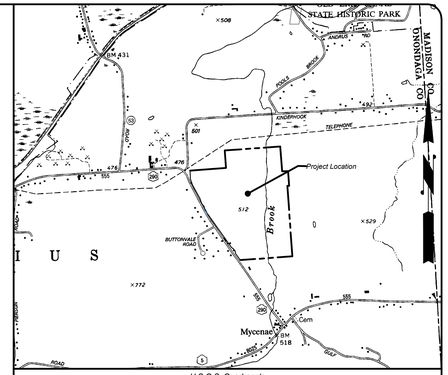




Legend:

- Approximate Property Line
- Centerline of Road
- Edge of Gravel
- Wire Fence
- Found Concrete Highway Monument
- Fire Hydrant
- W — Waterline
- GAS — Natural Gas Line
- Sign
- RCP — Reinforced Concrete Pipe
- HDPE — High-Density Polyethylene
- 489.1 — Spot Elevation
- 9901 P156 FEE — Highway Appropriation Map Reference
- Liber 2829 - Page191 — Deed Book and Page





U.S.G.S. Quadrangle
Manlius, New York
Not to Scale

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7. *Elevations and contours shown reference the North American Vertical Datum of 1988 (NAVD88-Geoid12B).*
8. *Contours shown hereon were generated from a Digital Terrain Model utilizing AutoCAD Civil 3D Land Surveying and Engineering software.*
9. *The information shown hereon is based on an instrument survey completed on March 9, 2020.*

Tax Parcel Number:

Town of Manlius, Onondaga County, New York
Section 82. Block 2 Lot 15.1.

Deed References:

Gilbert S. Button and Dorothy A. Button
to
Charles L. Hafner
Liber 2829 - Page 191
Dated: 10, September 1980
Recorded: 15, October 1980

Reference Drawings:

1. *Acquisition Map No. 91, Parcel Nos.145, 163 & 173, Onondaga County, Sheets 1-7. Prepared by Fisher Associates and Bryan A. Merritt, LS.*
2. *"East Syracuse - Chittenango State Highway No. 555", designated as Map No. 91 Parcel Nos. 145, 163, & 173, Sheet 2 of 7, and is on file at the New York State Department of Transportion Office (Region 3), located in Syracuse New York.*
3. *"Map Showing Existing Topography, 8507 Green Lakes Road, SunEdison Project No. NY-14-0035", dated February 10, 2016, prepared by Thew Associates PE-LS, PLLC, and is distinguished as Drawing No. UK566B-01-16.*

Project Control:

CP-1

CP-1 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-1 is located 63.3 feet easterly of the centerline of Green Lakes Road, 14.2 feet northerly of a concrete highway monument, and 37.7 feet southerly of a break in a wire fence.
N: 1,115,148.77'
E: 992,314.10'
Elev: 510.60'

CP-2

CP-2 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-2 is located 47.9 feet easterly of the centerline of Green Lakes Road, 49.4 feet northwesterly of a fire hydrant, and 70.9 feet southerly of a concrete highway monument.
N: 1,114,810.84'
E: 992,493.87'
Elev: 497.91'

Benchmarks:

Site Benchmark No. 1: Chiseled "X" on the most northeasterly bonnet bolt of the hydrant located on the easterly side of New York State Route 28 and being approximately 1287.0 feet southeasterly from the centerline intersection of New York State Route 28 with Kinderhook Road. Elevation = 500.80'

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)

1 inch = 50 ft.

Unauthorized alteration or addition to a survey map bearing a licensed land surveyors seal is a violation of Section 7209, Subdivision 2 of the New York State Education Law.

Only copies from the original of this survey marked with an original of the surveyor's inked seal or his embossed seal shall be considered to be valid and true copies.

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REV	DESCRIPTION	DATE

PROJECT NUMBER: CK4025-03-20

DRAWN: JLS
CHECKED: JST
SCALE: 1" = 50'
DATE: 03/18/2020

Map Showing Existing Topography
8507 Green Lakes Road
Proposed Green Lakes Solar
Sheet 2 of 2

Town of Manlius
County of Onondaga
State of New York

Thew Associates LAND SURVEYORS
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F: 315/797-1957

Exhibit C

LEGAL SITE DESCRIPTION

Surveyor's Measured Description
Proposed Solar Lease Area
Contains: 24.125 acres

All that tract or parcel of land situate in the Town of Manlius, County of Onondaga, State of New York, and being more precisely described as follows:

Beginning at a 5/8-inch rebar with a 1 1/4-inch diameter red plastic cap marked "THEW ASSOCIATES - UTICA NY" (herein after referred to as a 5/8-inch rebar) set on the easterly bounds of New York State Route 290 (variable width), said rebar having New York State plane coordinates (NAD83/2011 - Central Zone) of 1,114,797.85 feet North and 992,483.19 feet East;

thence through a parcel of land conveyed by Charles L. Hafner to JRT Properties, LLC by deed dated June 30, 2017 and recorded in the Onondaga County Clerk's Office on June 30, 2017 in Liber 5432 of Deeds at Page 175, the following 25 courses and distances:

1. North 61 degrees 26 minutes 39 seconds East a distance of 406.22 feet to a set 5/8-inch rebar;
2. North 22 degrees 16 minutes 31 seconds West a distance of 325.33 feet to a set 5/8-inch rebar;
3. North 26 degrees 21 minutes 49 seconds West a distance of 481.00 feet to a set 5/8-inch rebar;
4. North 83 degrees 55 minutes 38 seconds East a distance of 199.60 feet to a set 5/8-inch rebar;
5. North 51 degrees 52 minutes 55 seconds East a distance of 225.71 feet to a set 5/8-inch rebar;
6. North 62 degrees 29 minutes 49 seconds East a distance of 75.14 feet to a set 5/8-inch rebar;
7. North 81 degrees 35 minutes 33 seconds East a distance of 156.00 feet to a set 5/8-inch rebar;
8. North 76 degrees 47 minutes 39 seconds East a distance of 84.19 feet to a set 5/8-inch rebar;
9. North 73 degrees 14 minutes 19 seconds East a distance of 227.94 feet to a set 5/8-inch rebar;
10. North 85 degrees 44 minutes 25 seconds East a distance of 64.37 feet to a set 5/8-inch rebar;
11. South 00 degrees 14 minutes 32 seconds West a distance of 106.19 feet to a set 5/8-inch rebar;
12. South 17 degrees 43 minutes 01 seconds East a distance of 121.85 feet to a set 5/8-inch rebar;
13. South 45 degrees 26 minutes 47 seconds East a distance of 136.85 feet to a set 5/8-inch rebar;
14. South 25 degrees 36 minutes 50 seconds East a distance of 157.74 feet to a set 5/8-inch rebar;
15. South 41 degrees 29 minutes 35 seconds East a distance of 320.48 feet to a set 5/8-inch rebar;
16. South 61 degrees 22 minutes 22 seconds East a distance of 114.92 feet to a set 5/8-inch rebar;

17. South 88 degrees 13 minutes 53 seconds East a distance of 114.09 feet to a set 5/8-inch rebar;

18. South 06 degrees 29 minutes 18 seconds East a distance of 107.13 feet to a set 5/8-icn rebar;

19. South 12 degrees 43 minutes 00 seconds East a distance of 186.73 feet to a set 5/8-inch rebar;

20. South 08 degrees 46 minutes 04 seconds West a distance of 78.98 feet to a set 5/8-inch rebar;

21. South 58 degrees 54 minutes 02 seconds West a distance of 322.60 feet to a set 5/8-inch rebar;

22. North 66 degrees 38 minutes 28 seconds West a distance of 56.59 feet to a set 5/8-inch rebar;

23. South 56 degrees 13 minutes 56 seconds West a distance of 25.51 feet to a set 5/8-inch rebar;

24. North 34 degrees 01 minutes 22 seconds West a distance of 637.26 feet to a set 5/8-inch rebar;

25. South 61 degrees 26 minutes 39 seconds West a distance of 1,059.14 feet to a 5/8-inch rebar set on the easterly bounds of New York State Route 290;

thence North 29 degrees 08 minutes 30 seconds West, along the easterly bounds of New York State Route 290, a distance of 32.50 feet to the **Point of Beginning**.

To contain 24.125 acres of land, more or less, as surveyed by Jeremy L. Sweeney, Licensed Land Surveyor No. 050863.

The above described lease parcel of land is intended to be a portion of the same premises conveyed by Charles L. Hafner to JRT Properties, LLC by deed dated June 30, 2017 and recorded in the Onondaga County Clerk's Office on June 30, 2017 in Liber 5432 of Deeds at Page 175.

The above-mentioned coordinates, bearings, and distances are referenced to the North American Datum of 1983, 2011 adjustment (NAD83/2011), projected on the New York State Plane Coordinate System (Central Zone).

Exhibit D

SWPPP

Preliminary Stormwater Pollution Prevention Plan (Prelim SWPPP)

Green Lakes Road Solar Project
8507 Green Lakes Road
Manlius, New York 13066

April 6, 2020

PREPARED FOR:

Falck Renewables
1 Bridge Street
Irivington, New York 10533

FALCK RENEWABLES
GRUPPOFALCK

PREPARED BY:

Tetra Tech, Inc.
3136 South Winton Road, Suite 303
Rochester, NY 14623

TETRA TECH



SIGNATORY REQUIREMENTS

The owner or operator has signed this document as acknowledgement that they have read and understand this SWPPP; and shall ensure that the provisions of this SWPPP are implemented as defined by the NYSDEC SPDES General Permit No. GP-0-20-001 and outlined herein.

Owner/Operator Signature	Date
Owner/Operator Printed Name	Title

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
CWA	Clean Water Act
ECL	Environmental Conservation Law
FIRM	Flood Insurance Rate Map
NTS	Not to Scale
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
OPRHP	Office of Parks, Recreation and Historic Preservation
PV	Photovoltaic
SCS	Soil Conservation Service
SHPA	State Historic Preservation Act
SMDM	Stormwater Management Design Manual (NYS)
SMP	Stormwater Management Practice
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

1.0 INTRODUCTION

This Preliminary Stormwater Pollution Prevention Plan (SWPPP) has been prepared for Falck Renewables North America Development Services & Construction Management, LLC (Falck Renewables) for proposed activities associated with construction of the Green Lakes Road Solar Project (the Project) located on Green Lakes Road, Manlius, Onondaga County, New York. The property on which the Project is located comprises approximately 148 acres of land. The Project will encompass an approximately 23.4-acre subset of that property (the Site).

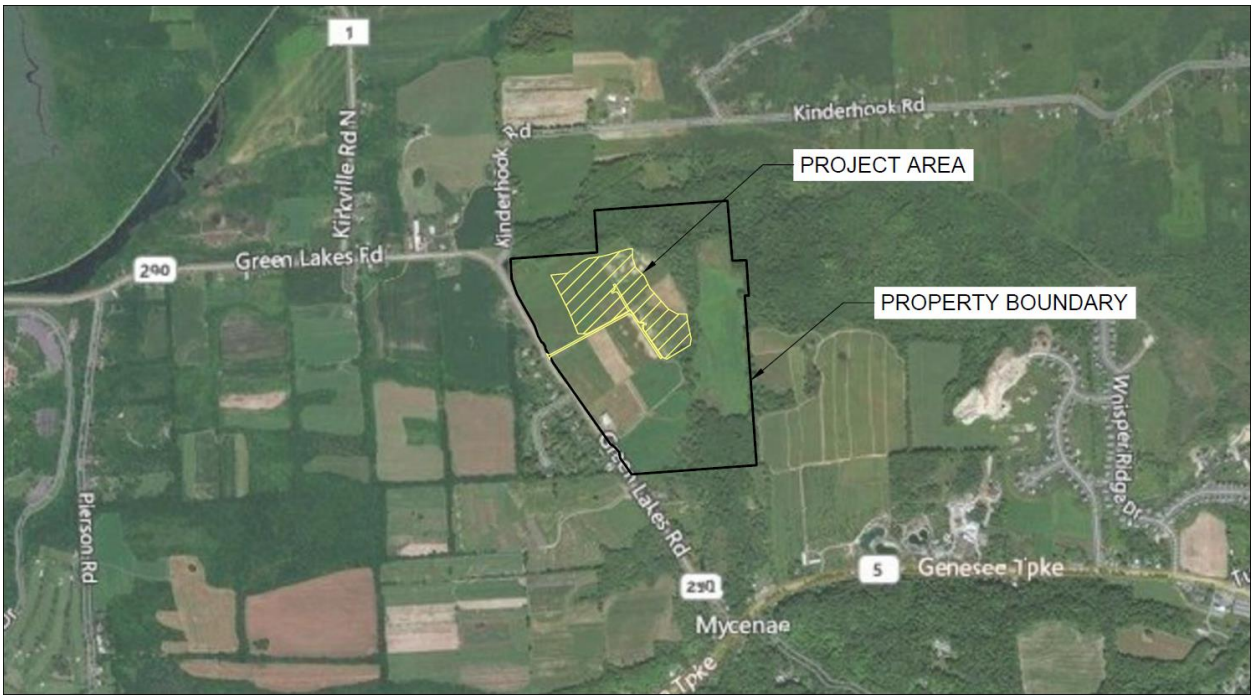


Figure 1 – Property Boundary & Project Area

Pursuant to Section 402 of the Clean Water Act (CWA), stormwater discharges from certain construction activities are unlawful unless they are authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. The New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permit program is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law (ECL). The General Permit for Stormwater Discharges from Construction Activity, General Permit Number GP-0-20-001 (the Permit) is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL.

The Permit authorizes stormwater discharges to surface waters of the State from construction activities involving soil disturbances of one or more acres, provided all of the eligibility provisions of the Permit are met. Part III.C of the Permit states that construction activities identified in Table 1 of Appendix B (of the Permit) are required to prepare a SWPPP that only includes erosion and sediment control practices. Construction activities identified in Table 2 of Appendix B (of the Permit) are required to prepare a SWPPP that also includes post-construction stormwater management practices.

The Project involves construction of a ground-mounted solar photovoltaic (PV) array, a permanent gravel access road, and concrete equipment pads. Although the overall impervious area is relatively small and a majority of the site will consist of a permanent vegetative cover, Table 2 of the Permit requires post-construction stormwater management practices be included in this preliminary SWPPP.

The total area to be disturbed is shown by the limits of disturbance on the discretionary permitting drawings for this Project. The gravel access roads, concrete & gravel equipment pads, racking posts and fence footings are all considered to be impervious surfaces. Table 1 shows the total impervious area to be 1.09 acres. Please note that the area contributing to impervious surface from the racking posts is considered negligible but has been shown for illustrative purposes.

Table 1 – Areas of Impervious Surface

Gravel Access Road	1.06 acres
Equipment Pads	0.03 acres
Racking Posts	0.001 acres
Fence Post Footings	0.01 acres
Total Impervious Surface	**1.10 acres**

It is not expected that more than 5 acres of the Project area will be disturbed at one given time. **If more than 5 acres of the Project area will be disturbed at one given time, the following are required by the Owner and Contractor**:

- Obtain written authorization from the NYSDEC prior to construction.
- Conduct at least two site inspections in accordance with Part IV.C of the General Permit every seven calendar days, for as long as greater than five acres of soil remain disturbed. The two inspections shall be separated by a minimum of two full calendar days.
- Initiate soil stabilization measures by the end of the next business day in areas where soil disturbance has temporarily or permanently ceased and complete within seven days from the date the current soil disturbance activity ceased.
- Prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
- Install additional site-specific practices needed to protect water quality.

Refer to Appendix B for a copy of the Permit.

2.0 SITE DESCRIPTION

2.1 PROPERTY

The Site, as previously noted, covers approximately 23.4 acres of a larger parcel located within Manlius, New York. The Site is located in a rural area on the north east side of the Town of Manlius. The general area around the Site consists of rural residential/agricultural properties. The Site is bound by woods to the north; by woods and agricultural fields to the east; by woods and a residential property to the south; and Green Lakes Road to the west. The Site is primarily used for agricultural purposes.

2.2 TOPOGRAPHY

The maximum elevation of the Site is approximately 500 feet above mean sea level. The Site generally slopes from the south west to the north east. Areas within the Site have slopes ranging from 1-5%.

2.3 SOILS

The United States Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey for Onondaga County was reviewed and provided surficial soil conditions for the Site. The SCS identified the presence of four (4) soil types within the Project area. Figure 2 shows the soil map for the Site.

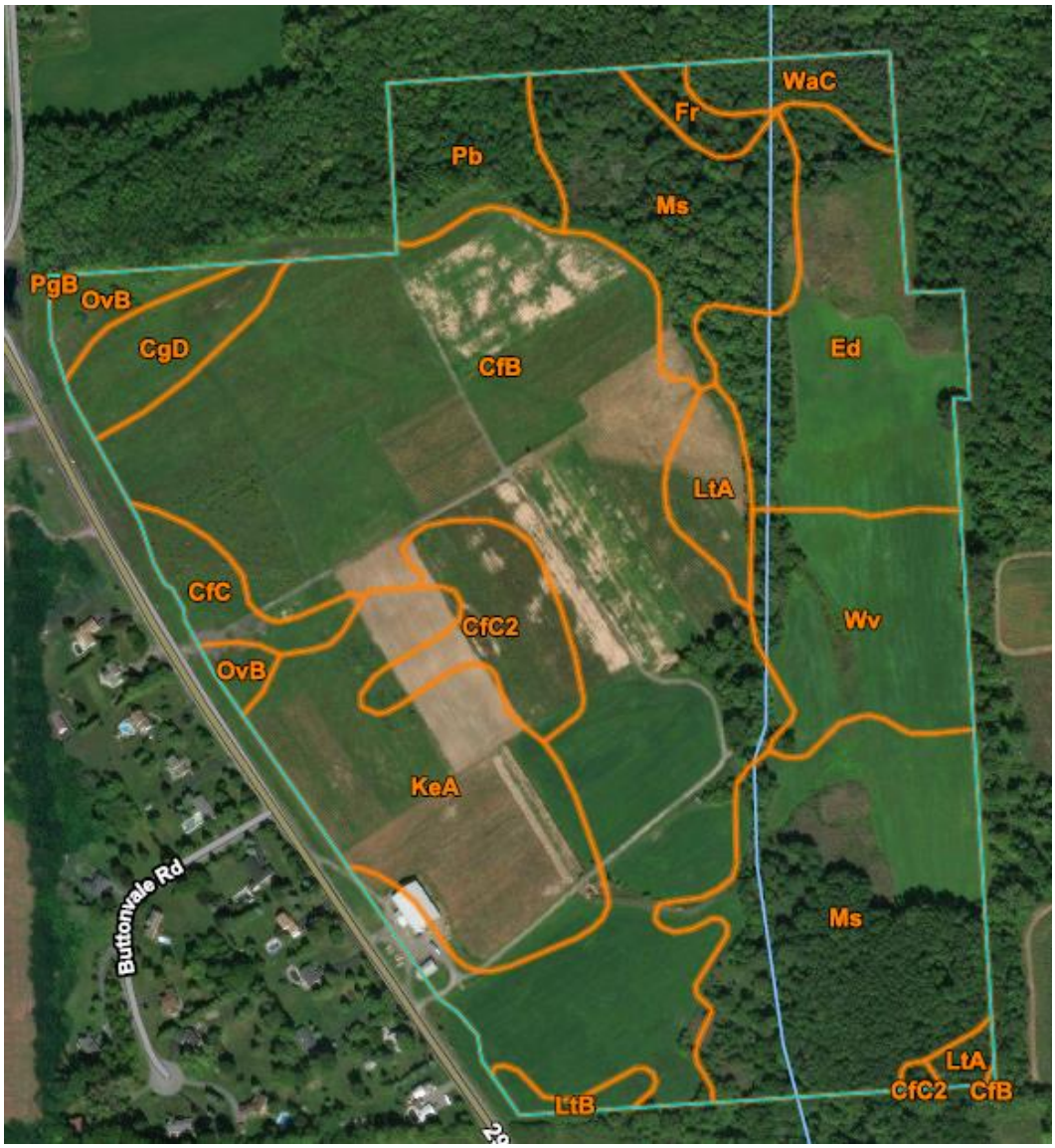


Figure 2 – Soil Map (NTS)

Soil data as provided by the SCS is presented in Table 2.

Table 2 – Soils Data for the Site

MAP SYMBOL/ DESCRIPTION	HYDROLOGIC SOIL GROUP	SLOPE (%)	SOIL PROFILE		K VALUE	DEPTH TO WATER TABLE (INCHES)
			DEPTH (IN)	USDA TEXTURE		
Cazenovia Soils (CgD)	C	15 – 25	0 – 12	Silt Loam	0.28	24 – 48
			12 – 36	Silty Clay Loam		
			36 –60	Gravelly Silty Clay Loam		
Cazenovia Silt Loam (CfB)	C	2 – 8	0 – 12	Silt Loam	0.28	24 - 48
			12 – 36	Silty Clay Loam		
			36 – 60	Gravelly Silty Clay Loam		
Lima Silt Loam (LtA)	B/D	0 – 3	0 – 9	Silt Loam	0.32	18 – 24
			9 – 12	Loam		
			12 – 16	Loam		
			16 – 25	Gravely Loam		
			25 - 79	Gravely Loam		
Weaver Silt Loam (Wv)	C	0 – 3	0 – 17	Silt Loam	0.24	18 - 30
			17 – 29	Silty Clay Loam		
			29 – 60	Silt Loam		

The SCS defines the hydrologic soil groups as follows:

Type A Soils: Soils having a high infiltration rate and low runoff potential when thoroughly wet. These soils consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a moderate rate of water transmission.

Type B Soils: Soils having a moderate infiltration rate when thoroughly wet and consists mainly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately course textures. These soils have a moderate rate of water transmission.

Type C Soils: Soils having a low infiltration rate when thoroughly wet. These soils consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine-to-fine texture. These soils have a low rate of water transmission.

Type D Soils: Soils having a very low infiltration rate and high runoff potential when thoroughly wet. These soils consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high-water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very low rate of water transmission.

The complete USDA Soil Survey (including the soil map to scale) for the Site can be found in Appendix E.

2.4 COVER CONDITIONS

The existing Site cover condition is pasture/grassland with some wooded area and wetlands. The Site cover condition post-construction is to be a permanent grassed vegetative cover, a gravel access road, and concrete equipment pads with a portion of the Site remaining as pasture/grassland with the wooded area and wetlands. Disturbed areas to be vegetated will receive topsoil and seeding for final stabilization.

Runoff curve numbers for the various cover types and descriptions used in the stormwater evaluation for this project were obtained from Tables 2-2a-d of the *Urban Hydrology for Small Watersheds Technical Release 55* by the USDA. A summary of the curve numbers is provided in Table 2.

Table 3 – Curve Numbers for Hydrologic Soil Group

Cover Type	A	B	C	D
Woods (Good)	30	55	70	77
Straight Row Crop (Good)	67	78	85	89
Pasture, grassland, or range – continuous forage for grazing (Good)	39	61	74	80
Meadow – continuous grass, protected from grazing and generally mowed for hay	30	58	71	78
Gravel	96	96	96	96
Paved parking lots, roofs, driveways, etc.	98	98	98	98

2.5 WETLANDS

There is a NYSDEC wetland mapped to the north of the Site. The design includes a 100-foot buffer around the wetland. The proposed Project avoids the wetland and its associated buffer.

2.6 HISTORIC PRESERVATION

The NYSDEC and NYS Office of Parks, Recreation and Historic Preservation (OPRHP) have developed a process for construction projects to identify and address potential impacts on archeological and historic resources. This process is documented in a Letter of Resolution (LOR) that was developed between the NYSDEC and OPRHP. A letter from the Office concluded that the Project will have No Adverse Impact on historic resources. A copy of the letter from the State Historic Preservation Act (SHPA) Review is included in Appendix C.

2.7 SURFACE WATERS & FLOOD PLAINS

The Site is located in the Chittenango Creek Watershed as part of the Oswego River/Finger Lakes Basin (East) that ultimately outlets to Lake Ontario. The Chittenango Creek watershed is not identified in Appendix C of the Permit; as such, enhanced phosphorous removal standards are

not required. Runoff from the Site flows over agricultural areas (currently row crop), infiltrates into surface soils and leaves via overland flow to wetlands to the north and a stream to the east. The stream is a tributary of Chittenango Creek. The tributaries are not listed in the 303(d) segments listed in Appendix E of the Permit.

Using the map service center provided by the Federal Emergency Management Agency (FEMA), a portion of two Flood Insurance Rate Maps (FIRMs) for the Town of Manlius, panel numbers 36067CO262F and 36067CO266F, were printed for the Site as a FIRMette. A majority of the Site is located within Zone X (Area of Minimal Flood Hazard). Portions of the Site are considered a Special Flood Hazard Area, that is defined as areas subject to flooding by the 1% annual chance flood (100-year flood). Sensitive components of the Project such as concrete equipment pads and gravel access roads have been located outside of the 100-year flood plain. The Project components within the 100-year flood plain are limited to driven panel posts and fence post footings. A copy of the FIRMette can be found in Appendix D.

2.8 RAINFALL DATA

In accordance with the *2016 New York State Standards and Specifications for Erosion and Sediment Control*, hydrologic data and rainfall distributions published by the Northeast Regional Climate Center (NRCC) on their website (http://precip.eas.cornell.edu/) are used in the stormwater hydrology calculations herein. The rainfall data for various 24-hour storm events anticipated at the Site is presented in Table 4.

Table 4 – Rainfall Data

Storm Event	24-Hour Rainfall
1-year	2.07–inches
2-year	2.40-inches
10-year	3.45–inches
100-year	5.82–inches

3.0 EROSION & SEDIMENT CONTROL

This section of the SWPPP and the associated construction drawings identify the temporary and permanent erosion and sediment control (ESC) measures that have been incorporated into the design of this Project. These measures will be implemented during construction to protect the waters of the State from sediment loads during runoff events.

The anticipated order of construction activities is outlined along with the ESC measures to be implemented for each construction activity that will result in soil disturbance. The SWPPP and construction drawings provide a description of the temporary and permanent ESC measures including limitations on the duration of soil exposure, criteria and specifications for placement and installation of the ESC measures, and a maintenance schedule.

An emphasis was placed on the preservation of natural features, conserving existing drainage patterns and vegetation, minimizing impervious surfaces, slowing down runoff, increasing infiltration, and utilizing green infrastructure techniques throughout the design process.

3.1 CONSTRUCTION SEQUENCE

Construction is anticipated to start in 2020. Operation is targeted for 2020. The Project's construction will be approximately four months in duration. The construction will begin with the initial site preparation, preliminary site grading, installation of access roadway, erection of arrays, electrical installation, and commissioning/startup.

The following is a typical sequence of operations and phasing plan describing the intended order of construction activities:

Initial Phase

1. Hold a pre-construction meeting on-site attended by the qualified inspector, and any involved subcontractors to discuss responsibilities as they relate to the implementation of the SWPPP, identify the secure location where the SWPPP will be kept on the Site (must be accessible during normal business hours), and review appropriate measures to avoid and minimize impacts to protected species during remediation, demolition and construction. If contractors and subcontractors have not already done so, the certification statements in Appendix L shall be signed at this time.

2. Delineate limits of work disturbance, proposed infrastructure areas for the Project, and resources to protect.

3. Install and stabilize temporary ESC measures (i.e., sediment control barrier, stabilized construction entrance)..

4. Minimally clear areas as required for the following:

    a. Rough grading; and
    b. Placement of construction office trailer and parking areas.

5. Install temporary infrastructure (e.g., construction office trailer, interim road, fence, security measures).

6. Establish equipment staging (laydown area), topsoil stockpile, and concrete truck washout areas.

7. Identify post-construction stormwater management practice areas to be protected in order to preserve native soil permeability.

Interim Phase

1. Perform grading, additional clearing, grubbing for the remainder of the site per approved construction drawings.

2. Mount and install the supporting structure and racking system.

3. Install solar panels, string inverters and connections.

4. Construct equipment pads (transformer, central inverters, battery storage systems, etc.).
5. Install underground electric wiring and/or above ground cable management systems.

Final Phase

1. Install permanent ESC measures.
2. Install permanent access road and paved access road entrance (if required).
3. Install permanent post-construction stormwater management practices (if required)
4. Install permanent perimeter fencing.
5. Conduct soil restoration (as required).
6. Complete fine grading, landscaping, seeding and soil stabilization.
7. Remove temporary ESC measures.
8. Restore and stabilize any disturbed areas remaining upon removal of temporary ESC measures

If the disturbed area exceeds 5 acres at any given time, prior written acceptance of this plan from the Regional NYSDEC office must be received and attached.

3.2 TEMPORARY EROSION & SEDIMENT CONTROL MEASURES

Temporary erosion and sediment control measures are included as part of the construction drawings and described herein.

3.2.1 Stabilized Construction Entrance

During the initial phase, a stabilized construction entrance shall be installed, as shown on the construction drawings, to reduce the tracking of sediment onto public roadways.

Construction traffic must enter and exit the Site at the stabilized construction entrance. The intent is to trap dust and mud that would otherwise be carried off-Site by construction traffic.

The entrance shall be maintained in a condition that will control tracking of sediment onto the local roadway. When necessary, the placement of additional aggregate atop the filter fabric will be done to assure the minimum thickness is maintained. All sediments and soils spilled, dropped, or washed onto any public right-of-way must be removed immediately. Periodic inspection and needed maintenance shall be provided after each substantial rainfall event.

3.2.2 Dust Control

Water trucks may be used as needed during construction to reduce dust generated on the Site. Dust control must be provided by the Contractor to a degree that is acceptable to the Owner, and in compliance with the applicable local and state dust control requirements.

3.2.3 Material Storage & Equipment Staging Areas

Construction materials shall be stored in a dedicated staging area. The staging area shall be located in an area that minimizes the impacts of the construction materials affecting stormwater quality and protected by a temporary sediment control barrier.

Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the Site, treated and disposed at an approved solid waste or chemical disposal facility.

Material resulting from the clearing and grubbing operation shall be stockpiled up slope from adequate sedimentation controls or at an off-site location with appropriate protections for re-use during the restoration stage.

3.2.4 Concrete Wash Area

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in a specifically designated diked and impervious washout area which has been prepared to prevent contact between the concrete wash and stormwater. Waste generated from concrete wash water shall not be allowed to flow into drainage ways, inlets, receiving waters or highway right of ways, or any location other than the designated Concrete Wash Areas. Proper signage designating the “Concrete Wash Area” shall be implemented. The Concrete Wash Area shall be located at minimum 100 linear feet from drainage ways, inlets and surface waters.

The hardened residue from the Concrete Wash Area shall be disposed of in the same manner as other non-hazardous construction waste materials. Maintenance of the wash area shall include removal of hardened concrete. The Facility shall have sufficient volume to contain all the concrete waste resulting from washout and a minimum freeboard of 12 inches. The Facility shall not be filled beyond 95 percent capacity and shall be cleaned out once 75 percent full unless a new facility is constructed. The Contractor will be responsible for seeing that these procedures are followed.

Saw-cut Portland Cement Concrete (PCC) slurry shall not be allowed to enter storm drains or watercourses. Saw-cut residue should not be left on the surface of pavement or be allowed to flow over and off pavement.

All concrete washout areas shall be inspected daily and repaired or replaced as necessary. The Site shall be inspected frequently to ensure that no concrete discharges are taking place in non-designated areas.

3.2.5 Sediment Control Barrier

Prior to the initiation of and during construction activities, a geotextile filter fabric (or silt fence) or compost filter sock will be established along the perimeter of areas to be disturbed as a result of the construction that lies upgradient of water courses or adjacent properties. These barriers may extend into non-impact areas to ensure adequate protection of adjacent lands.

Clearing and grubbing will be performed only as necessary for the installation of the sediment control barrier. To ensure effectiveness of the sediment control barrier, daily inspections and inspections immediately after significant storm events will be performed by Site personnel. Maintenance of the fence will be performed as needed.

3.2.6 Dewatering

Dewatering shall be used to intercept sediment-laden stormwater or pumped groundwater and allow it to settle out of the pumped discharge prior to being discharged from the Site, as needed. Water from dewatering operations shall be treated to eliminate the discharge of sediment and other pollutants. Water resulting from dewatering operations shall be directed to the temporary sediment traps, or dewatering devices, such as the Dandy Dewatering Bag, manufactured by Mirafi Geosynthetics or approved equivalent. Temporary sediment traps and dewatering bags shall be provided, installed and maintained at down-gradient locations to control sediment deposits to wetlands.

3.2.7 Temporary Soil Stockpile

Materials, such as topsoil or removed soil for special handling, shall be temporarily stockpiled (if necessary) on the Site during the grading and construction process. Stockpiles shall be located in an area away from storm drainage, water bodies and/or courses, and shall be properly protected from erosion by a surrounding sediment control barrier.

3.2.8 Preservation of Natural Areas

During the initial phase, the limits of construction and resources to protect shall be identified in accordance with the construction drawings. Sturdy fences or other protective materials shall be placed around valuable vegetation for protection from construction equipment. Soil placement over existing tree and shrub roots shall be limited to a maximum of 3 inches.

3.2.9 Temporary Seeding

In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased.

3.2.10 Temporary Diversion Swales

Temporary diversion swales shall be used to divert off-site runoff around the construction Site, divert runoff from stabilized areas around disturbed areas, and direct runoff from disturbed areas into sediment traps.

3.2.11 Temporary Slope Protection

Erosion control blankets shall be installed on all slopes exceeding 3H:1V. Erosion control blankets provide temporary erosion protection, rapid vegetative establishment, and long-term erosion resistance to shear stresses associated with high runoff flow velocities associated with steep slopes.

3.2.12 Stone Check Dams

Stone check dams shall be installed within drainage ditches to reduce the velocity of stormwater runoff, to promote settling of sediment, and to reduce sediment transport offsite.

The stone check dams shall be inspected after each runoff event. Damage shall be repaired upon discovery. If significant erosion has occurred between structures, a liner of stone or other suitable material shall be installed in that portion of the channel.

Sediment accumulated behind the stone check dam shall be removed as needed to allow the channel to drain through the stone check dam and prevent large flows from carrying sediment over or around the dam. Stones shall be replaced as needed to maintain the design cross section of the structures.

3.2.13 Temporary Soil Stabilization

In areas where soil disturbance activity has temporarily or permanently ceased, the application of temporary soil stabilization measures shall be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. Appendix A of the Permit defines “temporarily ceased” as an existing disturbed area that will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary soil stabilization can be achieved by covering exposed soil with mulch, seed and mulch, and/or erosion control mats (e.g., jute twisted yarn, excelsior wood fiber mats) to prevent the exposed soil from eroding until permanent soil stabilization has been implemented and achieved.

3.3 PERMANENT EROSION & SEDIMENT CONTROL MEASURES

Permanent erosion and sediment control measures are included as part of the construction drawings provided in Appendix A and described herein.

3.3.1 Permanent Soil Stabilization

Disturbed areas that will be vegetated must be seeded in accordance with the construction drawings.

All areas at final grade must be seeded and mulched within 14 days after completion of the major construction activity. All seeded areas should be protected with mulch.

Final Site stabilization is achieved when all soil-disturbing activities at the Site have been completed and a uniform, perennial vegetative cover with a density of 80 percent has been

established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

3.3.2 Riprap Weir

A riprap weir is utilized at the outlet of proposed vegetated swales to prevent erosion of the downstream face of the outlet during rainfall events. Outlet types and specifications are identified in the construction drawings.

3.3.3 Rock Outlet Protection

Outlet protection will be utilized as necessary using rock riprap at culvert outlets, new channels constructed as outlets for culverts and conduits, and pipe conduits from sediment basins, dry storm water ponds, and permanent ponds. Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular, and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5. A filter shall be placed under the rock riprap as specified in the construction drawings. Permanent sections of rock protection at outlets reduce the depth, velocity, and energy of the water in order to prevent the flow from eroding the downstream reach.

3.3.4 Soil Restoration

The structure of healthy soil is permeable, with spaces between solid particles where water, air, and soil organisms can move. Soil compaction occurs when weight on the soil surface collapses these spaces, creating a hard, solid mass. Water, air, and roots may be completely unable to penetrate compacted soil, reducing or destroying its capacity to sustain life. Soil restoration promotes greater stormwater infiltration in areas with pervious cover and, therefore, helps to reduce runoff volume.

Soil restoration is achieved by aeration through mechanical loosening, and addition of organic matter and soil amendments. In areas where significant soil disturbance has occurred outside of pavement areas, the disturbed sub-soils shall be returned to rough grade and soils restoration steps applied, in accordance with Table 4.6, Soil Restoration Requirements of the NYS Standards and Specifications for Erosion and Sediment Control dated July 2016 and amended in November 2016 and Section 5.1.6, Soil Restoration of the NYS Stormwater Management Design Manual, dated January 2015.

Table 5 provides the soil restoration requirements for various types of soil disturbance. Grading and soil restoration requirements shall be in accordance with the construction drawings.

Table 5 – Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No Soil Disturbance	Restoration not permitted.		Preservation of natural features.
Minimal Soil Disturbance	Restoration not required.		Clearing and grubbing.
	HSG A & B	HSG C & D	

<table>
<tr><td>Areas where topsoil is stripped only – no change in grade</td><td>Apply 6 inches of topsoil</td><td>Aerate* and apply 6 inches of topsoil</td><td>Protect areas from any ongoing construction activities.</td></tr>
<tr><td rowspan="2">Areas of cut or fill</td><td>HSG A & B</td><td>HSG C & D</td><td rowspan="2"></td></tr>
<tr><td>Aerate and apply 6 inches of topsoil</td><td>Apply full soil restoration**</td></tr>
<tr><td>Heavy traffic areas on site (especially within 5-25 feet of buildings but not within a 5-foot perimeter around foundation walls)</td><td colspan="2">Apply full soil restoration (de-compaction and compost enhancement)</td><td></td></tr>
<tr><td>Areas where runoff reduction and/or infiltration practices are applied</td><td colspan="2">Restoration not required but may be applied to enhance the reduction specified for appropriate practices.</td><td>Keep construction equipment away from crossing these areas.</td></tr>
</table>

***** Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per “Deep Ripping and De-compaction, DEC 2008”

4.0 STORMWATER MANAGEMENT DESIGN

The design described herein is in conformance with the sizing criteria outlined in the Permit, and the performance criteria provided in New York State Stormwater Management Design Manual (SMDM). The SMDM outlines provisions for water quality, runoff reduction, channel protection, overbank flood control, and extreme flood management in the State of New York.

The design objectives are focused on water quality and quantity. Utilization of green infrastructure techniques to the maximum extent possible reduces the total water quality volume and the overall site runoff volume. Additional structural SMPs may be required to maintain the pre-development rate of runoff in order to minimize impacts to adjacent or downstream properties, but only after all other techniques to reduce runoff have been exhausted or deemed infeasible.

4.1 STORMWATER MANAGEMENT PRACTICES (SMPS)

The SWPPP and construction drawings identify the stormwater management practices that have been incorporated into the design of this Project. Stormwater runoff from the proposed development will be collected and conveyed to the quantity and quality control systems described herein.

4.1.1 Preservation of Undisturbed Areas & Buffers

Important natural features and areas such as undisturbed forested and native vegetated areas, natural terrain, riparian corridors, wetlands and other important site features have been delineated and placed outside the limits of construction. These areas are shown on the construction drawings. Permanently protected natural areas that have been placed into conservation easements can be used to reduce the area required for treatment by structural stormwater management measures.

4.1.2 Reduction of Clearing & Grading

Clearing and grading of the site has been limited to the minimum amount needed for the development function, road access, and infrastructure. Limits of disturbance have been established for all development activities.

4.1.3 Locating Development in Less Sensitive Areas

The site layout has been located to avoid sensitive resource areas such as steep slopes (> 15%), erodible soils, mature forests and critical habitat areas. The entire 100-year floodplain should be avoided for clearing and should be preserved in a natural, undisturbed state. The Project components within the floodplains are limited to pile drive posts and fence post footings. The floodplains are shown on the construction drawings, where applicable.

4.1.4 Reduction of Impervious Cover

Reduction of impervious cover utilized in this design includes methods to reduce the amount of parking lots, roadways, and other surfaces that do not allow rainfall to infiltrate the soil, in order

to reduce the volume of stormwater runoff, increase groundwater recharge, and reduce pollutant loadings that are generated from a site.

The length and width of the proposed access road have been minimized to reduce overall imperviousness. The design of the access road is based on minimum lengths and widths required to meet applicable federal, state and local codes and support the necessary equipment accessing the Site.

4.1.5 Sheetflow to Riparian Buffers or Filter Strips

An existing riparian buffer exists around the stream to the north and east boundaries of the Site that is avoided by the Project and is to be preserved. The water quality calculations in this SWPPP do not take credit for the additional benefits that the buffer will provide for runoff from the Site entering the stream.

4.1.6 Disconnection of Non-rooftop Runoff

Due to the nature of ground mounted solar system installation, the solar panels themselves are not considered to contribute to the amount of impervious area by acting as a pervious cover. The memorandum from the NYSDEC dated Februarry 21, 2020 provides guidance for solar panel construction stormwater permitting. This project falls under scenario 2, which requires post-construction stormwater practices to be designed in accordance with chapter 4 of the SMDM. However, the water quality volume and runoff reduction volume sizing criteria can be addressed by design and constructing the solar panels in accordance with the criteria in items 1-4, which are summarized below.

1. Solar panels are constructed on post or rack systems elevated off the ground surface.
2. The panels are spaced apart so that rainwater can flow off the down gradient side of the panel and continue as sheet flow across the ground surface.
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rainwater sheet flows down slope.
4. The ground surface below the panels consist of a well-established vegetative cover (see “Final Stabilization” definition in Appendix A of the General Permit).

This guidance is consistent with the rationale behind solar panels acting as a pervious cover. By providing adequate row spacing, enough distance below the racking system to allow for natural sheet flow, and a well-established vegetative cover, the infiltration rate into the ground beneath the panels will be equal to the rate of infiltration prior to construction or better. An important component of this rationale is that the existing cultivated row crops and agricultural field within the Site will be seeded and brought to a permanent vegetation for the life of the system. Ground cover is one of the most important factors for erosion.

Items 2 & 3 in the above criteria refer to the Maryland Department of the Environment’s stormwater design guidance for solar panel installations. This guidance suggests the use of level spreaders for areas where slopes exceed 5%. The Site does not have slopes that exceed 5% and therefore no level spreaders are proposed.

4.1.7 Vegetated Swales

Vegetated swales have been implemented in the design to convey stormwater at a low velocity, promoting natural treatment and infiltration of the runoff from the proposed access road. The vegetated swales provide a runoff reduction for the water quality volume calculations. The swale must also be a minimum of 100 feet, a bottom width between 2-6 feet, have side slopes no steeper than 3 feet horizontal to 1 foot vertical, have a slope between 0.5-4%.

See the construction drawings and Drainage Maps for the location and design requirements of the proposed vegetated swales.

As per 6 New York Code of Rules and Regulations (NYCRR) Chapter V – Resource Management Services, Subchapter E, Water Regulation, Part 608, Use and Protection of Waters, Section608.3, Dams, a dam permit is not required for the Project as none of the stormwater management facilities have been designed with a height greater than 15 feet.

4.2 DRAINAGE AREAS

The study area for this Project consists of drainage areas that encompass approximately 38.5 acres. These drainage areas discharge to five different outfall locations, each defined as a Design Point (DP).

The separation of the drainage areas was dictated by watershed conditions, methods of collection, conveyance, and points of discharge. Watershed characteristics for each drainage area were assessed using aerial photographs, a topographical survey, soil surveys, Site investigations, and land use maps.

Table 6 summarizes the location and acreage for each of the drainage areas.

Table 6 – Summary of Drainage Areas

Drainage Area	Acreage	Description
1	5.28	Drainage occurs from the south west to the north and discharges at the tree line of the northern wetland.
2	1.02	Drainage occurs from the south to the north and discharges at the tree line of the northern wetland.
3	3.19	Drainage occurs from the west to the northeast at a point within the forested wetland.
4	2.35	Drainage occurs from the north and east and enters an existing roadside swale off the property.
5	21.08	Most of the Site runoff occurs in drainage area 5 with drainage occurring from the west to the east and discharging within the wetland buffer.
5A	15.08	This area is a segment of drainage area 5 that includes the proposed access road. This drainage area will ultimately discharge to the same discharge point as drainage area 5 but is calculated separately in order to properly size the proposed vegetated swale.

Drainage Area	Acreage	Description
6	5.63	Drainage occurs from the south to the north east and discharges within the wetland buffer.
6A	0.26	This area is a segment of drainage area 6 that includes the proposed access road. This drainage area will ultimately discharge to the same discharge point as drainage area 6 but is calculated separately in order to properly size the proposed vegetated swale.

Drainage maps are provided in Appendix F and depict the extent of the drainage areas, the locations of the design points, the flow paths and routing, and the soils within each drainage area for both pre-development and post-development conditions.

Note that the locations of proposed stormwater features (e.g., vegetated swales) have been identified on the post-development drainage map. These features shall be designed by a New York State Professional Engineer and sized in accordance with the NYS SMDM and the General Permit prior to construction.

4.3 STORMWATER QUALITY CONTROL

Stormwater runoff from impervious surfaces is recognized as a significant contributor of pollution that can adversely affect the quality of the receiving water bodies. Therefore, treatment of stormwater runoff is important since most runoff related water quality contaminants are transported from land, particularly the impervious surfaces, during the initial stages of storm events.

The objective for this design in accordance with the Permit is to reduce the total water quality volume of the Site by application of runoff reduction techniques and standard SMPs with runoff reduction volume capacity. The NYS SMDM provides a unified approach for calculating the water quality volume, runoff reduction volumes, and sizing green infrastructure and SMPs to meet pollutant removal goals.

4.3.1 Water Quality Volume (WQ_v)

The Water Quality Volume (WQ_v) is intended to improve water quality by capturing and treating runoff from small, frequent storm events that tend to contain higher pollutant levels. New York has defined the WQ_v as the volume generated from the 90th percentile rain event.

The following equation is used to determine the water quality volume (in acre-feet of storage):

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v = Water Quality Volume (acre-feet)
P = 90% Rainfall Event Number (Figure 4.1 in NYS SMDM)
R_v = 0.05 + 0.009(I), where I is percent impervious cover
A = Site contributing area (acres)

The WQ_v is calculated in the Runoff Reduction Worksheet provided by NYSDEC for each sub-drainage area (5A and 6A). The remaining drainage areas described above containing only solar panels and fence (i.e., no impervious surfaces) or where existing conditions do not change post development (portions of access road in drainage areas 4 & 5) have been left out of these calculations as the area reduction technique for disconnection of non-rooftop runoff and guidance discussed in section 4.1.6 satisfies the water quality volume requirement.

Full calculations are provided in Appendix G. Runoff reduction techniques previously discussed that help to reduce the overall contributing area have been accounted for in this calculation and are summarized in Table 7.

4.3.2 Runoff Reduction Volume (RR_v)

The NYS SMDM states that runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, or evaporation/evapotranspiration of 100 percent of the post-development water quality volume to the maximum extent practical. If the runoff reduction volume (RR_v) is greater than the WQ_v, then the Project has already met the requirement for WQ_v by applying runoff reduction techniques.

Projects that do not achieve runoff reduction requirements must, at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the Site. In no case shall the runoff reduction achieved be less than the minimum RR_v.

The percent reduction is based upon the Hydrologic Soil Group (HSG) of the Site and is defined as the Specific Reduction Factor (S). Section 4.3 of the NYS SMDM defines the minimum Runoff Reduction Volume ($RR_{v\ min}$) as:

$$RR_{vmin} = \frac{(P)(\overline{R}_V{}^*)(A_{ic})(S)}{12}$$

Where:

RR_{vmin} = Minimum Runoff Reduction Volume required (acre-feet)

P = 90 percent Rainfall Event Number

$\overline{R}_V{}^*$ = 0.05 + 0.009 (I), where I is 100% impervious

A_{ic} = Total Area of New Impervious Cover (Acres)

S = Hydrologic Soil Group (HSG) Specific Reduction Factor where:

HSG A = 0.55 HSG C = 0.30

HSG B = 0.40 HSG D = 0.20

The RR_v provided and the RR_{vmin} are calculated in the Runoff Reduction Worksheet provided by NYSDEC. Full calculations are provided in Appendix G.

The minimum runoff reduction volume is 1,004 cubic feet. The runoff reduction volume for each of the SMPs utilized in this project are summarized in Table 7.

4.3.3 Summary

The following table summarizes the water quality volume, the runoff reduction volume provided by the implemented green infrastructure practices and the total water quality volume that has been treated for each drainage area.

As shown, the water quality requirements have been satisfied through the implementation of runoff reduction techniques and standard SMPs.

Table 7 – Summary of the Water Quality Volume (WQ_v) Calculations

Drainage Area	Total Area (acres)	Impervious Surface (acres)	WQ_v (cf)	Runoff Reduction Technique(s)	RR_v (cf)	WQ_v Treated (cf)
1	5.28	--	--	Non-Rooftop Disconnection	--	--
2	3.19	--	--	Non-Rooftop Disconnection	--	--
3	2.35	--	--	Non-Rooftop Disconnection	--	--
4	21.08	--	--	Non-Rooftop Disconnection	--	--
5	15.08	--	--	Non-Rooftop Disconnection	--	--
5A	0.30	0.17	610	Vegetated Swale	461	149
6	0.26	--	--	Non-Rooftop Disconnection	--	--
6A	5.28	0.13	472	Vegetated Swale	472	0

4.4 STORMWATER QUANTITY CONTROL

This section presents the methodology and analysis performed for the pre- and post-development conditions of the Site to address erosion and flood control during specified storm events.

4.4.1 Hydrologic & Hydraulic Analysis

The methodology Hydrocad® Storm and Sanitary Analysis, a comprehensive hydrology and hydraulic analysis application, was used to compute the stormwater peak discharge rate at the drainage area outfalls for each storm event. A stormwater network model was produced consisting of three types of components as described below:

- Subbasin: Hydrologic areas of land whose topography and drainage system elements direct surface runoff to a single discharge point.
- Conveyance Link: Channels, pipes and culverts used to route the stormwater runoff to various features.
- Storage Nodes: Catchbasins, detention ponds, reservoirs and lakes associated with storage volume.

A comparison of the pre- and post-development watershed conditions was performed for all design points and storm events evaluated herein.

The hydrologic and hydraulic analysis considers the SCS Type II 24-hour storm events and uses TR-20 methodology. The TR-55 method is used for calculating the time of concentration (T_c). Input data required to perform the analysis includes acreages and curve numbers for the associated drainage areas, and slopes and flow lengths for the time of concentration calculations.

The analyses demonstrate that the peak rate of runoff will not be increased post-development for each design point and design storm. Therefore, the Project will not have a significant adverse impact on the adjacent or downstream properties or receiving water courses.

The results of the computer modeling used to analyze the pre- and post-development conditions are presented in Appendix H and Appendix I, respectively. Table 8 summarizes the results.

Table 8 – Summary of Pre-Development & Post-Development Peak Discharge Rates

Design Point (DP #)	24-Hour Storm Event (cfs)					
	1-year		10-year		100-year	
	Pre	Post	Pre	Post	Pre	Post
1	4.69	3.97	12.13	11.10	26.32	25.06
2	1.20	1.07	2.80	2.65	5.73	5.60
3	3.34	1.71	7.86	5.44	16.16	13.14
4	1.89	1.89	4.91	4.91	10.69	10.69
5	12.85	6.09	31.87	20.28	67.55	50.14
6	4.26	2.33	11.47	8.34	25.44	21.16
Total	**28.23**	**17.06**	**71.04**	**52.72**	**151.89**	**125.79**

Table 9 – Summary of Pre-Development & Post-Development Runoff Volume

Design Point (DP #)	24-Hour Storm Event (acre-feet)					
	1-year		10-year		100-year	
	Pre	Post	Pre	Post	Pre	Post
1	0.306	0.266	0.766	0.703	1.682	1.592
2	0.072	0.063	0.168	0.154	0.351	0.334
3	0.225	0.129	0.524	0.370	1.099	0.883
4	0.136	0.136	0.341	0.341	0.748	0.748
5	1.394	0.854	3.327	2.448	7.076	5.836
6	0.305	0.195	0.783	0.594	1.745	1.468
Total	**2.438**	**1.643**	**5.909**	**4.610**	**12.701**	**10.861**

Table 8 & 9 shows that the overall discharge leaving the site has decreased from the pre-development condition. This is mostly due to the improved ground cover for a large portion of the Site from the pre-developed condition.

4.4.2 Stream Channel Protection Volume (Cp_v)

The stream channel protection volume requirement is designed to protect stream channels from erosion. This is accomplished by providing 24 hours of extended detention for the 1 year, 24-hour storm event, remaining from runoff reduction. The NYS SMDM defines the Cp_v detention time as the center of mass detention time through each stormwater management practice.

The Cp_v requirement does not apply when the reduction of the entire Cp_v is achieved at a site through green infrastructure or infiltration systems. This reduction is shown in Table 9.

4.4.3 Overbank Flood Control (Q_p)

The overbank flood control requirement is designed to prevent an increase in the frequency and magnitude of flow events that exceed the bank-full capacity of a channel, and, therefore, must spill over into the floodplain. The control requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Q_p) to pre-development rates.

Tables 8 & 9 show the results of the 24-hour, 10-year storm event for pre- and post-development.

4.4.4 Extreme Flood Control (Q_f)

The extreme flood control requirement is designed to prevent the increased risk of flood damage from large storm events, to maintain the boundaries of the pre-development 100-year floodplain, and to protect the physical integrity of stormwater management practices. The control requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Q_f) to pre-development rates.

Tables 8 & 9 show the results of the 24-hour, 100-year storm event for pre- and post-development.

5.0 SPILL PREVENTION & SOLID WASTE MANAGEMENT

The following describes other control measures to be employed during all phases of construction.

5.1 SPILL PREVENTION & RESPONSE

A Spill Prevention and Response Plan shall be developed for the Site by the Contractor. The plan shall detail the steps needed to be followed in the event of an accidental spill identify contact names and phone numbers of people and agencies that must be notified.

The plan shall include Safety Data Sheets (SDS) for materials to be stored on-Site. Workers on-Site will be required to be trained on safe handling and spill prevention procedures for all materials used during construction.

The use of detergents for large scale washing is prohibited (e.g., vehicles, buildings, pavement surfaces, etc.)

5.2 SOLID & LIQUID WASTE DISPOSAL

Solid or liquid waste, including building materials, are not allowed to be discharged from the Site with stormwater. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers shall be emptied periodically by a licensed solid waste disposal service and hauled away from the Site and disposed of a permitted facility.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the Site. As an example, special care must be exercised during equipment fueling and servicing operations. A designated refueling area will be provided that will allow for appropriate containment; however, if a spill occurs, it must be contained and disposed so that it will not flow from the Site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

5.2.1 Sanitary Facilities

Temporary sanitary facilities will be provided throughout the construction phase. These facilities will be utilized by construction personnel and will be serviced by an outside contractor. These facilities shall comply with state and local sanitary or septic system regulations.

5.2.2 Water Source

Non-stormwater components of Site discharge must be clean water. Water used for construction, when discharged from the Site, must originate from a public water supply or private well approved by the Onondaga County Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the Site. It can be retained until it infiltrates and evaporates.

6.0 INSPECTION & MAINTENANCE REQUIREMENTS

6.1 PRE-CONSTRUCTION INSPECTION

Prior to the commencement of construction, the Owner or Operator must identify the Contractor(s) and Subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the Contractor(s) and Subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The Owner or Operator shall have each of the Contractors and Subcontractors identify at least one (1) person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the Trained Contractor, who shall be on site on a daily basis when soil disturbance activities are being performed.

The responsible Contractor or Subcontractor shall sign the form included in Appendix L.

A Qualified Inspector shall conduct an assessment of the Site and certify that the appropriate erosion and sediment control structures have been adequately installed and implemented. Refer to the inspection forms in Appendix M.

6.2 CONSTRUCTION PHASE INSPECTIONS & MAINTENANCE

A Qualified Inspector, as defined in Appendix A of the General Permit GP-0-020-001, shall conduct weekly Site inspections between the time the SWPPP is implemented and final site stabilization. To ensure the stability and effectiveness of all protective measures and practices during construction, all erosion and sediment control measures employed will be inspected by the Qualified Inspector at least every 7 calendar days. If disturbance exceeds 5 acres, the Qualified Inspector shall conduct at least two inspections every 7 calendar days. The two inspections shall be separated by a minimum of two full calendar days.

The purpose of Site inspections is to assess performance of pollutant controls. Based on these inspections, the Qualified Inspector shall decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or whatever else may be needed in order to prevent pollutants from leaving the Site via stormwater runoff. The Construction Contractor has the duty to cause pollutant control measures to be repaired, modified, maintained, supplemented, or whatever else is necessary in order to achieve effective pollutant control.

Examples of particular items to evaluate during Site inspections are listed below. This list is not intended to be comprehensive. During each inspection the Qualified Inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

- Locations where vehicles enter and exit the Site must be inspected for evidence of off-site sediment tracking. A stabilized construction entrance will be constructed where vehicles enter and exit. This entrance will be maintained or supplemented as necessary to prevent sediment from leaving the Site on vehicles.

- Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material from behind sediment barriers will be stockpiled on the up-slope side. Additional sediment barriers must be constructed as needed.

- Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered, or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.

- Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The Site will be considered to have achieved final stabilization once all areas are covered with building foundation, pavement, or gravel, or have a stand of grass with at least 80 percent density, which is considered stabilized or mulched. Areas must be watered, fertilized, and reseeded as needed to achieve this goal.

- All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

Within 1 business day of the completion of an inspection, the Qualified Inspector shall notify the Owner or Operator and appropriate contractor (or subcontractor) of any corrective actions that need to be taken. The Contractor (or subcontractor) shall begin implementing corrective actions within 1 business day of this notification and shall complete the corrective actions in a reasonable time frame.

In addition to the inspections performed by the Qualified Inspector, the Contractor shall perform routine inspections that include a visual check of all erosion and sediment control measures. All inspections and maintenance shall be performed in accordance with the inspection and maintenance schedule provided on the Drawings. Sediment removed from erosion and sediment control measures will be exported from the Site, stockpiled for later use, or used immediately for general non-structural fill.

It is the responsibility of the Contractor to assure the adequacy of Site pollutant discharge controls. Actual physical Site conditions or contractor practices could make it necessary to install more erosion and sediment controls than shown on the attached Drawings. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers.) Assessing the need for additional controls and implementing them or adjusting existing controls will need to be addressed throughout all aspects of this Project, and until the Site achieves final stabilization.

6.3 INSPECTION & MAINTENANCE REPORTS

Inspection reports must be completed for every inspection conducted and include additional remarks if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the Site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance.

Sample inspection forms are included in Appendix M. At a minimum, the inspection report shall include and/or address the following:

- Date and time of inspection;
- Name and title of person(s) performing inspection;
- A description of the weather and soil conditions (e.g., dry, wet, saturated) at the time of the inspection;
- A description of the condition of the runoff at all points of discharge from the construction Site. This shall include identification of any discharges of sediment from the construction Site. Include discharges from conveyance systems (e.g., pipes, culverts, ditches, etc.) and overland flow;
- Identification of all erosion and sediment control practices that need repair or maintenance;
- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
- Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices, and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
- Include color photographs with date stamp, taken with a digital camera that clearly show the condition of all practices that have been identified as needing corrective actions. Color copies of photographs shall be attached to the inspection report within 7 calendar days of inspection. Color photographs with date stamp, taken with a digital camera must clearly show the condition of practice(s) after the corrective action has been completed. Color copies of the photographs, that document completion of the corrective action work within 7 calendar days of inspection, shall be attached to inspection report.

All inspection reports shall be signed by the Qualified Inspector and shall be maintained on Site with the SWPPP, kept in Appendix N.

6.4 TEMPORARY SUSPENSION OF CONSTRUCTION ACTIVITIES

For constructions areas where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the frequency of Qualified Inspector inspections can be reduced to once every 30 calendar days.

Prior to reducing the frequency of inspections, the Owner/Operator shall notify the NYSDEC Division of Water in writing.

6.5 PARTIAL PROJECT COMPLETION

For construction areas where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the Project have been constructed in conformance with the SWPPP and are operational. The owner or operator shall notify the NYSDEC Region 7 Water (SPDES) Program contact in writing prior to the shutdown.

If soil disturbance activities are not resumed within 2 years from the date of shutdown, the Owner or Operator shall have the qualified inspector perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination (NOT).

6.6 POST-CONSTRUCTION OR PLANNED SHUTDOWN INSPECTION

The Owner or Operator shall have the Qualified Inspector perform a final Site inspection prior to submitting the NOT when all disturbed areas are stabilized, and all stormwater management systems are in place and operable. The Qualified Inspector shall certify that all disturbed areas have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT.

Prior to submitting the Notice of Termination, the Owner or Operator must have a deed restriction in place to ensure that the Operation and Maintenance Plan is implemented for the post-construction stormwater management practices.

6.7 RETENTION OF RECORDS

The owner or operator shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, and any inspection reports that were prepared in conjunction with this permit for a period of at least 5 years from the date that the Site achieves final stabilization. This period may be extended by the NYSDEC, in its sole discretion, at any time upon written notification.

With the exception of the NOI, and NOT, all written correspondence requested by the NYSDEC, including individual permit applications, shall be sent to the following NYSDEC address:

NYSDEC Region 7 Office
615 Erie Blvd. West Road
Syracuse, NY 13204-2400

7.0 CONCLUSION

This Project is not subject to the requirements of a regulated Municipal Separate Storm Sewer System (MS4), and this SWPPP has been prepared in conformance with the New York State (NYS) Stormwater Design Manual 2015. As such, it is anticipated that GP-0-20-001 coverage will be effective 5 business days from the date the NYSDEC receives the complete electronic version of the NOI (eNOI) or 10 business days from the date the NYSDEC receives the complete paper version of the NOI, unless notified otherwise by the NYSDEC.

The proposed stormwater collection system consisting of pipes and open drainage ways will adequately collect and convey the stormwater generated by the proposed activities during construction.

Following construction of the project, the Site soils shall be restored in accordance with Section 5.1.6 of the NYS SMDM, and re-vegetation shall be implemented.

The post-construction stormwater management practice(s) will be owned by the landowner. Policies and procedures will be put in place that ensure that operation and maintenance of the practice(s) are in accordance with the operation and maintenance plan.

As demonstrated within this SWPPP, the proposed Project will not adversely impact adjacent or downstream properties.

8.0 LIMITATIONS

The work product included in this report was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and, thus, should be relied upon and used by our client recognizing these considerations and limitations. Tetra Tech shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

9.0 REFERENCES

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-20-001 (effective January 29, 2020, expires January 28, 2025).

New York State Department of Environmental Conservation, Stormwater Toolbox, from World Wide Web: http://www.dec.ny.gov/.

New York State Department of Environmental Conservation, Memorandum “Solar Panel Construction Stormwater Permitting/SWPPP Guidance”, April 5, 2018.

New York State Stormwater Management Design Manual (January 2015).

New York State Standards and Specifications for Erosion and Sediment Control, NYSDEC (November 2016).

Maryland Department of the Environment Stormwater Design Guidance – Solar Panel Installations.

APPENDIX A – CONSTRUCTION DRAWINGS

Refer to the discretionary permitting civil drawing set.
Construction level drawings will be attached and included with the final SWPPP.

APPENDIX B – NYSDEC GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY PERMIT NO. GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

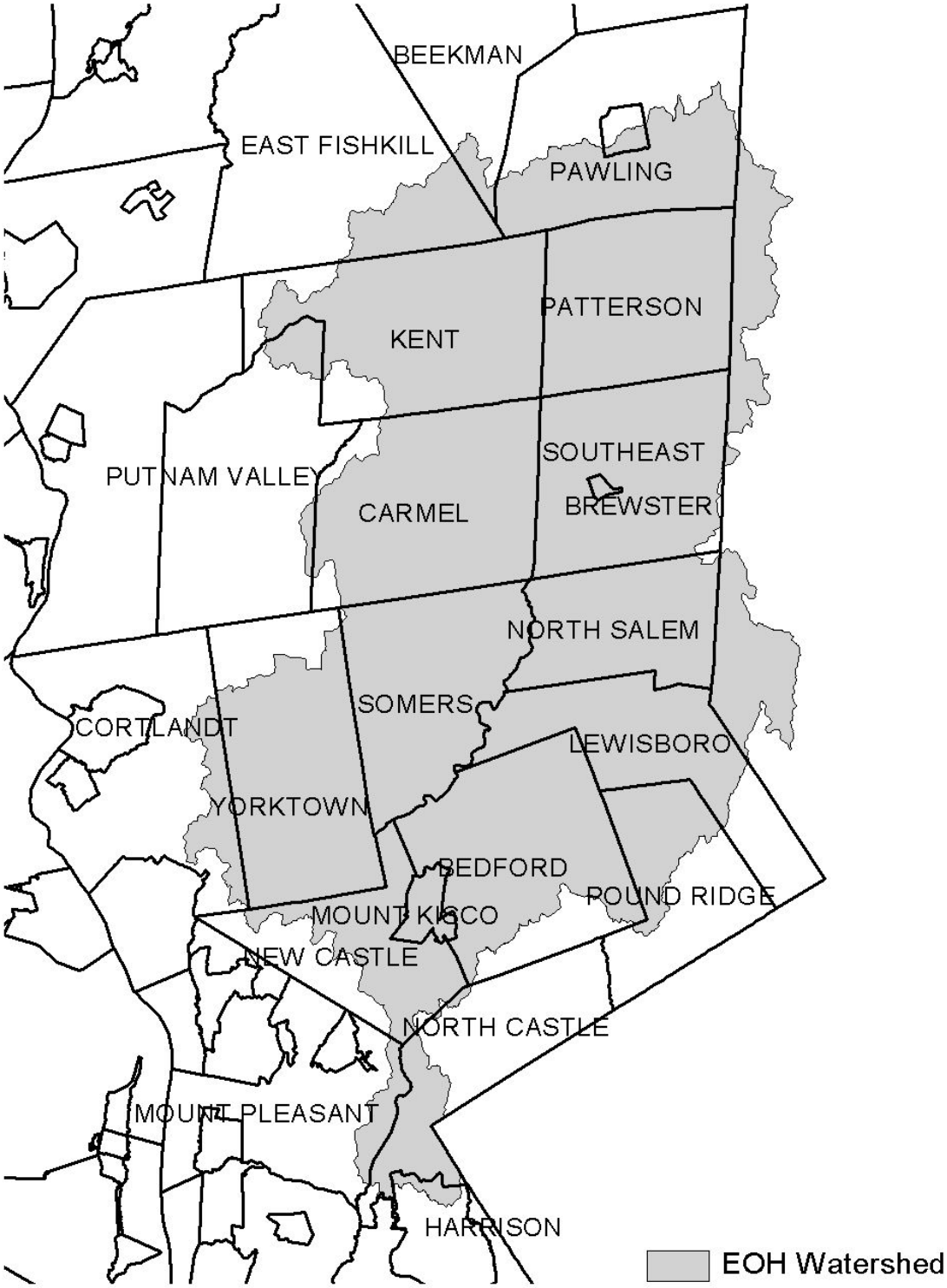


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

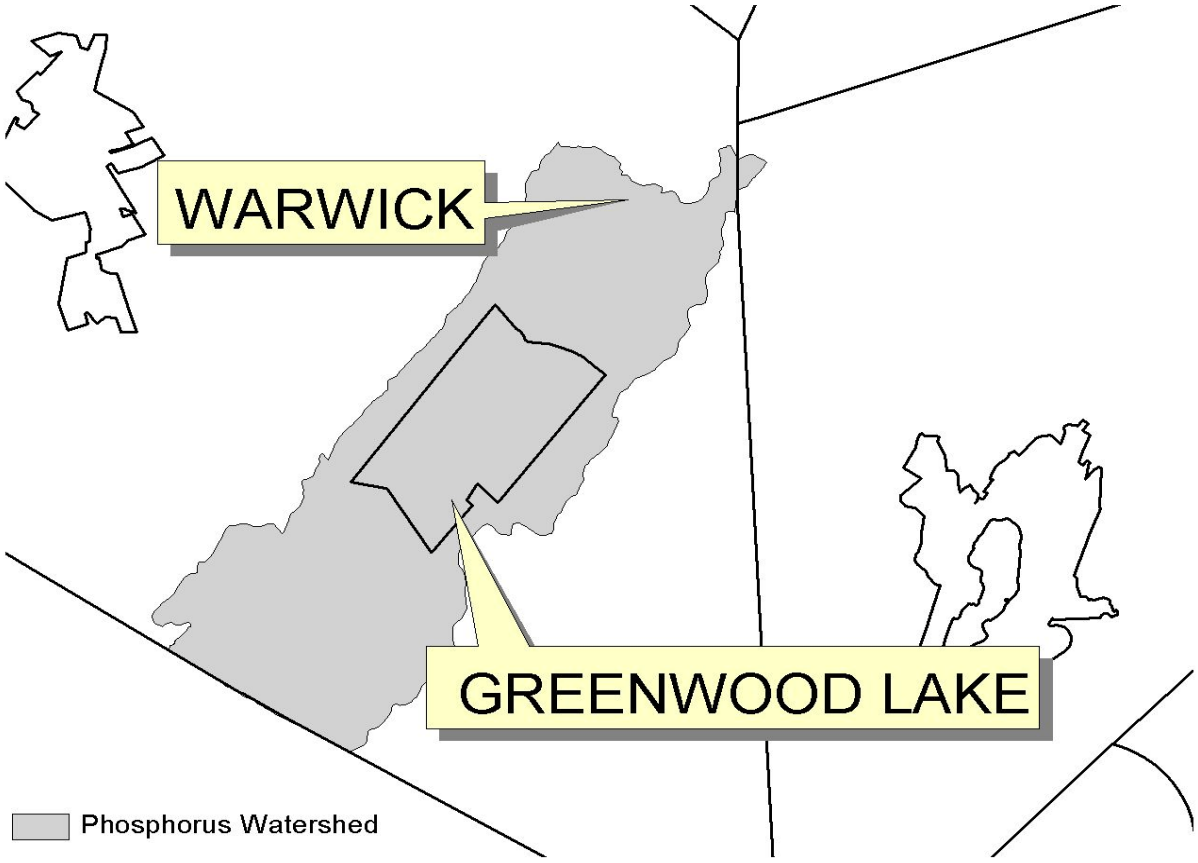


Figure 4 - Oscawana Lake Watershed

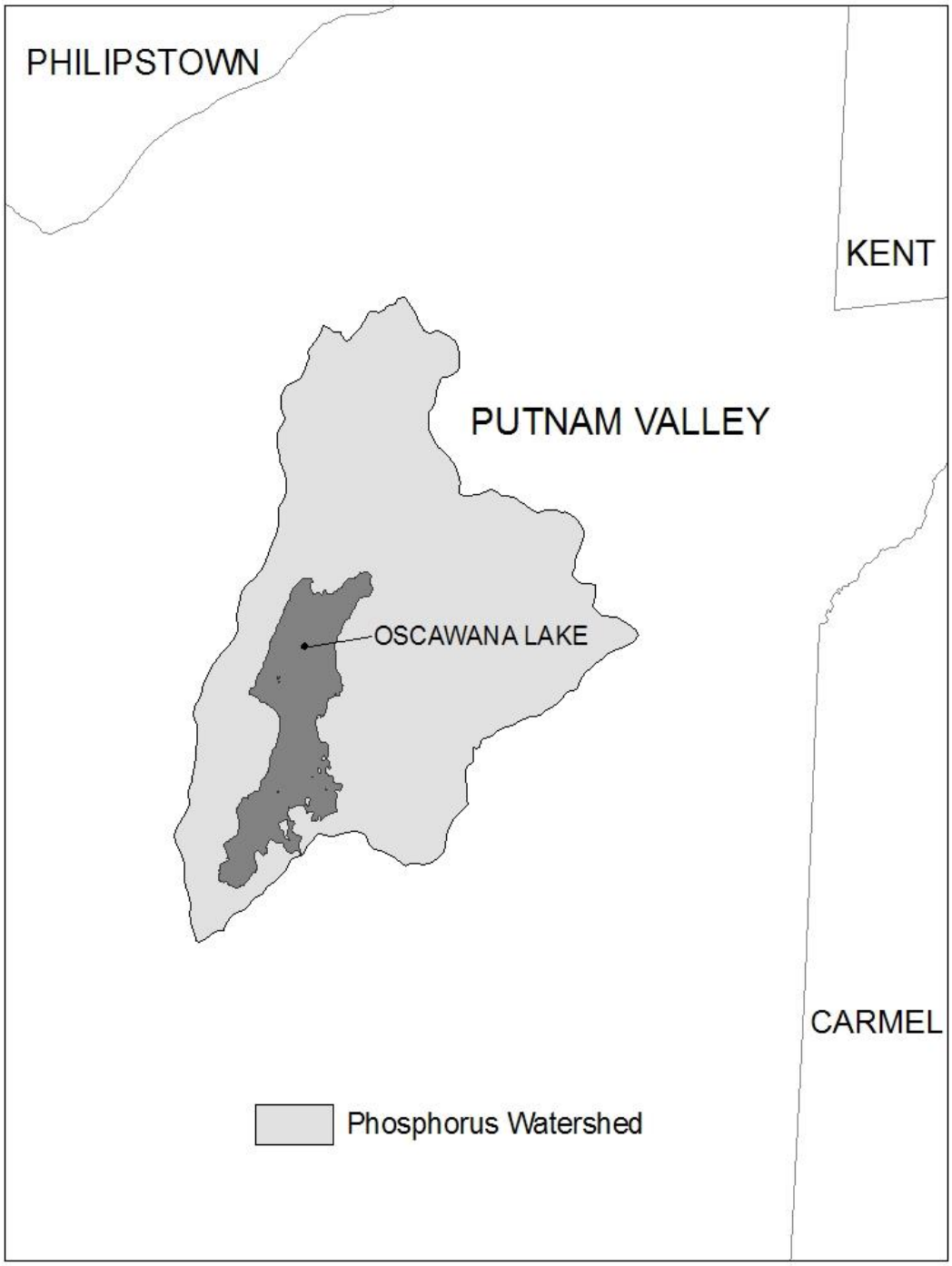
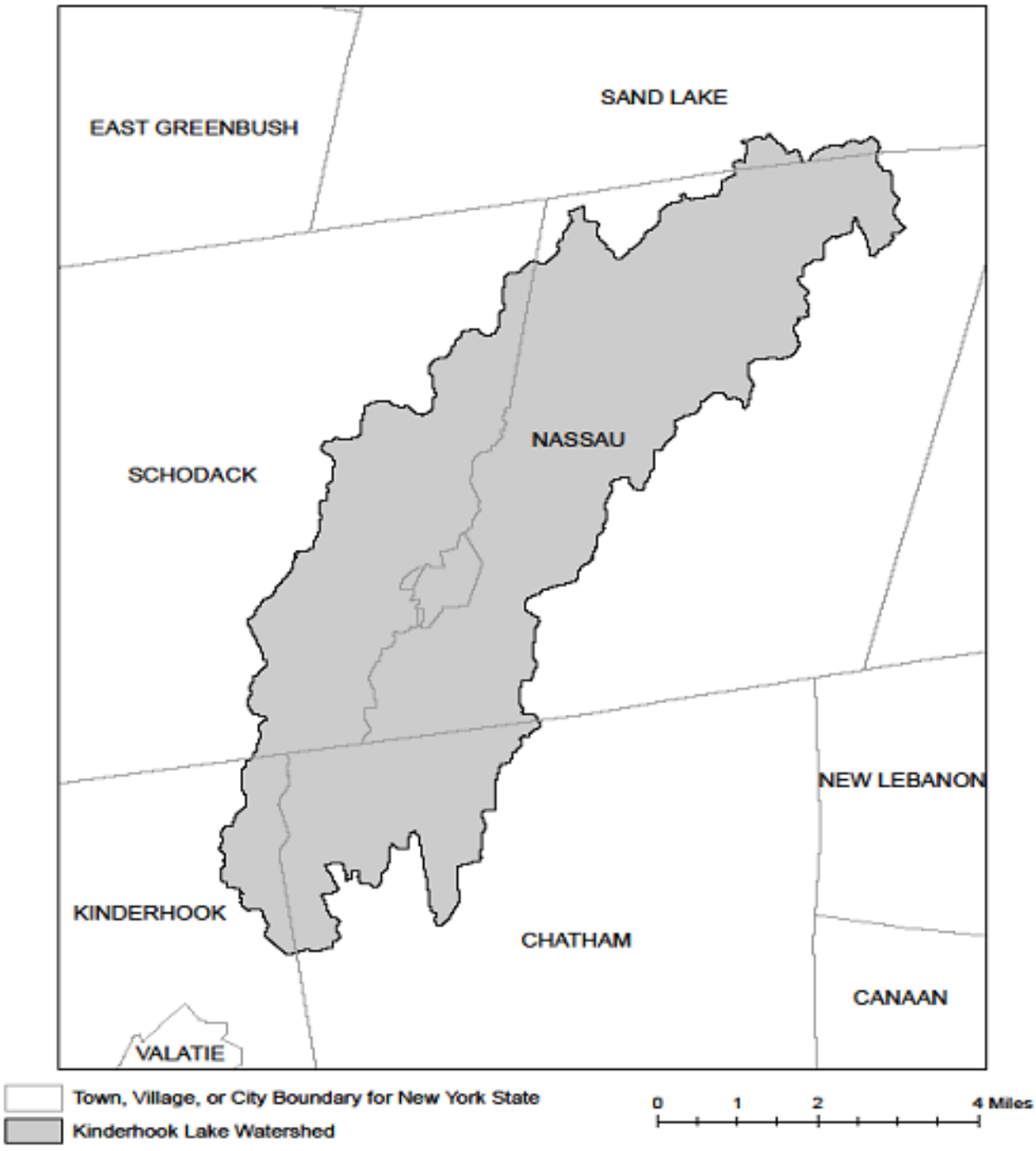


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX C – LETTER FROM NYS OPRHP

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 19, 2020

Jodi Hunt
Project manager
Tetra Tech, Inc.
3136 South Winton Road
Suite 303
Rochester, NY 14623

Re: DEC
Green Lakes Solar/7 MW/23.5 of 147 Acres
8507 Green Lakes Rd, Town of Manlius, Onondaga County, NY
20PR01565

Dear Jodi Hunt:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

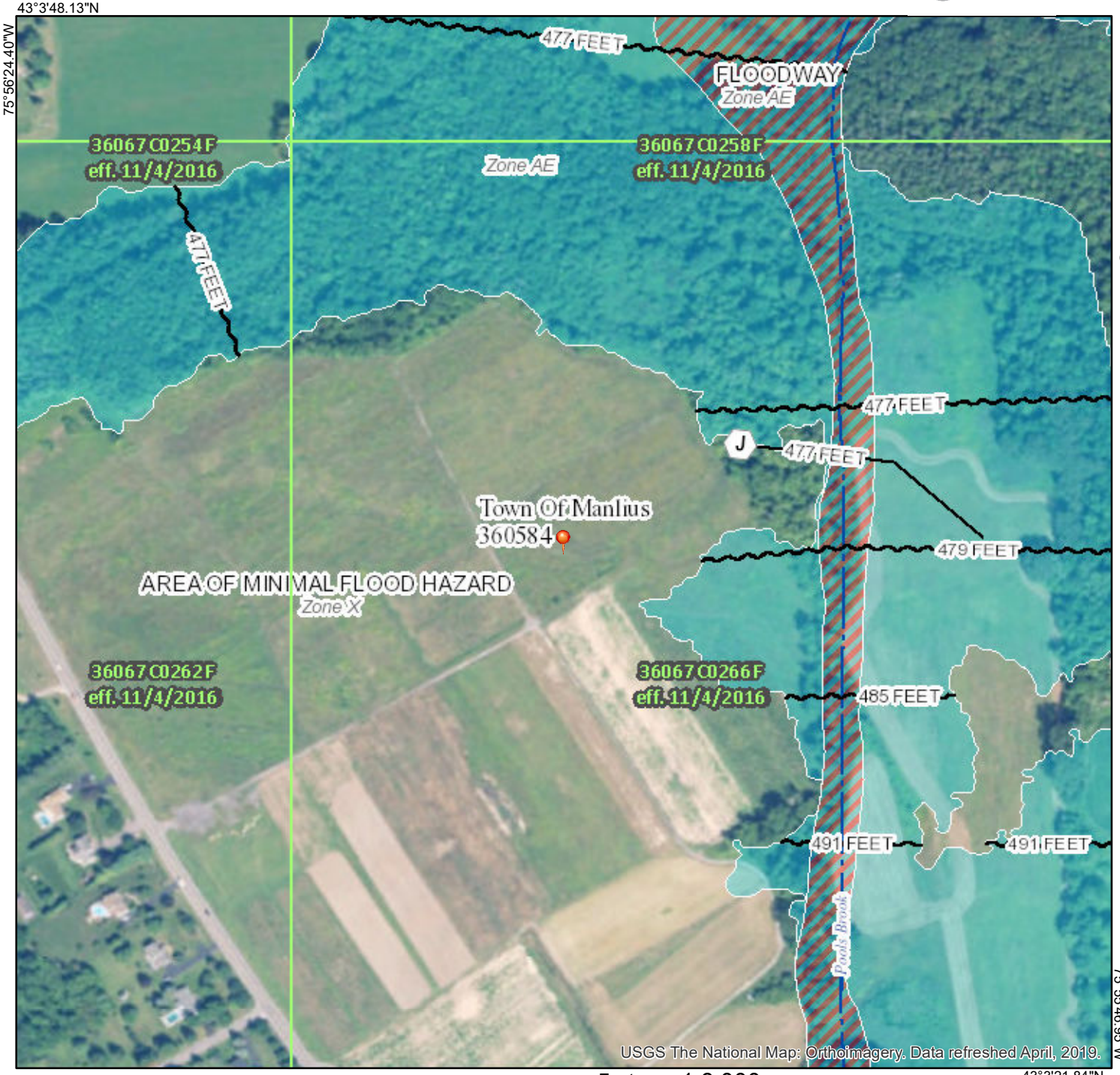
R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

APPENDIX D – FLOOD INSURANCE RATE MAP (FIRM)

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 — Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/6/2020 at 11:01:02 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX E – NRCS SOILS REPORT

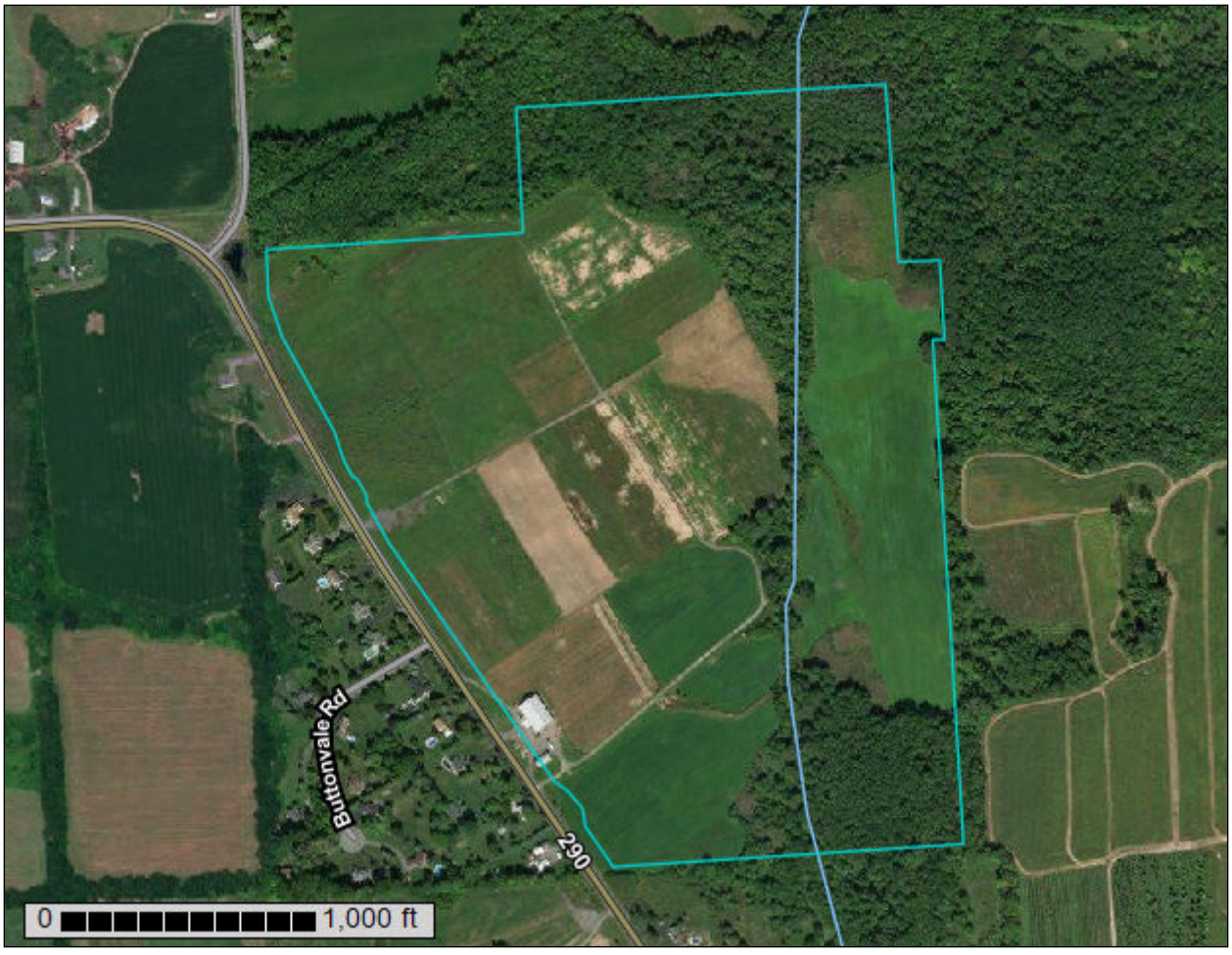
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Onondaga County, New York



March 25, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

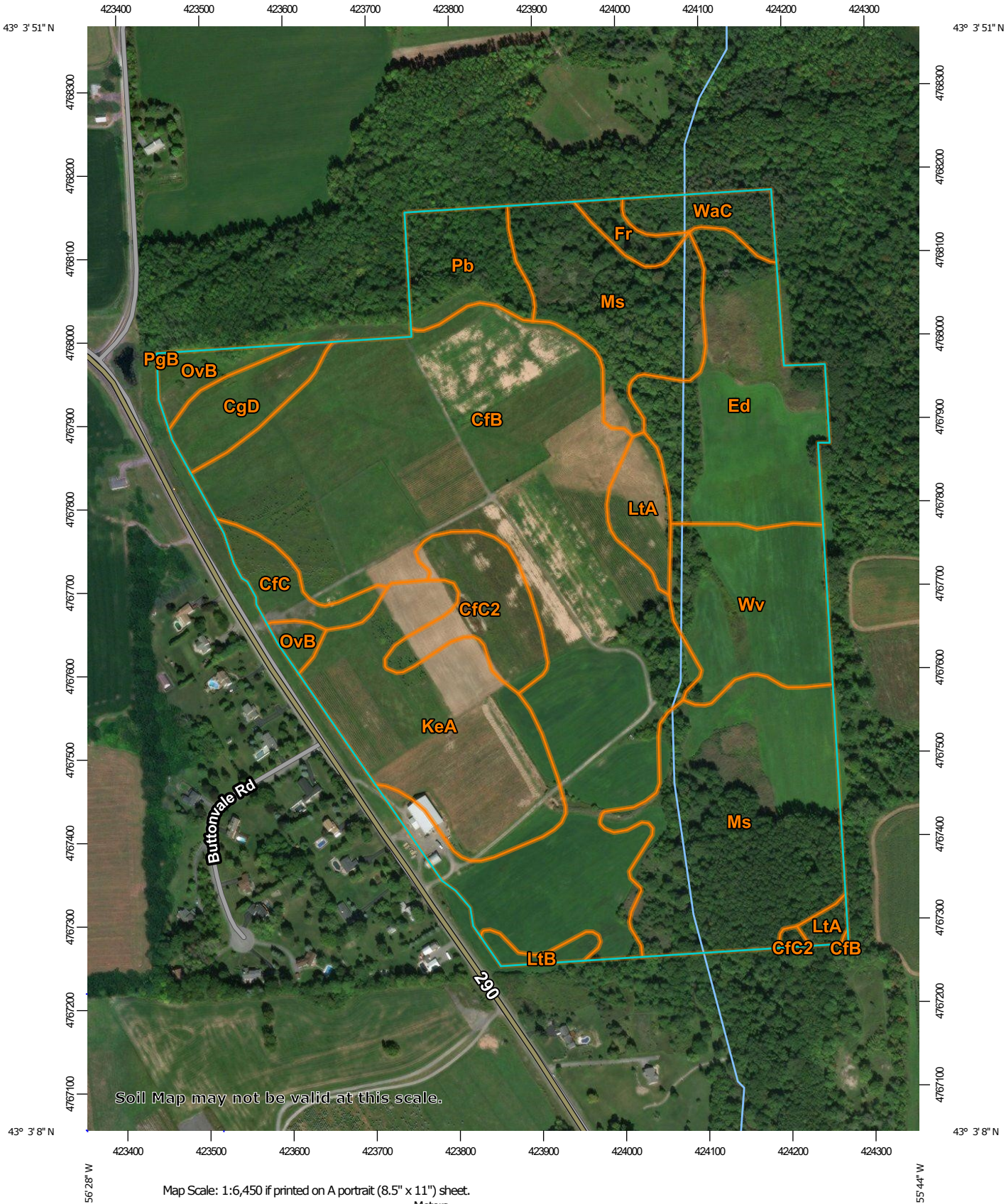
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Green Lakes Solar)



Map Scale: 1:6,450 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend (Green Lakes Solar)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CfB	Cazenovia silt loam, 2 to 8 percent slopes	49.1	36.3%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	2.4	1.8%
CfC2	Cazenovia silt loam, 8 to 15 percent slopes, eroded	5.0	3.7%
CgD	Cazenovia soils, 15 to 25 percent slopes	3.2	2.4%
Ed	Edwards muck	13.0	9.6%
Fr	Fredon loam	1.1	0.8%
KeA	Kendaia silt loam, 0 to 3 percent slopes	14.3	10.6%
LtA	Lima silt loam, 0 to 3 percent slopes	2.9	2.1%
LtB	Lima silt loam, 3 to 8 percent slopes	0.8	0.6%
Ms	Martisco and Warners soils	26.3	19.4%
OvB	Ovid silt loam, 3 to 8 percent slopes	2.2	1.6%
Pb	Palms muck	4.3	3.2%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	0.0	0.0%
WaC	Wampsville gravelly silt loam, rolling	2.3	1.7%
Wv	Weaver silt loam	8.7	6.4%
Totals for Area of Interest		**135.4**	**100.0%**

Map Unit Descriptions (Green Lakes Solar)

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made

up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

CfB—Cazenovia silt loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vg5
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 10 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

CfC—Cazenovia silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9vg6
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cazenovia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Hydric soil rating: No

Minor Components

Schoharie
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

Ovid
Percent of map unit: 5 percent
Hydric soil rating: No

CfC2—Cazenovia silt loam, 8 to 15 percent slopes, eroded

Map Unit Setting
National map unit symbol: 9vg7
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Cazenovia, eroded, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia, Eroded

Setting
Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie

Percent of map unit: 5 percent
Hydric soil rating: No

CgD—Cazenovia soils, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9vg8
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Cazenovia and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cazenovia

Setting

Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 36 inches: silty clay loam
H3 - 36 to 60 inches: gravelly silty clay loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ovid

Percent of map unit: 5 percent
Hydric soil rating: No

Ontario

Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent
Hydric soil rating: No

Ed—Edwards muck

Map Unit Setting

National map unit symbol: 9vgl
Elevation: 600 to 1,000 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Edwards and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Edwards

Setting

Landform: Swamps, marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over marl

Typical profile

H1 - 0 to 24 inches: muck
H2 - 24 to 60 inches: marl

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 90 percent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Halsey

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Carlisle

Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 5 percent
Landform: Swamps, marshes

Hydric soil rating: Yes

Martisco

Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Fr—Fredon loam

Map Unit Setting

National map unit symbol: 9vgq
Elevation: 250 to 1,200 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Fredon, somewhat poorly, and similar soils: 50 percent
Fredon, poorly, and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fredon, Somewhat Poorly

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 27 inches: sandy loam
H3 - 27 to 60 inches: stratified very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Description of Fredon, Poorly

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 27 inches: sandy loam
H3 - 27 to 60 inches: stratified very gravelly loamy sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Phelps

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palmyra

Percent of map unit: 5 percent
Hydric soil rating: No

Halsey

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Minoa

Percent of map unit: 5 percent
Hydric soil rating: No

KeA—Kendaia silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w5j0
Elevation: 460 to 1,640 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Kendaia and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kendaia

Setting

Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw - 8 to 15 inches: silt loam
Bg - 15 to 20 inches: gravelly silt loam
BCg - 20 to 24 inches: gravelly loam
C - 24 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Lima

Percent of map unit: 6 percent
Landform: Drumlins, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Lyons

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Churchville

Percent of map unit: 2 percent
Landform: Till plains, lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope, rise, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ovid

Percent of map unit: 2 percent
Landform: Reworked lake plains, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

LtA—Lima silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2w3kh
Elevation: 410 to 1,640 feet
Mean annual precipitation: 31 to 57 inches

Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lima and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lima

Setting

Landform: Ridges, till plains, drumlins
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam
Bt/E - 9 to 12 inches: loam
Bt1 - 12 to 16 inches: loam
Bt2 - 16 to 25 inches: gravelly loam
C - 25 to 79 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Honeoye

Percent of map unit: 6 percent
Landform: Drumlins, hills, till plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Appleton

Percent of map unit: 3 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Kendaia

Percent of map unit: 3 percent
Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Cazenovia

Percent of map unit: 2 percent
Landform: Reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Lyons

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

LtB—Lima silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2w3kk
Elevation: 380 to 1,680 feet
Mean annual precipitation: 31 to 57 inches
Mean annual air temperature: 41 to 50 degrees F
Frost-free period: 100 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Lima and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lima

Setting

Landform: Drumlins, ridges, till plains
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Calcareous loamy lodgment till derived from limestone, sandstone, and shale

Typical profile

Ap - 0 to 9 inches: silt loam
Bt/E - 9 to 12 inches: loam
Bt1 - 12 to 16 inches: loam
Bt2 - 16 to 25 inches: gravelly loam
C - 25 to 79 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 1.42 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 40 percent
Available water storage in profile: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Honeoye

Percent of map unit: 6 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Convex, linear
Across-slope shape: Convex
Hydric soil rating: No

Kendaia

Percent of map unit: 3 percent
Landform: Till plains, ridges, drumlins
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Appleton

Percent of map unit: 3 percent
Landform: Till plains, drumlins, ridges
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Cazenovia

Percent of map unit: 2 percent
Landform: Reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Hydric soil rating: No

Lyons

Percent of map unit: 1 percent
Landform: Depressions, drainageways
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Ms—Martisco and Warners soils

Map Unit Setting

National map unit symbol: 9vjm
Elevation: 50 to 1,200 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Martisco and similar soils: 40 percent
Warners and similar soils: 40 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Martisco

Setting

Landform: Swamps, marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave

Across-slope shape: Concave
Parent material: A thin mantle of organic material over marl

Typical profile
H1 - 0 to 13 inches: muck
H2 - 13 to 60 inches: marl

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Description of Warners

Setting
Landform: Depressions
Landform position (two-dimensional): Toeslope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium over marl

Typical profile
H1 - 0 to 12 inches: mucky silt loam
H2 - 12 to 30 inches: silt loam
H3 - 30 to 60 inches: marl

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: Low (about 5.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Edwards
Percent of map unit: 8 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Weaver
Percent of map unit: 8 percent
Hydric soil rating: No

Wayland
Percent of map unit: 2 percent
Landform: Flood plains
Hydric soil rating: Yes

Saprists
Percent of map unit: 2 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

OvB—Ovid silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9vk7
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Ovid and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ovid

Setting
Landform: Till plains, reworked lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till with a significant component of reddish shale or reddish glaciolacustrine clays, mixed with limestone and some sandstone

Typical profile
H1 - 0 to 13 inches: silt loam
H2 - 13 to 30 inches: silty clay loam
H3 - 30 to 76 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Lyons

Percent of map unit: 7 percent
Landform: Depressions
Hydric soil rating: Yes

Cazenovia

Percent of map unit: 7 percent
Hydric soil rating: No

Schoharie

Percent of map unit: 3 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 3 percent
Hydric soil rating: No

Pb—Palms muck

Map Unit Setting

National map unit symbol: 9vkf
Elevation: 250 to 1,500 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Palms and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palms

Setting

Landform: Swamps, marshes
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over loamy glacial drift

Typical profile

H1 - 0 to 24 inches: muck
H2 - 24 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 20 percent
Available water storage in profile: Very high (about 16.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Carlisle

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Lamson

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Edwards

Percent of map unit: 5 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

PgB—Palmyra gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vkh
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Palmyra and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Palmyra

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over sandy and gravelly glaciofluvial deposits, derived mainly from limestone and other sedimentary rocks

Typical profile

H1 - 0 to 14 inches: gravelly loam
H2 - 14 to 31 inches: gravelly loam
H3 - 31 to 60 inches: stratified very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Phelps
Percent of map unit: 5 percent
Hydric soil rating: No

Schoharie
Percent of map unit: 5 percent
Hydric soil rating: No

Arkport
Percent of map unit: 5 percent
Hydric soil rating: No

Howard
Percent of map unit: 5 percent
Hydric soil rating: No

WaC—Wampsville gravelly silt loam, rolling

Map Unit Setting
National map unit symbol: 9vl6
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Wampsville, rolling, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wampsville, Rolling

Setting
Landform: Valley trains, terraces
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from reddish shale intermixed with limestone, sandstone, and gray shale

Typical profile
H1 - 0 to 13 inches: gravelly silt loam
H2 - 13 to 36 inches: gravelly silty clay loam
H3 - 36 to 72 inches: stratified very gravelly sand

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Lairdsville
Percent of map unit: 5 percent
Hydric soil rating: No

Phelps
Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 5 percent
Hydric soil rating: No

Palmyra
Percent of map unit: 5 percent
Hydric soil rating: No

Wv—Weaver silt loam

Map Unit Setting
National map unit symbol: 9vlc
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Weaver and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weaver

Setting
Landform: Flood plains
Landform position (two-dimensional): Summit

Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy calcareous alluvium

Typical profile

H1 - 0 to 17 inches: silt loam
H2 - 17 to 29 inches: silty clay loam
H3 - 29 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Warners

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Teel

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Rock Free (Green Lakes Solar)

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kf (rock free)" indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.


75° 56' 28" W
75° 55' 44" W
43° 3' 51" N
43° 3' 8" N
423400
423500
423600
423700
423800
423900
424000
424100
424200
424300
4768300
4768200
4768100
4768000
4767900
4767800
4767700
4767600
4767500
4767400
4767300
4767200
4767100
WaC
Fr
Pb
Ms
PgB
OvB
CgD
CfB
Ed
LtA
CfC
CfC2
Wv
OvB
KeA
Ms
LtA
CfC2
CfB
LtB
Buttonvale Rd
290
Soil Map may not be valid at this scale.
Map Scale: 1:6,450 if printed on A portrait (8.5" x 11") sheet.
Meters
0 50 100 200 300
Feet
0 300 600 1200 1800
N
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Rock Free (Green Lakes Solar)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CfB	Cazenovia silt loam, 2 to 8 percent slopes	.28	49.1	36.3%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	.28	2.4	1.8%
CfC2	Cazenovia silt loam, 8 to 15 percent slopes, eroded	.28	5.0	3.7%
CgD	Cazenovia soils, 15 to 25 percent slopes	.28	3.2	2.4%
Ed	Edwards muck		13.0	9.6%
Fr	Fredon loam	.28	1.1	0.8%
KeA	Kendaia silt loam, 0 to 3 percent slopes	.28	14.3	10.6%
LtA	Lima silt loam, 0 to 3 percent slopes	.32	2.9	2.1%
LtB	Lima silt loam, 3 to 8 percent slopes	.32	0.8	0.6%
Ms	Martisco and Warners soils		26.3	19.4%
OvB	Ovid silt loam, 3 to 8 percent slopes	.28	2.2	1.6%
Pb	Palms muck		4.3	3.2%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	.17	0.0	0.0%
WaC	Wampsville gravelly silt loam, rolling	.24	2.3	1.7%
Wv	Weaver silt loam	.24	8.7	6.4%
Totals for Area of Interest			**135.4**	**100.0%**

Rating Options—K Factor, Rock Free (Green Lakes Solar)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

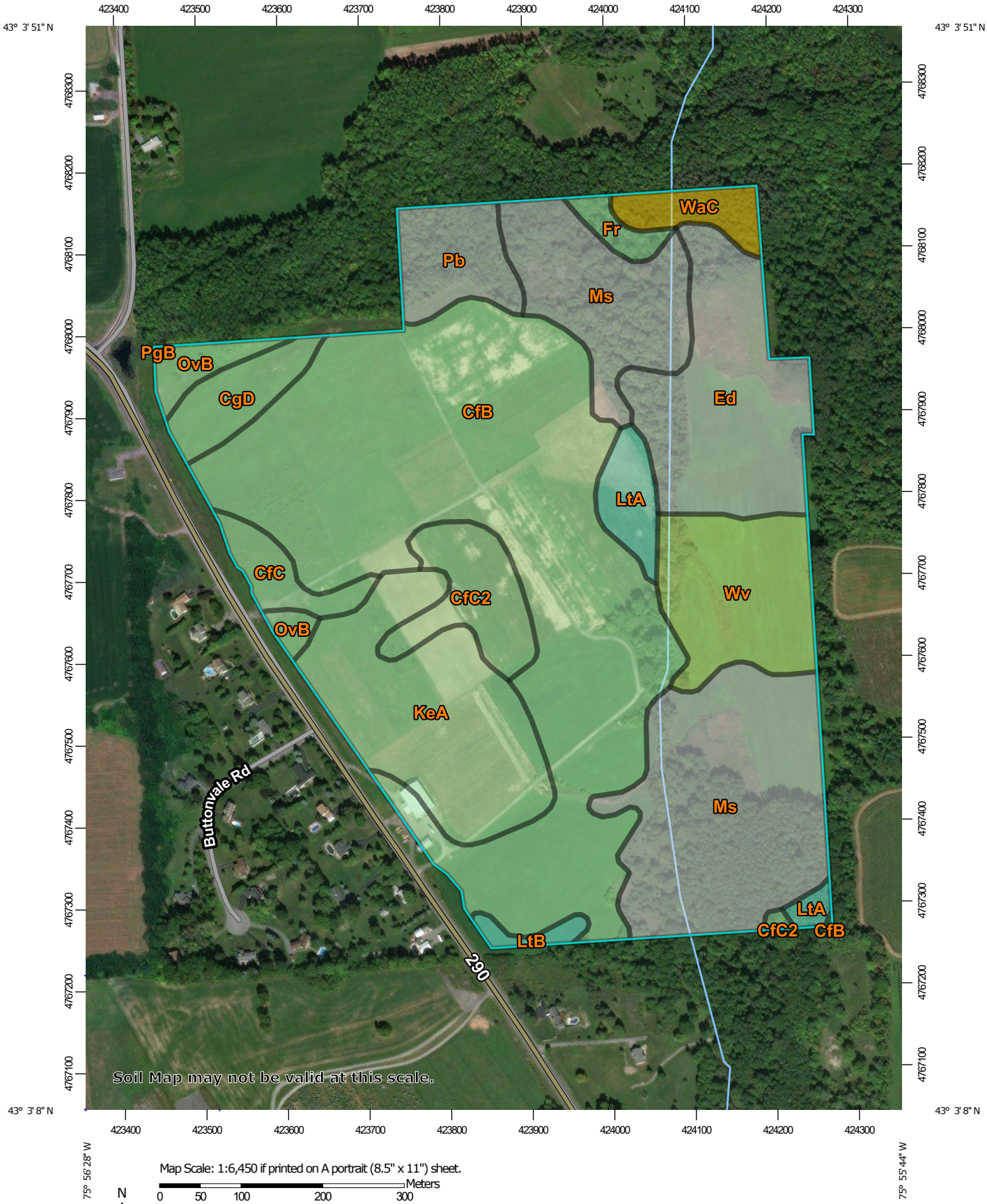
K Factor, Whole Soil (Green Lakes Solar)

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"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report
Map—K Factor, Whole Soil (Green Lakes Solar)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

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Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 14, Sep 16, 2019

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Wv	Weaver silt loam	.24	8.7	6.4%
Totals for Area of Interest			**135.4**	**100.0%**

Rating Options—K Factor, Whole Soil (Green Lakes Solar)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

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APPENDIX F – DRAINAGE MAPS

DRAINAGE AREA 1
5.28 ACRES

DRAINAGE AREA 2
1.02 ACRES

DRAINAGE AREA 3
3.19 ACRES

DRAINAGE AREA 4
2.35 ACRES

DRAINAGE AREA 5
21.08 ACRES

DRAINAGE AREA 6
5.63 ACRES

DISCHARGE POINT 1
DISCHARGE POINT 2
DISCHARGE POINT 3
DISCHARGE POINT 4
DISCHARGE POINT 5
DISCHARGE POINT 6

DA 1 TOTAL FOREST AREA: 1.06 ACRES
DA 1 TOTAL ROWED CROP AREA: 3.78 ACRES
DA 1 TOTAL TREE/GRASS AREA: 0.44 ACRES
DA 2 TOTAL ROWED CROP AREA: 1.02 ACRES
DA 3 TOTAL FOREST AREA: 0.06 ACRES
DA 3 TOTAL ROWED CROP AREA: 3.13 ACRES
DA 4 TOTAL TREE/GRASS AREA: 0.80 ACRES
DA 4 TOTAL ROWED CROP AREA: 1.55 ACRES
DA 5 TOTAL ROWED CROP AREA: 18.82 ACRES
DA 5 TOTAL TREE/GRASS AREA: 2.26 ACRES
DA 6 TOTAL TREE/GRASS AREA: 2.54 ACRES
DA 6 TOTAL ROWED CROP AREA: 3.09 ACRES

Tc LENGTH=221 FT AVG. SLOPE=2.7%
Tc LENGTH=520 FT AVG. SLOPE=2.7%
Tc LENGTH=717 FT AVG. SLOPE=4.7%
Tc LENGTH=1,661 FT AVG. SLOPE=1.9%
Tc LENGTH=631 FT AVG. SLOPE=2.9%
Tc LENGTH=649 FT AVG. SLOPE=1.7%

0 100 200
SCALE IN FEET

LEGEND

- PROPERTY LINE
- Tc LENGTH=1,408 FT — LONGEST FLOW PATH
- DRAINAGE AREA
- MdB / OgB — SOIL TYPE BOUNDARY
- WETLANDS JURISDICTIONAL TO NYSDEC
- FORESTED ARA
- DIRECTION OF RUNOFF
- DISCHARGE POINT
- 515 — EXISTING CONTOUR (MAJOR)
- EXISTING CONTOUR (MINOR)
- 100-YEAR FLOODPLAIN

GENERAL NOTES:

1. CONTOUR DATA AND EXISTING CONDITIONS INFORMATION OBTAINED FROM SURVEY BY THEW ASSOCIATES, PLLC DATED MARCH 18, 2020. THIS DATA IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83)(2011) NEW YORK CENTRAL ZONE, US FOOT AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) GEIOD 12B, US FOOT.
2. TREE LINES SHOWN HEREON ARE APPROXIMATE. SOURCE: GOOGLE EARTH.
3. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
4. ORTHOIMAGERY OBTAINED FROM NYS GIS CLEARINGHOUSE, 2018 ONE FOOT FOUR BAND CENTRAL ZONE INDEX.

NOT FOR CONSTRUCTION

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CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

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GREEN LAKES ROAD SOLAR PROJECT

8507 GREEN LAKES ROAD
MANLIUS, NY 13066

PROJECT NUMBERS:
194-7119

SHEET TITLE:
PRE-DEVELOPMENT DRAINAGE MAP

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.

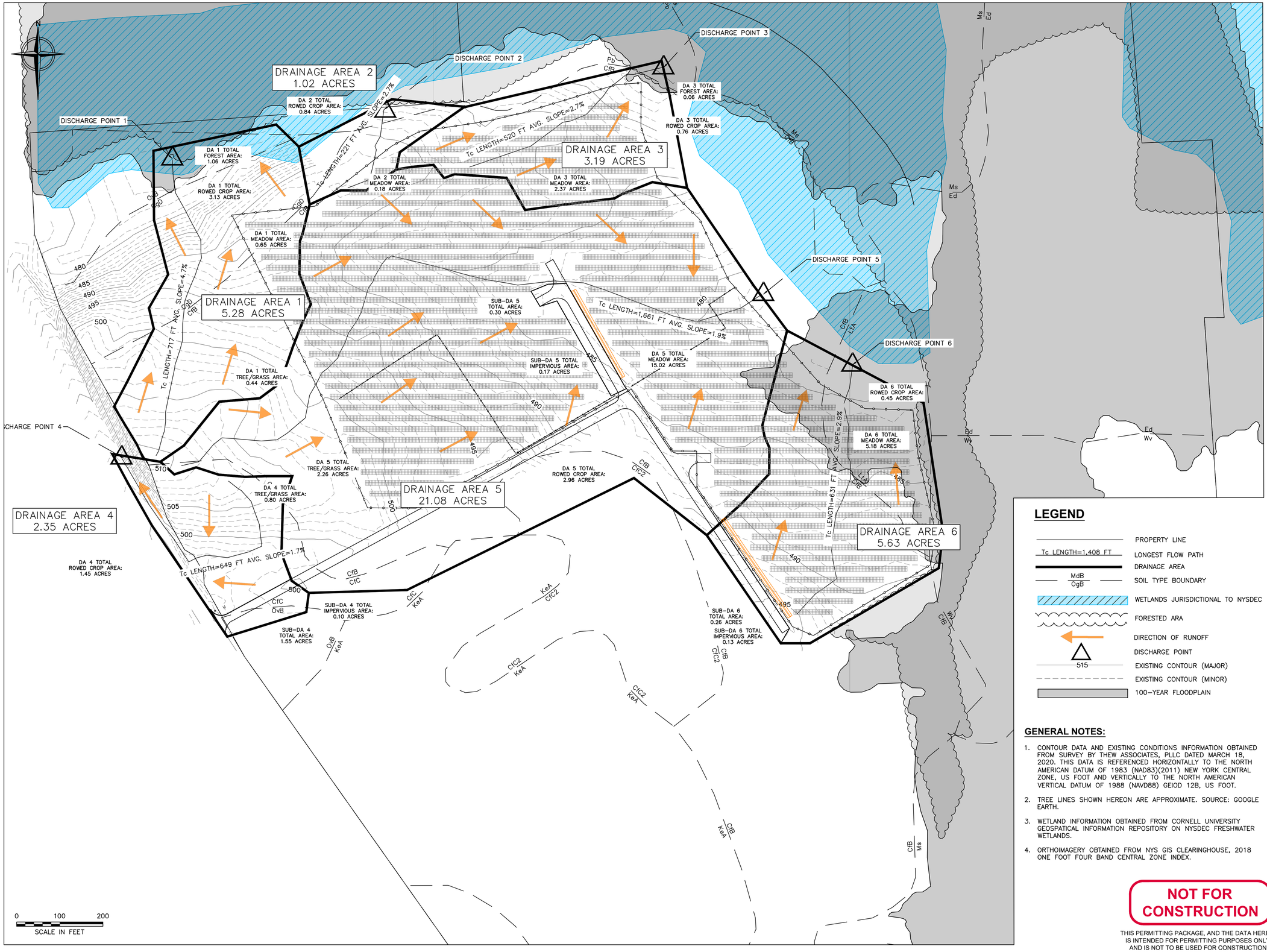
DATE:	03/27/2020
DRAWN BY:	AJF
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
1

P:\Falck Renewables\01-Green Lakes Solar\08-SWPPP\02-Figures\GREENLAKES-PRE DEV DRAINAGE MAP-02.dwg
Printed: 4/11/2020 7:03 PM
GESTAMP FTGM SHEET SET R1.0.4



LEGEND

- PROPERTY LINE
- Tc LENGTH=1,408 FT — LONGEST FLOW PATH
- DRAINAGE AREA
- MdB / OgB — SOIL TYPE BOUNDARY
- WETLANDS JURISDICTIONAL TO NYSDEC
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24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.

DATE:	03/27/2020
DRAWN BY:	AJF
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
2

P:\Falck Renewables\01-Green Lakes Solar\08-SWPPP\02-Figures\GREENLAKES-POST DEV DRAINAGE MAP-02.dwg

Printed: 4/13/2020 1:21 PM

GESTAMP FTGM SHEET SET R1.0.4

APPENDIX G – DESIGN CALCULATIONS

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:		
P=	1.00	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.30	0.17	57%	0.56	610	
2	0.26	0.13	50%	0.50	472	
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	0.56	0.30	54%	0.53	**1,082**	**Subtotal 1**
Total	0.56	0.30	54%	0.53	**1,082**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	0.56	0.30	54%	0.53	1,082
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**0.56**	**0.30**	54%	0.53	1,082
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	0.56	0.30	54%	0.53	**1,082**
WQv reduced by Area Reduction techniques					0

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	0.56	0.30	933	149
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction		→	0.00	0.00	0	
Totals by Volume Reduction		→	0.00	0.00	0	
Totals by Standard SMP w/RRV		→	0.56	0.30	933	149
Totals by Standard SMP		→	0.00	0.00		0
Totals (Area + Volume + all SMPs)		→	0.56	0.30	933	149
	Impervious Cover √	okay				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	15.34	30%
D		20%
Total Area	15.34	
Calculate the Minimum RRv		
S =	**0.30**	
Impervious =	0.30	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**310**	***ft3***
	0.01	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	1082	*0.025*
30	Total RRV Provided	933	*0.021*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	310	*0.007*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	149	*0.003*
34	Sum of Volume Reduced & Treated	1082	*0.025*
34	Sum of Volume Reduced and Treated	1082	*0.025*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

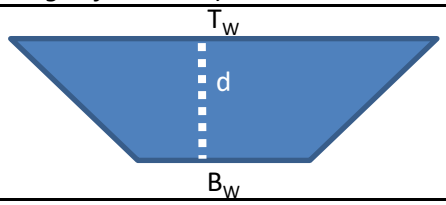
Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?	*Yes*	Plan Completed

Dry Swale Worksheet

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.30	0.17	0.57	0.56	609.84	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops			57%	0.56	610	<<WQv after adjusting for Disconnected Rooftops	

Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	61	ft^3	

Calculate Available Storage Capacity			
Bottom Width	2	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	2%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	11	*ft*	
Area	9.75	*sf*	
Minimum Length	56	*ft*	
Actual Length	230	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	2,303	ft^3	
Soil Group (HSG)		C	

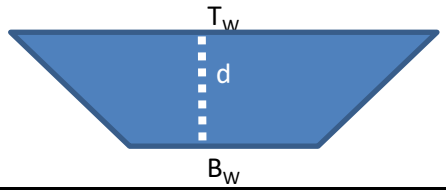
Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		No	Select Practice	
RRv	**461**	**ft^3**	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	149	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	0	ft^3	This volume is directed another practice	
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv	

Dry Swale Worksheet

Design Point:	

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	0.26	0.13	0.50	0.50	471.90	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops			50%	0.50	472	<<WQv after adjusting for Disconnected Rooftops	

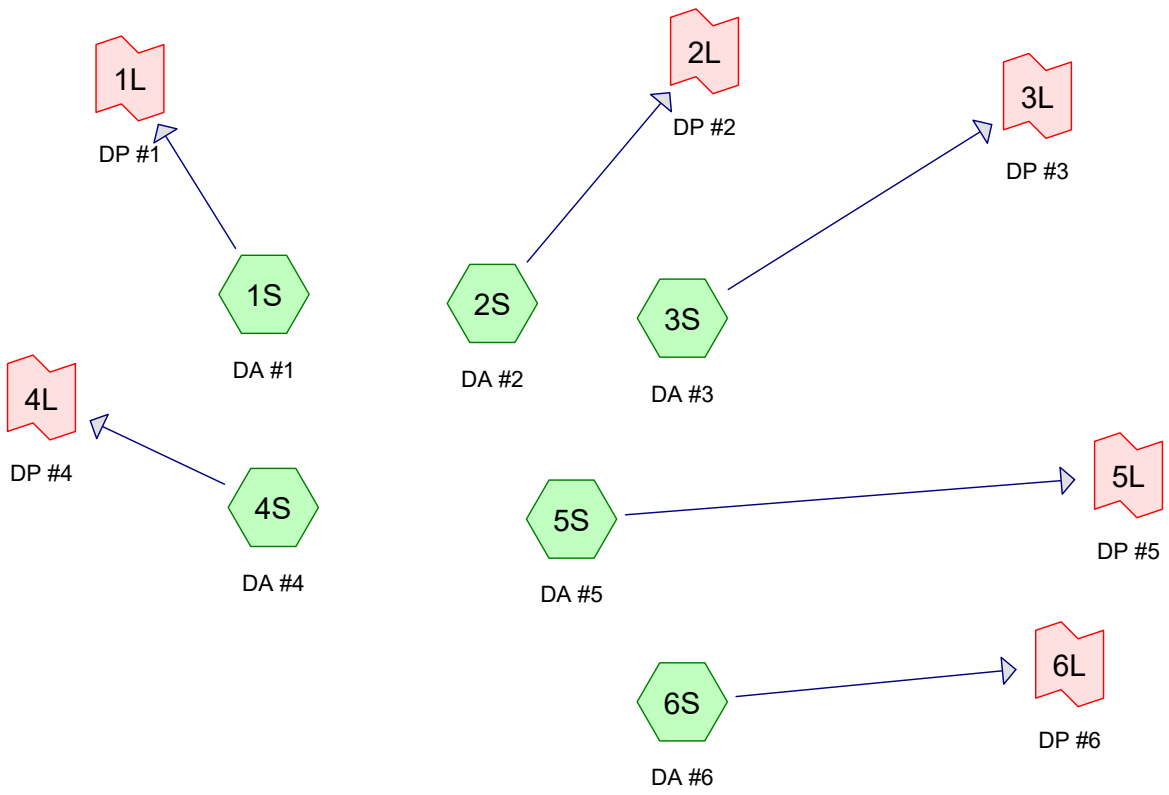
Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	47	ft^3	

Calculate Available Storage Capacity			
Bottom Width	2	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	3%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	11	*ft*	
Area	9.75	*sf*	
Minimum Length	44	*ft*	
Actual Length	275	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	2,728	ft^3	
Soil Group (HSG)		C	

Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		No	Select Practice	
RRv	**472**	**ft^3**	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	0	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	0	ft^3	This volume is directed another practice	
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv	

APPENDIX H – PRE-DEVELOPMENT ANALYSIS

Green Lakes
Pre-Development



Subcat Reach Pond Link

Routing Diagram for GREEN LAKES PRE DEV HYDROCAD Rev 1
Prepared by Tetra Tech Inc, Printed 4/7/2020
HydroCAD® 10.00-24 s/n 04052 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
31.390	85	Row crops, straight row, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S)
1.120	73	Woods, Fair, HSG C (1S, 3S)
6.040	76	Woods/grass comb., Fair, HSG C (1S, 4S, 5S, 6S)
38.550	**83**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
38.550	HSG C	1S, 2S, 3S, 4S, 5S, 6S
0.000	HSG D	
0.000	Other	
38.550		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	31.390	0.000	0.000	31.390	Row crops, straight row, Good	1S, 2S, 3S, 4S, 5S, 6S
0.000	0.000	1.120	0.000	0.000	1.120	Woods, Fair	1S, 3S
0.000	0.000	6.040	0.000	0.000	6.040	Woods/grass comb., Fair	1S, 4S, 5S, 6S
0.000	**0.000**	**38.550**	**0.000**	**0.000**	**38.550**	**TOTAL AREA**	

Summary for Subcatchment 1S: DA #1

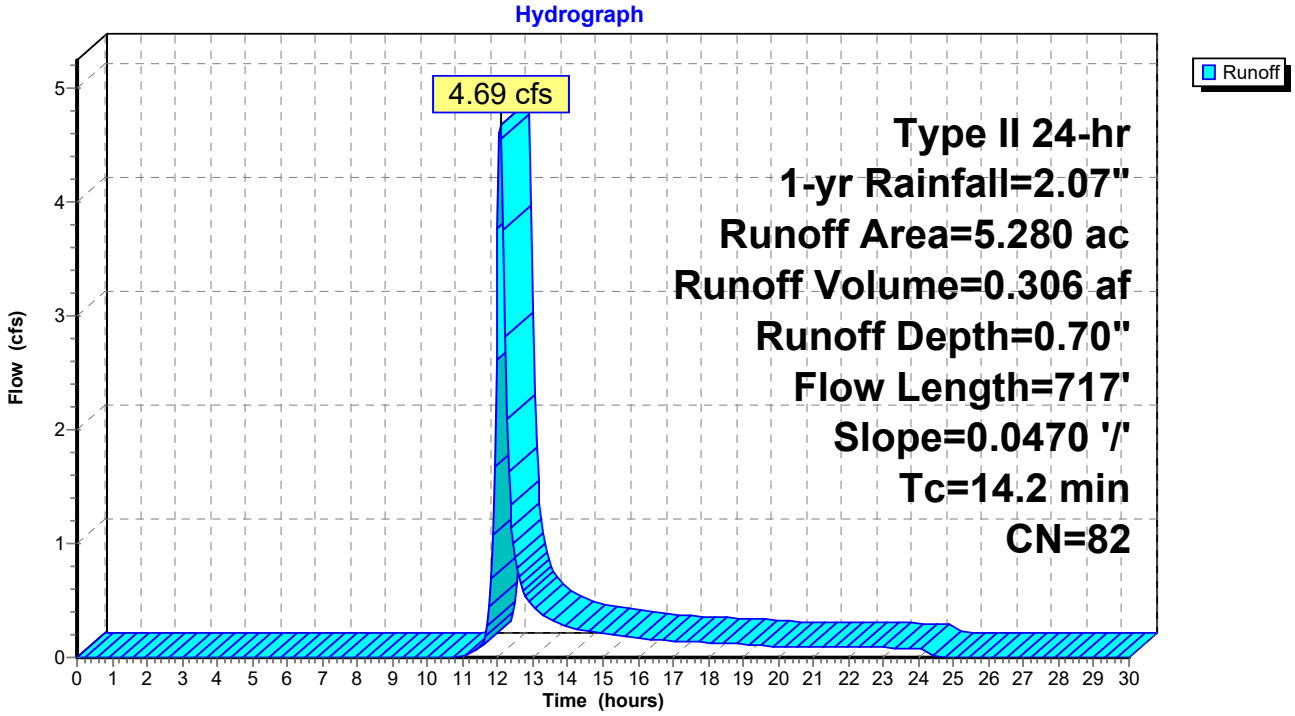
Runoff = 4.69 cfs @ 12.07 hrs, Volume= 0.306 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.780	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
5.280	82	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

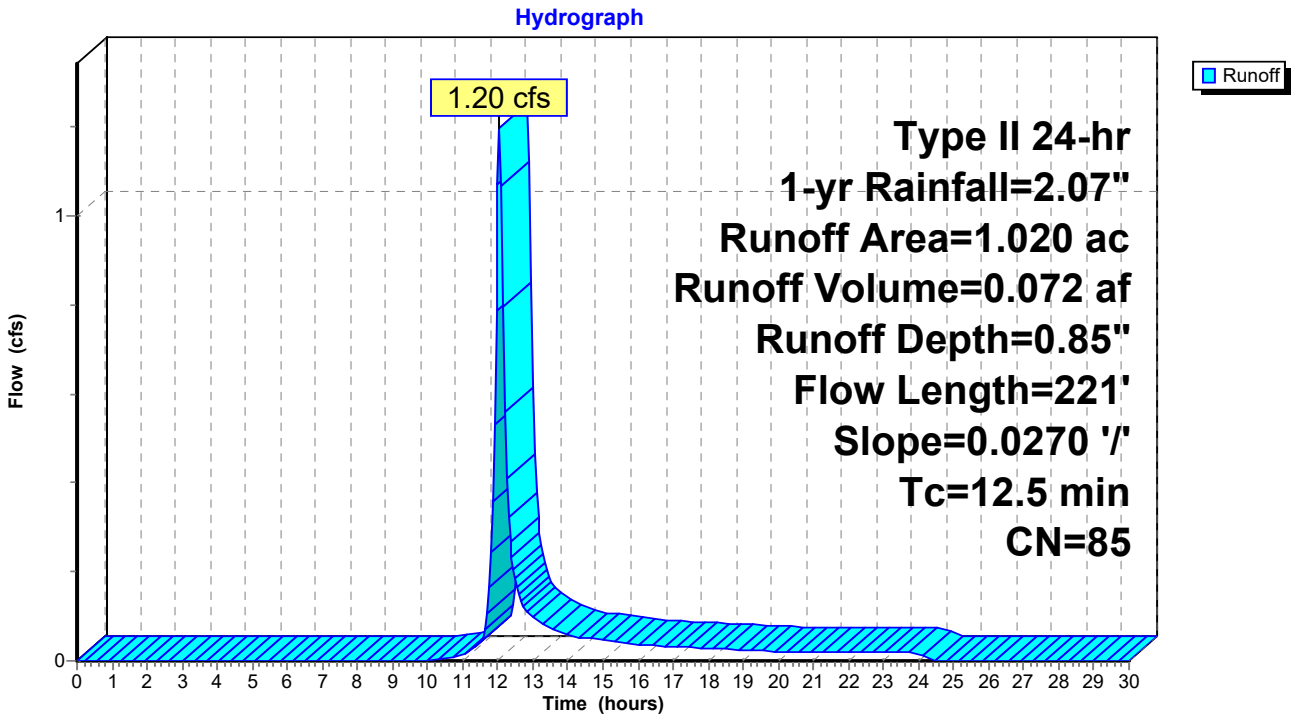
Runoff = 1.20 cfs @ 12.05 hrs, Volume= 0.072 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
1.020	85	Row crops, straight row, Good, HSG C
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
1.4	121	0.0270	1.48		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

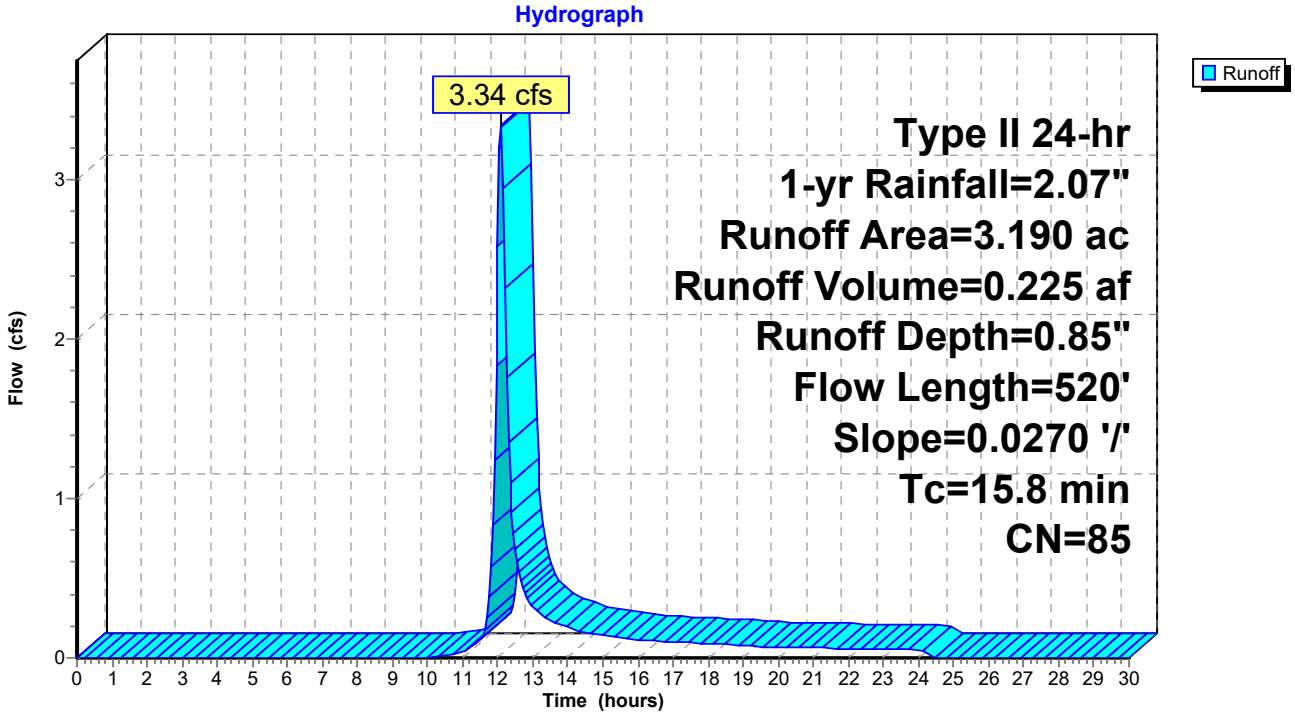
Runoff = 3.34 cfs @ 12.09 hrs, Volume= 0.225 af, Depth= 0.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
3.130	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
3.190	85	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
4.7	420	0.0270	1.48		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
15.8	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

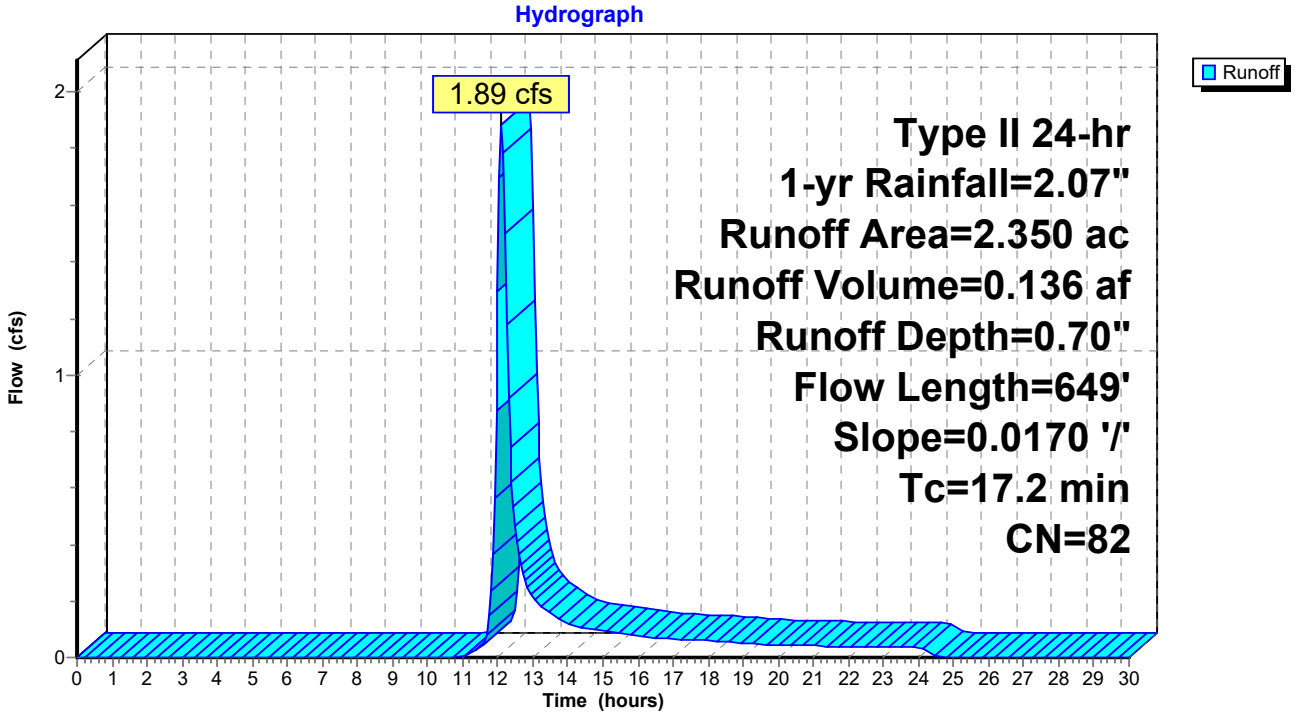
Runoff = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.550	85	Row crops, straight row, Good, HSG C
2.350	82	Weighted Average
2.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow - Small Tree Farm** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

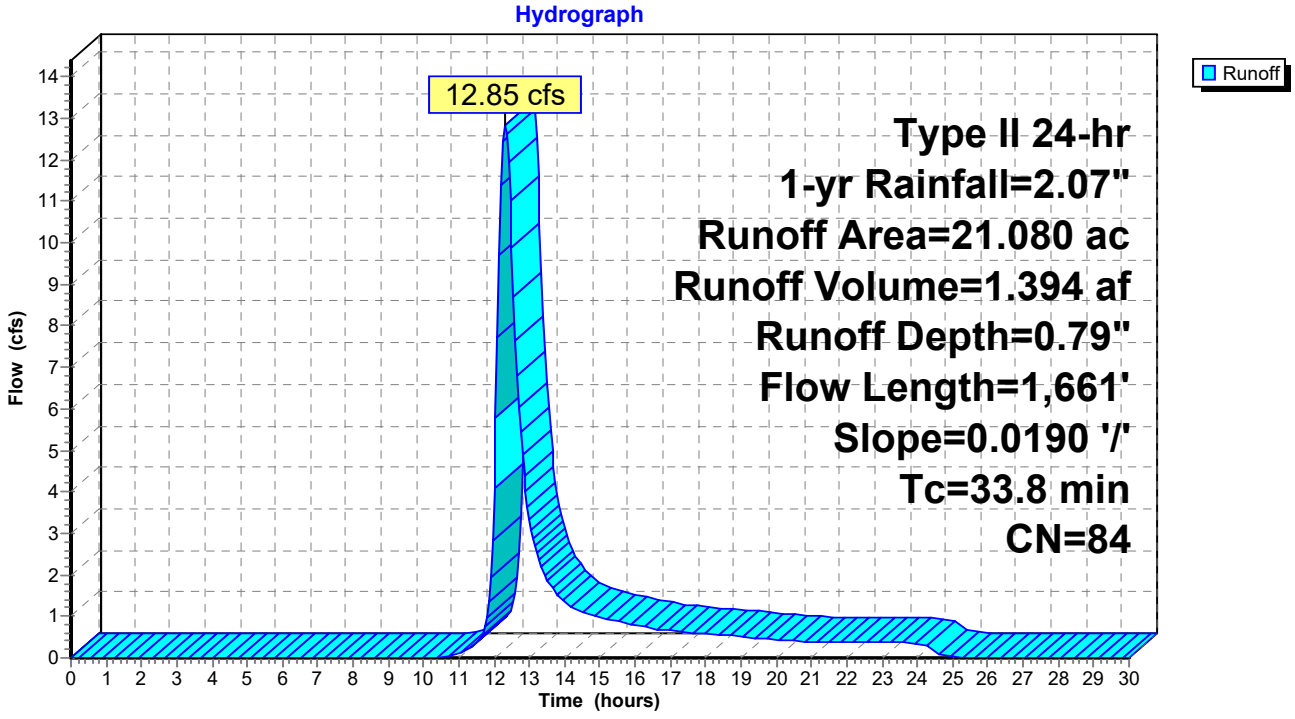
Runoff = 12.85 cfs @ 12.31 hrs, Volume= 1.394 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
18.820	85	Row crops, straight row, Good, HSG C
21.080	84	Weighted Average
21.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
21.0	1,561	0.0190	1.24		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
33.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

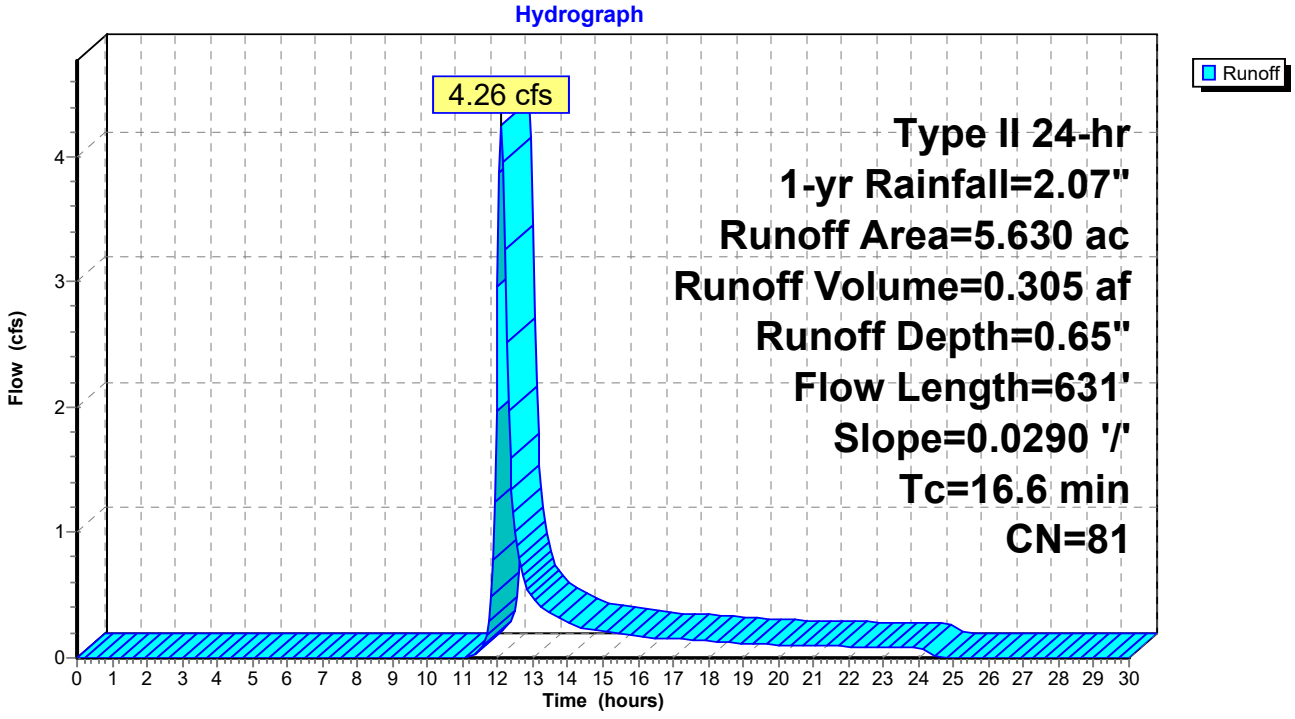
Runoff = 4.26 cfs @ 12.10 hrs, Volume= 0.305 af, Depth= 0.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
3.090	85	Row crops, straight row, Good, HSG C
2.540	76	Woods/grass comb., Fair, HSG C
5.630	81	Weighted Average
5.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0290	0.15		**Sheet Flow, Sheet - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.8	531	0.0290	1.53		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
16.6	631	Total			

Subcatchment 6S: DA #6

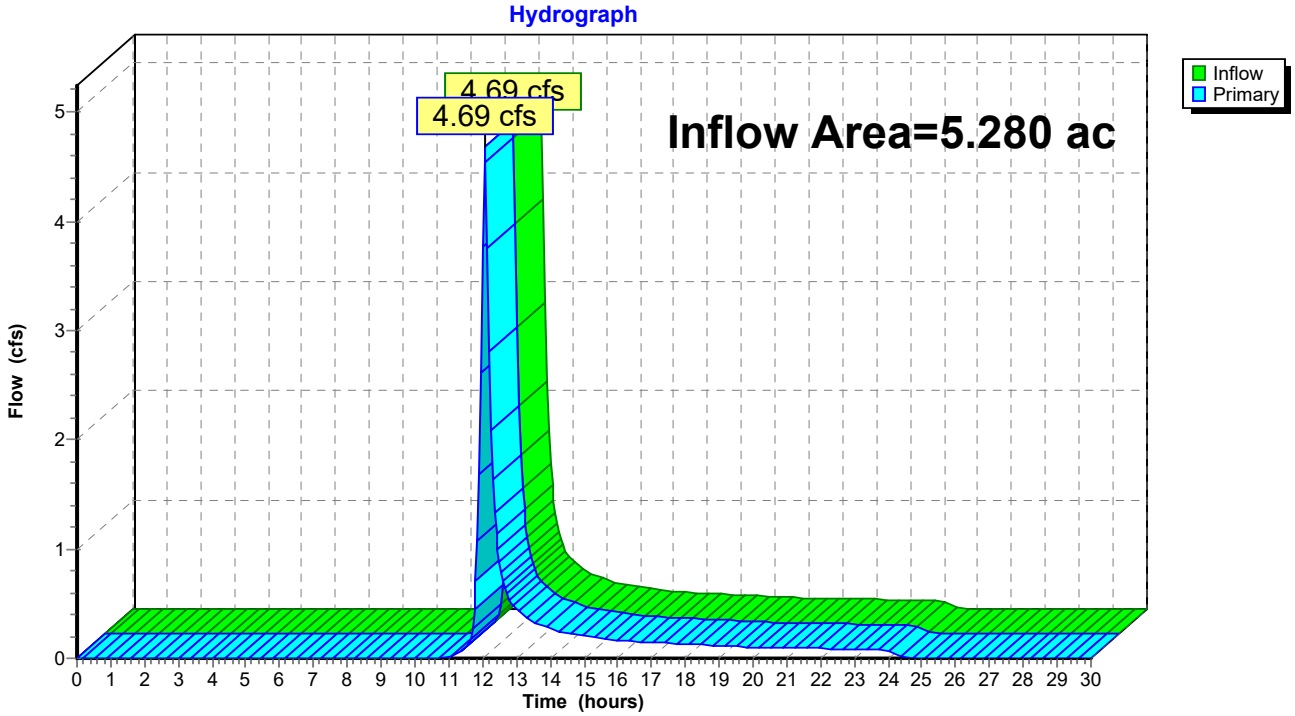


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 0.70" for 1-yr event
Inflow = 4.69 cfs @ 12.07 hrs, Volume= 0.306 af
Primary = 4.69 cfs @ 12.07 hrs, Volume= 0.306 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

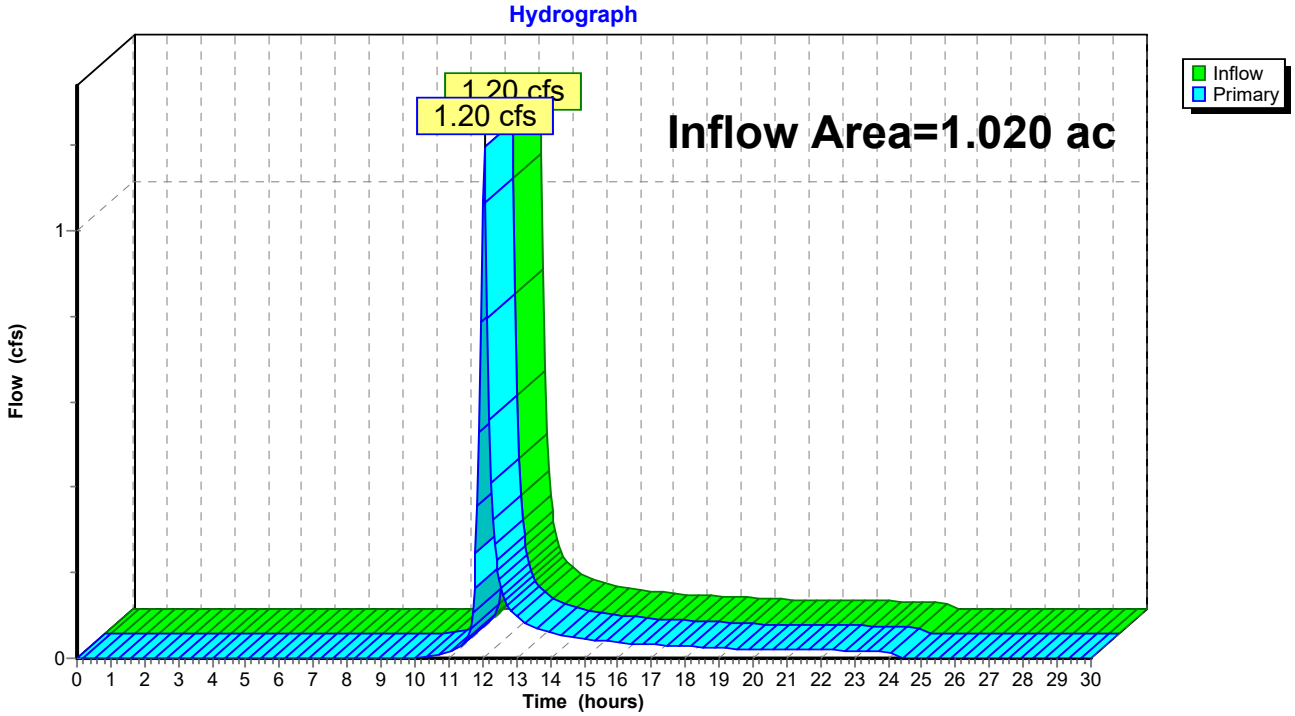


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 0.85" for 1-yr event
Inflow = 1.20 cfs @ 12.05 hrs, Volume= 0.072 af
Primary = 1.20 cfs @ 12.05 hrs, Volume= 0.072 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

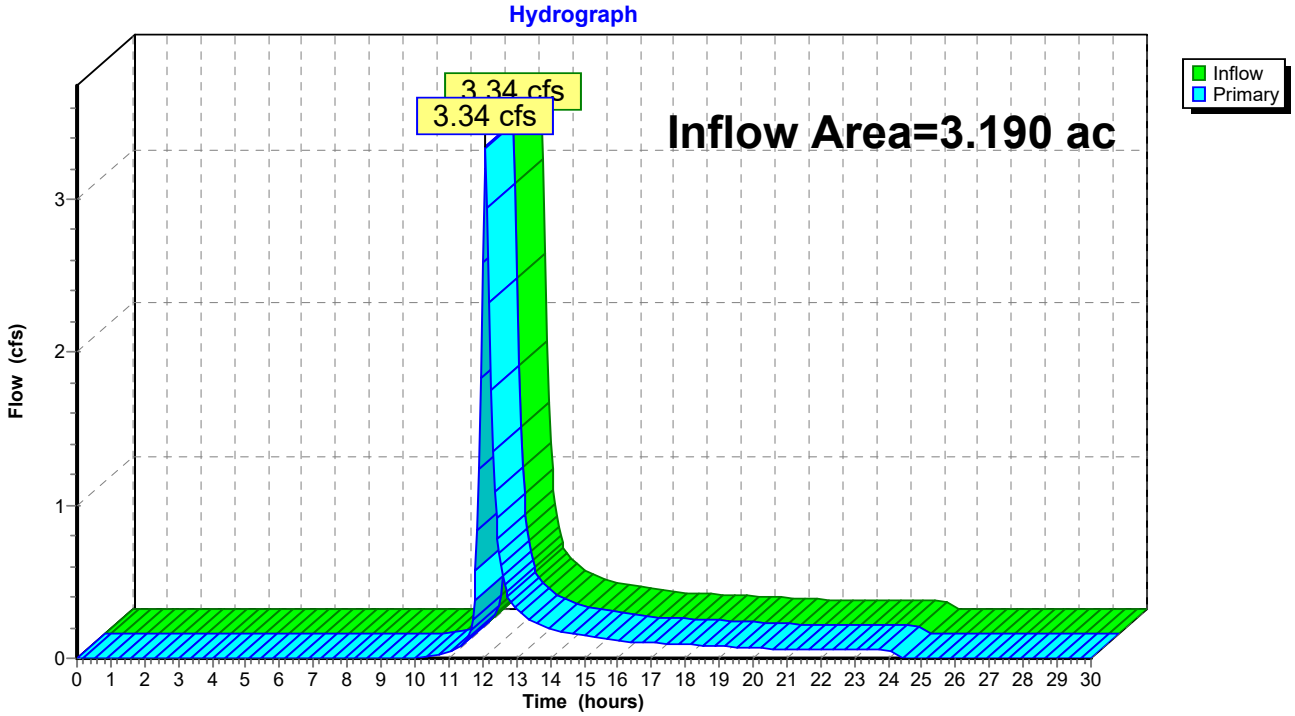


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 0.85" for 1-yr event
Inflow = 3.34 cfs @ 12.09 hrs, Volume= 0.225 af
Primary = 3.34 cfs @ 12.09 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

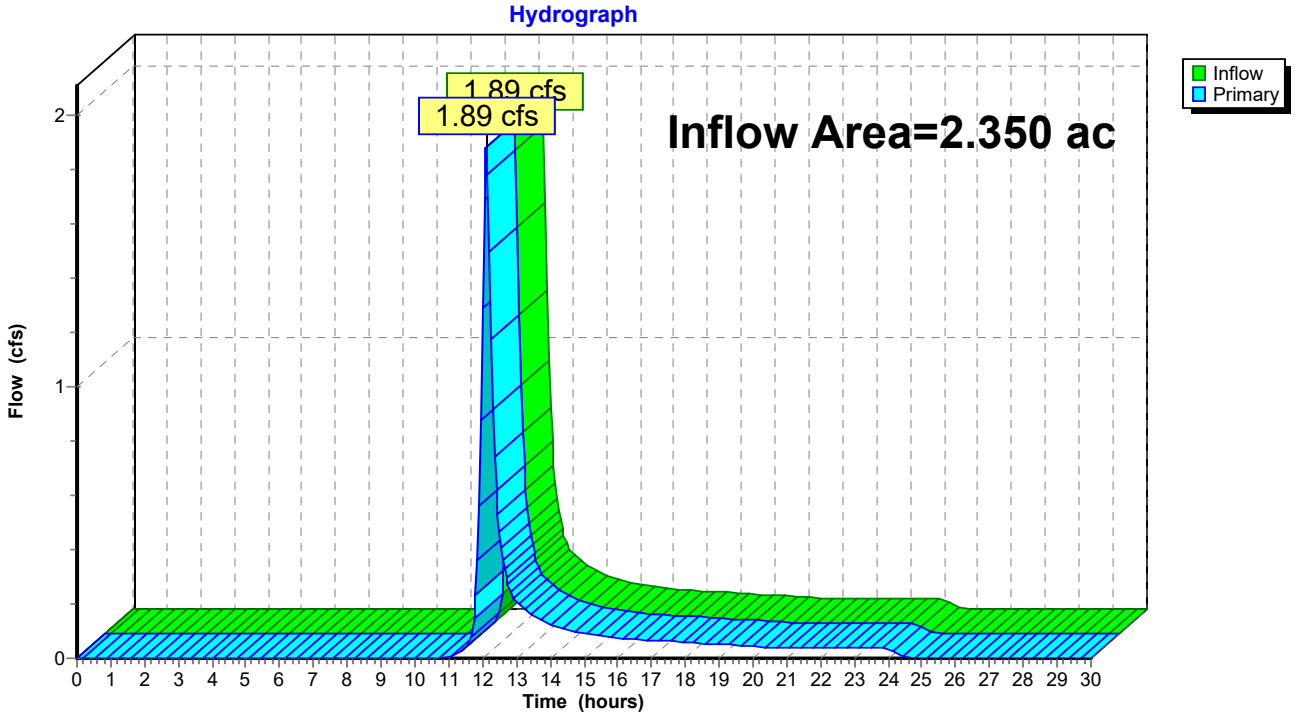


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 0.00% Impervious, Inflow Depth = 0.70" for 1-yr event
Inflow = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af
Primary = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

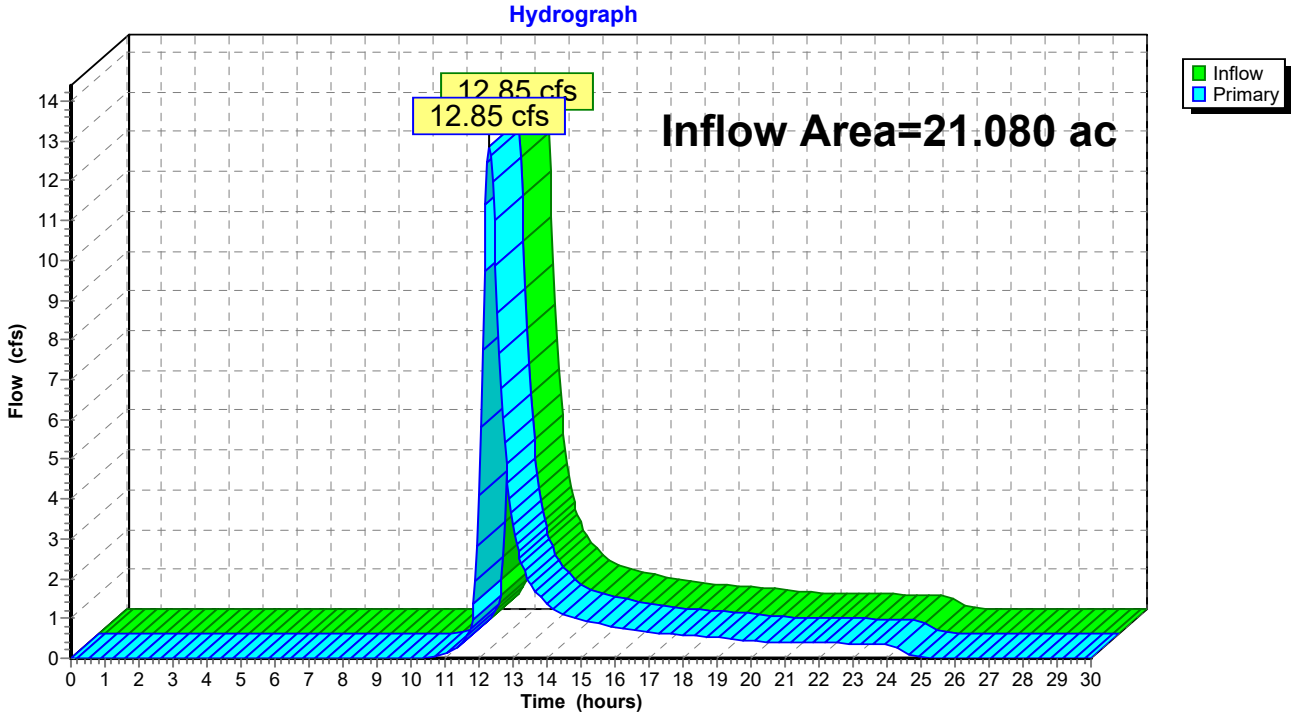


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 0.00% Impervious, Inflow Depth = 0.79" for 1-yr event
Inflow = 12.85 cfs @ 12.31 hrs, Volume= 1.394 af
Primary = 12.85 cfs @ 12.31 hrs, Volume= 1.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

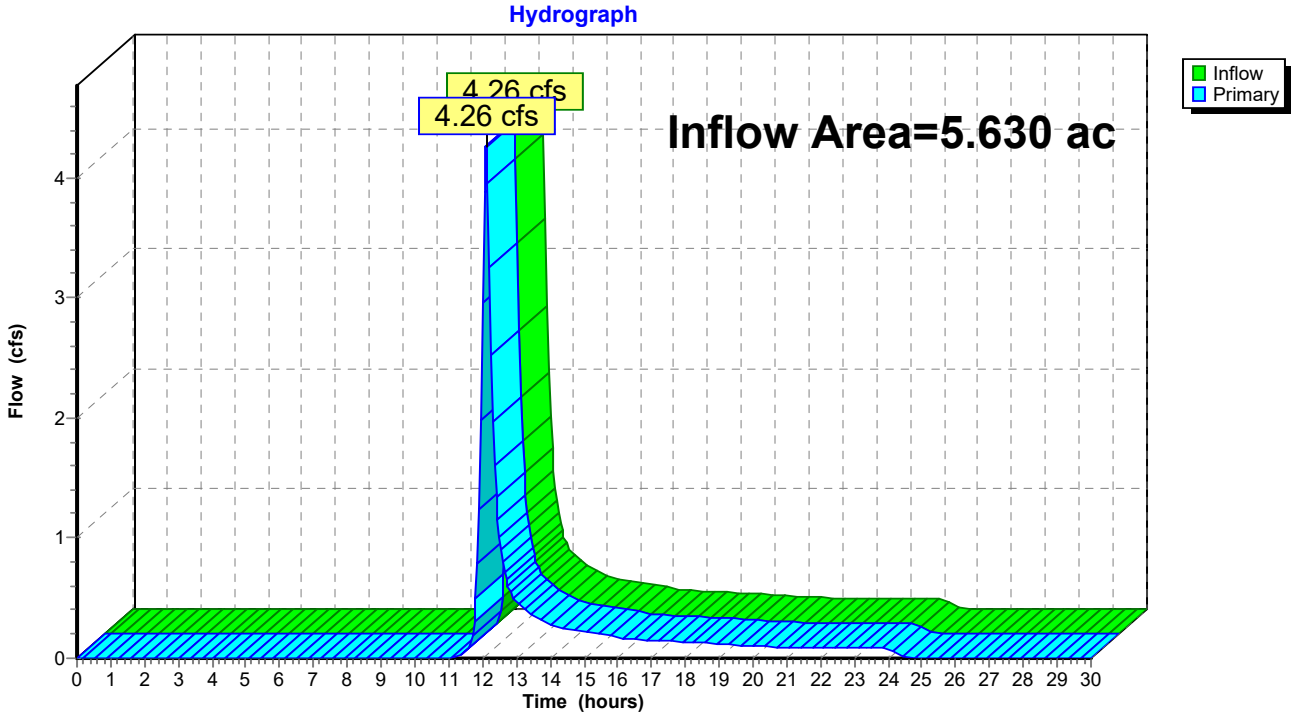


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 0.00% Impervious, Inflow Depth = 0.65" for 1-yr event
Inflow = 4.26 cfs @ 12.10 hrs, Volume= 0.305 af
Primary = 4.26 cfs @ 12.10 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



Summary for Subcatchment 1S: DA #1

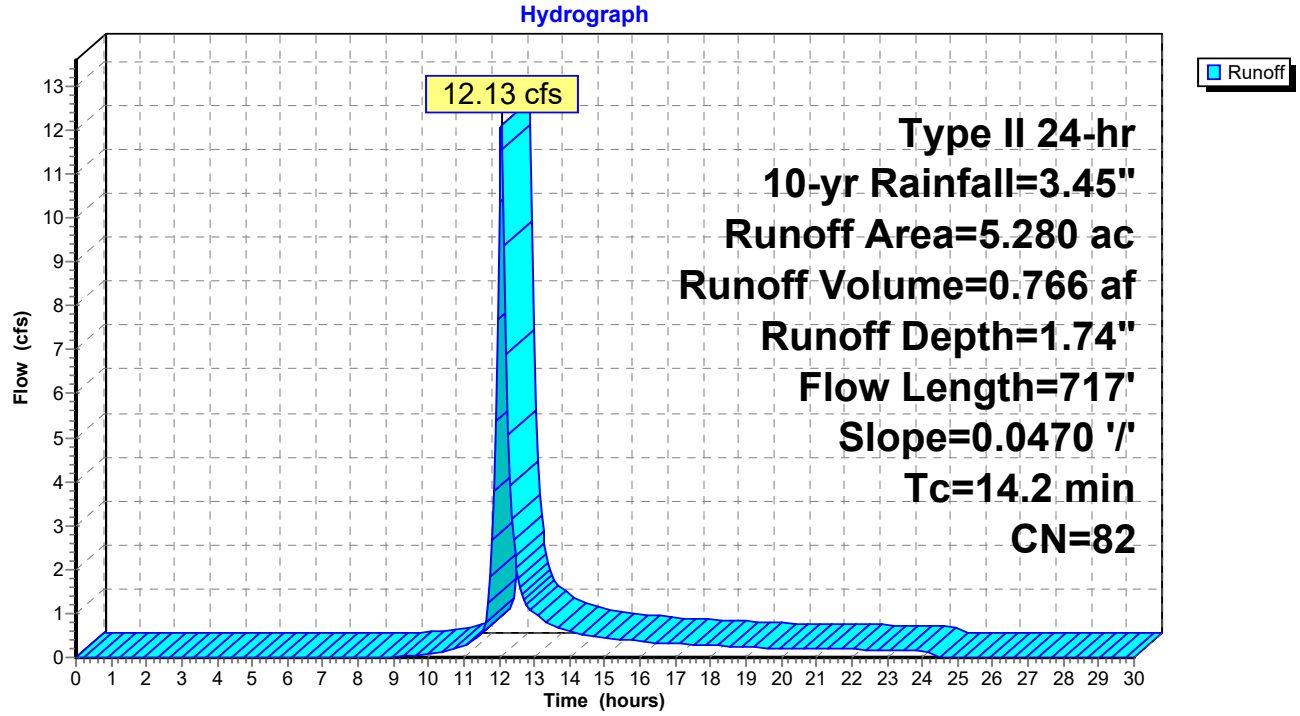
Runoff = 12.13 cfs @ 12.06 hrs, Volume= 0.766 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.780	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
5.280	82	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

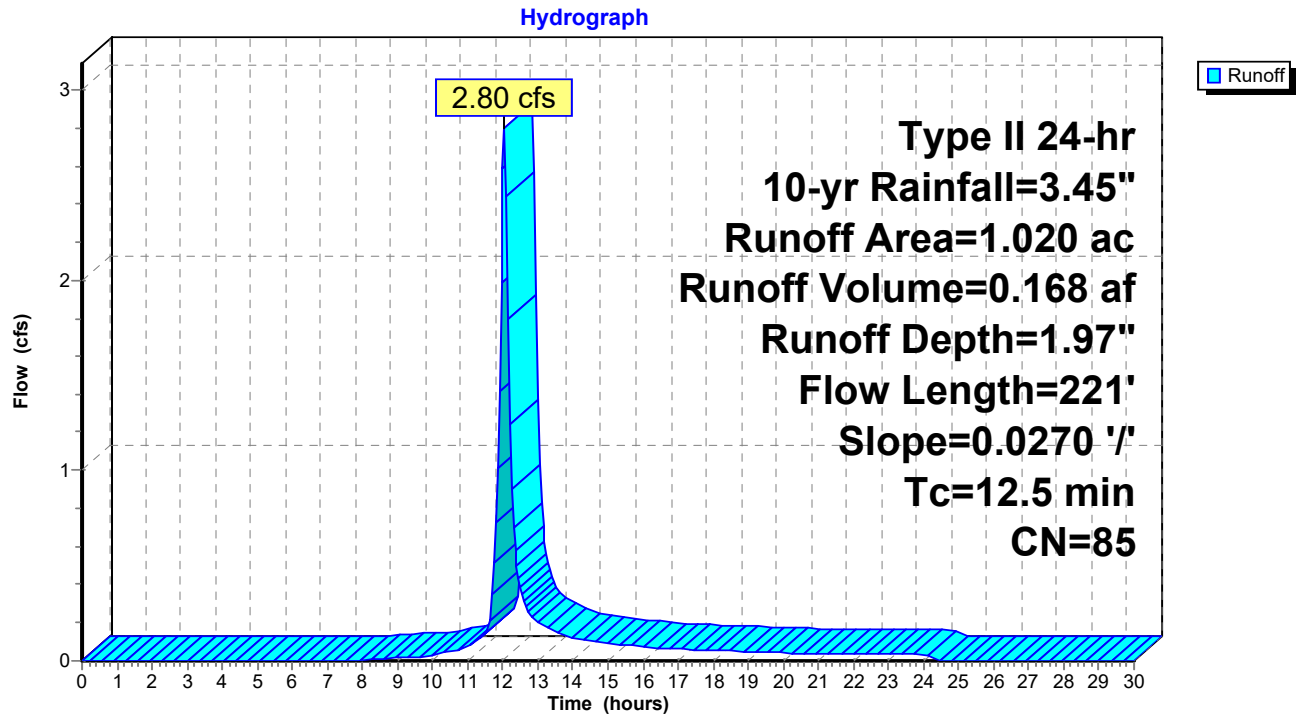
Runoff = 2.80 cfs @ 12.04 hrs, Volume= 0.168 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
1.020	85	Row crops, straight row, Good, HSG C
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
1.4	121	0.0270	1.48		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

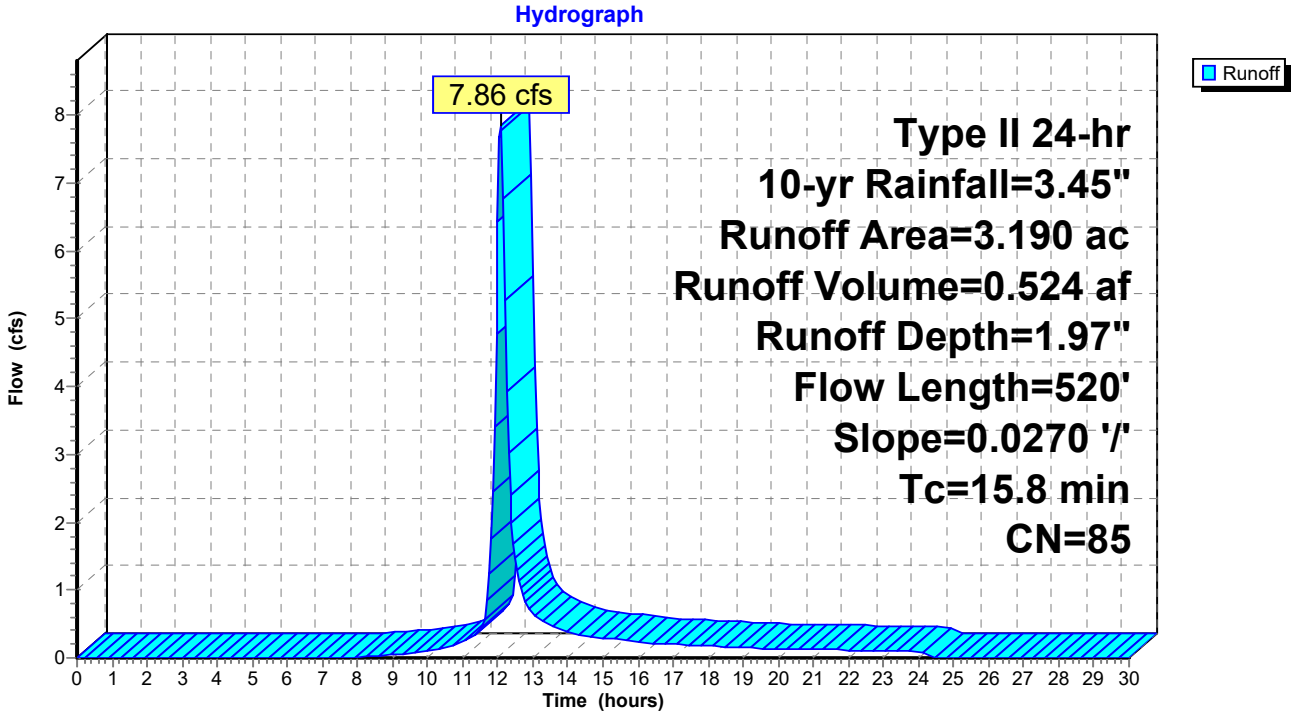
Runoff = 7.86 cfs @ 12.08 hrs, Volume= 0.524 af, Depth= 1.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
3.130	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
3.190	85	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
4.7	420	0.0270	1.48		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
15.8	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

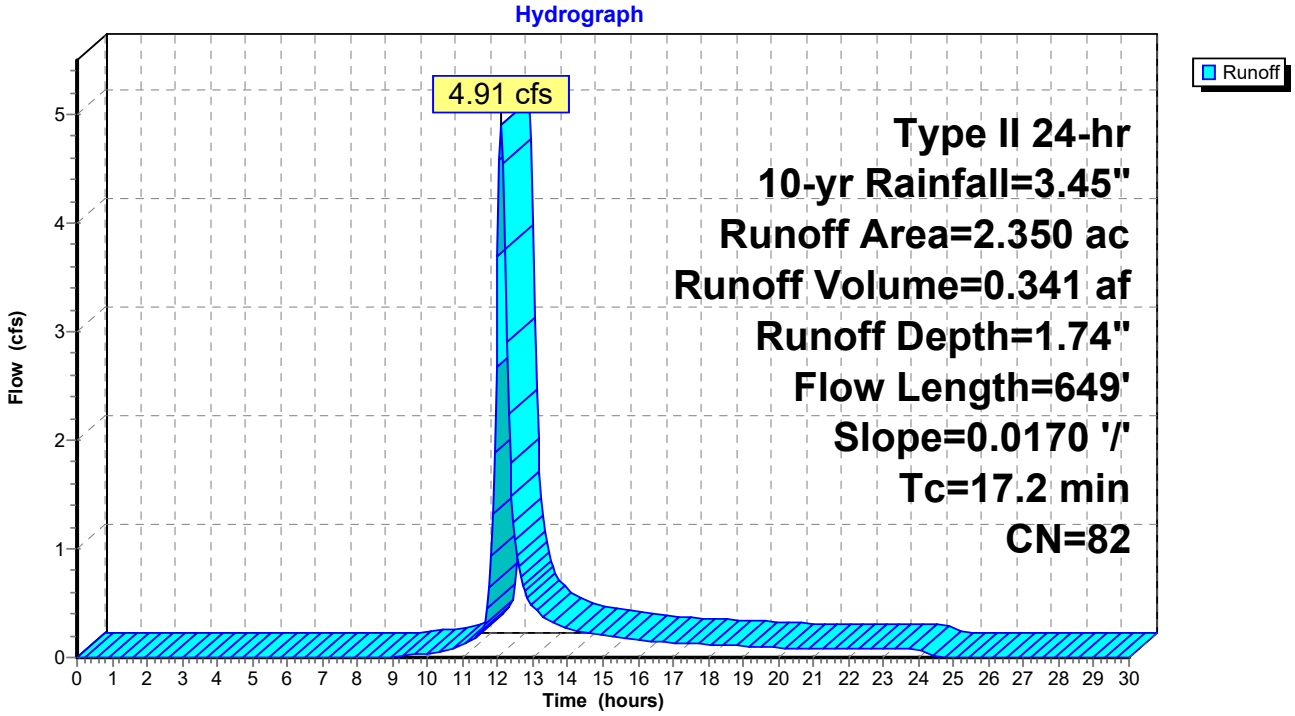
Runoff = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.550	85	Row crops, straight row, Good, HSG C
2.350	82	Weighted Average
2.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow - Small Tree Farm** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

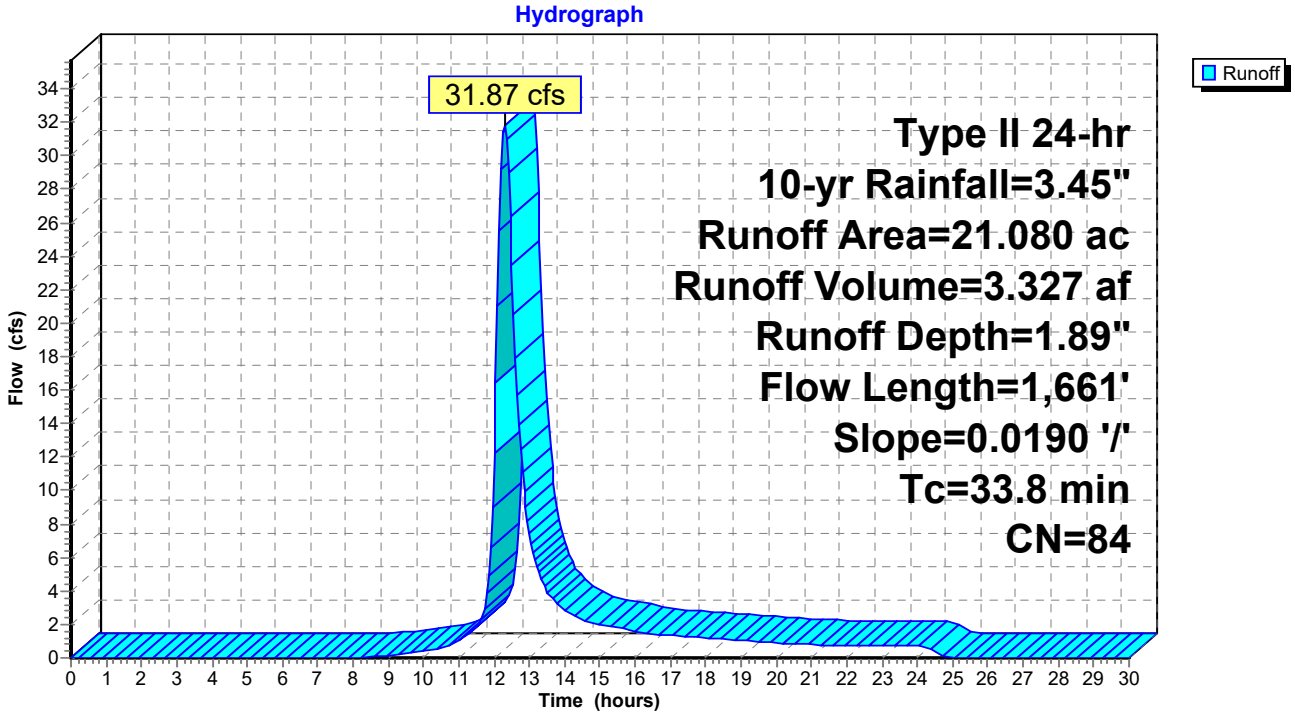
Runoff = 31.87 cfs @ 12.29 hrs, Volume= 3.327 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
18.820	85	Row crops, straight row, Good, HSG C
21.080	84	Weighted Average
21.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
21.0	1,561	0.0190	1.24		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
33.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

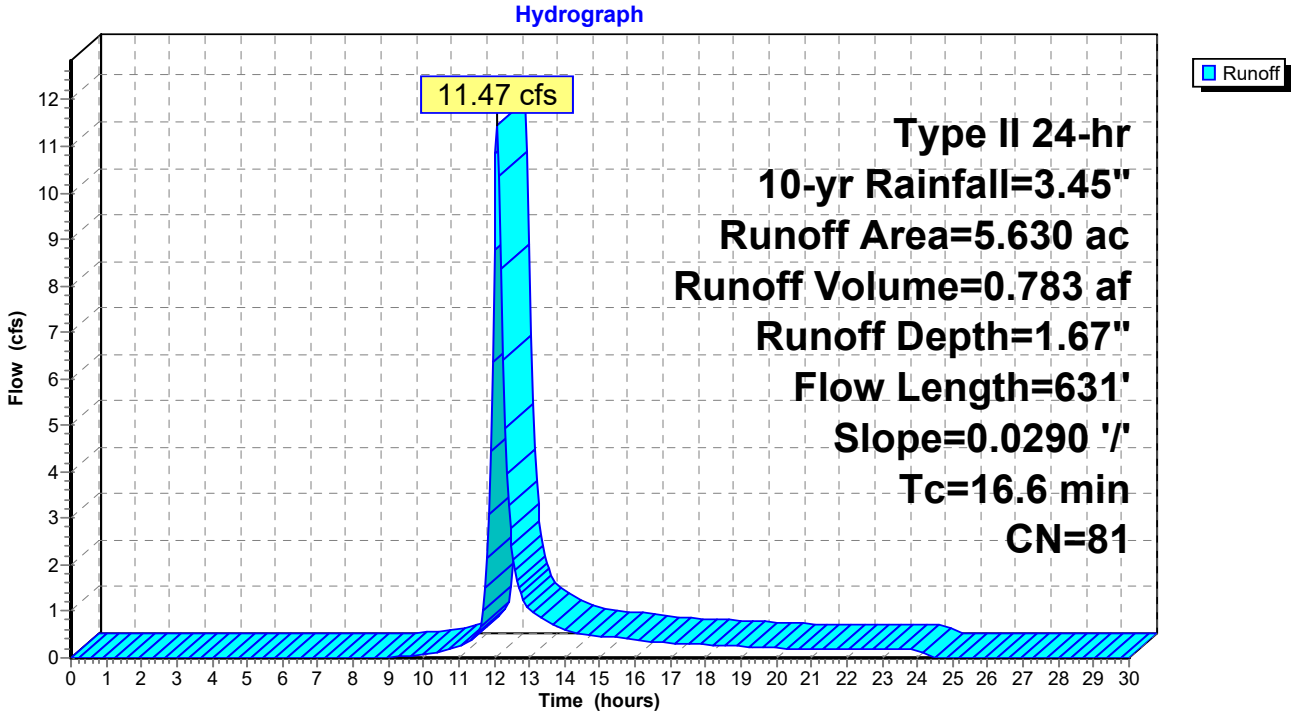
Runoff = 11.47 cfs @ 12.09 hrs, Volume= 0.783 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
3.090	85	Row crops, straight row, Good, HSG C
2.540	76	Woods/grass comb., Fair, HSG C
5.630	81	Weighted Average
5.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0290	0.15		**Sheet Flow, Sheet - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.8	531	0.0290	1.53		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
16.6	631	Total			

Subcatchment 6S: DA #6

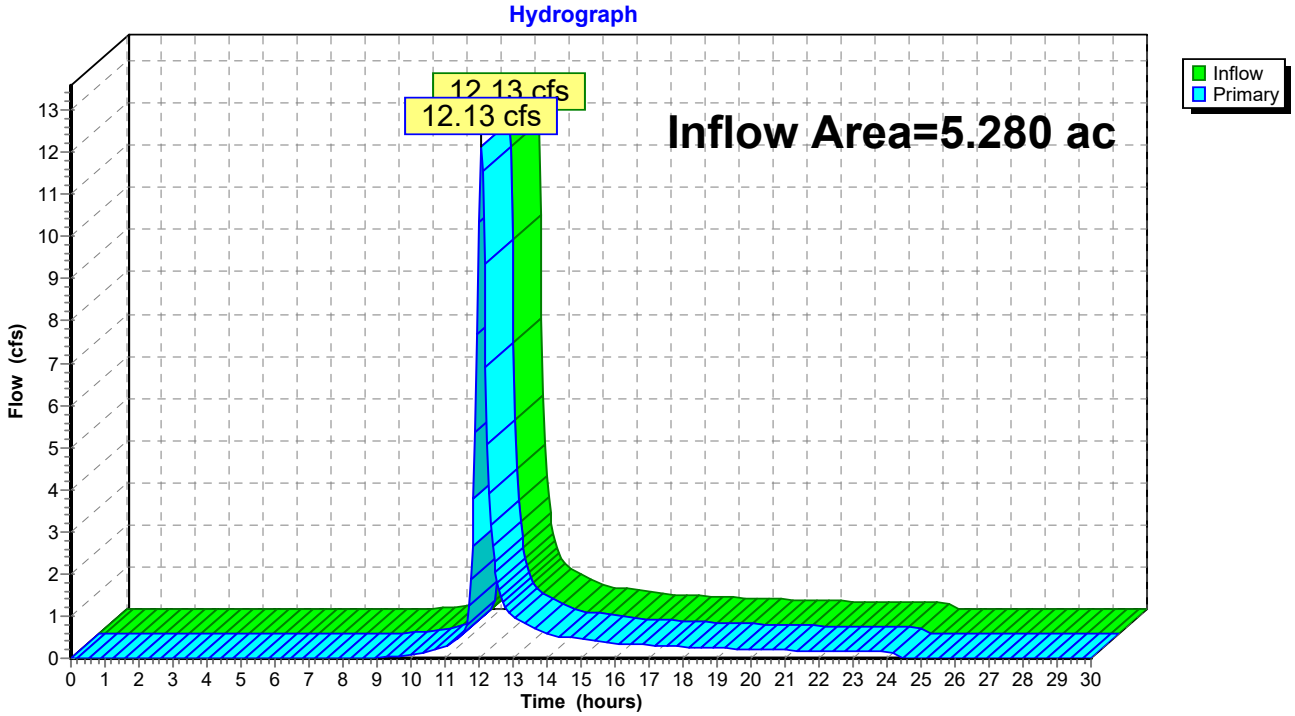


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 1.74" for 10-yr event
Inflow = 12.13 cfs @ 12.06 hrs, Volume= 0.766 af
Primary = 12.13 cfs @ 12.06 hrs, Volume= 0.766 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

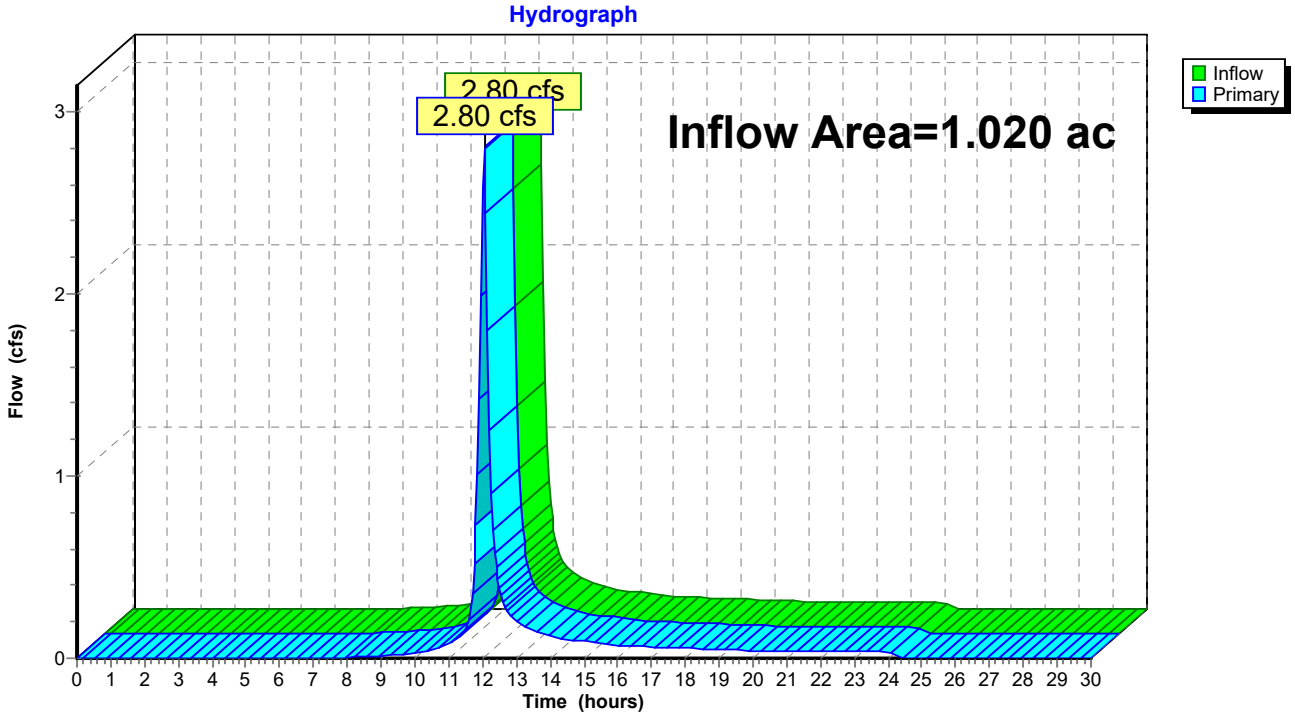


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-yr event
Inflow = 2.80 cfs @ 12.04 hrs, Volume= 0.168 af
Primary = 2.80 cfs @ 12.04 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

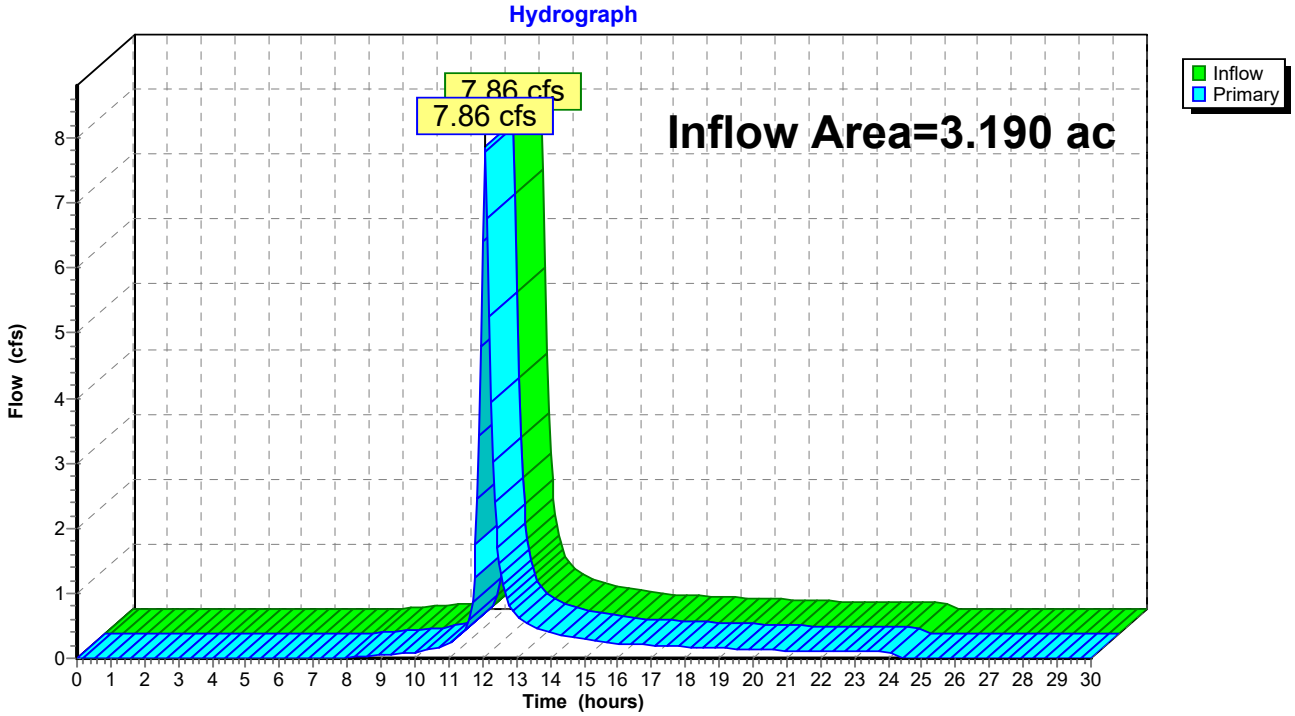


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 1.97" for 10-yr event
Inflow = 7.86 cfs @ 12.08 hrs, Volume= 0.524 af
Primary = 7.86 cfs @ 12.08 hrs, Volume= 0.524 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

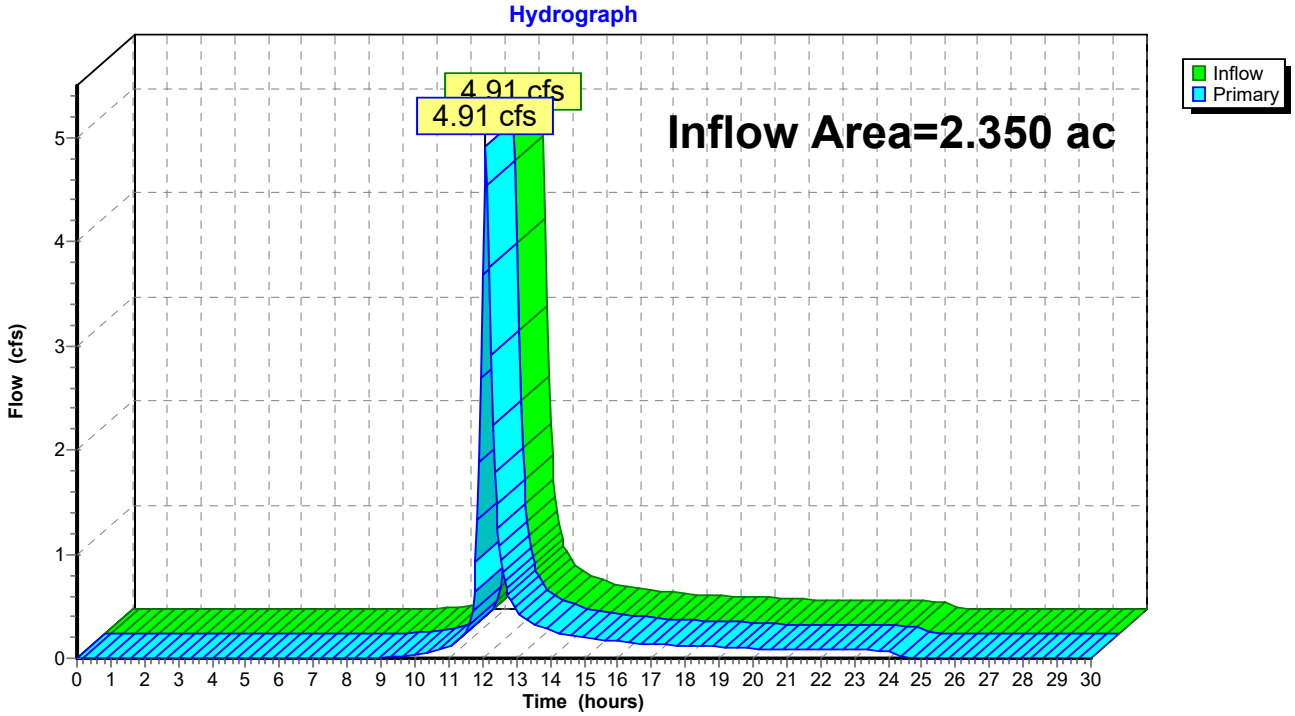


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 0.00% Impervious, Inflow Depth = 1.74" for 10-yr event
Inflow = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af
Primary = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

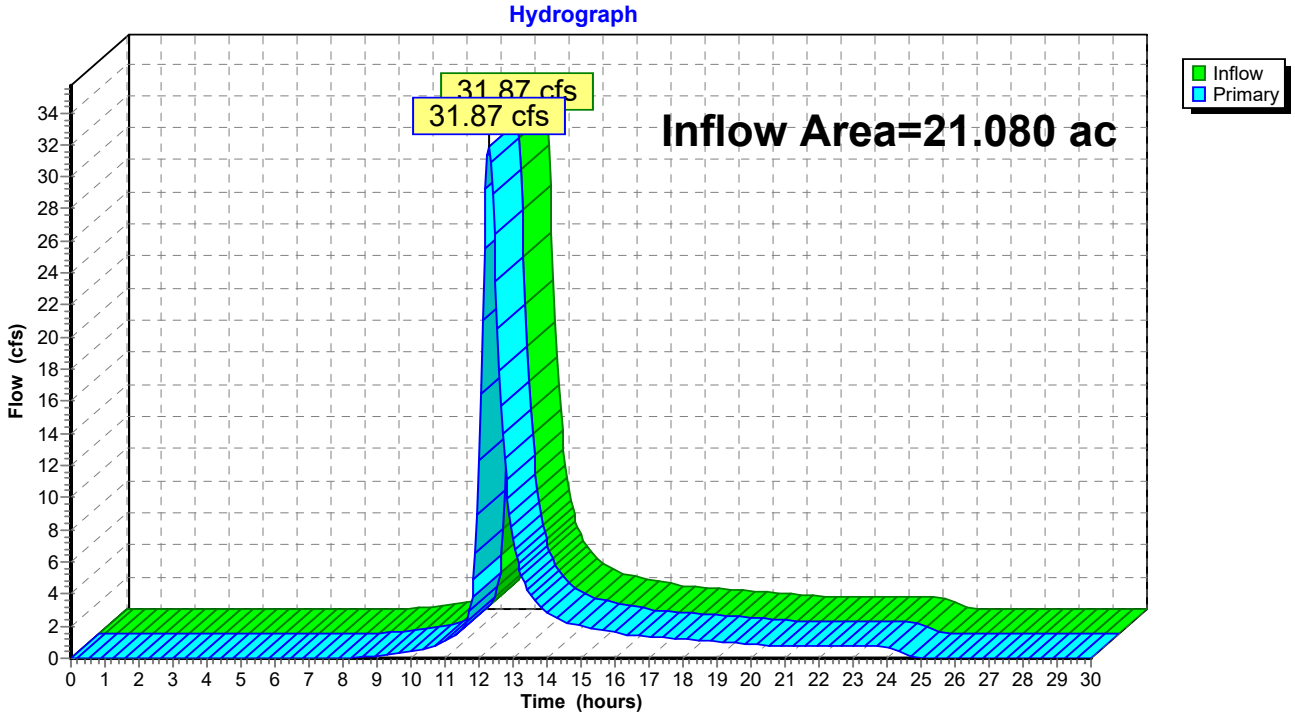


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 0.00% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 31.87 cfs @ 12.29 hrs, Volume= 3.327 af
Primary = 31.87 cfs @ 12.29 hrs, Volume= 3.327 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

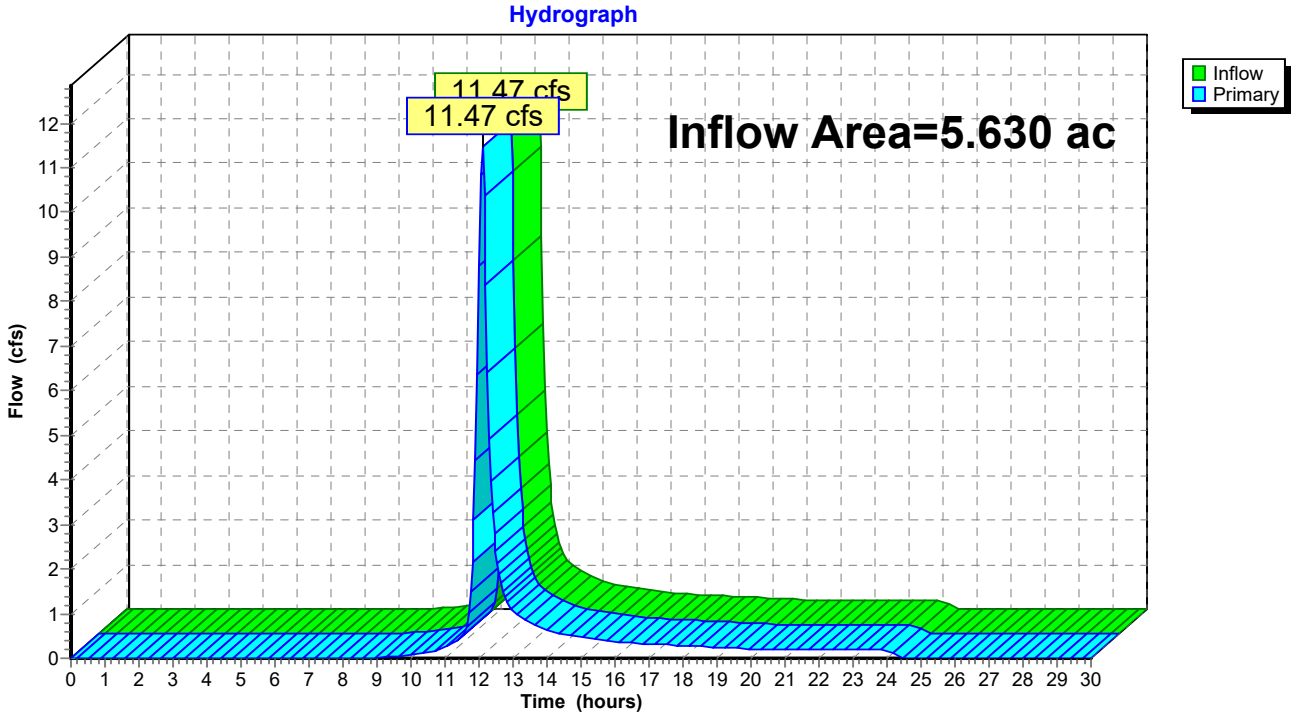


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 0.00% Impervious, Inflow Depth = 1.67" for 10-yr event
Inflow = 11.47 cfs @ 12.09 hrs, Volume= 0.783 af
Primary = 11.47 cfs @ 12.09 hrs, Volume= 0.783 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



Summary for Subcatchment 1S: DA #1

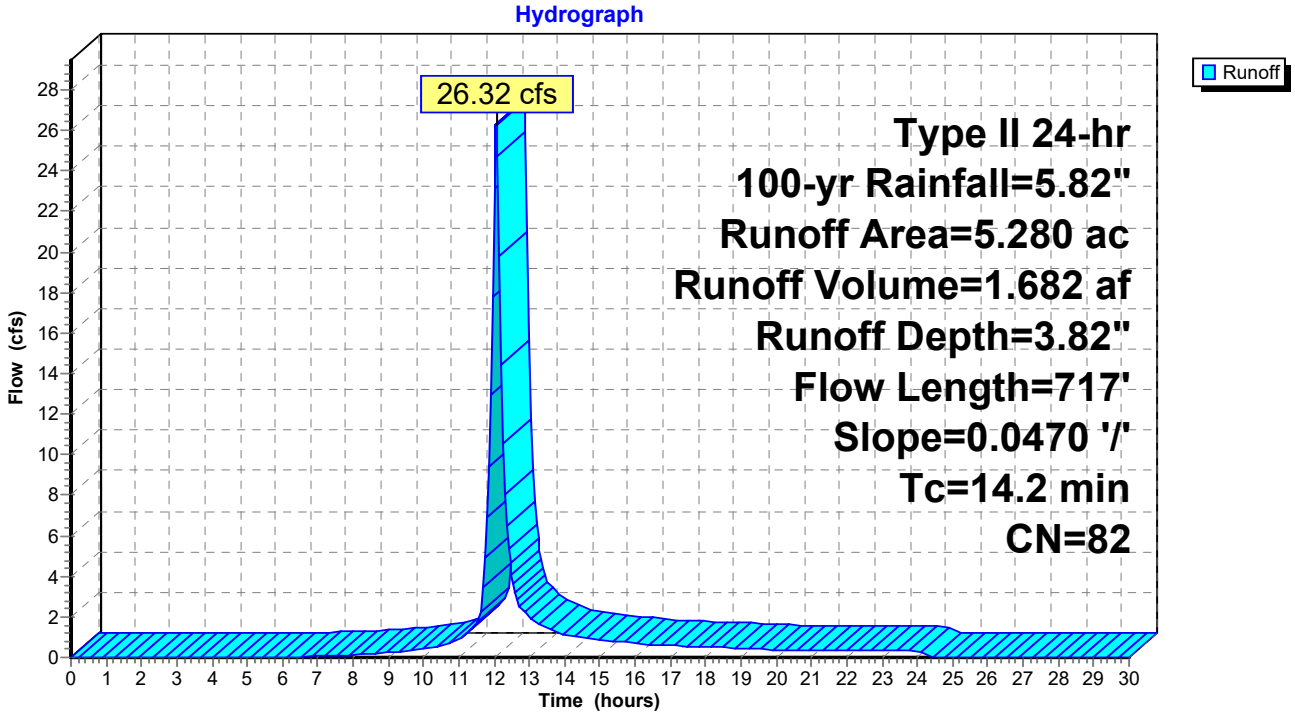
Runoff = 26.32 cfs @ 12.06 hrs, Volume= 1.682 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.780	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
5.280	82	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

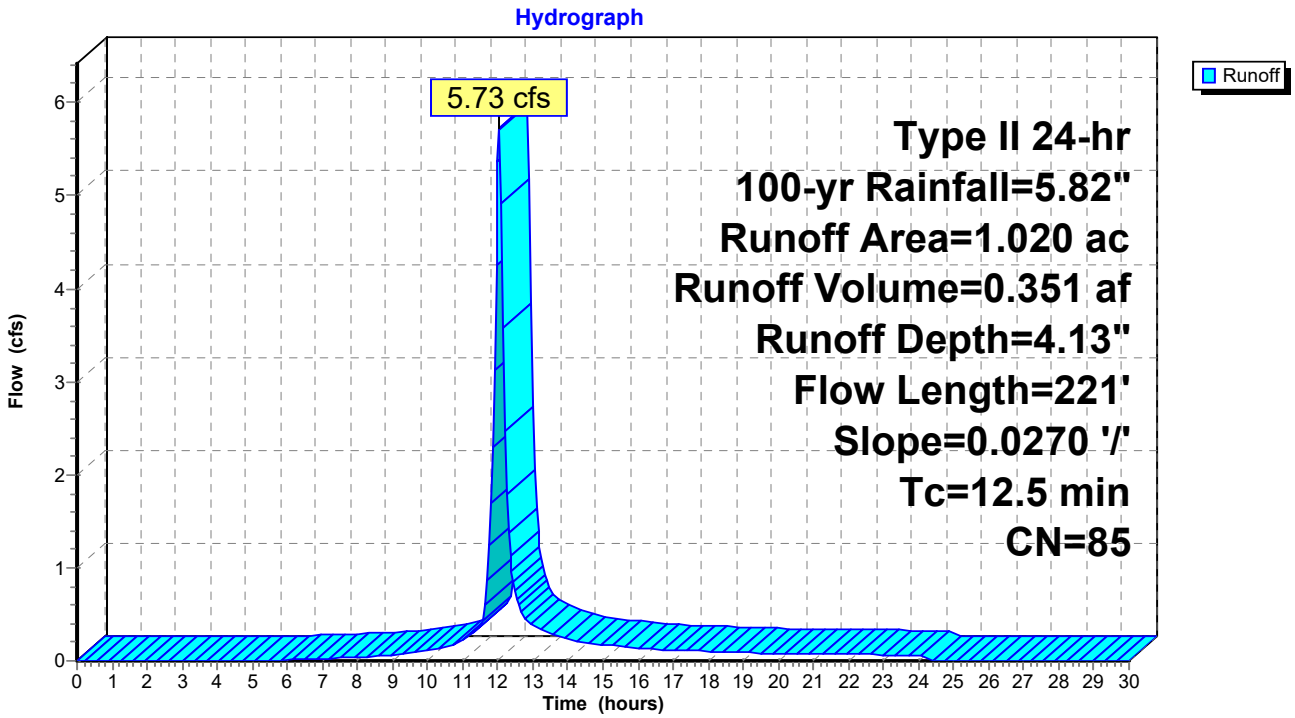
Runoff = 5.73 cfs @ 12.04 hrs, Volume= 0.351 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
1.020	85	Row crops, straight row, Good, HSG C
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
1.4	121	0.0270	1.48		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
12.5	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

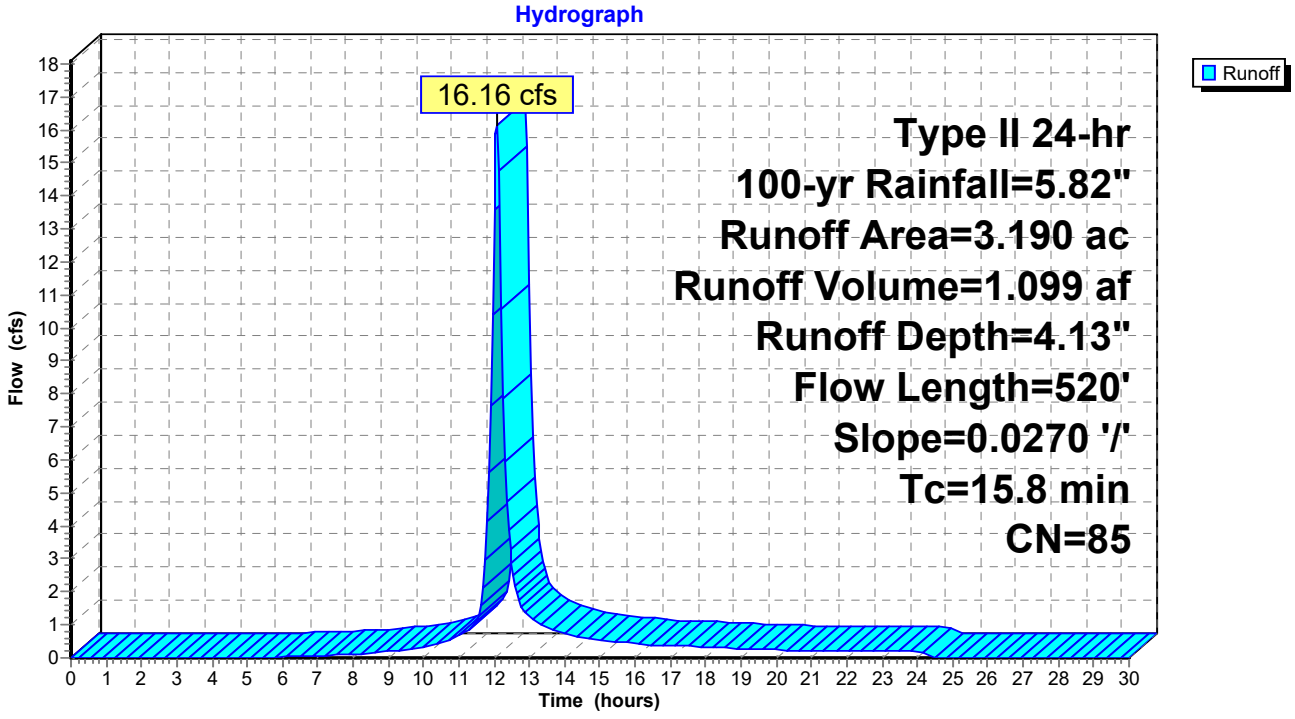
Runoff = 16.16 cfs @ 12.07 hrs, Volume= 1.099 af, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
3.130	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
3.190	85	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	100	0.0270	0.15		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
4.7	420	0.0270	1.48		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
15.8	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

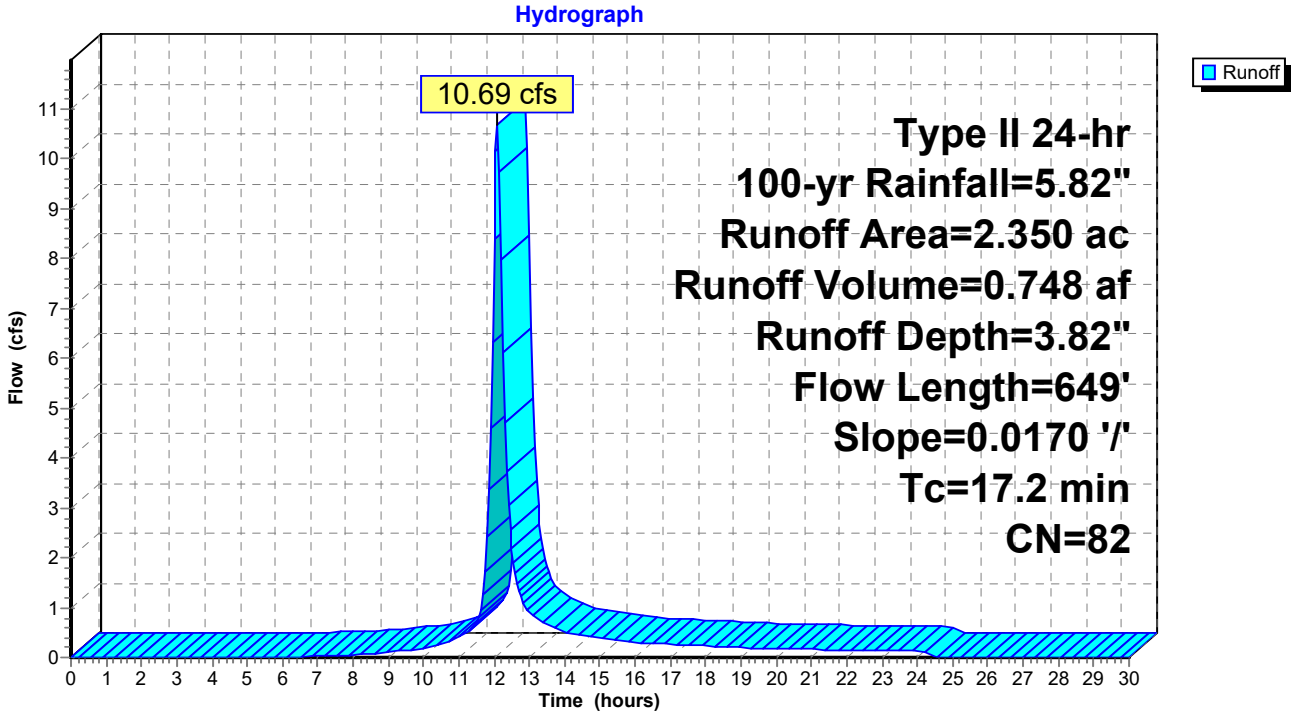
Runoff = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.550	85	Row crops, straight row, Good, HSG C
2.350	82	Weighted Average
2.350		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow - Small Tree Farm** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

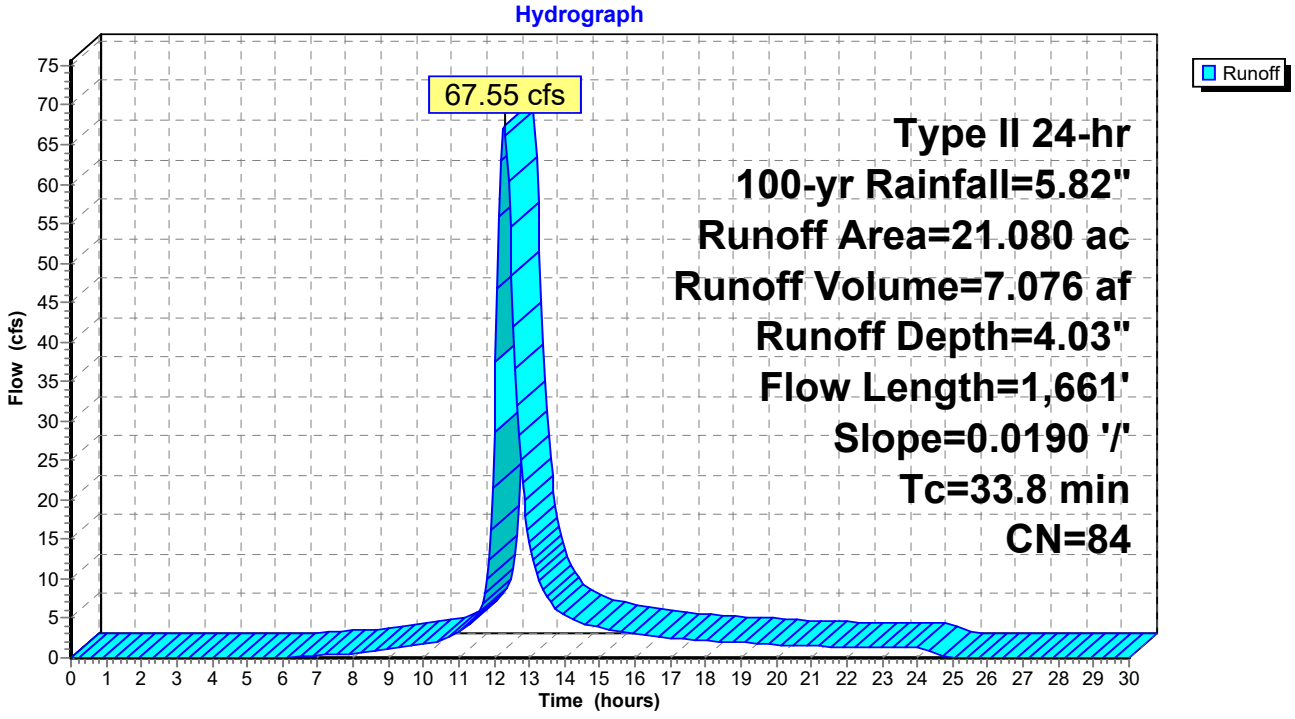
Runoff = 67.55 cfs @ 12.28 hrs, Volume= 7.076 af, Depth= 4.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
18.820	85	Row crops, straight row, Good, HSG C
21.080	84	Weighted Average
21.080		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
21.0	1,561	0.0190	1.24		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
33.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

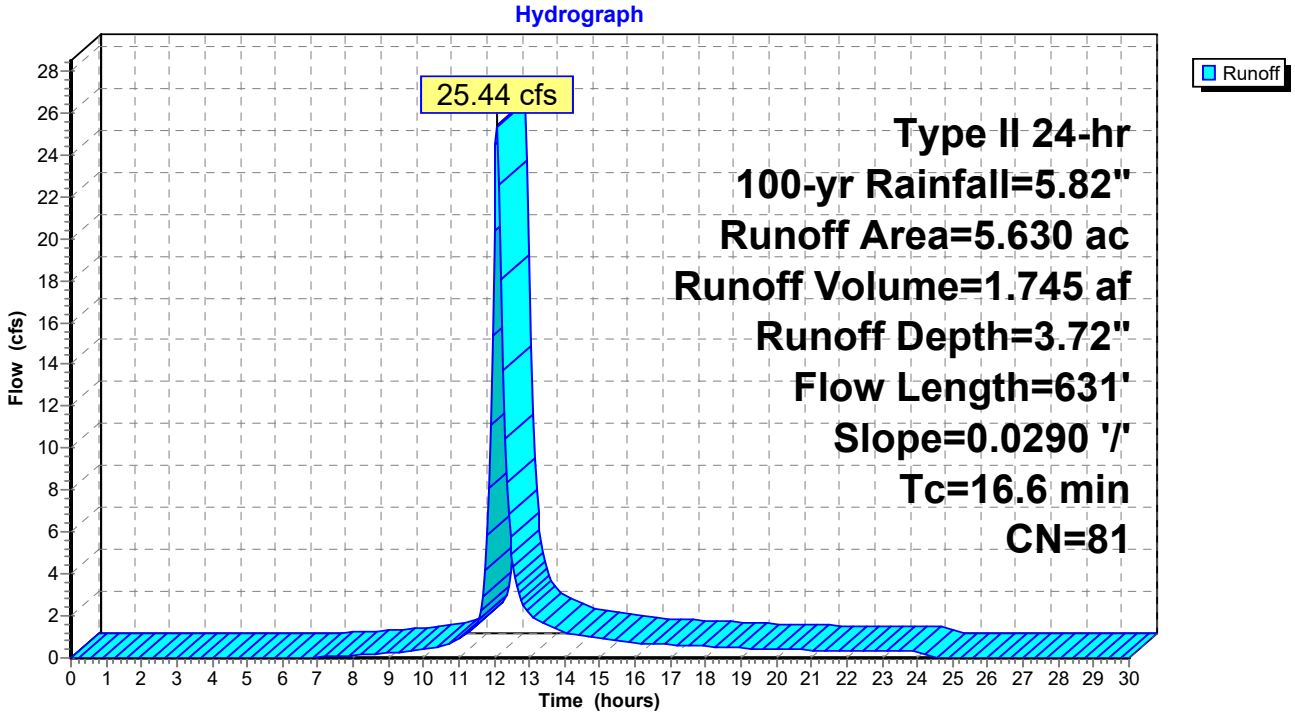
Runoff = 25.44 cfs @ 12.09 hrs, Volume= 1.745 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
3.090	85	Row crops, straight row, Good, HSG C
2.540	76	Woods/grass comb., Fair, HSG C
5.630	81	Weighted Average
5.630		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0290	0.15		**Sheet Flow, Sheet - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.8	531	0.0290	1.53		**Shallow Concentrated Flow, Shallow - Crops** Cultivated Straight Rows Kv= 9.0 fps
16.6	631	Total			

Subcatchment 6S: DA #6

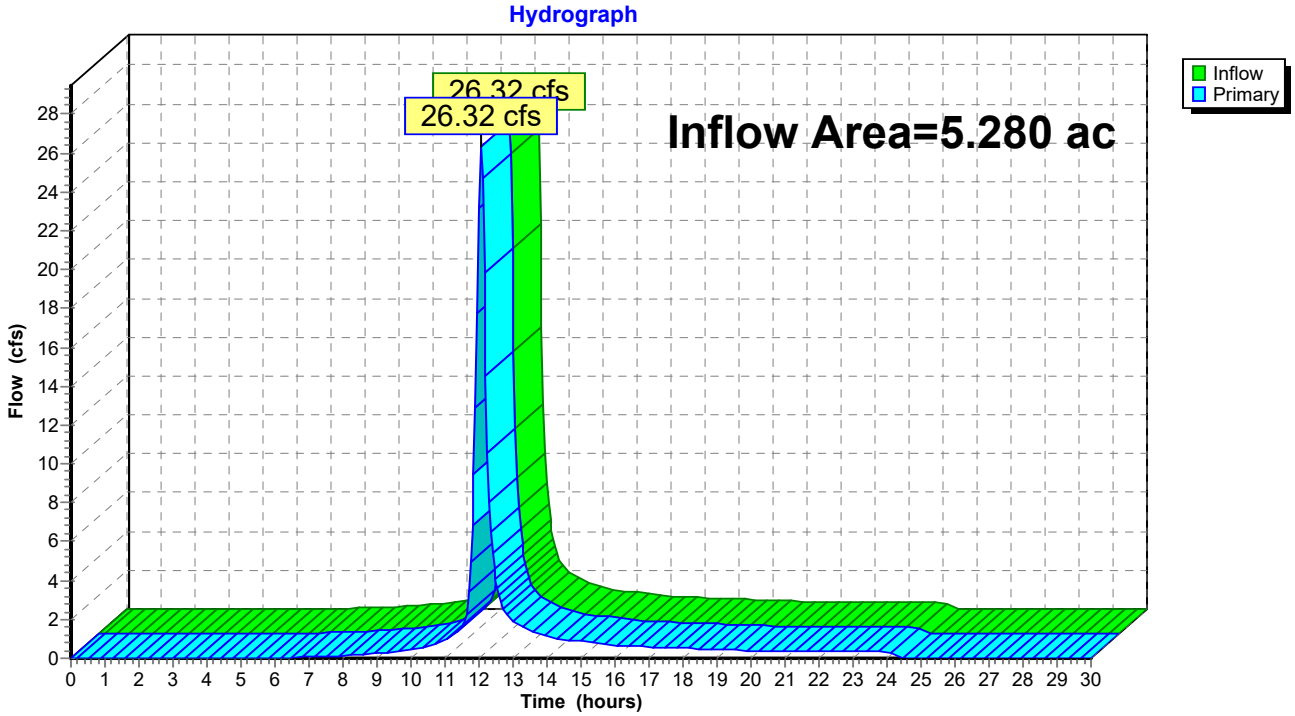


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 3.82" for 100-yr event
Inflow = 26.32 cfs @ 12.06 hrs, Volume= 1.682 af
Primary = 26.32 cfs @ 12.06 hrs, Volume= 1.682 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

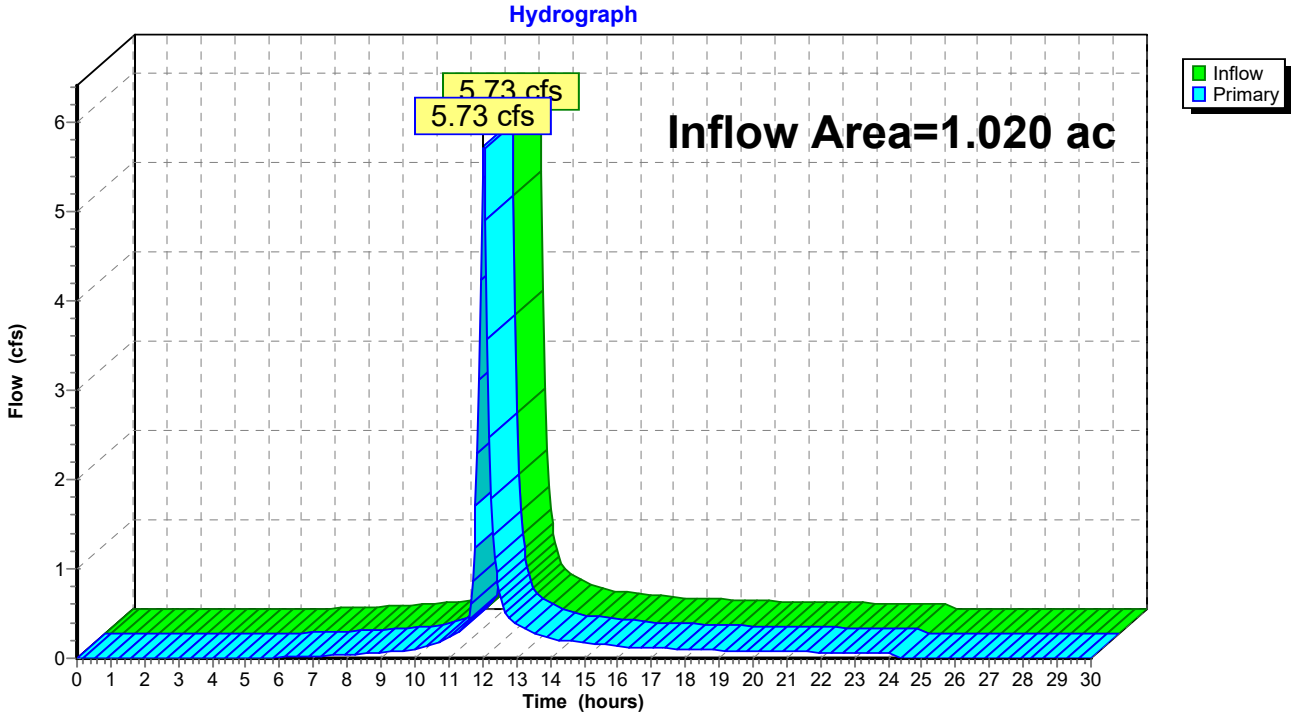


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 4.13" for 100-yr event
Inflow = 5.73 cfs @ 12.04 hrs, Volume= 0.351 af
Primary = 5.73 cfs @ 12.04 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

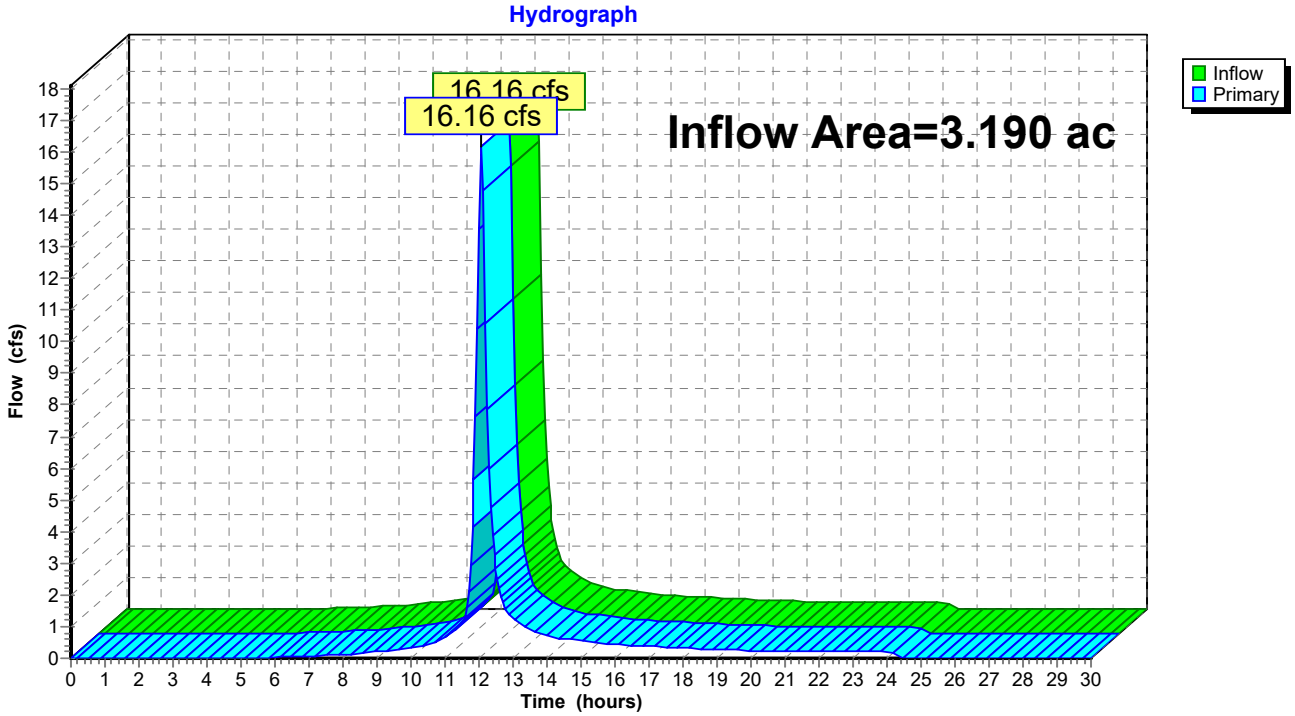


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 4.13" for 100-yr event
Inflow = 16.16 cfs @ 12.07 hrs, Volume= 1.099 af
Primary = 16.16 cfs @ 12.07 hrs, Volume= 1.099 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

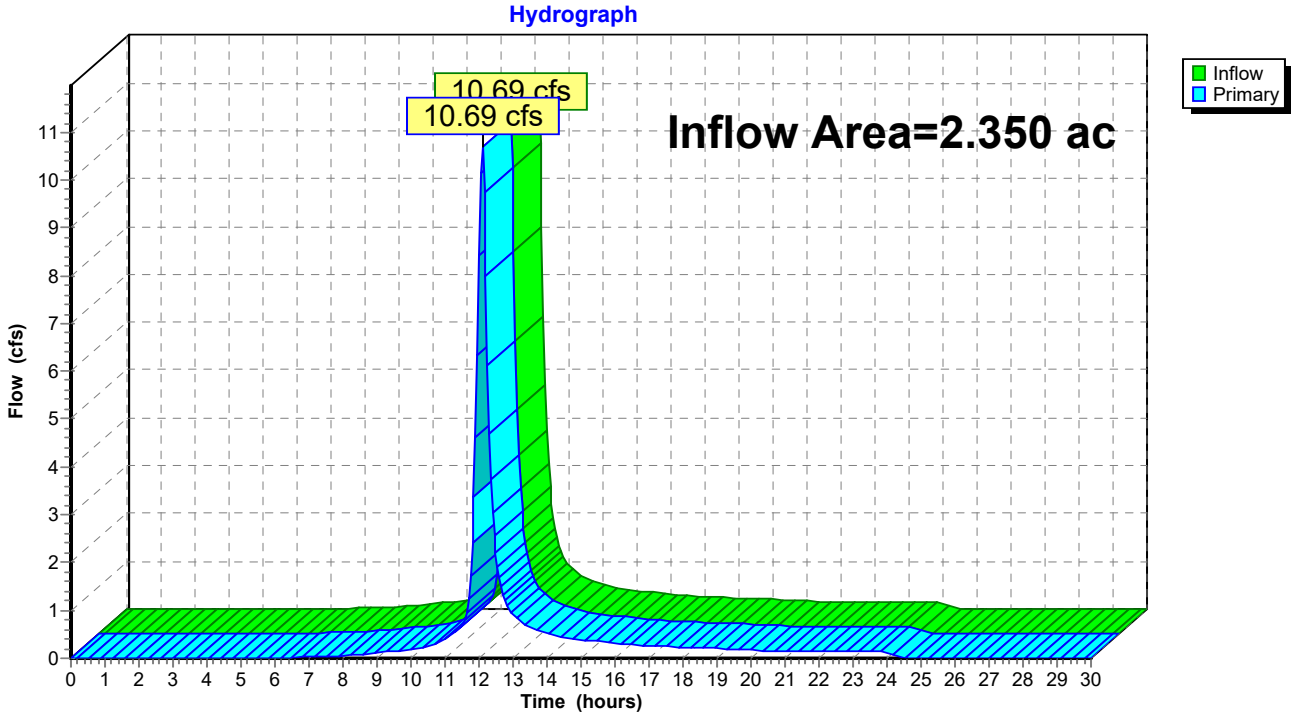


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 0.00% Impervious, Inflow Depth = 3.82" for 100-yr event
Inflow = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af
Primary = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

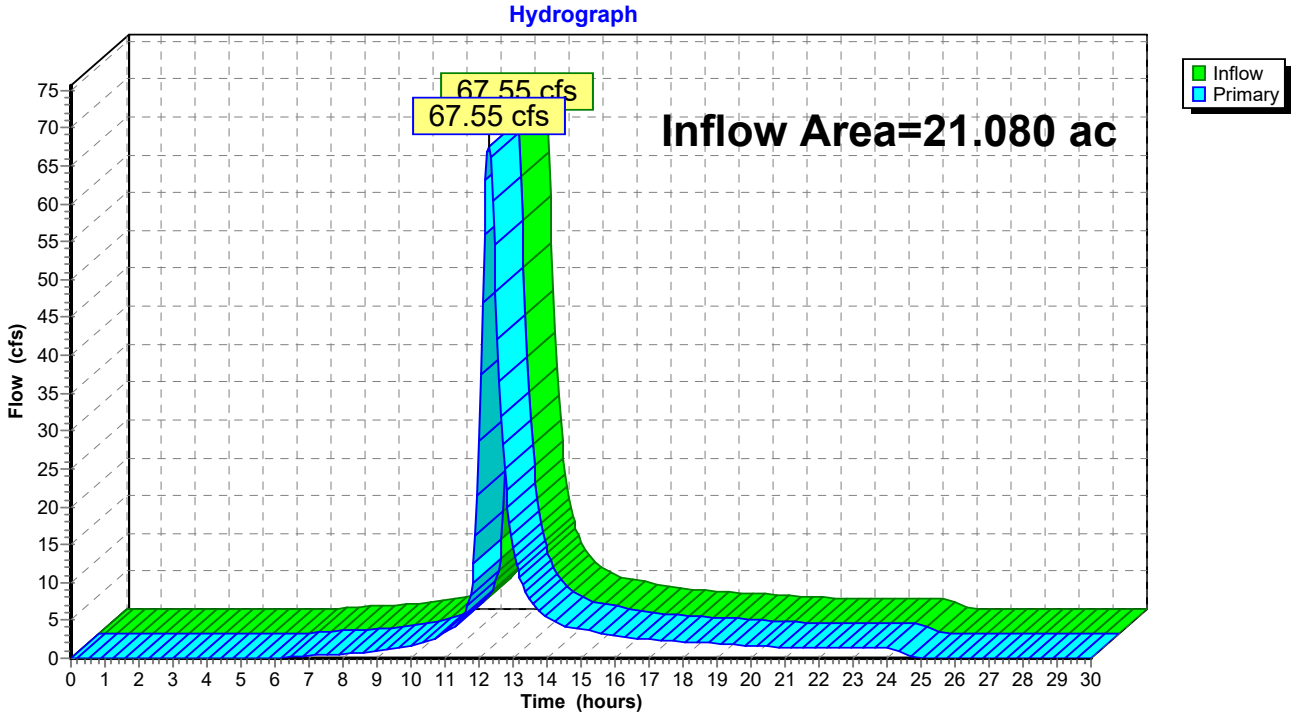


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 0.00% Impervious, Inflow Depth = 4.03" for 100-yr event
Inflow = 67.55 cfs @ 12.28 hrs, Volume= 7.076 af
Primary = 67.55 cfs @ 12.28 hrs, Volume= 7.076 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

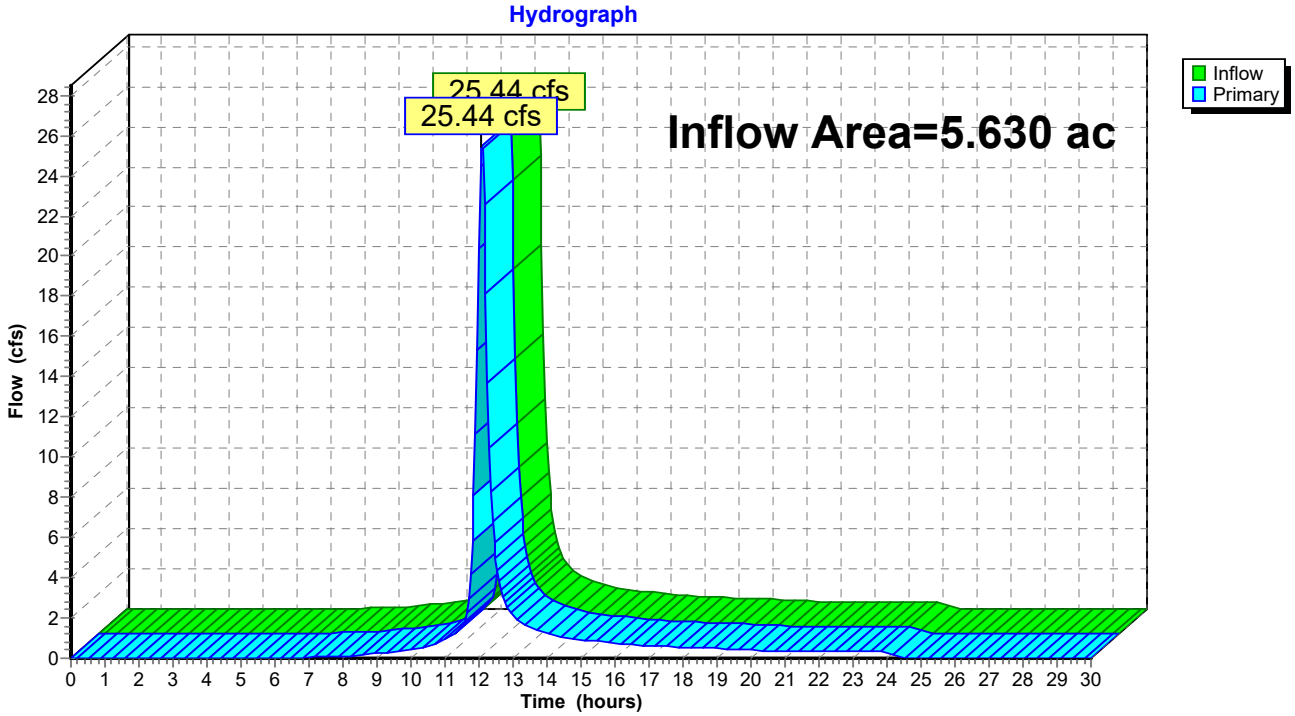


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 0.00% Impervious, Inflow Depth = 3.72" for 100-yr event
Inflow = 25.44 cfs @ 12.09 hrs, Volume= 1.745 af
Primary = 25.44 cfs @ 12.09 hrs, Volume= 1.745 af, Atten= 0%, Lag= 0.0 min

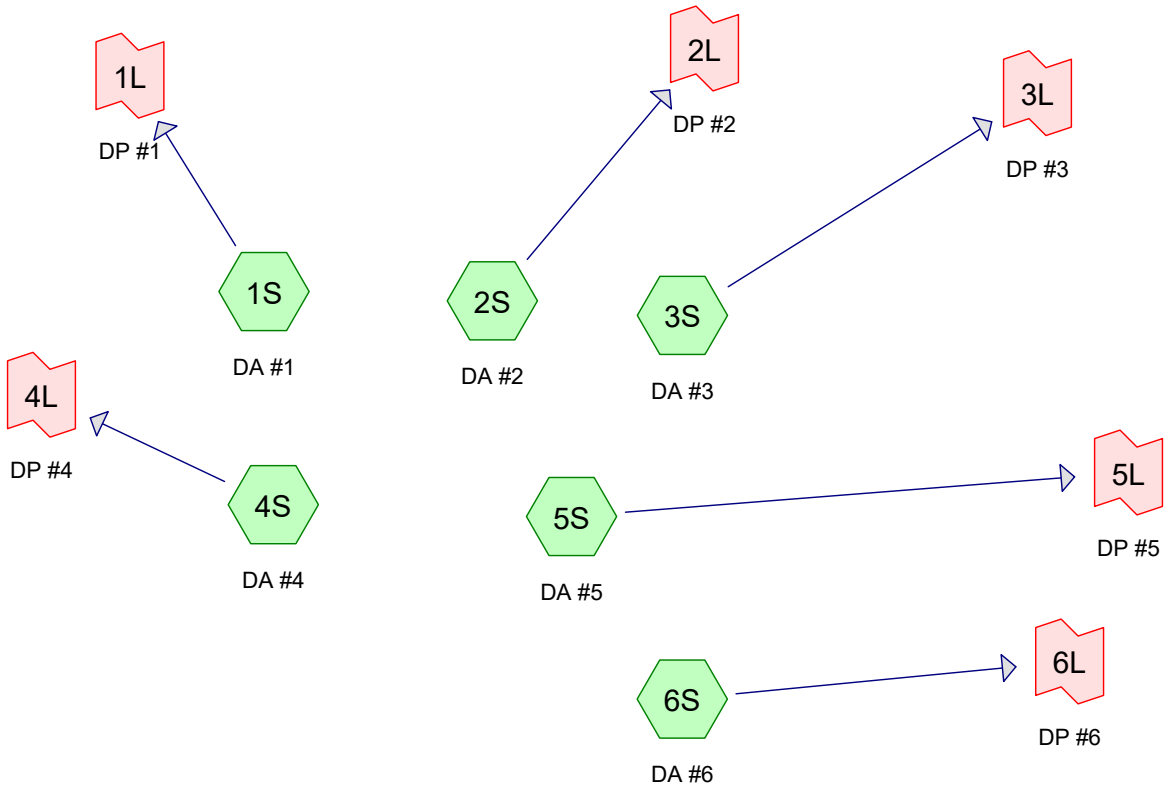
Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



APPENDIX I – POST-DEVELOPMENT ANALYSIS

Green Lakes
Post-Development



Subcat Reach Pond Link

Routing Diagram for GREEN LAKES POST DEV HYDROCAD Rev 1
Prepared by Tetra Tech Inc, Printed 4/7/2020
HydroCAD® 10.00-24 s/n 04052 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
23.400	74	Pasture/grassland/range, Good, HSG C (1S, 2S, 3S, 5S, 6S)
1.070	98	Paved parking, HSG C (4S, 5S, 6S)
9.460	85	Row crops, straight row, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S)
1.120	73	Woods, Fair, HSG C (1S, 3S)
3.500	76	Woods/grass comb., Fair, HSG C (1S, 4S, 5S)
38.550	**78**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
38.550	HSG C	1S, 2S, 3S, 4S, 5S, 6S
0.000	HSG D	
0.000	Other	
38.550		**TOTAL AREA**

GREEN LAKES POST DEV HYDROCAD Rev 1

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	23.400	0.000	0.000	23.400	Pasture/grassland/range, Good	1S, 2S, 3S, 5S, 6S
0.000	0.000	1.070	0.000	0.000	1.070	Paved parking	4S, 5S, 6S
0.000	0.000	9.460	0.000	0.000	9.460	Row crops, straight row, Good	1S, 2S, 3S, 4S, 5S, 6S
0.000	0.000	1.120	0.000	0.000	1.120	Woods, Fair	1S, 3S
0.000	0.000	3.500	0.000	0.000	3.500	Woods/grass comb., Fair	1S, 4S, 5S
0.000	**0.000**	**38.550**	**0.000**	**0.000**	**38.550**	**TOTAL AREA**	

Summary for Subcatchment 1S: DA #1

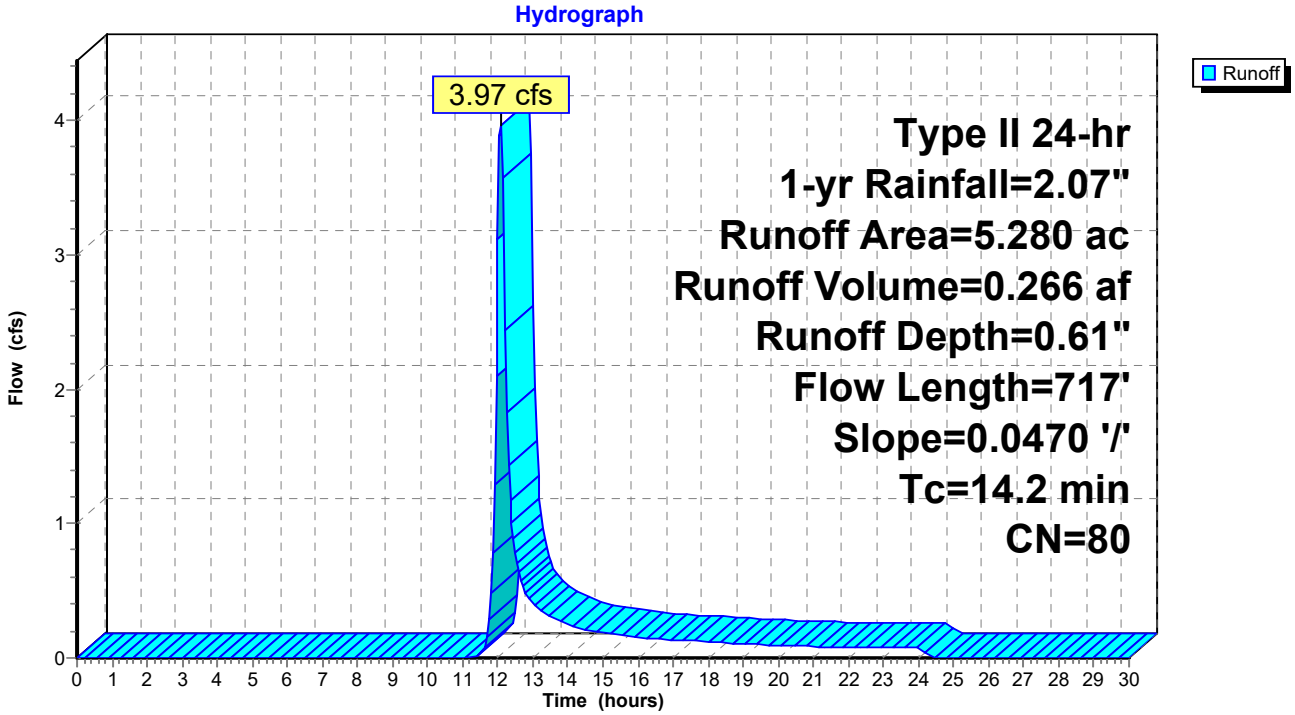
Runoff = 3.97 cfs @ 12.08 hrs, Volume= 0.266 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.130	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
0.650	74	Pasture/grassland/range, Good, HSG C
5.280	80	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

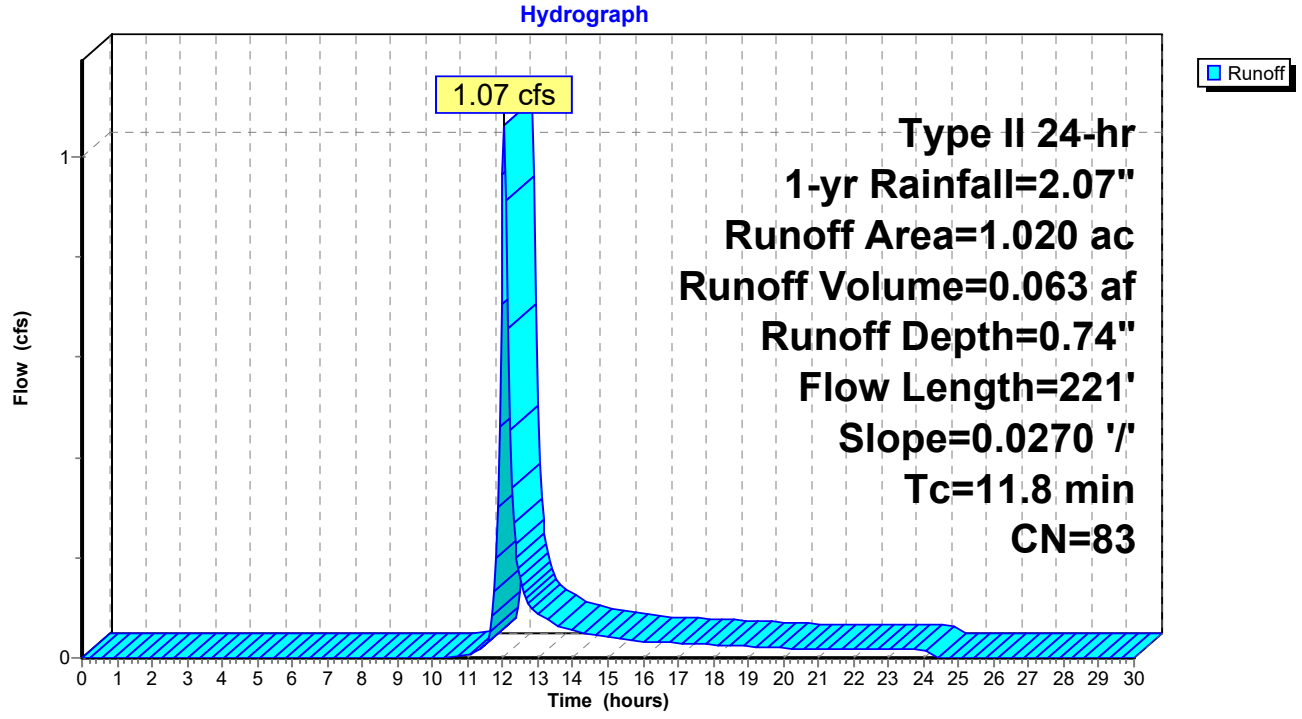
Runoff = 1.07 cfs @ 12.04 hrs, Volume= 0.063 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.840	85	Row crops, straight row, Good, HSG C
0.180	74	Pasture/grassland/range, Good, HSG C
1.020	83	Weighted Average
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
1.8	121	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

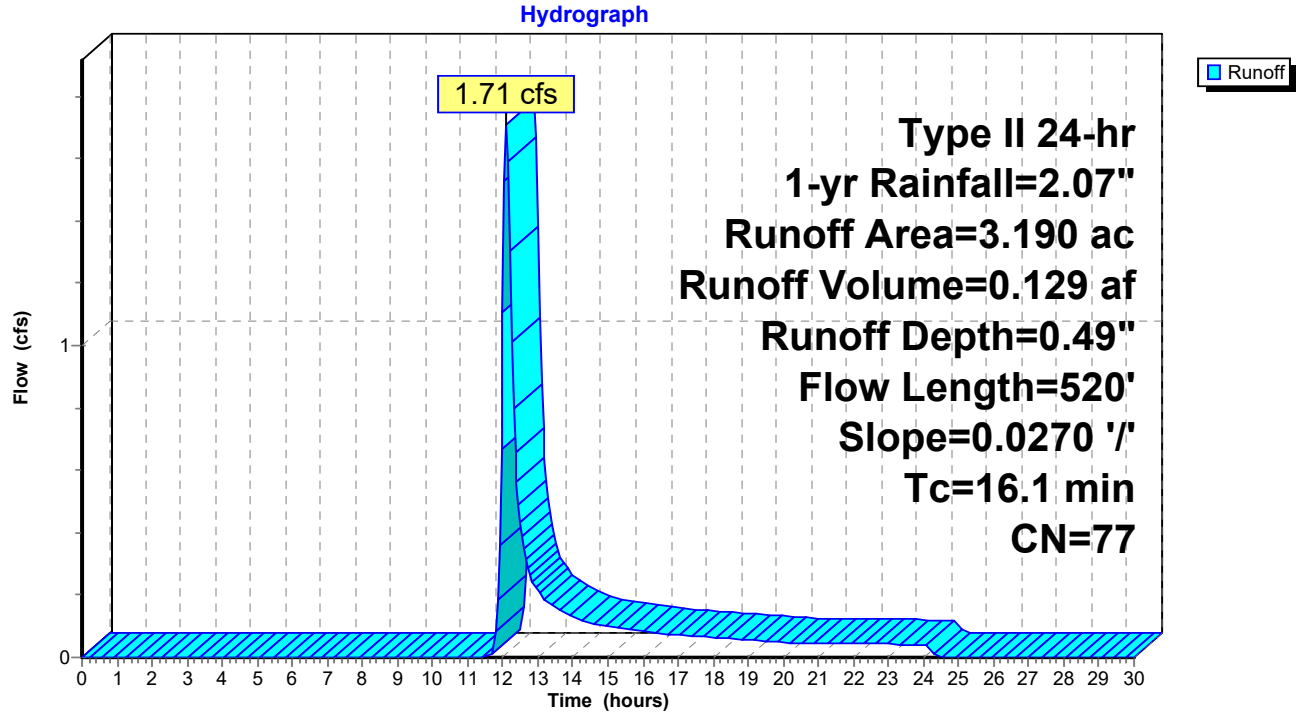
Runoff = 1.71 cfs @ 12.11 hrs, Volume= 0.129 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.760	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
2.370	74	Pasture/grassland/range, Good, HSG C
3.190	77	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
6.1	420	0.0270	1.15		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
16.1	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

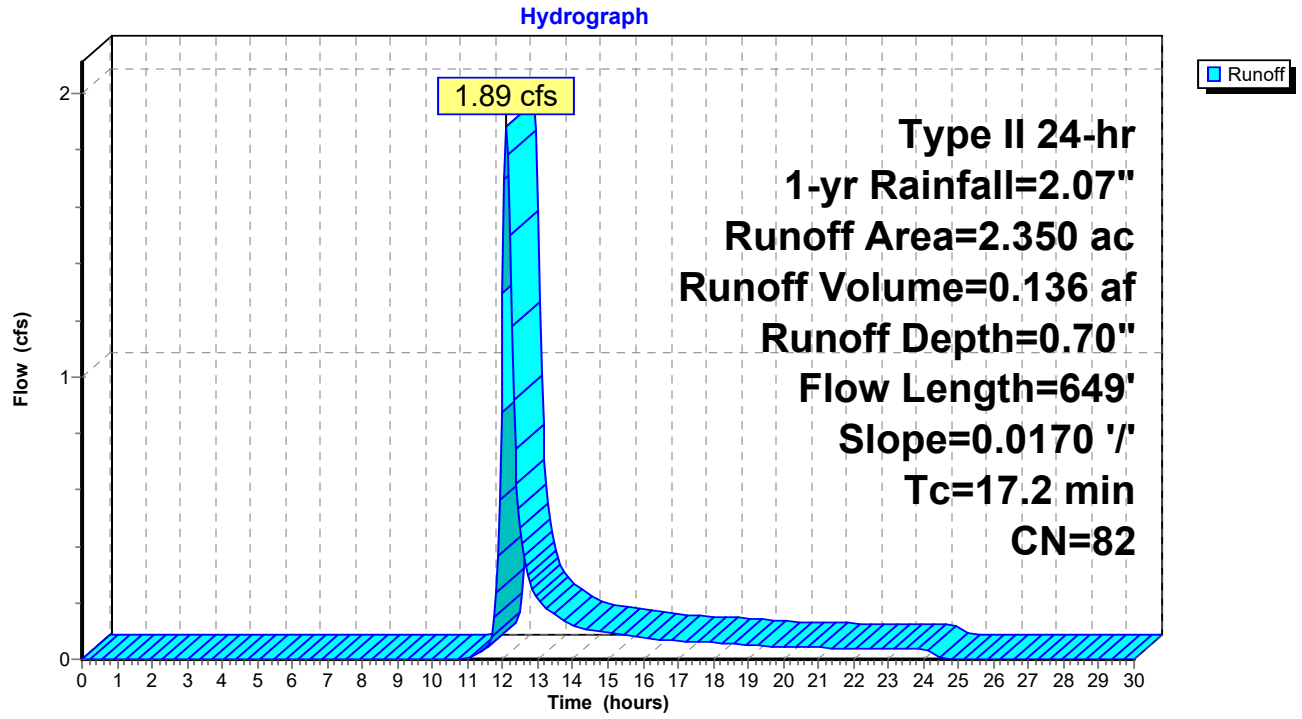
Runoff = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 0.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.450	85	Row crops, straight row, Good, HSG C
0.100	98	Paved parking, HSG C
2.350	82	Weighted Average
2.250		95.74% Pervious Area
0.100		4.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

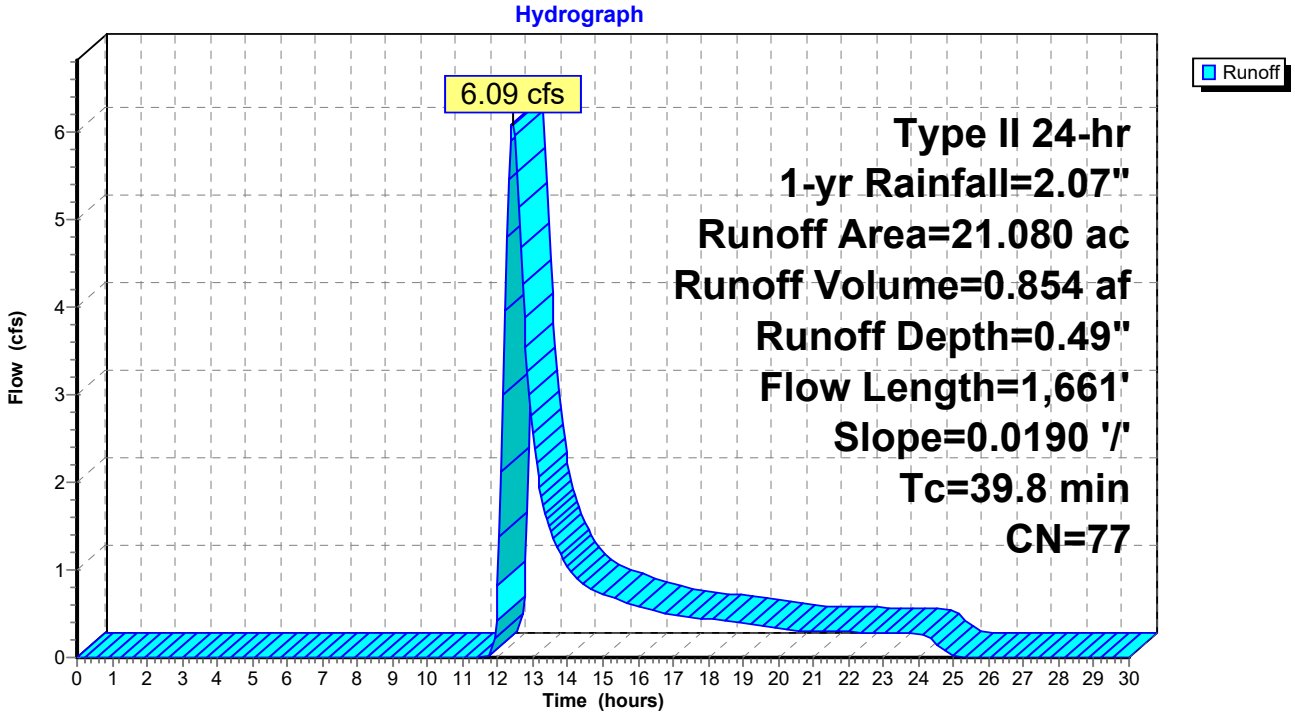
Runoff = 6.09 cfs @ 12.42 hrs, Volume= 0.854 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
2.960	85	Row crops, straight row, Good, HSG C
15.020	74	Pasture/grassland/range, Good, HSG C
0.840	98	Paved parking, HSG C
21.080	77	Weighted Average
20.240		96.02% Pervious Area
0.840		3.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
27.0	1,561	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
39.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

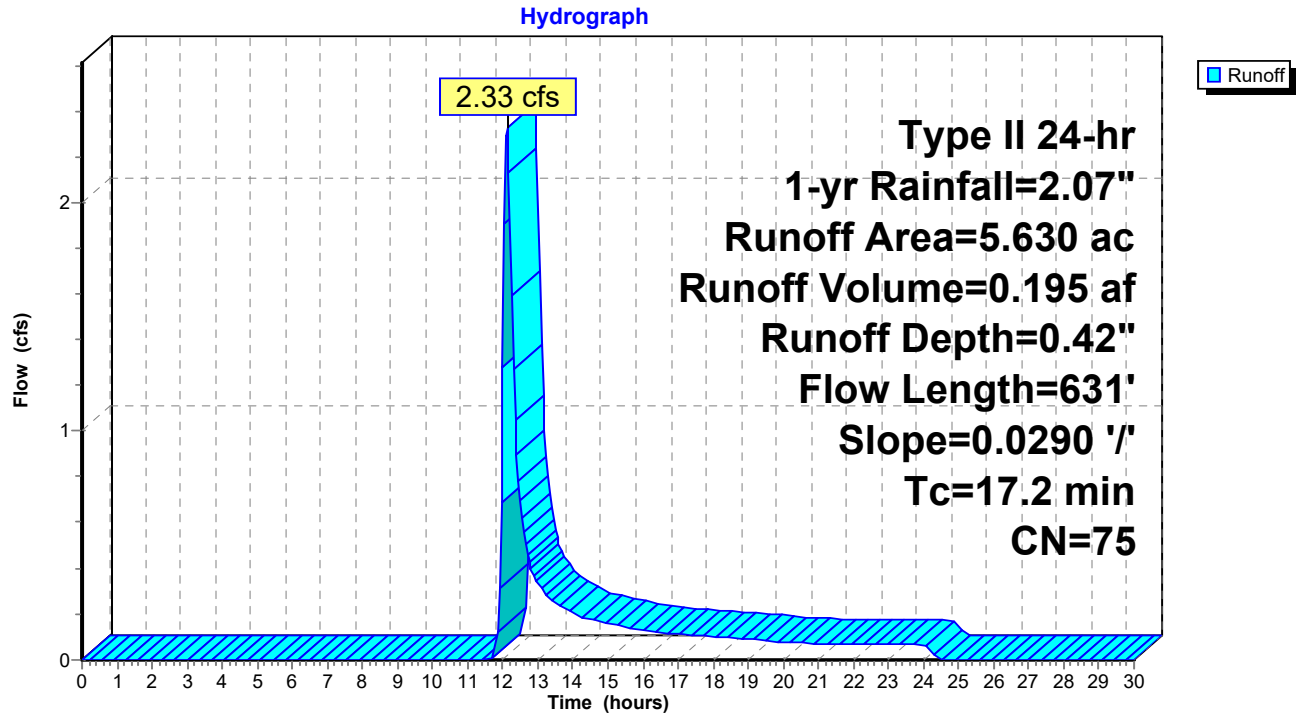
Runoff = 2.33 cfs @ 12.12 hrs, Volume= 0.195 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=2.07"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
5.180	74	Pasture/grassland/range, Good, HSG C
0.130	98	Paved parking, HSG C
5.630	75	Weighted Average
5.500		97.69% Pervious Area
0.130		2.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0290	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.40"
7.4	531	0.0290	1.19		**Shallow Concentrated Flow, Shallow - Crops** Short Grass Pasture Kv= 7.0 fps
17.2	631	Total			

Subcatchment 6S: DA #6

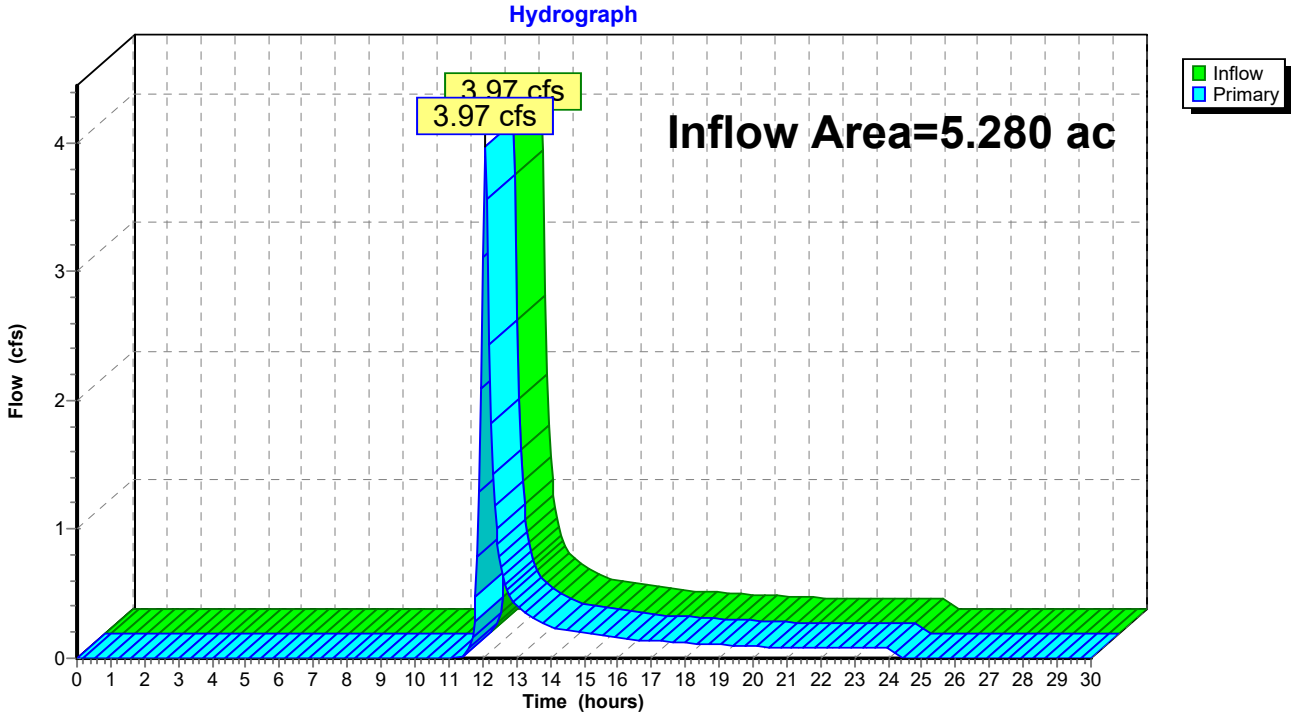


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 0.61" for 1-yr event
Inflow = 3.97 cfs @ 12.08 hrs, Volume= 0.266 af
Primary = 3.97 cfs @ 12.08 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

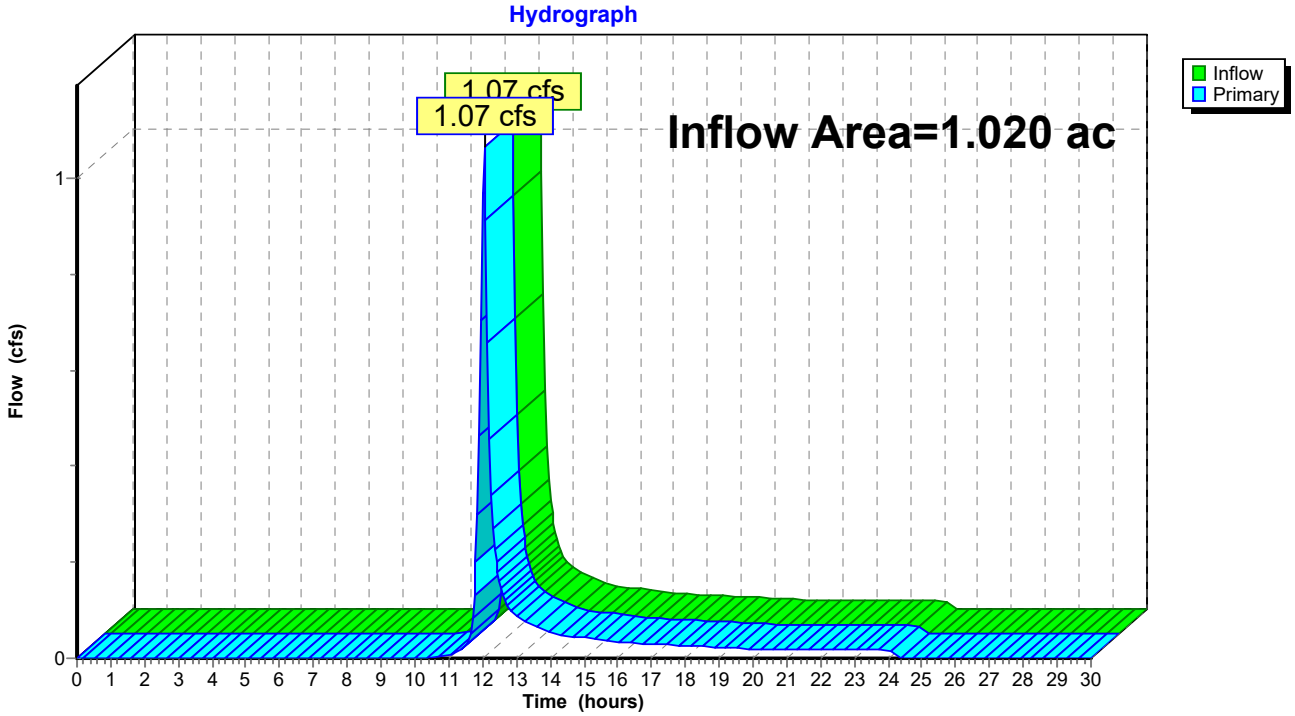


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1-yr event
Inflow = 1.07 cfs @ 12.04 hrs, Volume= 0.063 af
Primary = 1.07 cfs @ 12.04 hrs, Volume= 0.063 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

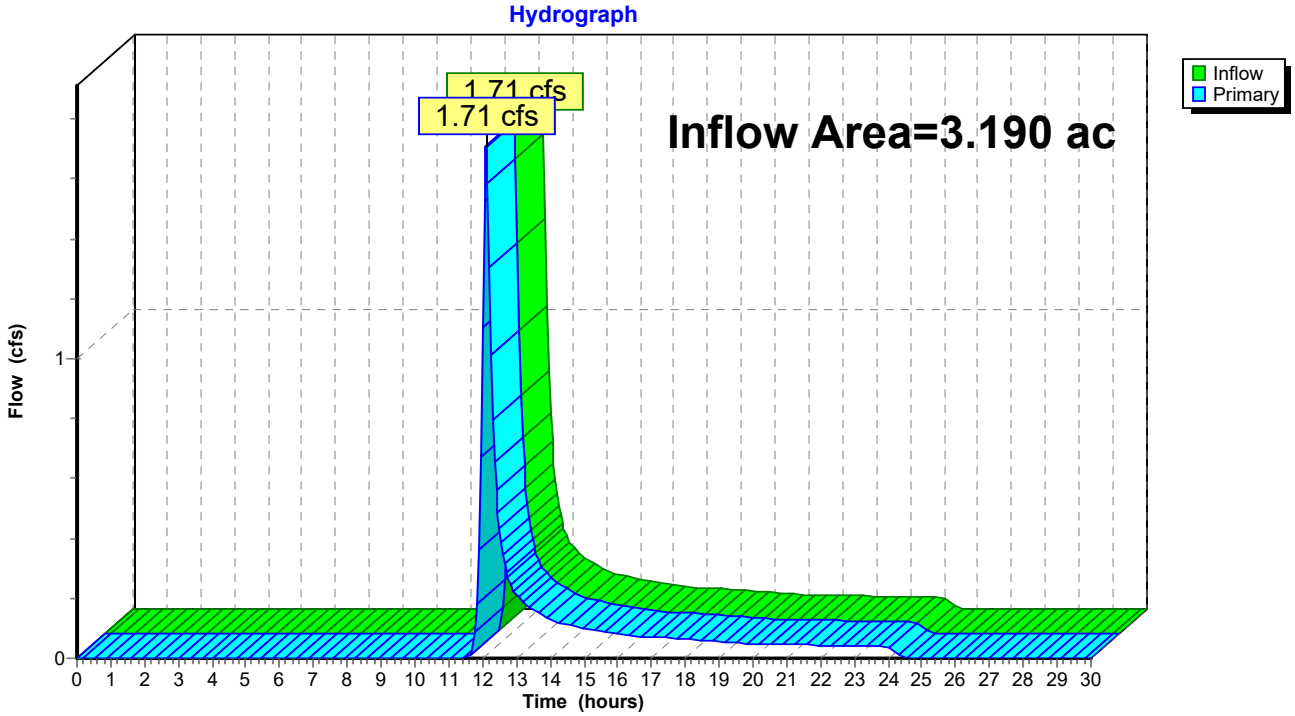


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 0.49" for 1-yr event
Inflow = 1.71 cfs @ 12.11 hrs, Volume= 0.129 af
Primary = 1.71 cfs @ 12.11 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

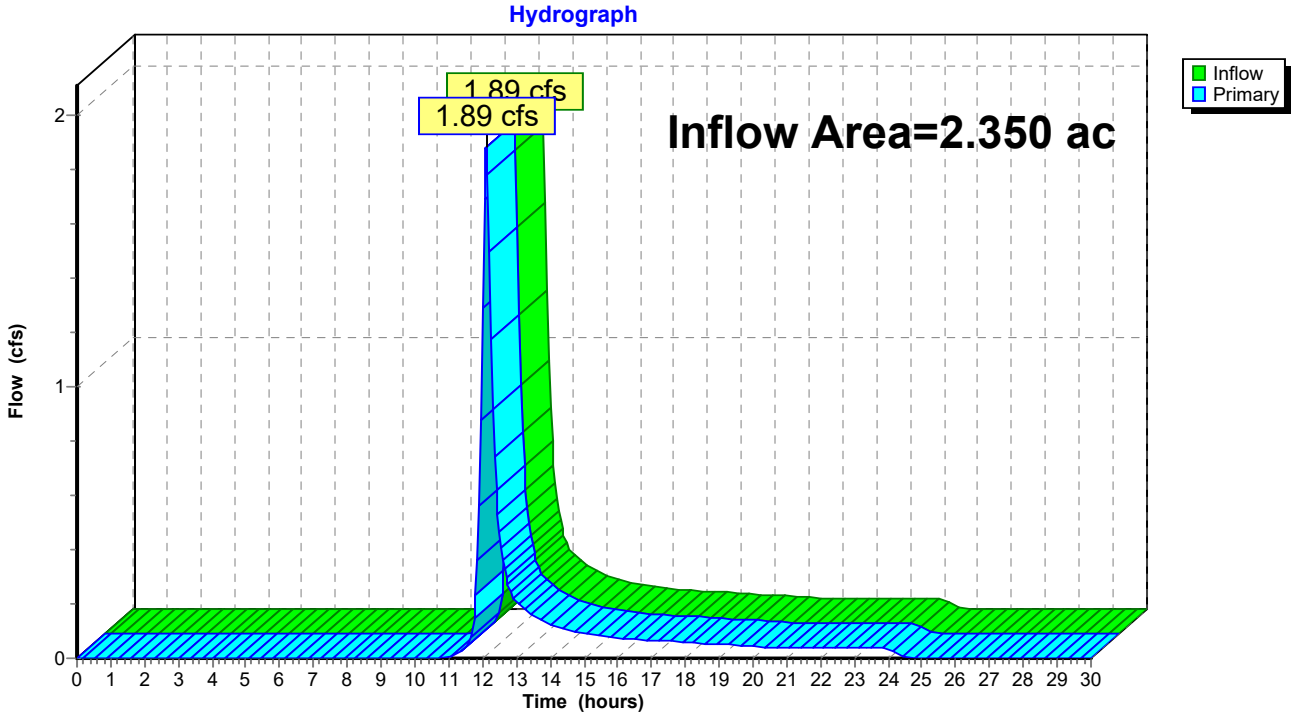


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 4.26% Impervious, Inflow Depth = 0.70" for 1-yr event
Inflow = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af
Primary = 1.89 cfs @ 12.11 hrs, Volume= 0.136 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

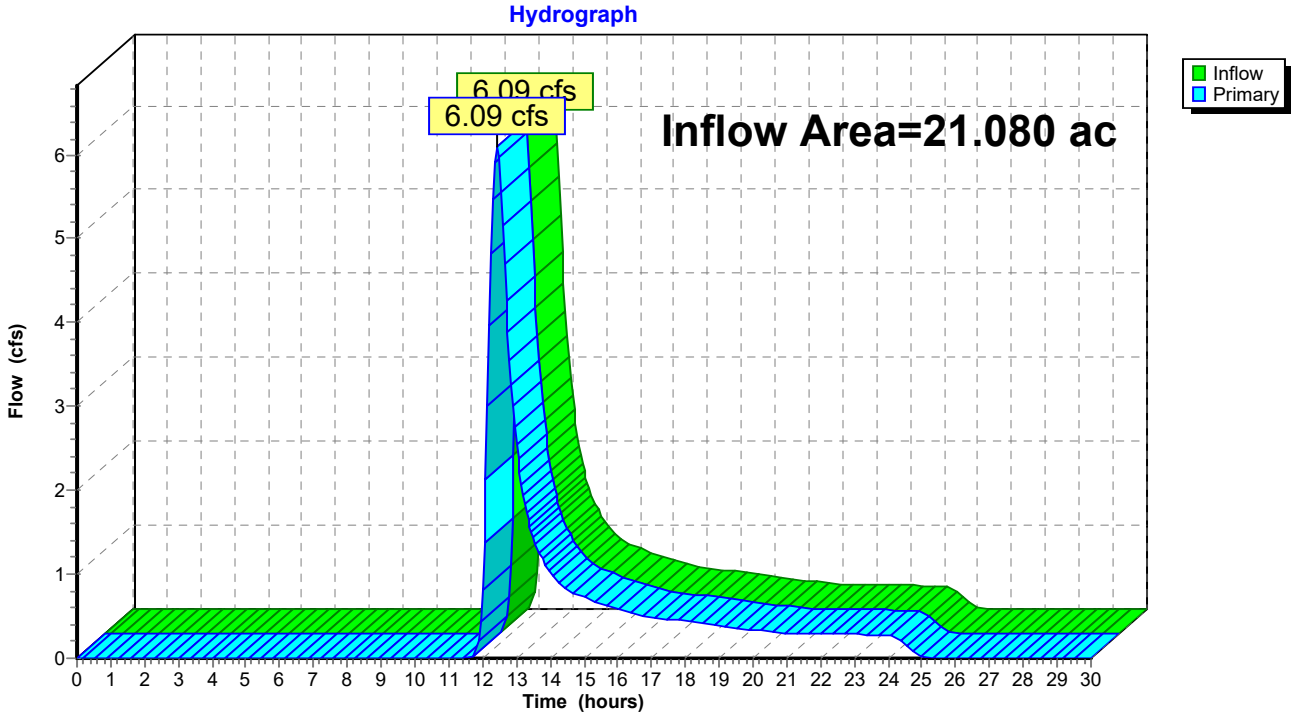


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 3.98% Impervious, Inflow Depth = 0.49" for 1-yr event
Inflow = 6.09 cfs @ 12.42 hrs, Volume= 0.854 af
Primary = 6.09 cfs @ 12.42 hrs, Volume= 0.854 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

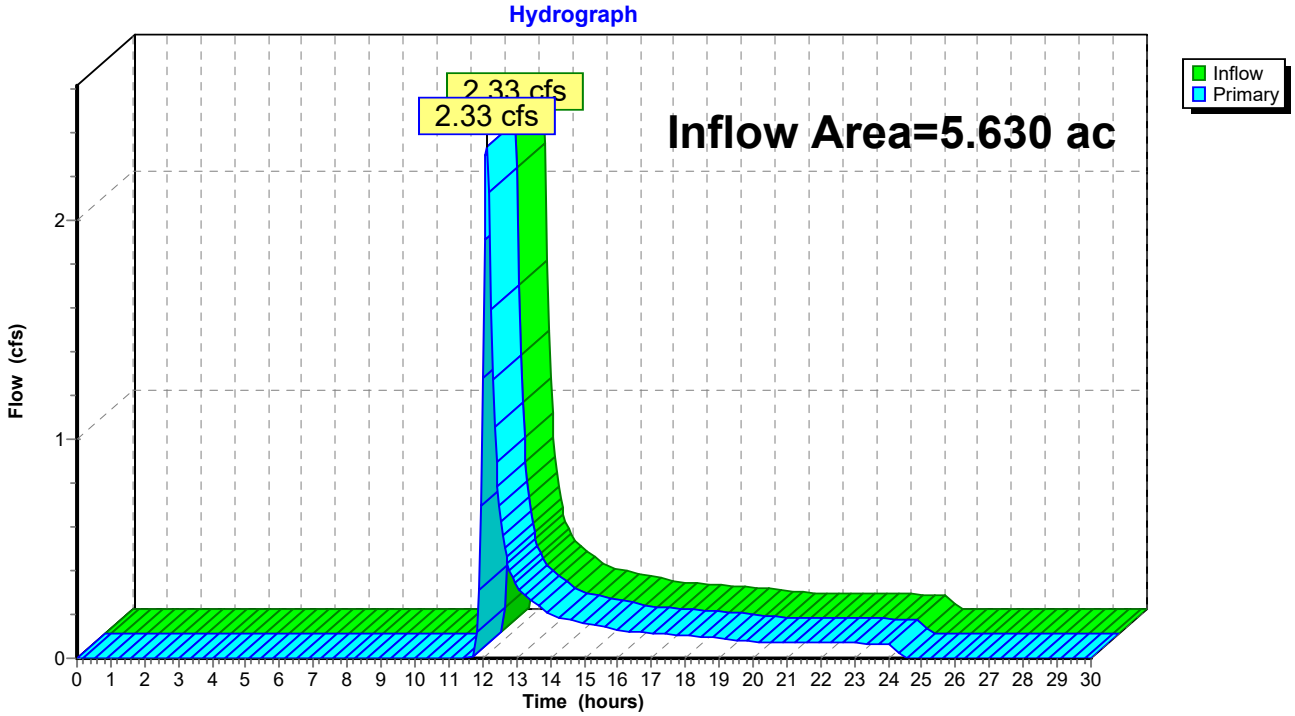


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 2.31% Impervious, Inflow Depth = 0.42" for 1-yr event
Inflow = 2.33 cfs @ 12.12 hrs, Volume= 0.195 af
Primary = 2.33 cfs @ 12.12 hrs, Volume= 0.195 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



Summary for Subcatchment 1S: DA #1

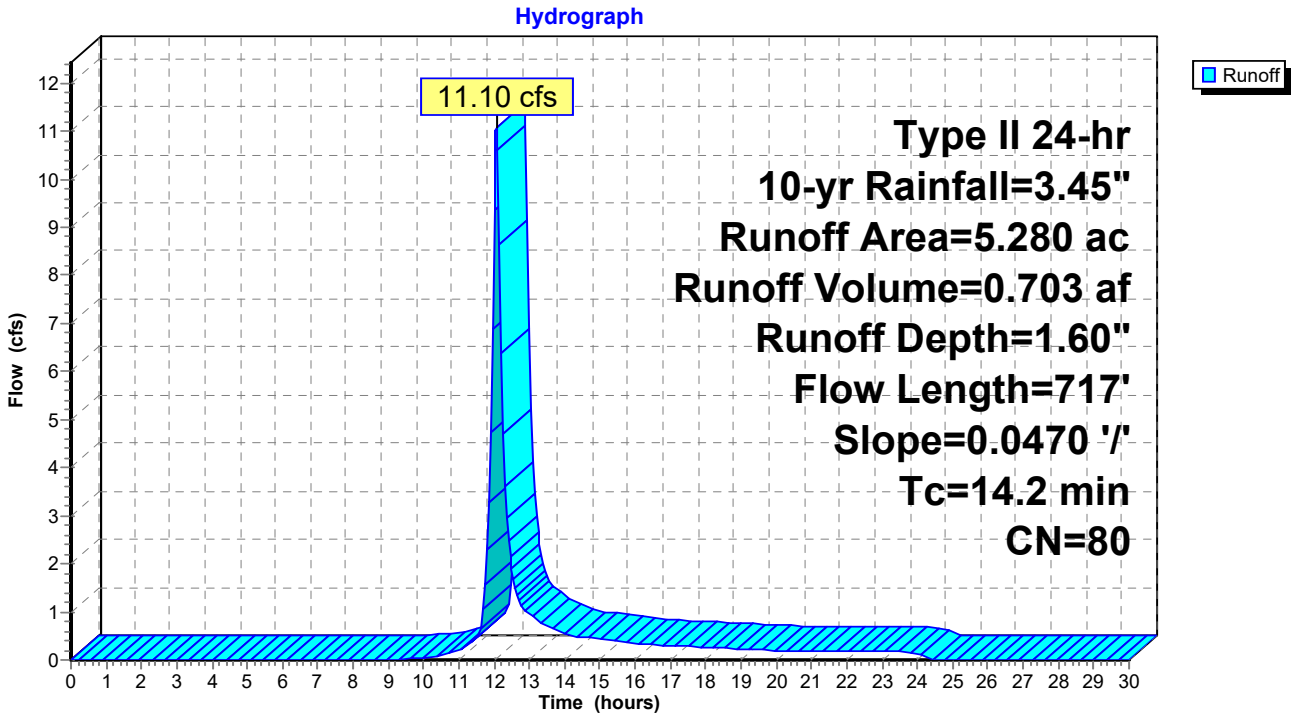
Runoff = 11.10 cfs @ 12.07 hrs, Volume= 0.703 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.130	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
0.650	74	Pasture/grassland/range, Good, HSG C
5.280	80	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

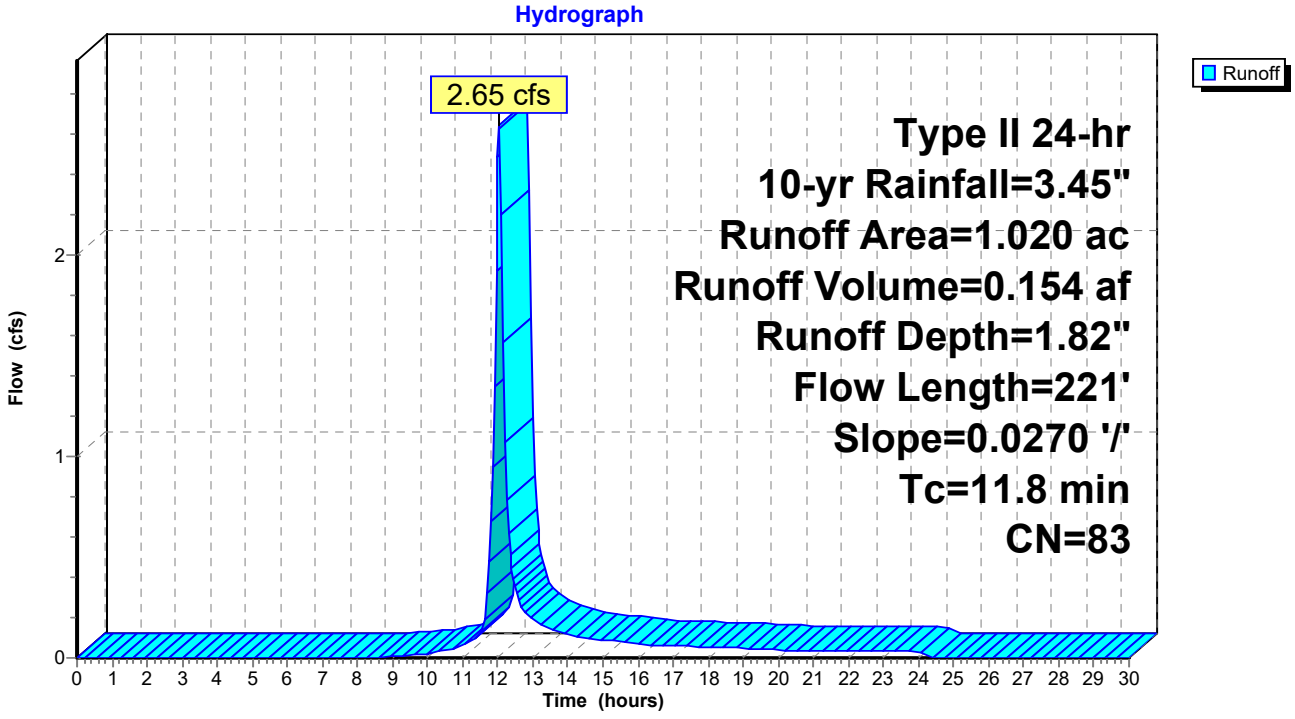
Runoff = 2.65 cfs @ 12.04 hrs, Volume= 0.154 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.840	85	Row crops, straight row, Good, HSG C
0.180	74	Pasture/grassland/range, Good, HSG C
1.020	83	Weighted Average
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
1.8	121	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

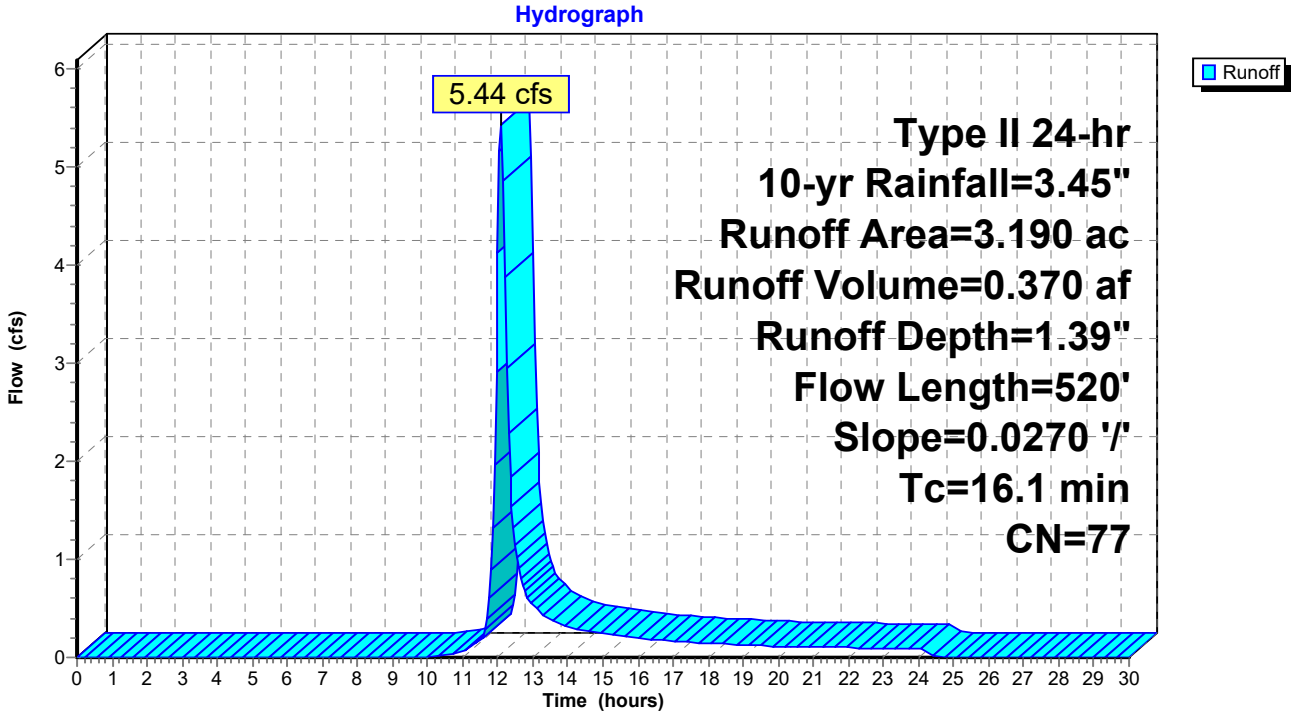
Runoff = 5.44 cfs @ 12.09 hrs, Volume= 0.370 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.760	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
2.370	74	Pasture/grassland/range, Good, HSG C
3.190	77	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
6.1	420	0.0270	1.15		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
16.1	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

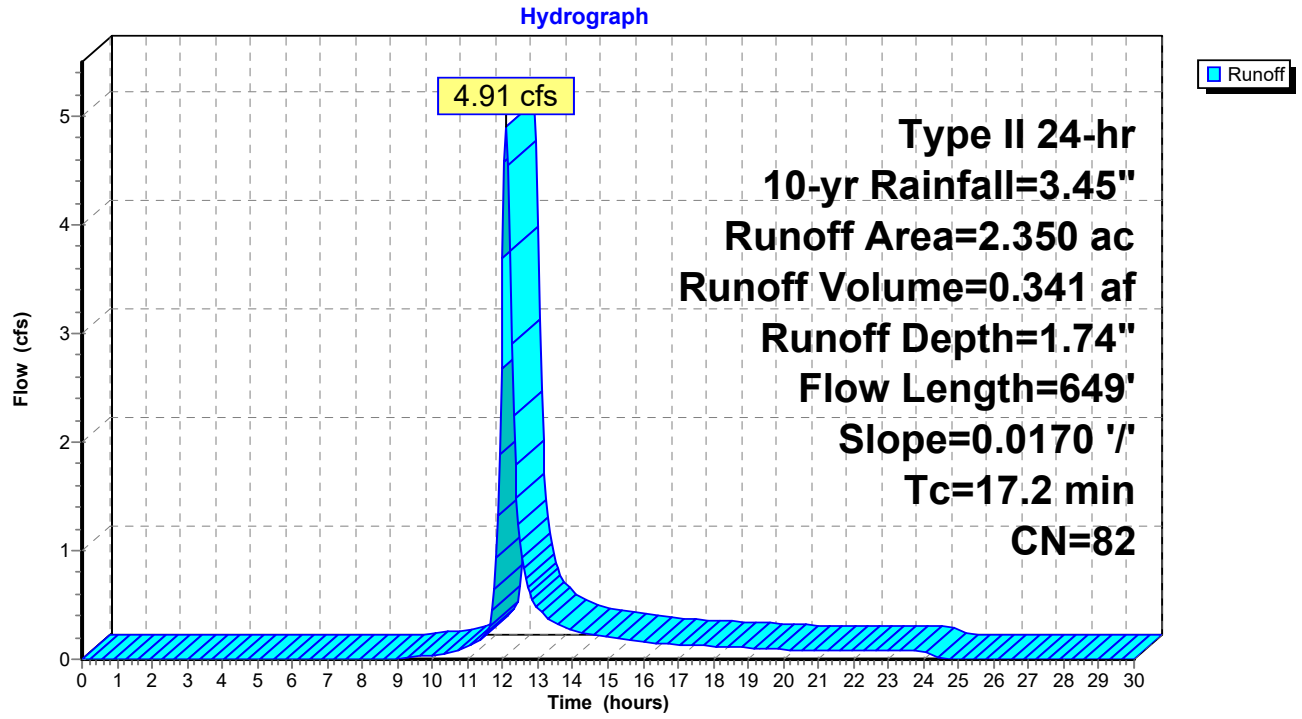
Runoff = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.450	85	Row crops, straight row, Good, HSG C
0.100	98	Paved parking, HSG C
2.350	82	Weighted Average
2.250		95.74% Pervious Area
0.100		4.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

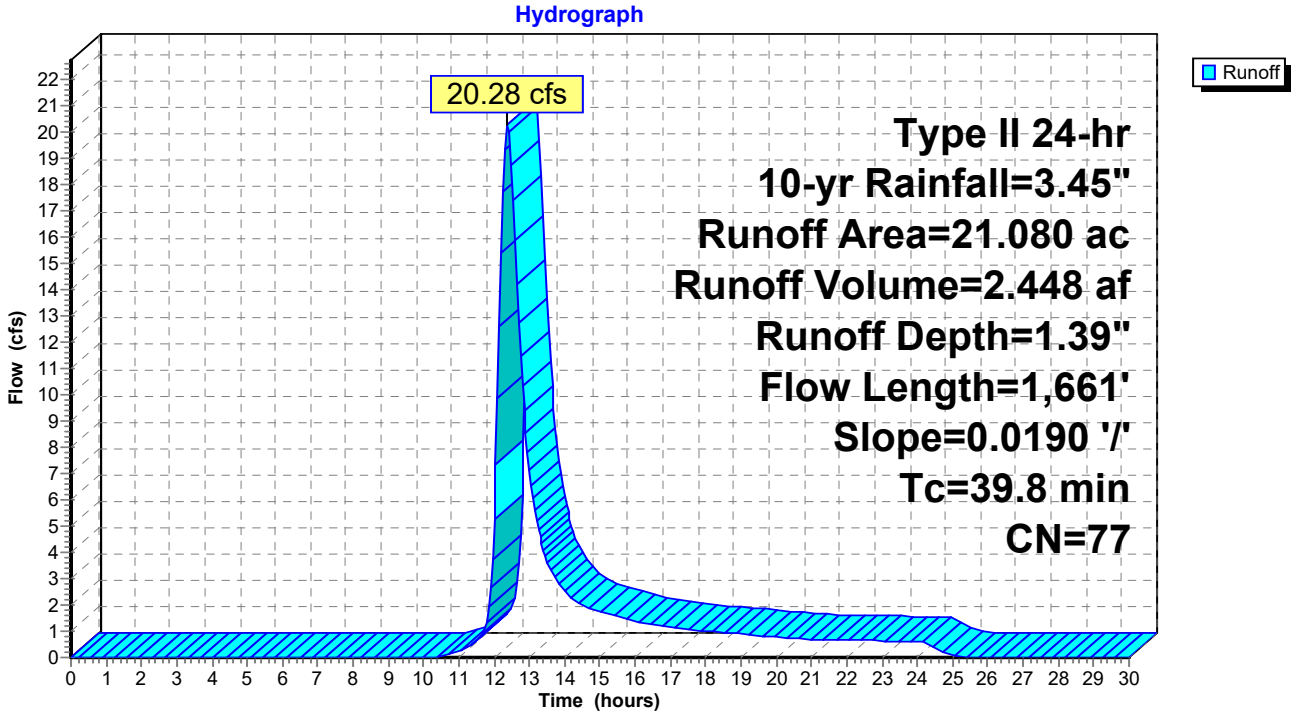
Runoff = 20.28 cfs @ 12.38 hrs, Volume= 2.448 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
2.960	85	Row crops, straight row, Good, HSG C
15.020	74	Pasture/grassland/range, Good, HSG C
0.840	98	Paved parking, HSG C
21.080	77	Weighted Average
20.240		96.02% Pervious Area
0.840		3.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
27.0	1,561	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
39.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

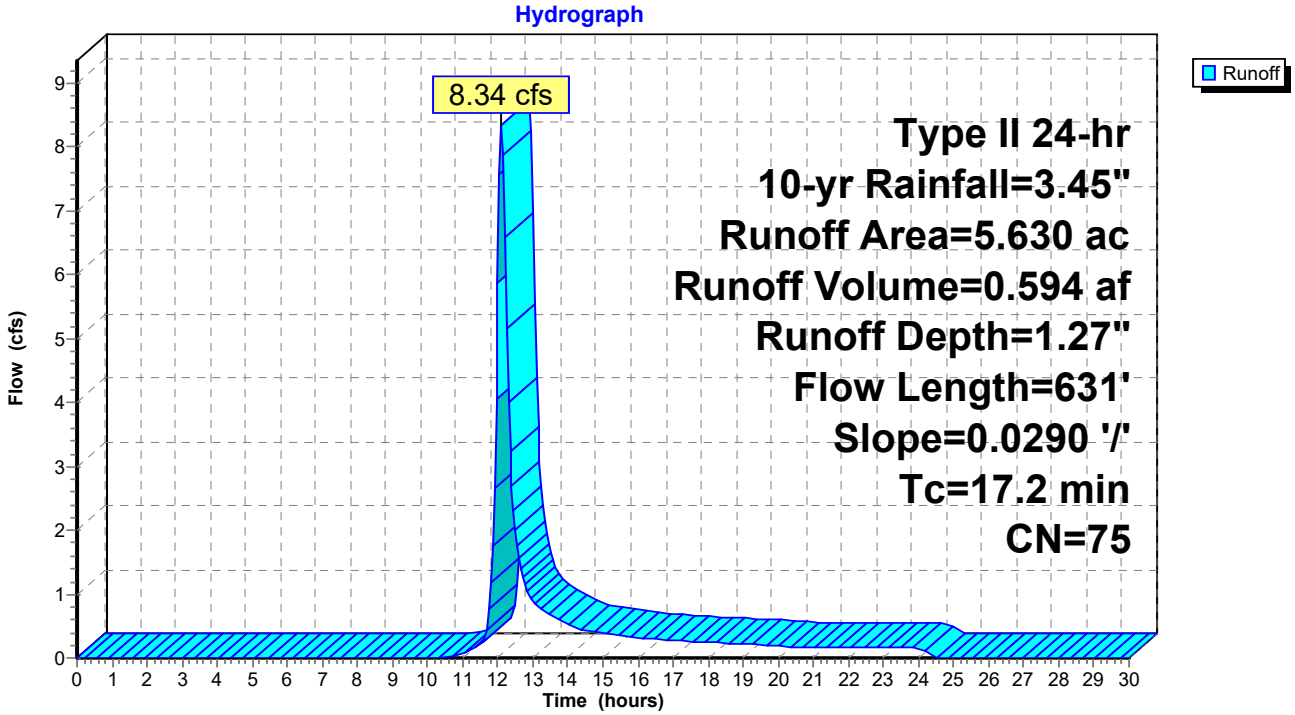
Runoff = 8.34 cfs @ 12.11 hrs, Volume= 0.594 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.45"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
5.180	74	Pasture/grassland/range, Good, HSG C
0.130	98	Paved parking, HSG C
5.630	75	Weighted Average
5.500		97.69% Pervious Area
0.130		2.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0290	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.40"
7.4	531	0.0290	1.19		**Shallow Concentrated Flow, Shallow - Crops** Short Grass Pasture Kv= 7.0 fps
17.2	631	Total			

Subcatchment 6S: DA #6

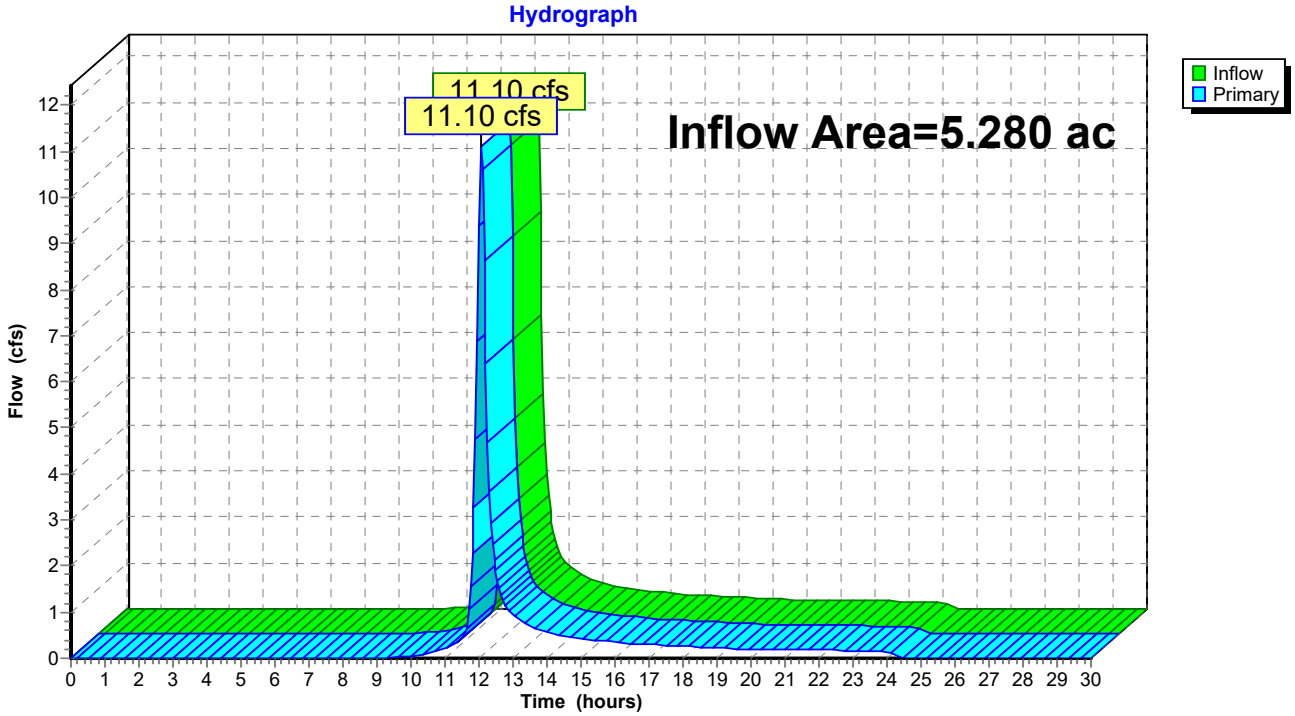


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 1.60" for 10-yr event
Inflow = 11.10 cfs @ 12.07 hrs, Volume= 0.703 af
Primary = 11.10 cfs @ 12.07 hrs, Volume= 0.703 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

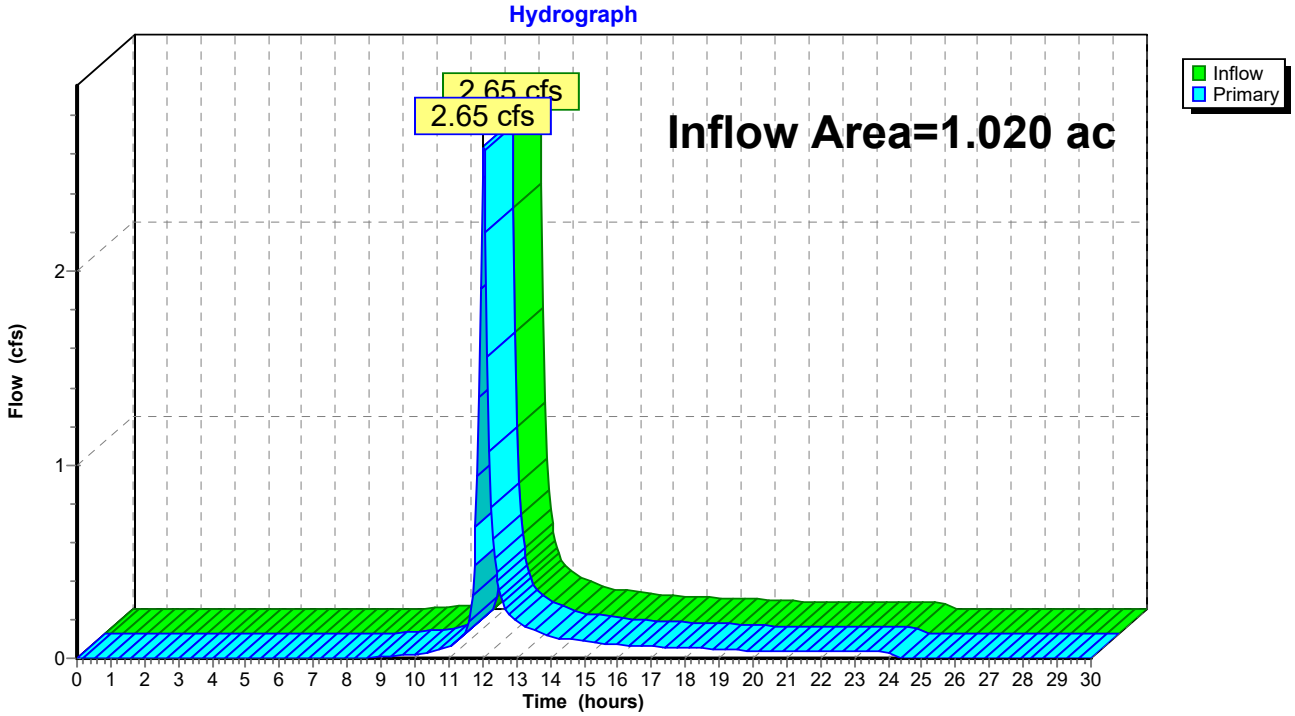


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 1.82" for 10-yr event
Inflow = 2.65 cfs @ 12.04 hrs, Volume= 0.154 af
Primary = 2.65 cfs @ 12.04 hrs, Volume= 0.154 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

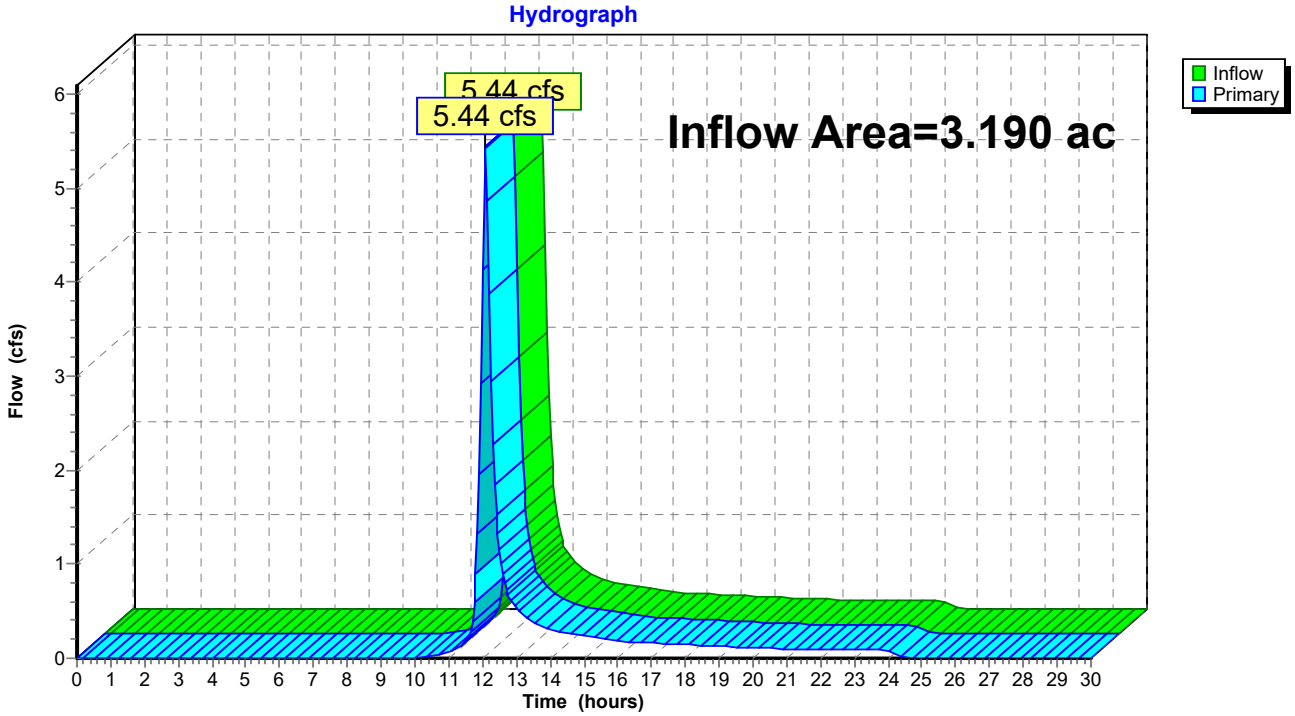


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 1.39" for 10-yr event
Inflow = 5.44 cfs @ 12.09 hrs, Volume= 0.370 af
Primary = 5.44 cfs @ 12.09 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

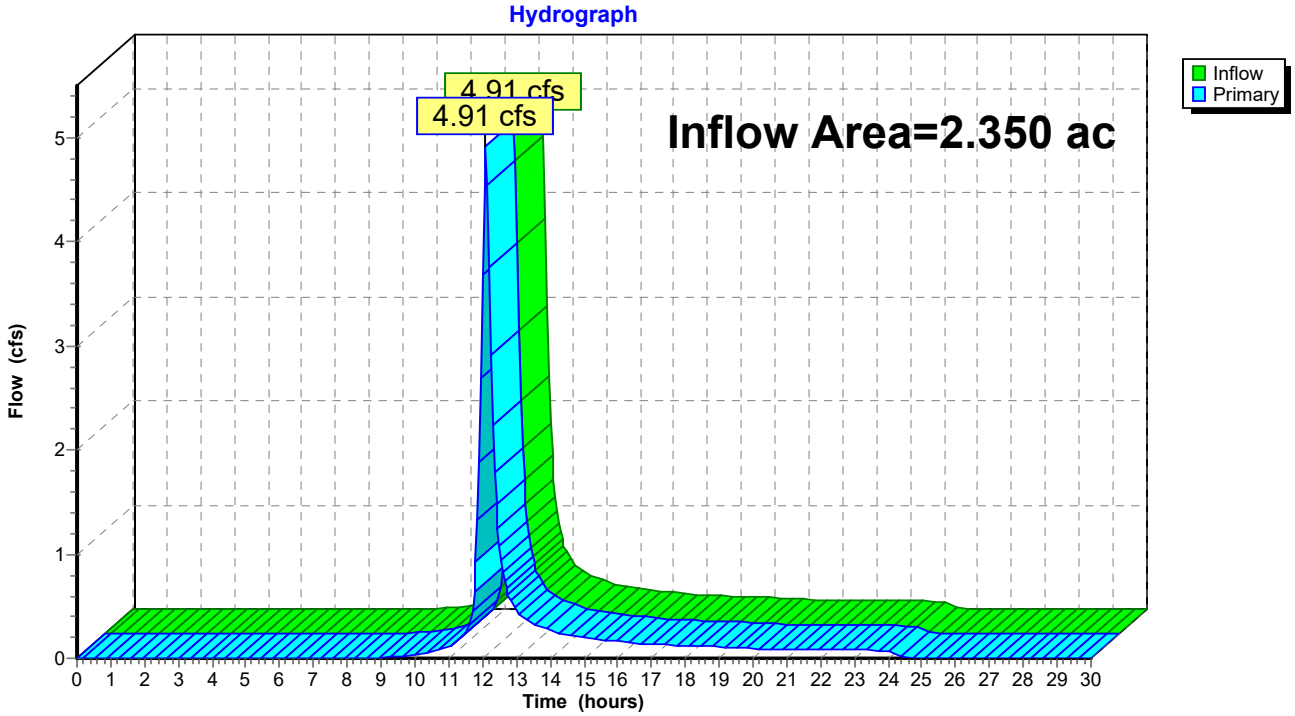


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 4.26% Impervious, Inflow Depth = 1.74" for 10-yr event
Inflow = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af
Primary = 4.91 cfs @ 12.10 hrs, Volume= 0.341 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

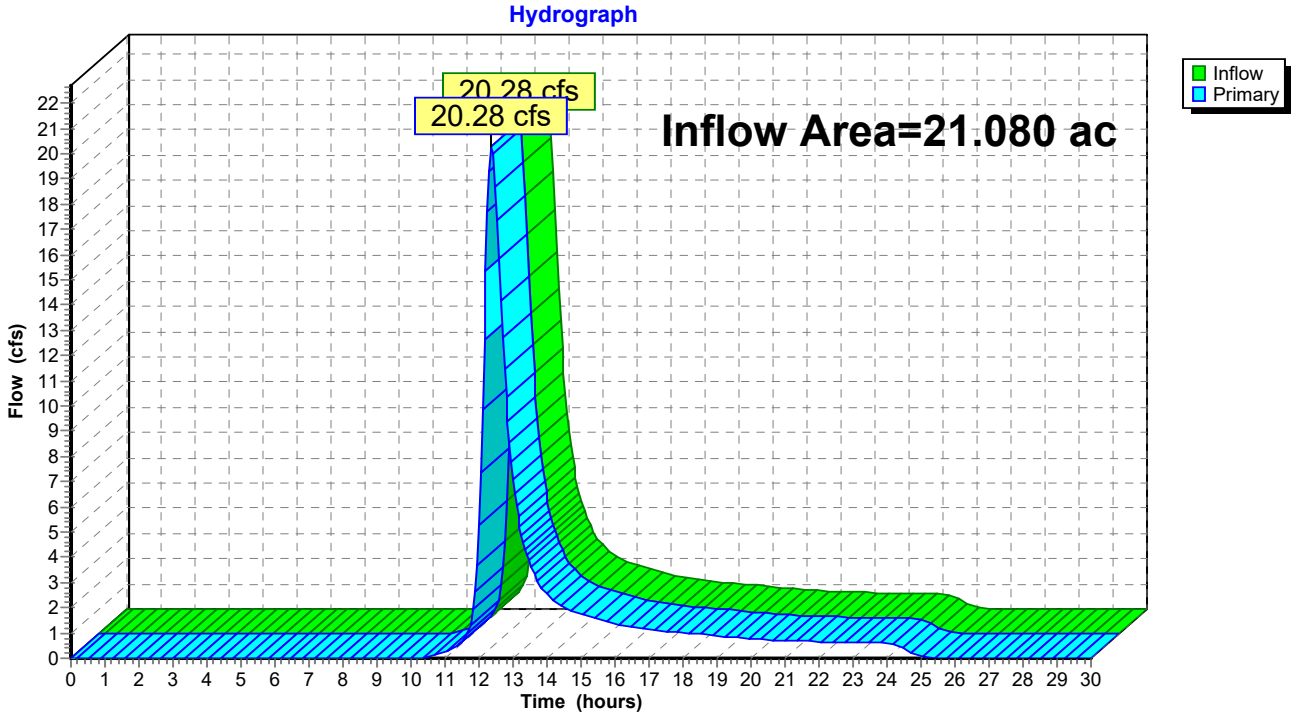


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 3.98% Impervious, Inflow Depth = 1.39" for 10-yr event
Inflow = 20.28 cfs @ 12.38 hrs, Volume= 2.448 af
Primary = 20.28 cfs @ 12.38 hrs, Volume= 2.448 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

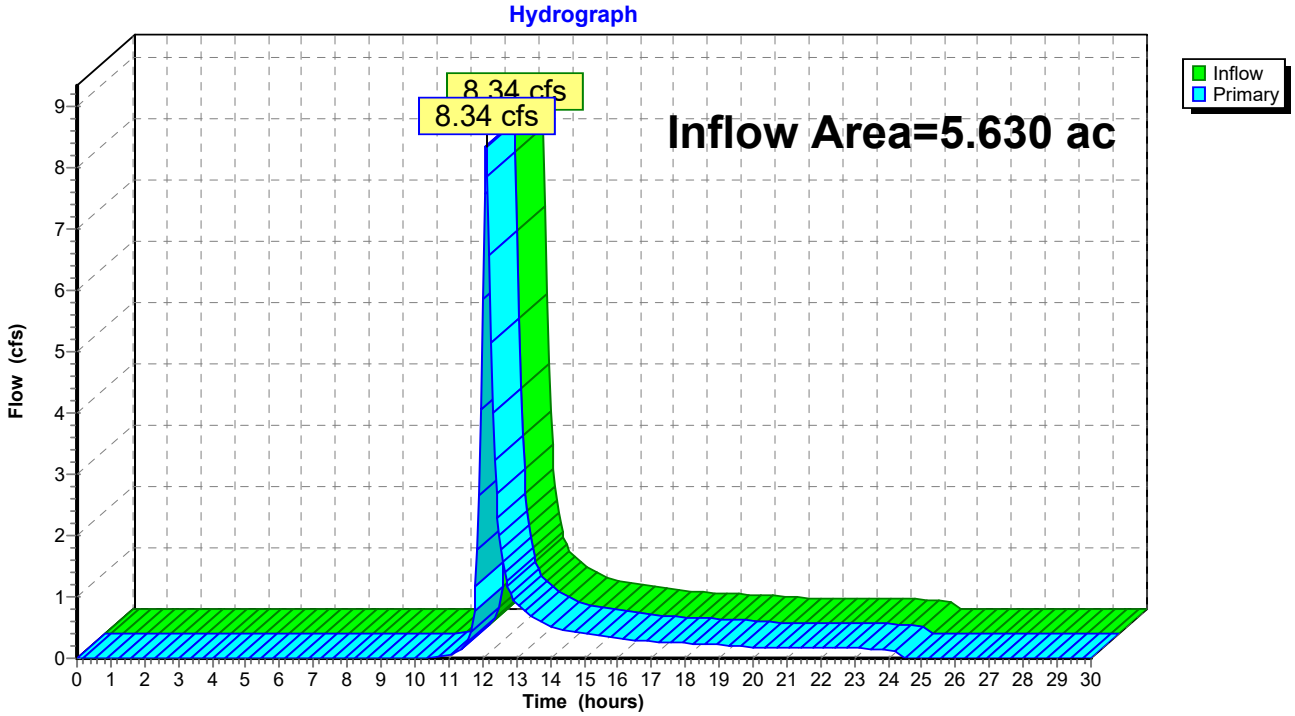


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 2.31% Impervious, Inflow Depth = 1.27" for 10-yr event
Inflow = 8.34 cfs @ 12.11 hrs, Volume= 0.594 af
Primary = 8.34 cfs @ 12.11 hrs, Volume= 0.594 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



Summary for Subcatchment 1S: DA #1

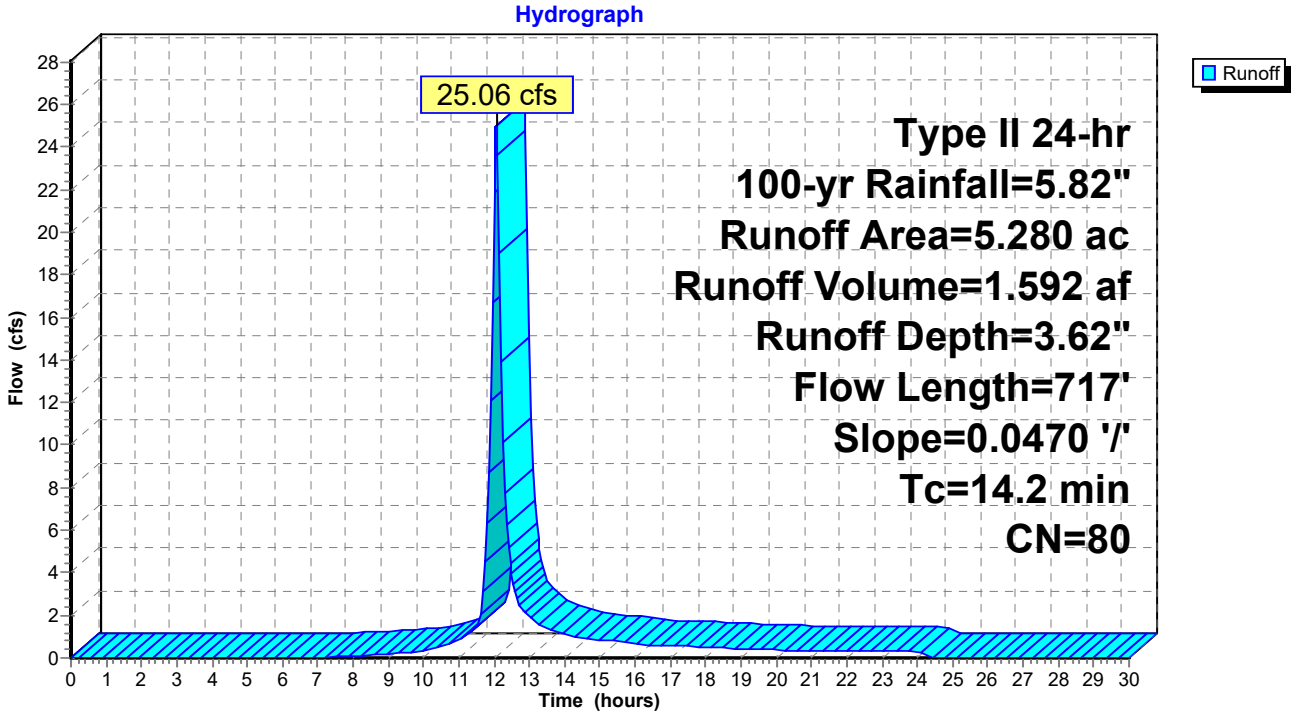
Runoff = 25.06 cfs @ 12.06 hrs, Volume= 1.592 af, Depth= 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.440	76	Woods/grass comb., Fair, HSG C
3.130	85	Row crops, straight row, Good, HSG C
1.060	73	Woods, Fair, HSG C
0.650	74	Pasture/grassland/range, Good, HSG C
5.280	80	Weighted Average
5.280		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	100	0.0470	0.19		**Sheet Flow, Sheet Flow - Crops** Cultivated: Residue>20% n= 0.170 P2= 2.40"
5.3	617	0.0470	1.95		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Cultivated Straight Rows Kv= 9.0 fps
14.2	717	Total			

Subcatchment 1S: DA #1



Summary for Subcatchment 2S: DA #2

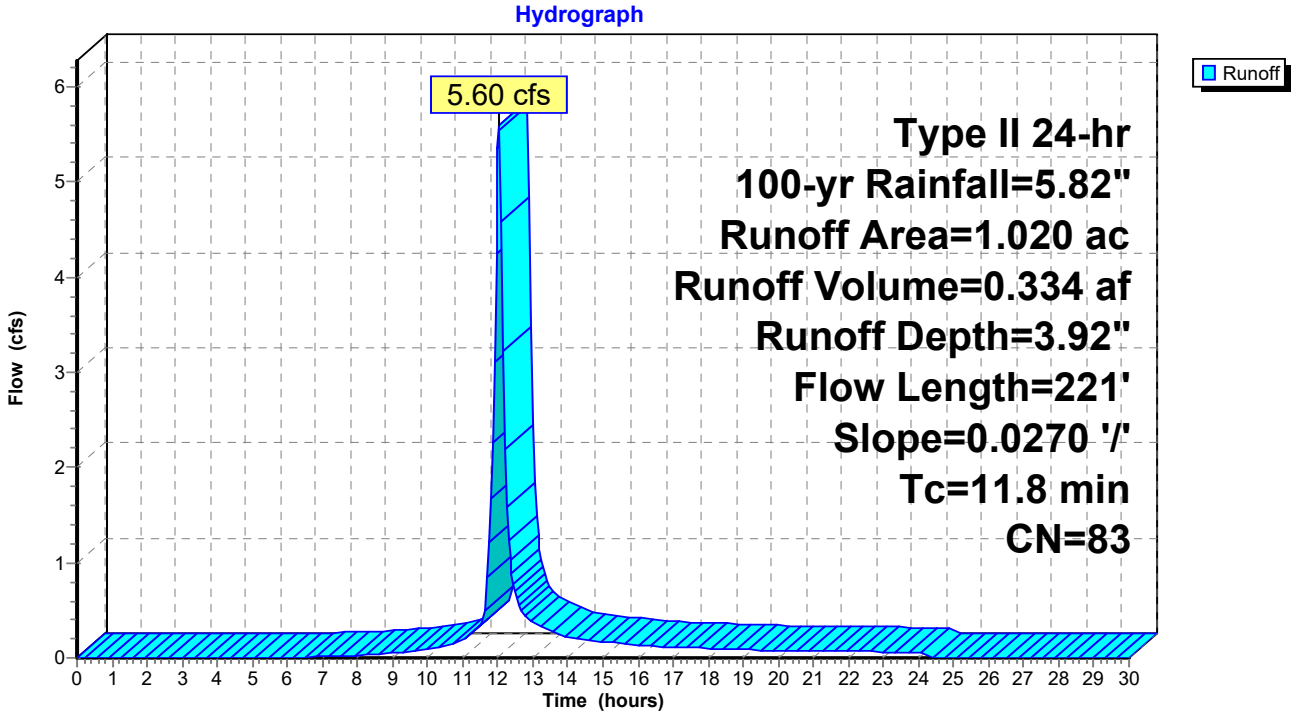
Runoff = 5.60 cfs @ 12.03 hrs, Volume= 0.334 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.840	85	Row crops, straight row, Good, HSG C
0.180	74	Pasture/grassland/range, Good, HSG C
1.020	83	Weighted Average
1.020		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
1.8	121	0.0270	1.15		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
11.8	221	Total			

Subcatchment 2S: DA #2



Summary for Subcatchment 3S: DA #3

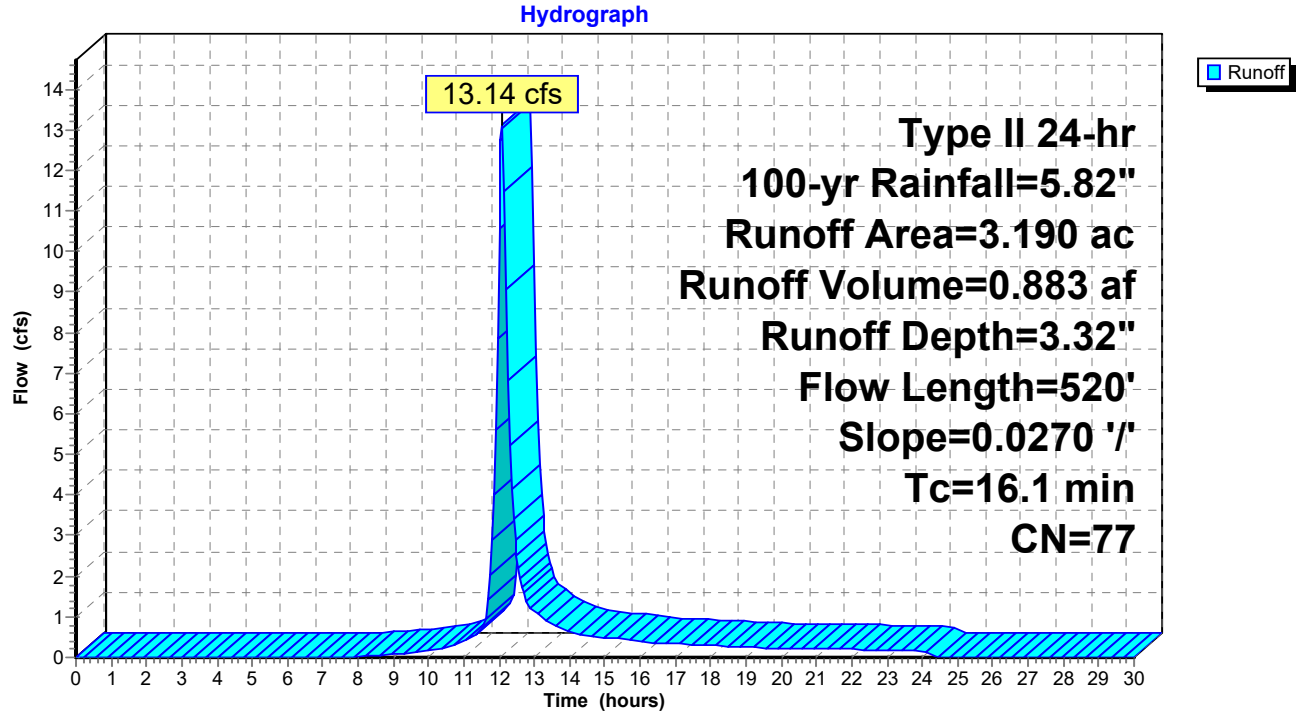
Runoff = 13.14 cfs @ 12.08 hrs, Volume= 0.883 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.760	85	Row crops, straight row, Good, HSG C
0.060	73	Woods, Fair, HSG C
2.370	74	Pasture/grassland/range, Good, HSG C
3.190	77	Weighted Average
3.190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	100	0.0270	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 2.40"
6.1	420	0.0270	1.15		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
16.1	520	Total			

Subcatchment 3S: DA #3



Summary for Subcatchment 4S: DA #4

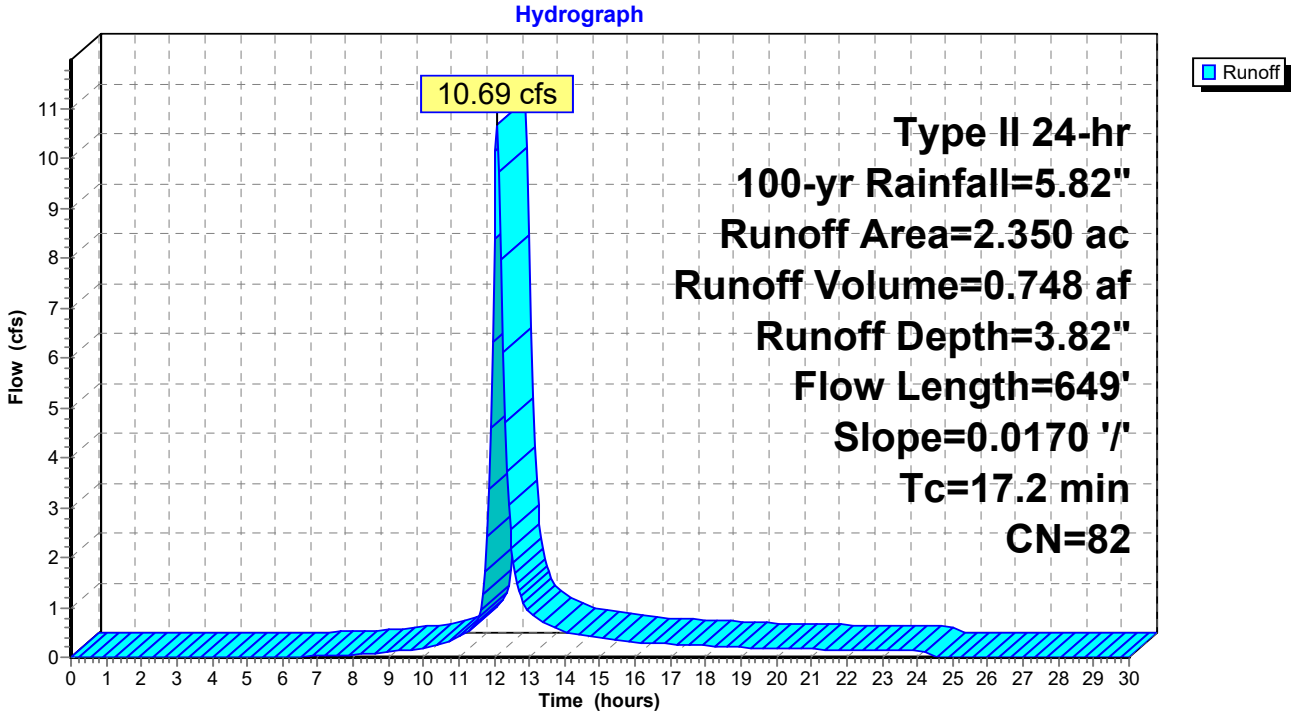
Runoff = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af, Depth= 3.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.800	76	Woods/grass comb., Fair, HSG C
1.450	85	Row crops, straight row, Good, HSG C
0.100	98	Paved parking, HSG C
2.350	82	Weighted Average
2.250		95.74% Pervious Area
0.100		4.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	100	0.0170	0.12		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
2.8	200	0.0170	1.17		**Shallow Concentrated Flow, Shallow** Cultivated Straight Rows Kv= 9.0 fps
1.1	349	0.0170	5.54	49.82	**Channel Flow, Channel - Roadside** Area= 9.0 sf Perim= 9.0' r= 1.00' n= 0.035 Earth, dense weeds
17.2	649	Total			

Subcatchment 4S: DA #4



Summary for Subcatchment 5S: DA #5

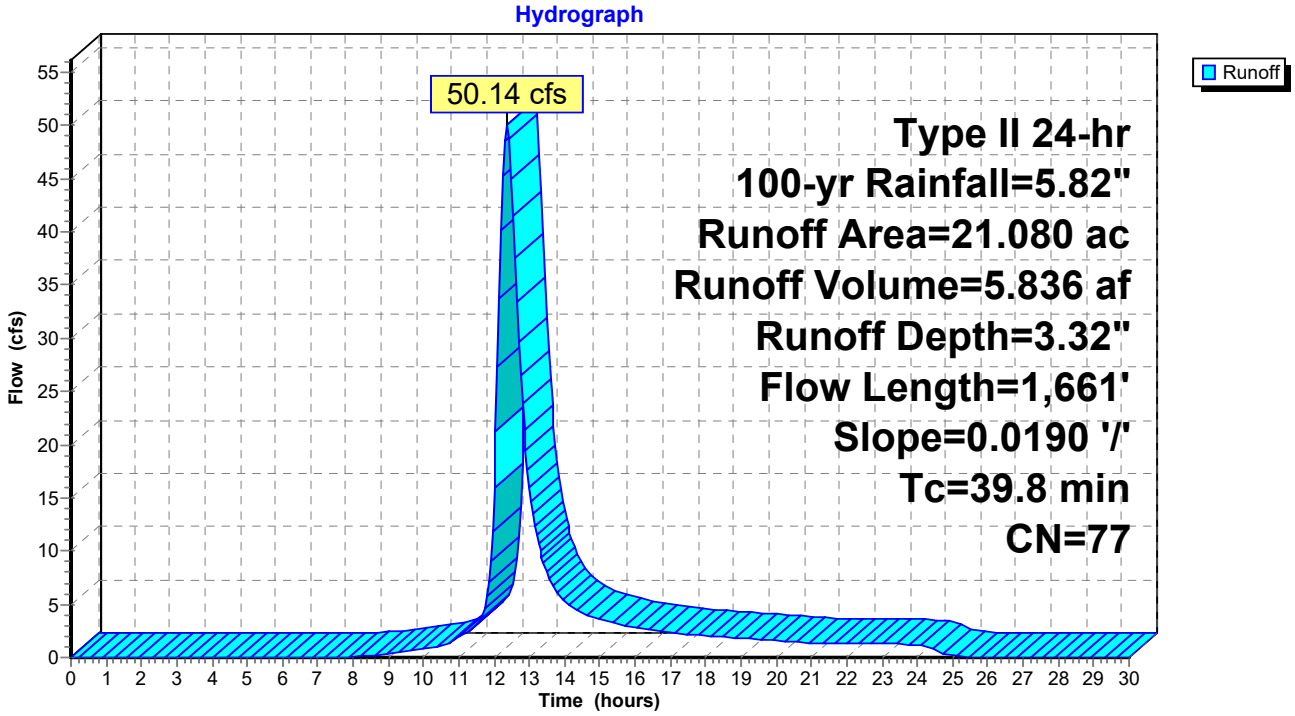
Runoff = 50.14 cfs @ 12.36 hrs, Volume= 5.836 af, Depth= 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
2.260	76	Woods/grass comb., Fair, HSG C
2.960	85	Row crops, straight row, Good, HSG C
15.020	74	Pasture/grassland/range, Good, HSG C
0.840	98	Paved parking, HSG C
21.080	77	Weighted Average
20.240		96.02% Pervious Area
0.840		3.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	100	0.0190	0.13		**Sheet Flow, Sheet Flow** Cultivated: Residue>20% n= 0.170 P2= 2.40"
27.0	1,561	0.0190	0.96		**Shallow Concentrated Flow, Shallow Concentrated - Crops** Short Grass Pasture Kv= 7.0 fps
39.8	1,661	Total			

Subcatchment 5S: DA #5



Summary for Subcatchment 6S: DA #6

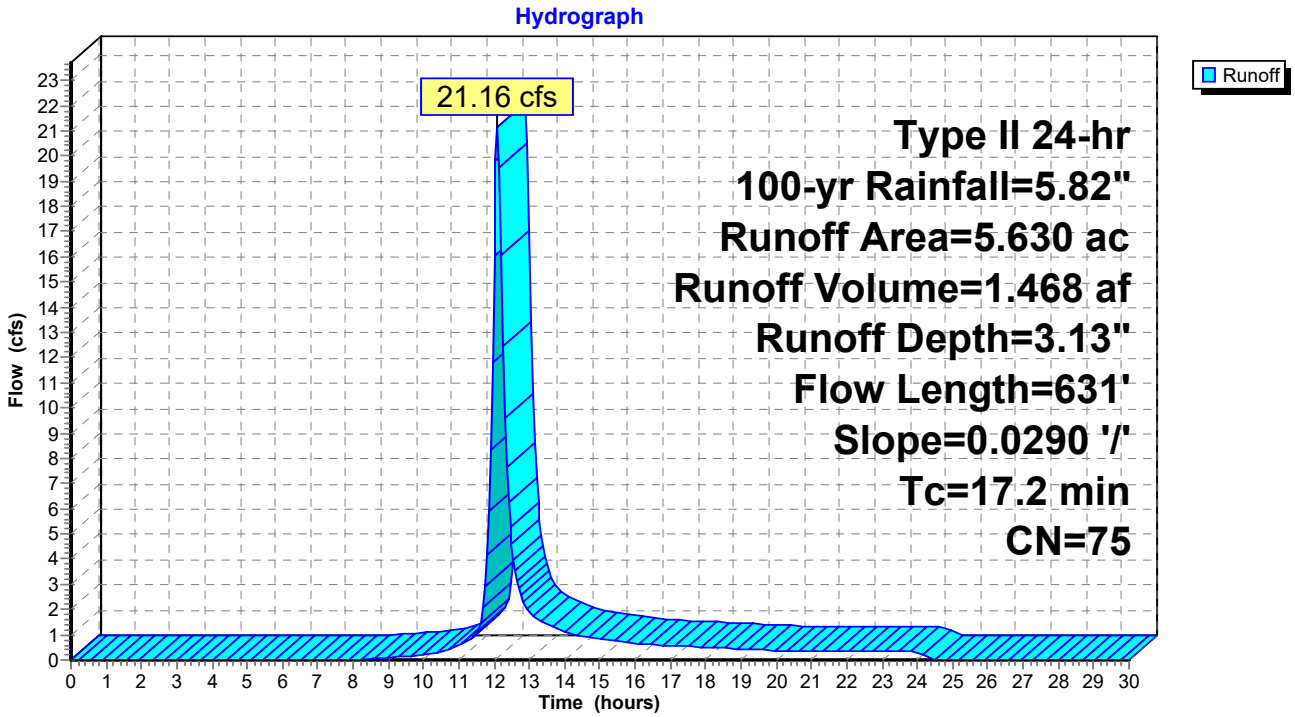
Runoff = 21.16 cfs @ 12.10 hrs, Volume= 1.468 af, Depth= 3.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.82"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
5.180	74	Pasture/grassland/range, Good, HSG C
0.130	98	Paved parking, HSG C
5.630	75	Weighted Average
5.500		97.69% Pervious Area
0.130		2.31% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0290	0.17		**Sheet Flow, Sheet** Grass: Short n= 0.150 P2= 2.40"
7.4	531	0.0290	1.19		**Shallow Concentrated Flow, Shallow - Crops** Short Grass Pasture Kv= 7.0 fps
17.2	631	Total			

Subcatchment 6S: DA #6

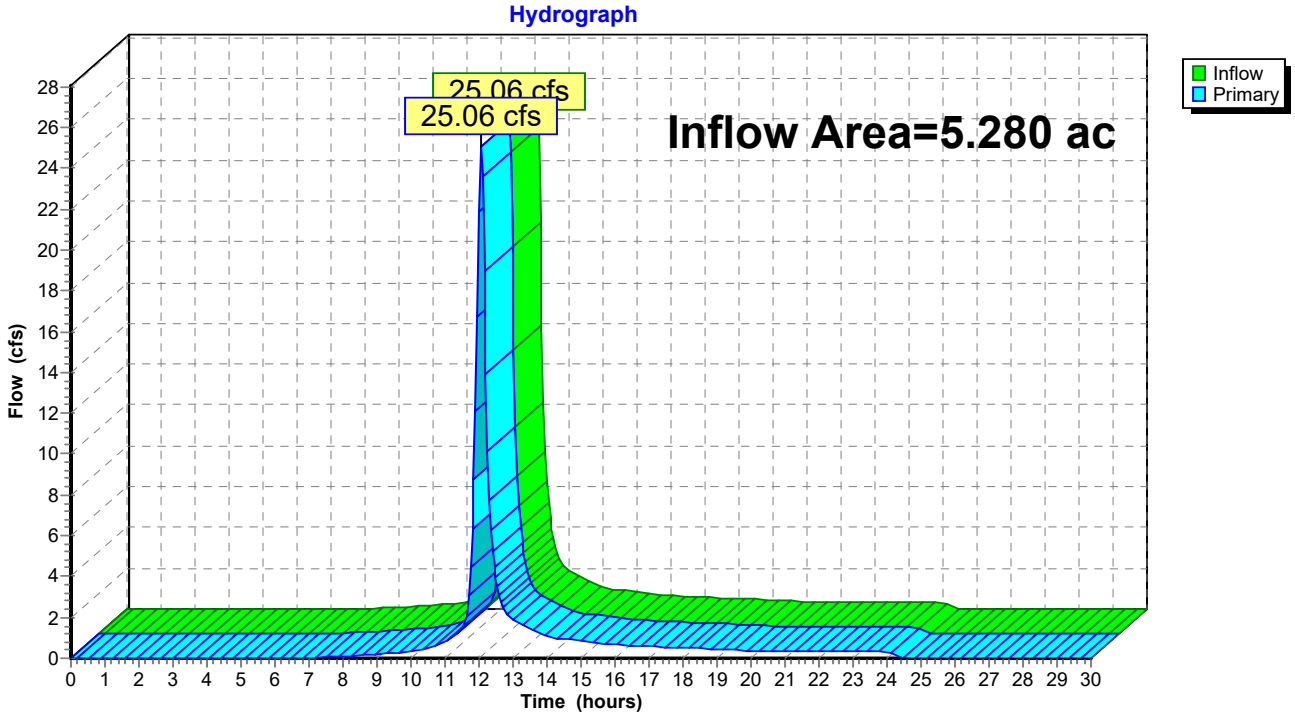


Summary for Link 1L: DP #1

Inflow Area = 5.280 ac, 0.00% Impervious, Inflow Depth = 3.62" for 100-yr event
Inflow = 25.06 cfs @ 12.06 hrs, Volume= 1.592 af
Primary = 25.06 cfs @ 12.06 hrs, Volume= 1.592 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP #1

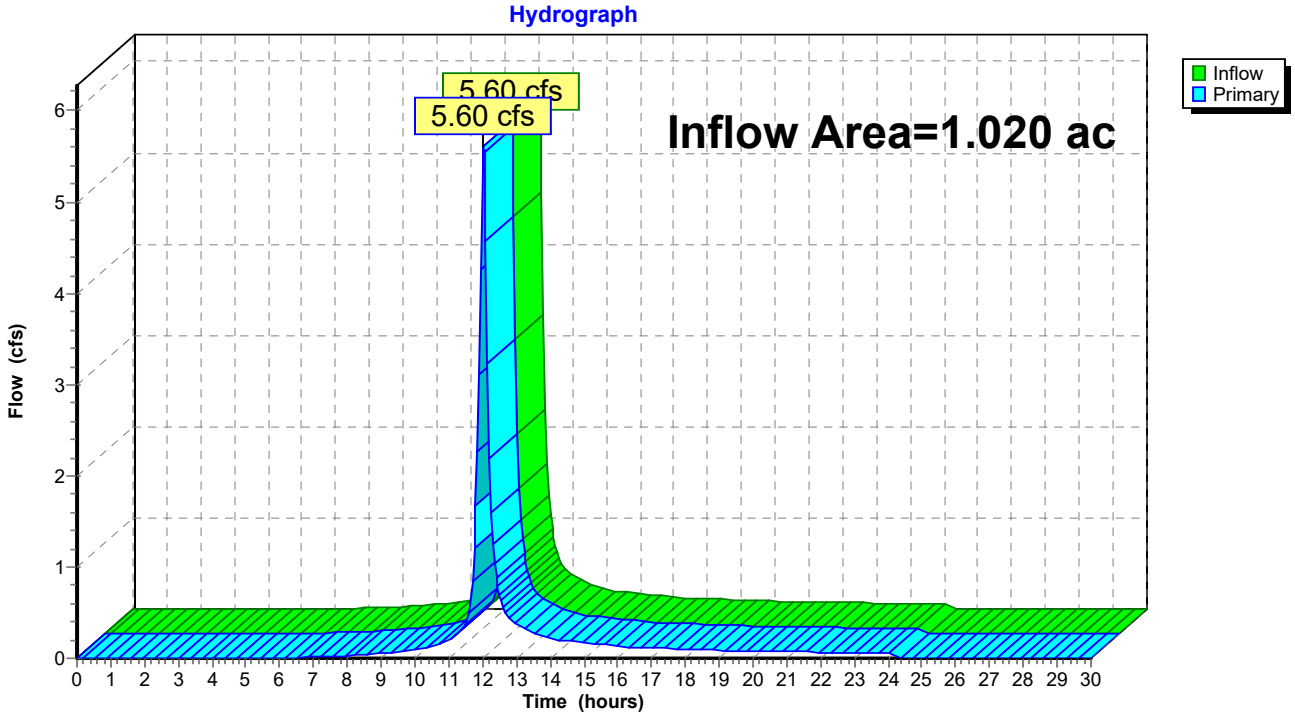


Summary for Link 2L: DP #2

Inflow Area = 1.020 ac, 0.00% Impervious, Inflow Depth = 3.92" for 100-yr event
Inflow = 5.60 cfs @ 12.03 hrs, Volume= 0.334 af
Primary = 5.60 cfs @ 12.03 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP #2

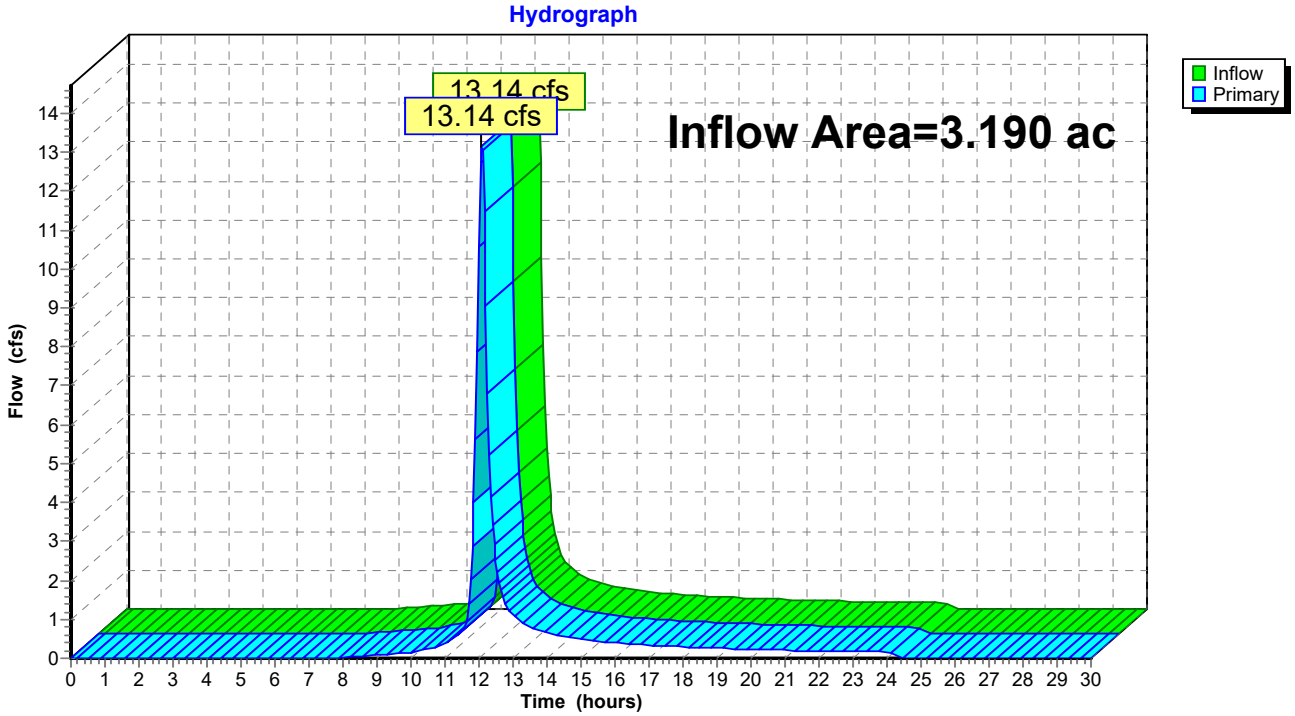


Summary for Link 3L: DP #3

Inflow Area = 3.190 ac, 0.00% Impervious, Inflow Depth = 3.32" for 100-yr event
Inflow = 13.14 cfs @ 12.08 hrs, Volume= 0.883 af
Primary = 13.14 cfs @ 12.08 hrs, Volume= 0.883 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP #3

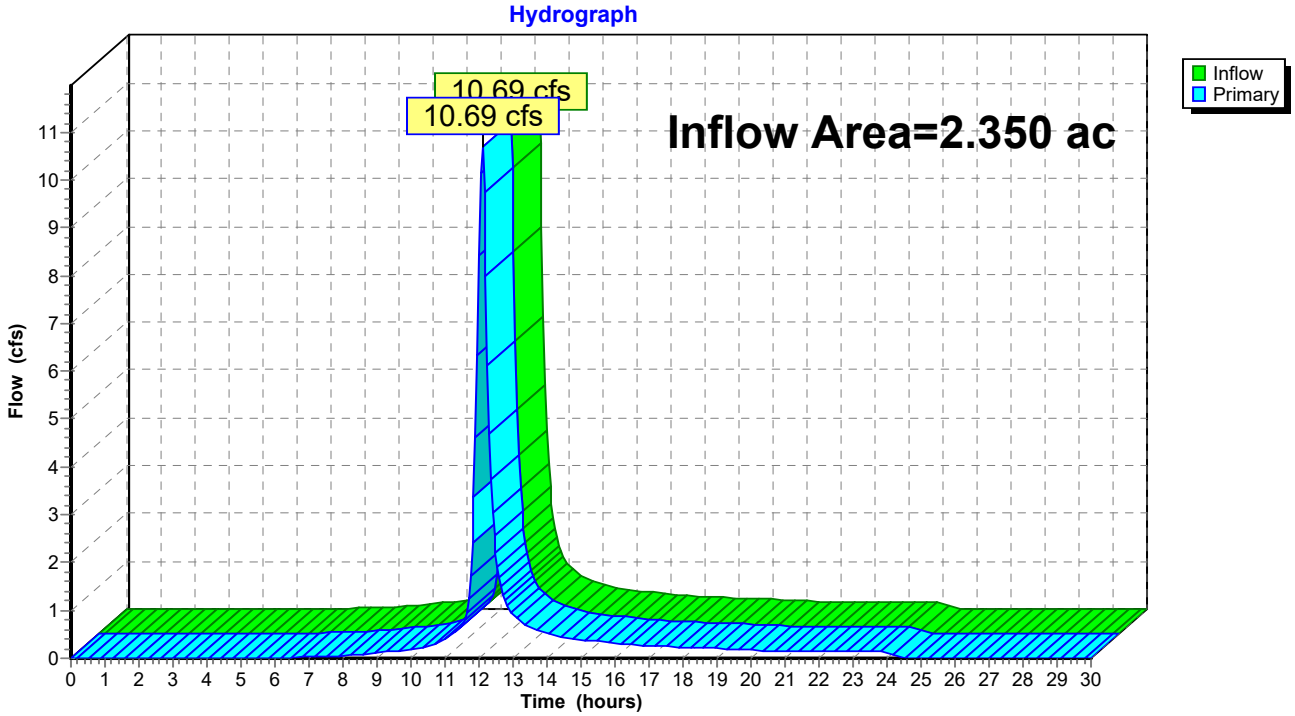


Summary for Link 4L: DP #4

Inflow Area = 2.350 ac, 4.26% Impervious, Inflow Depth = 3.82" for 100-yr event
Inflow = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af
Primary = 10.69 cfs @ 12.09 hrs, Volume= 0.748 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP #4

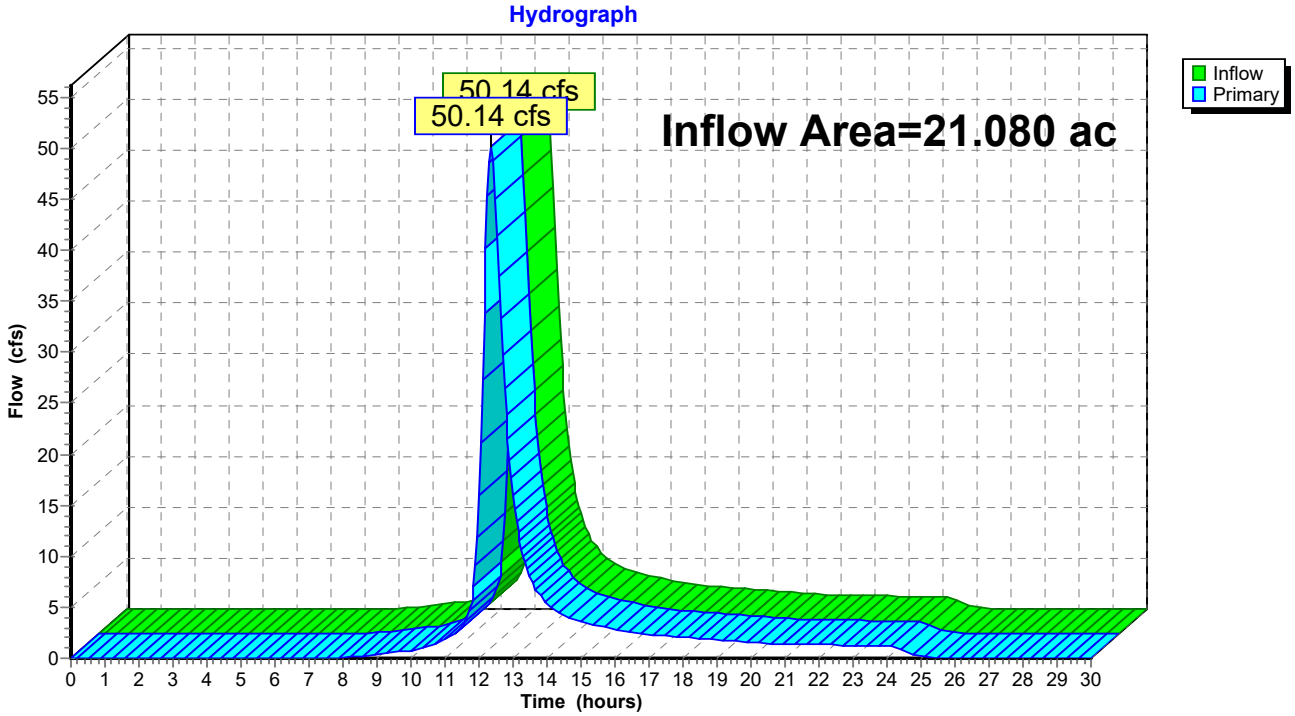


Summary for Link 5L: DP #5

Inflow Area = 21.080 ac, 3.98% Impervious, Inflow Depth = 3.32" for 100-yr event
Inflow = 50.14 cfs @ 12.36 hrs, Volume= 5.836 af
Primary = 50.14 cfs @ 12.36 hrs, Volume= 5.836 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP #5

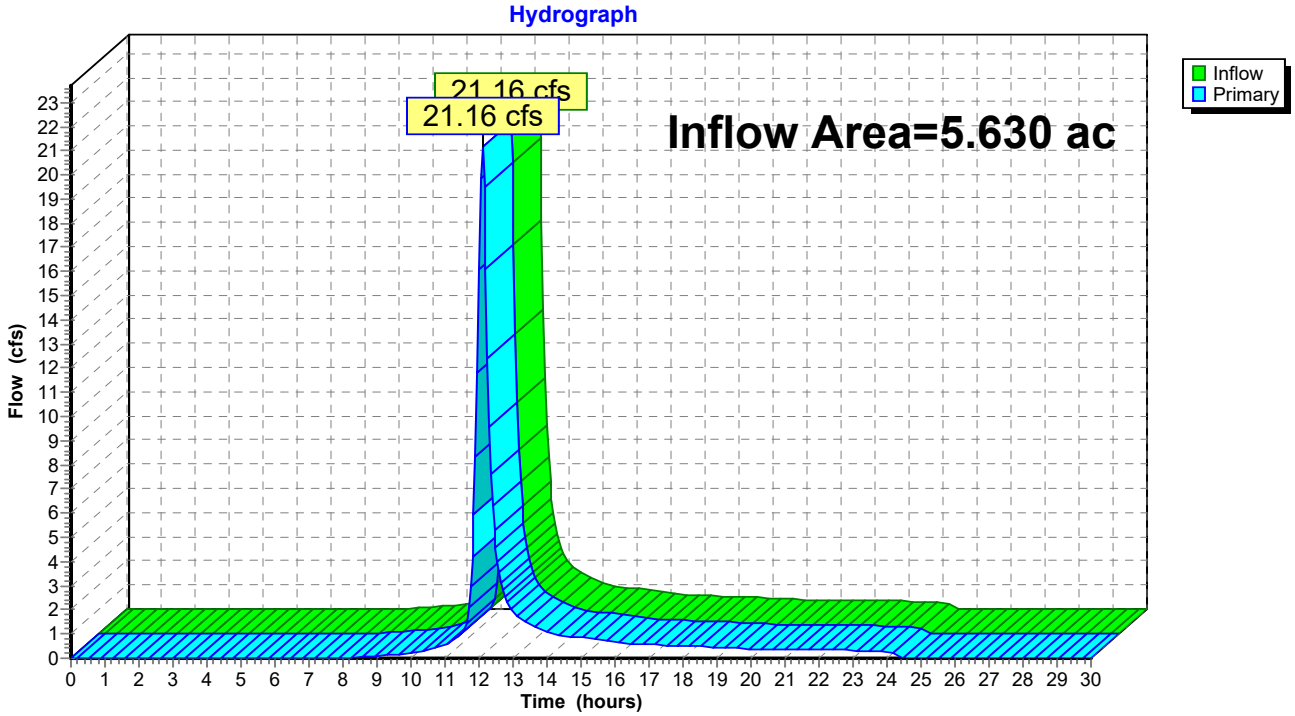


Summary for Link 6L: DP #6

Inflow Area = 5.630 ac, 2.31% Impervious, Inflow Depth = 3.13" for 100-yr event
Inflow = 21.16 cfs @ 12.10 hrs, Volume= 1.468 af
Primary = 21.16 cfs @ 12.10 hrs, Volume= 1.468 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP #6



APPENDIX J – NOTICE OF INTENT (NOI)

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Falck Renewables

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
DAmico

Owner/Operator Contact Person First Name
Andrew

Owner/Operator Mailing Address
One Bridge Street, Suite 11

City
Irvington

State
NY

Zip
10533-

Phone (Owner/Operator)
201-286-2069

Fax (Owner/Operator)

Email (Owner/Operator)
andrew.d'amico@falckrenewables.com

FED TAX ID
--
(not required for individuals)

Project Site Information

Project/Site Name
GREEN LAKES SOLAR

Street Address (NOT P.O. BOX)
8507 Green Lakes Road

Side of Street
● **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
MANLIUS

State: NY
Zip: 13104 -
County: ONONDOGA
DEC Region: 7

Name of Nearest Cross Street
Buttonvale Road

Distance to Nearest Cross Street (Feet)
530

Project In Relation to Cross Street
○ **North** ● **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
82.-2-15.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 59379
Ex. -73.749

Y Coordinates (Northing)
4305961
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ● CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ● OTHER SOLAR

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
23.4	23.4	0.9	0.2

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	100 %	%

7. Is this a phased project? ○ **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date / / – **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Wetland

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ● Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ **Yes** ● **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Tetra Tech, Inc.

Contact Name (Last, Space, First)

Sielski, Brian

Mailing Address

6 Century Road, Suite 300

City

Parsippany

State Zip

NJ 07054-

Phone

973-630-8167

Fax

Email

brian.sielski@tetratech.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name

MI

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

VEGETATED SWALES and RIP RAP WEIR

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ● **Locating Development in Less Sensitive Areas**
- ● **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ○ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ● Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	0	2	5	**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
○ Bioretention (F-5)			
● Dry Swale (O-1)			0.30
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other** [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name [ ]

Manufacturer [ ]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.021 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.007 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.003 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 0.025

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required . **acre-feet**

CPv Provided . **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

● Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development 71.04 **CFS**

Post-development 52.72 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development 151.89 **CFS**

Post-development 125.79 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ● **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

Soil types C on site limit the efficiency of the proposed vegetative swales. Non-rooftop disconnection was utilized for areas of the solar array where no impervious surfaces are proposed. The change in ground cover type from existing agricultural to permanent grass cover on site results in a runoff reduction.

Long term operations and maintenance plan for post-construction stormwater management practices will be implemented into the Owner/Operators overall operations and maintenance plan prior to construction.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ● **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date / /

APPENDIX K – NOTICE OF TERMINATION (NOT)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX L – CERTIFICATION STATEMENTS

CONTRACTOR CERTIFICATION PAGE

Green Lakes Solar Project

8507 Green Lakes Road, Manlius, NY 13066

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollution Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Name of Contractor/Subcontractor	Phone Number
Address	City, State, Zip Code
Signature of Person Completing this Form	Date
Printed Name	Title
Name of Trained Contractor	Title

Responsibilities (check all that apply):

Erosion and Sediment Control Practices:

- ❑ Installation and/or construction
- ❑ Repair
- ❑ Replacement
- ❑ Inspection
- ❑ Maintenance

Post-construction SMPs:

- ❑ Construction
- ❑ Repair
- ❑ Inspection
- ❑ Operation & Maintenance

CONTRACTOR CERTIFICATION PAGE

Green Lakes Solar Project

8507 Green Lakes Road, Manlius, NY 13066

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollution Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

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- ❑ Construction
- ❑ Repair
- ❑ Inspection
- ❑ Operation & Maintenance

APPENDIX M – INSPECTION FORMS

I. **PRE-CONSTRUCTION MEETING DOCUMENTS**

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. **Preamble to Site Assessment and Inspections**

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

Inspector (print name)	**Date of Inspection**
Qualified Inspector (print name)	**Qualified Inspector Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.

Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

APPENDIX N – INSPECTION REPORTS & PHOTO LOG

Exhibit E

LONG EAF

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: Green Lakes Solar		
Project Location (describe, and attach a general location map): The proposed project is located on private land at 8507 Green Lakes Road, Town of Manlius, Onondaga County, New York.		
Brief Description of Proposed Action (include purpose or need): EF NY CDG 002, LLC (Falck Renewables) proposes the development of approximately 23.8 acres of a larger 146.3.-acre parcel of private land in Onondaga County into a ground-mounted photovoltaic (PV) solar energy generating facility (Green Lakes Solar). The proposed project would be capable of delivering about 7,8700 kilowatts (kW) of alternating electric current (AC) to the electrical power grid, which is sufficient to provide renewable energy to approximately 600 households. The PV panels proposed for this project are similar to solar panels utilized for typical residential roof top installations and would be placed on a racking system either pile driven or screw mounted to the ground surface. The PV project will be directly interconnected to, and provide energy to, National Grid's local electric distribution grid via either underground or overhead electrical service. Prior to utility interconnection, direct current (DC) electrical power generated by the solar panels will be transformed to AC power and modified as necessary to connect to National Grid's electrical power supply. The project would also include an equipment pad, a gravel access road and would be surrounded by a chain-linked security fence.		
Name of Applicant/Sponsor: Falck Renewables	Telephone: E-Mail:	
Address: One Bridge Street, Suite 11		
City/PO: Irvington	State: New York	Zip Code: 10533
Project Contact (if not same as sponsor; give name and title/role): Jonathan Koch	Telephone: E-Mail:	
Address: One Bridge Street, Suite 11		
City/PO: Irvington	State: New York	Zip Code: 10533
Property Owner (if not same as sponsor): Charles Hafner	Telephone: (315) 263-0597 E-Mail: pshapero01@gmail.com	
Address: 8507 Green Lakes Road		
City/PO: Manlius	State: NY	Zip Code: 13104

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town of Manlius: Special Permit	4/16/2020
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town of Manlius: Special Permit Approval	4/16/2020
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☐Yes ☑No		
e. County agencies ☐Yes ☑No		
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSERDA Grant; NYS Ag & Markets Review, SPDES General Permit	4/16/2020
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☑Yes ☐No

If Yes, identify the plan(s):

Onondaga County Agriculture and Farmland Protection Plan

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Restricted Agriculture

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Fayetteville-Manlius Central School District

b. What police or other public protection forces serve the project site?
Town of Manlius Police Department

c. Which fire protection and emergency medical services serve the project site?
Minoa Fire Department, Fayetteville Fire Department

d. What parks serve the project site?
Green Lakes State Park, Mill Run Park, Beard park, Lewis Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?

b. a. Total acreage of the site of the proposed action? 146.43 acres
b. Total acreage to be physically disturbed? 23.8 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 24.5 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☐ Yes ☑ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	_____	_____	_____	_____
At completion of all phases	_____	_____	_____	_____

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes,

i. Total number of structures 7,870 kW

ii. Dimensions (in feet) of largest proposed structure: 7 to 10 height; 550 ft width; and 800 ft length

iii. Approximate extent of building space to be heated or cooled: 0 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐ Yes ☑ No

If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐ Other specify:

_____

iii. If other than water, identify the type of impounded/contained liquids and their source.

_____

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

_____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

i*v.* Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☑ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

_____

_____

_____

_____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No

If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____

_____

- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

_____

c. Will the proposed action use, or create a new demand for water? ☐Yes ☑No

If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☐No

If Yes:

- Name of district or service area: _____
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No

If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

_____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☐Yes ☑No

If Yes:

i. Total anticipated liquid waste generation per day: _____ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

_____

_____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☑No

If Yes:

- Name of wastewater treatment plant to be used: _____
- Name of district: _____
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☐No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: _____

_____

_____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

_____

_____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 1.09 acres (impervious surface)

_____ Square feet or 146.4 acres (parcel size)

ii. Describe types of new point sources. _____

_____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

_____

- If to surface waters, identify receiving water bodies or wetlands: _____

_____

_____

- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:
- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

_____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

_____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

_____

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7am-5pm
- Saturday: N/A
- Sunday: N/A
- Holidays: N/A

ii. During Operations:

- Monday - Friday: Daylight Hours
- Saturday: Daylight Hours
- Sunday: Daylight Hours
- Holidays: Daylight Hours

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☐ Yes ☑ No

If yes:

i. Provide details including sources, time of day and duration:

_____

_____

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☐ No

Describe: _____

_____

n. Will the proposed action have outdoor lighting? ☐ Yes ☑ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

_____

_____

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☐ No

Describe: _____

_____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

_____

_____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:_____

_____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

_____

_____

_____

_____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____

  _____
- Operation: _____

  _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____

  _____
- Operation: _____

  _____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☑ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

Primarily used for agriculture with minimal residential development

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	0	0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	23.4	0	-23.4
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: ground mounted solar array, equipment pad and gravel access road	0	23.4	+23.4

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No

If Yes,

i. Identify Facilities:

_____

_____

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☑ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☐ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Cazenovia silt loam	97.4 %
Cazenovia Soils	1.0 %
Lima Silt Loam	1.6 %

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils:
☑ Well Drained: 1.6 % of site
☑ Moderately Well Drained: 98.4 % of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____% of site
☐ 15% or greater: _____% of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☐ Yes ☑ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☑ Yes ☐ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site: _____

_____ _____ _____

_____ _____ _____

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

_____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☐ Yes ☑ No

If Yes:

i. Species and listing (endangered or threatened): _____

_____

_____

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

If Yes:

i. Species and listing: _____

_____

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No

If yes, give a brief description of how the proposed action may affect that use: _____

_____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☑ Yes ☐ No

If Yes, provide county plus district name/number: ONON003

b. Are agricultural lands consisting of highly productive soils present? ☑ Yes ☐ No

i. If Yes: acreage(s) on project site? Approximately 8

ii. Source(s) of soil rating(s): Prime Farmland

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

_____

_____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Green Lakes State Park, national Natural Landmark (Round Lake), and NYS State Trail (Bike Path)

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): Sate Parks and National Natural Lake

iii. Distance between project and resource: West and North 0.8 and 1.9 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name Jodi Hunt Date 4/16/2020

Signature Jodi2 Hunt Title Project Manager

PRINT FORM

EAF Mapper Summary Report

Tuesday, March 31, 2020 7:21 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	Yes
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	No
E.2.p. [Rare Plants or Animals]	No

E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	ONON003
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Exhibit F

WETLAND REPORT

Wetland Delineation Report

Proposed Green Lakes Solar Site

8507 Green Lakes Road
Fayetteville, New York 13082

April 8, 2020

Prepared by:

Tetra Tech, Inc.
3136 South Winton Road, Suite 303
Rochester, NY 14623
Phone: (585) 417-4002

Prepared for:

Falck Renewables
One Bridge Street, Suite 11
Irvington, New York 10533

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Appendix A Select Site Photographs

1.0 INTRODUCTION

EF NY CDG 002, LLC (Falck Renewables) is proposing to construct a ground-mounted solar facility located at 8507 Green Lakes Road, Fayetteville, New York (hereafter referred to as the "Site"). The Site includes approximately 23.4 acres of a larger 147-acre parcel (Figure 1).

Tetra Tech, Inc. (Tetra Tech) was retained by Falck Renewables to delineate wetlands in support of potential state and federal wetland permits. This wetland delineation report summarizes the results of the wetland delineation effort and includes a description of the Site, methods used to delineate wetlands, information reviewed, field survey results, a summary and a references section. Attached appendices include data forms and select site photographs.

1.1 Regulatory Framework

In New York, wetlands are jointly regulated by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE). New York State's freshwater wetlands are protected under Article 24 of the Environmental Conservation Law, commonly referred to as the Freshwater Wetlands Act. Pursuant to Article 24, New York regulates wetlands greater than 12.4 acres or wetlands of any size that possess unique qualities. In addition, to protect and preserve wetlands, New York regulates a wetlands adjacent area, which is defined as those areas of land or water that are outside a wetland and within 100 feet of the wetland boundary. The USACE has regulatory jurisdiction over waters of the United States including wetlands pursuant to Section 404 of the Clean Water Act, and jurisdiction over Navigable Waters of the United States pursuant to Section 10 of the 1899 Rivers and Harbors Act.

2.0 SITE DESCRIPTION

The Site is located in the central portion of New York, approximately four miles northeast of Fayetteville, New York. It is surrounded by agricultural fields, undeveloped forest, and residential properties. As identified above, the Site includes approximately 23.4 acres of a larger 147-acre parcel located adjacent to Green Lakes Road to the west. The parcel is mainly comprised of agricultural fields and undeveloped mixed forest. There are several unimproved roads, a pole barn and Quonset steel hut. The Site is comprised of agricultural fields (Christmas trees, hay, row crops), vacant fields, and a portion of an unimproved road.

3.0 METHODS

Wetland boundaries were delineated in the field using the Routine Onsite Determination Method, as described in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987), together with region-specific methods and guidelines provided in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (USACE, 2012). In addition, the Routine Delineation Procedure, as described in the New York State Freshwater Wetlands Delineation Manual (Browne et al., 1995) was also considered. These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of freshwater wetlands.

The presence of a wetland was field-verified by analyzing dominant vegetation, soil classification, and hydrology at one sample station within each investigated area. Under the New York State method, the presence of hydrophytic vegetation characteristics (i.e., greater than 50 percent facultative wet (FACW) or wetter species, 10 percent or greater areal cover of obligate (OBL) perennial species, morphological adaptions, or expanses of peat mosses over persistently saturated soils) typically indicates a wetland, and

an area that exhibits these indicators can generally be considered a wetland without detailed examination of hydrology and/or soils.

Dominant vegetation in each stratum (tree, shrub, herbaceous, and vine) was identified using appropriate regional field guides. Wetland indicator statuses for dominant species were obtained from the National Wetland Plant List (U.S. Army Corps of Engineers 2016). Wetlands were classified based on the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) classification hierarchy (USFWS 2018). Classifications were assigned by determining the most abundant type classification(s) in the wetland. A wetland was assigned multiple type classifications if more than one class comprised at least 30 percent areal coverage. Soil cores were obtained by using a hand-held augur, which was advanced to a depth of 20 inches, when possible. Soil profiles/characteristics were recorded in standard soil log format and soil colors were determined using a Munsell Soil Color Chart (Kollmorgen Corporation, 2000). Primary and secondary wetland hydrology indicators were also visually assessed and recorded.

The USGS National Hydrology Dataset (NHD) is a digital geospatial dataset that maps and models the surface water of the United States. It represents the water drainage networks of the Site and surrounding area, describing features such as rivers, streams, lakes, and ponds.

Data from the United States Department of Agriculture Natural Resource Conservation Service (USDA NRCS) provided soil maps and soil surveys for the counties of New York State, specifically Onondaga County. This data provides information on the soil types and series found within the region. Information and soil data for the Site could be found through the USDA Web Soil Survey (WSS).

Wetland boundary points and sample stations, and stream centerlines were recorded using a Trimble GeoExplorer 7X GPS handheld unit. This unit generally provides sub-meter accuracy; however, accuracy can range within three to five meters.

4.0 INFORMATION REVIEW

4.1 Mapped Wetlands and Streams

Federal and state data regarding mapped wetlands were reviewed for the Site (Figure 2). Data from the USFWS NWI identified five mapped freshwater forested/shrub wetlands within the parcel, making up approximately 8.0-acres, located to the north of the Site. These NWI wetlands include two palustrine forested, broad-leaved deciduous, seasonally saturated (PFO1B) wetlands; two palustrine forested, needle-leaved evergreen, seasonally saturated (PFO4B) wetlands; and one palustrine forested, broad-leaved deciduous/ needle-leaved evergreen, seasonally saturated (PFO1/4B) wetland complex.

NWI mapped riverine wetlands connect the referenced off-Site mapped wetlands to Pools Brook, located to the east of the Site. The riverine wetland was identified as riverine, unknown perennial, unconsolidated bottom, permanently flooded (R5UBH). Approximately 1.9-acres of the mapped riverine feature occurs within the parcel.

NYSDEC regulated mapped wetlands were not identified within the Site boundaries. Although there were no mapped NYSDEC wetlands identified on the Site, the NYSDEC may also regulate any wetlands that are 12.4 acres or larger. This acreage includes all wetlands that are hydrologically connected, both on-Site and off-Site. The closest state regulated mapped freshwater wetland to the Site is located approximately 100 feet to the north and east (NYSDEC Wetland MAN-8). This feature generally occurs in the same location as the previously identified PFO1B/PFO4B mapped NWI wetland complex. This state mapped

wetland is listed as occupying 229.3-acres and is classified as a Class 1 wetland. The NYSDEC ranks wetlands in one of four classes ranging from Class 1, which provide the most benefits, to Class 4, which provide the fewest benefits. There are approximately 20.0-acres of the NYSDEC wetland found within the parcel.

The USGS NHD identified one stream in the same locations as the NWI mapped riverine wetlands described above. Approximately 3,149.87 linear feet of this NHD mapped stream occurs within the parcel and east of the Site.

4.2 Soil Survey

According to the USDA NRCS soil survey for Onondaga County, New York, three mapped soil units were identified within the Site (Figure 3). The hydric rating, as presented on Figure 3, indicates the percentage of a mapped soil unit's components that meets the criteria for hydric soils. Lima Silt loam (LtA) minor component met the hydric soil rating, the other two series did not. The minor component comprised approximately 1 percent of the Lima soils for 1 percent hydric rating. Mapped soil units on-Site include the following:

- **Cazenovia silt loam, 2 to 8 percent slopes (CfB)** – CfB soils occupy approximately 19.5-acres of the Site or 97.4 percent. These soils include approximately 85 percent Cazenovia components. The parent material of the Cazenovia soil consists of a loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale. Cazenovia soils are generally moderately well drained soils that occur on convex and gently undulating reworked lake plains and till plains. The seasonal zone of water saturation for this component is about 24 to 48 inches. These soils do not meet the hydric criteria.
- **Cazenovia soils, 15 to 25 percent slopes (CgD)** – CgD soils occupy approximately 0.2-acres of the Site or 1.0 percent. These soils include approximately 80 percent Cazenovia components. The parent material of the Cazenovia soil consists of a loamy till that contains limestone with an admixture of reddish lake-laid clays or reddish clay shale. Cazenovia soils are generally moderately well drained soils that occur on convex and gently undulating reworked lake plains and till plains. The seasonal zone of water saturation for this component is about 24 to 48 inches. These soils do not meet the hydric criteria.
- **Lima silt loam, 0 to 3 percent slopes (LtA)** – LtA soils occupy approximately 0.3-acres of the Site or 1.6 percent. These soils include approximately 85 percent Lima components. The parent material of the Lima soil consists of a loamy till that contains calcareous loamy lodgment till derived from limestone, sandstone, and shale. Lima soils are generally moderately well drained soils that occur on ridges, till plains, and drumlins. The seasonal zone of water saturation for this component is about 18 to 24 inches. With only 1 percent of the LtA soil components described as having hydric features, these soils do not meet the hydric criteria.

5.0 SURVEY RESULTS

Observations of the vegetation communities within the Site can generally be broken down into three communities; Christmas tree plantations, maintained fields, and vacant fields. The two Christmas tree areas consisted mainly of balsam fir (*Abies balsamea*) and patches of unidentifiable grass species and white clover (*Trifolium repens*).

The maintained field community appear to be areas of previous farming that have been rotated out and have upland successional plants growing, with areas of observed seasonal mowing. The area consists of a diverse herbaceous community with varied densities of broad-leafed weed species such as common plantain (*Plantago major*), bull thistle (*Cirsium vulgare*), white clover (*Trifolium repens*), and unidentifiable grass species. There are also densities of Indian mallow (*Abutilon fruticosum*), Queen Anne's lace (*Daucus carota*), and Chicory (*cichorium intybus*).

The vacant field community appears to be partially maintained fields mainly comprised of an unidentifiable hay species, Canada goldenrod (*Solidago canadensis*), Queen Anne's lace (*Daucus carota*), common milkweed (*Asclepias syriaca*), and some densities of purple loosestrife (*Lythrum salicaria*).

Land within the Site and surrounding land has been subjected to historic modification of landform and hydrology. Most of the modification was conducted to facilitate agriculture by altering the drainage contours and stormwater discharge through excavated drainage ditches and drainage tiles.

Based on the desktop evaluation and field observations, including lack of hydrology, hydric soils, and dominance of upland vegetation throughout the Site, there are no wetlands present within the Site.

6.0 SUMMARY

According to the New York State Freshwater Wetlands Delineation Manual, the vegetative growing season is defined as the portion of the year when soil temperatures are above biological zero (41°F). For the Site, which is found in mesic soil temperature regime, the growing season months are assumed between late March and late October. The field delineation for the Site was conducted in early April in the early growing season. There were dead standing structures of herbaceous plants that were largely identifiable, with diagnostic features such as dried seed heads and leaves. Hydrology conditions at the time of observation were seasonably "wetter" with recent rain and snow melt. This caused the Site to have areas of standing water, moist soils, and observable water table. Test pits were dug to examine soils within the Site; they were found to be similar to the described Cazenovia Silt Loams (CfB), 2 to 8 percent slopes. Based on field observations of hydrology, soils, and identifiable vegetation, we can conclude that there are no wetlands present within the Site. No NYSDEC regulated freshwater wetlands or surface waterbodies were identified within the Site. Areas of the undeveloped forest to the north and east of the Site, outside of the fenced area, were observed to have wetter conditions and appear to match the mapped NWI and NYSDEC wetlands. An official jurisdictional determination would need to be based on USACE and NYSDEC review of the Site.

7.0 REFERENCES

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Figure 1

Site Location



Legend

- Parcel Boundary
- Site Boundary

*Locations are approximate

Approximate Scale:

0 0.125 0.25 0.5 Miles

TETRA TECH

Figure 1
Site Location

Green Lake Solar
8507 Green Lakes Road
Fayetteville, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Figure 2

NWI and NYDEC Mapped
Wetlands and NHD Mapped
Streams



Legend

- Parcel Boundary
- Site Boundary
- NYSDEC Wetlands
- Freshwater Forested/Shrub Wetland
- Riverine

*Locations are approximate

Approximate Scale:

0 0.05 0.1 0.2 Miles

TETRA TECH

Figure 2
Mapped Water Features

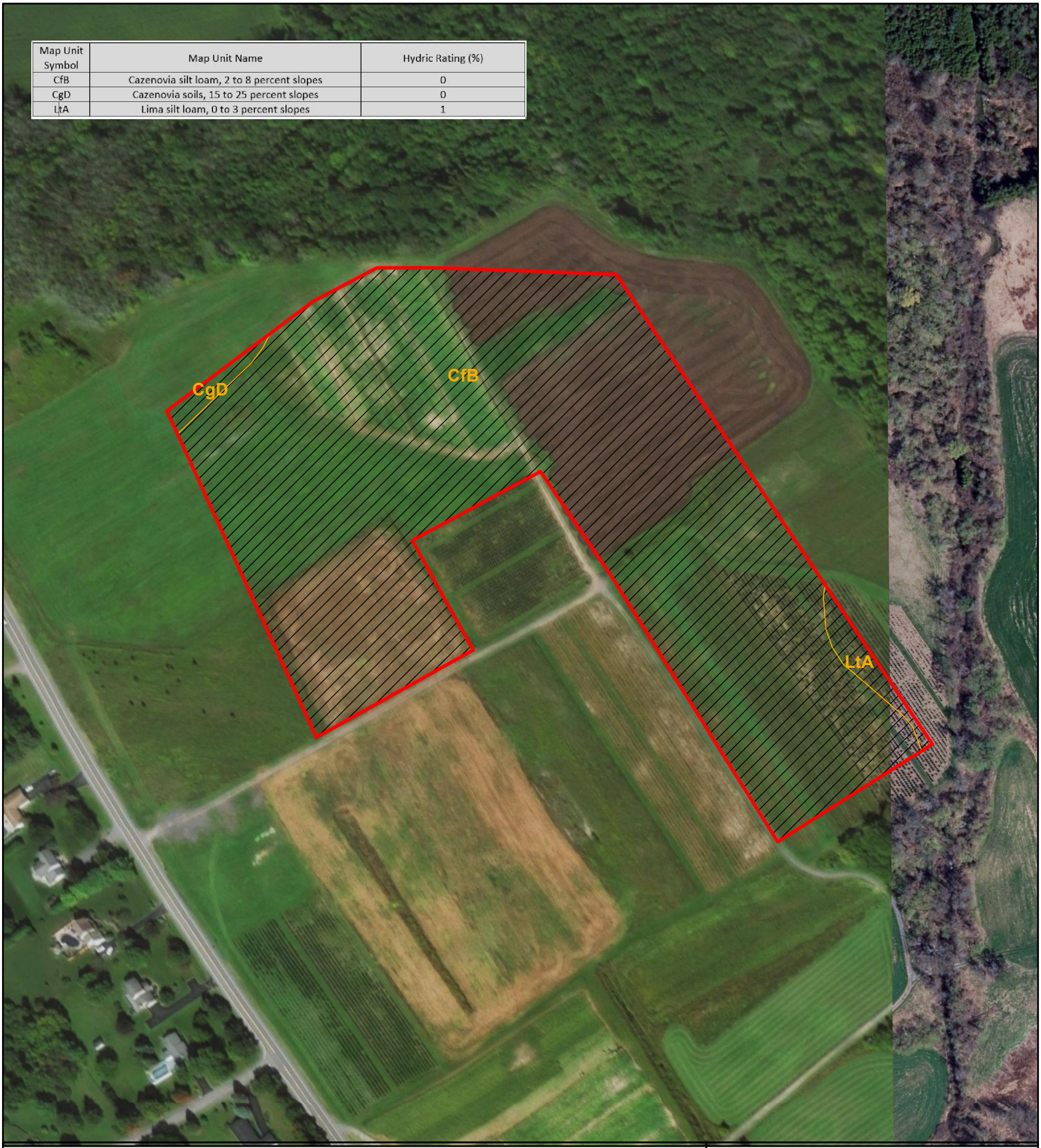
Green Lake Solar
8507 Green Lakes Road
Fayetteville, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Figure 3

NRCS Soil Units

Map Unit Symbol	Map Unit Name	Hydric Rating (%)
CfB	Cazenovia silt loam, 2 to 8 percent slopes	0
CgD	Cazenovia soils, 15 to 25 percent slopes	0
LtA	Lima silt loam, 0 to 3 percent slopes	1



Legend

Site Boundary

NRCS Soils

Approximate Scale:

0 225 450 900 Feet

TETRA TECH

Figure 3
NRCS Soil Units

Green Lake Solar
8507 Green Lakes Road
Fayetteville, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Appendix A

Select Site Photography

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of western boundary of the Site facing north from unpaved access road.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of Site and unpaved access road facing east.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of soil test pit within Site facing east within vacant field. Pit had filled with water overtime, high water table from recent rainfall in past days.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of typical maintained fields found within the Site facing west.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View from northern boundary of the Site looking towards Christmas Tree plantings facing south..

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of slope difference between the upslope Site and the downslope wooded wetland, facing northwest.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of eastern boundary of Site facing south.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7119.01.03
Site Name:	Green Lakes Solar Site	**Location:**	Fayetteville, NY



Description:	View of the southern portion of the Site from the access road facing north.

Exhibit G

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

TOWN OF MANLIUS

SPECIAL PERMIT APPLICATION – EXHIBIT "G"

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

As a condition of the application(s) to the Town of Manlius, its Zoning Board of Appeals, Planning Board, codes administration/planning office, and/or Town Board (the **"**Town**"**) for various zoning, land use, construction and related reviews, approvals, certificates, permits and related consideration(s) (including for any local governmental assisted funding) related to the request of EF NY CDG 002, LLC (Falck Renewables): (the "Application"), Green Lakes Solar Facility [name], One Bridge Street, Suite 11, Irvington, New York 10533 [legal address] ("Applicant") relative to proposed development at 8507 Green Lakes Road, Fayetteville, New York 13066 [project address], Tax Parcel # 082-02-15.1**,** Manlius, New York, and related matters (the "Project") agrees as follows:

The Application and Project may or will likely entail that the Town incur legal, engineering, architectural, administrative and related expense(s) including, without limitation, for both on staff and third party consultants involved in the consideration of the Application and Project, and including, without limitation, attendance at Zoning Board of Appeals, Planning Board, and Town Board meetings, consultation with the Applicant, its or the Town's engineer, architect, attorney, and/or other Town officers and employees, or consultants or professional service providers, incidental to the Application from the earlier of the filing of the Application for and/or first presentation of the Project to Town, and through final completion and issuance of all Town and other governmental permits, certifications and approvals.

In connection with and consideration of the foregoing, Applicant agrees to bear all cost and expense for such administrative, legal, engineering, architect and other professional and consulting assistance to the Town incidental to the Application and Project, and including that expense incurred by the Town for Town employees and officers performing reasonable and necessary work on behalf of the Town incident to the Application or Project.

In connection with the foregoing, Applicant shall reimburse the Town for time spent by outside consultants and professionals at the usual rate charged by them to private clientele, or if none, then the usual rate charged to municipalities. Reimbursement for the cost of Town employees and officers shall be based upon the cost to Town for the services of such persons, including salary and fringe benefits, reduced to an hourly rate and including overtime where directly attributable to the Application or Project.

Should the Town determine, in its sole discretion, that additional services are required to represent, supervise, inspect, evaluate and/or consult, including in order to protect the rights and/or interests of the Town such as relative to an enforcement or violation proceeding, the Applicant shall likewise bear all costs associated with such services.

This Agreement shall be effective as of _____, 20__. The Applicant shall deposit an initial sum of **$**_____, and such other amounts as from time to time the Town may determine, payable to and deposited with the Town and which sum or sums shall be applied against those sums reimbursable to the Town pursuant to the terms of this Agreement (the "Deposit"). Upon completion or discontinuance of the Application and Project and payment of all fees incurred, any unused Deposit shall be returned to the Applicant.

The Applicant shall receive periodically, one or more statements detailing charges for which reimbursement has been made against the Deposit, detailing unpaid amounts, if any, and setting forth any additional Deposit required by the Town. Failure to pay any amounts due the Town of Manlius within twenty (20) days of the date of statement may result in the termination of work/services by Town relative to the Application, the non-issuance suspension or revocation of any certificates, permits or approvals, and/or denial of applications, the Town's commencement of collection efforts, and/or the exercise of any other rights or remedies available to Town hereunder or pursuant to applicable law, including under the Town Code. No certificates, approvals or permits, including, without limitation, Certificates of Occupancy/Compliance, may be issued until all fees due hereunder are paid or sufficient Deposit for same made.

Notwithstanding any provision hereof to the contrary or otherwise, the intent of this Agreement is to subject all of those subject matter areas under applicable provisions of Federal, State, and County laws, rules and regulations whatsoever, the Town Code including as any of same may be amended from time to time, and without limitation, those provisions under Chapters 59, 63, 72, 83, 95, 96, 104, 119, 123, 125, 126, 127, 131, 147, and 155 of the Town Code to the provisions hereof; in addition any financing or funding applications incidental to the Application or Project and requiring sponsorship or support of Town, and review under the State Environmental Quality Review Act or other State or Federal environmental, historical or related laws, rules or regulations shall likewise be subject to the provisions hereof.

In addition, and notwithstanding any provisions hereof to the contrary or otherwise, any provisions of the Town Code or other laws, rules or regulations providing rights more favorable to and protective of Town shall be deemed incorporated herein by reference, and shall not be deemed superseded by less protective provisions herein.

In the event of a breach or default by Applicant, Town shall be entitled to pursue any and all legal rights and remedies pursuant to applicable law including, without limitation, the Town Code and shall be entitled to recover, in addition to any sums due, reasonable attorney's fees ,costs and disbursements incurred in any such efforts.

If any part of this Agreement or the application thereof to any person or entity or circumstance is adjudged invalid, illegal or unconstitutional by any court of competent jurisdiction, such order or judgment shall be confined in its operation to the part of this law or in its application directly involved in the controversy in which such judgment shall have been rendered and shall not affect or impair the validity of the remainder of this Agreement or the application thereof to other persons, entities or circumstances. Further, in adjudging such invalid, illegal or unconstitutional provision or part thereof, the court shall attempt to modify same to a provision or part which is not illegal, invalid or unconstitutional and which best achieves the intent of such illegal, invalid or unconstitutional provision or part thereof.

The Town Supervisor has executed this agreement pursuant to a blanket Resolution adopted by the Town Board at a meeting thereof held on _____, 20__, and is duly authorized and empowered to execute this instrument and enter into this Agreement on behalf of the Town of Manlius.

In the event Applicant is a closely held corporation, partnership or limited liability company, its three (3) largest principals shall be signatories to this Agreement, as joint and severable parties with Applicant and Town.

This instrument shall be executed in triplicate. At least one original shall be permanently filed, after execution thereof, in the office of the Town Clerk and one in the Code Enforcement Office.

Dated: 4/15/2020

_____	_____
Print Applicant Name	**Applicant's Authorized Signature/Title**

Applicant Address: One Bridge Street, Suite 11, Irvington, New York 10533

_____

_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**
_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**
_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**

TOWN OF MANLIUS

By: _____

Name: _____

Title: _____

Exhibit H

DISCLOSURE AFFIDAVIT

DISCLOSURE AFFIDAVIT

Green Lakes Solar Facility Application
8507 Green Lakes Road, Fayetteville, New York
13066

State of New York

Mr. Jonathan Koch, as a representative of the Applicant, EF NY CDG 002, LLC (Falck Renewables), who having been first duly sworn says:

I reviewed General Municipal Law §809 and am familiar with the provisions contained therein, that no state officer, or any officer or employee of the County of Onondaga or Town of Manlius has any interest in the person, partnership or association owning the premises subject of the application or making such application, and that no other violation of §809 shall result from such application

Jonathan Koch
Falck Renewables

Subscribed and sworn to before me this day 4/1/2020

Notary Public

ERIN Q. SANCHEZ
Notary Public, State of New York
No. 1SA6035943
Qualified in Dutchess County
Commission Expires January 10, 2022

My Commission Expires on: 1/10/22



Special Use Permit and Site Plan Approval Application

Proposed Green Lakes Solar Site
8507 Green Lakes Road
Fayetteville, New York 13082

Submitted April 16, 2020

Prepared by:

TETRA TECH

Tetra Tech, Inc.
3163 South Winton Road, Suite 303
Rochester, NY 14623
Phone: (585) 417-4007

Prepared for:

EF NY CDG 002, LLC
One Bridge Street, Suite 11
Irvington, New York 10533

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1.0 PROJECT OVERVIEW

EF NY CDG 002, LLC (Falck Renewables) is seeking a Special Use Permit and Site Plan approval for the construction of the Green Lakes Solar 5 megawatt (MW) alternating current (AC) photovoltaic (PV) array located at 8507 Green Lakes Road, Fayetteville (Manlius), New York (hereafter referred to as the "Site"). Falck Renewables proposes the development of approximately 23.4 acres of a larger approximately 147.43-acre parcel of agricultural land in the Town of Manlius, Onondaga County into a ground-mounted (PV) solar farm.

The proposed PV solar farm would be capable of delivering about 5,000 kW AC into the local electrical distribution system, which is sufficient to provide renewable energy to approximately 600 households. The PV solar modules proposed for this project are fixed-tilt modules that would be placed on a racking system that is either pile driven or screw mounted to the ground surface. The PV solar modules will be directly interconnected to and provide energy to the local electric distribution system via a typical 13.2 kilovolt, overhead electrical service. Prior to utility interconnection, direct current (DC) electric power generated by the PV solar modules will be transformed to AC electric power by inverters and modified as necessary to safely supply the local electrical distribution system. The PV solar farm would also include an equipment pad, a gravel access road, a vegetative soil cover, and it will be surrounded by a chain-linked security fence per code.

The following sections and Exhibits provide information 1) about the proposed PV solar farm and 2) required as part of the Special Permit application criteria and Section 155-27.2 of the Town Code.

2.0 SITE DESCRIPTION

The Site located 8507 Green Lakes Road, Fayetteville, New York, consists of an approximately 147.43-acre parcel assigned Assessor Parcel Number (APN) 313889-082-000-0002-015-001-0000 and Property Identifier 082.-02-15.1. According to the Onondaga County Image Mate Online database the property class is listed as "field crops" and is zoned as residential-agricultural.

The Site includes agricultural and wooded land with several unimproved roads and two farm related buildings. The Site is bounded by wooded land followed by agricultural land to the north and east, wooded land followed by residential structures to the south and Green Lakes Road followed by residential structures to the west.

A map showing the location of the Site is presented in *Attachment 1*.

3.0 COMMUNITY CHARACTER AND SURROUNDING LAND USE

The general area at the Site consists of agricultural and undeveloped land. The Site is located within a rural residential area in the Village of Fayetteville in Onondaga County, New York. The Site is bounded by wooded land followed by agricultural land to the north and east, wooded land followed by residential structures to the south and Green Lakes Road followed by residential structures to the west.

Table 4-1 Adjacent Properties and Addresses

Direction from the Site	Street Address	Description
North	N/A	Wooded Land
East	N/A	Wooded and Agricultural Land
South	Green Lakes Road	Wooded Land
South	8535 Green Lakes Road	Residential
West	Green Lakes Road	Green Lakes Road
West	8542-8512 Green Lakes Road	Residential

The installation and operation of a solar facility is consistent with the Town's vision to *"...promote the safe, effective and efficient use of solar photovoltaic energy systems that reduce on-site and off-site consumption of utility-supplied energy while protecting the health, safety and welfare of adjacent and surrounding land uses and properties."* (Section 155-27.2 of the Town Code).

Falck Renewables and its affiliates have worked closely with the landowner to locate the Site in the least productive area of farmland on the designated land parcel. In addition, the PV solar farm will be decommissioned after its useful life (designed for 40 years) and the land may be readily reused for agriculture. During the PV solar farm's useful life, native nutrient-rich plant blends can be used as ground cover to enhance soil erosion measures and increase future farm production.

The proposed PV solar farm is harmonious with the Site's adjoining parcels' existing agricultural use, will not depreciate or alter those properties' essential character, and presents no conflict with residentially zoned areas of Town of Manlius.

While research is limited on the effect of ground-mounted PV solar farms on surrounding land values, a 2013 nationwide study of wind farms and surrounding property values within viewing range showed no evidence of affected property values. Due to PV solar farms' smaller profile and lack of flicker and shadow potential on surrounding lands, PV solar farms are anticipated to have even less of an impact than wind farms on surrounding land values.

4.0 NATURAL AND CULTURAL RESOURCES

4.1 Threatened and Endangered Species

Tetra Tech, on behalf of Falck Renewables, consulted with the New York State Department of Environmental Conservation (NYSDEC) online Environmental Assessment Form (EAF) Mapper on March 31, 2020. The NYSDEC review stated that there is no record of unique geological features, wetlands or waterbodies, State listed rare species of plant or animal, or critical environmental areas on the project Site. The NYSDEC EAF Form is included as Exhibit E to the Special Permit Application.

Tetra Tech submitted a consultation request to the United States Department of the Interior Fish and Wildlife Service (USFWS) on March 3, 2020. The USFWS responded that there are no critical habitats for threatened or endangered species in the vicinity of the Site (*Attachment 2)*.

4.2 Cultural Resources

Tetra Tech, on behalf of Falck Renewables, submitted a consultation request to the New York State Office of Parks, Recreation, and Historic Preservation's (OPRHP) Cultural Resource Information System (CRIS) database to identify properties listed on the State and National Register of Historic Places (NRHP) on or in the vicinity of the Project Site. OPRHP responded to the consultation by issuing a "No Effect" letter dated March 19, 2020 (*Attachment 3*) stating that no archaeological surveying was required, and the proposed solar facility would have no effect on historic cultural resources.

5.0 OPERATION AND MAINTENANCE CONSIDERATIONS

While PV solar farms of this capacity are typically considered to be fairly low-maintenance, routine operation and maintenance services, including locally contracted vegetation management, will be performed per industry codes and manufacturers' specifications, ensuring the safe and efficient operation of equipment. The PV solar farm will be continuously monitored such that unexpected issues may be addressed immediately.

5.1 Noninterference

The Site will not produce an electromagnetic interference in the existing microwave communications operation.

5.2 Proximity to radio, television and telephone systems

The Site will not interfere with existing fixed broadcast, retransmission, or reception antennae for radio, television or wireless phone.

5.3 Fencing and security

The Site will be surrounded by a chain-link fence in compliance with all Federal, State, and Municipal codes.

5.4 Lighting

No artificial lighting will be needed for the normal operations at the Site.

5.5 Utility Interconnection and Considerations

In general, the greatest challenge in siting economically viable PV solar farm is associated with utility interconnection capacity and requirements. Falck Renewables and its affiliates have been working in close coordination with the National Grid and the 25% interconnection down payment associated with the Site has been paid per D. Payment and Construction Milestones of the New York State Standardized Interconnection Requirements and Application Process For New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems.

Traffic impacts are generally limited to the PV solar farm construction period, which is estimated to last approximately three months. Once the PV solar farm is operational, traffic is typically

limited to less than 10 visits per year to monitor operation, provide maintenance/repair, and maintain vegetation, as necessary.

5.7 Noise

There may be some noise associated with PV solar farm construction – truck entry/exit, earthmoving equipment, etc. – but it is expected to be temporary in duration and limited to normal working hours.

The solar collection modules themselves are quiet. The greatest potential source of noise is anticipated to be from the power inverter at the Site. The inverter will be located central to the array of solar modules and more than 700 feet from the nearest residential receptor. Noise levels at a typical inverter will be approximately 55 decibels at a distance of three feet and the noise will dissipate quickly as distance from the inverter increases. As a point of comparison, engaging in normal face-to-face conversation generates a noise level of approximately 60 decibels, and typical city traffic inside a car has a noise level of approximately 80 decibels (Center for Disease Control and Prevention, 2017). At a distance of 40 feet, which is closer than the nearest receptors, the inverter's noise level calculates to approximately 35 decibels, which is comparable to a soft whisper. Thus, noise impacts from the facility's operation are expected to be insignificant.

5.8 Solid Waste

Some minor amount of solid waste generation may occur during the construction process, but it will be disposed of off-site at an appropriate location. Once operational, the PV solar farm will not generate an appreciable amount of solid waste.

5.9 Fire Protection and Emergency Access

Coordination with emergency services is an important part of any PV solar farm development process and this coordination will be conducted as part of the Building Permit application process. Local emergency services will be provided with notification that the Site is undergoing review and invited to visit the Site. Equipment specifications will be provided to responders during the building permit application and implementation process.

The following measures will be taken regarding response to potential emergencies at the proposed facility:

- Local emergency responders will be invited to tour the Site during construction and after construction is completed. The Site tour will agenda will include descriptions of the system components, emergency shut-down, system isolation, etc.;

- The facility will be provided with a 'Knox-Box" or other similar locking mechanism to provide Site access to emergency responders;
- Emergency telephone numbers will be posted on the perimeter fence;
- System components will be marked in order to provide emergency responders with appropriate warning and guidance with respect to isolating the electrical systems;
- A Site access road will be constructed in a way that allows for the passage of emergency vehicles in the event of an emergency; and
- A Site access road will be maintained to allow emergency vehicle access to the Site.

6.0 VISUAL IMPACTS ANALYSES

6.1 Viewsheds and screening

Tetra Tech, on behalf of Falck Renewables conducted a full dimensional viewshed analysis and developed a conceptual landscape/screening plan to address concerns of visibility from residences in proximity to the proposed Site. The viewshed map analyzes the potential visibility of the solar modules and screening provided by topography as well as existing vegetation. A profile that depicts the terrain and other existing features that may influence visibility of the Site was developed to provide a graphical representation of the line of sight from points selected along Green Lakes Road. The viewshed map is provided in *Attachment 4* and the Landscaping plan is included in *Attachment 5*.

To incorporate vegetative screening into the project, the project will incorporate the daily activities of the existing commercial farm located on the property, growing trees for both landscaping and seasonal purposes (Chuck Hafner Farms). Operations from the tree farm will continue during solar operations and provide partial screening of the PV solar farm from residences located along the west side of Highway 290 and along Buttonvale Road.

6.2 Federal Aviation Administration & Glare Analysis

With growing numbers of solar energy systems being proposed and installed throughout the United States, the potential impact of glint and glare from photovoltaic modules is receiving increased attention. The Federal Aviation Administration (FAA) developed *Technical Guidance for Evaluating Selected Solar Technologies on Airports* in 2010 (FAA Guidance). The FAA Guidance recommends that glare analyses should be performed on a site-specific basis using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This guidance applies to PV solar farm located on/near airport property but is also considered to be an industry best practice for solar facilities in general.

Sandia developed SGHAT v. 3.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g. anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard (Sandia Laboratories, 2016).

The SGHAT (GlareGauge) was utilized to evaluate the potential for glare at several locations along nearby roads, residences, and any commercial facilities. The modules to be used on the Site are smooth glass surface material with an anti-reflection coating (ARC), which is noted in the glare analysis. The modules will be on a south-facing fixed-tilt array with an approximate height not to exceed nine feet from the ground surface. The modules will have a maximum 25-degree tilt. Two separate glare analyses were conducted for a module height of nine feet (maximum height) with applicable panel specifications. The SGHAT Report is included as *Attachment 6.*

The Federal Aviation Administration (FAA) Notice Criteria Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed solar facility would require formal filing to the FAA. The FAA Notice Criteria Tool Report is included as *Attachment 7.*

7.0 REFERENCES

Adolf Goetzberger and Volker Hoffman (2005). "Photovoltaic Solar Energy Generation." Springer, New York.

The Federal Aviation Administration (FAA) developed *Technical Guidance for Evaluating Selected Solar Technologies on Airports* in 2010

Fthenakis, V.M. (2003). Practical Handbook of Photovoltaics: Fundamentals and Applications: Overview of Potential Hazards. Available at http://www.bnl.gov/pv/files/pdf/art_170.pdf .

U.S. Dept. of Energy (2010). "Photovoltaic Basics." Available at http://www1.eere.energy.gov/solar/pv_basics.html .

Vasilis Fthenakis, Hyung Chul Kim and Erik Alsema (2008). "Emissions from Photovoltaic Life-Cycles." *Environmental Science and Technology* 2008 42 (6):2168-2174. Available at: http://pubs.acs.org/doi/full/10.1021/es071763q .

Hoen et al. (2013). "A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States". Ernest Orlando Lawrence Berkeley National Laboratory.

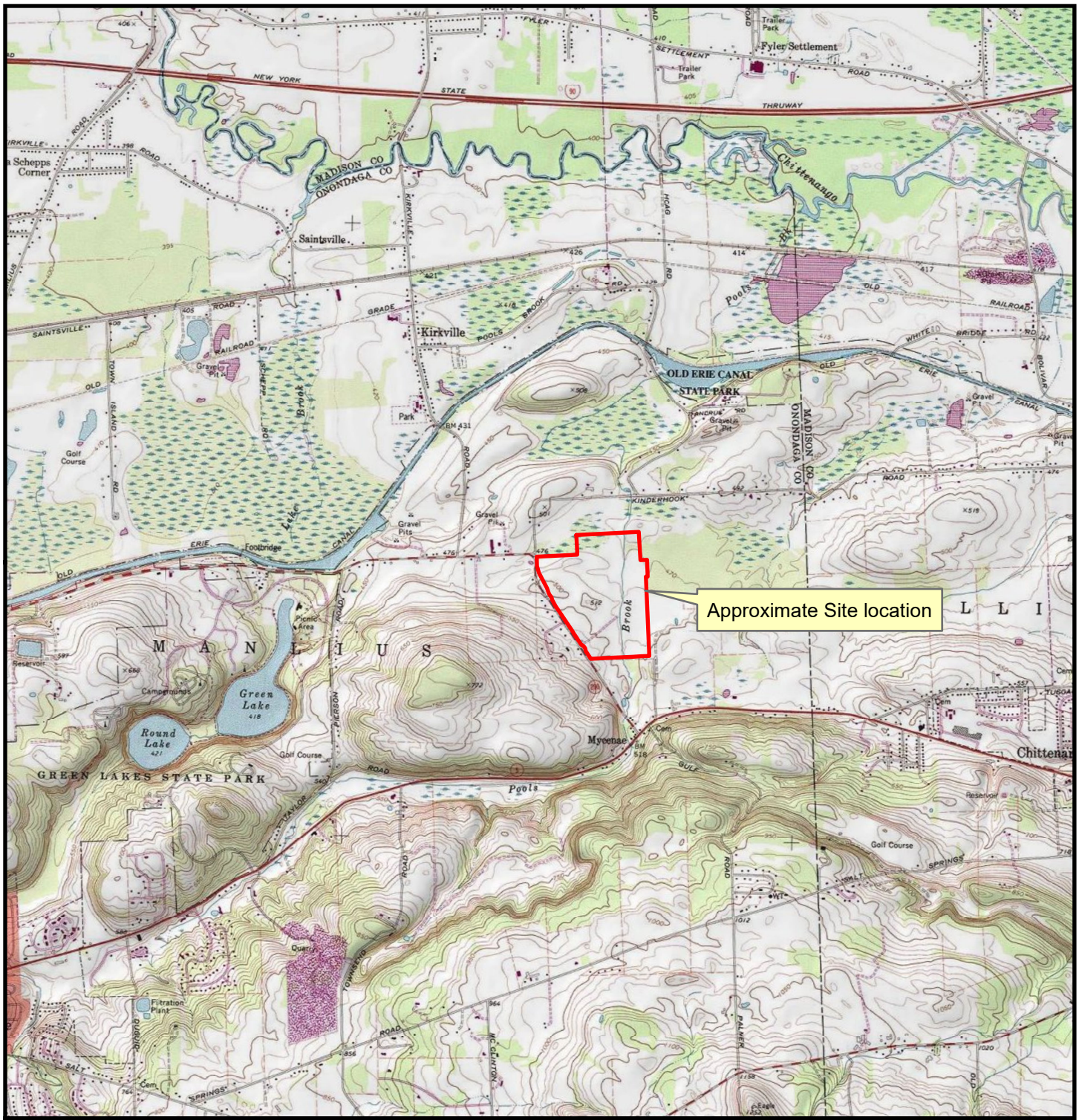
8.0 ATTACHMENTS

ATTACHMENT 1 – SITE LOCATION MAP
ATTACHMENT 2 – USFWS THREATENED AND ENDANGERED SPECIES
ATTACHMENT 3 – SHPO CONSULTATION LETTER
ATTACHMENT 4 – VIEWSHED ANALYSIS
ATTACHMENT 5 – LANDSCAPING PLAN
ATTACHMENT 6 – GLARE ANALYSIS
ATTACHMENT 7 – FEDERAL AVIATION ADMINSTRATION SCREEN

ATTACHMENT 1

SITE LOCATION MAP

Copyright: Tetra Tech 12/19/2019 4:58:47 PM





Legend

Approximate Site boundary

Approximate scale:

0 0.25 0.5 1 Miles

TETRA TECH

Attachment A
Site Location

Green Lakes Solar
8507 Green Lakes Road
Fayetteville, NY

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

ATTACHMENT 2

USFWS THREATENED AND ENDANGERED SPECIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: March 04, 2020
Consultation Code: 05E1NY00-2020-SLI-1931
Event Code: 05E1NY00-2020-E-05805
Project Name: Green Lakes Solar

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2020-SLI-1931

Event Code: 05E1NY00-2020-E-05805

Project Name: Green Lakes Solar

Project Type: POWER GENERATION

Project Description: Proposed ground-mounted solar project on agricultural land

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.05829677491623N75.93458241903994W



Counties: Onondaga, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

Snails

NAME	STATUS
Chittenango Ovate Amber Snail *Succinea chittenangoensis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1776	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

ATTACHMENT 3

SHPO CONSULTATION LETTER

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 19, 2020

Jodi Hunt
Project manager
Tetra Tech, Inc.
3136 South Winton Road
Suite 303
Rochester, NY 14623

Re: DEC
Green Lakes Solar/7 MW/23.5 of 147 Acres
8507 Green Lakes Rd, Town of Manlius, Onondaga County, NY
20PR01565

Dear Jodi Hunt:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

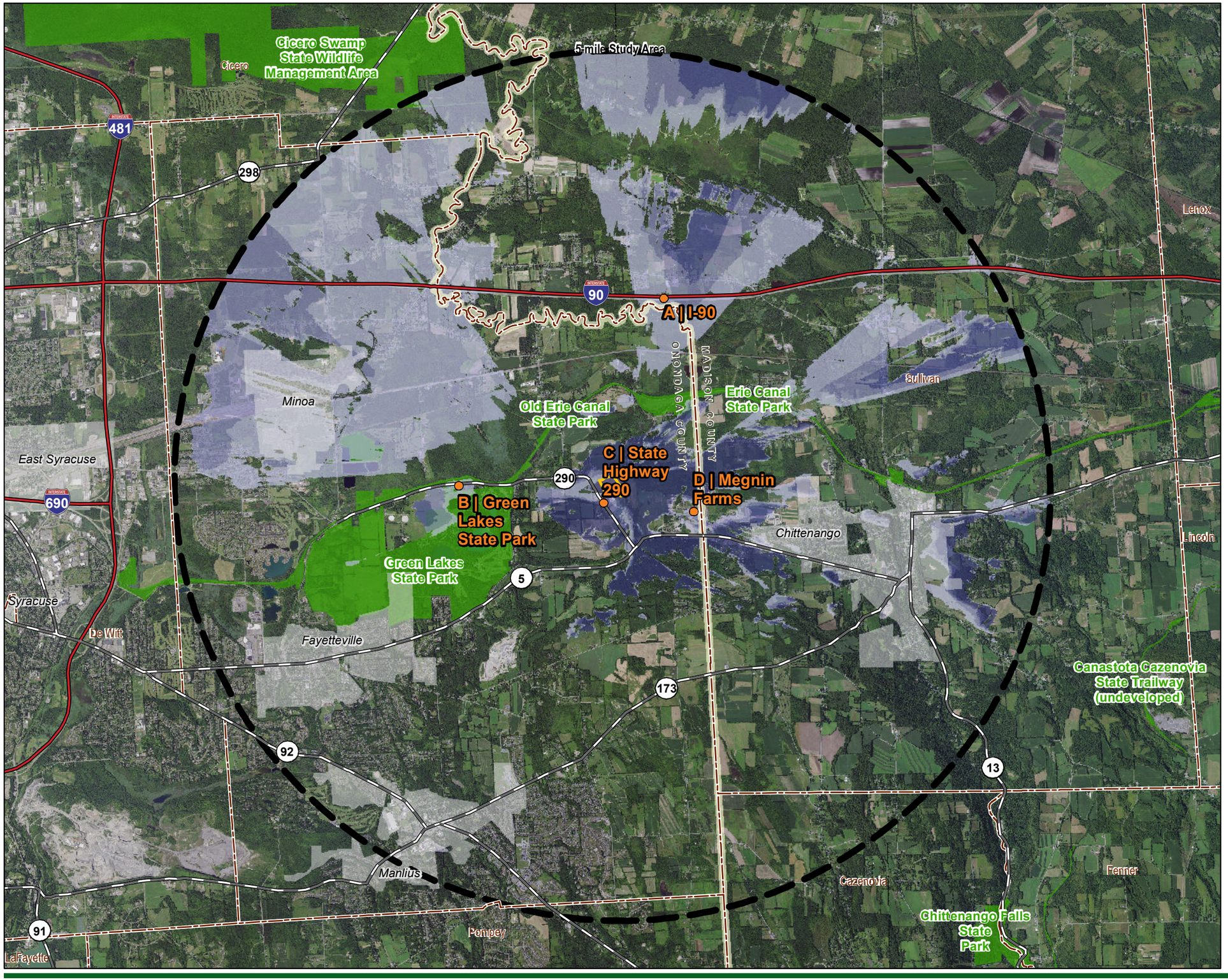
R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

ATTACHMENT 4

VIEWSHED ANALYSIS

Green Lakes Solar Project | Onondaga County, NY



Project Area | **Viewshed Analysis**

- Line-of-Sight Location
- Project Area
- State Park

Transportation

- Interstate Highway
- U.S. Highway
- State Highway

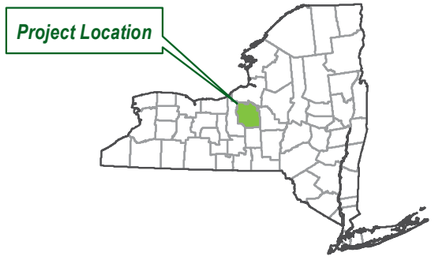
% of PV Panels Potentially Visible

- < 25%
- 25% - 50%
- 50% - 75%
- > 100%

*Viewshed analysis is based on topography (bare earth; no vegetation or intervening structures) and a maximum 10' height of solar panels to evaluate the potential visibility of the proposed project. Areas that are not shaded in purple indicate that there is likely no visibility.

NOT FOR CONSTRUCTION

0 1.5 3 Miles



Green Lakes Solar Project | Onondaga County, NY



Project Area | **Viewshed Analysis**

- Line-of-Sight Location
- Line-of-Sight
- Project Area
- State Park

Transportation

- Interstate Highway
- U.S. Highway
- State Highway

% of PV Panels Potentially Visible

- < 25%
- 25% - 50%
- 50% - 75%
- > 100%

*Viewshed analysis is based on topography (bare earth; no vegetation or intervening structures) and a maximum 10' height of solar panels to evaluate the potential visibility of the proposed project. Areas that are not shaded in purple indicate that there is likely no visibility.

NOT FOR CONSTRUCTION

0 0.5 1 Miles

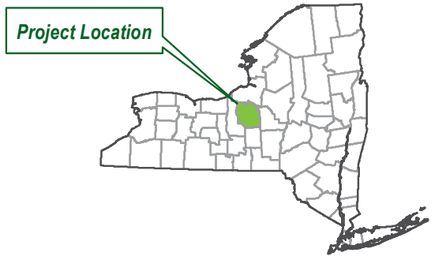


Figure 1: Line of Sight A | I-90

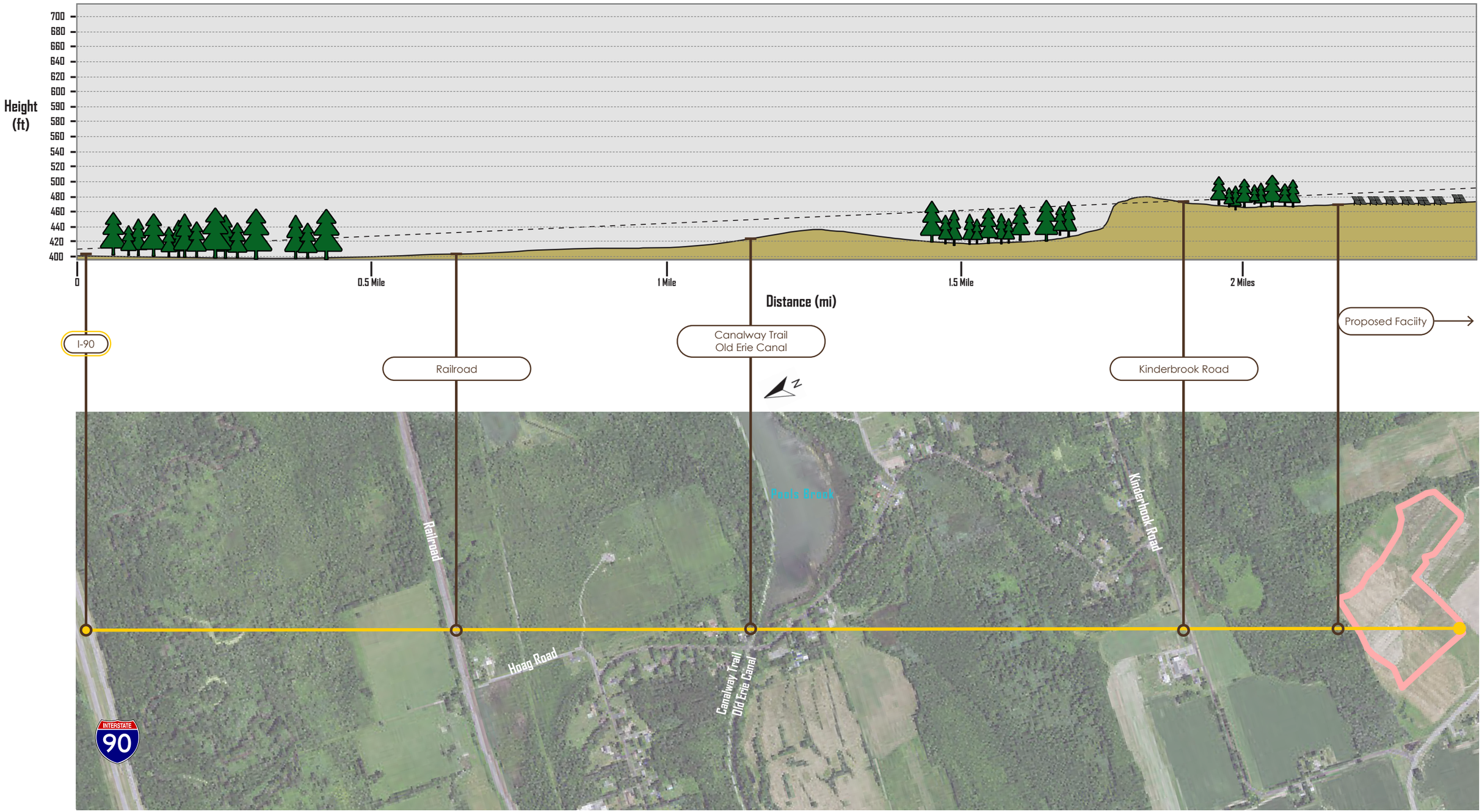


Figure 2: Line of Sight B | Green Lakes State Park

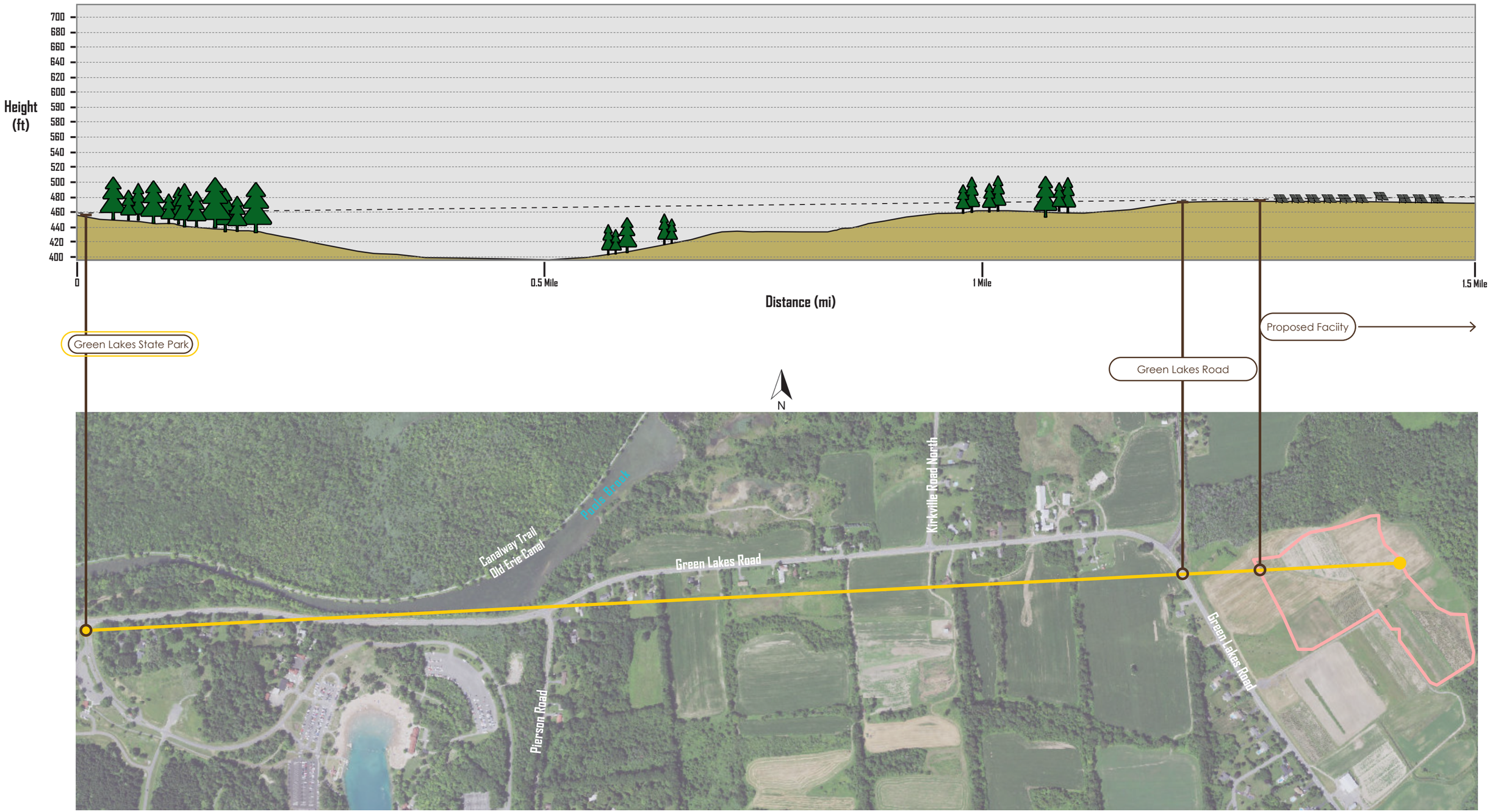


Figure 3: Line of Sight C | State Highway 290/Green Lakes Road

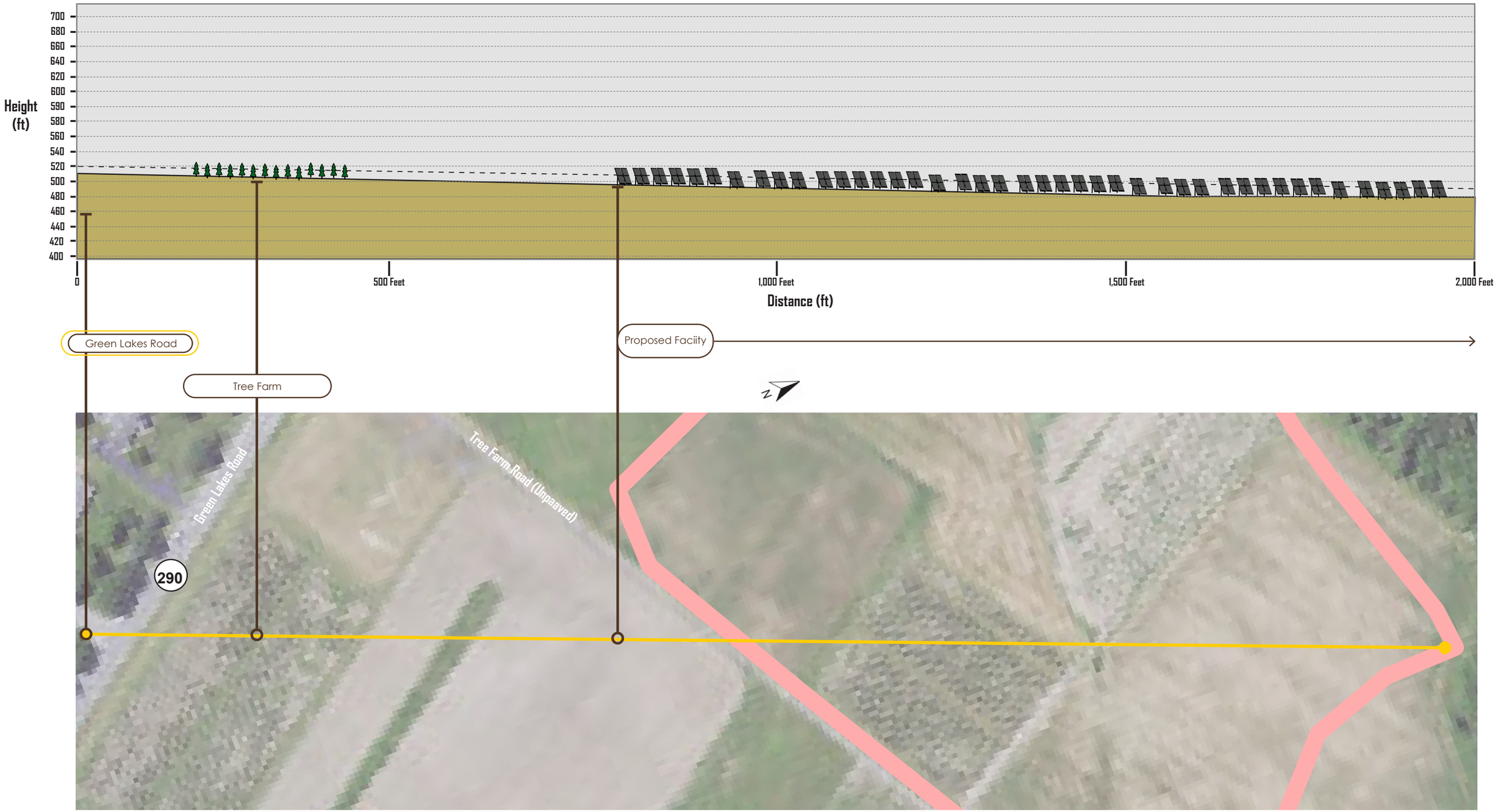
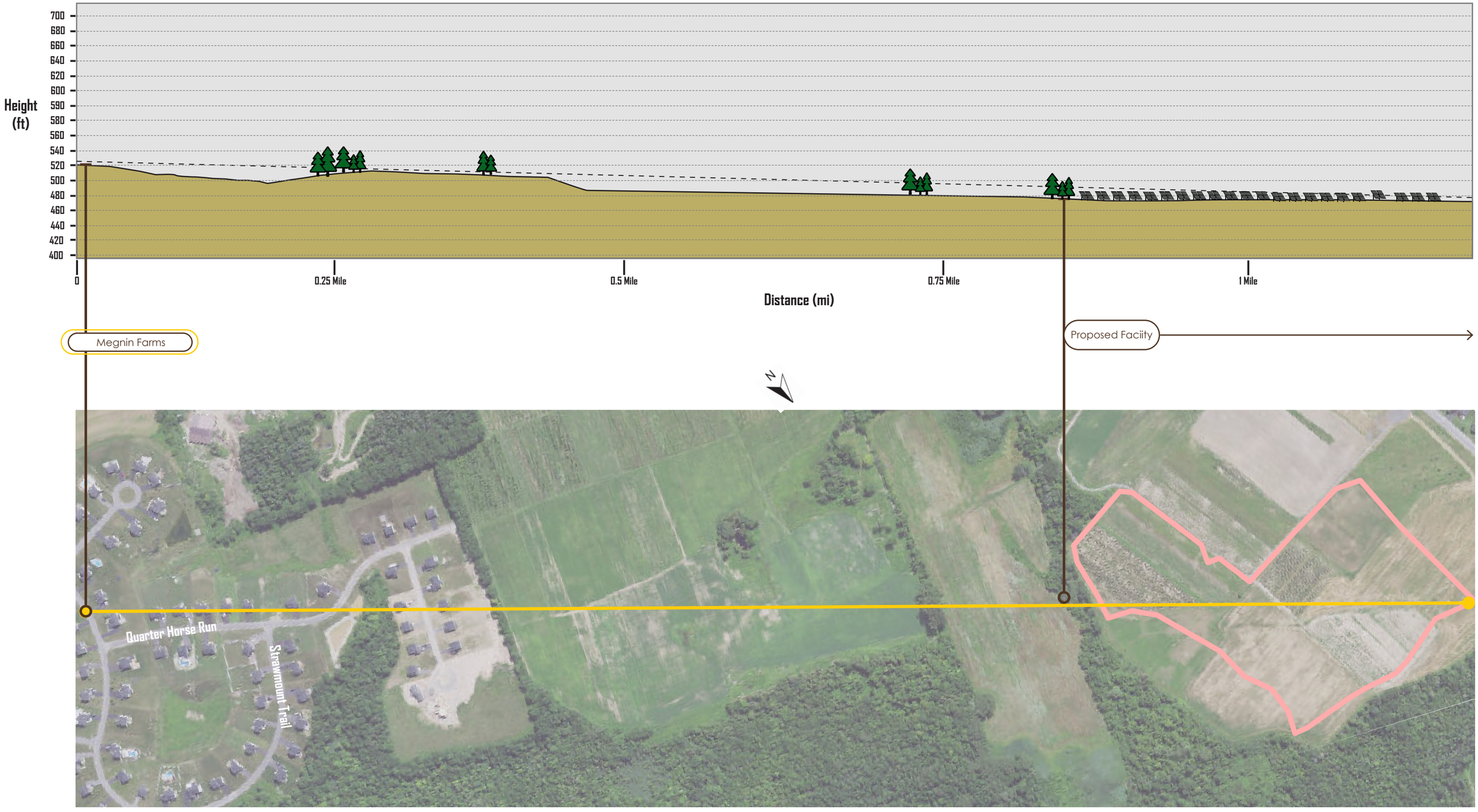


Figure 4: Line of Sight D | Megnin Farms



ATTACHMENT 5

LANDSCAPING PLAN

TETRA TECH
ARCHITECTS & ENGINEERS

April 10, 2020

Mrs. Jodi L. Hunt, Project Manager
Tetra Tech Engineering Corporation, P.C.
3136 South Winton Road, Suite 303
Rochester, New York 14623

Re: Green Lakes Solar Project
8507 Green Lakes Road
Manlius, New York 13066
Tt Project Number 194-7119

Dear Mrs. Hunt:

On April 8, 2020 I visited the above referenced project for the purposes of determining whether landscape materials are recommended to be installed to screen the proposed solar array development from New York State Route 290 – Green Lakes Road as shown on the Sheet C-201.

I evaluated the existing site against the proposed site plan in order to determine where the solar units might be visible from Green Lakes Road and from adjacent properties. Additionally, I compared the existing site topography against the road profile to gain a perspective on whether the solar array development could be visible along the property road frontage.

The solar project towards the northwest portion of the site is approximately 470 feet from the center line of Green Lakes Road. This portion of the development begins approximately 10 feet below the highest topographic point of the site. The solar panels will therefore be about 15 feet below the centerline of the road.

The south west portion of the solar development is approximately 1,130 feet from the centerline of Green Lakes Road and drops approximately 5 feet from the center line of the road. This portion of the development appears to be partially screened by evergreen trees.

The placement of this solar development on the site given the existing topography currently limits the overall visibility of the planned solar development. Adding plant material to enhance screening of this development will not be effective and is shown on the attached photographs.

Tetra Tech Architects & Engineers
Cornell Business & Technology Park
10 Brown Road, Ithaca, New York 14850
Tel 607.277.7100 Fax 607.277.1410 www.tetratech-ae.com

If you should have any questions on the enclosed, please do not hesitate to contact me at our **Ithaca** Office.

Sincerely,

James R. Stephenson

James R. Stephenson
Senior Landscape Architect
jim.stephenson@TetraTech.com

JRS:adm

cc: Project 194-7119, File 46b



SITE PHOTOGRAPHS



View to Northwest portion of the solar development



View to Southwest portion of the solar development

ATTACHMENT 6

GLARE ANALYSIS

TETRA TECH

MEMO

To:	EF NY CDG 002, LLC
From:	Tetra Tech, Inc.
Date:	March 13, 2020
Subject:	Glint and Glare Analysis of the Green Lakes Solar Project in Onondaga County, Fayetteville, NY

At the request of EF NY CDG 002, LLC (Falck Renewables), Tetra Tech, Inc. (Tetra Tech) conducted a glint and glare analysis of the proposed Green Lakes Solar Project (Project) located in Onondaga County, New York. The Project site consists of approximately 20 acres of undeveloped land approximately 3.8 miles northeast of downtown Fayetteville, New York. The Project is bounded by wooded land followed by agricultural land to the north and east, wooded land followed by residential structures to the south and Green Lakes Road followed by residential structures to the west. Topography throughout the Project site is relatively flat and ranges from approximately 440 to 500 feet above mean sea level with the highest elevations along the northern Project site boundary, gradually sloping down to the southwest.

This memorandum provides a description of the glint and glare anticipated from use of the Project site as a solar energy generating facility. Included are a Site Plan (Attachment A), the Sandia glare analysis reports (Attachment B), and the Federal Aviation Administration (FAA) Notice Criteria Tool Output (Attachment C).

GLARE ANALYSIS METHOD

With growing numbers of solar energy systems being proposed and installed throughout the United States, the potential impact of glare (a continuous source of bright light) from photovoltaic modules is receiving increased attention. As an industry standard, the term “glint and glare” analysis is typically used to describe an analysis of potential ocular impacts to defined receptors. As a point of clarification ForgeSolar defines glint and glare in the following statement:

> *Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.*

Based on the ForgeSolar definitions of glint and glare and the stationary nature of the Project modules (tracking arrays do not rotate faster than the relative movement of the sun), the potential reflectance from the Project modeled throughout this report will be referred to as glare.

The Federal Aviation Administration (FAA) developed Technical Guidance for Evaluating Selected Solar Technologies on Airports in 2010 (FAA Guidance). The FAA Guidance recommends that glare analyses should be performed on a site-specific basis using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This guidance applies to solar facilities located on federally-obligated airport property but is also considered to be an industry best practice for solar facilities in general. The SGHAT complies with FAA 78 FR 63276. Tetra Tech

utilized the SGHAT technology as part of an online tool (GlareGauge) developed by Sandia National Laboratories and hosted by ForgeSolar. GlareGauge provides a quantitative assessment of the following:

- When and where glare has the potential to occur throughout the year for a defined solar array polygon; and
- Potential effects on the human eye at locations where glare is predicted.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptor, the GlareGauge categorizes potential glare where it is predicted by the model to occur in accordance with three tiers of severity (ocular hazards) that are shown by different colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

The following statement was issued by Sandia Laboratories regarding the SGHAT technology:

> *Sandia developed SGHAT v. 3.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g. anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard (Sandia Laboratories, 2016).*

According to the Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports (78 FR 63276), the FAA has determined that "glint and glare from solar energy systems could result in an ocular impact to pilots and/or air traffic control (ATC) facilities and compromise the safety of the air transportation system." The FAA has developed the following criteria analyzed by SGHAT as it pertains to the Project:

- No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab; and
- No potential for glare or "low potential for after-image" along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two miles from 50 feet above the landing threshold using a standard three-degree glidepath.

The SGHAT was utilized to evaluate the potential for glint and glare at Syracuse Hancock International (SYR) as noted in the FAA Notice Criteria Tool Output (Attachment C). SYR contains 4 two-mile final approach path runways (RWY 10/28 and RWY 15/33) which were modeled according to the direction, threshold crossing height and glide path noted in the FAA Airport Database. In addition, 2 representative surrounding observation points (OPs) and segmented routes along Green Lakes Road were modeled to provide a representation of potential impacts to the surrounding viewshed. The SGHAT input parameters are noted in Table 1 and Table 2.

Table 1: SGHAT Input Parameters - Surrounding Properties

Racking Type	Module Type	Module Orientation[1]	Tilt	Panel Centroid Height[2]	Observation Point Height[2]	Route Receptor Height[2]
Fixed Tilt	Smooth Glass with Anti-Reflective Coating	180˚	25˚	5 feet	6 feet	5 feet

1. South-facing modules throughout Project
2. Height above ground surface: OP height of 6 feet represents standing on ground or first story views; route receptor height represents average views from a standard vehicle.

Table 2: SGHAT Input Parameters - Syracuse Hancock International

Module Orientation[1]	Tilt	Panel Centroid Height[2]	Air Traffic Control Tower Height[2]	Runway Direction (true direction)	Runway Threshold Crossing Height[2]	Runway Glide Path[3]
180˚	25˚	5 feet	50 feet	RWY 10: 87˚ RWY 28: 267˚ RWY 15: 134˚ RWY 33: 314˚	RWY 10: 55 feet RWY 28: 60 feet RWY 15: 53 feet RWY 33: 53 feet	RWY 10: 3˚ RWY 28: 3˚ RWY 15: 3˚ RWY 33: 3˚

1. Fixed-tilt, south-facing, smooth glass modules with anti-reflective coating throughout the Project.
2. Height above ground surface: ATCT height assumed to be approximately 50 feet.
3. Glide path is the angle of aircraft decent along the two-mile final approach path into the designated runway.

GLARE ANALYSIS RESULTS

The SGHAT GlareGauge modeled the results for the Project. Based on conservatisms and assumptions in the software, the Project was split into two photovoltaic (PV) array areas (PV 1 and PV 2) and Green Lakes Road was split into four segments. The SGHAT did not produce any results for glare along the two-mile final approach paths into SYR nor at the SYR ATCT; therefore, the Project complies with the minimum standards set for solar projects on airport property (FAA 78 FR 63276, as outlined above).

In addition, red glare and green glare were not predicted at any surrounding OPs or route receptors modeled in the SGHAT; however, yellow glare was predicted at one of the OPs as outlined in Table 3.

Table 3: Glare Analysis Summary

Receptor	Annual Green Glare Minutes	Annual Yellow Glare Minutes	Annual Red Glare Minutes
SYR RWY 10	0	0	0

SYR RWY 28	0	0	0
SYR RWY 15	0	0	0
SYR RWY 33	0	0	0
SYR ATCT	0	0	0
Green Lakes Road - 1	0	0	0
Green Lakes Road – 2	0	0	0
Green Lakes Road – 3	0	0	0
Green Lakes Road - 4	0	0	0
OP 2 (Residential)	0	2,730	0
OP 3 (Residential 2)	0	0	0

It is important to note that the SGHAT is bound by conservative limitations. The SGHAT does not consider obstacles (either man-made or natural) between the defined Project and the observer during analysis such as vegetative screening (existing or proposed), buildings, rolling topography, etc. In addition, the SGHAT does not account for varying ambient conditions (i.e. cloudy days, precipitation, etc.). The Project is located in an agricultural field that is surrounded by existing vegetation on the northern, eastern and southern sides. Residential homes located on the western side have tree plantings and sloping topography along Green Lakes Road. The glare analysis results summarized in Table 3 are a conservative representation as it is anticipated that many of these predicted annual glare minutes will be obstructed by existing vegetation and topography.

FAA NOTICE CRITERIA CONSULTATION

The FAA Notice Criteria Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed solar facility is recommended to formally file to the FAA based on the Project's central location and height above ground surface. The FAA Notice Criteria Tool Report (Attachment C) stated that a formal filing with the FAA Obstruction Evaluation Group is recommended due to the Project's proximity to SYR. As demonstrated by the results of the SGHAT, the Project is not anticipated to have adverse effects on SYR's two-mile final approach paths or ATCT. Formal filing of the Project to the FAA is recommended with the SGHAT output appended to demonstrate no adverse effects.

SUMMARY

The Project Site layout was modeled on the SGHAT GlareGauge in order to evaluate the potential extent of glare the proposed Project may have upon the two-mile final approach paths to SYR, approximately 9 miles northwest of the Project as well as on the surrounding properties and roadways. The final approach paths were generally defined as 2 miles from approximately 50 feet above the landing thresholds (78 FR 63276) using a standard 3-degree glide path. The land thresholds were defined from Runway 10/28 and 15/33 as noted in the FAA Airport Database and summarized in Table 2. In addition, the SGHAT was used to model potential extents of glare at

representative residential properties to the west and segmented vehicular traffic routes along Green Lakes Road. Based on the results noted in Table 3, no glare was predicted at the SYR receptors and, therefore, the Project is in compliance with FAA 78 FR 63276. Since the Project was recommended to formally file to the FAA OEG from the results of the FAA Notice Criteria Tool, Tetra Tech recommends that this formal filing be conducted with the glare analysis appended to demonstrate no adverse effects on navigable airspace.

Yellow glare (glare predicted with a potential for temporary after-image) was predicted at OP 2. In general, the yellow glare predicted at these receptors occurs in the morning hours (from 5:00 AM to 7:00 AM) from March through mid-September. The predicted glare (2,730 annual minutes) at OP 2 is totaling no more than 20 minutes per day, which equates to approximately 1.0% of annual daylight minutes. As noted above, the SGHAT is a conservative model and does not account for varying ambient conditions and/or screening due to existing or proposed vegetative cover or other objects, rolling topography between the Project and receptor, etc. Based on the Project location surrounded by existing mature vegetation and undeveloped land, it is anticipated that many of the predicted annual glare minutes will be obstructed by existing vegetation and rolling topography.

REFERENCES

Sandia Solar Glare Hazard Analysis Tool, GlareGauge hosted by ForgeSolar. Accessed online https://www.forgesolar.com/.

Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports. 78 FR 63276. October 23, 2013.

Federal Aviation Administration. CFR Title 14 Part 77.9 Notice of Proposed Construction or Alteration Requiring Notice. 2010.

Federal Aviation Administration. Technical Guidance for Evaluating Selected Solar Technologies on Airports. 2010.

Federal Aviation Administration Notice Criteria Tool. Obstruction Evaluation Version 2018.1.4. Accessed online https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm

Federal Aviation Administration Airport Database. Accessed online on March 9, 2020. https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/Airport_Data/

FORGESOLAR GLARE ANALYSIS

Project: **Falck Renewables - New York**
Site configuration: **Green Lakes**
Analysis conducted by Josh Burdett (joshua.burdett@tetratech.com) at 14:08 on 13 Mar, 2020.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

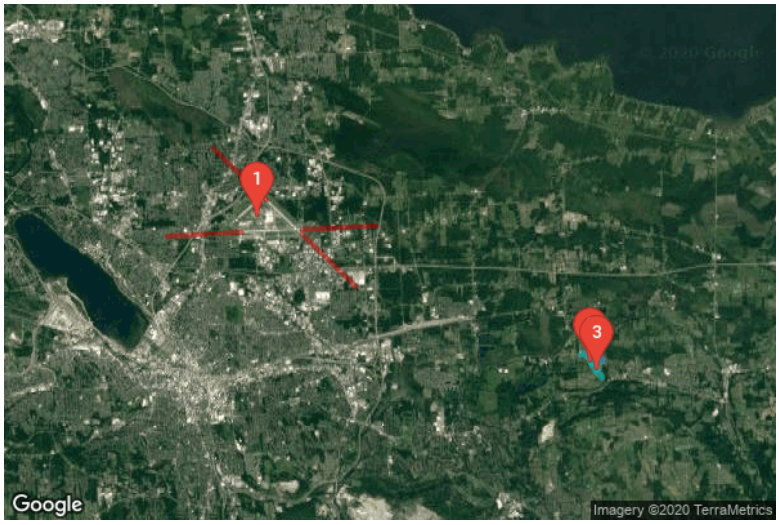
- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 36624.6727



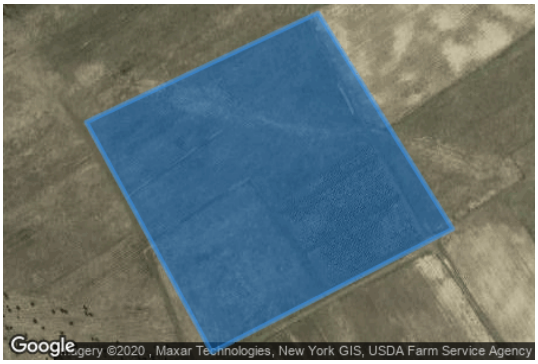
PV Array(s)

Name: PV array 1
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.057794	-75.933735	492.31	5.00	497.31
2	43.057747	-75.933477	489.42	5.00	494.42
3	43.058076	-75.932726	486.08	5.00	491.08
4	43.058531	-75.932769	484.24	5.00	489.24
5	43.059095	-75.932941	478.74	5.00	483.74
6	43.059754	-75.933606	476.54	5.00	481.54
7	43.060773	-75.934550	478.80	5.00	483.80
8	43.061008	-75.935194	476.98	5.00	481.98
9	43.060663	-75.936181	485.04	5.00	490.04

Name: PV array 2
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.060673	-75.936224	486.14	5.00	491.14
2	43.059246	-75.935001	482.47	5.00	487.47
3	43.058431	-75.937189	498.20	5.00	503.20
4	43.059952	-75.938327	489.99	5.00	494.99

Flight Path Receptor(s)

Name: RWY-10
Description:
Threshold height: 55 ft
Direction: 87.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



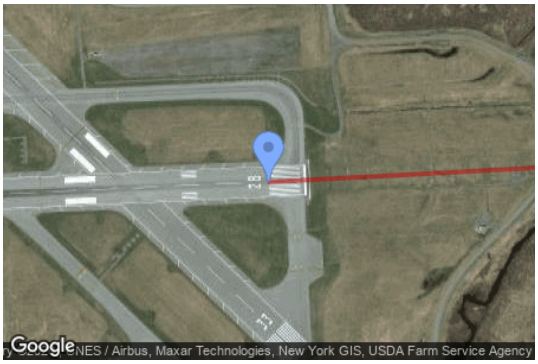
Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.108224	-76.125582	415.27	55.00	470.27
Two-mile	43.106711	-76.165177	431.53	592.20	1023.73

Name: RWY-15
Description:
Threshold height: 53 ft
Direction: 134.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.120919	-76.112385	410.69	53.00	463.69
Two-mile	43.141004	-76.140912	398.83	618.32	1017.15

Name: RWY-28
Description:
Threshold height: 60 ft
Direction: 267.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.109293	-76.093161	397.59	60.00	457.59
Two-mile	43.110806	-76.053565	406.77	604.28	1011.05

Name: RWY-33
Description:
Threshold height: 53 ft
Direction: 314.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

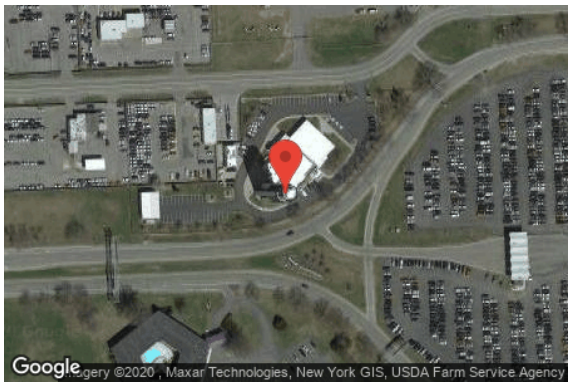


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.107304	-76.093075	399.29	53.00	452.29
Two-mile	43.087219	-76.064554	417.04	588.70	1005.74

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	43.114195	-76.117112	417.90	50.00
OP 2	2	43.057594	-75.939496	498.93	6.00
OP 3	3	43.054193	-75.936029	523.22	6.00

Map image of 1-ATCT



Route Receptor(s)

Name: Green Lakes Road-1
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.060937	-75.944060	488.71	5.00	493.71
2	43.061032	-75.941914	484.69	5.00	489.69
3	43.060561	-75.940927	477.04	5.00	482.04
4	43.059871	-75.940412	481.33	5.00	486.33

Name: Green Lakes Road-2
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.059864	-75.940431	481.34	5.00	486.34
2	43.059221	-75.939959	493.92	5.00	498.92
3	43.058531	-75.939466	496.96	5.00	501.96
4	43.057701	-75.938779	497.26	5.00	502.26
5	43.057230	-75.938393	497.64	5.00	502.64

Name: Green Lakes Road-3
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.057230	-75.938414	497.88	5.00	502.88
2	43.054878	-75.936226	515.53	5.00	520.53

Name: Green Lakes Road-4
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.054878	-75.936247	515.77	5.00	520.77
2	43.052087	-75.933586	513.07	5.00	518.07

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV array 1	25.0	180.0	0	2,654	-
PV array 2	25.0	180.0	0	76	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY-10	0	0
RWY-15	0	0
RWY-28	0	0
RWY-33	0	0
1-ATCT	0	0
OP 2	0	2730
OP 3	0	0
Green Lakes Road-1	0	0
Green Lakes Road-2	0	0
Green Lakes Road-3	0	0
Green Lakes Road-4	0	0

Results for: PV array 1

Receptor	Green Glare (min)	Yellow Glare (min)
RWY-10	0	0
RWY-15	0	0
RWY-28	0	0
RWY-33	0	0
1-ATCT	0	0
OP 2	0	2654
OP 3	0	0
Green Lakes Road-1	0	0
Green Lakes Road-2	0	0
Green Lakes Road-3	0	0
Green Lakes Road-4	0	0

Flight Path: RWY-10

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-15

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-28

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-33

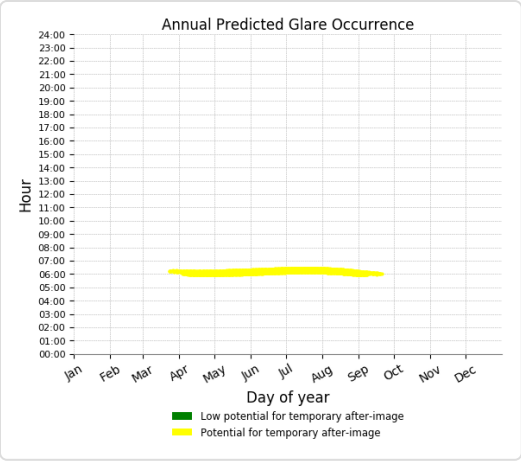
0 minutes of yellow glare
0 minutes of green glare

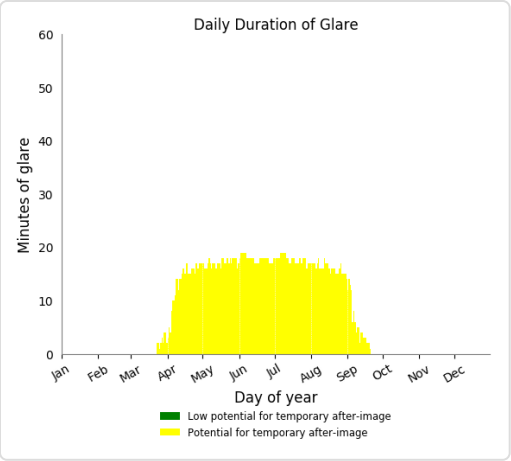
Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

2654 minutes of yellow glare
0 minutes of green glare





Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-1

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-2

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-3

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-4

0 minutes of yellow glare
0 minutes of green glare

Results for: PV array 2

Receptor	Green Glare (min)	Yellow Glare (min)
RWY-10	0	0
RWY-15	0	0
RWY-28	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
RWY-33	0	0
1-ATCT	0	0
OP 2	0	76
OP 3	0	0
Green Lakes Road-1	0	0
Green Lakes Road-2	0	0
Green Lakes Road-3	0	0
Green Lakes Road-4	0	0

Flight Path: RWY-10

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-15

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-28

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY-33

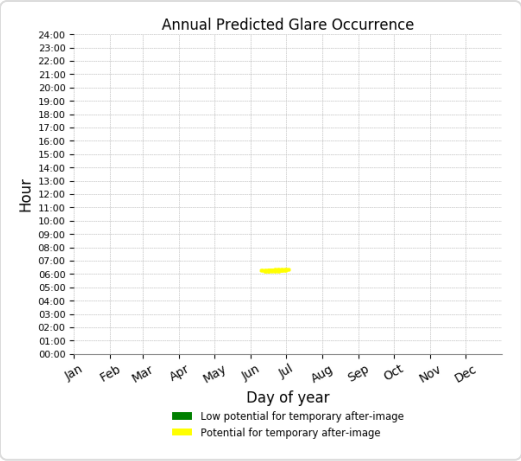
0 minutes of yellow glare
0 minutes of green glare

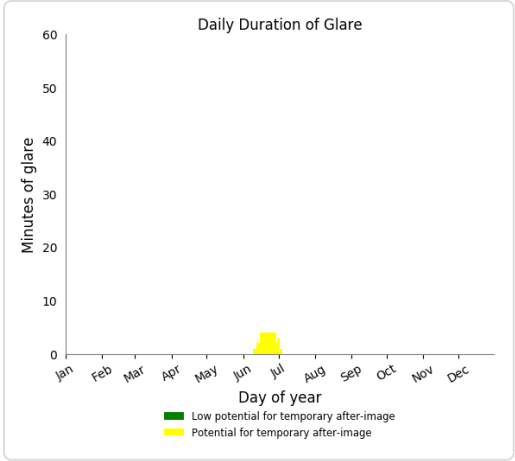
Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

76 minutes of yellow glare
0 minutes of green glare





Point Receptor: OP 3

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-1

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-2

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-3

0 minutes of yellow glare
0 minutes of green glare

Route: Green Lakes Road-4

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

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ATTACHMENT 7

FEDERAL AVIATION ADMINSTRATION SCREEN

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

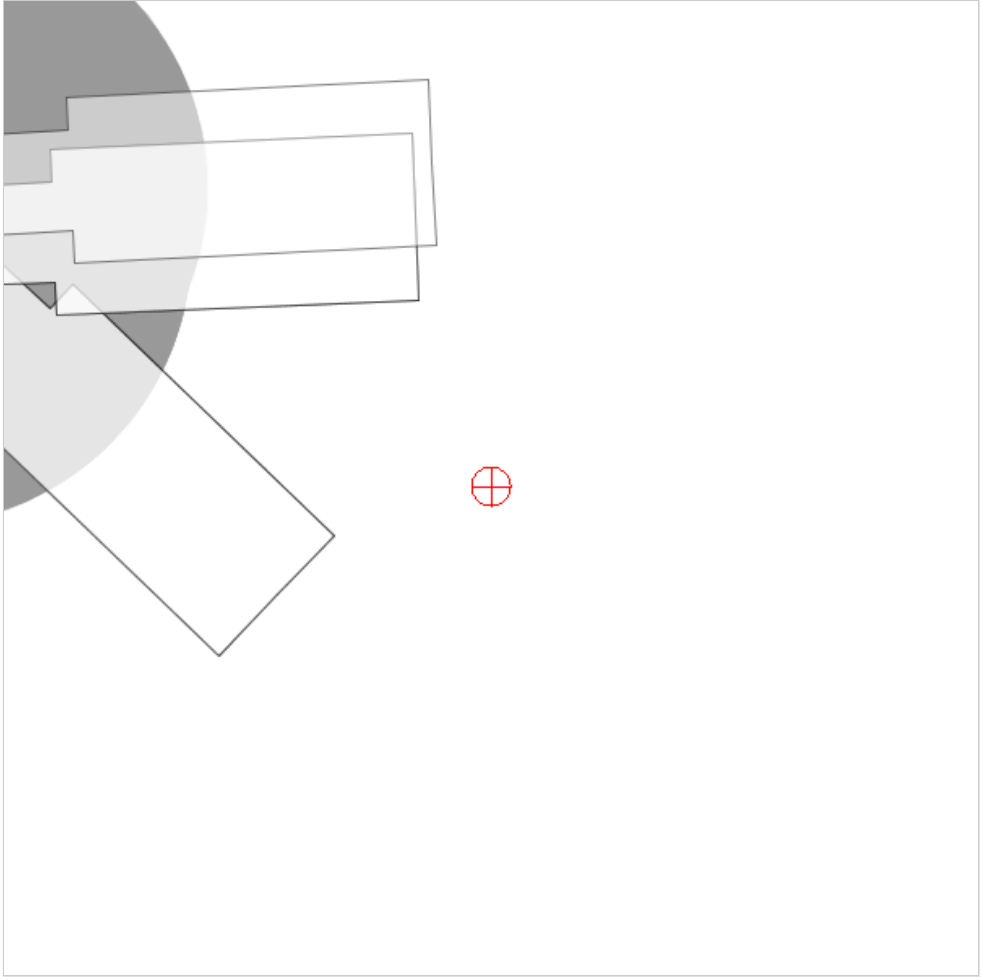
Latitude:	43 Deg 3 M 33.81 S N ▼
Longitude:	75 Deg 56 M 7.72 S W ▼
Horizontal Datum:	NAD83 ▼
Site Elevation (SE):	485 (nearest foot)
Structure Height :	7 (nearest foot)
Traverseway:	No Traverseway ▼ (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	◉ No ○ Yes

Results

You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

The FAA requests that you file



Project Submission Success
Project Name: FALCK-000573772-20

Project FALCK-000573772-20 has been submitted successfully to the FAA.

Your filing is assigned Aeronautical Study Number (ASN):

Please refer to the assigned ASN on all future inquiries regarding this filing.

Please return to the system at a later date for status updates.

It is the responsibility of each e-filer to exercise due diligence to determine if coordination of the proposed construction or alteration is necessary with their state aviation department. Please use the link below to contact your state aviation department to determine their requirements:
State Aviation Contacts

To ensure e-mail notifications are delivered to your inbox please add noreply@faa.gov to your address book. Notifications sent from this address are system generated FAA e-mails and replies to this address will NOT be read or forwarded for review. Each system generated e-mail will contain specific FAA contact information in the text of the message.

Return to Portal

TOWN OF MANLIUS
SPECIAL PERMIT APPLICATION
(Original or Renewal)

DATE: April 16, 2020 Tax Map # 098-01-15.0

I Jonathan Koch , as applicant relative to property located at 5062 North Eagle Village Road, Manlius, New York, hereby request/apply for issuance of a **SPECIAL PERMIT** from the Town of Manlius Town Board as required by the Town of Manlius Code, submit the following application and documentary evidence and/or information, including comprising the Exhibits in support of this request and certify that it is correct, true and accurate to the best of my/our knowledge and after reasonable due diligence and investigation. I further knowledge and agree that should any such evidence or information be later determined as false or not credible in any material respect, any special permit issued/renewed based thereon may be determined by the Town Board as void from the start or revocable.

Applicant's Signature

A 1 Owner(s) of property: Paul Shapero

A 2 Status (Owner, Lessee) of each applicant: An affiliated entity of Falck Renewables, which has the option to lease the property

A 3 Present Zoning of Property: Restricted Agricultural

A 4 Present Use of Property (describe in detail as best as reasonably possible- add additional pages as needed): The property located at 5062 North Eagle Village Road, Manlius, New York was being utilized as farm land. Most recently, the area of the proposed solar project was used as a corn field. The project site is currently vacant land.

A 5 Describe property condition at present: The project site consists of vacant land. The Site is bounded by wooded land followed by residential properties and Salt Springs Road to the north, Townsend Road followed by wooded land and residential properties to the east, North Eagle Village Road followed by agricultural land to the south, and wooded land followed by agricultural land and a church to the west. The proposed project site occupies approximately 21.3 acres of the larger 44.71 acre parcel.

B 1 Proposed use of property: EF NY CDG 001, LLC (an affiliate of Falck Renewables) proposes the development of approximately 21.3 acres of a larger 44.71-acre parcel of private land in Onondaga County into a ground-mounted photovoltaic (PV) solar energy generating facility (North Eagle Solar). The proposed project would be capable of delivering about 5,000 kilowatts (kW) of alternating electric current (AC) to the electrical power grid, which is sufficient to provide renewable energy to approximately 600 households. The PV panels proposed for this project are similar to solar panels utilized for typical residential roof top installations and would be placed on a racking system either pile driven or screw mounted to the ground surface. The PV project will be directly interconnected to, and provide energy to,

National Grid's local electric distribution grid via either underground or overhead electrical service. Prior to utility interconnection, direct current (DC) electrical power generated by the solar panels will be transformed to AC power and modified as necessary to connect to National Grid's electrical power supply. The project would also include an equipment pad, a gravel access road and would be surrounded by a chain-linked security fence.

B 2 Anticipated number of employees, guests, customers on property: The PV project, after construction is completed, will not require continuous supervision, maintenance or support. The PV Arrays are monitored using a GPS/Telemetry system and maintenance personnel would respond to indications that the arrays were not functioning properly. Landscaping, mowing, and snow removal would occur on an as-needed basis.

B 3 Hours of Proposed Operation:

During Construction:		During Operations:	
Monday – Friday	7 a.m. – 5 p.m.	Monday – Friday	Daylight Hours
Saturday	N/A	Saturday	Daylight Hours
Sunday	N/A	Sunday	Daylight Hours
Holidays	N/A	Holidays	Daylight Hours

B 4. Anticipated Automobile Parking: The proposed PV project includes an access road to provide ingress/egress and temporary parking during construction and for maintenance personnel. There is no designated parking area.

B 5. Parking Area Buffer/Screening: Automobile parking is prohibited on the project site except for temporary parking for maintenance personnel.

B 6. Anticipated Vehicle Traffic Volume/Flow: Traffic impacts are generally limited to the construction period which lasts approximately three months for a 5,000 kW ground mounted solar project. Once the facility is operational, traffic is typically limited to less than 10 visits per year to monitor operation and provide facility maintenance.

B 7. Proposed Site Lighting: In general, lighting is not required for the proposed solar energy project. Security for the solar energy project is provided by security fencing.

B 8. Anticipated noise sources, known decibel levels: Electrical inverters, which convert power from DC to AC, and associated electrical equipment can generate noise at a solar energy site. The low hum of the electrical equipment is not generally heard at distances greater than 100 feet from the electrical equipment. The proposed inverter is located more than 100 feet from the nearest property line. Noise can also be generated during periodic mowing and trimming of the facility during operation.

B 9. Landscape:

a) Existing landscaping: The project area consists of a cultivated crops, the northern portion of the Site is bordered by hardwood forest and Salt Springs Road to the north, hardwood forest and Townsend Road to the east, cultivated farm fields and North Eagle Village Road to the south, and a forest boundary followed by fields and a church to the west.

b) Proposed landscaping: The Project area will have approximately 55 rows of solar panels. The height of the solar panels are typically seven to ten feet above the ground

surface. The project site would also include an equipment pad, a gravel access road and would be surrounded by a chain-linked security fence. The proposed security fencing is located more than 50 feet from Townsend and North Eagle Village Road.

B 10. Proposed Signage: Signs demarcating the solar energy facility will be located on the security fence and no larger than 24 inches in diameter.

B 11. Level of municipal and other services required to support the proposed activity (i.e., water supply sanitary sewage facilities): The PV project will be directly interconnected to, and provide energy to, National Grid's local electric distribution grid via either underground or overhead electrical service. No municipal water supply or sanitary sewage services will be required.

B 12.

Specific Requirements:	**Town Code (District) Requirements:**	**Proposal:**
Parking Spaces	Not Specified	N/A
Lot Coverage	Not Specified	~48%
Front Yard Setback	40	50 feet
Side Yard Setback	20	50 feet
Rear Yard Setback	40	50 feet
Maximum Height of Building	Not Specified	7-10 feet

EXHIBITS TO SPECIAL PERMIT APPLICATION:

1. Detailed site plan of any proposed construction anticipated (attach as Exhibit "A"). The Town Board requires that drawings be certified by the appropriate design professional, i.e. a licensed engineer, architect, or surveyor, and include, except as may be permitted at #10 below, at time of application such detail as required per Town Zoning Code §155-28A(1)(13) for site plan submission.

2. Survey Map (Exhibit "B") Certified by a licensed surveyor within two years of date of application. Survey should show all existing state of facts, improvements, structures, easements, rights-of-way, appropriations, landscape features, encroachments and existing pavement on site. Any survey map last redated prior to 60 days before the application filing date shall be accompanied by an affidavit from the applicant, owner or occupant, i.e. someone with personal knowledge, that the survey map accurately shows the state of facts of the survey map as of the date of the application filing or if it does not the affidavit should describe any change features.

3. Legal description of proposed site (Exhibit "C"). The legal description must be in a form sufficient to follow the legal description on the survey map submitted.

4. Drainage, SWPPP if applicable, sanitary sewer, water service plans and specifications for proposed site (certified by a licensed professional engineer). Attach as Exhibit "D" and as applicable, numbered sub-exhibits e.g. "D-1", "D-2" etc.

5. Environmental Assessment Form (Exhibit "E"). A short environmental assessment form(see attached form) may be provided with any application for an unlisted action, however acceptance of same shall not be deemed a waiver by the Town of its right to require a long EAF with appropriate documentary substantiation of answers provided (including without limitation #6 following). For Type One Actions a long EAF must be submitted at time of application.

6. Freshwater Wetlands Letter. Pursuant to 6 NYCRR 663.4(a), where the application involves conduct of regulated activity on freshwater wetlands or adjacent areas, the applicant must obtain either a permit or letter of permission from the DEC or the authorized local government having jurisdiction over the wetland. Any delineation such determination is based on shall likewise be provided. Attach as Exhibit "F" and as applicable, with numbered sub-exhibits.

7. Professional Fees Reimbursement Agreement (Exhibit "G").

8. Disclosure Affidavit. The applicant shall submit an affidavit attesting it has reviewed General Municipal Law §809 and is familiar with the provisions contained therein, that no state officer, or any officer or employee of the County of Onondaga or Town of Manlius has any interest in the person, partnership or association owning the premises subject of the application or making such application, and that no other violation of §809 shall result from such application (Exhibit "H").

9. Filing and Professional Review Fees. At the time of application filing, applicant shall submit $100.00 in the form of cash or check payable to the Town of Manlius for Special Permit filing or renewal fees. Site Plan filing and Professional Review fees must be paid per Town Code Fee Schedule prior to commencement of Planning Board advisory review.

10. NOTE: THE ABOVE ARE NOT INTENDED AS AN EXHAUSTIVE LISTING OF THE APPLICATION REQUIREMENTS. THE APPLICANT SHALL BE RESPONSIBLE FOR FAMILIARIZING ITSELF WITH ALL TOWN CODE ZONING, SITE PLAN REVIEW, AND SPECIAL PERMIT REQUIREMENTS, AND THE REQUIREMENTS OF OTHER INVOLVED AND PERMITTING AGENCIES INCLUDING RELATIVE TO SEQRA, GENERAL MUNICIPAL LAW SECTION 239 REVIEW, STATE/COUNTY DOT, DOH AND THE LIKE.

11. THE FOREGOING NOTWITHSTANDING IT IS ACKNOWLEDGED THAT UPON INITIAL APPLICATION CERTAIN OF THE ABOVE MAY NOT, WITHOUT INITIAL INPUT FROM THE TOWN BOARD OR PLANNING BOARD, BE REASONABLY CAPABLE OF FINAL

COMPLETION, AND ACCORDINGLY MAY BE WAIVED OR SUCH REQUIREMENTS RELAXED TEMPORARILY AND UNTIL SUFFICIENT SPECIFIC DIRECTION FROM THE RESPECTIVE BOARDS HAS BEEN GIVEN. AT TIME OF SUBMISSION THE APPLICANT SHALL SPECIFICALLY REFERENCE ANY SUCH REQUEST(S) AND ITS REASON(S) FOR SAME IN A DETAILED ENCLOSURE LETTER DESCRIBING THE SUBMISSION AND EXHIBITS.

RENEWAL APPLICATIONS SHALL REQUIRE ONLY SUCH OF THE FOREGOING INFORMATION AND EXHIBITS AS ARE DEEMED NECESSARY FOR CONSIDERATION OF A RENEWAL PERMIT INVOLVING NO MATERIAL CHANGES FROM OR VIOLATIONS UNDER THE PRIOR ISSUED SPECIAL PERMIT.

APPLICATIONS SHALL BE SUBMITTED IN BOUND TABBED BOOKLET FORM WITH A COVER LETTER, TABLE OF CONTENTS REFERENCING EXHIBITS, AND LEGIBLE 11"by 17" MINIMUM DRAWINGS FOLDED TO LETTER SIZE THEREIN. TWENTY COPIES SHALL BE DELIVERED TOGETHER WITH SEVEN(7) FULL SIZE PRINTS OF ALL DRAWINGS. SUBSEQUENT SUBMISSIONS OF MINOR MODIFICATIONS MAY BE SUBMITTED IN THE SAME MANNER WITH A LETTER REFERENCING THE SPECIFICS OF THE SUBSTITUTION, HOWEVER IF NUMEROUS OR MATERIAL IN NATURE ENTIRE REPLACEMENT SUBMISSIONS MAY BE REQUESTED.

Exhibit A

SITE PLAN

FALCK RENEWABLES

GRUPPOFALCK



LOCATION MAP
SCALE 1"=1000'

NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE ROAD
MANLIUS, NY 13104

DISCRETIONARY PERMITTING

DRAWING INDEX	
SHEET NUMBER	SHEET TITLE
C-001	CIVIL TITLE SHEET
C-101	EXISTING CONDITIONS
C-201	SITE PLAN
C-202	EROSION & SEDIMENT CONTROL PLAN
C-401	SITE DETAILS
C-402	FENCE & GATE DETAILS
C-403	EROSION & SEDIMENT CONTROL DETAILS

PROJECT SUMMARY	
PARCEL NUMBER	098.-01-15.0
PARCEL ACREAGE	44.71 ACRES
ZONING CLASSIFICATION	RESTRICTED AGRICULTURE (R-A)
FRONT SETBACK	50 FT
REAR SETBACK	50 FT
SIDE SETBACK	50 FT
PROJECT AREA	21.3 ACRES (INCLUDES ACCESS ROAD)
LATITUDE/LONGITUDE	43.0229°/-75.9604°
SYSTEM SIZE (DC)	7.50 MW DC
SYSTEM SIZE (AC)	5.00 MW AC
PITCH	24.9 FT (CENTER TO CENTER)
TREE CLEARING	0.00 ACRES
ROAD LENGTH	±1,280 FT
PERIMETER FENCE LENGTH	±3,910 FT
SILT FENCE LENGTH	±2,450 FT

PROJECT DEVELOPER

FALCK RENEWABLES NORTH AMERICA
DEVELOPMENT SERVICES &
CONSTRUCTION MANAGEMENT, LLC
1 BRIDGE STREET
IRVINGTON, NEW YORK 10533
+1 (914) 340-4740

PROJECT SCOPE

THIS PERMITTING PACKAGE PROVIDES DRAWINGS AND DETAILS FOR THE INSTALLATION OF A SOLAR PHOTOVOLTAIC SYSTEM IN THE STATE OF NEW YORK. THIS DRAWING SET IS FOR DISCRETIONARY PERMITTING PURPOSES ONLY, NOT FOR CONSTRUCTION.

CIVIL ENGINEER

TETRA TECH
ENGINEERING CORPORATION, P.C.
CERT #0015490
3136 SOUTH WINTON RD, SUITE 303
ROCHESTER, NEW YORK 14624
(585) 417-4009

APPLICABLE CODES & STANDARDS

- NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)
- NFPA 855 (REFERENCE ONLY)
- 2015 INTERNATIONAL BUILDING CODE (IBC) AND NEW YORK AMENDMENTS
- 2015 INTERNATIONAL FIRE CODE (IFC) AND NEW YORK AMENDMENTS
- 2016 NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL
- 2015 NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
- 2016 TOWN OF MANLIUS LOCAL SOLAR CODE

PROPERTY OWNER

PAUL SHAPERO
5062 NORTH EAGLE VILLAGE ROAD
MANLIUS, NY 13104

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IRVINGTON, NY 10533
T: +1 (914) 340-4740
WWW.FALCKRENEWABLES.COM

TETRA TECH
TETRA TECH ENGINEERING CORPORATION, P.C.
CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

STAMP:



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NORTH EAGLE SOLAR PROJECT
5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
CIVIL TITLE SHEET

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	WETLANDS	04/09/2020	KMG

DATE:	03/09/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-001

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LEGEND

- PROPERTY LINE (APPROX.)
- ADJACENT PROPERTY LINE
- ZONING SETBACKS
- 475 EXISTING TOPO (5 FT CONTOURS)
- EXISTING TREE LINE
- DELINEATED STREAM
- 25' STREAM BUFFER
- DELINEATED WETLAND
- EXISTING ROAD CENTERLINE
- EXISTING ROAD EASEMENTS
- EXISTING OVERHEAD ELECTRIC
- EXISTING UTILITY POLE
- EXISTING STONE WALL

GENERAL NOTES:

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2. EXISTING ROAD FEATURES OBTAINED FROM USDA NRCS GEOSPATIAL DATA GATEWAY.
3. TREE LINES SHOWN HEREON ARE APPROXIMATE. SOURCE: GOOGLE EARTH.
4. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
5. ORTHOIMAGERY OBTAINED FROM NYS GIS CLEARINGHOUSE, 2018 ONE FOOT FOUR BAND CENTRAL ZONE INDEX.

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TETRA TECH
TETRA TECH ENGINEERING CORPORATION, P.C.
CERT# 0015490
3136 SOUTH WINTON ROAD, SUITE 303
ROCHESTER, NY 14623

STAMP:

BRIAN M. SIELSKI — STATE OF NEW YORK — 084250-1 — LICENSED PROFESSIONAL ENGINEER

Brian Sielski 4/9/20

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
EXISTING CONDITIONS

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0 ½" 1"

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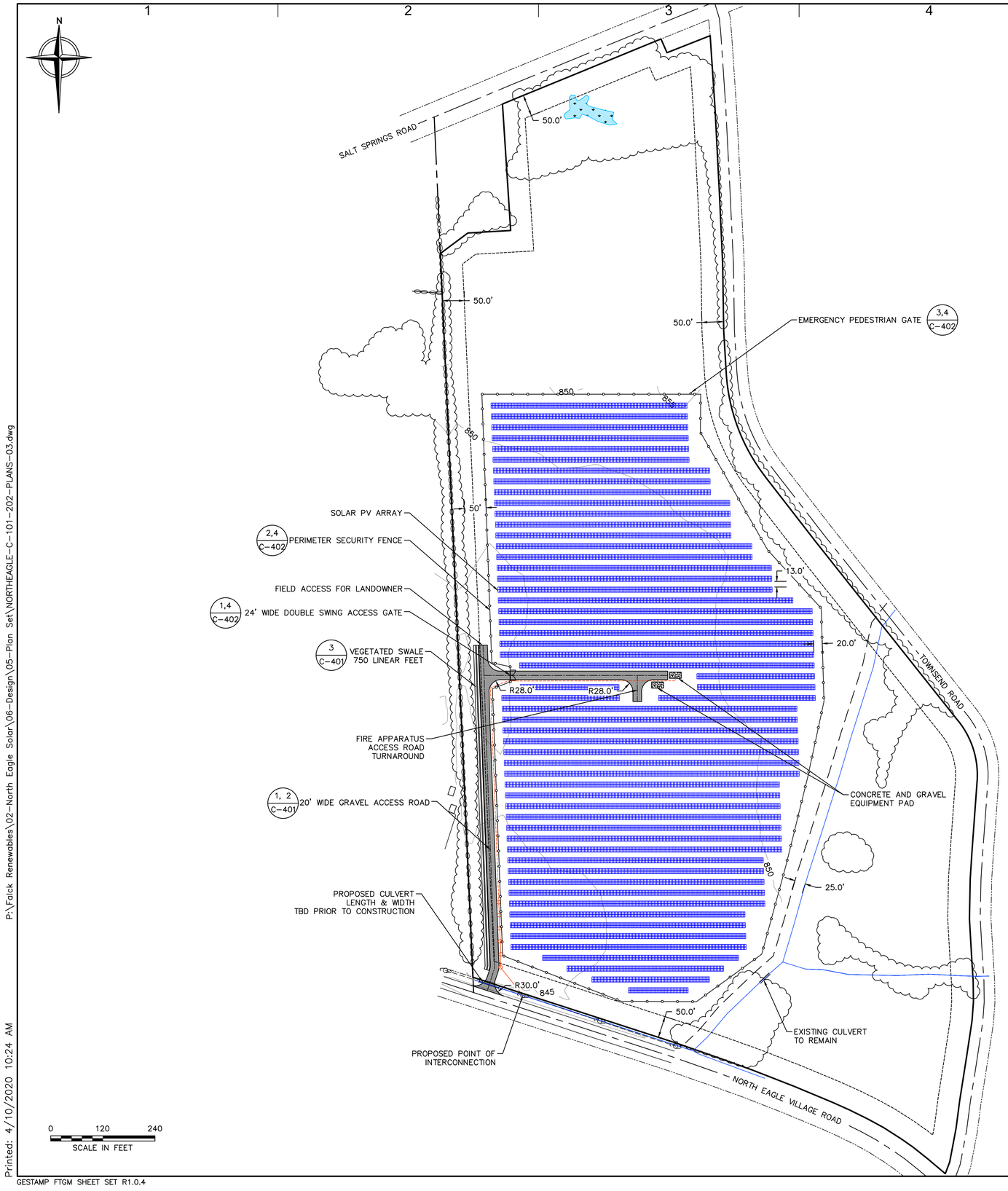
DATE:	03/09/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-101

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LEGEND

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- EXISTING UTILITY POLE
- EXISTING STONE WALL
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED UTILITY POLE
- PROPOSED CULVERT
- PROPOSED VEGETATED SWALE

GENERAL NOTES:

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4. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
5. MAINTAIN MINIMUM 2 FOOT DISTANCE BETWEEN GROUND ELEVATION AND BOTTOM OF SOLAR PANEL. DISTANCE BETWEEN GROUND ELEVATION AND TOP OF SOLAR PANEL NOT TO EXCEED 20 FEET.

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ROCHESTER, NY 14623

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Brian Sielski 4/9/20

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
SITE PLAN

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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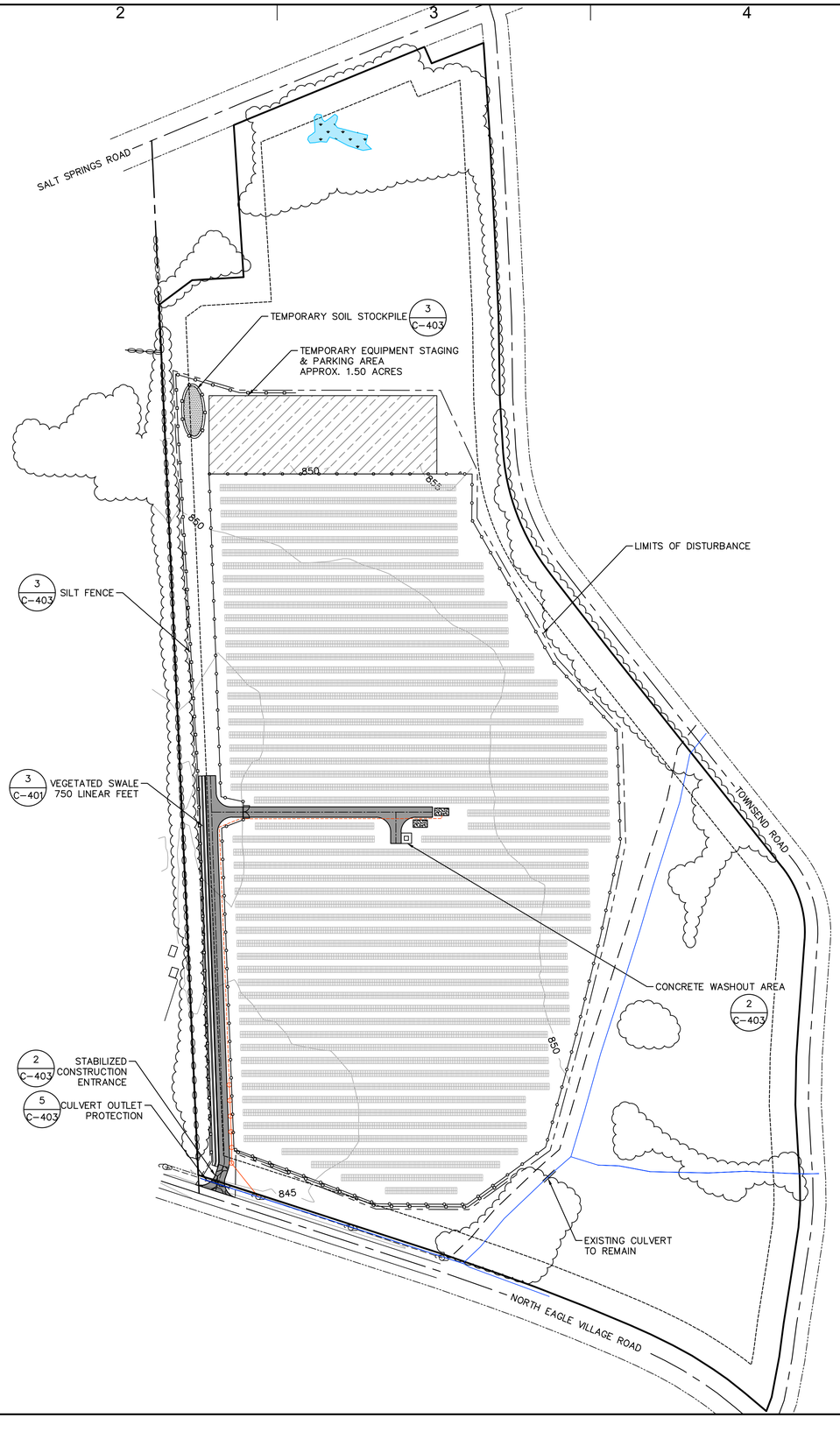
DATE:	03/09/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
C-201

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SCALE IN FEET

LEGEND

- PROPERTY LINE (APPROX.)
- ADJACENT PROPERTY LINE
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- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED UTILITY POLE
- PROPOSED SILT FENCE
- LIMITS OF DISTURBANCE
- TEMPORARY EQUIPMENT LAYDOWN AREA
- TEMPORARY SOIL STOCKPILE AREA
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED CULVERT
- PROPOSED VEGETATED SWALE
- TEMPORARY CONCRETE WASHOUT AREA

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TETRA TECH
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ROCHESTER, NY 14623

STAMP:

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Brian Sielski 4/9/20

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
EROSION & SEDIMENT CONTROL PLAN

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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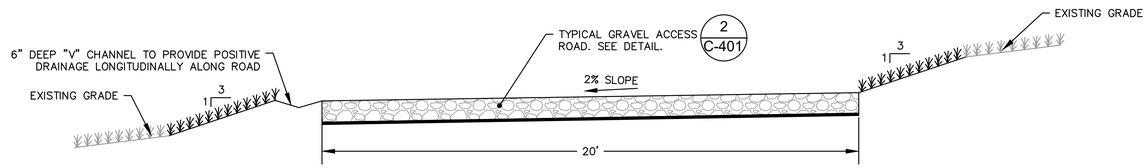
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APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

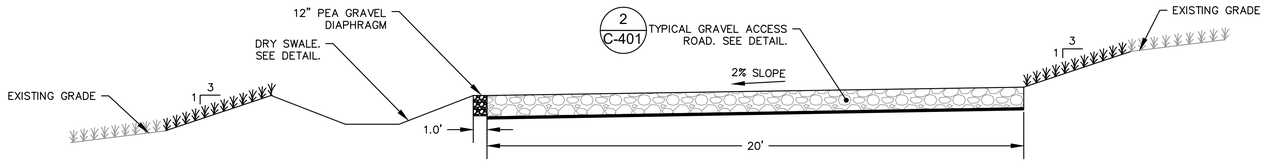
SCALE:
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SHEET NO.:
C-202

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SECTION WITH DITCH



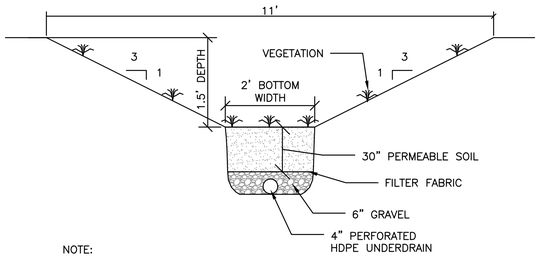
SECTION WITH VEGETATED SWALE

TYPICAL ACCESS ROAD

DETAIL

SCALE: NTS

1
C-401



NOTE:

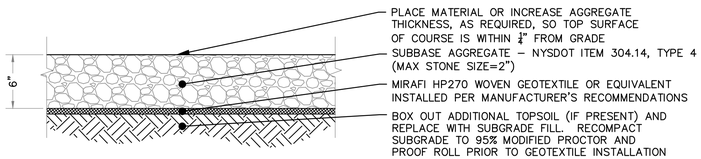
1. PERMEABLE SOIL SHALL CONSIST OF A MINIMUM OF 6 INCHES OF TOPSOIL OVERLYING A 50/50 MIX OF TOPSOIL AND SAND.
2. GRAVEL SHALL BE AASHTO M-43 SIZE NO. 57.

TYPICAL VEGETATED SWALE

DETAIL

SCALE: N.T.S.

3
C-401



TYPICAL GRAVEL ACCESS ROAD SECTION

SECTION

SCALE: N.T.S.

2
C-401

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Brian Sielski 4/9/20

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NORTH EAGLE SOLAR PROJECT

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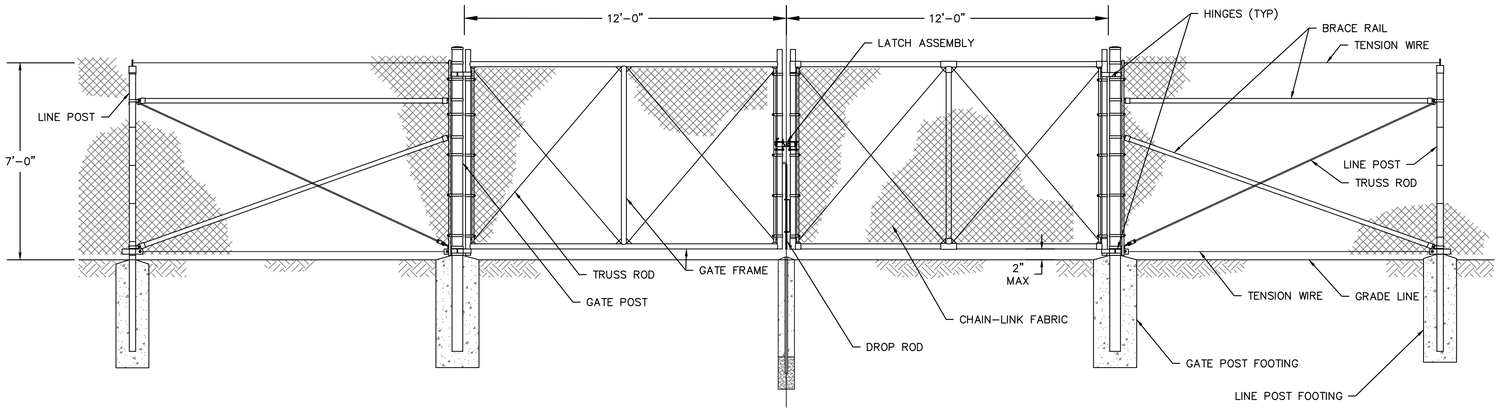
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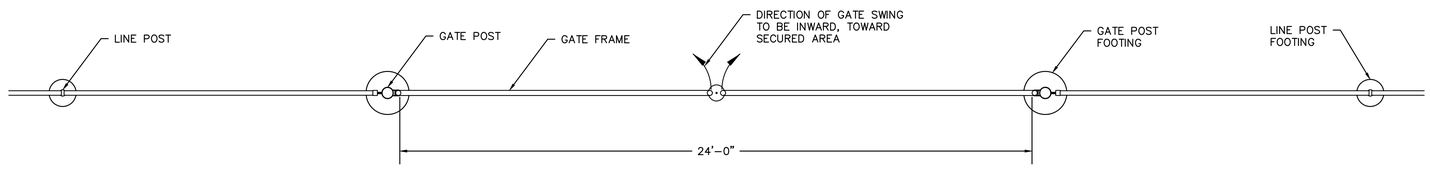
SCALE:
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SHEET NO.:
C-401

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ELEVATION



PLAN VIEW

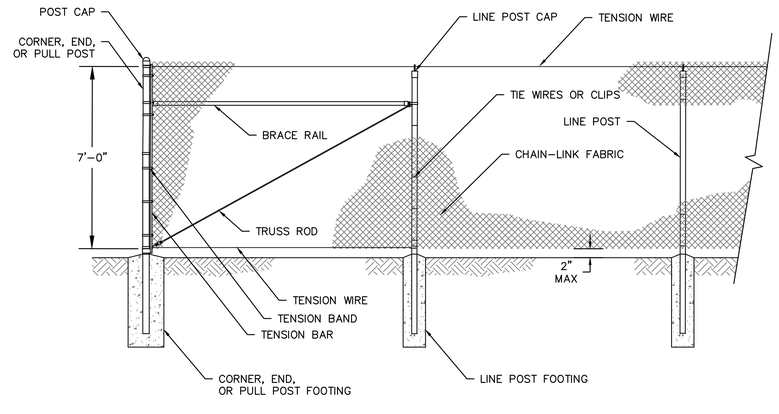
TYPICAL 24' DOUBLE SWING ACCESS GATE

DETAIL 1 / C-402

SCALE: NTS

FENCE & GATE NOTES:

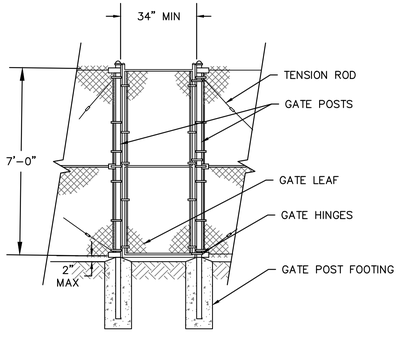
1. SIZE AND DIMENSIONS OF THE FENCE AND GATE COMPONENTS SHOWN HEREON SHALL BE IN ACCORDANCE WITH THE CHAIN-LINK FENCE MANUFACTURER SPECIFICATIONS UNLESS OTHERWISE NOTED ON THIS DRAWING.
2. GROUNDING AND BONDING OF THE SECURITY FENCE SYSTEM SHALL BE IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE (NEC), AND ALL OTHER APPLICABLE STATE AND LOCAL CODE REQUIREMENTS.
3. DOUBLE SWING GATE TO OPEN INWARD, TOWARD SECURED AREA AS SHOWN ON THE SITE PLAN.
4. INSTALL WIRE TIES, RAILS, POSTS, AND BRACES ON THE SECURE SIDE OF THE FENCE ALIGNMENT. PLACE CHAIN-LINK FABRIC ON THE OPPOSITE SIDE OF THE SECURE AREA.
5. DESIGN AND INSTALL GATE, LINE, CORNER, END, AND PULL POST CONCRETE FOOTINGS, AS REQUIRED, PER APPLICABLE CODES AND CHAIN-LINK FENCE MANUFACTURER SPECIFICATIONS.
6. TOP SELVAGES TO BE TWISTED, BOTTOM SELVAGES TO BE KNUCKLED.
7. SIGNAGE SHALL BE AS REQUIRED BY CODE WITH DETAILS INCLUDING FACILITY NAME, OWNER, AND CONTACT PHONE NUMBER. WARNING SIGNAGE TO BE PLACED AT BASE OF ALL PAD-MOUNTED TRANSFORMERS AND SUBSTATIONS.



TYPICAL SECURITY PERIMETER FENCE

DETAIL 2 / C-402

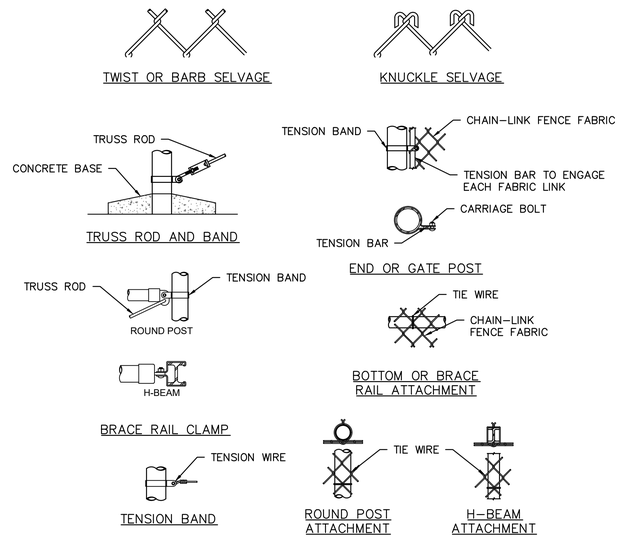
SCALE: NTS



TYPICAL EMERGENCY PEDESTRIAN GATE

DETAIL 3 / C-402

SCALE: NTS



TYPICAL CHAIN LINK FENCE FASTENING

DETAILS 4 / C-402

SCALE: NTS

NOT FOR CONSTRUCTION

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TETRA TECH
TETRA TECH ENGINEERING CORPORATION, P.C.
CERT# 0015490
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STAMP:



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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
FENCE & GATE DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	WETLANDS	04/09/2020	KMG

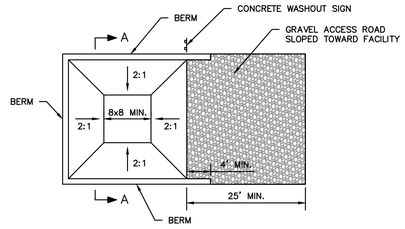
DATE:	03/09/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

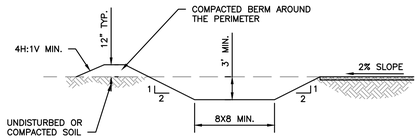
SCALE:
AS SHOWN

SHEET NO.:
C-402

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PLAN



SECTION A-A

CONCRETE TRUCK WASHOUT AREA NOTES:

1. LOCATE THE FACILITY A MINIMUM OF 100 FEET FROM DRAINAGE SWALES, STORM DRAIN INLETS, WETLANDS, STREAMS AND OTHER SURFACE WATER.
2. PREVENT SURFACE WATER FROM ENTERING THE STRUCTURE EXCEPT FOR THE ACCESS ROAD.
3. PROVIDE A GRAVEL ACCESS ROAD TO FACILITY THAT IS SLOPED DOWN TO FACILITY.
4. SIGNS SHALL BE PLACED TO DIRECT DRIVERS TO THE FACILITY AFTER THEIR LOAD IS DISCHARGED.
5. ALL WASHOUT FACILITIES SHALL BE LINED TO PREVENT LEACHING OF LIQUIDS INTO THE GROUND. THE LINER SHALL BE PLASTIC SHEETING HAVING A MINIMUM THICKNESS OF 10 MILS WITH NO HOLES OR TEARS, AND ANCHORED BEYOND THE TOP OF THE PIT WITH AN EARTHEN BERM, SAND BAGS, STONE, OR OTHER STRUCTURAL APPURTENANCES EXCEPT AT THE ACCESS POINT.
6. PREFABRICATED WASHOUT FACILITIES CAN BE USED BUT THEY MUST CAPTURE AND CONTAIN CONCRETE WASH AND BE SIMILARLY SIZED AS SHOWN ABOVE AND LOCATED AS NOTED ABOVE.
7. WASH WATER IS ESTIMATED TO BE 7 GALLONS PER CHUTE AND 50 GALLONS PER HOPPER OF A PUMP TRUCK AND/OR DISCHARGING DRUM.

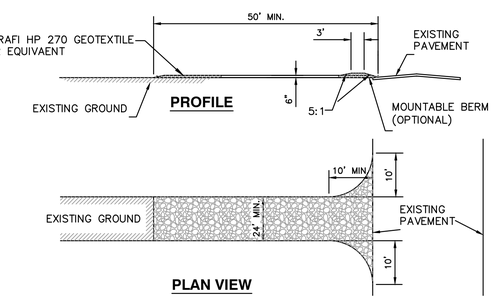
MAINTENANCE:

1. ALL FACILITIES MUST BE INSPECTED DAILY.
2. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY.
3. EXCESS ACCUMULATED RAINWATER OVER HARDENED CONCRETE SHALL BE PUMPED TO A STABILIZED AREA, SUCH AS A GRASS FILTER STRIP.
4. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF THE STORAGE CAPACITY OF THE FACILITY IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF-SITE AT A PERMITTED C&D LANDFILL. NO ONSITE DISPOSAL WILL BE ALLOWED.
5. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF THE FACILITY.
6. INSPECT PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

CONCRETE WASHOUT

DETAIL 1 / C-403

SCALE: N.T.S.



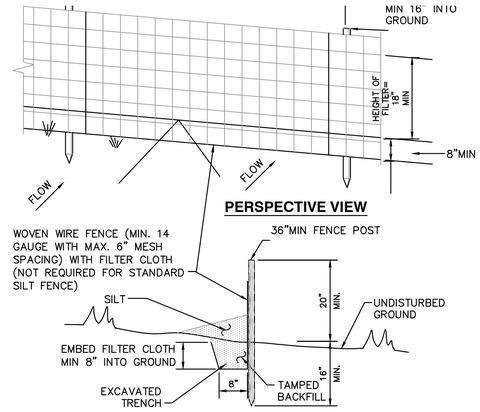
STABILIZED CONSTRUCTION ENTRANCE NOTES:

1. STONE SIZE – USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. THICKNESS – NOT LESS THAN SIX (6) INCHES.
3. WIDTH –TWENTY (20) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY FOUR FEET (24) FOOT IF SINGLE ENTRANCE TO SITE.
4. LENGTH – AS REQUIRED, BUT NOT LESS THAN 50'.
5. GEOTEXTILE – PLACE OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – MAINTAIN THE ENTRANCE IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – CLEAN WHEELS TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PROVIDE WEEKLY INSPECTION AND NEEDED MAINTENANCE.

STABILIZED CONSTRUCTION ENTRANCE

DETAIL 2 / C-403

SCALE: N.T.S.



SILT FENCE NOTES:

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL.
4. PERFORM MAINTENANCE AS NEEDED AND REMOVE MATERIALS WHEN "BULGES" DEVELOP IN THE SILT FENCE.
5. USE SILT FENCE WHERE EROSION COULD OCCUR IN THE FORM OF SHEET EROSION.
6. DO NOT USE SILT FENCE WHEN A CONCENTRATION OF WATER IS FLOWING TO THE BARRIER AND SOIL CONDITIONS DO NOT ALLOW FOR PROPER KEYING OF FABRIC, OR OTHER ANCHORAGE, TO PREVENT BLOWOUTS.
7. THE TYPE OF SILT FENCE SHALL NOT EXCEED THE MAXIMUM SLOPE LENGTH AND MAXIMUM FENCE LENGTH REQUIREMENTS SHOWN IN THE FOLLOWING TABLE.

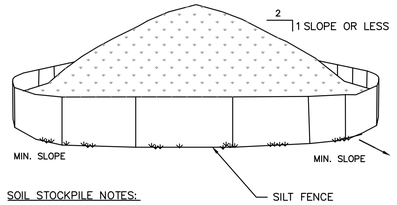
SLOPE	STEEPNESS	SLOPE LENGTH/FENCE LENGTH (FT)		
		STANDARD	REINFORCED	SUPER
<2%	<50:1	300/1500	N/A	N/A
2-10%	50:1 TO 10:1	125/1000	250/2000	300/2500
10-20%	10:1 TO 5:1	100/750	150/1000	200/1000
20-33%	5:1 TO 3:1	60/500	80/750	100/1000
33-50%	3:1 TO 2:1	40/250	70/350	100/500
>50%	>2:1	20/125	30/175	50/250

8. STANDARD SILT FENCE DOES NOT REQUIRE WOVEN WIRE FENCE. SUPER SILT FENCE REQUIRES CHAIN LINK FENCE IN-LIEU OF WOVEN WIRE FENCE AND THE POSTS MUST BE STANDARD CHAIN LINK FENCE POSTS AND BE DRIVEN 3 FEET INTO THE GROUND.

SILT FENCE

DETAIL 3 / C-403

SCALE: N.T.S.



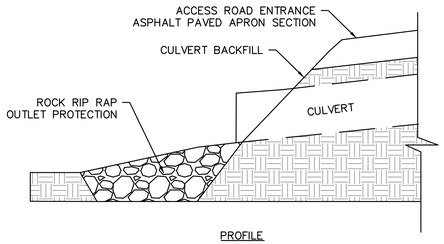
SOIL STOCKPILE NOTES:

1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1V:2H.
3. UPON COMPLETION OF SOIL STOCKPILING, SURROUND EACH PILE WITH SILT FENCING, THEN STABILIZE WITH VEGETATION OR COVER THE STOCKPILE IF IT REMAINS FOR MORE THAN 7 DAYS.
4. SEE DETAILS FOR INSTALLATION OF SILT FENCE.
5. STOCKPILE HEIGHT SHOULD GENERALLY NOT EXCEED 20 FEET.

TEMPORARY SOIL STOCKPILE

DETAIL 4 / C-403

SCALE: N.T.S.



NOTES:

1. RIP-RAP APRON DIMENSIONS WILL VARY DEPENDING UPON THE GRADING CONFIGURATION.
2. STONE RIP-RAP SHALL BE PLACED ON NON-WOVEN GEOTEXTILE HAVING A THICKNESS OF 60 MILS (MIN.), GRAB STRENGTH NO LESS THAN 120 LBS: AND SHALL CONFORM TO ASTM D-1777 AND ASTM D-1682.

CULVERT OUTLET PROTECTION

DETAIL 5 / C-403

SCALE: N.T.S.

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ROCHESTER, NY 14623

STAMP:



Brian Sielski 4/9/20

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
EROSION & SEDIMENT CONTROL DETAILS

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.
A	PERMITTING	03/31/2020	KMG
B	WETLANDS	04/09/2020	KMG

DATE:	03/09/2020
DRAWN BY:	KMG
ENGINEER:	KMG
APPROVED BY:	BMS

PROJECT PHASE:
DISCRETIONARY PERMITTING

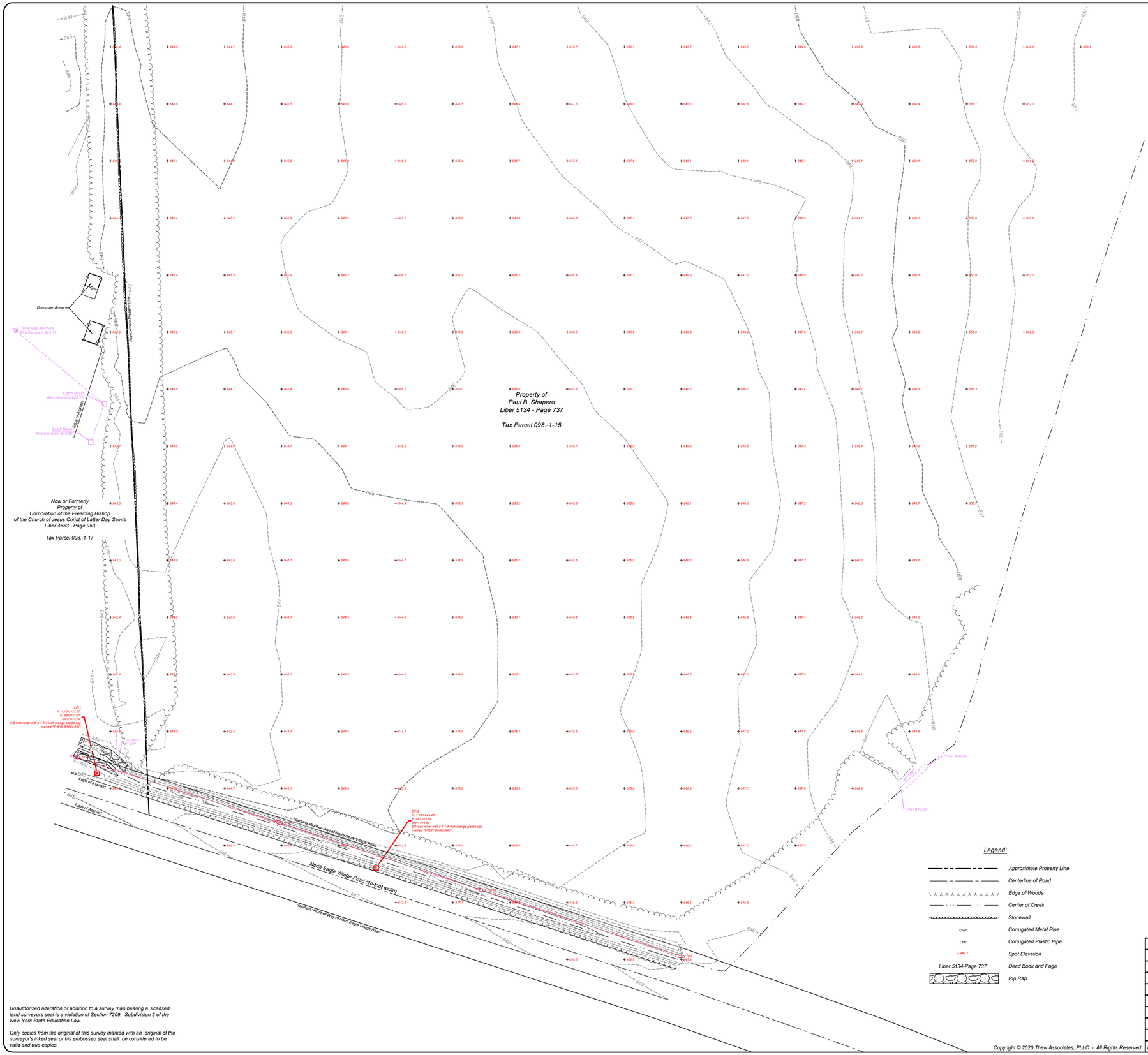
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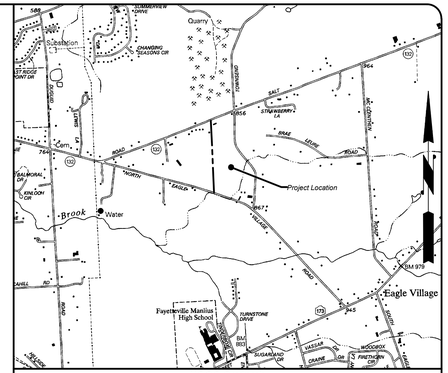
SHEET NO.:
C-403

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Exhibit B

SURVEY MAPS





General Notes:

1. *This survey is referenced horizontally to the North American Datum of 1983, 2011 adjustment (NAD83/2011), projected on the New York State Plane Coordinate System (Central Zone) and vertically to the North American Vertical Datum of 1988 (NAVD88).*
2. *North arrow as shown indicates Grid North referenced to NAD83/2011, projected on the New York State Plane Coordinate System (Central Zone).*
3. *The reference horizontal and vertical control station is a GPS Continuously Operating Reference Station (CORS). Designated as "North Syracuse CORS ARP" (CORS ID: NYNS), NYNS was established by the New York State Department of Transportation in 2011. Elevation 433.84 feet.*
4. *The property lines shown hereon are approximate and should not be relied upon. The location of the property lines were derived from record documents (i.e. deeds, filed maps, and tax maps).*
5. *Location of spot elevation is indicated by the tick "+" mark located adjacent to the elevation.*
6. *The subsurface utilities shown hereon are of Quality Level "C" as defined by the American Society of Civil Engineers (ASCE) in the "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data". The subsurface utilities shown hereon are based on physical evidence located during the field survey and existing utility drawings. The surveyor further does not warrant or certify that the subsurface utilities are in the exact location indicated although he does certify that they are depicted as accurately as possible from the information available. This surveyor has not physically located the subsurface utilities.*
7. *Elevations and contours shown reference the North American Vertical Datum of 1988 (NAVD88-Geoid12B).*
8. *Contours shown hereon were generated from a Digital Terrain Model utilizing AutoCAD Civil 3D Land Surveying and Engineering software.*
9. *The information shown hereon is based on an instrument survey completed on March 12, 2020.*

Tax Parcel Number:

Town of Manlius, Onondaga County, New York
Section 98. Block 1 Lot 15

Deed References:

Ernest A and Maureen A. Shapero
to
Paul B. Shapero
Liber 5134 - Page 737
Dated: 6, August 2010
Recorded: 6, August 2010

Project Control:

CP-1

CP-1 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-1 is located 20.9 feet northerly of the centerline of North Eagle Village Road and 23.8 feet southeasterly from utility pole NG81.
N: 1,101,332.60'
E: 986,927.61'
Elev: 844.70'

CP-2

CP-2 is 5/8-inch by 30-inch rebar with a 1 1/4-inch diameter orange plastic cap marked "Thew Baseline", set flush with grade. CP-2 is located 17.1 feet northerly of the centerline of North Eagle Village Road, 94.4 feet southeasterly from utility pole NG82, and 93.8 feet northwesterly from utility pole NG83.
N: 1,101,249.46'
E: 987,171.94'
Elev: 846.83'

Legend:

- *Approximate Property Line*
- *Centerline of Road*
- *Edge of Woods*
- *Center of Creek*
- *Stonewall*
- CMP — *Corrugated Metal Pipe*
- CPP — *Corrugated Plastic Pipe*
- + 489.1 — *Spot Elevation*
- Liber 5134-Page 737 — *Deed Book and Page*
- *Rip Rap*

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REV	DESCRIPTION	DATE

PROJECT NUMBER: CK4026-03-20

DRAWN: JLS
CHECKED: JST
SCALE: 1" = 40'
DATE: 03/18/2020

Map Showing Existing Topography
5062 North Eagle Village Road
Proposed North Eagle Solar
Sheet 1 of 2

Town of Manlius
County of Onondaga
State of New York

Thew Associates LAND SURVEYORS
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F: 315/386-1012
9478 River Road
Marcy, New York 13403
T: 315/733-7278
F: 315/797-1937

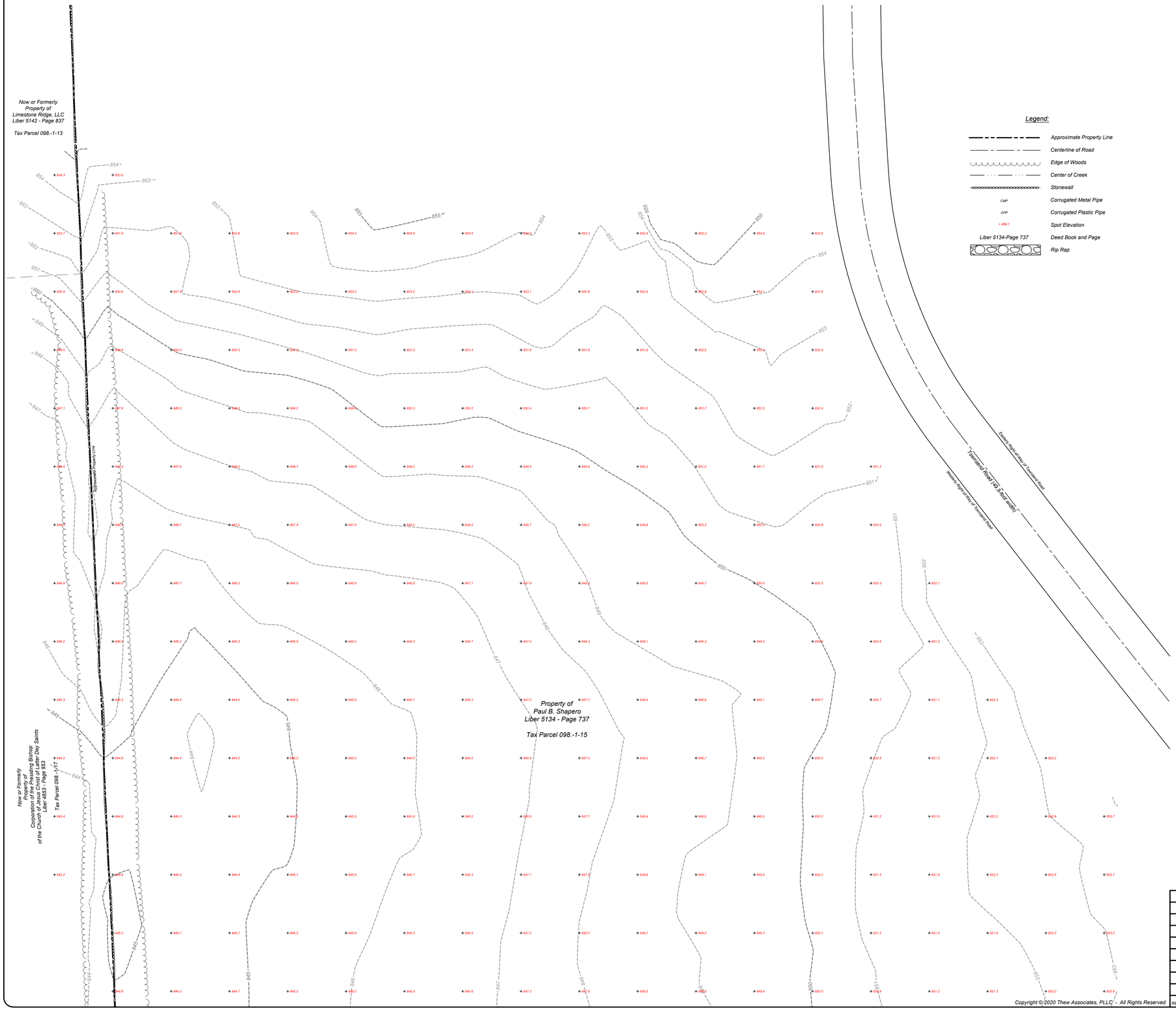
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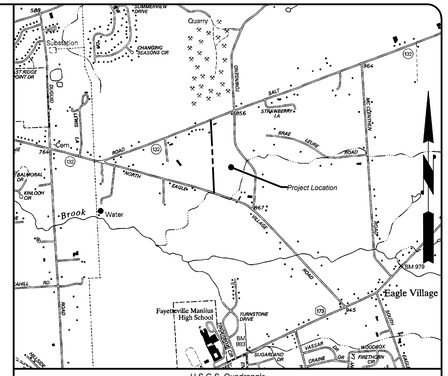
Only copies from the original of this survey marked with an original of the surveyor's inked seal or his embossed seal shall be considered to be valid and true copies.

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U.S.G.S. Quadrangle
XXXXXX, New York
1" = X000' +/-

Legend:

- *Approximate Property Line*
- *Centerline of Road*
- *Edge of Woods*
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- *Liber 5134-Page 737* — *Deed Book and Page*
- *Rip Rap*

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Tax Parcel Number:

Town of Manlius, Onondaga County, New York
Section 98. Block 1 Lot 15

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to
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Dated: 6, August 2010
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Elev: 844.70'

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N: 1,101,249.46'
E: 987,171.94'
Elev: 846.83'

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

REV	DESCRIPTION	DATE

PROJECT NUMBER: *CK4026-03-20*

DRAWN: *JLS*
CHECKED: *JST*
SCALE: *1" = 40'*
DATE: *03/18/2020*

Map Showing Existing Topography
5062 North Eagle Village Road
Proposed North Eagle Solar
Sheet 2 of 2

Town of Manlius
County of Onondaga
State of New York

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Exhibit C

LEGAL SITE DESCRIPTION

Proposed Lease Area
Contains: 21.758 acres

All that tract or parcel of land situate in the Town of Manlius, County of Onondaga, State of New York, and being more precisely described as follows:

Beginning at a 5/8-inch rebar with a 1 1/4-inch diameter red plastic cap marked "THEW ASSOCIATES - UTICA NY" (herein after referred to as a 5/8-inch rebar) set on the northerly right-of-way of North Eagle Village Road (66-foot width), said rebar having New York State plane coordinates (NAD83/2011 - Central Zone) of 1,101,322.31 feet North and 986,998.54 feet East;

thence through a parcel of land conveyed by Ernest A. and Maureen A. Shapero to Paul B. Shapero by deed dated August 6, 2010 and recorded in the Onondaga County Clerk's Office on August 6, 2010 in Liber 5134 of Deeds at Page 737, the following 20 courses and distances:

1. North 17 degrees 59 minutes 18 seconds East a distance of 21.17 feet to a set 5/8-inch rebar;
2. North 72 degrees 00 minutes 25 seconds West a distance of 14.50 feet to a set 5/8-inch rebar;
3. North 17 degrees 59 minutes 35 seconds East a distance of 10.56 feet to a set 5/8-inch rebar;
4. North 02 degrees 05 minutes 14 seconds West a distance of 743.58 feet to a set 5/8-inch rebar;
5. North 88 degrees 25 minutes 50 seconds East a distance of 40.67 feet to a set 5/8-inch rebar;
6. North 02 degrees 06 minutes 22 seconds West a distance of 577.91 feet to a set 5/8-inch rebar;
7. South 89 degrees 59 minutes 21 seconds East a distance of 514.00 feet to a set 5/8-inch rebar;
8. South 00 degrees 28 minutes 29 seconds West a distance of 91.00 feet to a set 5/8-inch rebar;
9. South 29 degrees 43 minutes 27 seconds East a distance of 311.65 feet to a set 5/8-inch rebar;
10. South 42 degrees 40 minutes 20 seconds East a distance of 182.33 feet to a set 5/8-inch rebar;
11. South 01 degrees 43 minutes 20 seconds East a distance of 216.96 feet to a set 5/8-inch rebar;
12. South 12 degrees 08 minutes 21 seconds West a distance of 181.31 feet to a set 5/8-inch rebar;
13. South 13 degrees 51 minutes 12 seconds West a distance of 207.91 feet to a set 5/8-inch rebar;
14. South 15 degrees 14 minutes 32 seconds West a distance of 213.26 feet to a set 5/8-inch rebar;
15. South 53 degrees 59 minutes 33 seconds West a distance of 189.32 fee tot a set 5/8-inch rebar;
16. North 89 degrees 42 minutes 17 seconds West a distance of 175.70 feet to a set 5/8-inch rebar;
17. North 68 degrees 56 minutes 12 seconds West a distance of 298.59 feet to a set 5/8-inch rebar;

18. South 02 degrees 07 minutes 18 seconds East a distance of 19.12 feet to a set 5/8-inch rebar;

19. South 07 degrees 56 minutes 06 seconds West a distance of 14.84 feet to a set 5/8-inch rebar;

20. South 17 degrees 59 minutes 18 seconds West a distance of 31.18 feet to a 5/8-inch rebar set on the northerly right-of-way of North Eagle Village Road;

thence North 72 degrees 03 minutes 11 seconds West, along the northerly right-of-way of North Eagle Village Road, a distance of 25.00 feet to the **Point of Beginning.**

To contain 21.758 acres of land, more or less, as surveyed by Jeremy L. Sweeney, Licensed Land Surveyor No. 050863.

The above described parcel of land is intended to be a portion of the same premises conveyed by Ernest A. and Maureen A. Shapero to Paul B. Shapero by deed dated August 6, 2010 and recorded in the Onondaga County Clerk's Office on August 6, 2010 in Liber 5134 of Deeds at Page 737.

The above-mentioned coordinates, bearings, and distances are referenced to the North American Datum of 1983, 2011 adjustment (NAD83/2011), projected on the New York State Plane Coordinate System (Central Zone).

Exhibit D

SWPPP

Preliminary Stormwater Pollution Prevention Plan (Prelim SWPPP)

North Eagle Solar Project
5062 N. Eagle Village Rd.
Manlius, NY 13104

April 9, 2020

PREPARED FOR:

Falck Renewables
1 Bridge Street, Suite 11
Irvington, New York 10533

PREPARED BY:

Tetra Tech, Inc.
3136 South Winton Road, Suite 303
Rochester, NY 14623



SIGNATORY REQUIREMENTS

The owner or operator has signed this document as acknowledgement that they have read and understand this SWPPP; and shall ensure that the provisions of this SWPPP are implemented as defined by the NYSDEC SPDES General Permit No. GP-0-20-001 and outlined herein.

Owner/Operator Signature	Date
Owner/Operator Printed Name	Title

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
CWA	Clean Water Act
ECL	Environmental Conservation Law
FIRM	Flood Insurance Rate Map
NTS	Not to Scale
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
OPRHP	Office of Parks, Recreation and Historic Preservation
PV	Photovoltaic
SCS	Soil Conservation Service
SHPA	State Historic Preservation Act
SMDM	Stormwater Management Design Manual (NYS)
SMP	Stormwater Management Practice
SPDES	State Pollutant Discharge Elimination System
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture

1.0 INTRODUCTION

This Preliminary Stormwater Pollution Prevention Plan (SWPPP) has been prepared for Falck Renewables North America Development Services & Construction Management, LLC (Falck Renewables) for proposed activities associated with construction of the North Eagle Solar project (the Project) located on North Eagle Village Road, Manlius, Onondaga County, New York. The property on which the Project is located comprises approximately 44.7 acres of land. The Project will encompass an approximately 21.3-acre subset of that property (the Site).



Figure 1 – Property Boundary & Project Area

Pursuant to Section 402 of the Clean Water Act (CWA), stormwater discharges from certain construction activities are unlawful unless they are authorized by a National Pollutant Discharge Elimination System (NPDES) permit or by a state permit program. The New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) permit program is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law (ECL). The General Permit for Stormwater Discharges from Construction Activity, General Permit Number GP-0-20-001 (the Permit) is issued pursuant to Article 17, Titles 7, 8 and Article 70 of the ECL.

The Permit authorizes stormwater discharges to surface waters of the State from construction activities involving soil disturbances of one or more acres, provided all of the eligibility provisions of the Permit are met. Part III.C of the Permit states that construction activities identified in Table 1 of Appendix B (of the Permit) are required to prepare a SWPPP that only includes erosion and sediment control practices. Construction activities identified in Table 2 of Appendix B (of the Permit) are required to prepare a SWPPP that also includes post-construction stormwater management practices.

The Project involves construction of a ground-mounted solar photovoltaic (PV) array, a permanent gravel access road, and concrete equipment pads. Although overall impervious area is relatively small and a majority of the site will consist of a permanent vegetative cover, the construction activities described above are identified in Table 2 of the Permit, and therefore post-construction stormwater management practices will be included in this preliminary SWPPP.

The total area to be disturbed is shown by the limits of disturbance on the discretionary permitting drawings for this Project. The gravel access roads, concrete & gravel equipment pads, racking posts and fence footings are all considered to be impervious surfaces. Table 1 shows the total impervious area to be 0.63 acres. Please note that the area contributing to impervious surface from the racking posts is considered negligible but has been shown for illustrative purposes.

Table 1 – Areas of Impervious Surface

Gravel Access Road	0.60 acres
Equipment Pads	0.02 acres
Racking Posts	0.001 acres
Fence Post Footings	0.01 acres
Total Impervious Surface	**0.63 acres**

It is not expected that more than 5 acres of the Project area will be disturbed at one given time. **If more than 5 acres of the Project area will be disturbed at one given time, the following are required by the Owner and Contractor**:

- Obtain written authorization from the NYSDEC prior to construction.
- Conduct at least two site inspections in accordance with Part IV.C of the General Permit every seven calendar days, for as long as greater than five acres of soil remain disturbed. The two inspections shall be separated by a minimum of two full calendar days.
- Initiate soil stabilization measures by the end of the next business day in areas where soil disturbance has temporarily or permanently ceased and complete within seven days from the date the current soil disturbance activity ceased.
- Prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
- Install additional site-specific practices needed to protect water quality.

Refer to Appendix B for a copy of the Permit.

2.0 SITE DESCRIPTION

2.1 PROPERTY

The Site, as previously noted, covers approximately 21.3 acres of a larger parcel located within Manlius, New York. The Site is located in a rural area to the north east of the Town of Manlius. The general area around the Site consists of rural residential/agricultural properties. The Site is bound by Salt Springs Road to the north; by North Eagle Village Road to the south; a tree-line and property boundary to the west; and a swale and Townsend Road to the east. The Site was primarily used for agricultural purposes.

2.2 TOPOGRAPHY

The maximum elevation of the Site is approximately 863 feet above mean sea level. The Site generally slopes from the northeast to the southwest. There is an existing swale that bisects the southeastern section of the Site from the northeast to the southwest. Areas within the Site have slopes ranging from 0–3%.

2.3 SOILS

The United States Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey for Onondaga County was reviewed and provided surficial soil conditions for the Site. The SCS identified the presence of three (3) soil types within the Project area. Figure 2 shows the soil map for the Site.

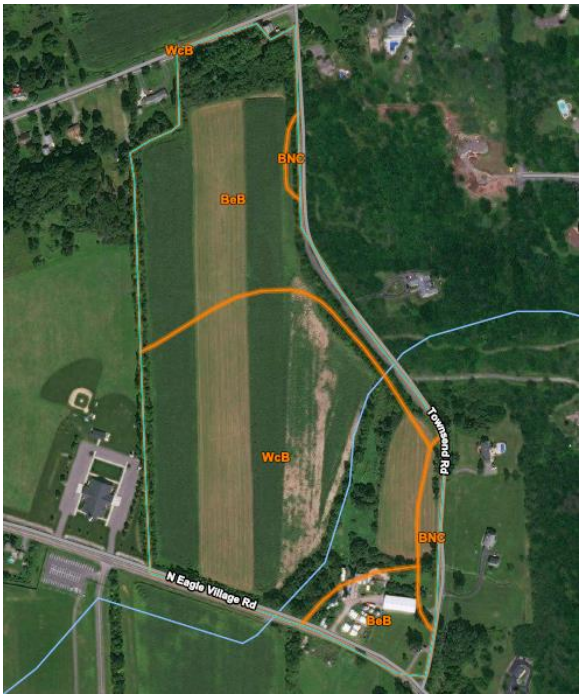


Figure 2 – Soil Map (NTS)

Soil data as provided by the SCS is presented in Table 2.

Table 2 – Soils Data

MAP SYMBOL/ DESCRIPTION	HYDROLOGIC SOIL GROUP	SLOPE (%)	SOIL PROFILE		K VALUE	DEPTH TO WATER TABLE (INCHES)
			DEPTH (IN)	USDA TEXTURE		
Benson silt loam (BeB)	D	0 – 8	0 – 8	Silt Loam	0.37	> 80
			8 – 18	Very Channery Loam		
			18 – 22	Unweathered Bedrock		
Benson-Wassaic-Rock outcrop association (BNC)	C/D	0 – 25	0 – 11	Silt Loam	n/a	19 – 39
			11 – 23	Channery Silt Loam		
			23 – 35	Channery Loam		
			35 – 39	Unweathered Bedrock		
Wassaic silt loam (WcB)	C	0 – 8	0 – 11	Silt Loam	0.28	19 – 39
			11 – 23	Channery Silt Loam		
			23 – 35	Channery Loam		
			35 – 39	Unweathered Bedrock		

The SCS defines the hydrologic soil groups as follows:

Type A Soils: Soils having a high infiltration rate and low runoff potential when thoroughly wet. These soils consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a moderate rate of water transmission.

Type B Soils: Soils having a moderate infiltration rate when thoroughly wet and consists mainly of moderately deep to deep, moderately well to well drained soils with moderately fine to moderately course textures. These soils have a moderate rate of water transmission.

Type C Soils: Soils having a low infiltration rate when thoroughly wet. These soils consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately fine-to-fine texture. These soils have a low rate of water transmission.

Type D Soils: Soils having a very low infiltration rate and high runoff potential when thoroughly wet. These soils consist chiefly of clays that have high shrink-swell potential, soils that have a permanent high-water table, soils that have a clay pan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very low rate of water transmission.

The complete USDA Soil Survey (including the soil map to scale) for the Site can be found in Appendix E.

2.4 COVER CONDITIONS

The existing Site cover condition is pasture/grassland with some wooded area. The Site cover condition post-construction is to be a permanent grassed vegetative cover, a gravel access road, and concrete equipment pads with a portion of the Site remaining as pasture/grassland with the wooded area. Disturbed areas to be vegetated will receive topsoil and seeding for final stabilization.

Runoff curve numbers for the various cover types and descriptions used in the stormwater evaluation for this project were obtained from Tables 2-2a-d of the *Urban Hydrology for Small Watersheds Technical Release 55* by the USDA. A summary of the curve numbers is provided in Table 3.

Table 3 – Curve Numbers for Hydrologic Soil Group

Cover Type	A	B	C	D
Woods (Good)	30	55	70	77
Straight Row Crop (Good)	67	78	85	89
Pasture, grassland, or range – continuous forage for grazing (Good)	39	61	74	80
Meadow – continuous grass, protected from grazing and generally mowed for hay	30	58	71	78
Gravel	96	96	96	96
Paved parking lots, roofs, driveways, etc.	98	98	98	98

2.5 WETLANDS

No wetlands were identified in the project area on the NYSDEC Environmental Resource Mapper website. A wetland delineation was performed on April 1, 2020 by Tetra Tech. One wetland was field delineated at the northern portion of the property. The proposed project does not impact this wetland, as it is outside of the project area. In addition to the wetland, there were two intermittent streams and one excavated ditch delineated on the property. A 25-foot buffer is applied to the intermittent streams. The Project is located outside of the stream buffer. The delineated wetland features are shown on the discretionary permitting drawings and will be incorporated into the final construction documents.

2.6 HISTORIC PRESERVATION

The NYSDEC and NYS Office of Parks, Recreation and Historic Preservation (OPRHP) have developed a process for construction projects to identify and address potential impacts on archeological and historic resources. This process is documented in a Letter of Resolution (LOR) that was developed between the NYSDEC and OPRHP. A letter from the Office concluded that the Project will have No Adverse Impact on historic resources. A copy of the letter from the State Historic Preservation Act (SHPA) Review is included in Appendix C.

2.7 SURFACE WATERS & FLOOD PLAINS

The Site is located in the Limestone Creek Watershed as part of the Oswego River/Finger Lakes Basin that ultimately outlets to Lake Ontario. The Limestone Creek watershed is not identified in Appendix C of the Permit; as such, enhanced phosphorous removal standards are not required. Runoff from the Site flows over agricultural areas (currently row crop), infiltrates into surface soils and leaves via overland flow to wetlands and the stream that bisects the Site before entering Bishop Brook. The Site ultimately leads to tributaries of the Oneida River.

Using the map service center provided by the Federal Emergency Management Agency (FEMA), a Flood Insurance Rate Maps (FIRMs) for the Town of Manlius, panel number 36067C0264F was printed for the Site as a FIRMette. The entirety of the Site is located within Zone X, Area of Minimal Flood Hazard. A copy of the FIRMette can be found in Appendix D.

2.8 RAINFALL DATA

In accordance with the *2016 New York State Standards and Specifications for Erosion and Sediment Control*, hydrologic data and rainfall distributions published by the Northeast Regional Climate Center (NRCC) on their website (http://precip.eas.cornell.edu/) are used in the stormwater hydrology calculations herein. The rainfall data for various 24-hour storm events anticipated at the Site is presented in Table 4.

Table 4 – Rainfall Data

Storm Event	24-Hour Rainfall
1-year	2.06–inches
2-year	2.40-inches
10-year	3.45–inches
100-year	5.81–inches

3.0 EROSION & SEDIMENT CONTROL

This section of the SWPPP and the associated construction drawings identify the temporary and permanent erosion and sediment control (ESC) measures that have been incorporated into the design of this Project. These measures will be implemented during construction to protect the waters of the state from sediment loads during runoff events.

The anticipated order of construction activities is outlined along with the ESC measures to be implemented for each construction activity that will result in soil disturbance. The SWPPP and construction drawings provide a description of the temporary and permanent ESC measures including limitations on the duration of soil exposure, criteria and specifications for placement and installation of the ESC measures, and a maintenance schedule.

An emphasis was placed on the preservation of natural features, conserving existing drainage patterns and vegetation, minimizing impervious surfaces, slowing down runoff, increasing infiltration, and utilizing green infrastructure techniques throughout the design process.

3.1 CONSTRUCTION SEQUENCE

Construction is anticipated to start in 2020. Operation is targeted for 2020. The Project's construction will be approximately four months in duration. The construction will begin with the initial site preparation, preliminary site grading, installation of access roadway, erection of arrays, electrical installation, and commissioning/startup.

The following is a typical sequence of operations and phasing plan describing the intended order of construction activities:

Initial Phase

1. Hold a pre-construction meeting on-site to be attended by the qualified inspector, and any involved subcontractors to discuss responsibilities as they relate to the implementation of the SWPPP, identify the secure location where the SWPPP will be kept on the Site (must be accessible during normal business hours), and review appropriate measures to avoid and minimize impacts to protected species during remediation, demolition and construction. If contractors and subcontractors have not already done so, the certification statements in Appendix L shall be signed at this time.

2. Delineate limits of work disturbance, proposed infrastructure areas for the Project, and resources to protect.

3. Install and stabilize temporary ESC measures (i.e. sediment control barrier, stabilized construction entrance). Minimal clearing may be required for this installation.

4. Minimally clear areas as required for the following:

    a. Rough grading; and
    b. Placement of construction office trailer and parking areas.

5. Install temporary infrastructure (e.g., construction office trailer, interim road, fence, security measures).

6. Establish equipment staging (laydown area), topsoil stockpile, and concrete truck washout areas.

7. Identify post-construction stormwater management practice areas to be protected in order to preserve native soil permeability.

Interim Phase

1. Perform grading, clearing, grubbing for the remainder of the site per approved construction drawings.

2. Mount and install the supporting structure and racking system.

3. Install solar panels, string inverters and connections.

4. Construct equipment pads (transformer, central inverters, battery storage systems, etc.).
5. Install underground electric wiring and/or above ground cable management systems.

Final Phase

1. Install permanent ESC measures.
2. Install permanent access road and paved access road entrance (if required).
3. Install permanent post-construction stormwater management practices (if required)
4. Install permanent perimeter fencing.
5. Conduct soil restoration (as required).
6. Complete fine grading, landscaping, seeding and soil stabilization.
7. Remove temporary ESC measures.
8. Restore and stabilize any disturbed areas remaining upon removal of temporary ESC measures

If the disturbed area exceeds 5 acres at any given time, prior written acceptance of this plan from the Regional NYSDEC office must be received and attached.

3.2 TEMPORARY EROSION & SEDIMENT CONTROL MEASURES

Temporary erosion and sediment control measures are included as part of the construction drawings and described herein.

3.2.1 Stabilized Construction Entrance

During the initial phase, a stabilized construction entrance shall be installed, as shown on the construction drawings, to reduce the tracking of sediment onto public roadways.

Construction traffic must enter and exit the Site at the stabilized construction entrance. The intent is to trap dust and mud that would otherwise be carried off-Site by construction traffic.

The entrance shall be maintained in a condition that will control tracking of sediment onto the local roadway. When necessary, the placement of additional aggregate atop the filter fabric will be done to assure the minimum thickness is maintained. All sediments and soils spilled, dropped, or washed onto any public right-of-way must be removed immediately. Periodic inspection and needed maintenance shall be provided after each substantial rainfall event.

3.2.2 Dust Control

Water trucks may be used as needed during construction to reduce dust generated on the Site. Dust control must be provided by the Contractor to a degree that is acceptable to the Owner, and in compliance with the applicable local and state dust control requirements.

3.2.3 Material Storage & Equipment Staging Areas

Construction materials shall be stored in a dedicated staging area. The staging area shall be located in an area that minimizes the impacts of the construction materials affecting stormwater quality and protected by a temporary sediment control barrier.

Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Except during application, the contents must be kept in trucks or within storage facilities. Runoff containing such material must be collected, removed from the Site, treated and disposed at an approved solid waste or chemical disposal facility.

Material resulting from the clearing and grubbing operation shall be stockpiled up slope from adequate sedimentation controls or at an off-site location with appropriate protections for re-use during the restoration stage.

3.2.4 Concrete Wash Area

Concrete trucks will be allowed to wash out or discharge surplus concrete or drum wash water on the site, but only in a specifically designated diked and impervious washout area which has been prepared to prevent contact between the concrete wash and stormwater. Waste generated from concrete wash water shall not be allowed to flow into drainage ways, inlets, receiving waters or highway right of ways, or any location other than the designated Concrete Wash Areas. Proper signage designating the “Concrete Wash Area” shall be implemented. The Concrete Wash Area shall be located at minimum 100 linear feet from drainage ways, inlets and surface waters.

The hardened residue from the Concrete Wash Area shall be disposed of in the same manner as other non-hazardous construction waste materials. Maintenance of the wash area shall include removal of hardened concrete. The Facility shall have sufficient volume to contain all the concrete waste resulting from washout and a minimum freeboard of 12 inches. The Facility shall not be filled beyond 95 percent capacity and shall be cleaned out once 75 percent full unless a new facility is constructed. The Contractor will be responsible for seeing that these procedures are followed.

Saw-cut Portland Cement Concrete (PCC) slurry shall not be allowed to enter storm drains or watercourses. Saw-cut residue should not be left on the surface of pavement or be allowed to flow over and off pavement.

All concrete washout areas shall be inspected daily and repaired or replaced as necessary. The Site shall be inspected frequently to ensure that no concrete discharges are taking place in non-designated areas.

3.2.5 Sediment Control Barrier

Prior to the initiation of and during construction activities, a geotextile filter fabric (or silt fence) or compost filter sock will be established along the perimeter of areas to be disturbed as a result of the construction that lies upgradient of water courses or adjacent properties. These barriers may extend into non-impact areas to ensure adequate protection of adjacent lands.

Clearing and grubbing will be performed only as necessary for the installation of the sediment control barrier. To ensure effectiveness of the sediment control barrier, daily inspections and

inspections immediately after significant storm events will be performed by Site personnel. Maintenance of the fence will be performed as needed.

3.2.6 Temporary Soil Stockpile

Materials, such as topsoil or removed soil for special handling, shall be temporarily stockpiled (if necessary) on the Site during the grading and construction process. Stockpiles shall be located in an area away from storm drainage, water bodies and/or courses, and shall be properly protected from erosion by a surrounding sediment control barrier.

3.2.7 Preservation of Natural Areas

During the initial phase, limits of construction and resources to protect shall be identified in accordance with the construction drawings. Sturdy fences or other protective materials shall be placed around valuable vegetation for protection from construction equipment. Soil placement over existing tree and shrub roots shall be limited to a maximum of 3 inches.

3.2.8 Temporary Seeding

In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased.

3.2.9 Temporary Diversion Swales

Temporary diversion swales shall be used to divert off-site runoff around the construction Site, divert runoff from stabilized areas around disturbed areas, and direct runoff from disturbed areas into sediment traps.

3.2.10 Temporary Slope Protection

Erosion control blankets shall be installed on all slopes exceeding 3H:1V. Erosion control blankets provide temporary erosion protection, rapid vegetative establishment, and long-term erosion resistance to shear stresses associated with high runoff flow velocities associated with steep slopes.

3.2.11 Stone Check Dams

Stone check dams shall be installed within drainage ditches to reduce the velocity of stormwater runoff, to promote settling of sediment, and to reduce sediment transport offsite.

The stone check dams shall be inspected after each runoff event. Damage shall be repaired upon discovery. If significant erosion has occurred between structures, a liner of stone or other suitable material shall be installed in that portion of the channel.

Sediment accumulated behind the stone check dam shall be removed as needed to allow the channel to drain through the stone check dam and prevent large flows from carrying sediment over or around the dam. Stones shall be replaced as needed to maintain the design cross section of the structures.

3.2.12 Temporary Soil Stabilization

In areas where soil disturbance activity has temporarily or permanently ceased, the application of temporary soil stabilization measures shall be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. Appendix A of the Permit defines temporarily ceased as an existing disturbed area that will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary soil stabilization can be achieved by covering exposed soil with mulch, seed and mulch, and/or erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats) to prevent the exposed soil from eroding until permanent soil stabilization has been implemented and achieved.

3.3 PERMANENT EROSION & SEDIMENT CONTROL MEASURES

Permanent erosion and sediment control measures are included as part of the construction drawings provided in Appendix A and described herein.

3.3.1 Permanent Soil Stabilization

Disturbed areas that will be vegetated must be seeded in accordance with the construction drawings. The type of seed, mulch, and maintenance measures are also defined in the construction drawings.

All areas at final grade must be seeded and mulched within 7 days after completion of the major construction activity. All seeded areas should be protected with mulch.

Final Site stabilization is achieved when all soil-disturbing activities at the Site have been completed and a uniform, perennial vegetative cover with a density of 80 percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

3.3.2 Riprap Weir

A riprap weir may be utilized at the outlet of proposed vegetated swales to prevent erosion of the downstream face of the outlet during rainfall events. Outlet types and specifications are identified in the construction drawings.

3.3.3 Rock Outlet Protection

Outlet protection will be utilized as necessary using rock riprap at culvert outlets, new channels constructed as outlets for culverts and conduits, and pipe conduits from sediment basins, dry storm water ponds, and permanent ponds. Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular, and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5. A filter shall be placed under the rock riprap as specified in the construction drawings. Permanent sections of rock protection at outlets reduce the depth, velocity, and energy of the water in order to prevent the flow from eroding the downstream reach.

3.3.4 Soil Restoration

The structure of healthy soil is permeable, with spaces between solid particles where water, air, and soil organisms can move. Soil compaction occurs when weight on the soil surface collapses these spaces, creating a hard, solid mass. Water, air, and roots may be completely unable to penetrate compacted soil, reducing or destroying its capacity to sustain life. Soil restoration promotes greater stormwater infiltration in areas with pervious cover and, therefore, helps to reduce runoff volume.

Soil restoration is achieved by aeration through mechanical loosening, and addition of organic matter and soil amendments. In areas where significant soil disturbance has occurred outside of buildings and pavement areas, the disturbed sub-soils shall be returned to rough grade and soils restoration steps applied, in accordance with Table 4.6, Soil Restoration Requirements of the NYS Standards and Specifications for Erosion and Sediment Control dated July 2016 and amended in November 2016 and Section 5.1.6, Soil Restoration of the NYS Stormwater Management Design Manual, dated January 2015.

Table 5 provides the soil restoration requirements for various types of soil disturbance. Grading and soil restoration requirements shall be in accordance with the construction drawings.

Table 5 – Soil Restoration Requirements

<table>
<tr><th>Type of Soil Disturbance</th><th colspan="2">Soil Restoration Requirement</th><th>Comments/Examples</th></tr>
<tr><td>No Soil Disturbance</td><td colspan="2">Restoration not permitted.</td><td>Preservation of natural features.</td></tr>
<tr><td>Minimal Soil Disturbance</td><td colspan="2">Restoration not required.</td><td>Clearing and grubbing.</td></tr>
<tr><td rowspan="2">Areas where topsoil is stripped only – no change in grade</td><td>HSG A & B</td><td>HSG C & D</td><td rowspan="2">Protect areas from any ongoing construction activities.</td></tr>
<tr><td>Apply 6 inches of topsoil</td><td>Aerate* and apply 6 inches of topsoil</td></tr>
<tr><td rowspan="2">Areas of cut or fill</td><td>HSG A & B</td><td>HSG C & D</td><td rowspan="2"></td></tr>
<tr><td>Aerate and apply 6 inches of topsoil</td><td>Apply full soil restoration**</td></tr>
<tr><td>Heavy traffic areas on site (especially within 5-25 feet of buildings but not within a 5-foot perimeter around foundation walls)</td><td colspan="2">Apply full soil restoration (de-compaction and compost enhancement)</td><td></td></tr>
<tr><td>Areas where runoff reduction and/or infiltration practices are applied</td><td colspan="2">Restoration not required but may be applied to enhance the reduction specified for appropriate practices.</td><td>Keep construction equipment away from crossing these areas.</td></tr>
</table>

***** Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per “Deep Ripping and De-compaction, DEC 2008”

4.0 STORMWATER MANAGEMENT DESIGN

The design described herein is in conformance with the sizing criteria outlined in the Permit, and the performance criteria provided in New York State Stormwater Management Design Manual (SMDM). The SMDM outlines provisions for water quality, runoff reduction, channel protection, overbank flood control, and extreme flood management in the State of New York.

The design objectives are focused on water quality and quantity. Utilization of green infrastructure techniques to the maximum extent possible reduces the total water quality volume and the overall site runoff volume. Additional structural SMPs may be required to maintain the pre-development rate of runoff in order to minimize impacts to adjacent or downstream properties, but only after all other techniques to reduce runoff have been exhausted or deemed infeasible.

4.1 STORMWATER MANAGEMENT PRACTICES (SMPS)

The SWPPP and construction drawings identify the stormwater management practices that have been incorporated into the design of this Project. Stormwater runoff from the proposed development will be collected and conveyed to the quantity and quality control systems described herein.

4.1.1 Preservation of Undisturbed Areas & Buffers

Important natural features and areas such as undisturbed forested and native vegetated areas, natural terrain, riparian corridors, wetlands and other important site features have been delineated and placed outside the limits of construction. These areas are shown on the construction drawings. Permanently protected natural areas that have been placed into conservation easements can be used to reduce the area required for treatment by structural stormwater management measures.

4.1.2 Reduction of Clearing & Grading

Clearing and grading of the site has been limited to the minimum amount needed for the development function, road access, and infrastructure. Limits of disturbance have been established for all development activities.

4.1.3 Locating Development in Less Sensitive Areas

The site layout has been located to avoid sensitive resource areas such as floodplains, steep slopes (> 15%), erodible soils, mature forests and critical habitat areas. The entire 100-year floodplain should be avoided for clearing and should be preserved in a natural, undisturbed state. There are no floodplains on the Site.

4.1.4 Reduction of Impervious Cover

Reduction of impervious cover utilized in this design includes methods to reduce the amount of parking lots, roadways, and other surfaces that do not allow rainfall to infiltrate the soil, in order to reduce the volume of stormwater runoff, increase groundwater recharge, and reduce pollutant loadings that are generated from a site.

The length and width of the proposed access road have been minimized to reduce overall imperviousness. The design of the access road is based on minimum lengths and widths required to meet applicable federal, state and local codes and support the necessary equipment accessing the Site.

4.1.5 Sheetflow to Riparian Buffers or Filter Strips

An existing riparian buffer exists around the stream that bisects the eastern portion of the Site that is avoided by the Project and is to be preserved. The water quality calculations in this SWPPP do not take credit for the additional benefits that the buffer will provide for runoff from the Site entering the stream.

4.1.6 Disconnection of Non-rooftop Runoff

Due to the nature of ground mounted solar system installation, the solar panels themselves are not considered to contribute to the amount of impervious area by acting as a pervious cover. The memorandum from the NYSDEC dated February 21, 2020 provides guidance for solar panel construction stormwater permitting. This project falls under scenario 2, which requires post-construction stormwater practices to be designed in accordance with chapter 4 of the SMDM. However, the water quality volume and runoff reduction volume sizing criteria can be addressed by design and constructing the solar panels in accordance with the criteria in items 1-4, which are summarized below.

1. Solar panels are constructed on post or rack systems elevated off the ground surface.
2. The panels are spaced apart so that rainwater can flow off the down gradient side of the panel and continue as sheet flow across the ground surface.
3. For solar panels constructed on slopes, the individual rows of solar panels are generally installed along the contour so rainwater sheet flows down slope.
4. The ground surface below the panels consist of a well-established vegetative cover (see “Final Stabilization” definition in Appendix A of the General Permit).

This guidance is consistent with the rationale behind solar panels acting as a pervious cover. By providing adequate row spacing, enough distance below the racking system to allow for natural sheet flow, and a well-established vegetative cover, the infiltration rate into the ground beneath the panels will be equal to the rate of infiltration prior to construction or better. An important component of this rationale is that the existing cultivated row crops and agricultural field within the Site will be seeded and brought to a permanent vegetation for the life of the system. Ground cover is one of the most important factors for erosion.

Items 2 & 3 in the above criteria refer to the Maryland Department of the Environment’s stormwater design guidance for solar panel installations. This guidance suggests the use of level spreaders for areas where slopes exceed 5%. The Site does not have slopes that exceed 5% and therefore no level spreaders are proposed.

4.1.7 Vegetated Swales

Vegetated swales have been implemented in the design to convey stormwater at a low velocity, promoting natural treatment and infiltration of the runoff from the proposed access road. The

vegetated swales provide a runoff reduction for the water quality volume calculations. The swale must also be a minimum of 100 feet, a bottom width between 2-6 feet, have side slopes no steeper than 3 feet horizontal to 1 foot vertical, have a slope between 0.5-4%.

See the construction drawings and Drainage Maps for the location and design requirements of the proposed vegetated swales.

The NRCS soil report for Onondaga County (Appendix E) identifies shallow depth to bedrock (10-40 inches) in soils across the Site. Taking this into consideration, geotechnical investigations will be required to assess if vegetated swales will be an effective approach to satisfy water quality requirements. Based on the results of geotechnical investigations to be completed prior to construction, an alternative practice may be implemented such as a vegetated filter strip or placing the tree line along the western property boundary into a conservation easement.

As per 6 New York Code of Rules and Regulations (NYCRR) Chapter V – Resource Management Services, Subchapter E, Water Regulation, Part 608, Use and Protection of Waters, Section608.3, Dams, a dam permit is not required for the Project as none of the stormwater management facilities have been designed with a height greater than 15 feet.

4.2 DRAINAGE AREAS

The study area for this Project consists of drainage areas that encompass approximately 47.2 acres. These drainage areas discharge to six different outfall locations, each defined as a Design Point (DP).

The separation of the drainage areas was dictated by watershed conditions, methods of collection, conveyance, and points of discharge. Watershed characteristics for each drainage area were assessed using aerial photographs, a topographical survey, soil surveys, Site investigations, and land use maps.

Table 6 summarizes the location and acreage for each of the drainage areas.

Table 6 – Summary of Drainage Areas

Drainage Area	Acreage	Description
1	11.2	Drainage occurs mostly from the northeast to the east and discharges to discharge point 1 that will ultimately discharge to the vegetated swale on the west boundary.
1A	0.90	This drainage area will ultimately discharge to the same discharge point as drainage area 1 but is used for water quality calculations and sizing the vegetated swale along the west boundary.
2	21.3	Drainage occurs mostly from east to west and discharges to drainage point 2. Drainage point 2 will ultimately discharge to the vegetated swale on the west boundary.
2A	1.73	A majority of the Site falls within Drainage Area 2. This area is a segment of drainage area 2 that includes the proposed access road and concrete/gravel equipment pads. This drainage area will ultimately discharge to the same discharge point as drainage area 1

Drainage Area	Acreage	Description
		but is used for water quality calculations and sizing the vegetated swale along the west boundary.
3	10.7	Drainage occurs from the east to the west and discharges to the stream that bisects the eastern portion of the Site.
4	0.80	This small drainage area in the northwest corner of the Site drains northeast to southwest and discharges towards the west to drainage point 4.
5	1.00	Drainage occurs generally from the east to the west and discharges to drainage point 5 at the northern Site boundary, adjacent to Salt Springs Road.
6	2.20	Drainage occurs generally south to north and discharges to drainage point 6 at the northern Site boundary, adjacent to Salt Springs Road.

Drainage maps are provided in Appendix F and depict the extent of the drainage areas, the locations of the design points, the flow paths and routing, and the soils within each drainage area for both pre-development and post-development conditions.

Note that the locations of proposed stormwater features (e.g. vegetated swales) have been identified on the post-development drainage map. These features shall be designed by a New York State Professional Engineer and sized in accordance with the NYS SMDM and the General Permit prior to construction.

4.3 STORMWATER QUALITY CONTROL

Stormwater runoff from impervious surfaces is recognized as a significant contributor of pollution that can adversely affect the quality of the receiving water bodies. Therefore, treatment of stormwater runoff is important since most runoff related water quality contaminants are transported from land, particularly the impervious surfaces, during the initial stages of storm events.

The objective for this design in accordance with the Permit is to reduce the total water quality volume of the Site by application of runoff reduction techniques and standard SMPs with runoff reduction volume capacity. The NYS SMDM provides a unified approach for calculating the water quality volume, runoff reduction volumes, and sizing green infrastructure and SMPs to meet pollutant removal goals.

4.3.1 Water Quality Volume (WQ_v)

The Water Quality Volume (WQ_v) is intended to improve water quality by capturing and treating runoff from small, frequent storm events that tend to contain higher pollutant levels. New York has defined the WQ_v as the volume generated from the 90th percentile rain event.

The following equation is used to determine the water quality volume (in acre-feet of storage):

$$WQ_v = \frac{(P)(R_v)(A)}{12}$$

Where:

WQ_v	=	Water Quality Volume (acre-feet)
P	=	90% Rainfall Event Number (Figure 4.1 in NYS SMDM)
R_v	=	0.05 + 0.009(I), where I is percent impervious cover
A	=	Site contributing area (acres)

The WQ_v is calculated in the Runoff Reduction Worksheet provided by NYSDEC for each sub-drainage area (1A and 2A). The remaining drainage areas described above containing only solar panels and fence (i.e. no impervious surfaces) have been left out of these calculations as the area reduction technique for disconnection of non-rooftop runoff and guidance discussed in section 4.1.6 satisfies the water quality volume requirement.

Full calculations are provided in Appendix G. Runoff reduction techniques previously discussed that help to reduce the overall contributing area have been accounted for in this calculation and are summarized in Table 7.

4.3.2 Runoff Reduction Volume (RR_v)

The NYS SMDM states that runoff reduction shall be achieved by infiltration, groundwater recharge, reuse, recycle, or evaporation/evapotranspiration of 100 percent of the post-development water quality volume to the maximum extent practical. If the runoff reduction volume (RR_v) is greater than the WQ_v, then the Project has already met the requirement for WQ_v by applying runoff reduction techniques.

Projects that do not achieve runoff reduction requirements must, at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the Site. In no case shall the runoff reduction achieved be less than the minimum RR_v.

The percent reduction is based upon the Hydrologic Soil Group (HSG) of the Site and is defined as the Specific Reduction Factor (S). Section 4.3 of the NYS SMDM defines the minimum Runoff Reduction Volume ($RR_{v\ min}$) as:

$$RR_{vmin} = \frac{(P)(\overline{R}_V{}^*)(A_{ic})(S)}{12}$$

Where:

RR_{vmin}	=	Minimum Runoff Reduction Volume required (acre-feet)
P	=	90 percent Rainfall Event Number
$\overline{R}_V{}^*$	=	0.05 + 0.009 (I), where I is 100% impervious
A_{ic}	=	Total Area of New Impervious Cover (Acres)
S	=	Hydrologic Soil Group (HSG) Specific Reduction Factor where:

HSG A = 0.55 HSG C = 0.30

HSG B = 0.40 HSG D = 0.20

The RR_v provided and the RR_{vmin} are calculated in the Runoff Reduction Worksheet provided by NYSDEC. Full calculations are provided in Appendix G.

The minimum runoff reduction volume is 439 cubic feet. The runoff reduction volume for each of the SMPs utilized in this project are summarized in Table 7.

4.3.3 Summary

The following table summarizes the water quality volume, the runoff reduction volume provided by the implemented green infrastructure practices and the total water quality volume that has been treated for each drainage area.

As shown, the water quality requirements have been satisfied through the implementation of runoff reduction techniques and standard SMPs.

Table 7 – Summary of the Water Quality Volume (WQ_v) Calculations

Drainage Area	Total Area (acres)	Impervious Surface (acres)	WQ_v (cf)	Runoff Reduction Technique(s)	RR_v (cf)	WQ_v Treated (cf)
1	11.2	0.00	--	Non-Rooftop Disconnection	--	--
1A	0.90	0.21	838	Vegetated Swale	699	139
2	21.3	0.00	--	Non-Rooftop Disconnection	--	--
2A	1.73	0.22	1,025	Vegetated Swale	801	225
3	10.7	0.00	--	Non-Rooftop Disconnection	--	--
4	0.80	0.00	--	Non-Rooftop Disconnection	--	--
5	1.00	0.00	--	Non-Rooftop Disconnection	--	--
6	2.20	0.00	--	Non-Rooftop Disconnection	--	--

4.4 STORMWATER QUANTITY CONTROL

This section presents the methodology and analysis performed for the pre- and post-development conditions of the Site to address erosion and flood control during specified storm events.

4.4.1 Hydrologic & Hydraulic Analysis

The methodology Hydrocad® Storm and Sanitary Analysis, a comprehensive hydrology and hydraulic analysis application, was used to compute the stormwater peak discharge rate at the

drainage area outfalls for each storm event. A stormwater network model was produced consisting of three types of components as described below:

- Subbasin: Hydrologic areas of land whose topography and drainage system elements direct surface runoff to a single discharge point.
- Conveyance Link: Channels, pipes and culverts used to route the stormwater runoff to various features.
- Storage Nodes: Catchbasins, detention ponds, reservoirs and lakes associated with storage volume.

A comparison of the pre- and post-development watershed conditions was performed for all design points and storm events evaluated herein.

The hydrologic and hydraulic analysis considers the SCS Type II 24-hour storm events and uses TR-20 methodology. The TR-55 method is used for calculating the time of concentration (T_c). Input data required to perform the analysis includes acreages and curve numbers for the associated drainage areas, and slopes and flow lengths for the time of concentration calculations.

The analyses demonstrate that the peak rate of runoff will not be increased post-development for each design point and design storm. Therefore, the Project will not have a significant adverse impact on the adjacent or downstream properties or receiving water courses.

The results of the computer modeling used to analyze the pre- and post-development conditions are presented in Appendix H and Appendix I, respectively. Tables 8 and 9 summarize the results.

Table 8 – Summary of Pre-Development & Post-Development Peak Discharge Rates

Design Point (DP #)	24-Hour Storm Event (cfs)					
	1-year		10-year		100-year	
	Pre	Post	Pre	Post	Pre	Post
1	10.63	2.13	24.05	10.72	47.87	30.71
2	22.73	7.43	49.83	27.54	97.31	70.22
3	12.43	12.43	28.62	28.62	57.55	57.55
4	1.25	1.25	2.79	2.79	5.56	5.56
5	1.28	1.28	3.12	3.12	6.54	6.54
6	2.08	2.08	5.80	5.80	13.11	13.11
Total	**50.40**	**26.60**	**114.21**	**78.59**	**227.94**	**183.69**

Table 9 – Summary of Pre-Development & Post-Development Runoff Volume

Design Point (DP #)	24-Hour Storm Event (acre-feet)					
	1-year		10-year		100-year	
	Pre	Post	Pre	Post	Pre	Post
1	0.889	0.271	1.995	0.963	4.047	2.563
2	1.799	0.729	3.946	2.248	7.886	5.539
3	0.798	0.798	1.832	1.832	3.771	3.771
4	0.060	0.060	0.137	0.137	0.282	0.282
5	0.061	0.061	0.151	0.151	0.326	0.326
6	0.102	0.102	0.280	0.280	0.644	0.644
Total	**3.709**	**2.021**	**8.341**	**5.611**	**16.956**	**13.125**

Table 8 and 9 show that overall discharge leaving the site has decreased from the pre-development condition due to improvement in the ground cover type from agricultural row crop to permanent grass cover. It should be noted that drainage areas 3-6 are outside of the proposed Site and therefore the pre-development and post-development runoff rates and volumes remain the same.

4.4.2 Stream Channel Protection Volume (Cp_v)

The stream channel protection volume requirement is designed to protect stream channels from erosion. This is accomplished by providing 24 hours of extended detention for the 1 year, 24-hour storm event, remaining from runoff reduction. The NYS SMDM defines the Cp_v detention time as the center of mass detention time through each stormwater management practice.

The Cp_v requirement does not apply when the reduction of the entire Cp_v is achieved at a site through green infrastructure or infiltration systems. This reduction is shown in Table 9.

4.4.3 Overbank Flood Control (Q_p)

The overbank flood control requirement is designed to prevent an increase in the frequency and magnitude of flow events that exceed the bank-full capacity of a channel, and, therefore, must spill over into the floodplain. The control requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Q_p) to pre-development rates.

Tables 8 & 9 show the results of the 24-hour, 10-year storm event for pre- and post-development.

4.4.4 Extreme Flood Control (Q_f)

The extreme flood control requirement is designed to prevent the increased risk of flood damage from large storm events, to maintain the boundaries of the pre-development 100-year floodplain, and to protect the physical integrity of stormwater management practices. The control requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Q_f) to pre-development rates.

Tables 8 & 9 show the results of the 24-hour, 100-year storm event for pre- and post-development.

5.0 SPILL PREVENTION & SOLID WASTE MANAGEMENT

The following describes other control measures to be employed during all phases of construction.

5.1 SPILL PREVENTION & RESPONSE

A Spill Prevention and Response Plan shall be developed for the Site by the Contractor. The plan shall detail the steps needed to be followed in the event of an accidental spill and shall identify contact names and phone numbers of people and agencies that must be notified.

The plan shall include Safety Data Sheets (SDS) for materials to be stored on-Site. Workers on-Site will be required to be trained on safe handling and spill prevention procedures for all materials used during construction.

The use of detergents for large scale washing is prohibited (e.g., vehicles, buildings, pavement surfaces, etc.)

5.2 SOLID & LIQUID WASTE DISPOSAL

No solid or liquid waste, including building materials, are allowed to be discharged from the Site with stormwater. All solid waste, including disposable materials incidental to the major construction activities, must be collected and placed in containers. The containers shall be emptied periodically by a licensed solid waste disposal service and hauled away from the Site and disposed of a permitted facility.

Substances that have the potential for polluting surface and/or groundwater must be controlled by whatever means necessary in order to ensure that they do not discharge from the Site. As an example, special care must be exercised during equipment fueling and servicing operations. A designated refueling area will be provided that will allow for appropriate containment; however, if a spill occurs, it must be contained and disposed so that it will not flow from the Site or enter groundwater, even if this requires removal, treatment, and disposal of soil. In this regard, potentially polluting substances should be handled in a manner consistent with the impact they represent.

5.2.1 Sanitary Facilities

Temporary sanitary facilities will be provided throughout the construction phase. These facilities will be utilized by construction personnel and will be serviced by an outside contractor. These facilities shall comply with state and local sanitary or septic system regulations.

5.2.2 Water Source

Non-stormwater components of Site discharge must be clean water. Water used for construction, which discharged from the Site, must originate from a public water supply or private well approved by the Onondaga County Health Department. Water used for construction that does not originate from an approved public supply must not discharge from the Site. It can be retained until it infiltrates and evaporates.

6.0 INSPECTION & MAINTENANCE REQUIREMENTS

6.1 PRE-CONSTRUCTION INSPECTION

Prior to the commencement of construction, the Owner or Operator must identify the Contractor(s) and Subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the Contractor(s) and Subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The Owner or Operator shall have each of the Contractors and Subcontractors identify at least one (1) person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the Trained Contractor, who shall be on site on a daily basis when soil disturbance activities are being performed.

The responsible Contractor or Subcontractor shall sign the form included in Appendix L.

A Qualified Inspector shall conduct an assessment of the Site and certify that the appropriate erosion and sediment control structures have been adequately installed and implemented. Refer to the inspection forms in Appendix M.

6.2 CONSTRUCTION PHASE INSPECTIONS & MAINTENANCE

A Qualified Inspector, as defined in Appendix A of the General Permit GP-0-020-001, shall conduct weekly Site inspections between the time the SWPPP is implemented and final site stabilization. To ensure the stability and effectiveness of all protective measures and practices during construction, all erosion and sediment control measures employed will be inspected by the Qualified Inspector at least every 7 calendar days. If disturbance exceeds 5 acres, the Qualified Inspector shall conduct at least two inspections every 7 calendar days. The two inspections shall be separated by a minimum of two full calendar days.

The purpose of Site inspections is to assess performance of pollutant controls. Based on these inspections, the Qualified Inspector shall decide whether it is necessary to modify this SWPPP, add or relocate sediment barriers, or whatever else may be needed in order to prevent pollutants from leaving the Site via stormwater runoff. The Construction Contractor has the duty to cause pollutant control measures to be repaired, modified, maintained, supplemented, or whatever else is necessary in order to achieve effective pollutant control.

Examples of particular items to evaluate during Site inspections are listed below. This list is not intended to be comprehensive. During each inspection the inspector must evaluate overall pollutant control system performance as well as particular details of individual system components. Additional factors should be considered as appropriate to the circumstances.

- Locations where vehicles enter and exit the Site must be inspected for evidence of off-site sediment tracking. A stabilized construction entrance will be constructed where vehicles enter and exit. This entrance will be maintained or supplemented as necessary to prevent sediment from leaving the Site on vehicles.

- Sediment barriers must be inspected and, if necessary, they must be enlarged or cleaned in order to provide additional capacity. All material from behind sediment barriers will be stockpiled on the up-slope side. Additional sediment barriers must be constructed as needed.

- Inspections will evaluate disturbed areas and areas used for storing materials that are exposed to rainfall for evidence of, or the potential for, pollutants entering the drainage system. If necessary, the materials must be covered, or original covers must be repaired or supplemented. Also, protective berms must be constructed, if needed, in order to contain runoff from material storage areas.

- Grassed areas will be inspected to confirm that a healthy stand of grass is maintained. The Site will be considered to have achieved final stabilization once all areas are covered with building foundation, pavement, or gravel, or have a stand of grass with at least 80 percent density, which is considered stabilized or mulched. Areas must be watered, fertilized, and reseeded as needed to achieve this goal.

- All discharge points must be inspected to determine whether erosion control measures are effective in preventing significant impacts to receiving waters.

Within 1 business day of the completion of an inspection, the Qualified Inspector shall notify the Owner or Operator and appropriate contractor (or subcontractor) of any corrective actions that need to be taken. The Contractor (or subcontractor) shall begin implementing corrective actions within 1 business day of this notification and shall complete the corrective actions in a reasonable time frame.

In addition to the inspections performed by the Qualified Inspector, the Contractor shall perform routine inspections that include a visual check of all erosion and sediment control measures. All inspections and maintenance shall be performed in accordance with the inspection and maintenance schedule provided on the Drawings. Sediment removed from erosion and sediment control measures will be exported from the Site, stockpiled for later use, or used immediately for general non-structural fill.

It is the responsibility of the Contractor to assure the adequacy of Site pollutant discharge controls. Actual physical Site conditions or contractor practices could make it necessary to install more erosion and sediment controls than shown on the attached Drawings. (For example, localized concentrations of runoff could make it necessary to install additional sediment barriers.) Assessing the need for additional controls and implementing them or adjusting existing controls will need to be addressed throughout all aspects of this Project, and until the Site achieves final stabilization.

6.3 INSPECTION & MAINTENANCE REPORTS

Inspection reports must be completed for every inspection conducted and include additional remarks if needed to fully describe a situation. An important aspect of the inspection report is the description of additional measures that need to be taken to enhance plan effectiveness. The inspection report must identify whether the Site was in compliance with the SWPPP at the time of inspection and specifically identify all incidents of non-compliance.

Sample inspection forms are included in Appendix M. At a minimum, the inspection report shall include and/or address the following:

- Date and time of inspection;
- Name and title of person(s) performing inspection;
- A description of the weather and soil conditions (e.g., dry, wet, saturated) at the time of the inspection;
- A description of the condition of the runoff at all points of discharge from the construction Site. This shall include identification of any discharges of sediment from the construction Site. Include discharges from conveyance systems (e.g., pipes, culverts, ditches, etc.) and overland flow;
- Identification of all erosion and sediment control practices that need repair or maintenance;
- Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
- Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards; and
- Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices, and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s).
- Include color photographs with date stamp, taken with a digital camera that clearly show the condition of all practices that have been identified as needing corrective actions. Color copies of photographs shall be attached to the inspection report within 7 calendar days of inspection. Color photographs with date stamp, taken with a digital camera must clearly show the condition of practice(s) after the corrective action has been completed. Color copies of the photographs, that document completion of the corrective action work within 7 calendar days of inspection, shall be attached to inspection report.

All inspection reports shall be signed by the Qualified Inspector and shall be maintained on Site with the SWPPP, kept in Appendix N.

6.4 TEMPORARY SUSPENSION OF CONSTRUCTION ACTIVITIES

For constructions areas where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the frequency of Qualified Inspector inspections can be reduced to once every 30 calendar days.

Prior to reducing the frequency of inspections, the Owner/Operator shall notify the NYSDEC Division of Water in writing.

6.5 PARTIAL PROJECT COMPLETION

For construction areas where soil disturbance activities have been shut down with partial project completion, the Qualified Inspector can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved final stabilization and all post-construction stormwater management practices required for the completed portion of the Project have been constructed in conformance with the SWPPP and are operational. The owner or operator shall notify the NYSDEC Region 7 Water (SPDES) Program contact in writing prior to the shutdown.

If soil disturbance activities are not resumed within 2 years from the date of shutdown, the Owner or Operator shall have the qualified inspector perform a final inspection and certify that all disturbed areas have achieved final stabilization, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination (NOT).

6.6 POST-CONSTRUCTION OR PLANNED SHUTDOWN INSPECTION

The Owner or Operator shall have the Qualified Inspector perform a final Site inspection prior to submitting the NOT when all disturbed areas are stabilized, and all stormwater management systems are in place and operable. The Qualified Inspector shall certify that all disturbed areas have achieved final stabilization; and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the NOT.

Prior to submitting the Notice of Termination, the Owner or Operator must have a deed restriction in place to ensure that the Operation and Maintenance Plan is implemented for the post-construction stormwater management practices.

6.7 RETENTION OF RECORDS

The owner or operator shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, and any inspection reports that were prepared in conjunction with this permit for a period of at least 5 years from the date that the Site achieves final stabilization. This period may be extended by the NYSDEC, in its sole discretion, at any time upon written notification.

With the exception of the NOI, and NOT, all written correspondence requested by the NYSDEC, including individual permit applications, shall be sent to the following NYSDEC address:

NYSDEC Region 7 Office
615 Erie Blvd. West
Syracuse, NY 13204-2400

7.0 CONCLUSION

This Project is not subject to the requirements of a regulated Municipal Separate Storm Sewer System (MS4), and this SWPPP has been prepared in conformance with the New York State (NYS) Stormwater Design Manual 2015. As such, it is anticipated that GP-0-20-001 coverage will be effective 5 business days from the date the NYSDEC receives the complete electronic version of the NOI (eNOI) or 10 business days from the date the NYSDEC receives the complete paper version of the NOI, unless notified otherwise by the NYSDEC.

The proposed stormwater collection system consisting of pipes and open drainage ways will adequately collect and convey the stormwater generated by the proposed activities during construction.

Following construction of the project, the Site soils shall be restored in accordance with Section 5.1.6 of the NYS SMDM, and re-vegetation shall be implemented.

The post-construction stormwater management practice(s) will be owned by the landowner. Policies and procedures will be put in place that ensure that operation and maintenance of the practice(s) are in accordance with the operation and maintenance plan.

As demonstrated within this SWPPP, the proposed Project will not adversely impact adjacent or downstream properties.

8.0 LIMITATIONS

The work product included in this report was undertaken in full conformity with generally accepted professional consulting principles and practices and to the fullest extent as allowed by law we expressly disclaim all warranties, express or implied, including warranties of merchantability or fitness for a particular purpose. The work product was completed in full conformity with the contract with our client and this document is solely for the use and reliance of our client (unless previously agreed upon that a third party could rely on the work product) and any reliance on this work product by an unapproved outside party is at such party's risk.

The work product herein (including opinions, conclusions, suggestions, etc.) was prepared based on the situations and circumstances as found at the time, location, scope and goal of our performance and, thus, should be relied upon and used by our client recognizing these considerations and limitations. Tetra Tech shall not be liable for the consequences of any change in environmental standards, practices, or regulations following the completion of our work and there is no warrant to the veracity of information provided by third parties, or the partial utilization of this work product.

9.0 REFERENCES

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, Permit No. GP-0-20-001 (effective January 29, 2020, expires January 28, 2025).

New York State Department of Environmental Conservation, Stormwater Toolbox, from World Wide Web: http://www.dec.ny.gov/.

New York State Department of Environmental Conservation, Memorandum “Solar Panel Construction Stormwater Permitting/SWPPP Guidance”, February 21, 2020.

New York State Stormwater Management Design Manual (January 2015).

New York State Standards and Specifications for Erosion and Sediment Control, NYSDEC (November 2016).

Maryland Department of the Environment Stormwater Design Guidance – Solar Panel Installations.

APPENDIX A – CONSTRUCTION DRAWINGS

Refer to the discretionary permitting civil drawing set.
Construction level drawings will be attached and included with the final SWPPP.

APPENDIX B – NYSDEC GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITY PERMIT NO. GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

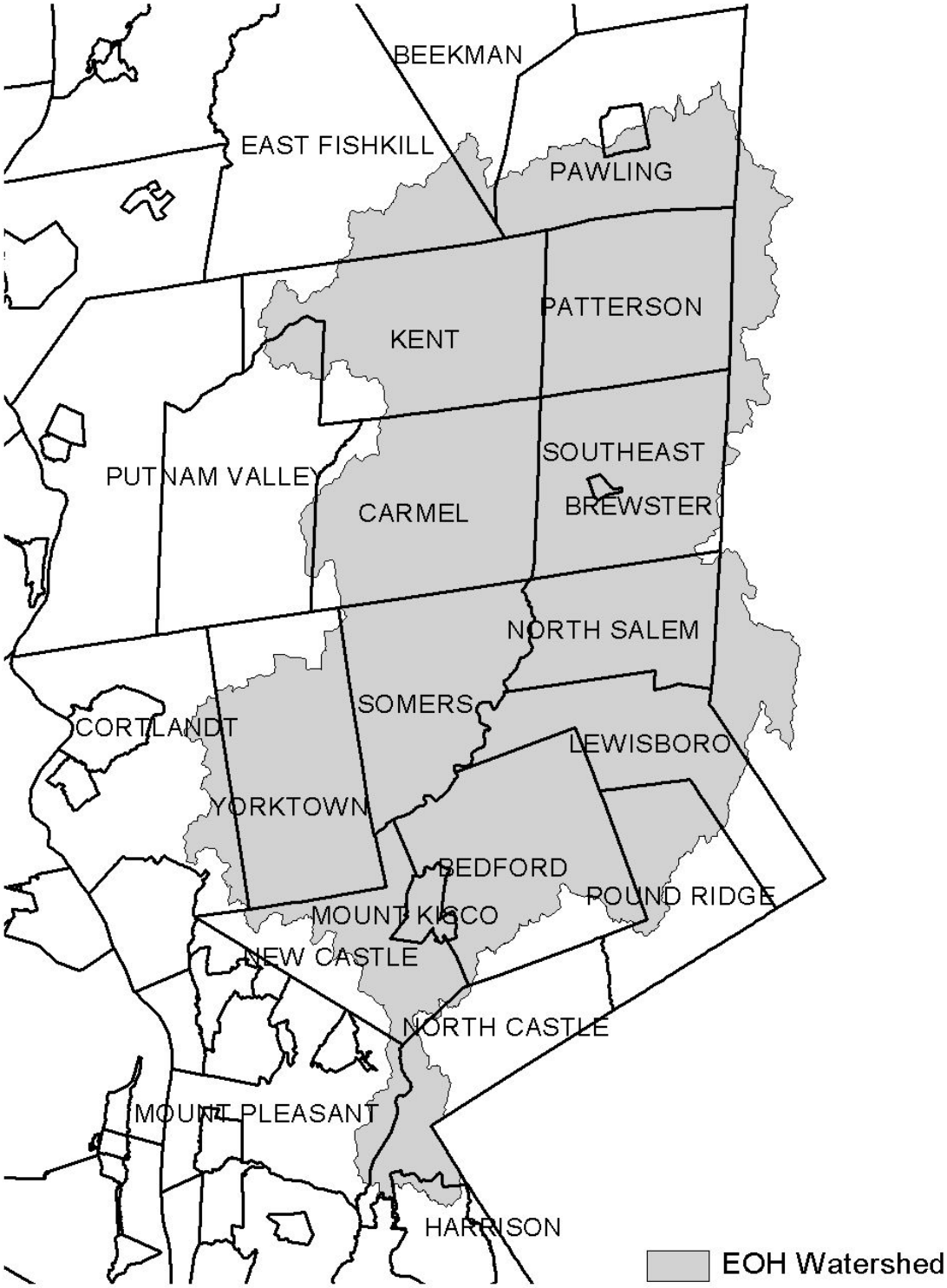


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

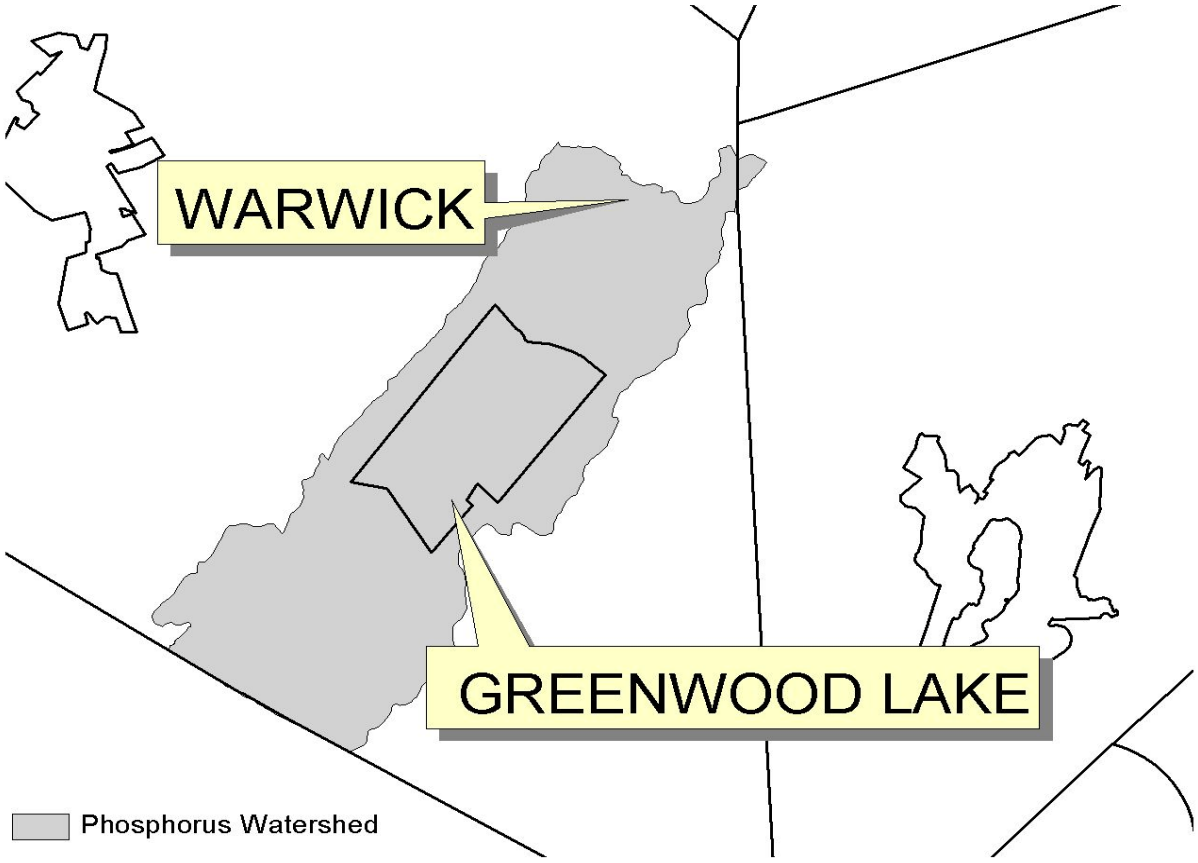


Figure 4 - Oscawana Lake Watershed

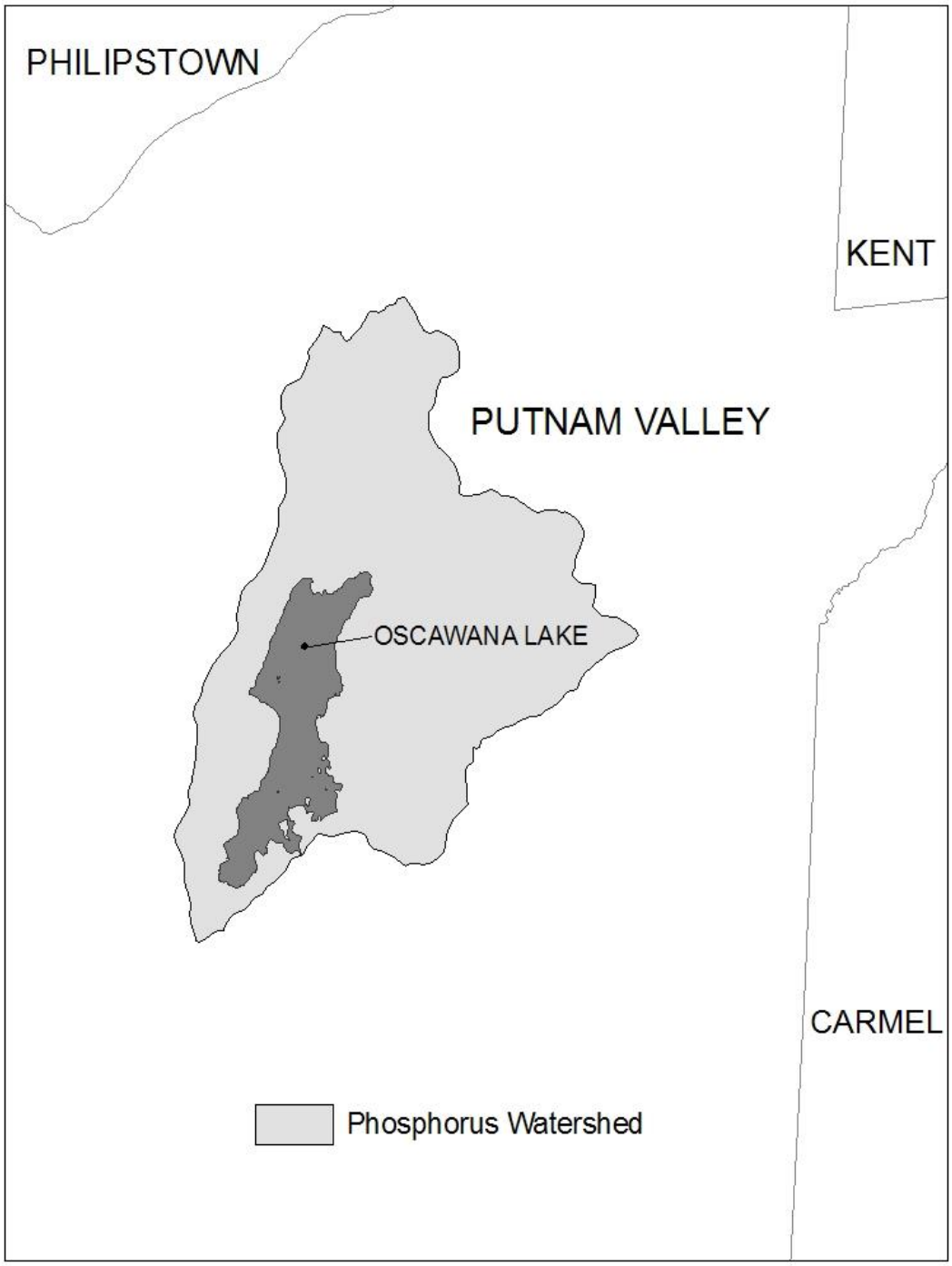
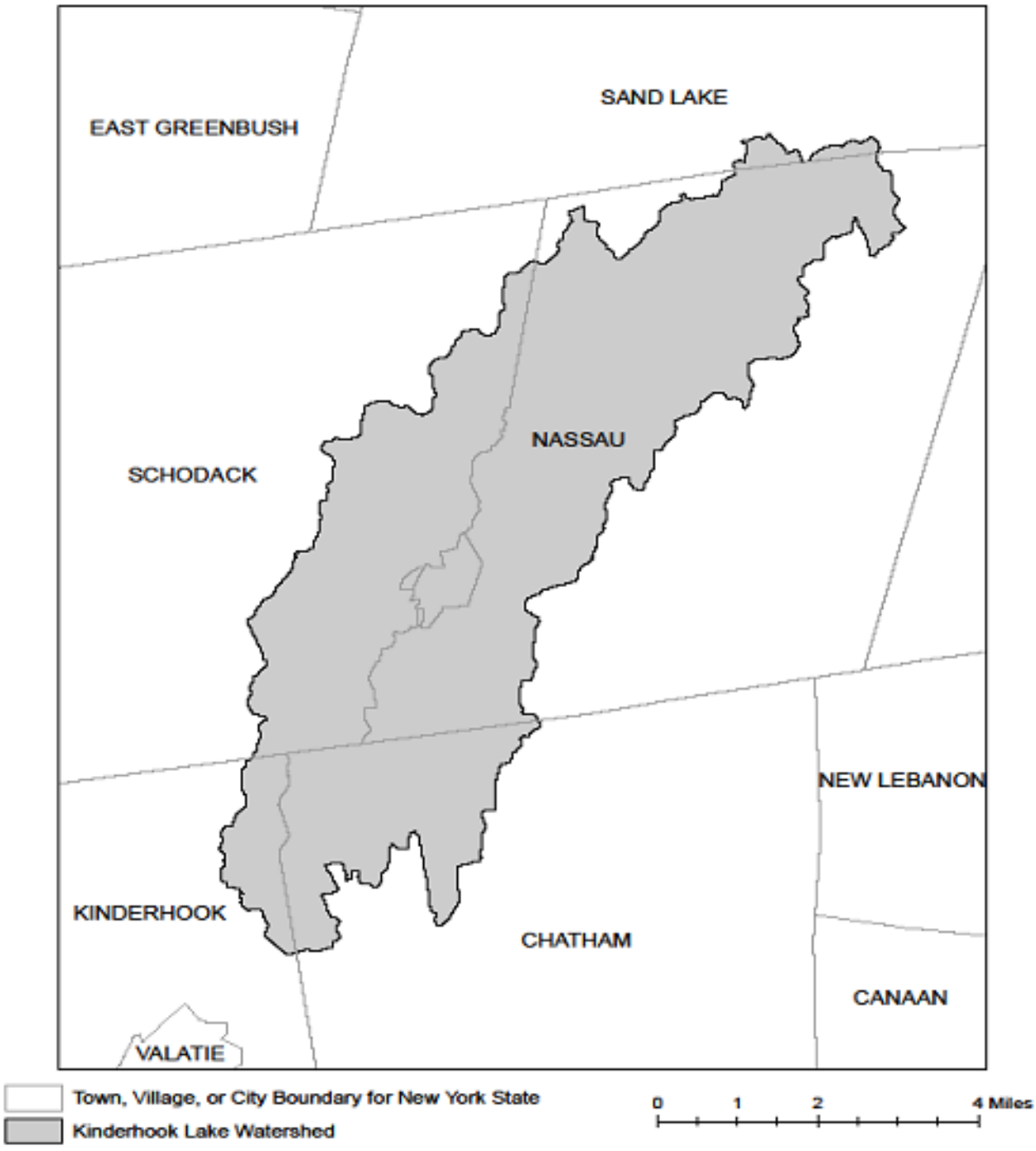


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX C – LETTER FROM NYS OPRHP

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 17, 2020

Charles Vandrei
Agency Historic Preservation Officer
NYS Environmental Conservation
625 Broadway
Albany, NY 12233

Re: DEC
North Eagle Solare Site/44.71 Acres
5062 N Eagle Rd., Manlius Onondaga County
20PR01564

Dear Charles Vandrei:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the submitted materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6NYCRR Part 617).

We note that the proposed project at 5062 N Eagle Village Road is within a half mile of 8142 Salt Springs Road, which is eligible for listing in the State and National Registers of Historic Places. We have reviewed the submission received on March 4, 2020. Based on that review, it is the OPRHP's opinion that the project, as described, will have No Adverse Impact on historic resources. If you have any questions, I can be reached at (518) 268-2170.

Sincerely,

Robyn Sedgwick
Historic Site Restoration Coordinator
e-mail: robyn.sedgwick@parks.ny.gov via e-mail only

cc: D. Timmis – Tetra Tech

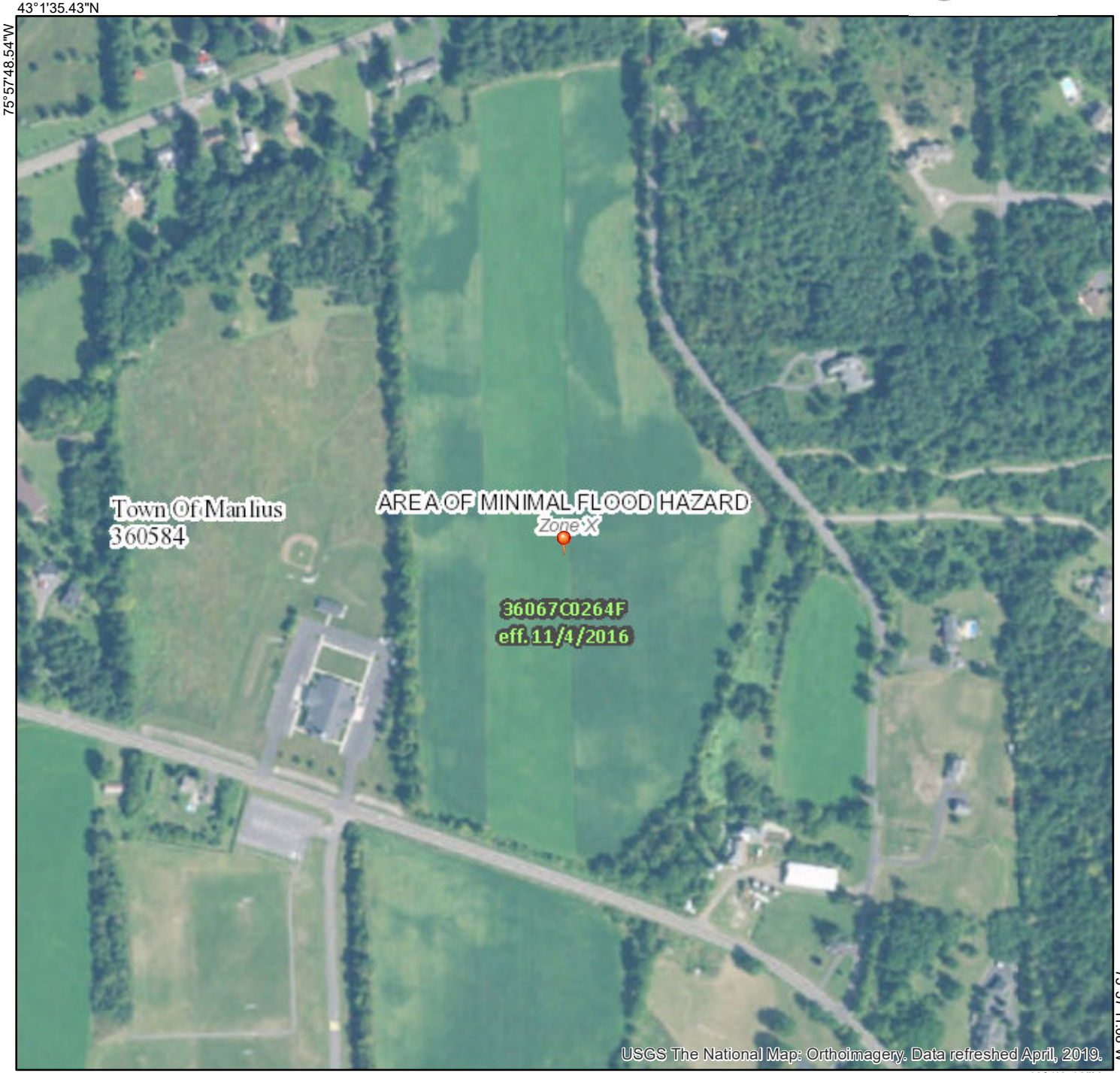
APPENDIX D – FLOOD INSURANCE RATE MAP (FIRM)

National Flood Hazard Layer FIRMette

FEMA

43°1'35.43"N

75°57'48.54"W



75°57'11.08"W

43°1'9.13"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/23/2020 at 6:28:07 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

APPENDIX E – NRCS SOILS REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Onondaga County, New York



March 23, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

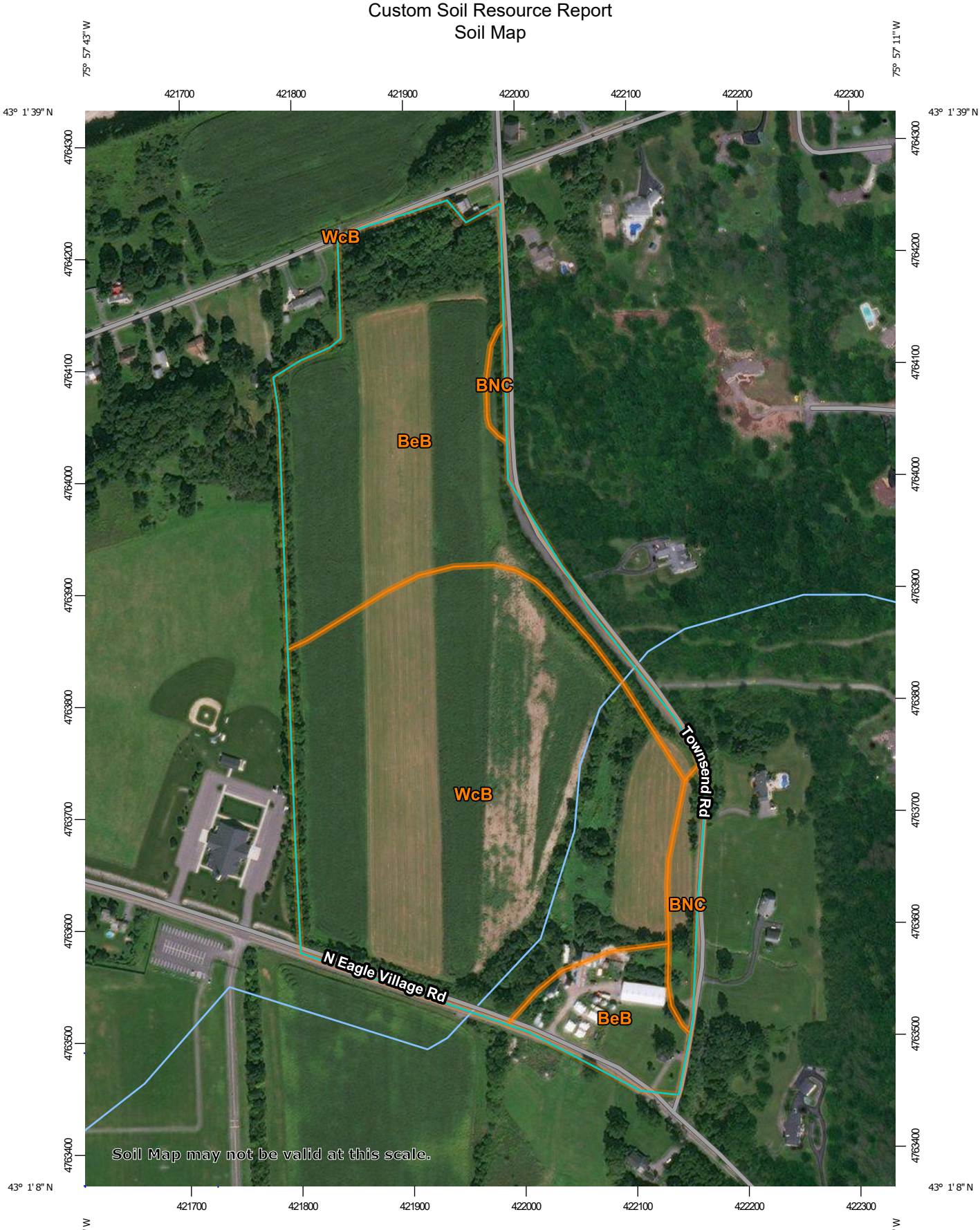
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:4,680 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	27.2	55.9%
Totals for Area of Interest		**48.7**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Onondaga County, New York

BeB—Benson silt loam, undulating

Map Unit Setting

National map unit symbol: 9vft
Elevation: 90 to 1,000 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Benson and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting

Landform: Benches, ridges, till plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Wassaic

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye
Percent of map unit: 5 percent
Hydric soil rating: No

Ontario
Percent of map unit: 5 percent
Hydric soil rating: No

Cazenovia
Percent of map unit: 5 percent
Hydric soil rating: No

BNC—Benson-Wassaic-Rock outcrop association, sloping

Map Unit Setting
National map unit symbol: 9vfq
Elevation: 90 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Benson and similar soils: 30 percent
Wassaic and similar soils: 30 percent
Rock outcrop: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Benson

Setting
Landform: Benches, ridges, till plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till underlain by limestone or calcareous shale

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 18 inches: very channery loam
H3 - 18 to 22 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 25 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.60 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Wassaic

Setting

Landform: Ridges, till plains, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ontario

Percent of map unit: 5 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 5 percent

Hydric soil rating: No

Cazenovia

Percent of map unit: 5 percent
Hydric soil rating: No

WcB—Wassaic silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vl8
Elevation: 800 to 1,750 feet
Mean annual precipitation: 38 to 42 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Wassaic and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wassaic

Setting

Landform: Ridges, till plains, benches
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock

Typical profile

H1 - 0 to 11 inches: silt loam
H2 - 11 to 23 inches: channery silt loam
C - 23 to 35 inches: channery loam
R - 35 to 39 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: About 19 to 39 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 1 percent
Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Benson

Percent of map unit: 5 percent
Hydric soil rating: No

Honeoye

Percent of map unit: 4 percent
Hydric soil rating: No

Mohawk

Percent of map unit: 4 percent
Hydric soil rating: No

Ontario

Percent of map unit: 4 percent
Hydric soil rating: No

Palatine

Percent of map unit: 4 percent
Hydric soil rating: No

Cazenovia

Percent of map unit: 4 percent
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

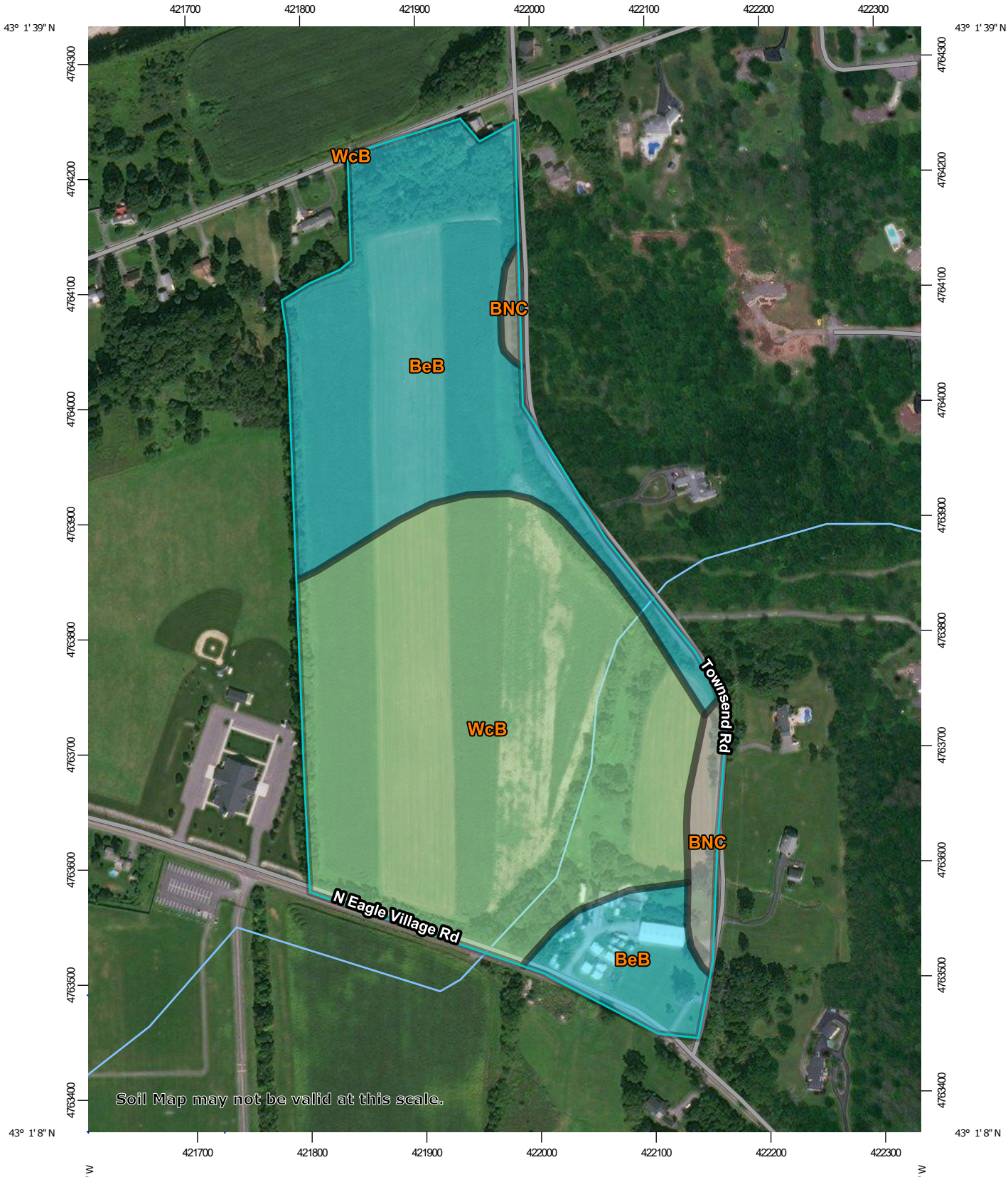
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report
Map—K Factor, Whole Soil



Map Scale: 1:4,680 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 50 100 200 300

Feet
0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Lines

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Soil Rating Points

.02
.05
.10
.15
.17
.20
.24
.28
.32
.37
.43
.49
.55
.64
Not rated or not available

Water Features

Streams and Canals

Transportation

Rails
Interstate Highways
US Routes
Major Roads
Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	.37	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping		1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	.28	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Soil Physical Properties

Soil Physical Properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Liquid Limit

Liquid limit (LL) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state. Generally, the amount of clay- and silt-size particles, the organic matter content, and the type of minerals determine the liquid limit. Soils that have a high liquid limit have the capacity to hold a lot of water while maintaining a plastic or semisolid state.

Liquid limit is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Liquid Limit

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	30.0	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	30.0	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	23.1	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Liquid Limit

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Percent Clay

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. The estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earth-moving operations.

Most of the material is in one of three groups of clay minerals or a mixture of these clay minerals. The groups are kaolinite, smectite, and hydrous mica, the best known member of which is illite.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Percent Clay

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	12.0	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	22.0	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	22.0	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Percent Clay

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Percent Sand

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the database, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Percent Sand

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	39.4	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	39.4	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	31.6	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Percent Sand

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Percent Silt

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the database, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Percent Silt

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	48.6	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	48.6	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	46.4	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Percent Silt

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Plasticity Index

Plasticity index (PI) is one of the standard Atterberg limits used to indicate the plasticity characteristics of a soil. It is defined as the numerical difference between the liquid limit and plastic limit of the soil. It is the range of water content in which a soil exhibits the characteristics of a plastic solid.

The plastic limit is the water content that corresponds to an arbitrary limit between the plastic and semisolid states of a soil. The liquid limit is the water content, on a percent by weight basis, of the soil (passing #40 sieve) at which the soil changes from a plastic to a liquid state.

Soils that have a high plasticity index have a wide range of moisture content in which the soil performs as a plastic material. Highly and moderately plastic clays have large PI values. Plasticity index is used in classifying soils in the Unified and AASHTO classification systems.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Table—Plasticity Index

Map unit symbol	Map unit name	Rating (percent)	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	9.0	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	9.0	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	6.0	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Plasticity Index

Units of Measure: percent

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Interpret Nulls as Zero: No

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Surface Texture

This displays the representative texture class and modifier of the surface horizon.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Table—Surface Texture

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	Silt loam	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	Silt loam	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	Silt loam	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Surface Texture

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

AASHTO Group Classification (Surface)

AASHTO group classification is a system that classifies soils specifically for geotechnical engineering purposes that are related to highway and airfield construction. It is based on particle-size distribution and Atterberg limits, such as liquid limit and plasticity index. This classification system is covered in AASHTO Standard No. M 145-82. The classification is based on that portion of the soil that is smaller than 3 inches in diameter.

The AASHTO classification system has two general classifications: (i) granular materials having 35 percent or less, by weight, particles smaller than 0.074 mm in diameter and (ii) silt-clay materials having more than 35 percent, by weight, particles smaller than 0.074 mm in diameter. These two divisions are further subdivided into seven main group classifications, plus eight subgroups, for a total of fifteen for mineral soils. Another class for organic soils is used.

For each soil horizon in the database one or more AASHTO Group Classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Table—AASHTO Group Classification (Surface)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	A-4	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	A-4	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	A-4	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—AASHTO Group Classification (Surface)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

Hydrologic Soil Group

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	D	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping		1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	C	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Map Unit Name

A soil map unit is a collection of soil areas or nonsoil areas (miscellaneous areas) delineated in a soil survey. Each map unit is given a name that uniquely identifies the unit in a particular soil survey area.

Table—Map Unit Name

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	Benson silt loam, undulating	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping	Benson-Wassaic-Rock outcrop association, sloping	1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	Wassaic silt loam, 0 to 8 percent slopes	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Map Unit Name

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower

Unified Soil Classification (Surface)

The Unified soil classification system classifies mineral and organic mineral soils for engineering purposes on the basis of particle-size characteristics, liquid limit, and plasticity index. It identifies three major soil divisions: (i) coarse-grained soils having less than 50 percent, by weight, particles smaller than 0.074 mm in diameter; (ii) fine-grained soils having 50 percent or more, by weight, particles smaller than 0.074 mm in diameter; and (iii) highly organic soils that demonstrate certain organic characteristics. These divisions are further subdivided into a total of 15 basic soil groups. The major soil divisions and basic soil groups are determined on the basis of estimated or measured values for grain-size distribution and Atterberg limits. ASTM D 2487 shows the criteria chart used for classifying soil in the Unified system and the 15 basic soil groups of the system and the plasticity chart for the Unified system.

The various groupings of this classification correlate in a general way with the engineering behavior of soils. This correlation provides a useful first step in any field or laboratory investigation for engineering purposes. It can serve to make some general interpretations relating to probable performance of the soil for engineering uses.

For each soil horizon in the database one or more Unified soil classifications may be listed. One is marked as the representative or most commonly occurring. The representative classification is shown here for the surface layer of the soil.

Table—Unified Soil Classification (Surface)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	CL	19.8	40.6%
BNC	Benson-Wassaic-Rock outcrop association, sloping		1.7	3.5%
WcB	Wassaic silt loam, 0 to 8 percent slopes	ML	27.2	55.9%
Totals for Area of Interest			**48.7**	**100.0%**

Rating Options—Unified Soil Classification (Surface)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

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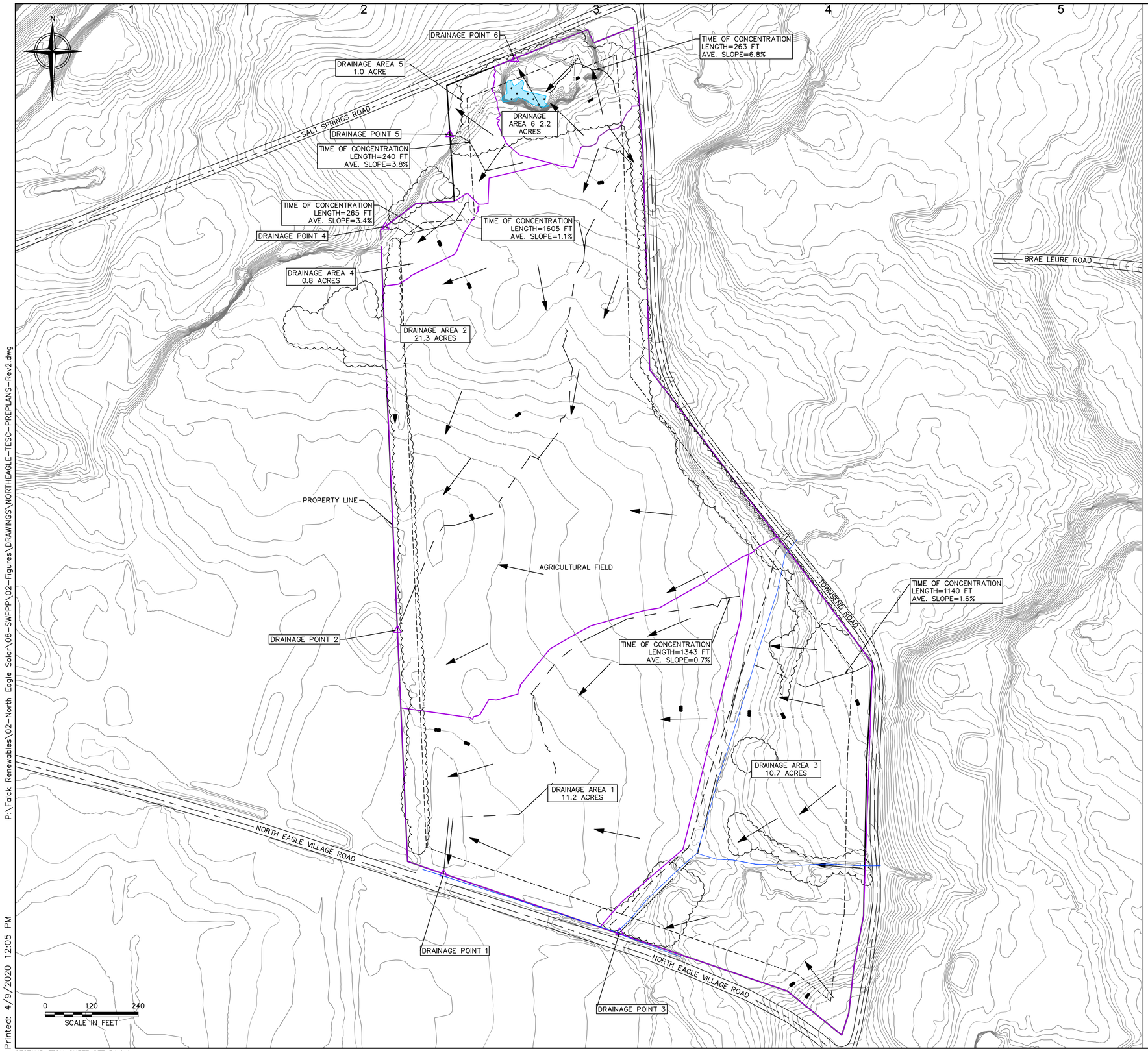
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APPENDIX F – DRAINAGE MAPS



LEGEND

- PROPERTY LINE
- ZONING SETBACKS
- EXISTING TOPO (1 FT CONTOURS)
- EXISTING TREE LINE
- 25' NWI WETLAND BUFFER
- NWI WETLAND
- DRAINAGE FLOW
- WcB — SOIL GROUP BOUNDARY
- DRAINAGE AREA
- FLOW PATH

GENERAL NOTES:

1. CONTOUR DATA OBTAINED FROM ONONDAGA COUNTY, TOWN OF MANLIUS FROM GIS.NY.GOV. THIS DATA IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83)(2011) NEW YORK CENTRAL ZONE, US FOOT AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAD88), US. FOOT.
2. EXISTING ROAD FEATURES OBTAINED FROM USDA NRCS GEOSPATIAL DATA GATEWAY.
3. TREE LINES SHOWN HEREON ARE APPROXIMATE. SOURCE: GOOGLE EARTH.
4. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.
5. ORTHOIMAGERY OBTAINED FROM NYS GIS CLEARINGHOUSE, 2018 ONE FOOT FOUR BAND CENTRAL ZONE INDEX.

NOT FOR CONSTRUCTION

THIS PERMITTING PACKAGE, AND THE DATA HEREIN, IS INTENDED FOR PERMITTING PURPOSES ONLY, AND IS NOT TO BE USED FOR CONSTRUCTION.

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
PRE-DEVELOPMENT DRAINAGE MAP

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.

DATE:	03/24/2020
DRAWN BY:	JDB
ENGINEER:	JDB
APPROVED BY:	JT

PROJECT PHASE:
DISCRETIONARY PERMITTING

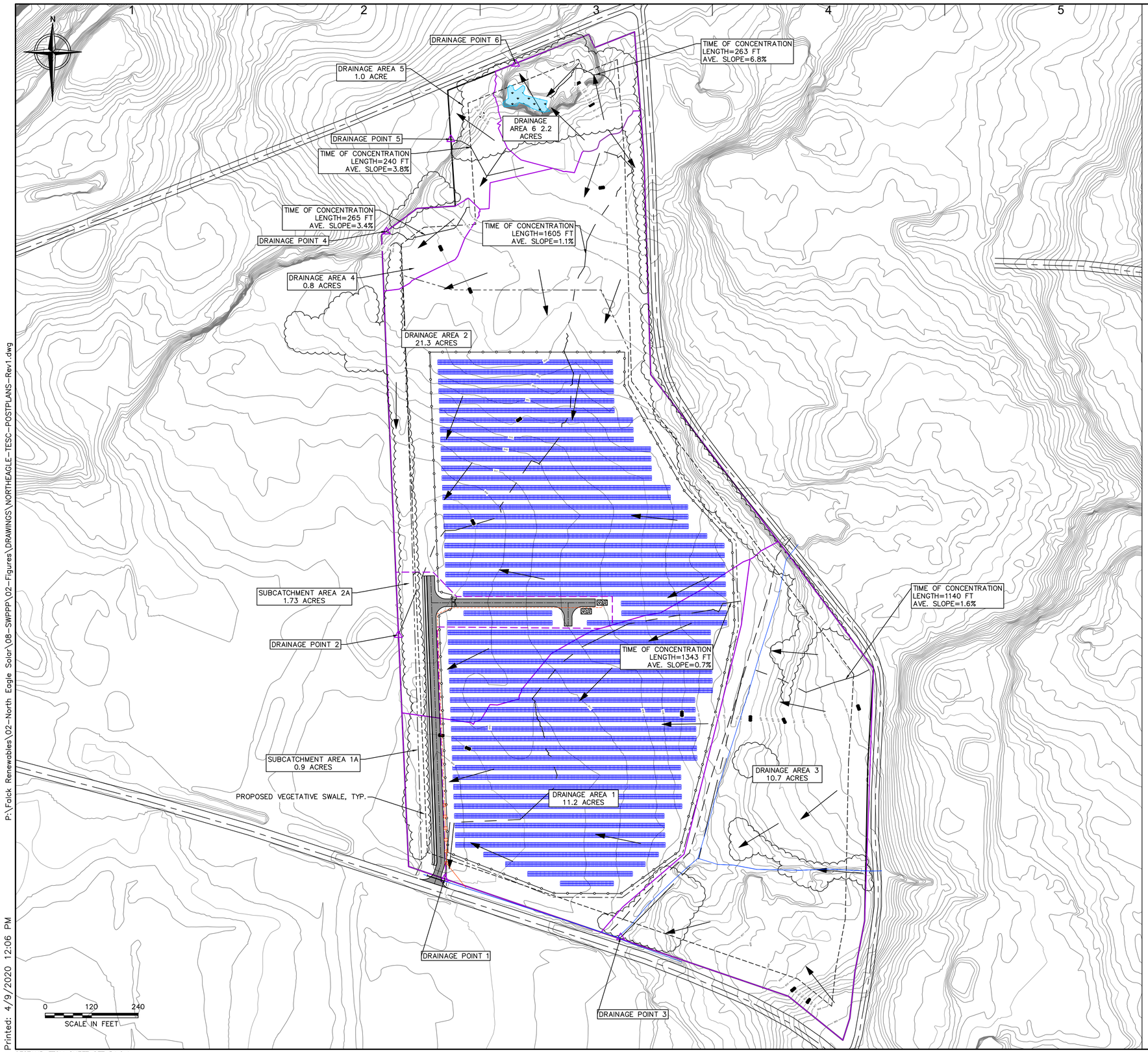
SCALE:
AS SHOWN

SHEET NO.:
1

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LEGEND

- PROPERTY LINE
- CONSTRUCTION LIMITS
- ZONING SETBACKS
- EXISTING TOPO (1 FT CONTOURS)
- EXISTING TREE LINE
- 25' NWI WETLAND BUFFER
- NWI WETLAND
- EXISTING UTILITY POLE
- PROPOSED GRAVEL ACCESS ROAD
- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED OVERHEAD ELECTRIC
- PROPOSED UTILITY POLE
- PROPOSED CULVERT
- DRAINAGE FLOW
- SOIL GROUP BOUNDARY (WcB)
- DRAINAGE AREA
- FLOW PATH
- SOLAR PANELS

GENERAL NOTES:

1. CONTOUR DATA OBTAINED FROM ONONDAGA COUNTY, TOWN OF MANLIUS FROM GIS.NY.GOV. THIS DATA IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83)(2011) NEW YORK CENTRAL ZONE, US FOOT AND VERTICALLY TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAD88), US. FOOT.
2. EXISTING ROAD FEATURES OBTAINED FROM USDA NRCS GEOSPATIAL DATA GATEWAY.
3. TREE LINES SHOWN HEREON ARE APPROXIMATE. SOURCE: GOOGLE EARTH.
4. WETLAND INFORMATION OBTAINED FROM CORNELL UNIVERSITY GEOSPATICAL INFORMATION REPOSITORY ON NYSDEC FRESHWATER WETLANDS.

NOT FOR CONSTRUCTION

THIS PERMITTING PACKAGE, AND THE DATA HEREIN, IS INTENDED FOR PERMITTING PURPOSES ONLY, AND IS NOT TO BE USED FOR CONSTRUCTION.

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NORTH EAGLE SOLAR PROJECT

5062 NORTH EAGLE VILLAGE RD
MANLIUS, NY 13104

PROJECT NUMBERS:
194-7179

SHEET TITLE:
POST-DEVELOPMENT DRAINAGE MAP

SHEET SIZE:
ARCH "D"
24" X 36" (610 x 914)
0 ½" 1"

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NO.	REVISION	DATE	INIT.

DATE:	03/26/2020
DRAWN BY:	JDB
ENGINEER:	JDB
APPROVED BY:	JT

PROJECT PHASE:
DISCRETIONARY PERMITTING

SCALE:
AS SHOWN

SHEET NO.:
2

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APPENDIX G – DESIGN CALCULATIONS

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No
Design Point:	1
P=	1.00 *inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	0.90	0.21	23%	0.26	838	Vegetated Swale
2	1.73	0.22	13%	0.16	1,025	Vegetated Swale
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	2.63	0.42	16%	0.20	**1,863**	**Subtotal 1**
Total	2.63	0.42	16%	0.20	**1,863**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	2.63	0.42	16%	0.20	1,863
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**2.63**	**0.42**	16%	0.20	1,863
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	2.63	0.42	16%	0.20	**1,863**
WQv reduced by Area Reduction techniques					0

Total Water Quality Volume Calculation

WQv(acre-feet) = [(P)(Rv)(A)] /12

All Subcatchments						
Catchment	**Total Area** *(Acres)*	**Impervious Cover** *(Acres)*	**Percent Impervious** *%*	**Runoff Coefficient** *Rv*	**WQv** *(ft^3)*	**Description**
1	0.90	0.21	0.23	0.26	837.98	Vegetated Swale
2	1.73	0.22	0.13	0.16	1,025	Vegetated Swale
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		**Total Contributing Area**	**Total Contributing Impervious Area**	**WQv Reduced (RRv)**	**WQv Treated**
			(acres)	**(acres)**	**cf**	**cf**
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	0.00	0.00	0	0
	Dry swale	O-1	2.63	0.42	1500	364
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction		→	0.00	0.00	0	
Totals by Volume Reduction		→	0.00	0.00	0	
Totals by Standard SMP w/RRV		→	2.63	0.42	1500	364
Totals by Standard SMP		→	0.00	0.00		0
Totals (Area + Volume + all SMPs)		→	2.63	0.42	1,500	364
	Impervious Cover √	okay				

Minimum RRv

Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	3.05	30%
D		20%
Total Area	3.05	
Calculate the Minimum RRv		
S =	**0.30**	
Impervious =	0.42	*acre*
Precipitation	1	*in*
Rv	0.95	
Minimum RRv	**439**	***ft3***
	0.01	af

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	1863	*0.043*
30	Total RRV Provided	1500	*0.034*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	439	*0.010*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	364	*0.008*
34	Sum of Volume Reduced & Treated	1863	*0.043*
34	Sum of Volume Reduced and Treated	1863	*0.043*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

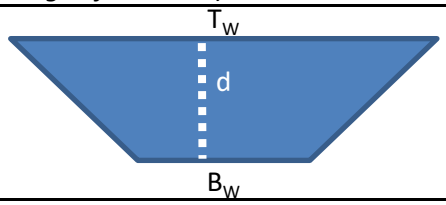
Apply Peak Flow Attenuation			
36	Channel Protection	*Cpv*	
37	Overbank	*Qp*	
37	Extreme Flood Control	*Qf*	
	Are Quantity Control requirements met?	*Yes*	Plan Completed

Dry Swale Worksheet

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	0.90	0.21	0.23	0.26	837.98	1.00	Vegetated Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	23%	0.26	838	<<WQv after adjusting for Disconnected Rooftops	

Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	84	ft^3	

Calculate Available Storage Capacity			
Bottom Width	2	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	1%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	11	*ft*	
Area	9.75	*sf*	
Minimum Length	77	*ft*	
Actual Length	350	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	3,496	ft^3	
Soil Group (HSG)		C	

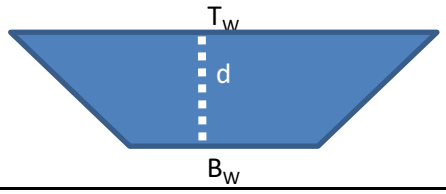
Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		No	Select Practice	
RRv	**699**	ft^3	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	139	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	0	ft^3	This volume is directed another practice	
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv	

Dry Swale Worksheet

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	1.73	0.22	0.13	0.16	1025.37	1.00	Vegetated Swale
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	13%	0.16	1,025	<<WQv after adjusting for Disconnected Rooftops	

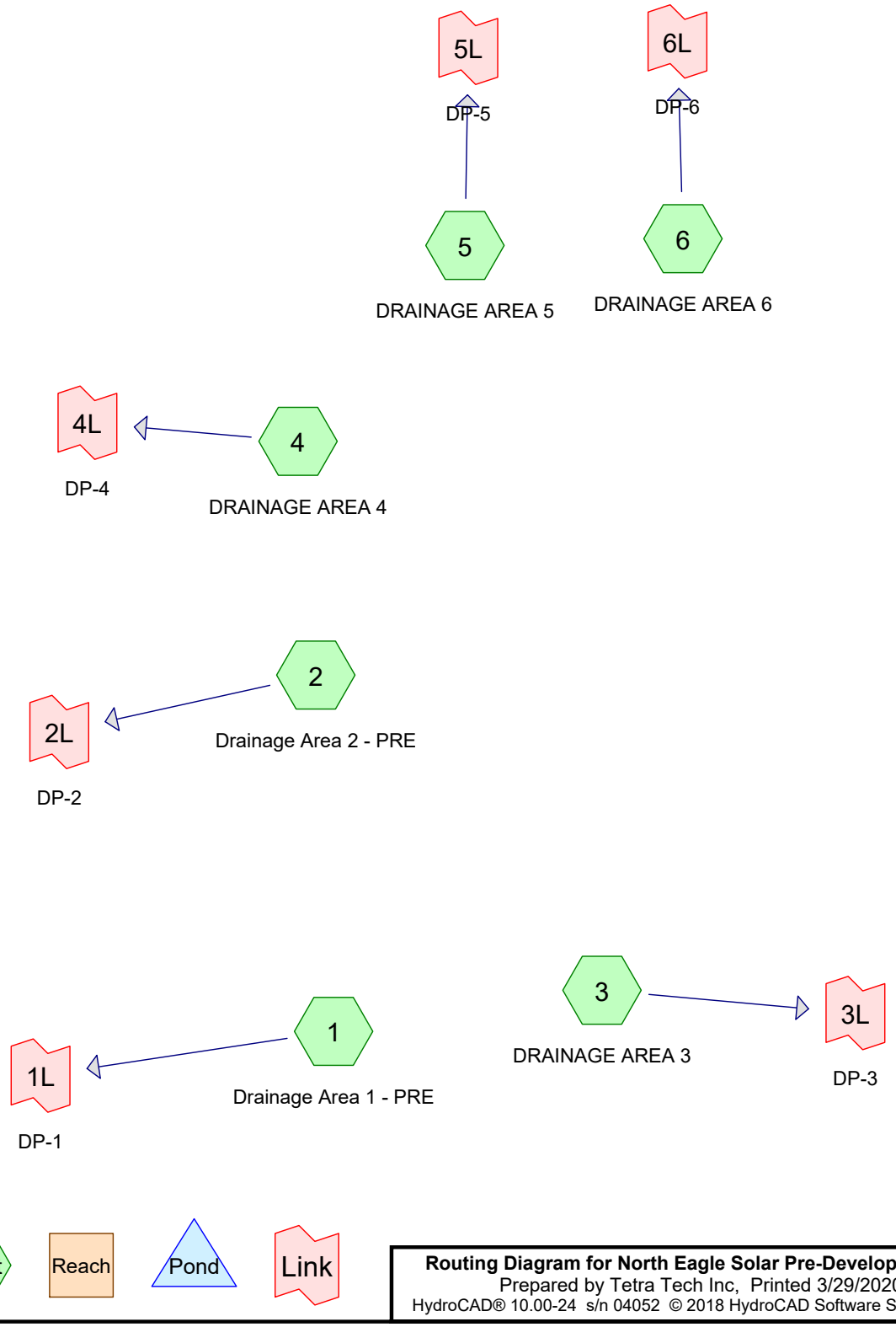
Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	103	ft^3	

Calculate Available Storage Capacity			
Bottom Width	2	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	3	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	1%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	11	*ft*	
Area	9.75	*sf*	
Minimum Length	95	*ft*	
Actual Length	400	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	4,003	ft^3	
Soil Group (HSG)		C	

Runoff Reduction				
Is the Dry Swale contributing flow to another practice?		No	Select Practice	
RRv	**801**	***ft^3***	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**	
Volume Treated	225	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale	
Volume Directed	0	ft^3	This volume is directed another practice	
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv	

APPENDIX H – PRE-DEVELOPMENT ANALYSIS

Existing Conditions



Routing Diagram for North Eagle Solar Pre-Development-Rev1
Prepared by Tetra Tech Inc, Printed 3/29/2020
HydroCAD® 10.00-24 s/n 04052 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.210	89	Roadway (1)
11.500	86	WEIGHTED FROM TR55 (3, 4)
2.200	79	WEIGHTED FROM TR55 (6)
1.000	83	WEIGHTED TR55 (5)
10.990	87	Weighted CN from TR55 (1)
21.300	88	Weighted CN from TR55 (2)
47.200	**87**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
47.200	Other	1, 2, 3, 4, 5, 6
47.200		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.210	0.210	Roadway	1
0.000	0.000	0.000	0.000	13.700	13.700	WEIGHTED FROM TR55	3, 4, 6
0.000	0.000	0.000	0.000	1.000	1.000	WEIGHTED TR55	5
0.000	0.000	0.000	0.000	32.290	32.290	Weighted CN from TR55	1, 2
0.000	**0.000**	**0.000**	**0.000**	**47.200**	**47.200**	**TOTAL AREA**	

Summary for Subcatchment 1: Drainage Area 1 - PRE

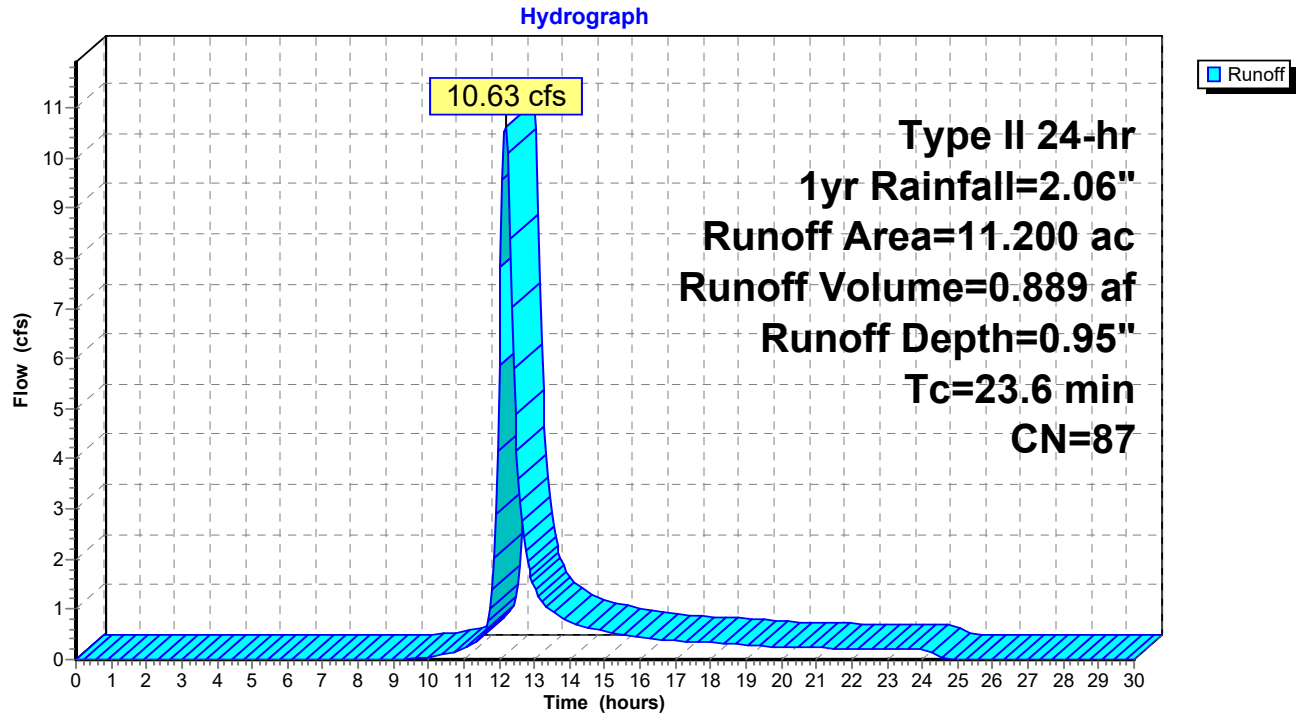
Runoff = 10.63 cfs @ 12.17 hrs, Volume= 0.889 af, Depth= 0.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	10.990	87	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	87	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1: Drainage Area 1 - PRE



Summary for Subcatchment 2: Drainage Area 2 - PRE

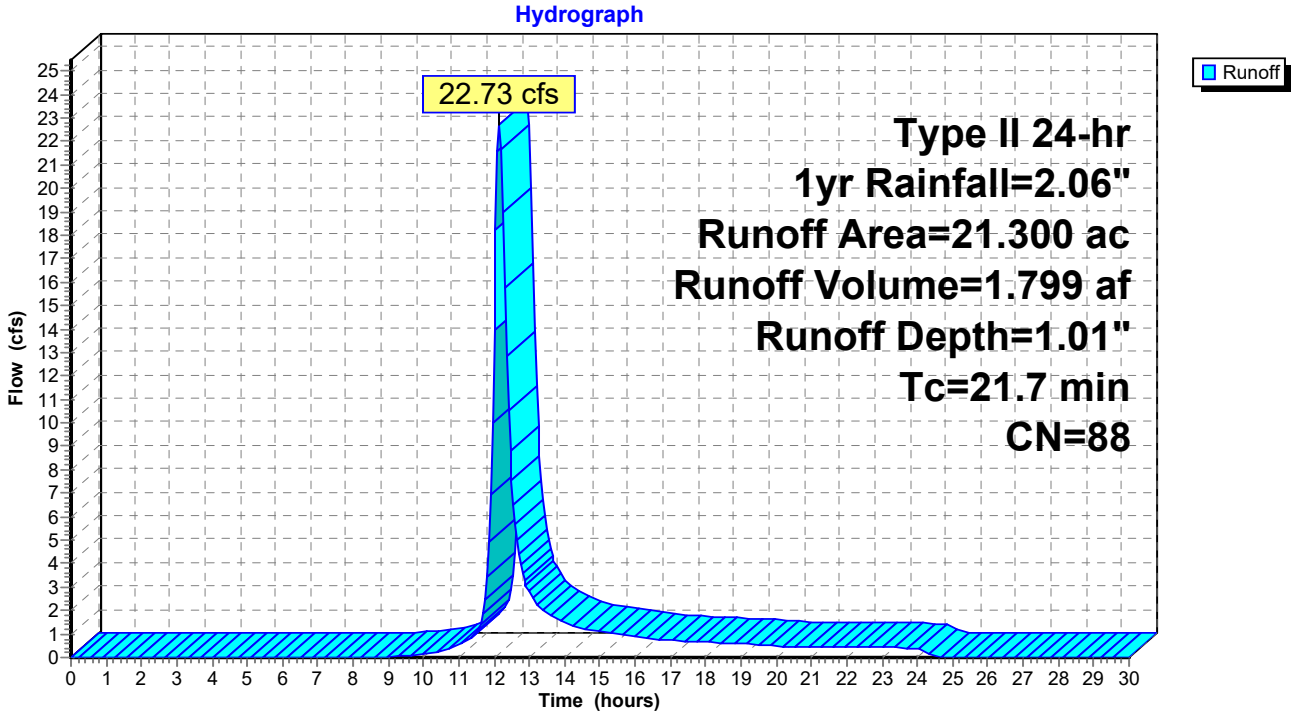
Runoff = 22.73 cfs @ 12.15 hrs, Volume= 1.799 af, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	21.300	88	Weighted CN from TR55
	21.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2: Drainage Area 2 - PRE



Summary for Subcatchment 3: DRAINAGE AREA 3

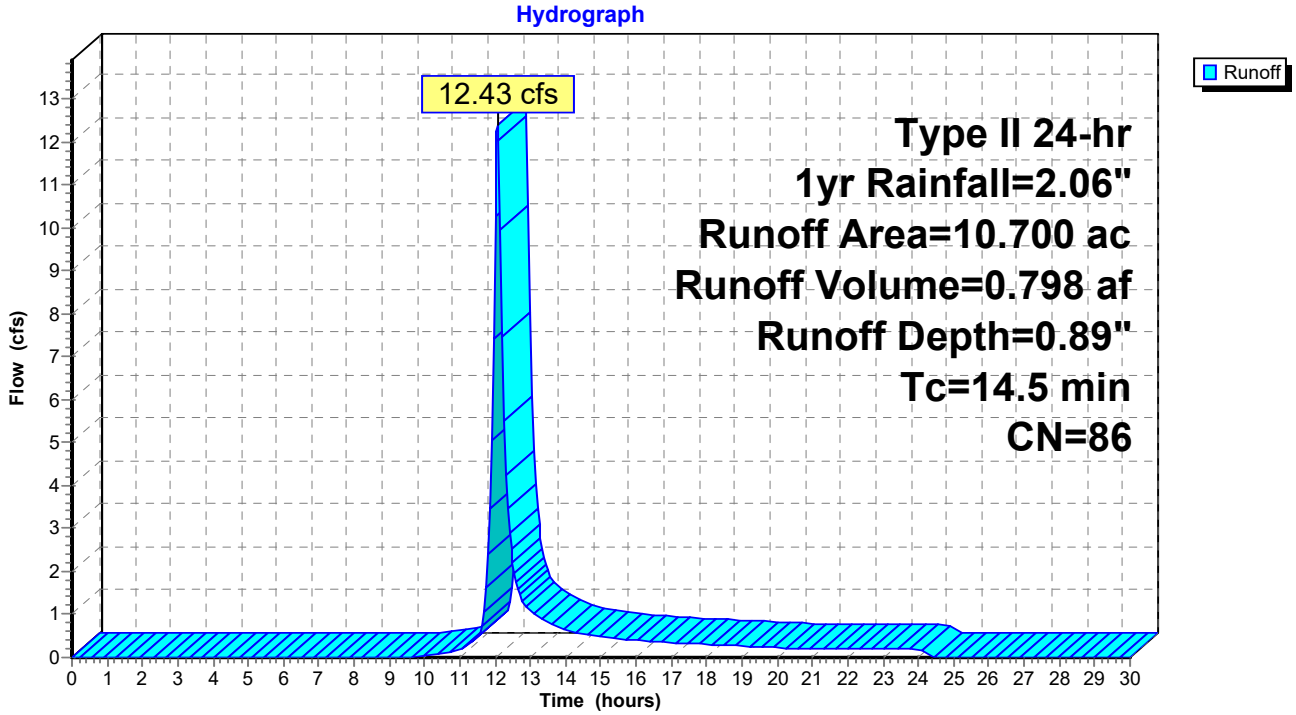
Runoff = 12.43 cfs @ 12.07 hrs, Volume= 0.798 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	10.700	86	WEIGHTED FROM TR55
	10.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5					**Direct Entry, TR55**

Subcatchment 3: DRAINAGE AREA 3



Summary for Subcatchment 4: DRAINAGE AREA 4

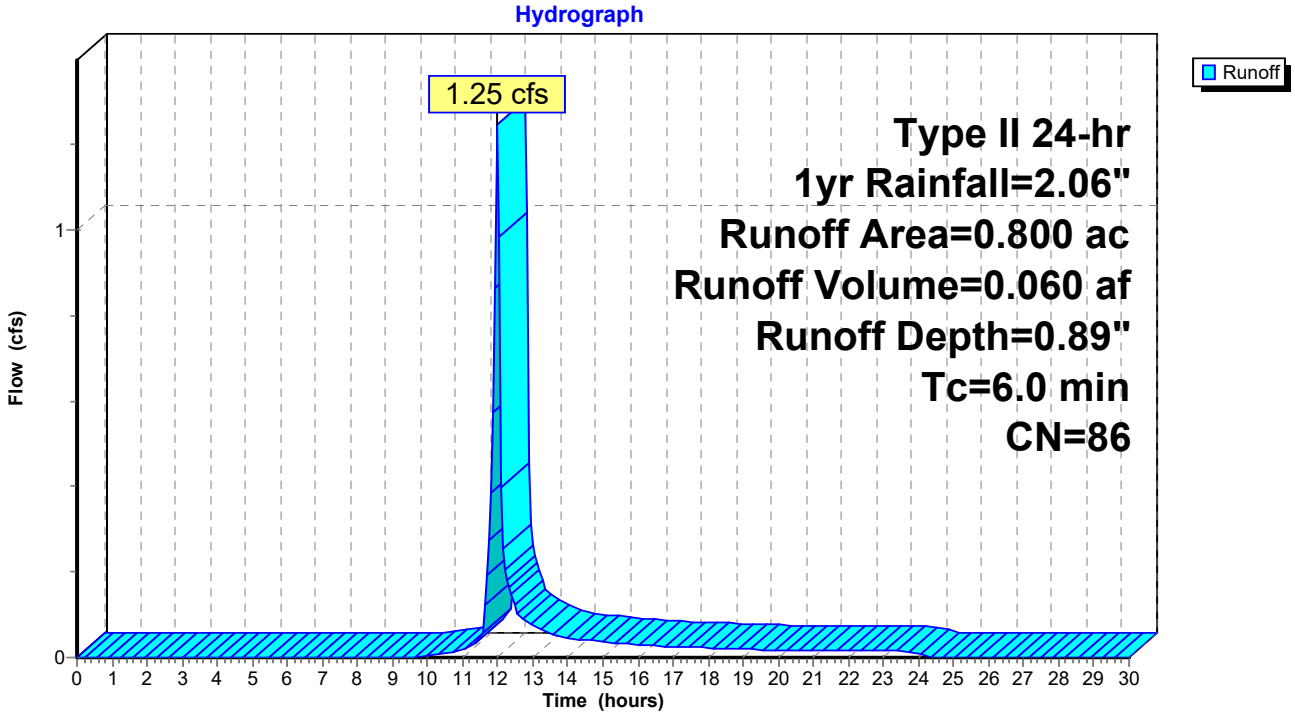
Runoff = 1.25 cfs @ 11.98 hrs, Volume= 0.060 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	0.800	86	WEIGHTED FROM TR55
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 4: DRAINAGE AREA 4



Summary for Subcatchment 5: DRAINAGE AREA 5

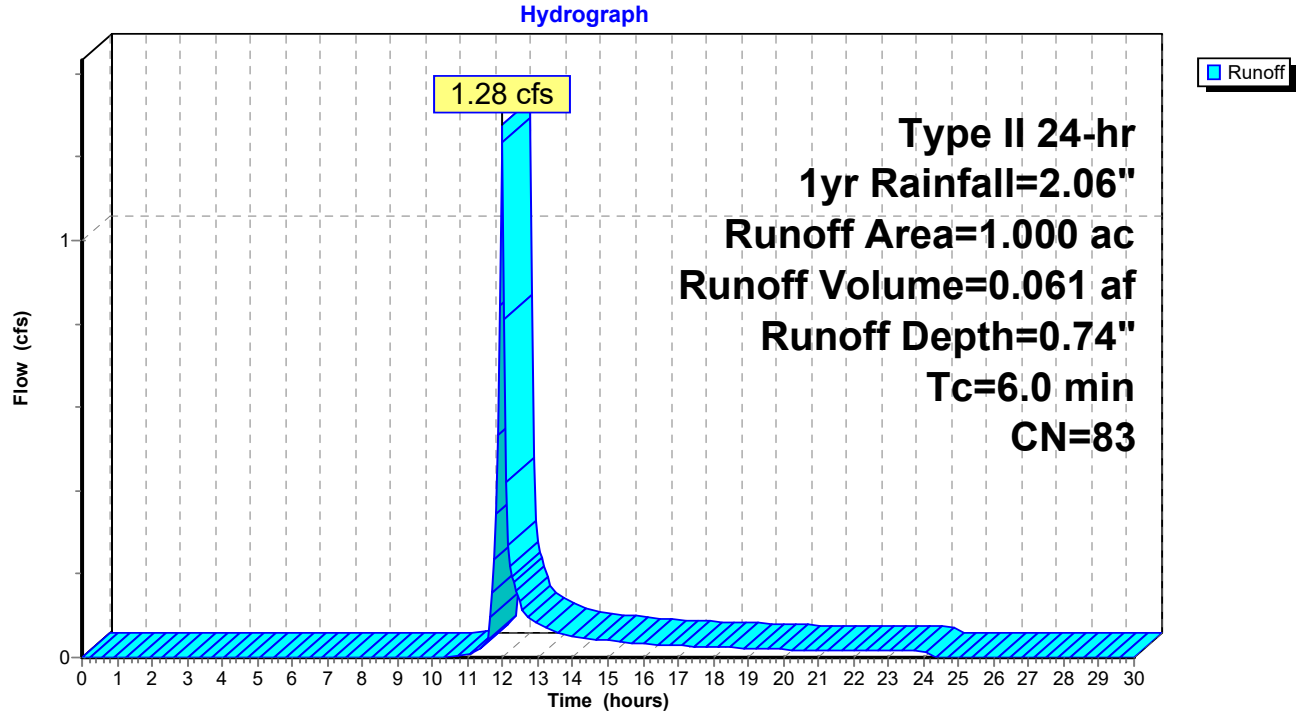
Runoff = 1.28 cfs @ 11.98 hrs, Volume= 0.061 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	1.000	83	WEIGHTED TR55
	1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 5: DRAINAGE AREA 5



Summary for Subcatchment 6: DRAINAGE AREA 6

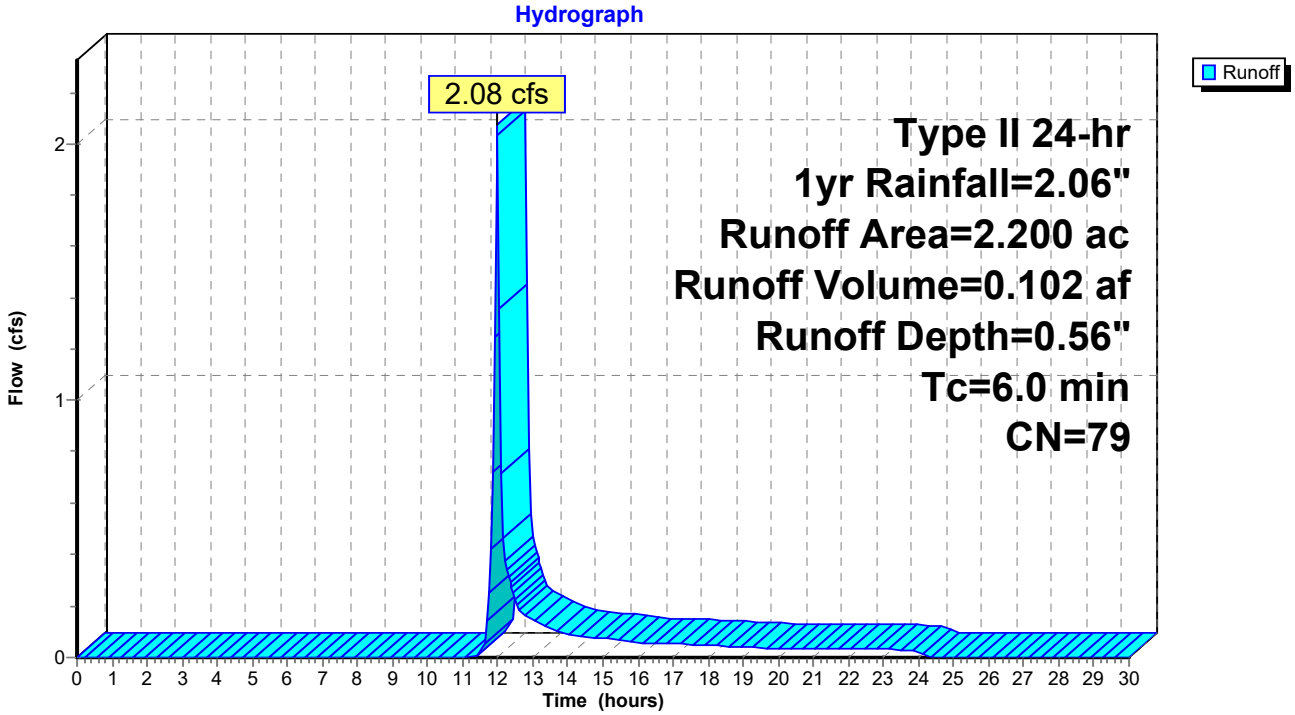
Runoff = 2.08 cfs @ 11.98 hrs, Volume= 0.102 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	2.200	79	WEIGHTED FROM TR55
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 6: DRAINAGE AREA 6

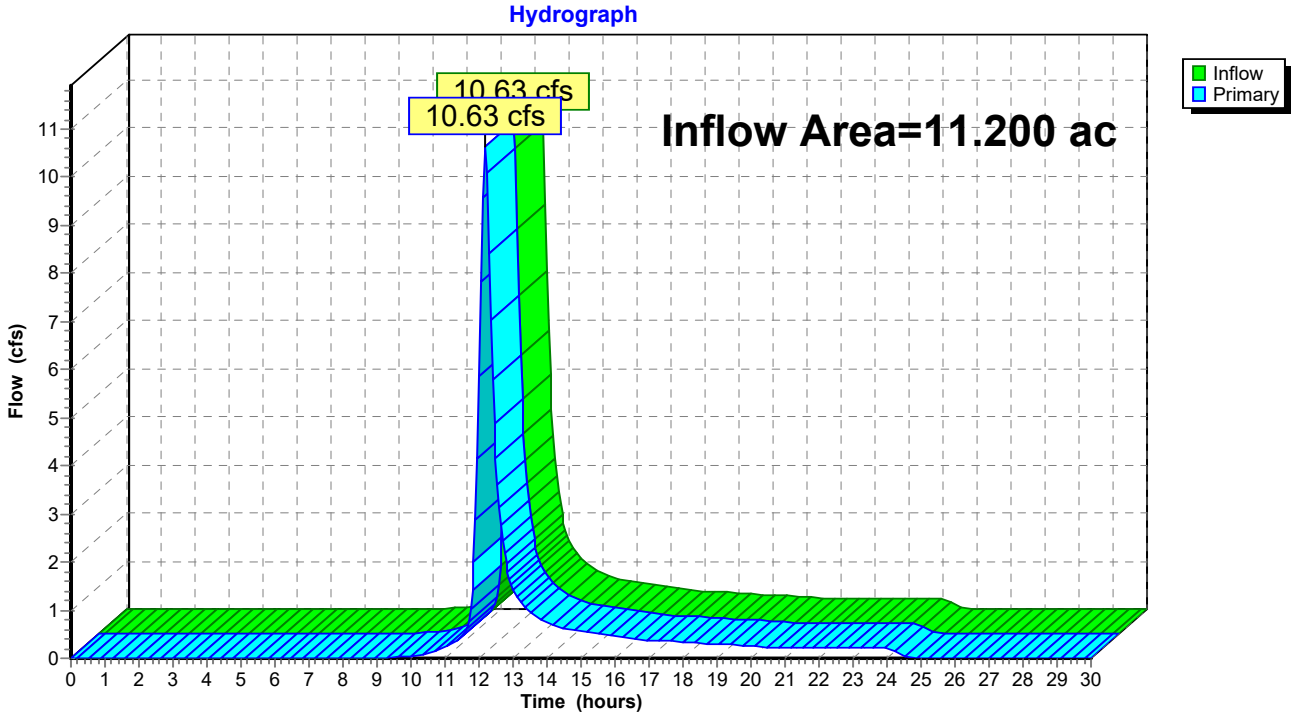


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 0.95" for 1yr event
Inflow = 10.63 cfs @ 12.17 hrs, Volume= 0.889 af
Primary = 10.63 cfs @ 12.17 hrs, Volume= 0.889 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

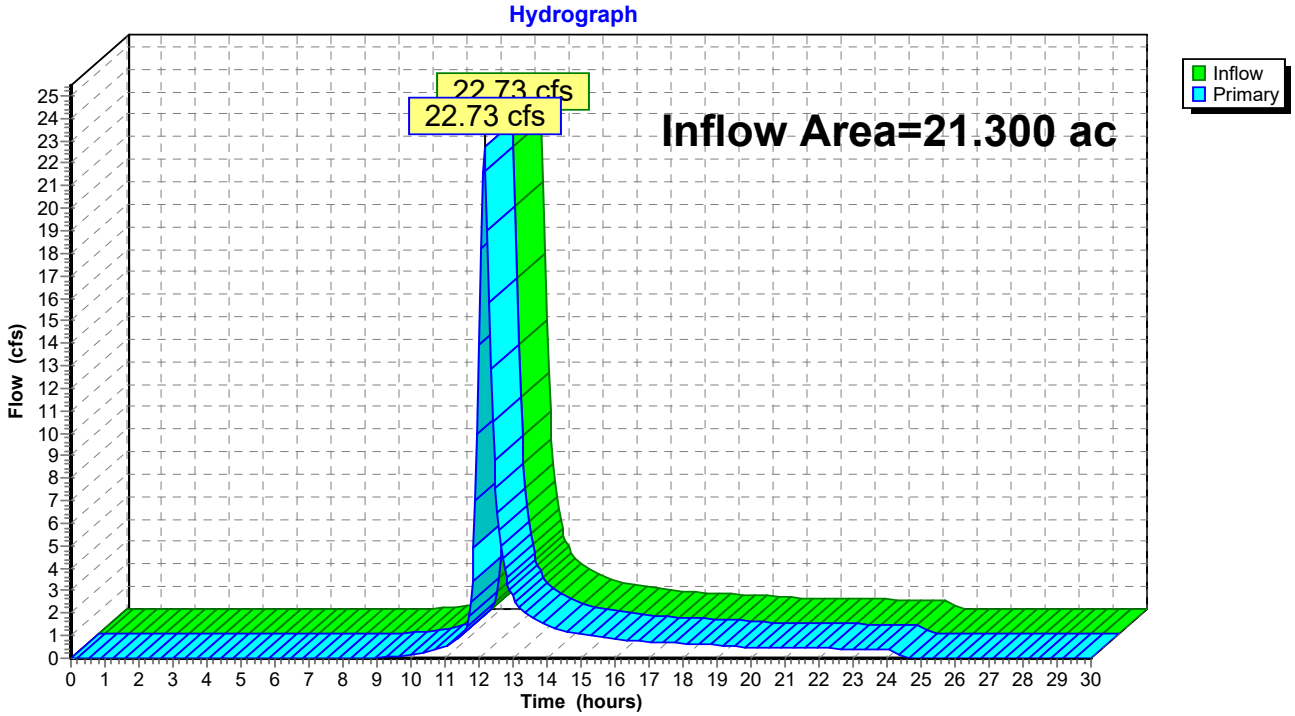


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.00% Impervious, Inflow Depth = 1.01" for 1yr event
Inflow = 22.73 cfs @ 12.15 hrs, Volume= 1.799 af
Primary = 22.73 cfs @ 12.15 hrs, Volume= 1.799 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2

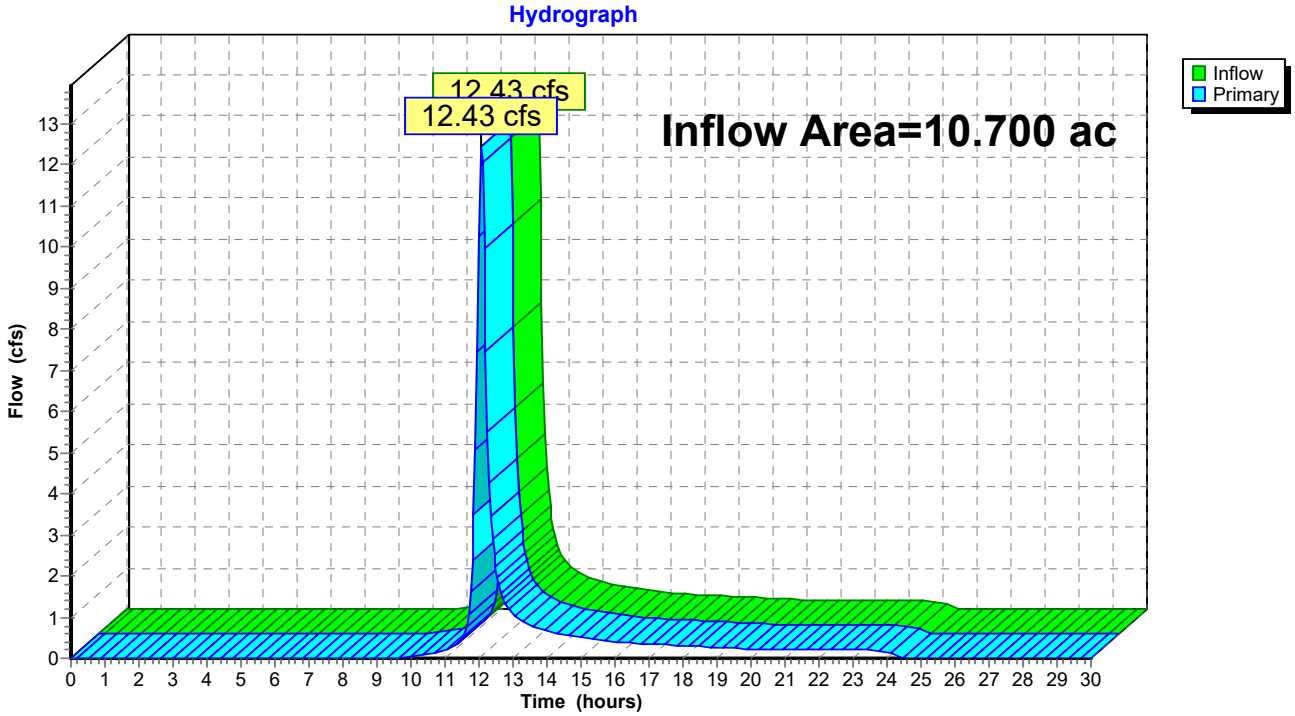


Summary for Link 3L: DP-3

Inflow Area = 10.700 ac, 0.00% Impervious, Inflow Depth = 0.89" for 1yr event
Inflow = 12.43 cfs @ 12.07 hrs, Volume= 0.798 af
Primary = 12.43 cfs @ 12.07 hrs, Volume= 0.798 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP-3

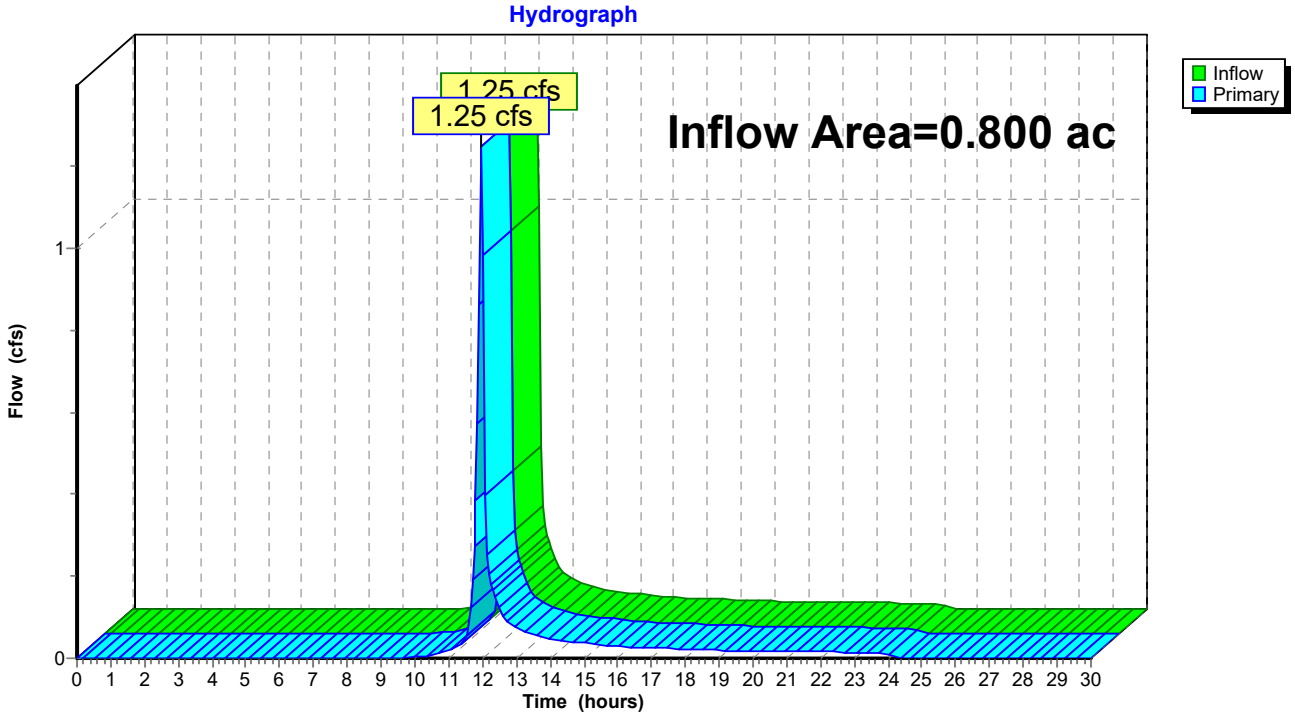


Summary for Link 4L: DP-4

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 0.89" for 1yr event
Inflow = 1.25 cfs @ 11.98 hrs, Volume= 0.060 af
Primary = 1.25 cfs @ 11.98 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP-4

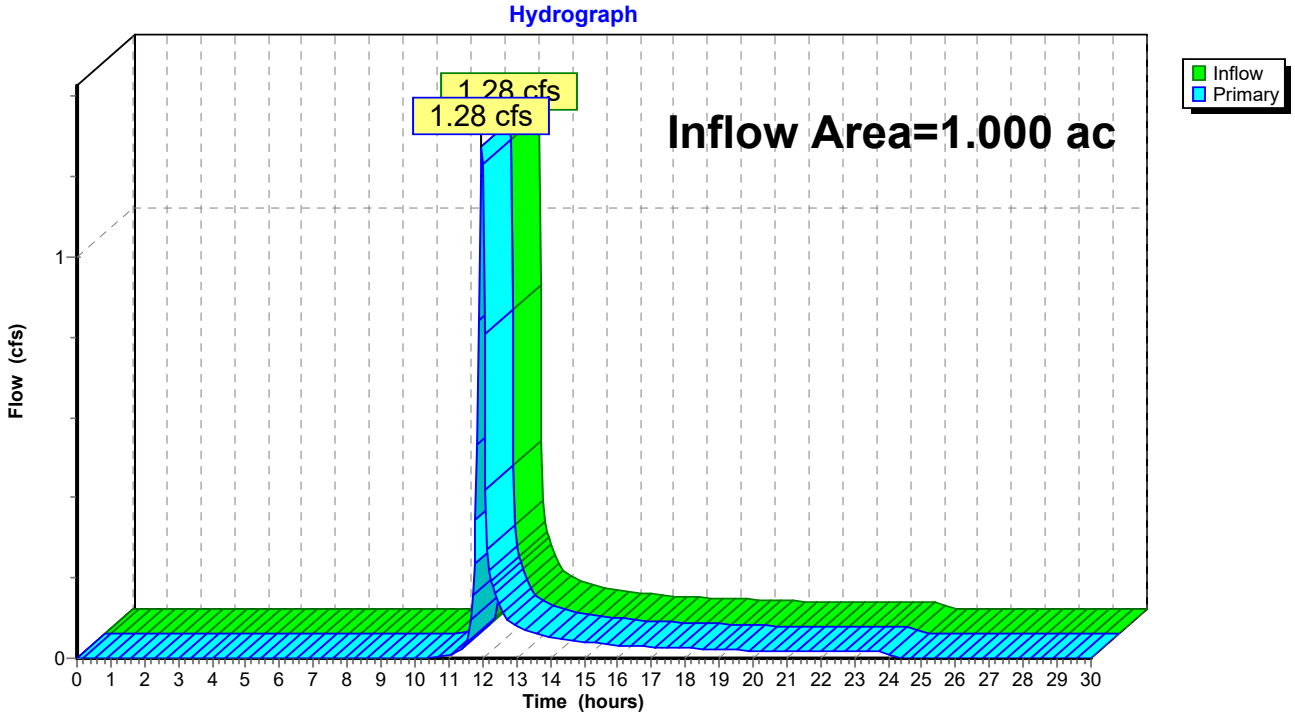


Summary for Link 5L: DP-5

Inflow Area = 1.000 ac, 0.00% Impervious, Inflow Depth = 0.74" for 1yr event
Inflow = 1.28 cfs @ 11.98 hrs, Volume= 0.061 af
Primary = 1.28 cfs @ 11.98 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP-5

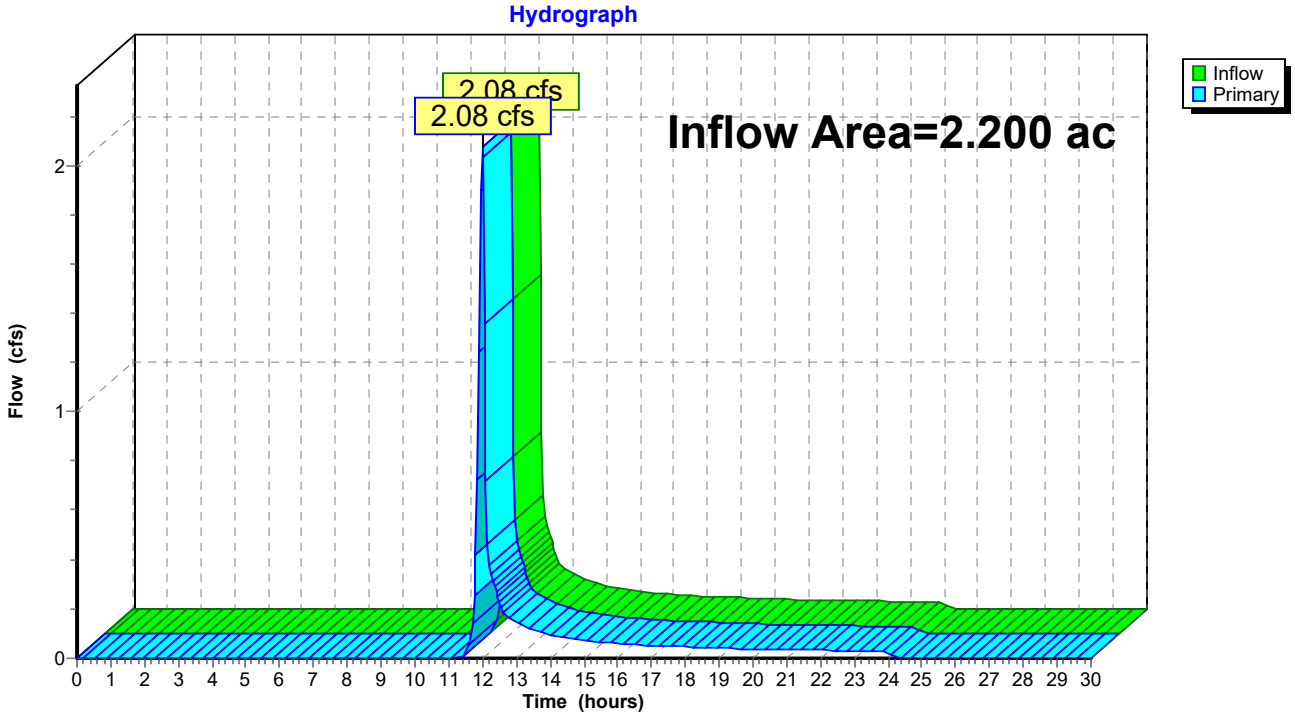


Summary for Link 6L: DP-6

Inflow Area = 2.200 ac, 0.00% Impervious, Inflow Depth = 0.56" for 1yr event
Inflow = 2.08 cfs @ 11.98 hrs, Volume= 0.102 af
Primary = 2.08 cfs @ 11.98 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP-6



Summary for Subcatchment 1: Drainage Area 1 - PRE

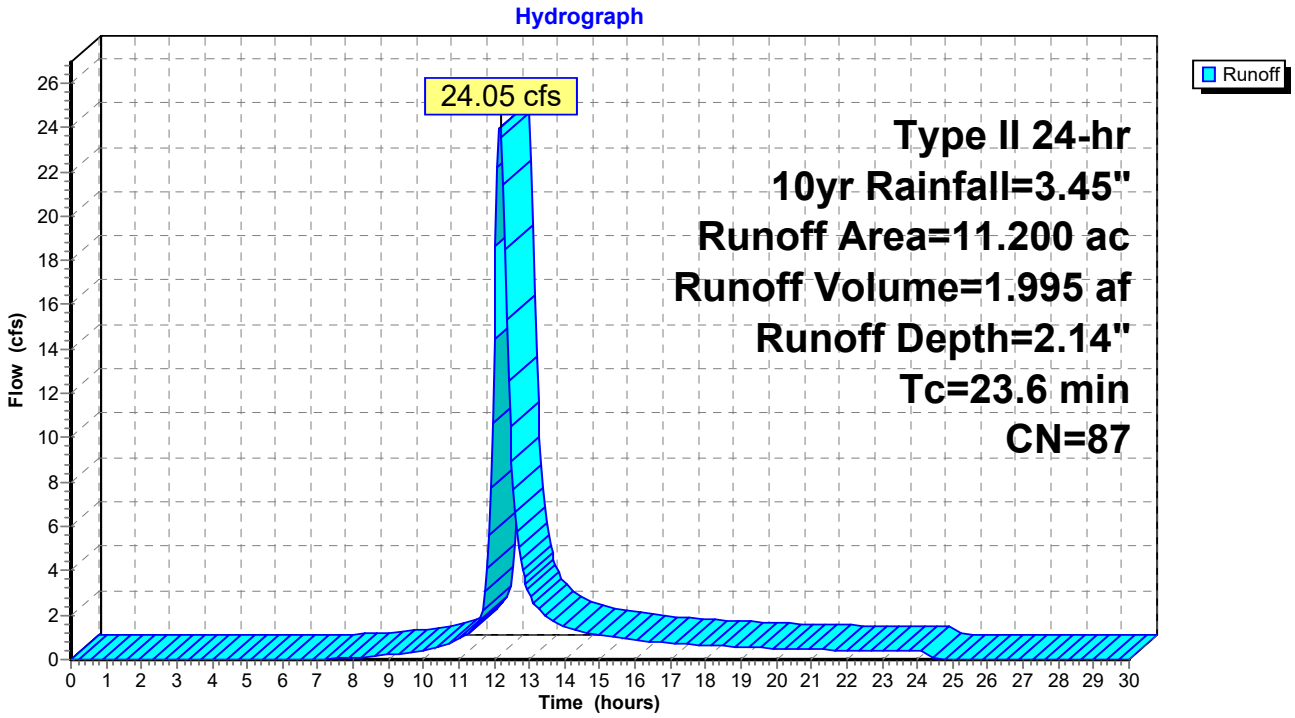
Runoff = 24.05 cfs @ 12.17 hrs, Volume= 1.995 af, Depth= 2.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	10.990	87	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	87	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1: Drainage Area 1 - PRE



Summary for Subcatchment 2: Drainage Area 2 - PRE

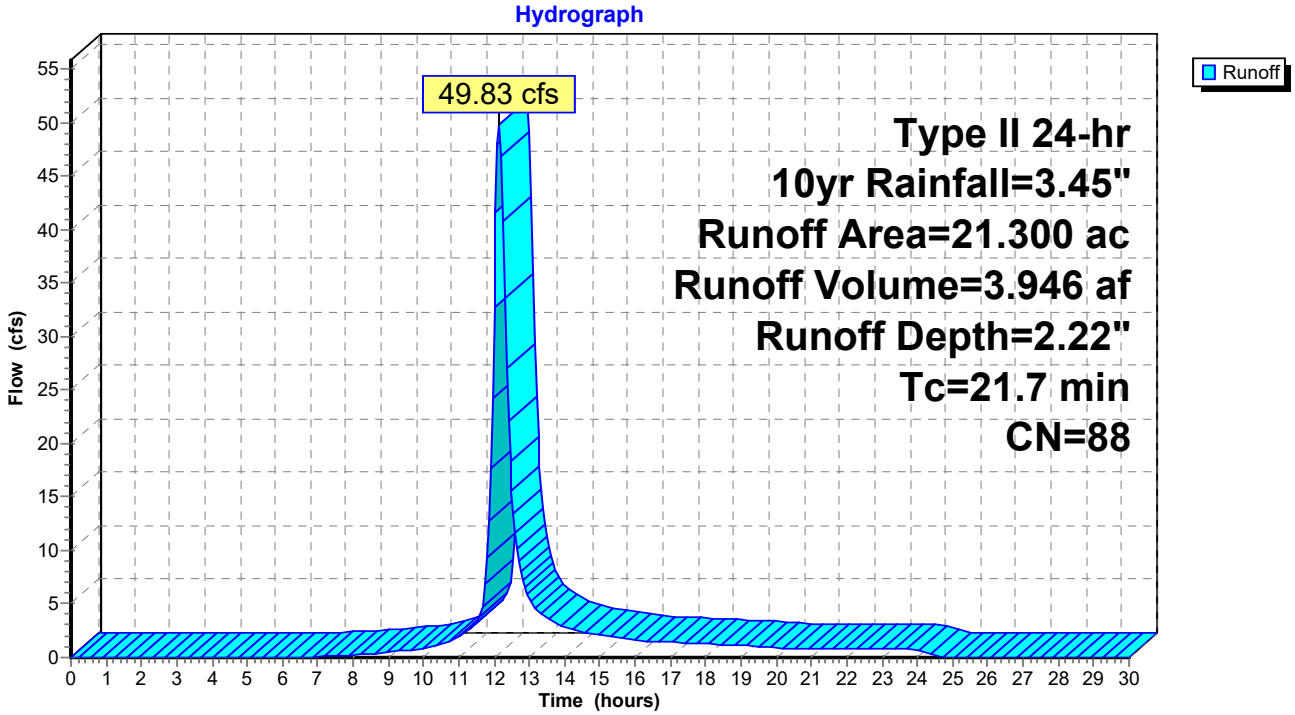
Runoff = 49.83 cfs @ 12.14 hrs, Volume= 3.946 af, Depth= 2.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	21.300	88	Weighted CN from TR55
	21.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2: Drainage Area 2 - PRE



Summary for Subcatchment 3: DRAINAGE AREA 3

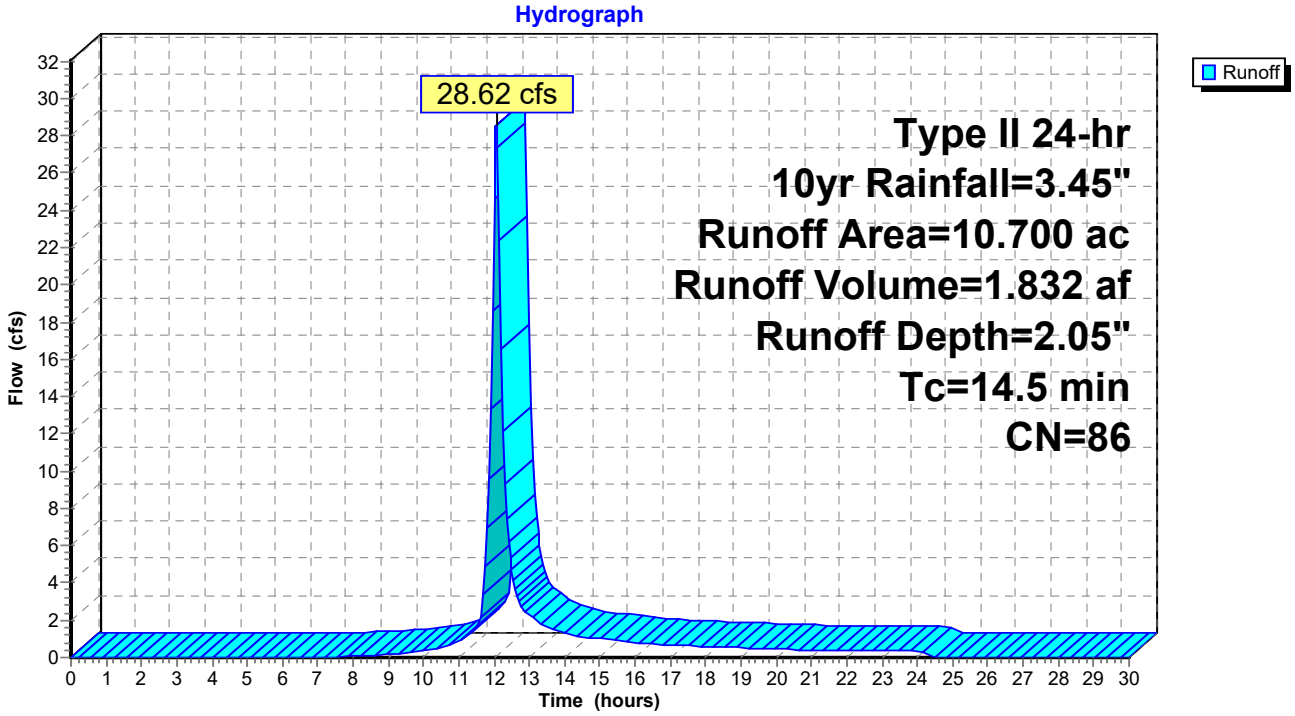
Runoff = 28.62 cfs @ 12.06 hrs, Volume= 1.832 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	10.700	86	WEIGHTED FROM TR55
	10.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5					**Direct Entry, TR55**

Subcatchment 3: DRAINAGE AREA 3



Summary for Subcatchment 4: DRAINAGE AREA 4

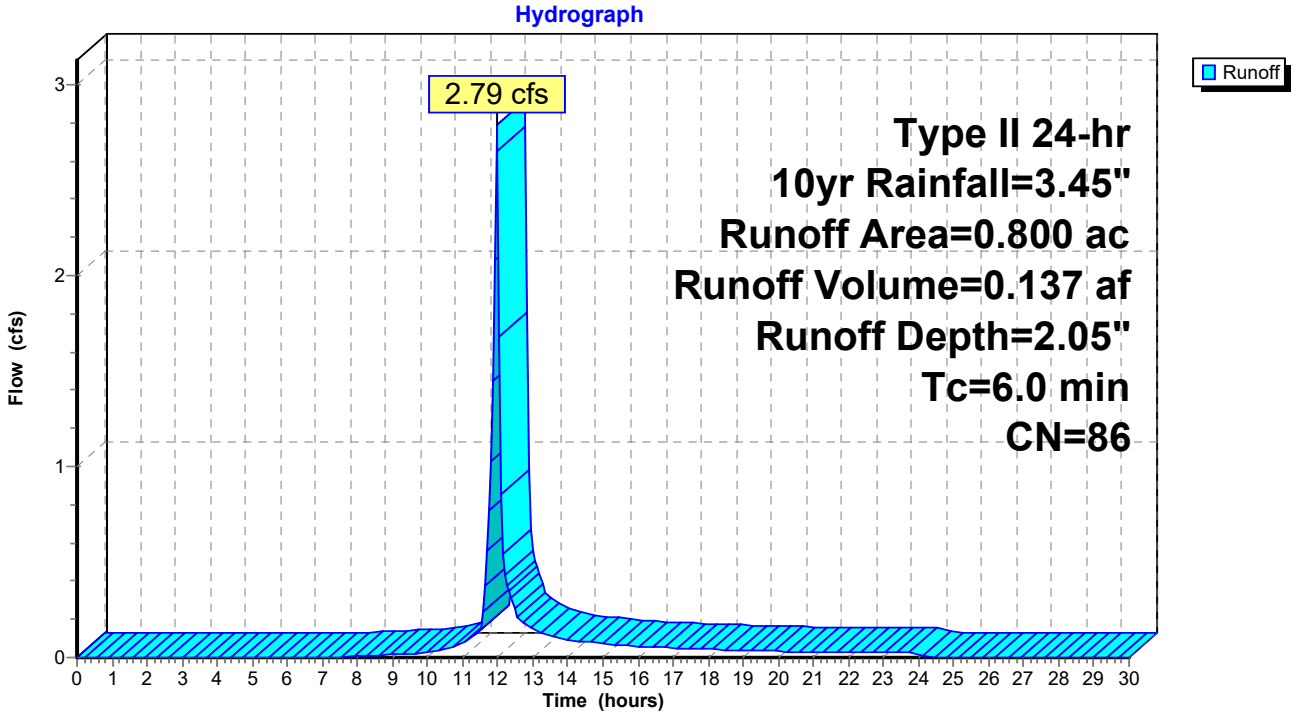
Runoff = 2.79 cfs @ 11.97 hrs, Volume= 0.137 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	0.800	86	WEIGHTED FROM TR55
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 4: DRAINAGE AREA 4



Summary for Subcatchment 5: DRAINAGE AREA 5

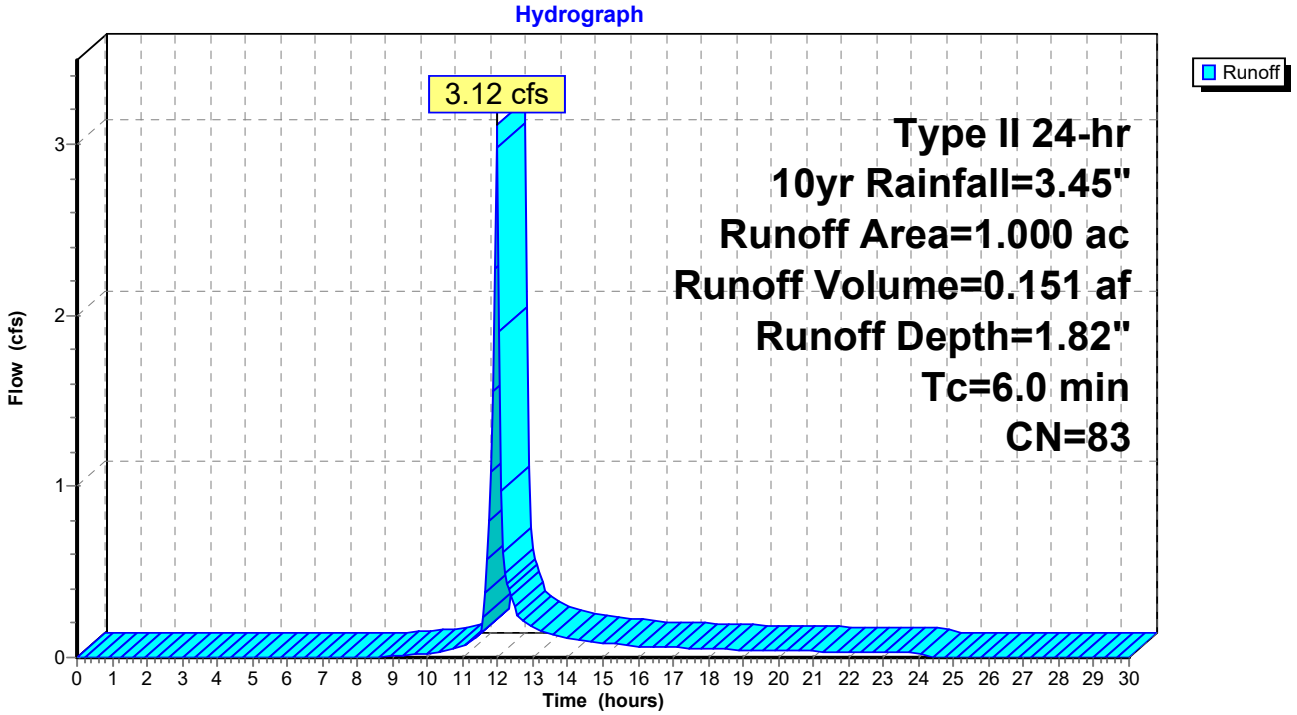
Runoff = 3.12 cfs @ 11.97 hrs, Volume= 0.151 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	1.000	83	WEIGHTED TR55
	1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 5: DRAINAGE AREA 5



Summary for Subcatchment 6: DRAINAGE AREA 6

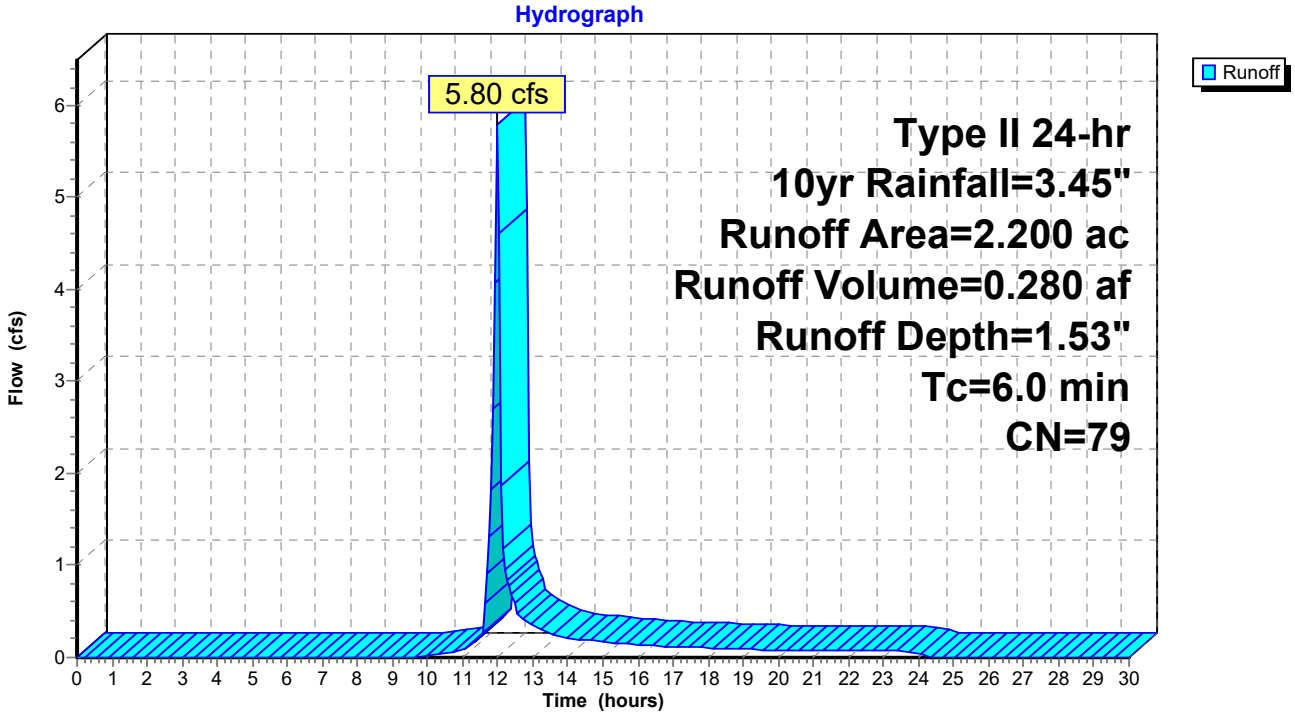
Runoff = 5.80 cfs @ 11.97 hrs, Volume= 0.280 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	2.200	79	WEIGHTED FROM TR55
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 6: DRAINAGE AREA 6

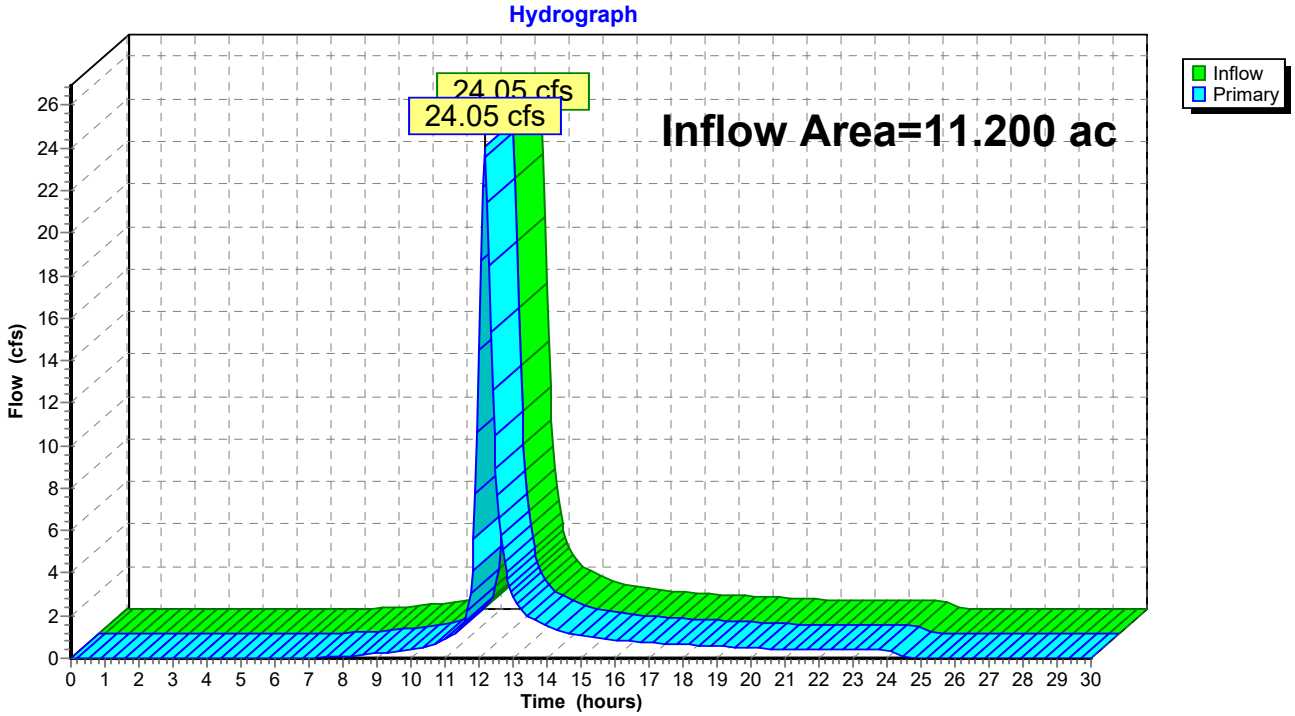


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 2.14" for 10yr event
Inflow = 24.05 cfs @ 12.17 hrs, Volume= 1.995 af
Primary = 24.05 cfs @ 12.17 hrs, Volume= 1.995 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

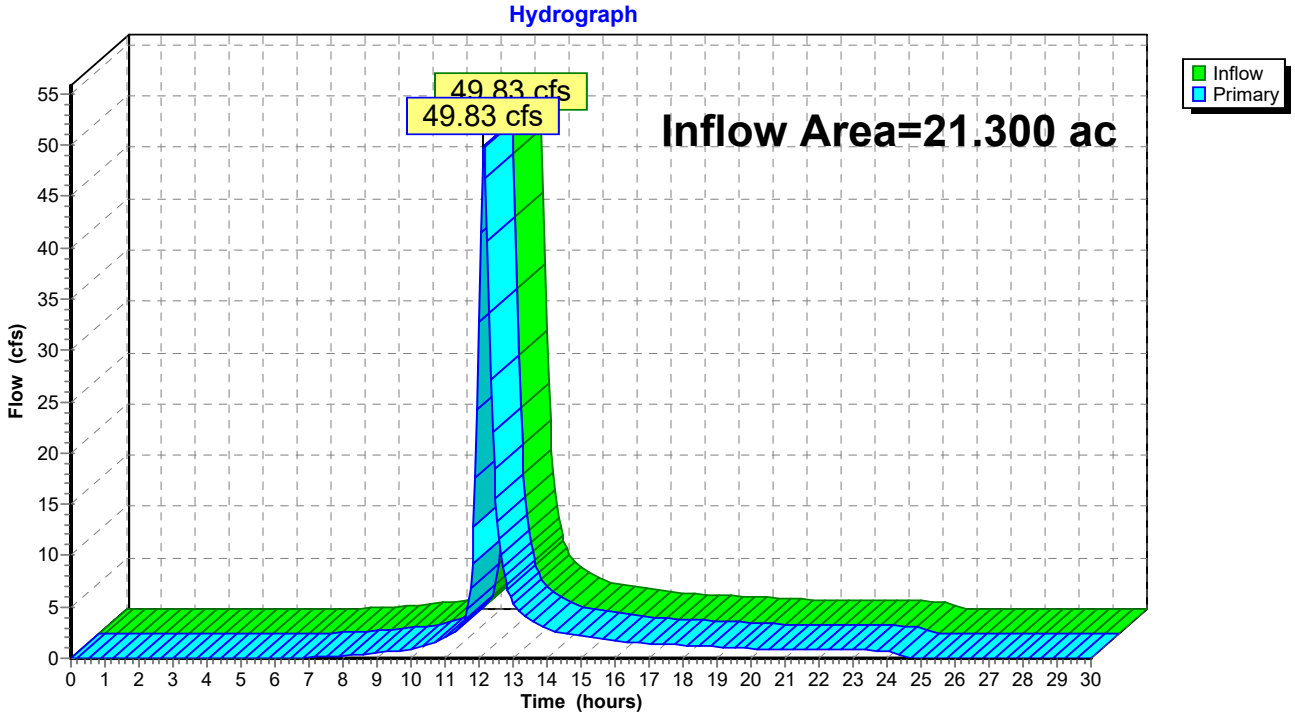


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.00% Impervious, Inflow Depth = 2.22" for 10yr event
Inflow = 49.83 cfs @ 12.14 hrs, Volume= 3.946 af
Primary = 49.83 cfs @ 12.14 hrs, Volume= 3.946 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2

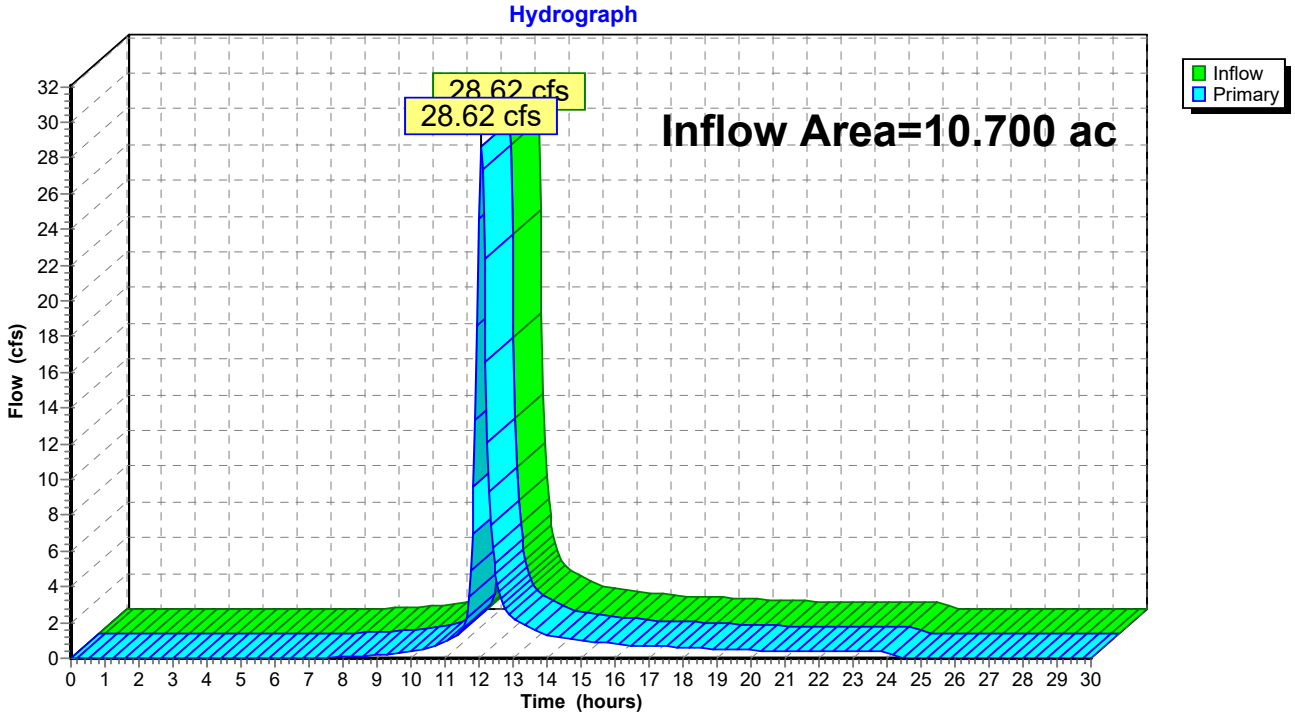


Summary for Link 3L: DP-3

Inflow Area = 10.700 ac, 0.00% Impervious, Inflow Depth = 2.05" for 10yr event
Inflow = 28.62 cfs @ 12.06 hrs, Volume= 1.832 af
Primary = 28.62 cfs @ 12.06 hrs, Volume= 1.832 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP-3

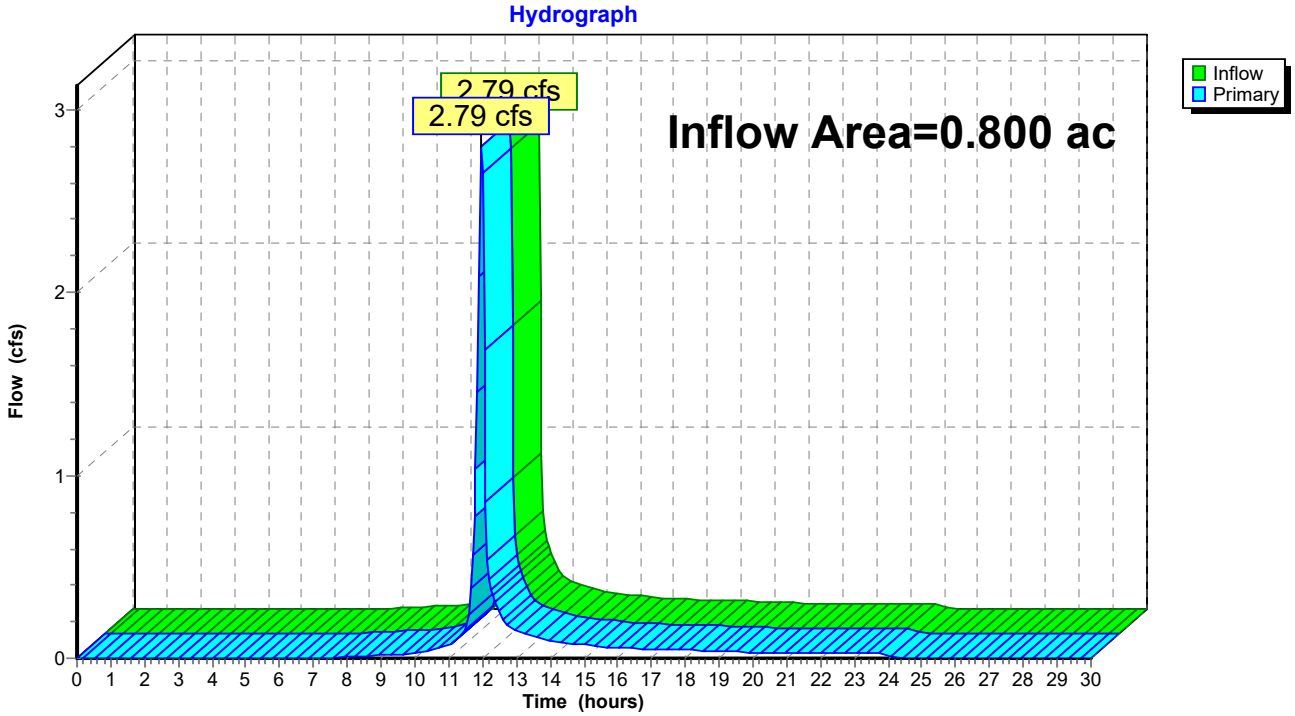


Summary for Link 4L: DP-4

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 2.05" for 10yr event
Inflow = 2.79 cfs @ 11.97 hrs, Volume= 0.137 af
Primary = 2.79 cfs @ 11.97 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP-4

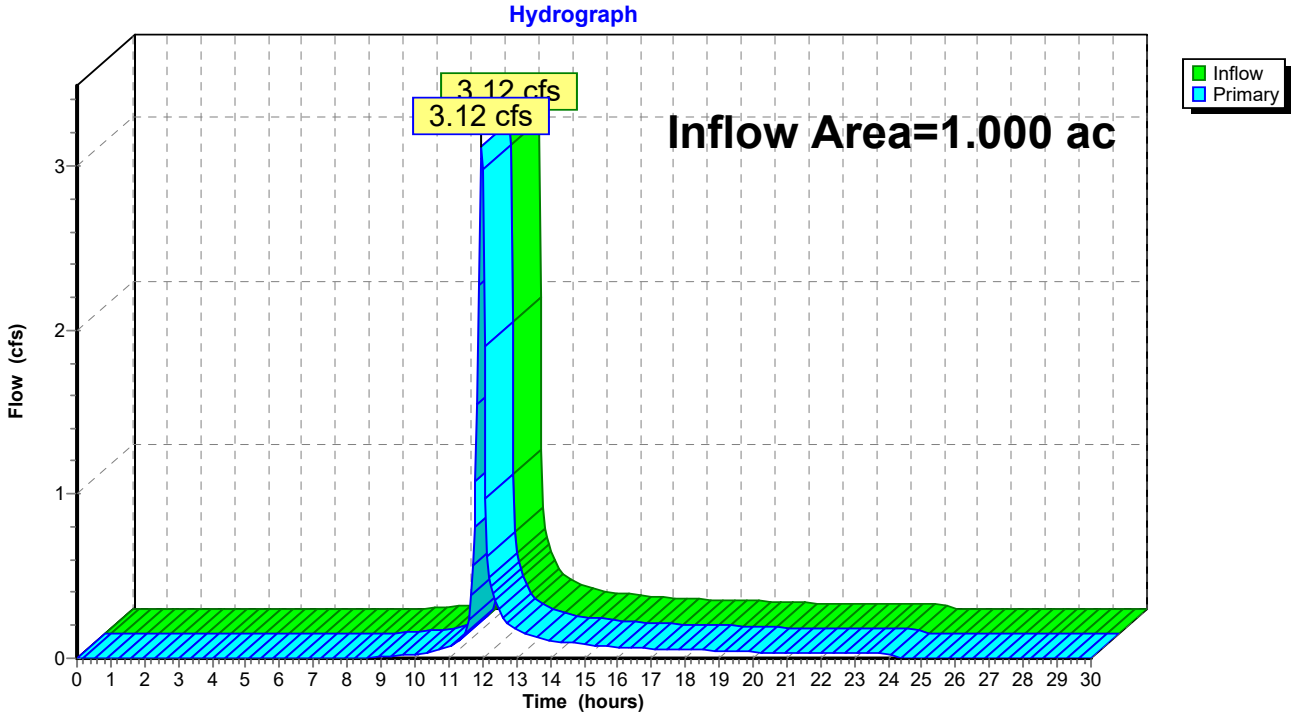


Summary for Link 5L: DP-5

Inflow Area = 1.000 ac, 0.00% Impervious, Inflow Depth = 1.82" for 10yr event
Inflow = 3.12 cfs @ 11.97 hrs, Volume= 0.151 af
Primary = 3.12 cfs @ 11.97 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP-5

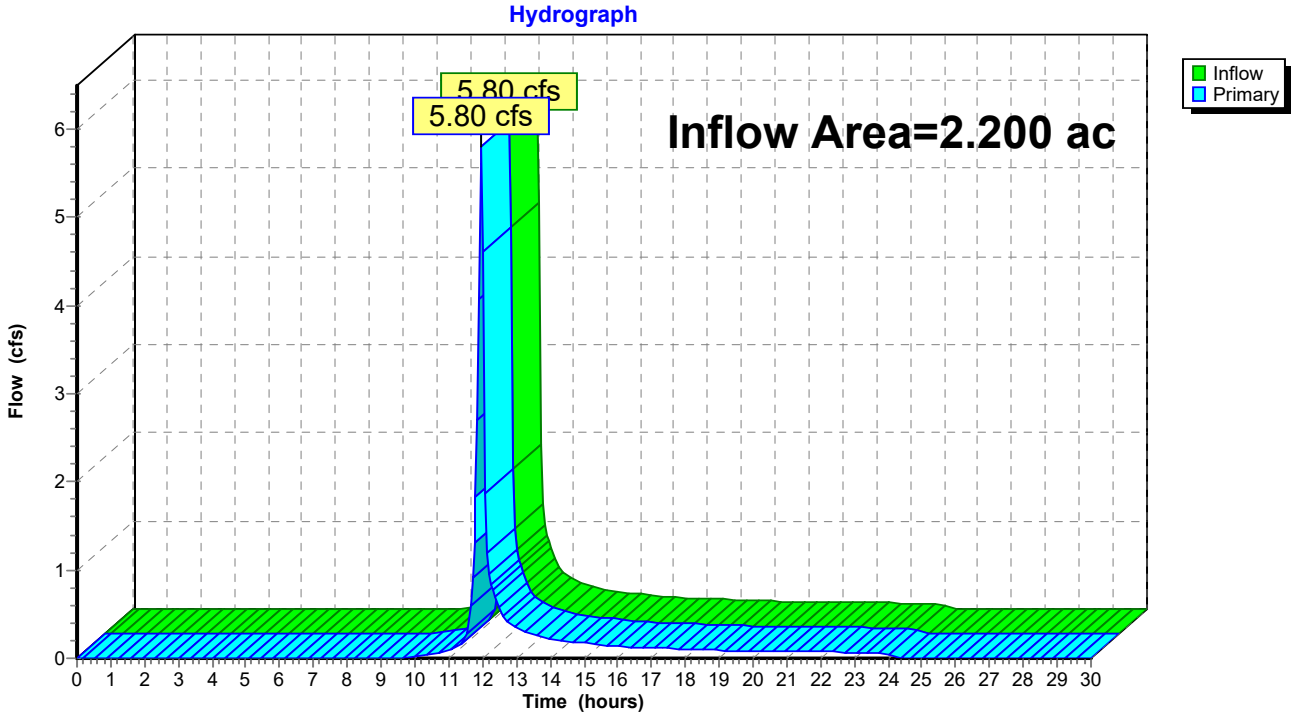


Summary for Link 6L: DP-6

Inflow Area = 2.200 ac, 0.00% Impervious, Inflow Depth = 1.53" for 10yr event
Inflow = 5.80 cfs @ 11.97 hrs, Volume= 0.280 af
Primary = 5.80 cfs @ 11.97 hrs, Volume= 0.280 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP-6



Summary for Subcatchment 1: Drainage Area 1 - PRE

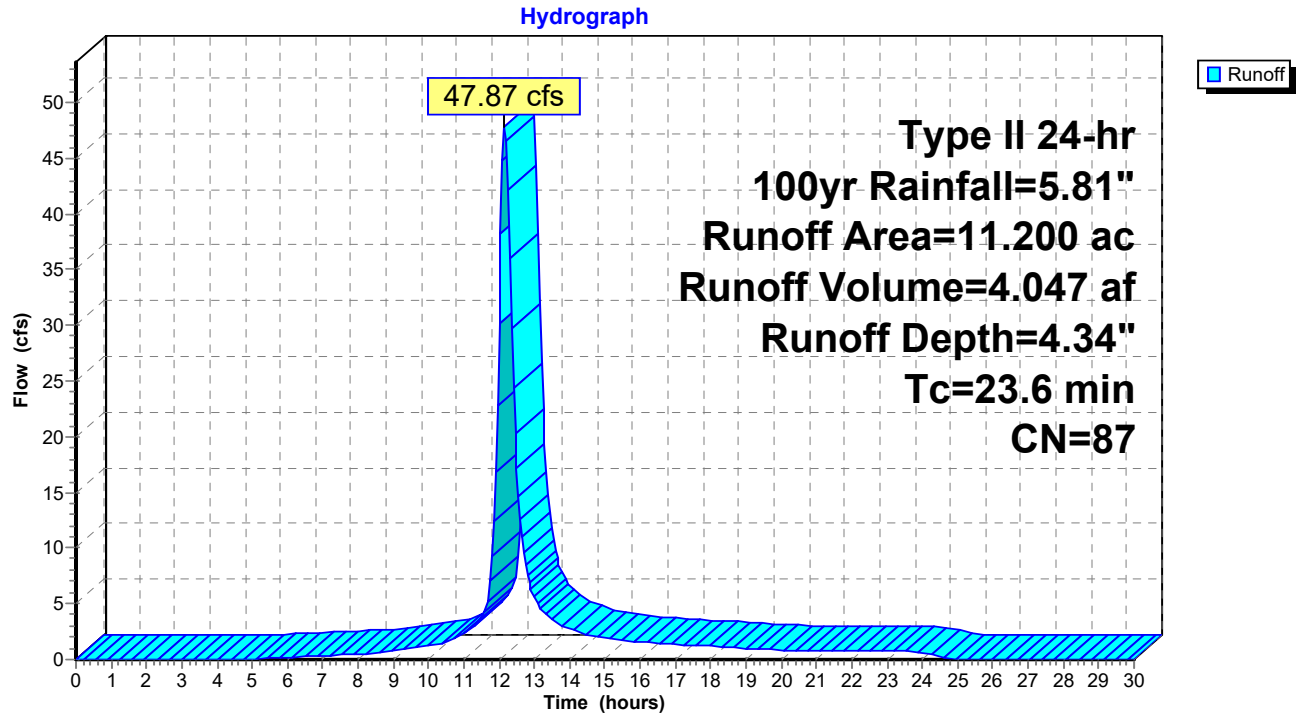
Runoff = 47.87 cfs @ 12.16 hrs, Volume= 4.047 af, Depth= 4.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	10.990	87	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	87	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1: Drainage Area 1 - PRE



Summary for Subcatchment 2: Drainage Area 2 - PRE

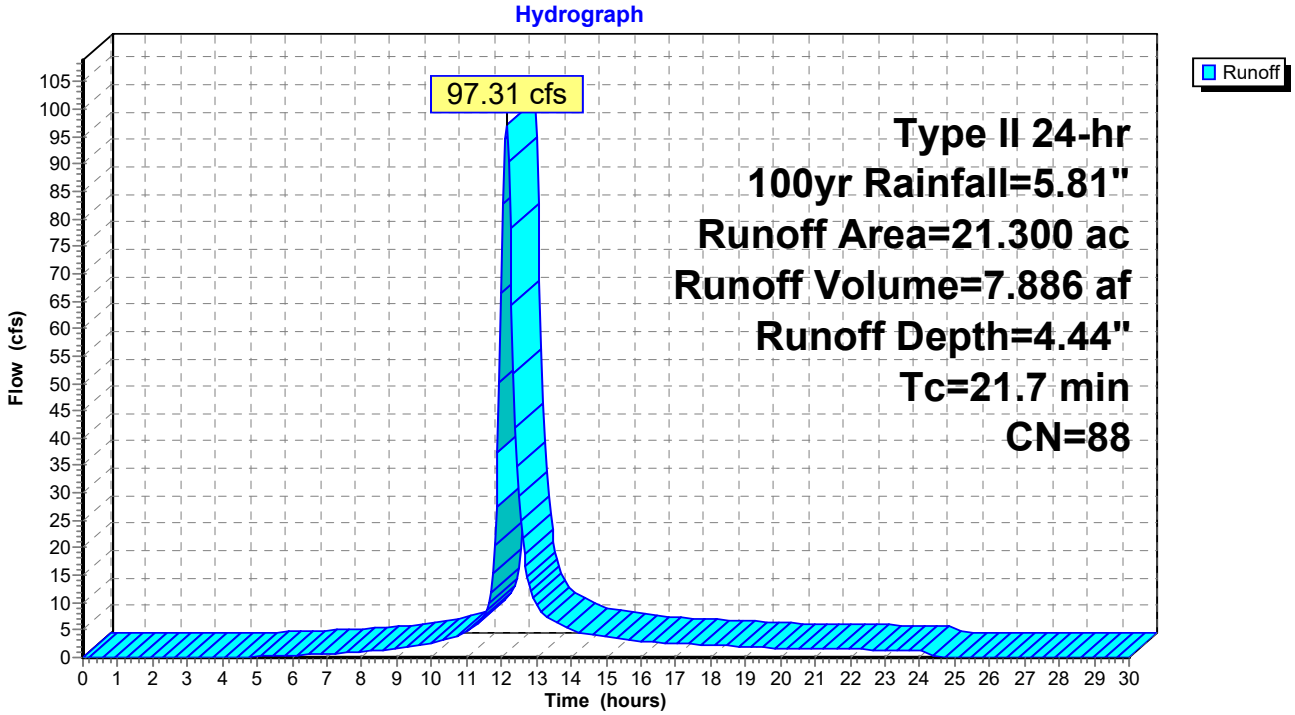
Runoff = 97.31 cfs @ 12.14 hrs, Volume= 7.886 af, Depth= 4.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	21.300	88	Weighted CN from TR55
	21.300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2: Drainage Area 2 - PRE



Summary for Subcatchment 3: DRAINAGE AREA 3

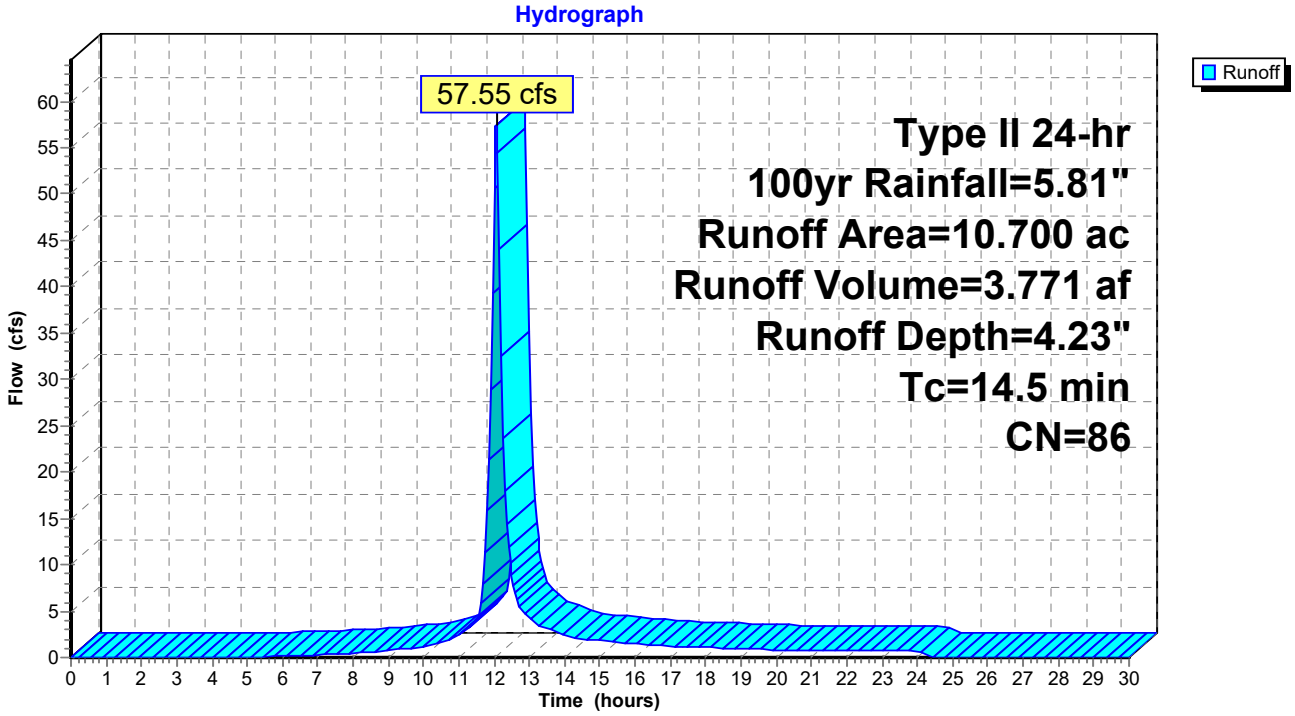
Runoff = 57.55 cfs @ 12.06 hrs, Volume= 3.771 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	10.700	86	WEIGHTED FROM TR55
	10.700		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5					**Direct Entry, TR55**

Subcatchment 3: DRAINAGE AREA 3



Summary for Subcatchment 4: DRAINAGE AREA 4

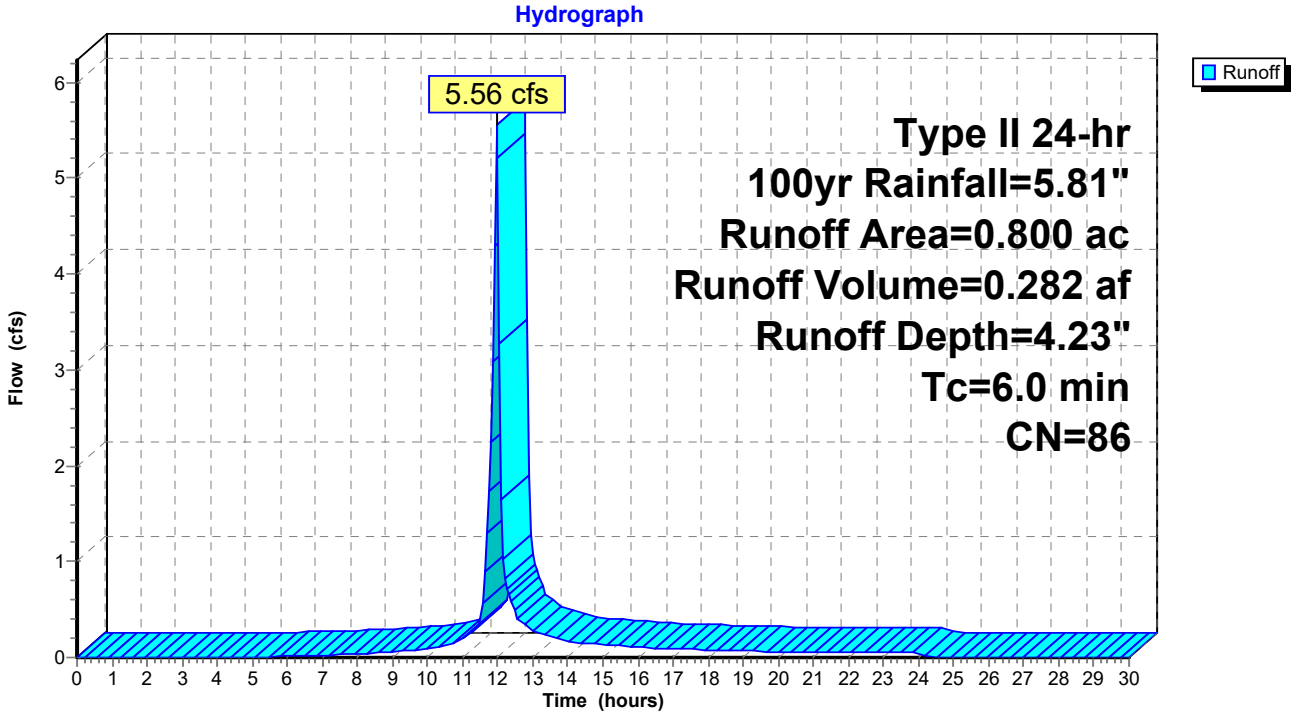
Runoff = 5.56 cfs @ 11.97 hrs, Volume= 0.282 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	0.800	86	WEIGHTED FROM TR55
	0.800		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 4: DRAINAGE AREA 4



Summary for Subcatchment 5: DRAINAGE AREA 5

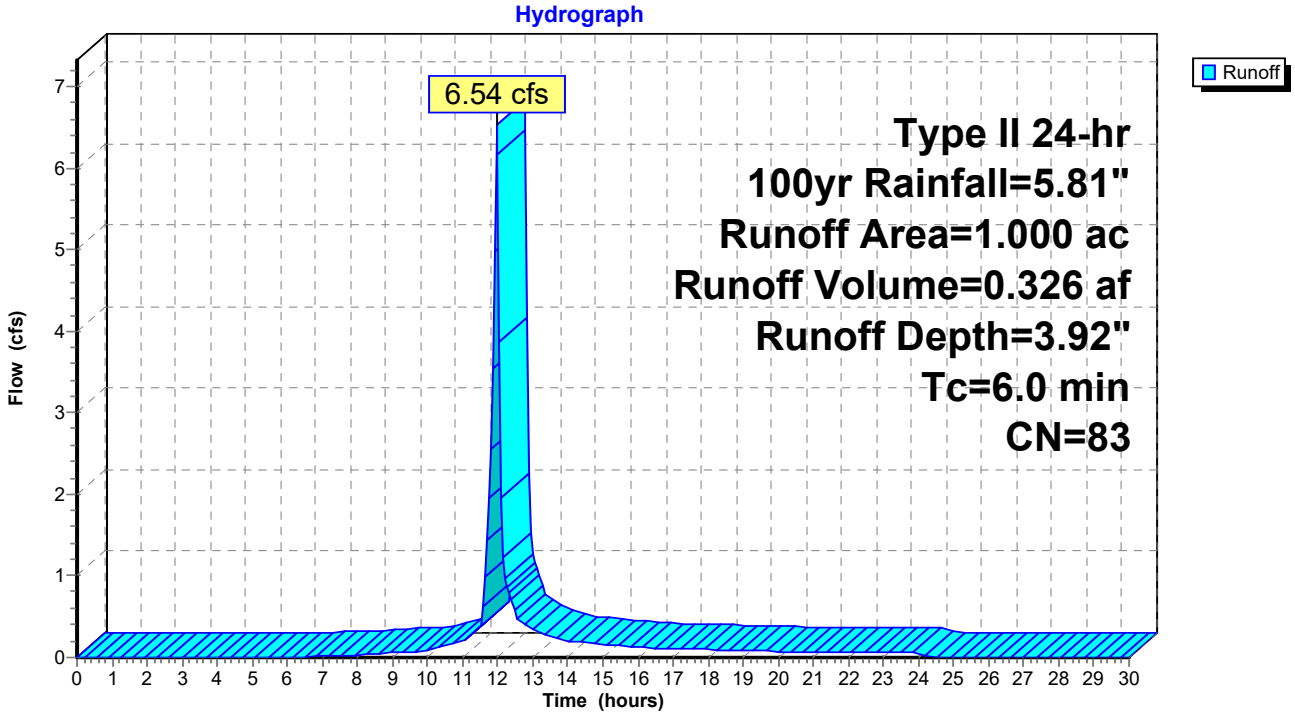
Runoff = 6.54 cfs @ 11.97 hrs, Volume= 0.326 af, Depth= 3.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	1.000	83	WEIGHTED TR55
	1.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 5: DRAINAGE AREA 5



Summary for Subcatchment 6: DRAINAGE AREA 6

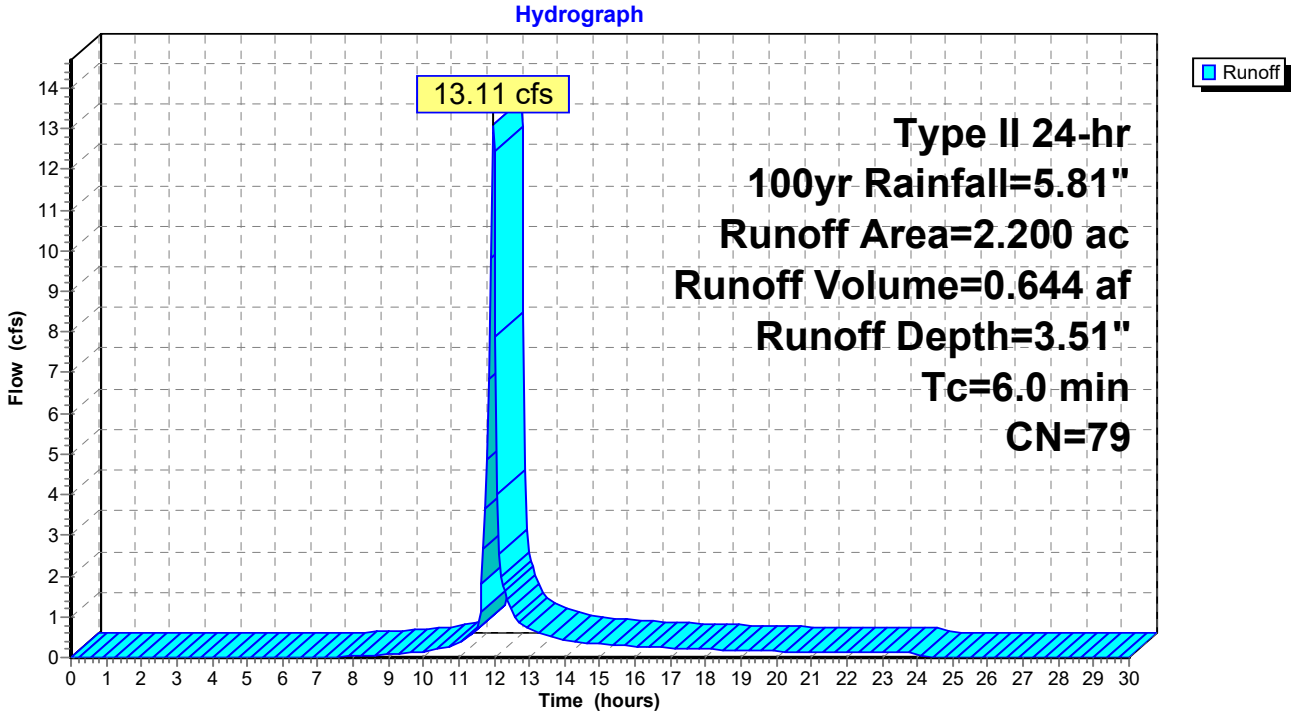
Runoff = 13.11 cfs @ 11.97 hrs, Volume= 0.644 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	2.200	79	WEIGHTED FROM TR55
	2.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, TR55**

Subcatchment 6: DRAINAGE AREA 6

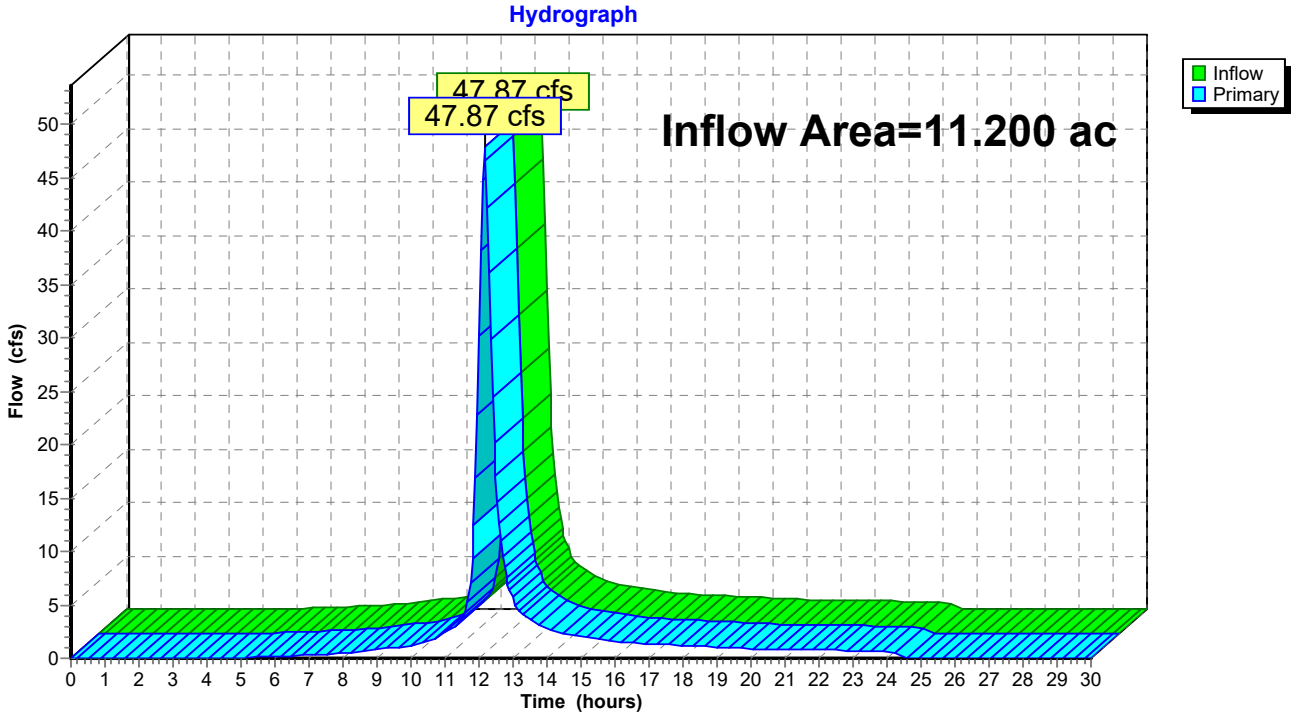


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 4.34" for 100yr event
Inflow = 47.87 cfs @ 12.16 hrs, Volume= 4.047 af
Primary = 47.87 cfs @ 12.16 hrs, Volume= 4.047 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

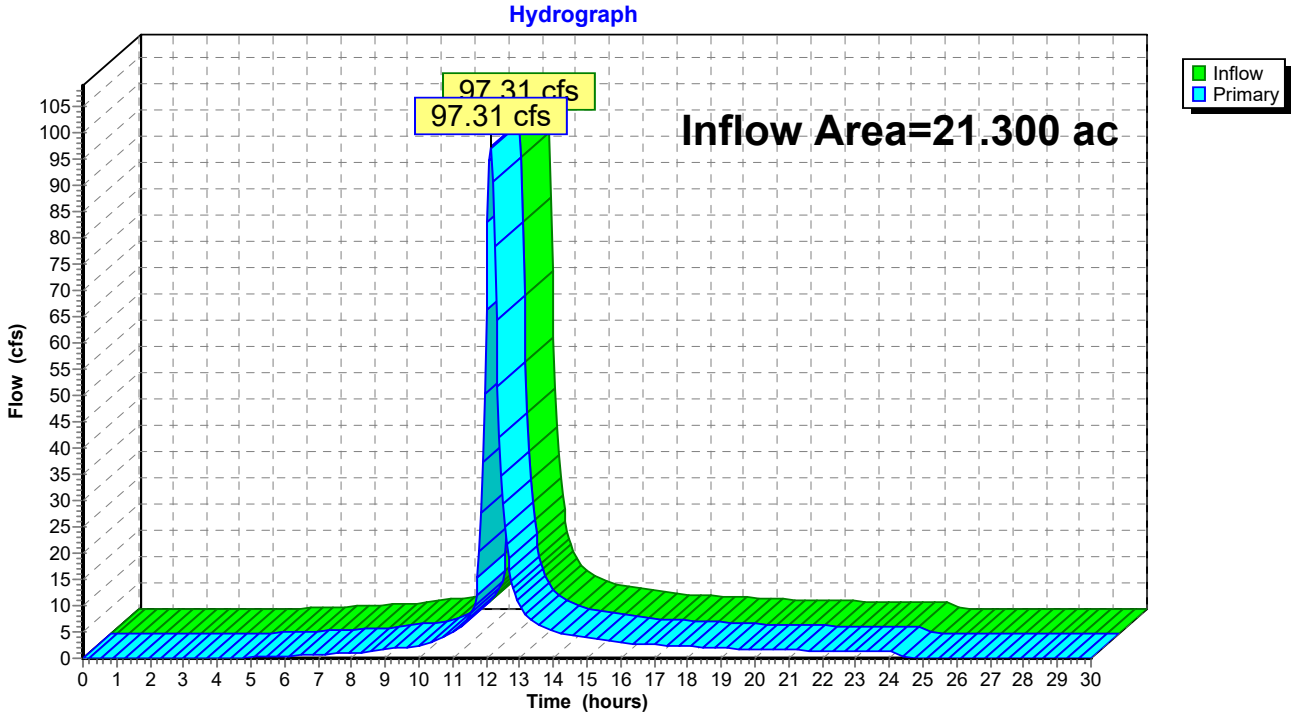


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.00% Impervious, Inflow Depth = 4.44" for 100yr event
Inflow = 97.31 cfs @ 12.14 hrs, Volume= 7.886 af
Primary = 97.31 cfs @ 12.14 hrs, Volume= 7.886 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2

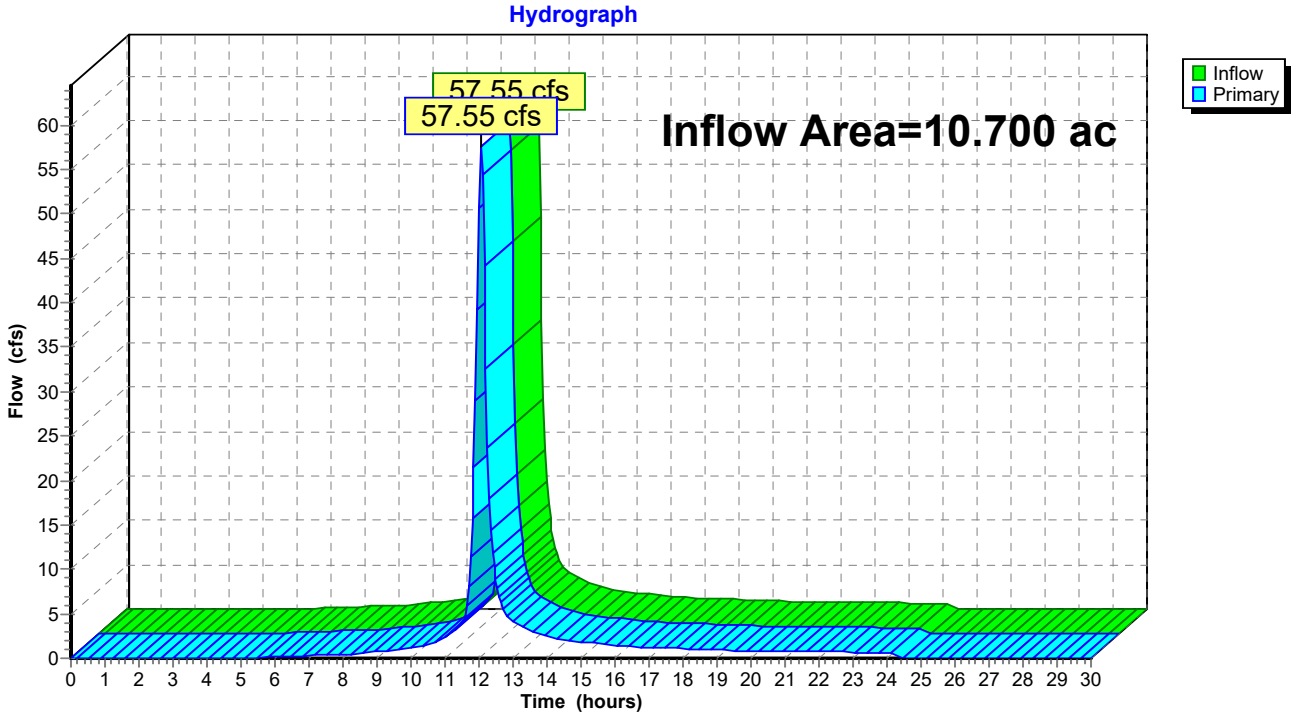


Summary for Link 3L: DP-3

Inflow Area = 10.700 ac, 0.00% Impervious, Inflow Depth = 4.23" for 100yr event
Inflow = 57.55 cfs @ 12.06 hrs, Volume= 3.771 af
Primary = 57.55 cfs @ 12.06 hrs, Volume= 3.771 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 3L: DP-3

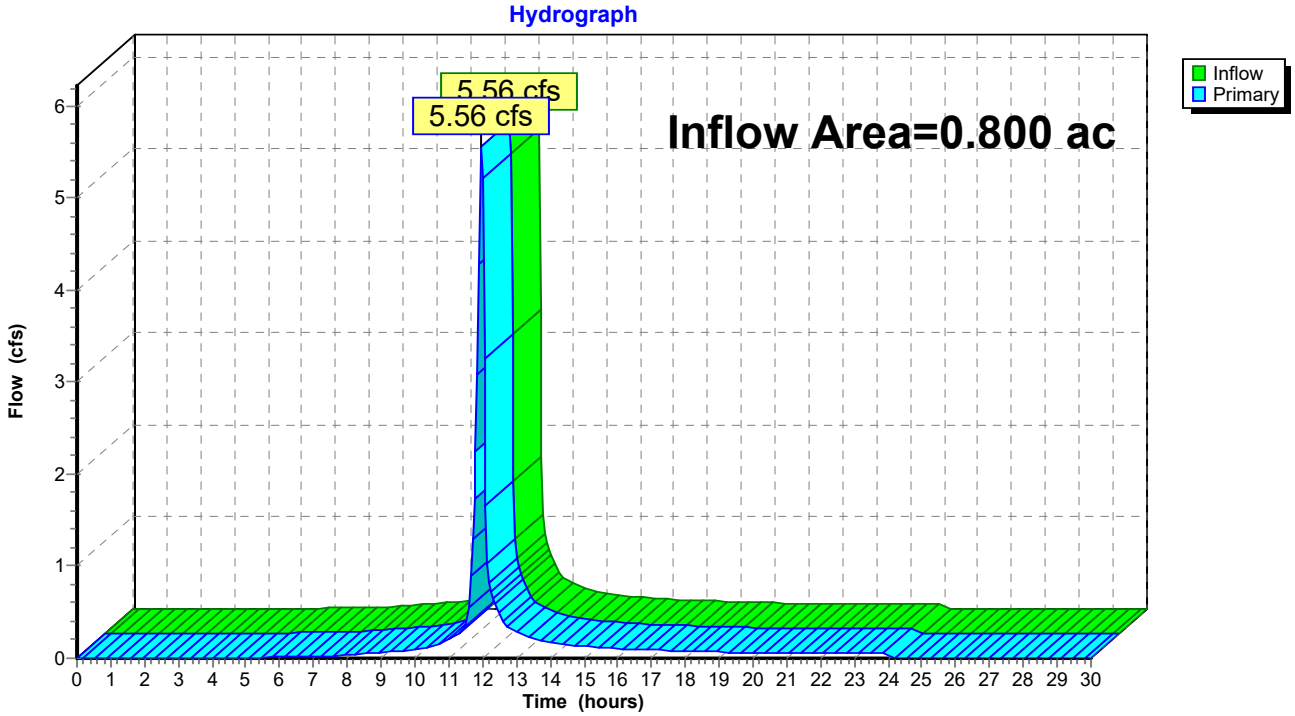


Summary for Link 4L: DP-4

Inflow Area = 0.800 ac, 0.00% Impervious, Inflow Depth = 4.23" for 100yr event
Inflow = 5.56 cfs @ 11.97 hrs, Volume= 0.282 af
Primary = 5.56 cfs @ 11.97 hrs, Volume= 0.282 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 4L: DP-4

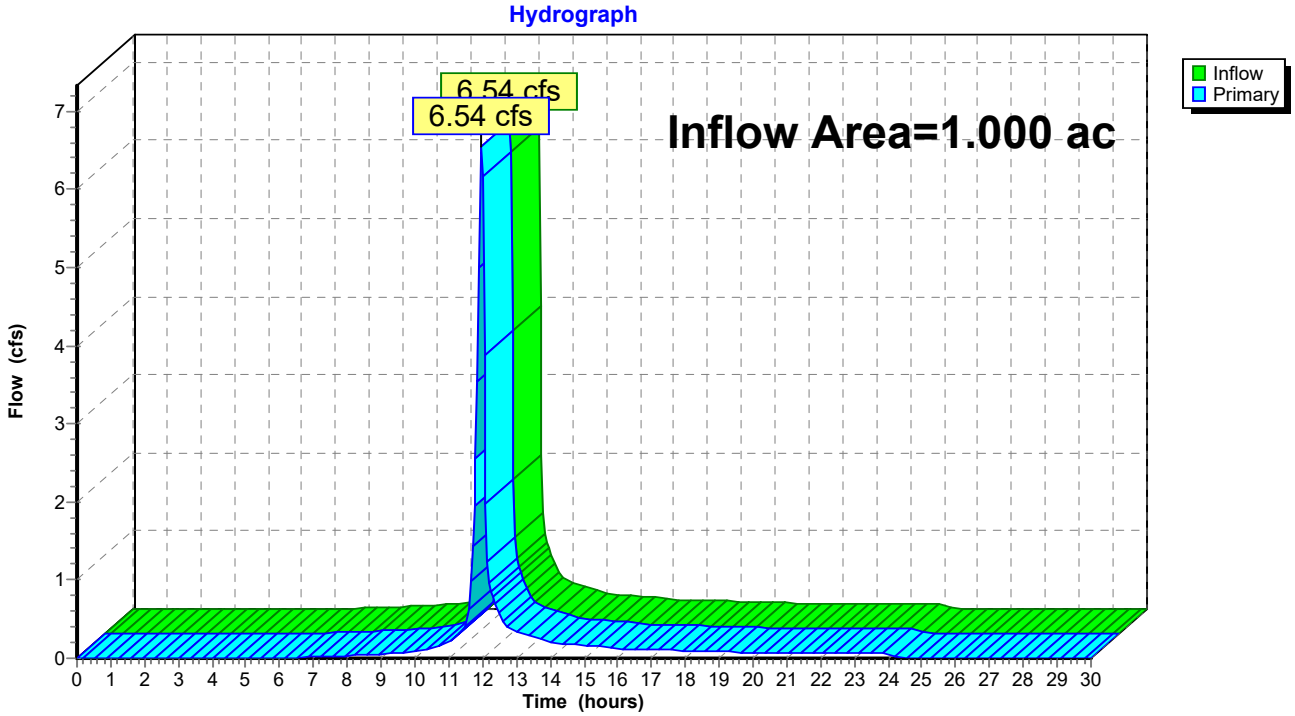


Summary for Link 5L: DP-5

Inflow Area = 1.000 ac, 0.00% Impervious, Inflow Depth = 3.92" for 100yr event
Inflow = 6.54 cfs @ 11.97 hrs, Volume= 0.326 af
Primary = 6.54 cfs @ 11.97 hrs, Volume= 0.326 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 5L: DP-5

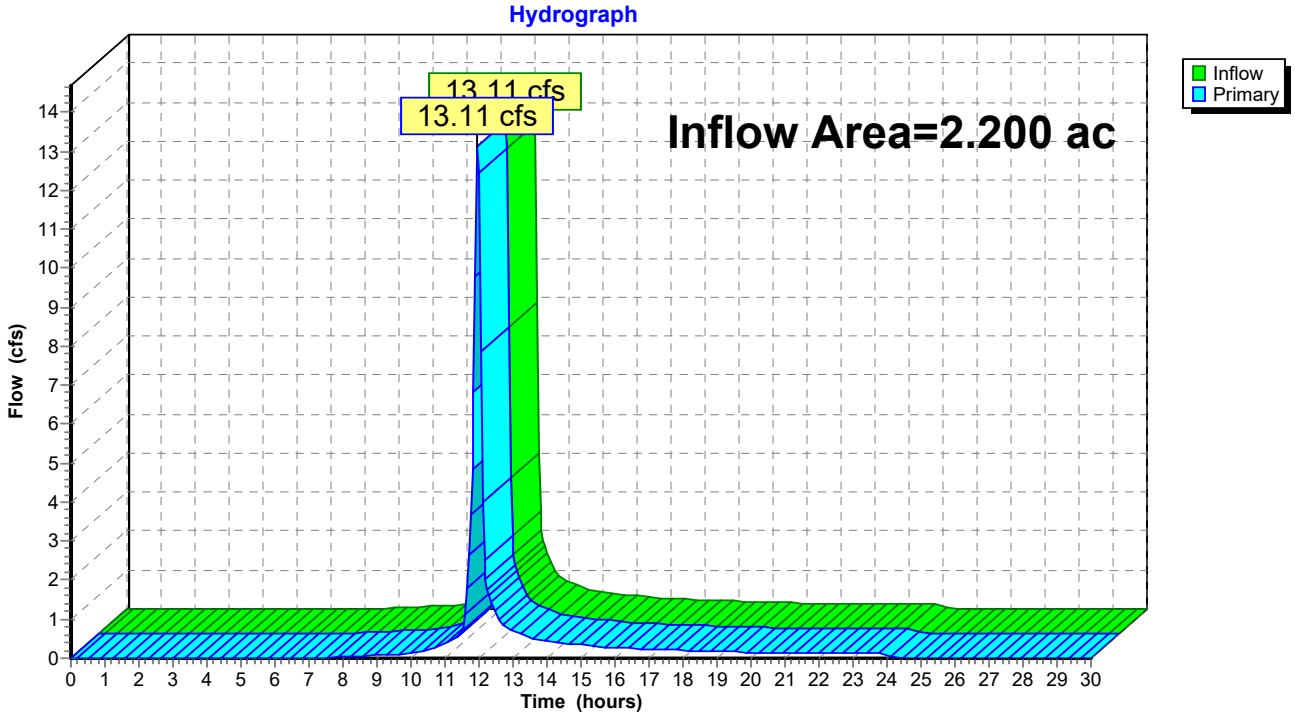


Summary for Link 6L: DP-6

Inflow Area = 2.200 ac, 0.00% Impervious, Inflow Depth = 3.51" for 100yr event
Inflow = 13.11 cfs @ 11.97 hrs, Volume= 0.644 af
Primary = 13.11 cfs @ 11.97 hrs, Volume= 0.644 af, Atten= 0%, Lag= 0.0 min

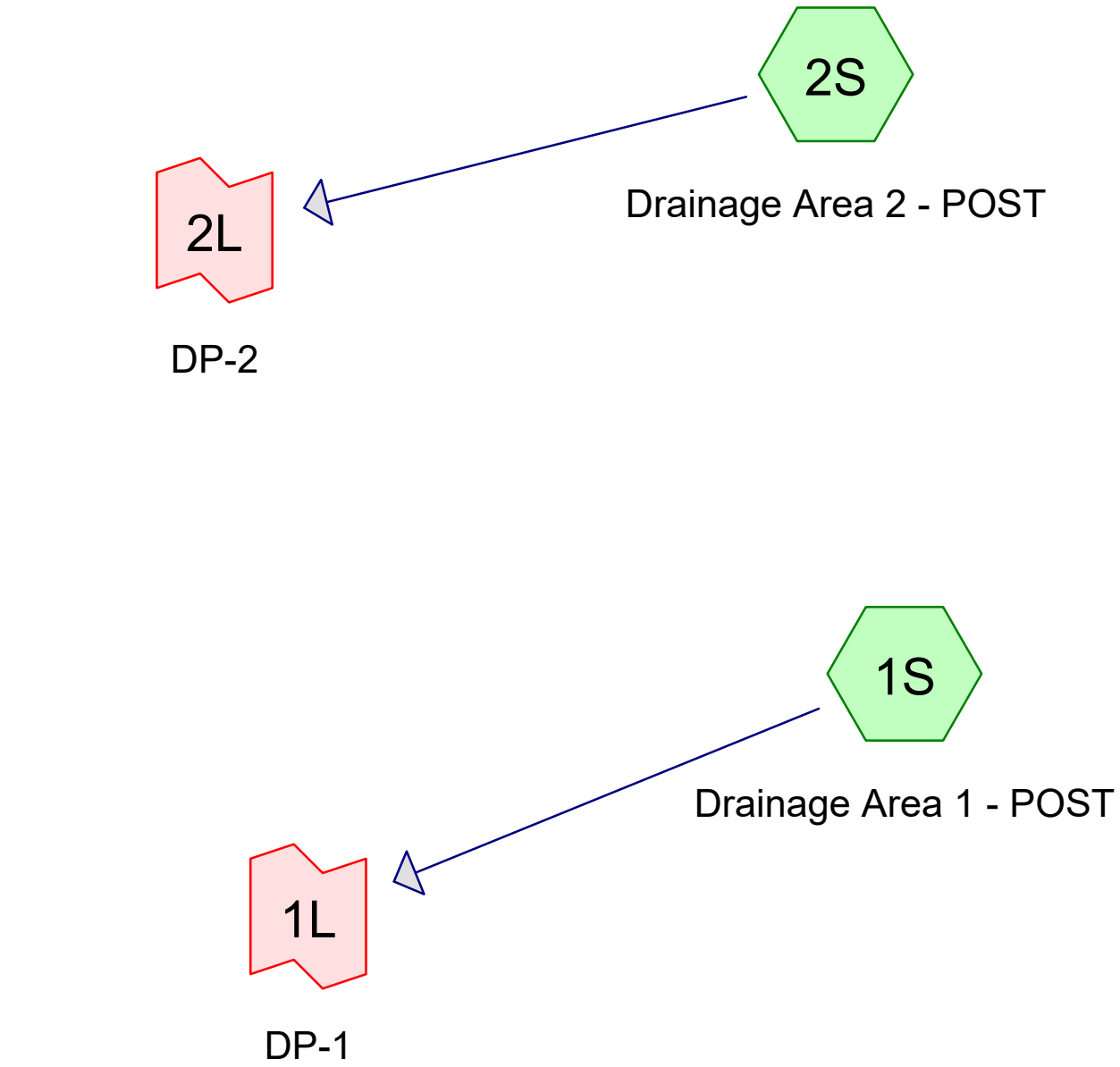
Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 6L: DP-6



APPENDIX I – POST-DEVELOPMENT ANALYSIS

Proposed Conditions



Routing Diagram for North Eagle Solar Post Development-Rev2
Prepared by Tetra Tech Inc, Printed 4/3/2020
HydroCAD® 10.00-24 s/n 04052 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.412	89	Roadway (1S, 2S)
10.990	71	Weighted CN from TR55 (1S)
21.080	75	Weighted CN from TR55 (2S)
0.018	98	concrete pads (2S)
32.500	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
32.500	Other	1S, 2S
32.500		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.000	0.412	0.412	Roadway	1S, 2S
0.000	0.000	0.000	0.000	32.070	32.070	Weighted CN from TR55	1S, 2S
0.000	0.000	0.000	0.000	0.018	0.018	concrete pads	2S
0.000	**0.000**	**0.000**	**0.000**	**32.500**	**32.500**	**TOTAL AREA**	

Summary for Subcatchment 1S: Drainage Area 1 - POST

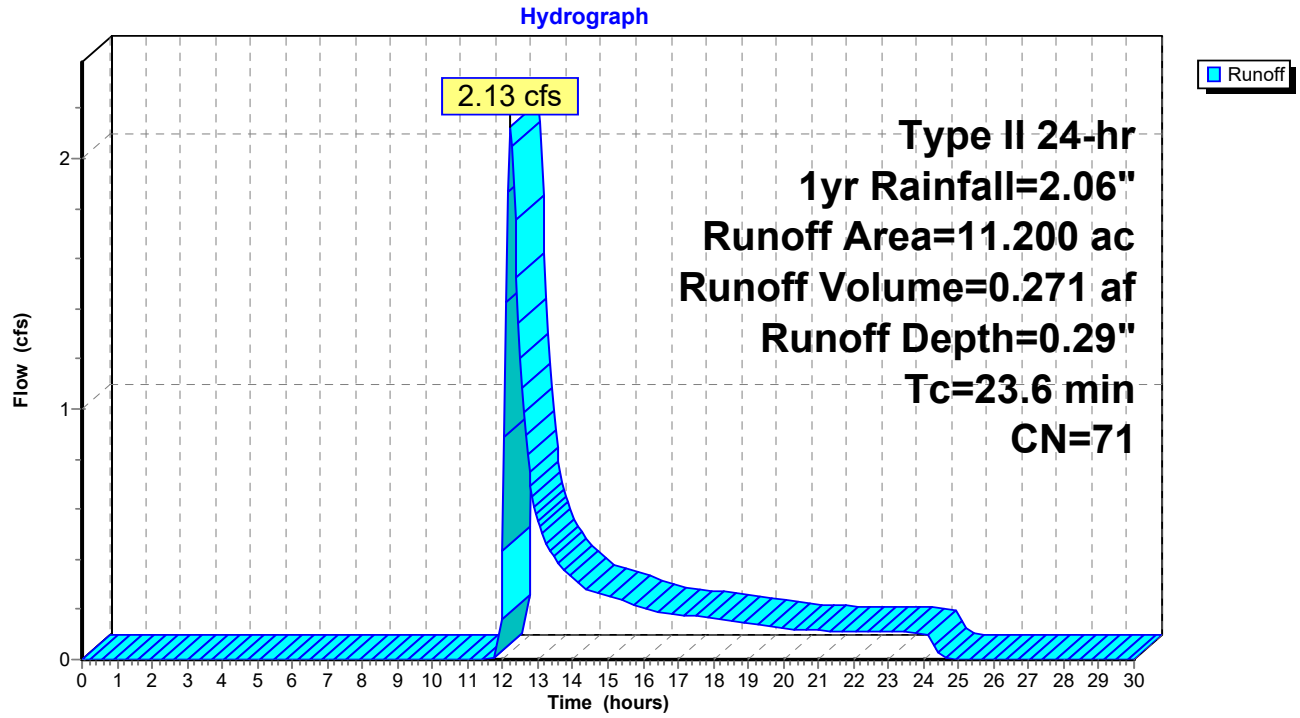
Runoff = 2.13 cfs @ 12.23 hrs, Volume= 0.271 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	10.990	71	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	71	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1S: Drainage Area 1 - POST



Summary for Subcatchment 2S: Drainage Area 2 - POST

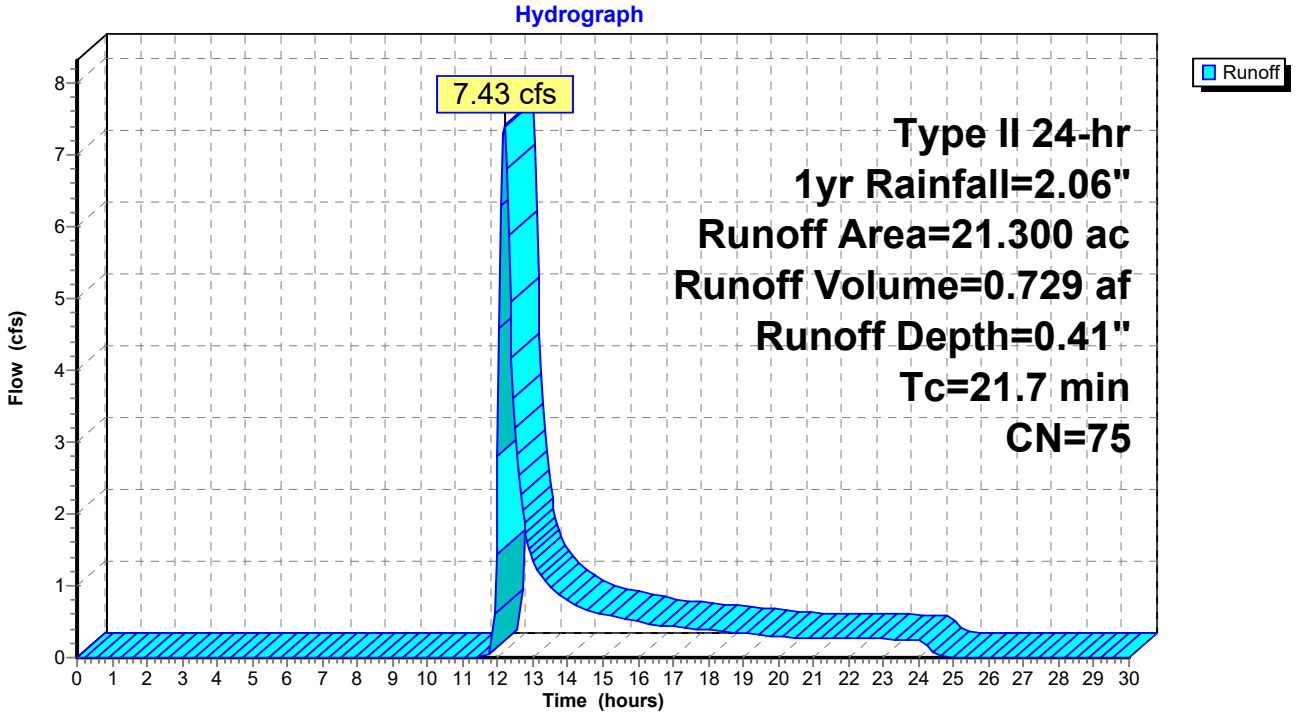
Runoff = 7.43 cfs @ 12.18 hrs, Volume= 0.729 af, Depth= 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 1yr Rainfall=2.06"

	Area (ac)	CN	Description
*	21.080	75	Weighted CN from TR55
*	0.018	98	concrete pads
*	0.202	89	Roadway
	21.300	75	Weighted Average
	21.282		99.92% Pervious Area
	0.018		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2S: Drainage Area 2 - POST

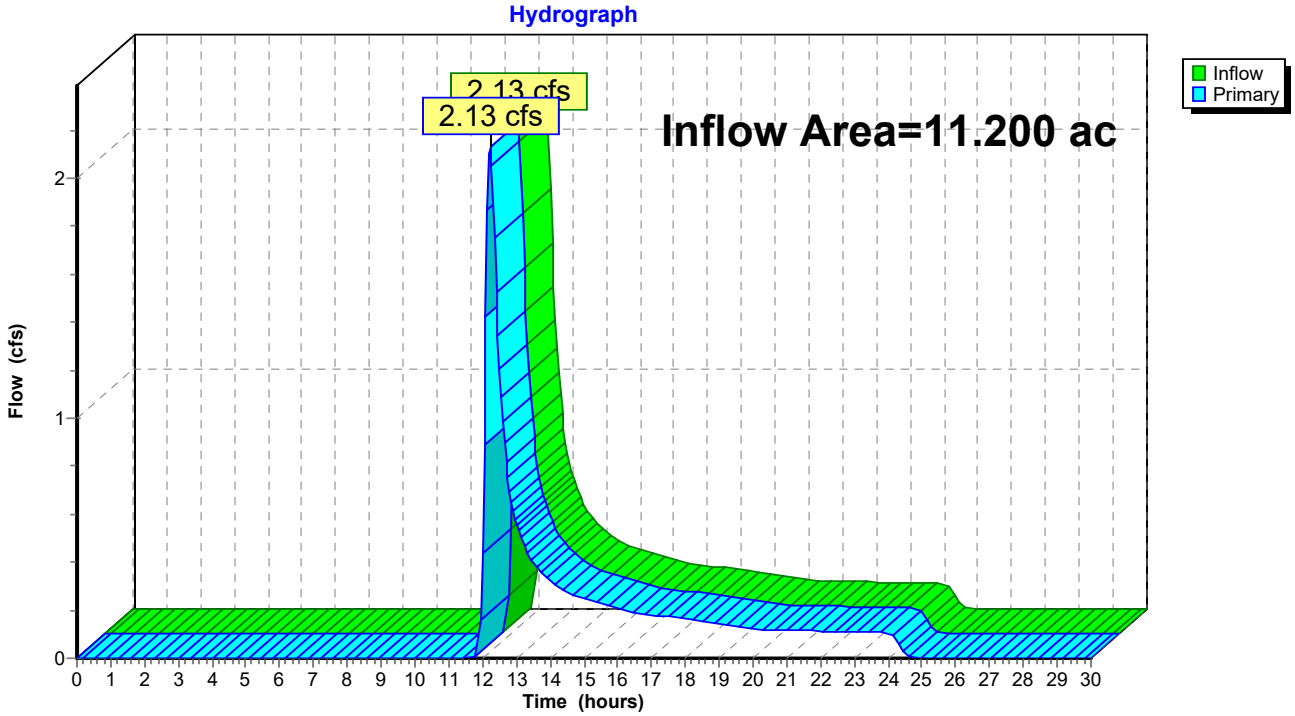


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 0.29" for 1yr event
Inflow = 2.13 cfs @ 12.23 hrs, Volume= 0.271 af
Primary = 2.13 cfs @ 12.23 hrs, Volume= 0.271 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

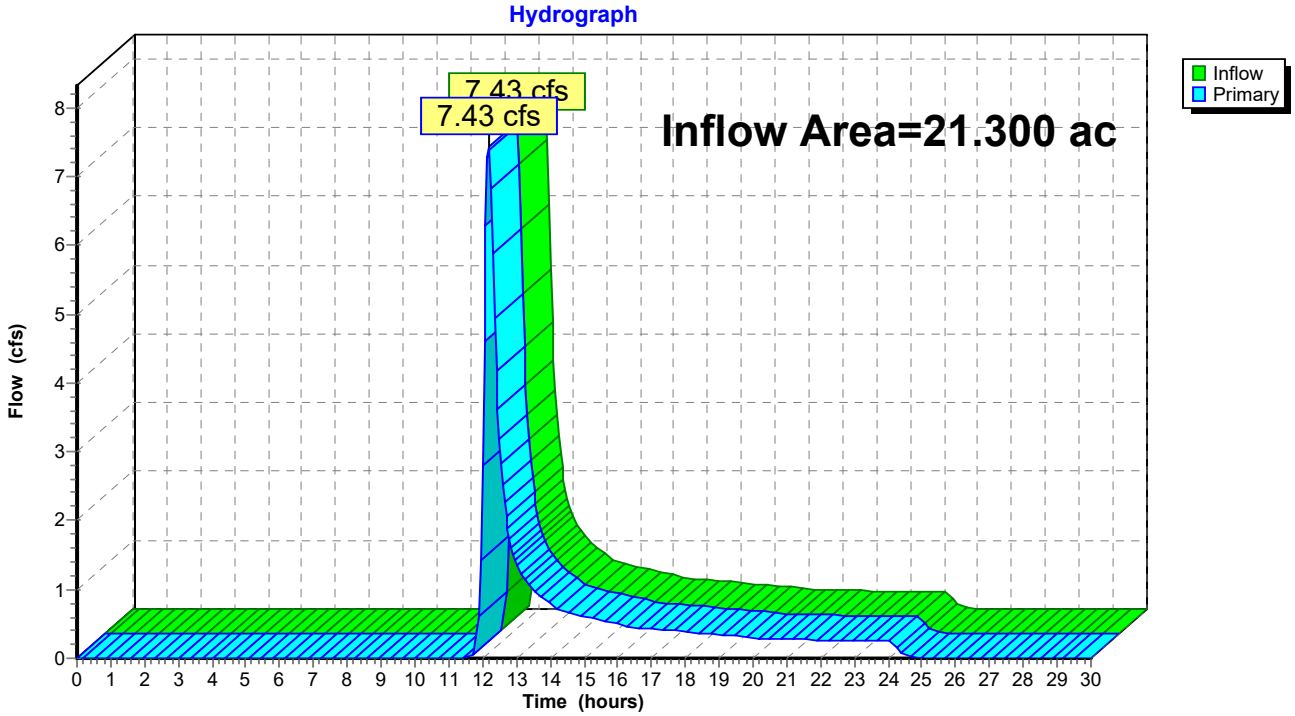


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.08% Impervious, Inflow Depth = 0.41" for 1yr event
Inflow = 7.43 cfs @ 12.18 hrs, Volume= 0.729 af
Primary = 7.43 cfs @ 12.18 hrs, Volume= 0.729 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2



Summary for Subcatchment 1S: Drainage Area 1 - POST

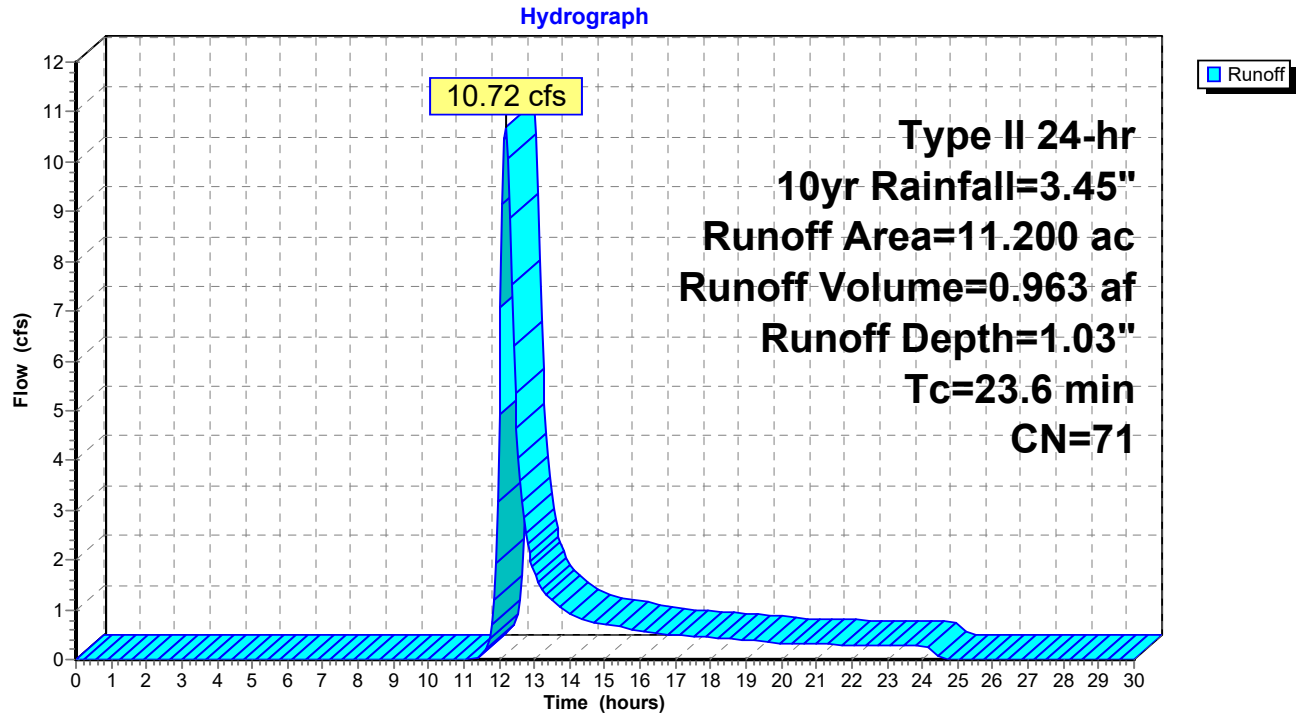
Runoff = 10.72 cfs @ 12.19 hrs, Volume= 0.963 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	10.990	71	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	71	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1S: Drainage Area 1 - POST



Summary for Subcatchment 2S: Drainage Area 2 - POST

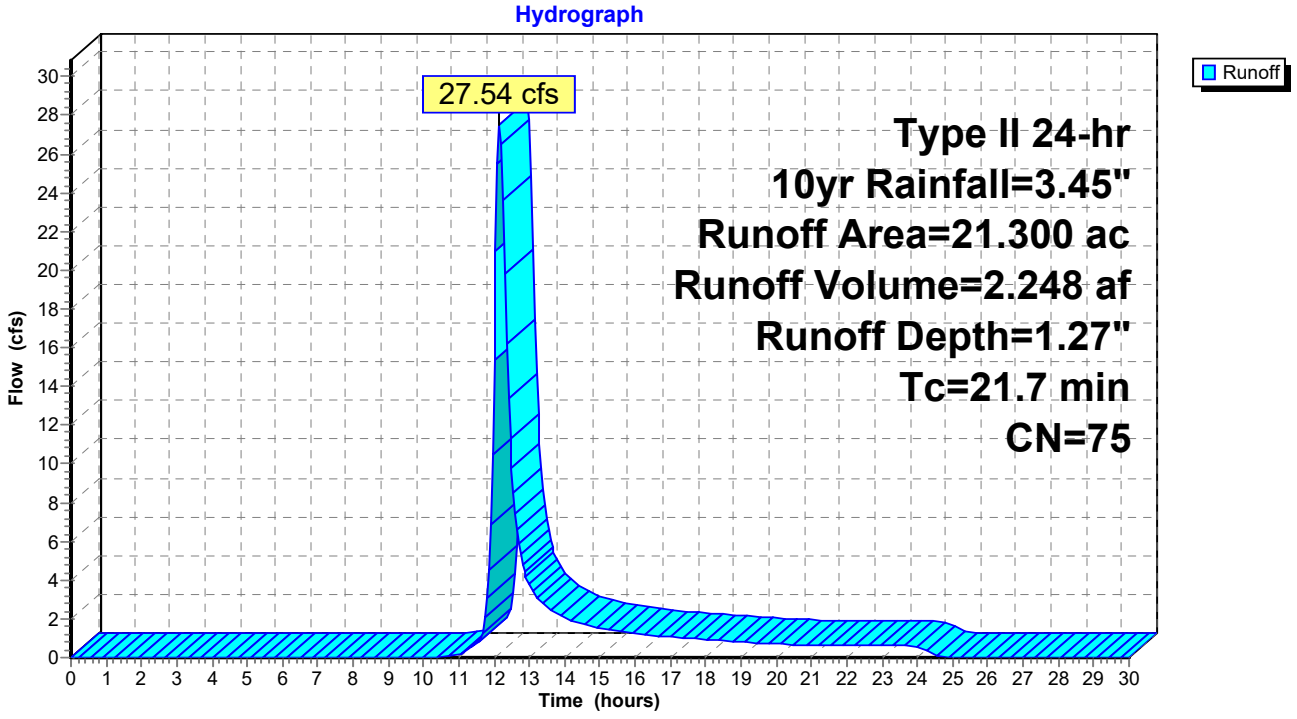
Runoff = 27.54 cfs @ 12.16 hrs, Volume= 2.248 af, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 10yr Rainfall=3.45"

	Area (ac)	CN	Description
*	21.080	75	Weighted CN from TR55
*	0.018	98	concrete pads
*	0.202	89	Roadway
	21.300	75	Weighted Average
	21.282		99.92% Pervious Area
	0.018		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2S: Drainage Area 2 - POST

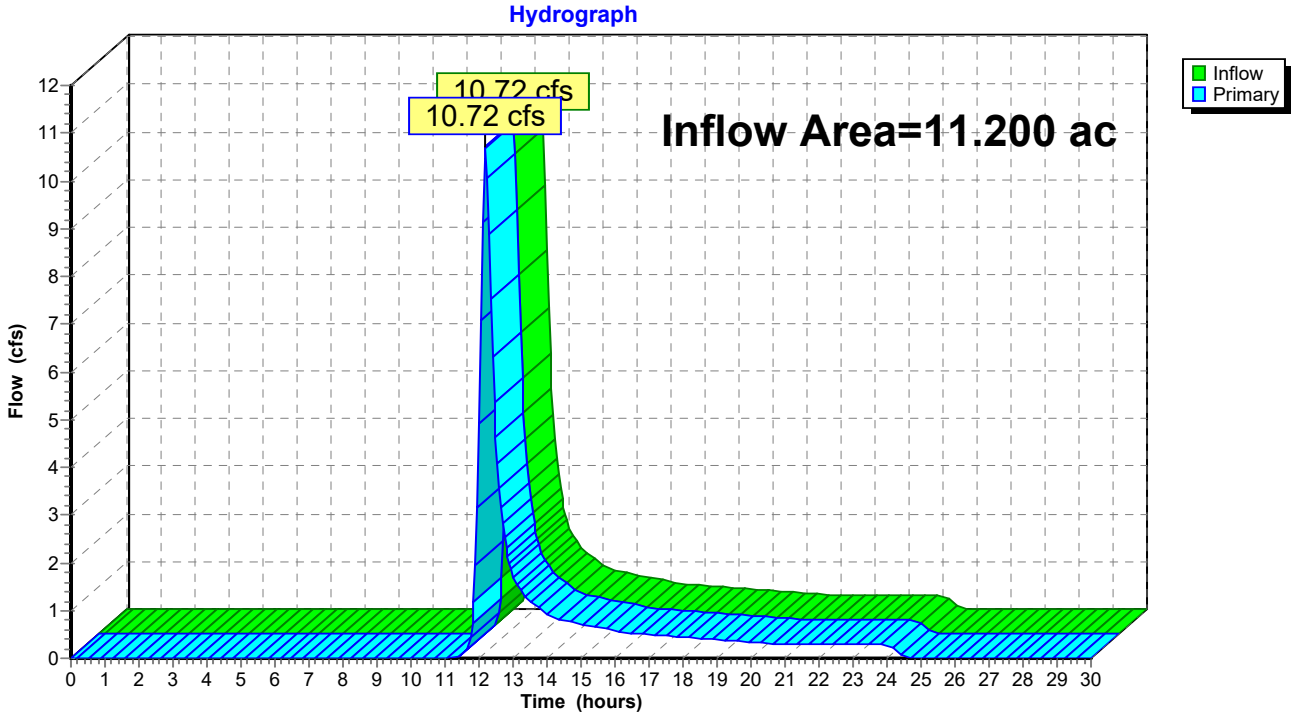


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 1.03" for 10yr event
Inflow = 10.72 cfs @ 12.19 hrs, Volume= 0.963 af
Primary = 10.72 cfs @ 12.19 hrs, Volume= 0.963 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

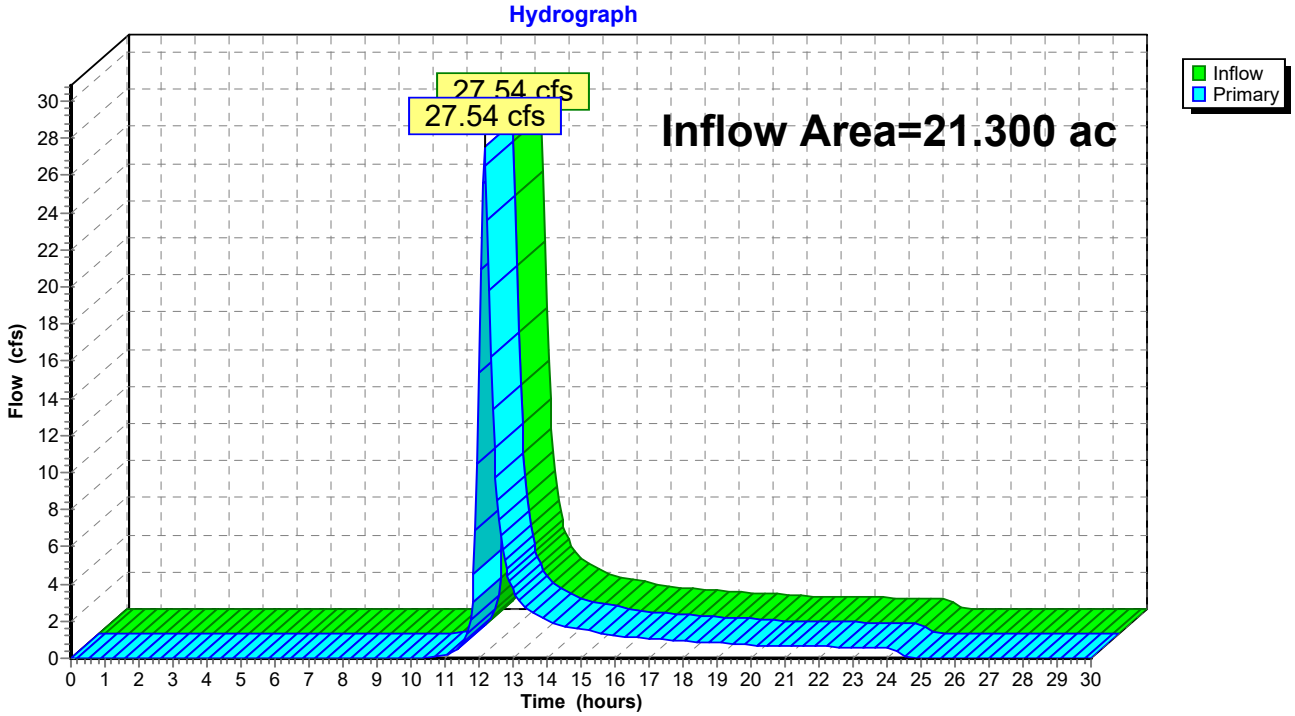


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.08% Impervious, Inflow Depth = 1.27" for 10yr event
Inflow = 27.54 cfs @ 12.16 hrs, Volume= 2.248 af
Primary = 27.54 cfs @ 12.16 hrs, Volume= 2.248 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2



Summary for Subcatchment 1S: Drainage Area 1 - POST

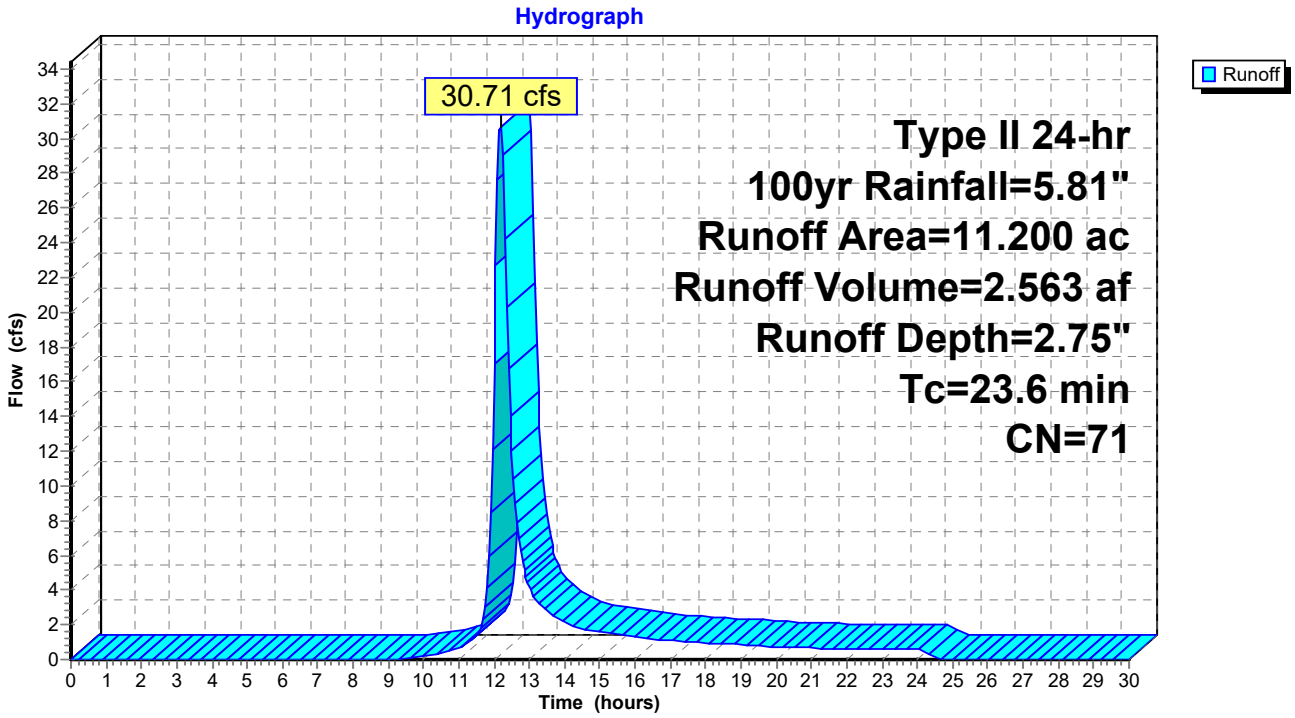
Runoff = 30.71 cfs @ 12.17 hrs, Volume= 2.563 af, Depth= 2.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	10.990	71	Weighted CN from TR55
*	0.210	89	Roadway
	11.200	71	Weighted Average
	11.200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6					**Direct Entry, TR55**

Subcatchment 1S: Drainage Area 1 - POST



Summary for Subcatchment 2S: Drainage Area 2 - POST

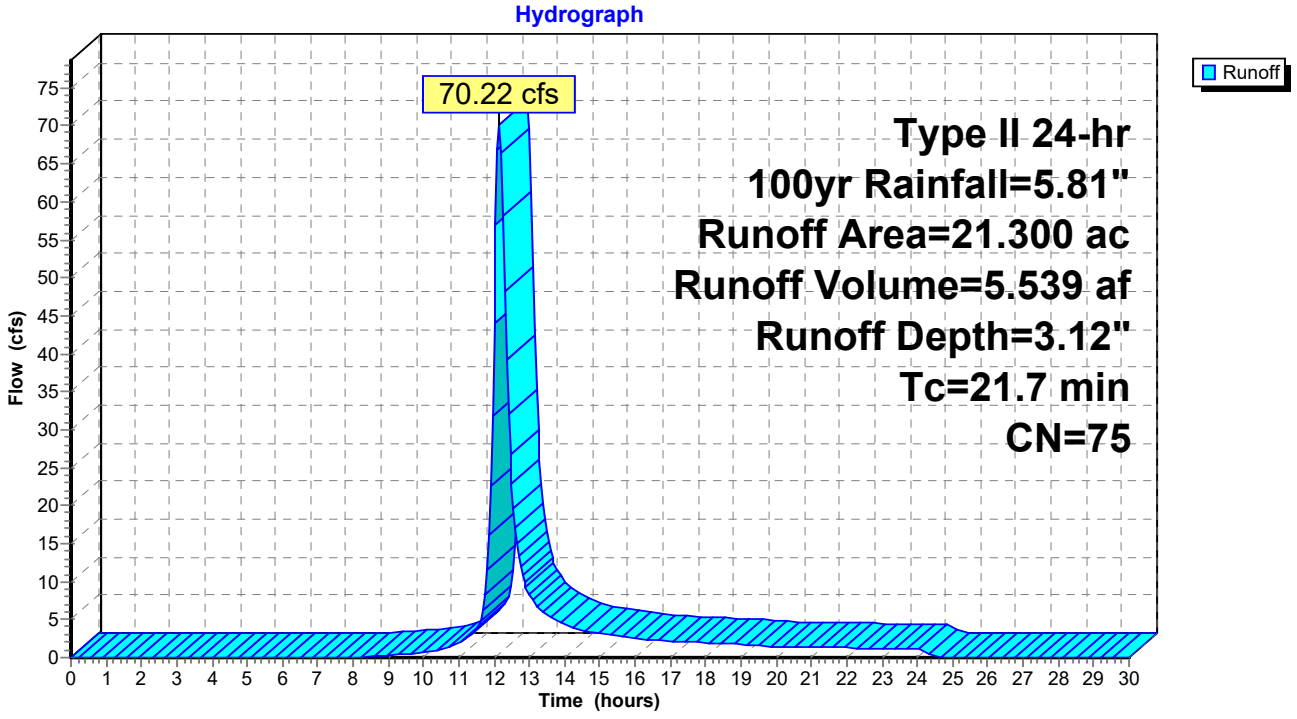
Runoff = 70.22 cfs @ 12.15 hrs, Volume= 5.539 af, Depth= 3.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs
Type II 24-hr 100yr Rainfall=5.81"

	Area (ac)	CN	Description
*	21.080	75	Weighted CN from TR55
*	0.018	98	concrete pads
*	0.202	89	Roadway
	21.300	75	Weighted Average
	21.282		99.92% Pervious Area
	0.018		0.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, TR55 Tc**

Subcatchment 2S: Drainage Area 2 - POST

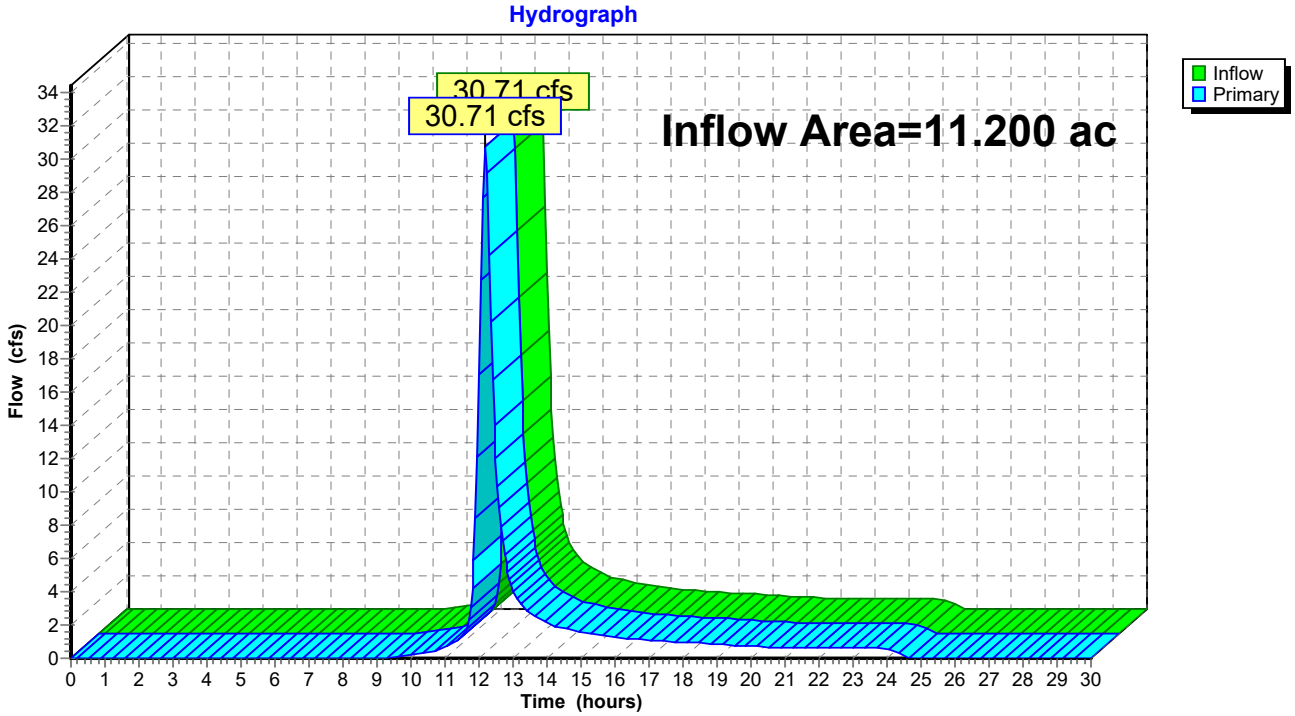


Summary for Link 1L: DP-1

Inflow Area = 11.200 ac, 0.00% Impervious, Inflow Depth = 2.75" for 100yr event
Inflow = 30.71 cfs @ 12.17 hrs, Volume= 2.563 af
Primary = 30.71 cfs @ 12.17 hrs, Volume= 2.563 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 1L: DP-1

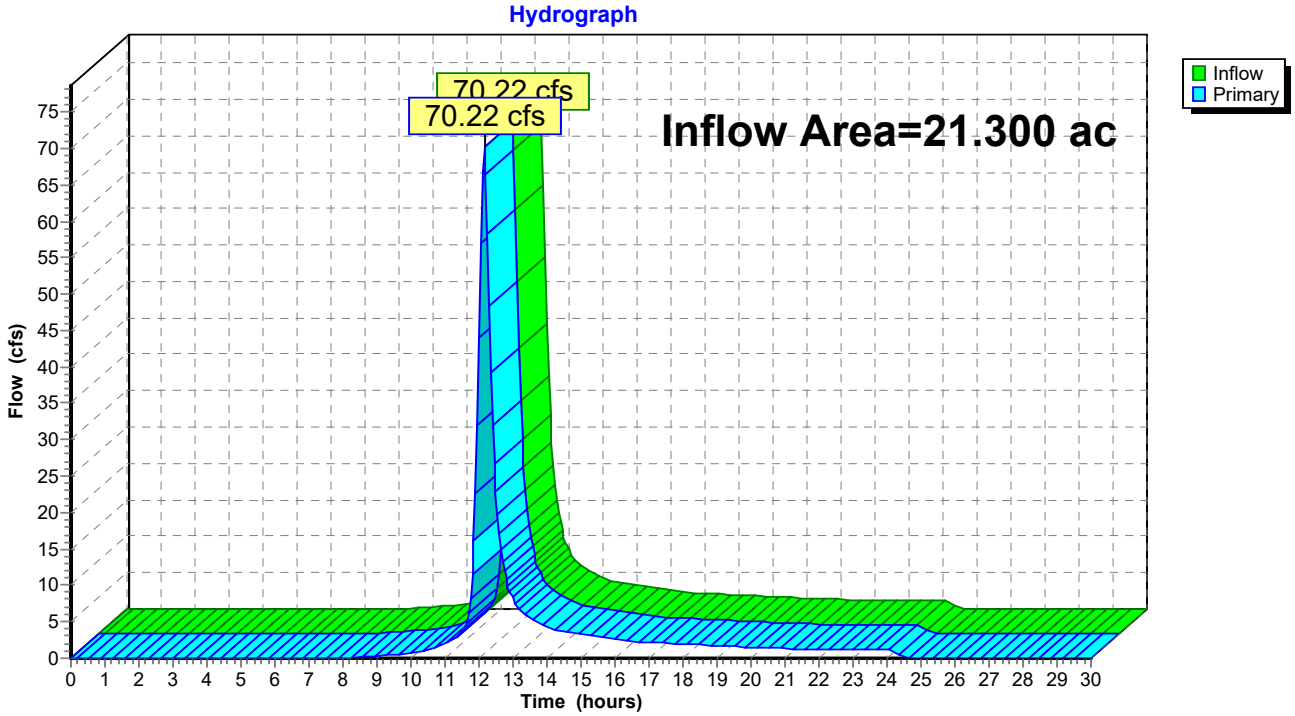


Summary for Link 2L: DP-2

Inflow Area = 21.300 ac, 0.08% Impervious, Inflow Depth = 3.12" for 100yr event
Inflow = 70.22 cfs @ 12.15 hrs, Volume= 5.539 af
Primary = 70.22 cfs @ 12.15 hrs, Volume= 5.539 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.05 hrs

Link 2L: DP-2



APPENDIX J – NOTICE OF INTENT (NOI)

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Falck Renewables

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
DAmico

Owner/Operator Contact Person First Name
Andrew

Owner/Operator Mailing Address
One Bridge Street, Suite 11

City
Irvington

State
NY

Zip
10533-

Phone (Owner/Operator)
201-286-2069

Fax (Owner/Operator)

Email (Owner/Operator)
andrew.d'amico@falckrenewables.com

FED TAX ID
--
(not required for individuals)

Project Site Information

Project/Site Name
NORTH EAGLE VILLAGE ROAD SOLAR

Street Address (NOT P.O. BOX)
5062 N. EAGLE VILLAGE ROAD

Side of Street
● **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
MANLIUS

State: NY
Zip: 13104-
County: ONANDOGA
DEC Region: 7

Name of Nearest Cross Street
Townsend Road

Distance to Nearest Cross Street (Feet)
1100

Project In Relation to Cross Street
○ **North** ○ **South** ○ **East** ● **West**

Tax Map Numbers
Section-Block-Parcel
098.-01-15.0

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 5 9 5 8 2
Ex. -73.749

Y Coordinates (Northing)
4 3 0 2 2 9 1
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ● CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ● OTHER SOLAR

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
21.3	21.3	0.0	0.6

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	70 %	30 %

7. Is this a phased project? ○ **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date / / – **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Wetland

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ● Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Town of Manlius

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Tetra Tech, Inc.

Contact Name (Last, Space, First)

Sielski, Brian

Mailing Address

6 Century Road, Suite 300

City

Parsippany

State Zip

NJ 07054-

Phone

973-630-8167

Fax

Email

brian.sielski@tetratech.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name

MI

Last Name

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ○ Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ○ Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

VEGETATED SWALES

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ● **Locating Development in Less Sensitive Areas**
- ● **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ○ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ● Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

0.043 **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
○ Bioretention (F-5)			
● Dry Swale (O-1)			0.42
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other** [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name [ ]

Manufacturer [ ]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.034 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.010 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.008 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). 0.043

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required . **acre-feet**

CPv Provided . **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

● Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development 114.21 **CFS**

Post-development 78.59 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development 227.94 **CFS**

Post-development 183.69 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ● **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

Soil types C & D on site limit the efficiency of the proposed vegetative swales. Non-rooftop disconnection was utilized for areas of the solar array where no impervious surfaces are proposed. The change in ground cover type from existing agricultural to permanent grass cover on site results in a runoff reduction.

Long term operations and maintenance plan for post-construction stormwater management practices will be implemented into the Owner/Operators overall operations and maintenance plan prior to construction.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ● **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date / /

APPENDIX K – NOTICE OF TERMINATION (NOT)

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

APPENDIX L – CERTIFICATION STATEMENTS

CONTRACTOR CERTIFICATION PAGE

North Eagle Solar Project

5062 North Eagle Village Road, Manlius, NY 13104

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollution Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Name of Contractor/Subcontractor	Phone Number
Address	City, State, Zip Code
Signature of Person Completing this Form	Date
Printed Name	Title
Name of Trained Contractor	Title

Responsibilities (check all that apply):

Erosion and Sediment Control Practices:

- ❑ Installation and/or construction
- ❑ Repair
- ❑ Replacement
- ❑ Inspection
- ❑ Maintenance

Post-construction SMPs:

- ❑ Construction
- ❑ Repair
- ❑ Inspection
- ❑ Operation & Maintenance

CONTRACTOR CERTIFICATION PAGE

North Eagle Solar Project

5062 North Eagle Village Road, Manlius, NY 13104

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version of the New York State Pollution Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations."

Name of Contractor/Subcontractor	Phone Number
Address	City, State, Zip Code
Signature of Person Completing this Form	Date
Printed Name	Title
Name of Trained Contractor	Title

Responsibilities (check all that apply):

Erosion and Sediment Control Practices:

- ❑ Installation and/or construction
- ❑ Repair
- ❑ Replacement
- ❑ Inspection
- ❑ Maintenance

Post-construction SMPs:

- ❑ Construction
- ❑ Repair
- ❑ Inspection
- ❑ Operation & Maintenance

APPENDIX M – INSPECTION FORMS

I. **PRE-CONSTRUCTION MEETING DOCUMENTS**

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. **Preamble to Site Assessment and Inspections**

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified inspector[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting should be held to review all of the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector at least every 7 calendar days. The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified inspector perform a final site inspection. The qualified inspector shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 Refer to "Qualified Inspector" inspection requirements in the current SPDES General Permit for Stormwater Discharges from Construction Activity for complete list of inspection requirements.
2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.
3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:

Inspection Forms will be filled out during the entire construction phase of the project.

Required Elements:

1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass water; and

6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

Inspector (print name)	**Date of Inspection**
Qualified Inspector (print name)	**Qualified Inspector Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA

[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

[ ] [ ] [ ] Is construction site litter, debris and spoils appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

3. Stabilized Construction Access

Yes No NA

[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

Runoff Control Practices (continued)

2. Flow Spreader

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

4. Stone Check Dam

Yes No NA

[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Silt Fence and Linear Barriers

Yes No NA

[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

2. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated; Filter Sock or Manufactured practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
[ ] [ ] [ ] Manufactured insert fabric is free of tears and punctures.
[ ] [ ] [ ] Filter Sock is not torn or flattened and fill material is contained within the mesh sock.

Sediment accumulation ___% of design capacity.

3. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.
[ ] [ ] [ ] Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is ___% of design capacity.

4. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
[ ] [ ] [ ] Sediment basin dewatering pool is dewatering at appropriate rate.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design. All practices shall be maintained in accordance with their respective standards.

Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:

1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

APPENDIX N – INSPECTION REPORTS & PHOTO LOG

Exhibit E

LONG EAF

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project: North Eagle Solar		
Project Location (describe, and attach a general location map): 5062 North Eagle Village Road, Manlius, New York		
Brief Description of Proposed Action (include purpose or need): EF NY CDG 001, LLC (Falck Renewables) proposes the development of approximately 21.3 acres of a larger 44.71-acre parcel of private land in Onondaga County into a ground-mounted photovoltaic (PV) solar energy generating facility (North Eagle Solar). The proposed project would be capable of delivering about 7,5000 kilowatts (kW) of alternating electric current (AC) to the electrical power grid, which is sufficient to provide renewable energy to approximately 600 households. The PV panels proposed for this project are similar to solar panels utilized for typical residential roof top installations and would be placed on a racking system either pile driven or screw mounted to the ground surface. The PV project will be directly interconnected to, and provide energy to, National Grid's local electric distribution grid via either underground or overhead electrical service. Prior to utility interconnection, direct current (DC) electrical power generated by the solar panels will be transformed to AC power and modified as necessary to connect to National Grid's electrical power supply. The project would also include an equipment pad, a gravel access road and would be surrounded by a chain-linked security fence.		
Name of Applicant/Sponsor: Falck Renewables	Telephone: E-Mail:	
Address: One Bridge Street, Suite 11		
City/PO: Irvington	State: New York	Zip Code: 10533
Project Contact (if not same as sponsor; give name and title/role): Jonathan Koch	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor): Paul Shapero	Telephone: (315) 263-0597 E-Mail:	
Address: 5062 N. Eagle Village Road		
City/PO: Manlius	State: New York	Zip Code: 13104

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Town of Manlius: Special Permit	4/16/2020
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town of Manlius: Special Permit Approval	4/16/2020
c. City, Town or Village Zoning Board of Appeals ☐Yes ☑No		
d. Other local agencies ☐Yes ☑No		
e. County agencies ☐Yes ☑No		
f. Regional agencies ☐Yes ☑No		
g. State agencies ☑Yes ☐No	NYSERDA Grant; NYS Ag & Markets Review, SPDES General Permit	4/16/2020
h. Federal agencies ☐Yes ☑No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☑Yes ☐No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☑No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☑Yes ☐No

If Yes, identify the plan(s):

Onondaga County Agriculture and Farmland Protection Plan

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Fayetteville-Manlius Central School District

b. What police or other public protection forces serve the project site?
Town of Manlius Police Department

c. Which fire protection and emergency medical services serve the project site?
Minoa Fire Department, Fayetteville Fire Department

d. What parks serve the project site?
Green Lakes State Park, Mill Run Park, Beard Park, Lewis Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?

b. a. Total acreage of the site of the proposed action? 21.3 acres
b. Total acreage to be physically disturbed? 44.71 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 23 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)

ii. Is a cluster/conservation layout proposed? ☐ Yes ☑ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: _____ months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☐Yes ☑No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑Yes ☐No

If Yes,

i. Total number of structures 7,500 kW

ii. Dimensions (in feet) of largest proposed structure: 7 to 10 height; 550 ft width; and 800 ft length

iii. Approximate extent of building space to be heated or cooled: 0 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☐Yes ☑No

If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☐Other specify:

_____

iii. If other than water, identify the type of impounded/contained liquids and their source.

_____

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):

_____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? ☐Yes ☑No
(Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

iv. Will there be onsite dewatering or processing of excavated materials? ☐Yes ☑No
If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐Yes ☐No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐Yes ☑No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

_____

_____

_____

_____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No

If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____

_____

- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

_____

c. Will the proposed action use, or create a new demand for water? ☐Yes ☑No

If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☐Yes ☐No

If Yes:

- Name of district or service area: _____
- Does the existing public water supply have capacity to serve the proposal? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No
- Do existing lines serve the project site? ☐Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☐No

If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

_____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☐Yes ☑No

If Yes:

i. Total anticipated liquid waste generation per day: _____ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

_____

_____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☐Yes ☐No

If Yes:

- Name of wastewater treatment plant to be used: _____
- Name of district: _____
- Does the existing wastewater treatment plant have capacity to serve the project? ☐Yes ☐No
- Is the project site in the existing district? ☐Yes ☐No
- Is expansion of the district needed? ☐Yes ☐No

- Do existing sewer lines serve the project site? ☐Yes ☐No
- Will a line extension within an existing district be necessary to serve the project? ☐Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

_____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☐No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

_____

_____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 0.63 acres (impervious surface)

_____ Square feet or 44.7 acres (parcel size)

ii. Describe types of new point sources. _____

_____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

_____

_____

- If to surface waters, identify receiving water bodies or wetlands: _____

_____

_____

- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

_____

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

_____

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

_____

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

_____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☑No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

_____

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7am-5pm
- Saturday: N/A
- Sunday: N/A
- Holidays: N/A

ii. During Operations:

- Monday - Friday: Daylight Hours
- Saturday: Daylight Hours
- Sunday: Daylight Hours
- Holidays: Daylight Hours

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☐ Yes ☑ No

If yes:

i. Provide details including sources, time of day and duration:

_____

_____

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☐ No

Describe: _____

_____

n. Will the proposed action have outdoor lighting? ☐ Yes ☑ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

_____

_____

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☐ No

Describe: _____

_____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

_____

_____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:_____

_____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

_____

_____

_____

_____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____

  _____
- Operation: _____

  _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____

  _____
- Operation: _____

  _____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☑ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

Primarily used for agriculture with minimal residential development

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0	0	0
• Forested	0	0	0
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	0	0	0
• Agricultural (includes active orchards, field, greenhouse etc.)	21.3	0	-21.3
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	0	0
• Wetlands (freshwater or tidal)	0	0	0
• Non-vegetated (bare rock, earth or fill)	0	0	0
• Other Describe: Ground mounted solar array, equipment pad, and gravel access road	0	21.3	+21.3

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No

If Yes,

i. Identify Facilities:

_____

_____

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☑ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☐ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? 2-3 feet

b. Are there bedrock outcroppings on the project site? ☑ Yes ☐ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? 2.6 %

c. Predominant soil type(s) present on project site:

Benson silt loam	39.7 %
Benson-Wassaic Rock Outcrop	2.6 %
Wassaic silt loam	57.6 %

d. What is the average depth to the water table on the project site? Average: 2-6 feet

e. Drainage status of project site soils:
☑ Well Drained: 42.3 % of site
☑ Moderately Well Drained: 57.6 % of site
☐ Poorly Drained _____ % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 100 % of site
☐ 10-15%: _____ % of site
☐ 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification R4SBC
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters, Federal Waters, Federal Waters Approximate Size 0.52
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☑ Yes ☐ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____
Name - Pollutants - Uses:Limestone Creek, Lower, and minor tribs – Pathogens;D.O./Oxygen Demand;Aesthetics – Recreation;Aquatic...

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site: _____

_____ _____ _____

_____ _____ _____

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑ Yes ☐ No

If Yes:

i. Species and listing (endangered or threatened): _____

Northern Long-eared Bat

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

If Yes:

i. Species and listing: _____

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☑ Yes ☐ No

If Yes, provide county plus district name/number: ONON003

b. Are agricultural lands consisting of highly productive soils present? ☑ Yes ☐ No

i. If Yes: acreage(s) on project site? 21.3

ii. Source(s) of soil rating(s): Prime Farmland

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Greenlakes State Park, National Natural Landmark (Round Lake), and NYS State Trail (Bike Path)

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): State Parks and National Natural Lake

iii. Distance between project and resource: West and North 1- 2 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

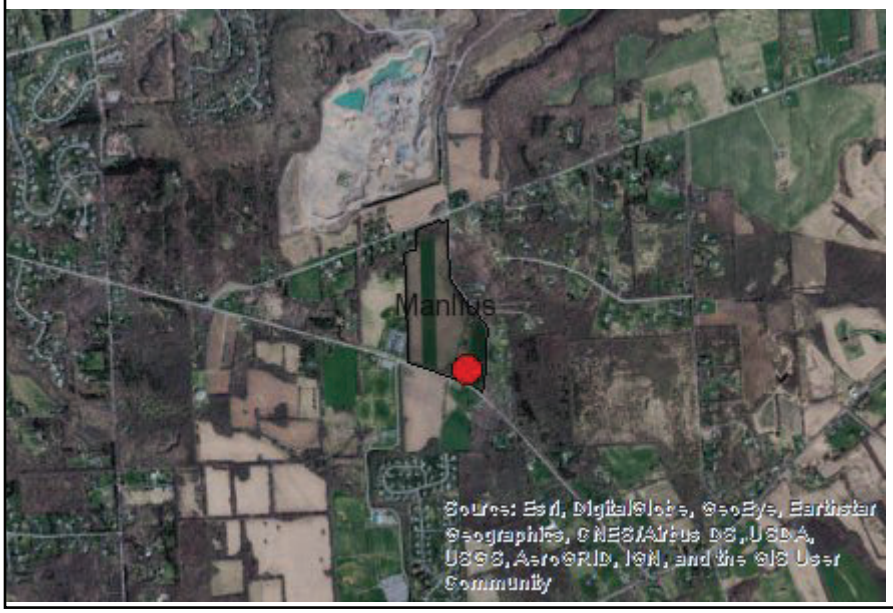
Applicant/Sponsor Name Jodi Hunt Date 4/16/2020

Signature Jodi2 Hunt Title Project Manager

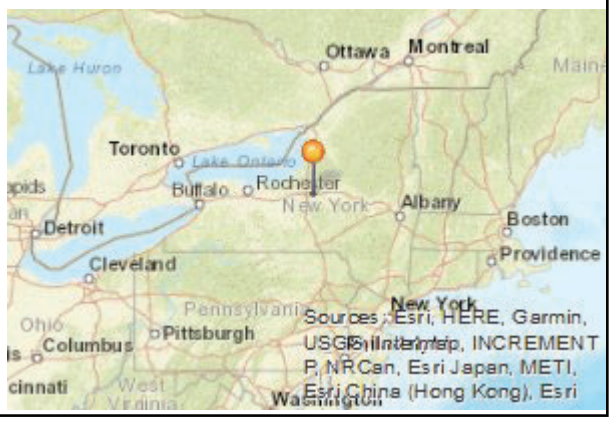
PRINT FORM

EAF Mapper Summary Report

Tuesday, March 31, 2020 8:13 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	Yes
E.2.h.v [Impaired Water Bodies - Name and Basis for Listing]	Name - Pollutants - Uses:Limestone Creek, Lower, and minor tribs – Pathogens;D.O./Oxygen Demand;Aesthetics – Recreation;Aquatic Life
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No

E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes
E.2.o. [Endangered or Threatened Species - Name]	Northern Long-eared Bat
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	Yes
E.3.a. [Agricultural District]	ONON003
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

Exhibit F

WETLAND REPORT

Wetland Delineation Report

Proposed Green Lakes Solar Site

5062 North Eagle Village Road
Manlius, New York 13104

April 6, 2020

Prepared by:

Tetra Tech, Inc.
3136 South Winton Road, Suite 303
Rochester, NY 14623
Phone: (585) 417-4002

Prepared for:

Falck Renewables
One Bridge Street, Suite 11
Irvington, New York 10533

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Figure 2 Mapped Water Features
Figure 3 NRCS Soil Units
Figure 4 Delineated Wetlands and Streams

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Appendix B Wetland Data Forms
Appendix C Select Site Photographs

1.0 INTRODUCTION

EF NY CDG 001, LLC (Falck Renewables) is proposing to construct a ground-mounted solar facility located at 5062 North Eagle Village Road, Manlius, New York (hereafter referred to as the "Site"). The Site includes approximately 44.71 acres of land (Figure 1).

Tetra Tech, Inc. (Tetra Tech) was retained by Falck Renewables to delineate wetlands in support of potential state and federal wetland permits. This wetland delineation report summarizes the results of the wetland delineation effort and includes a description of the Site, methods used to delineate wetlands, information reviewed, field survey results, a summary and a references section. Attached appendices include data forms and select site photographs.

1.1 Regulatory Framework

In New York, wetlands are jointly regulated by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (USACE). New York State's freshwater wetlands are protected under Article 24 of the Environmental Conservation Law, commonly referred to as the Freshwater Wetlands Act. Pursuant to Article 24, New York regulates wetlands greater than 12.4 acres or wetlands of any size that possess unique qualities. In addition, to protect and preserve wetlands, New York regulates a wetlands adjacent area, which is defined as those areas of land or water that are outside a wetland and within 100 feet of the wetland boundary. The USACE has regulatory jurisdiction over waters of the United States including wetlands pursuant to Section 404 of the Clean Water Act, and jurisdiction over Navigable Waters of the United States pursuant to Section 10 of the 1899 Rivers and Harbors Act.

2.0 SITE DESCRIPTION

The Site is located in the central portion of New York, approximately 1.7 miles northeast of Manlius, New York. It is surrounded by agricultural fields, undeveloped forest, and residential properties. As identified above, the Site is located on a 44.71-acre parcel located adjacent to Townsend Road to the east, N. Eagle Village Road to the south, and Salt Springs Road to the north. The parcel is mainly comprised of agricultural fields (soybean), undeveloped forest, and residential property. There are several storage structures and a residential home located in the southeast corner of the Site.

3.0 METHODS

Wetland boundaries were delineated in the field using the Routine Onsite Determination Method, as described in the United States Army Corps of Engineers (USACE) Wetlands Delineation Manual (USACE, 1987), together with region-specific methods and guidelines provided in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0 (USACE, 2012). In addition, the Routine Delineation Procedure, as described in the New York State Freshwater Wetlands Delineation Manual (Browne et al., 1995) was also considered. These methods incorporate a three-parameter approach using vegetation, soils, and hydrology to identify the presence of freshwater wetlands.

The presence of a wetland was field-verified by analyzing dominant vegetation, soil classification, and hydrology at one sample station within each investigated area. Under the New York State method, the presence of hydrophytic vegetation characteristics (i.e., greater than 50 percent facultative wet (FACW) or wetter species, 10 percent or greater areal cover of obligate (OBL) perennial species, morphological adaptions, or expanses of peat mosses over persistently saturated soils) typically indicates a wetland, and an area that exhibits these indicators can generally be considered a wetland without detailed examination of hydrology and/or soils.

Dominant vegetation in each stratum (tree, shrub, herbaceous, and vine) was identified using appropriate regional field guides. Wetland indicator statuses for dominant species were obtained from the National Wetland Plant List (U.S. Army Corps of Engineers 2016). Wetlands were classified based on the United States Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) classification hierarchy (USFWS 2018). Classifications were assigned by determining the most abundant type classification(s) in the wetland. A wetland was assigned multiple type classifications if more than one class comprised at least 30 percent areal coverage. Soil borings were obtained by using a hand-held augur, which was advanced to a depth of 20 inches, when possible. Soil profiles/characteristics were recorded in standard soil log format and soil colors were determined using a Munsell Soil Color Chart (Kollmorgen Corporation, 2000). Primary and secondary wetland hydrology indicators were also visually assessed and recorded.

The USGS National Hydrology Dataset (NHD) is a digital geospatial dataset that maps and models the surface water of the United States. It represents the water drainage networks of the Site and surrounding area, describing features such as rivers, streams, lakes, and ponds.

Data from the United States Department of Agriculture Natural Resource Conservation Service (USDA NRCS) provided soil maps and soil surveys for the counties of New York State, specifically Onondaga County. This data provides information on the soil types and series found within the region. Information and soil data for the Site could be found through the USDA Web Soil Survey (WSS).

Wetland boundary points and sample stations, and stream centerlines were recorded using a Trimble GeoExplorer 7X GPS handheld unit. This unit generally provides sub-meter accuracy; however, accuracy can range within three to five meters.

4.0 INFORMATION REVIEW

4.1 Mapped Wetlands and Streams

Federal and state data regarding mapped wetlands were reviewed for the Site (Figure 2). Data from the USFWS NWI identified one mapped freshwater riverine wetland within the parcel, making up approximately 0.52-acres within the Site, located along the southeastern corner of the Site. The NWI wetland was identified as riverine, intermittent, streambed, seasonally flooded (R4SBC).

NYSDEC regulated mapped wetlands were not identified within the Site boundaries. Although there were no mapped NYSDEC wetlands identified on the Site, the NYSDEC may also regulate any wetlands that are 12.4 acres or larger. This acreage includes all wetlands that are hydrologically connected, both on-Site and off-Site. The closest state regulated mapped freshwater wetland to the Site is located approximately 0.9 miles to the northeast (NYSDEC Wetland MAN-10). This state mapped wetland is listed as occupying 57.4-acres and is classified as a Class 1 wetland. The NYSDEC ranks wetlands in one of four classes ranging from Class 1, which provide the most benefits, to Class 4, which provide the fewest benefits.

USGS National Hydrography Dataset (NHD) stream was identified in the same locations as the NWI mapped riverine wetland described above. Approximately 1,131.12 linear feet of an NHD mapped stream occurs within the parcel and east of the Site.

4.2 Soil Survey

According to the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey for Onondaga County, New York (2020), three mapped soil units were identified within the Site (Figure 3). The hydric rating indicates the percentage of a mapped soil unit's components that meets the criteria for hydric soils. None of the mapped soils have a hydric rating. Mapped soil units on-Site include the following:

- **Benson silt loam, undulating (BeB)** – BeB soils occupy approximately 18.8-acres of the Site or 39.7 percent. These soils include approximately 80 percent Benson components. The parent material of the Benson soil consists of channery loamy till underlain by limestone or calcareous shale. Benson soils are generally moderately well drained soils that occur on level to very steep benches, bedrock ridges, and till plains. There is no zone of water saturation for this component within a depth of 72 inches. These soils do not meet the hydric criteria.
- **Benson-Wassaic-Rock outcrop association, sloping (BNC)** – BNC soils occupy approximately 1.3-acres of the Site or 2.6 percent. These soils include approximately 30 percent Benson, 30 percent Wassaic, and 20 percent rock outcrop components. The parent material of the Benson soil consists of channery loamy till underlain by limestone or calcareous shale. Benson soils are generally moderately well drained soils. There is no zone of water saturation for this component within a depth of 72 inches. The parent material of the Wassaic soil consists of loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock. Wassaic soils are generally moderately drained soils. There is no zone of water saturation for this component within a depth of 72 inches. This soil complex is found on the broad flat tops or the sides of limestone bedrock-controlled landforms. These soils do not meet the hydric criteria.
- **Wassaic silt loam, 0 to 8 percent slopes (WcB)** – WeB soils occupy approximately 27.2-acres of the Site or 57.6 percent. These soils include approximately 75 percent Wassaic components. The parent material of the Wassaic soil consists of loamy till derived mainly from limestone, with varying amounts of sandstone, shale, and crystalline rock. Wassaic soils are generally moderately drained soils, found on upland ridges, till plains and benches where the underlying bedrock affects the relief. There is no zone of water saturation for this component within a depth of 72 inches. These soils do not meet the hydric criteria.

5.0 SURVEY RESULTS

Observations of the vegetation communities within the Site can generally be broken down into three communities; landscaped field, agricultural field, and undeveloped forest/scrub shrub. The landscaped fields make up the residential lawn and a mowed field located in the southeastern corner adjacent to Townsend Road. Mainly consists of crab grass (*Digitaria* sp.), common plantain (*Plantago major*) white clover (*Trifolium repens*) and unidentifiable grass species.

The agricultural field community makes up the majority of the Site. It is comprised of soybean crops (*Glycine max*), Queen Anne's lace (*Daucus carota*), and pigweed (*Amaranthus retroflexus*).

The undeveloped forest/scrub shrub community is located centrally along the channelized streams and along the boundary of the Site. The forest community is dominated by green ash (*Fraxinus pennsylvanica*), sugar maple (*Prunus serotina*), black walnut (*Juglans nigra*) and staghorn sumac in the tree layer. A denser stand of trees occurred in the northern portion of the Site. Common hawthorn (*Crataegus monogyna*) and Morrow's honeysuckle (*Loricera morrowii*) dominated the shrub layer. The herbaceous community varied in densities throughout this habitat though mainly consisted of garlic mustard (*Alliaria petiolata*), burdock (*Arctium lappa*), and various grass species.

Land within the Site has been subjected to historic modification of landform and hydrology. Most of the modification was conducted to facilitate agriculture by altering the drainage contours and stormwater discharge through excavated drainage ditches and drainage tiles.

5.1 Delineated Wetlands

One wetland (W-1) was field delineated throughout the 44.71-acre Site on April 1, 2020 by Mr. Drew Timmis and Mr. Sean Meegan, both of Tetra Tech. Data from two sample stations, including one from the delineated wetland feature and one from the contiguous upland, were recorded in support of the delineations. Wetland data forms and select site photographs collected during the delineation effort are provided as Appendices A and C, respectively.

Delineated wetland features were classified as palustrine unconsolidated bottom (PUB) wetland. The wetland occurred in an area that was not mapped as wetlands by the NWI. As identified above in Section 3.1, there are no mapped NYSDEC wetlands on or within approximately 300 feet of the Site. A description of the delineated wetland is noted below. Table 1 summarizes the field results of the wetland delineation effort and Figure 4 depicts the location of the delineated wetland.

Wetland W-1 - This feature consists of a 0.09-acre freshwater pond located in the northern portion of the Site. Area appears to have had excavation in the past, with evidence of dumping along the southern portion of the pond. There appears to be no hydrological connection between wetland W-1 and any other waterbodies. Dominant vegetation within wetland W-1 included species of algae and leeches observed within the pond.

Wetland ID	Cowerdin Class[1]	Hydrology Indicator	Dominant Vegetation	Hydric Soils Indicator	Brief Wetland Description (Connectivity)	USACE Jurisdictional Status	Area within Site (acres)
W-1	PUB	• Surface Water • Aquatic Fauna	Algae species	•	Isolated freshwater pond found in depressional area.	Potentially Non-Jurisdictional	0.09

5.2 Delineated Waterbodies

Three waterbody features were delineated within the 44.71-acre Site, including two intermittent streams (S-1 and S-2), and one excavated ditch (S-3). Stream S-1 is the primary stream on Site originating off property with stream S-2 as a tributary. Stream S-1 flows into the roadside ditch S-3, which appears to have been excavated to direct the stream flow and collect stormwater flow from adjacent land and direct it west along N Eagle Village Road. Waterbodies on Site generally flowed to the southwest off-property.

Copies of the stream data forms and select site photographs are provided as Appendices B and C, respectively. Table 2 summarizes the field results of the stream delineation effort.

Table 2. Stream Delineation Summary

Stream ID	Water Present	Flow Regime	Water Type[1]	Wetland Present	Brief Stream Description (Connectivity)	USACE Jurisdictional Status	Length within the Site (feet)
S-1	Flowing Water	Intermittent	NRPW	None	A mapped NHD and NWI intermittent stream that flows south through the property and flows into the roadside ditch S-3.	Jurisdictional	1,145.98
S-2	Flowing Water	Intermittent	NRPW	None	An intermittent stream that flows west into stream S-1. Small dam made of stone and sheet metal observed near storage barn.	Jurisdictional	901.96
S-3	Flowing water	Ephemeral	NRPW	None	Roadside ditch created to direct streamflow from the Site west along N Eagle Village Road and off-property.	Jurisdictional	1,231.32
						Total Length within Site	**3,279.26**

[1]TNW =Traditional Navigable Waters, RPW = Relatively Permanent Waters, NRPW = Non-Relatively Permanent Waters

6.0 SUMMARY

According to the New York State Freshwater Wetlands Delineation Manual, the vegetative growing season is defined as the portion of the year when soil temperatures are above biological zero (41°F). For the Site, which is found in mesic soil temperature regime, the growing season months are assumed between late March and late October. The field delineation for the Site was conducted in early April in the early growing season. There were dead standing structures of herbaceous plants that were largely identifiable, with diagnostic features such as dried seed heads and leaves, and all woody vegetation was identifiable based on twigs and buds. Hydrology conditions at the time of observation were seasonably "wetter" with recent rain and snow melt. Soils examined within the Site were found to be similar to the described Benson and Wassaic Silt Loams but were restricted by low depth to limestone bedrock within the Site. Based on field observations of hydrology, soils, and identifiable vegetation, we described a freshwater pond (W-1) and three streams within the Site. Streams S-1 and S-3 appeared to match the NWI and NHD mapped riverine features. No NYSDEC regulated freshwater wetlands were identified within the Site. An official jurisdictional determination would need to be based on USACE and NYSDEC review of the Site.

7.0 REFERENCES

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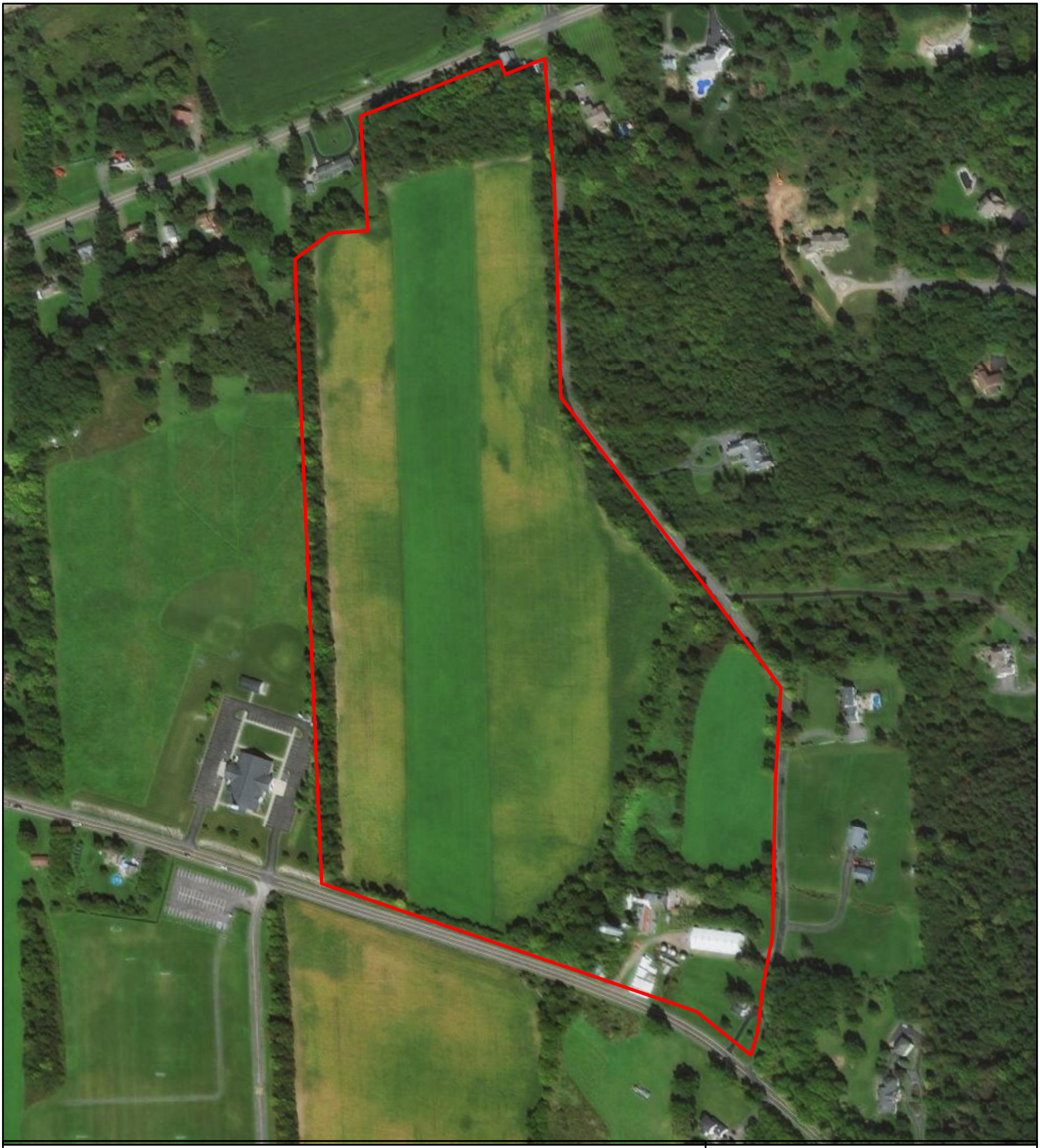
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Figure 1

Site Location



Legend

Site Boundary

Approximate Scale:

0 0.05 0.1 0.2 Miles

TETRA TECH

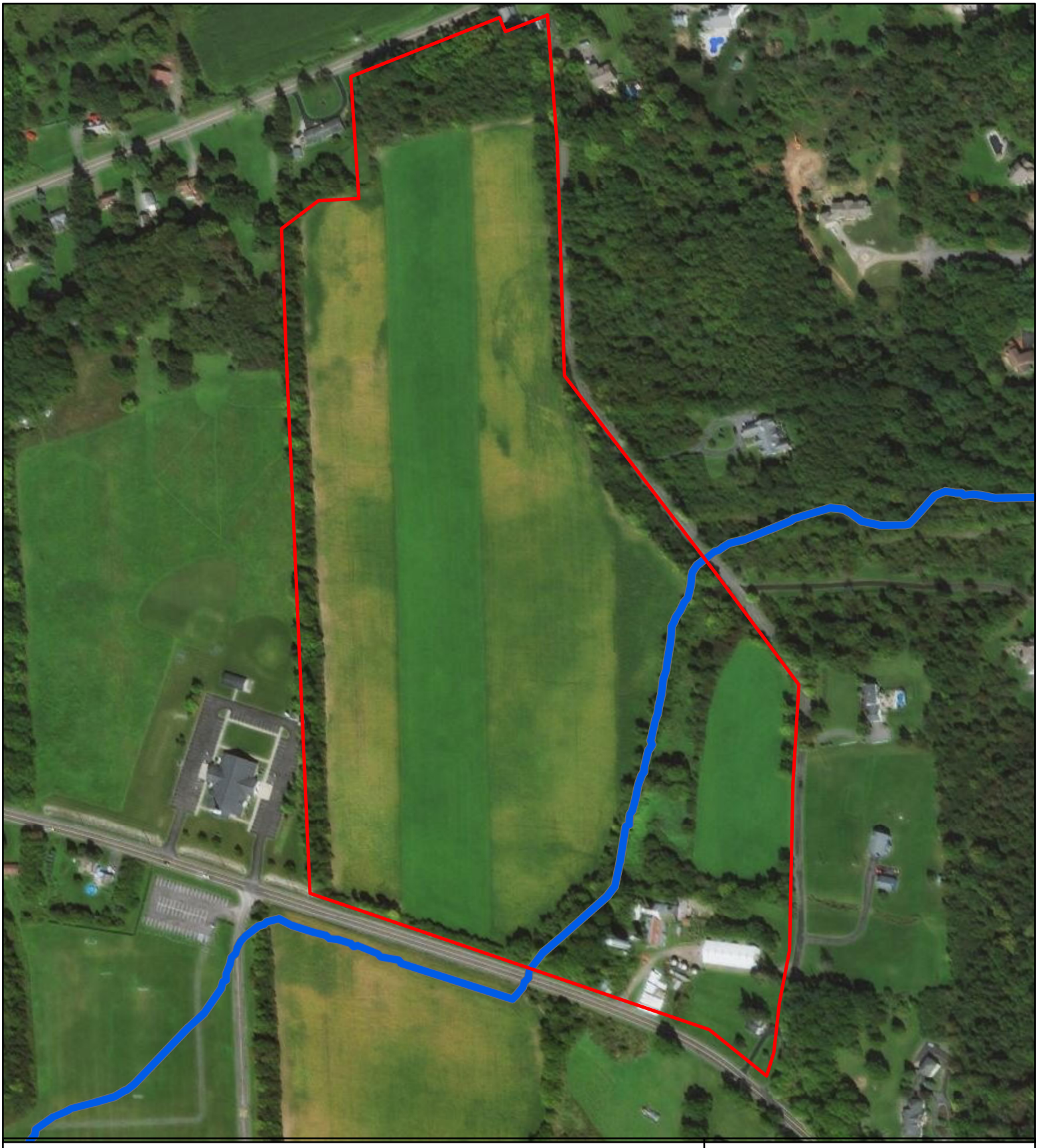
Figure 1
Site Location

North Eagle Solar
5062 North Eagle Village Road
Manlius, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Figure 2

NWI and NYDEC Mapped
Wetlands and NHD Mapped
Streams



Legend

Site Boundary

NWI Wetlands

Riverine

Approximate Scale:

0 0.05 0.1 0.2 Miles

TETRA TECH

Figure 2
Mapped Water Features

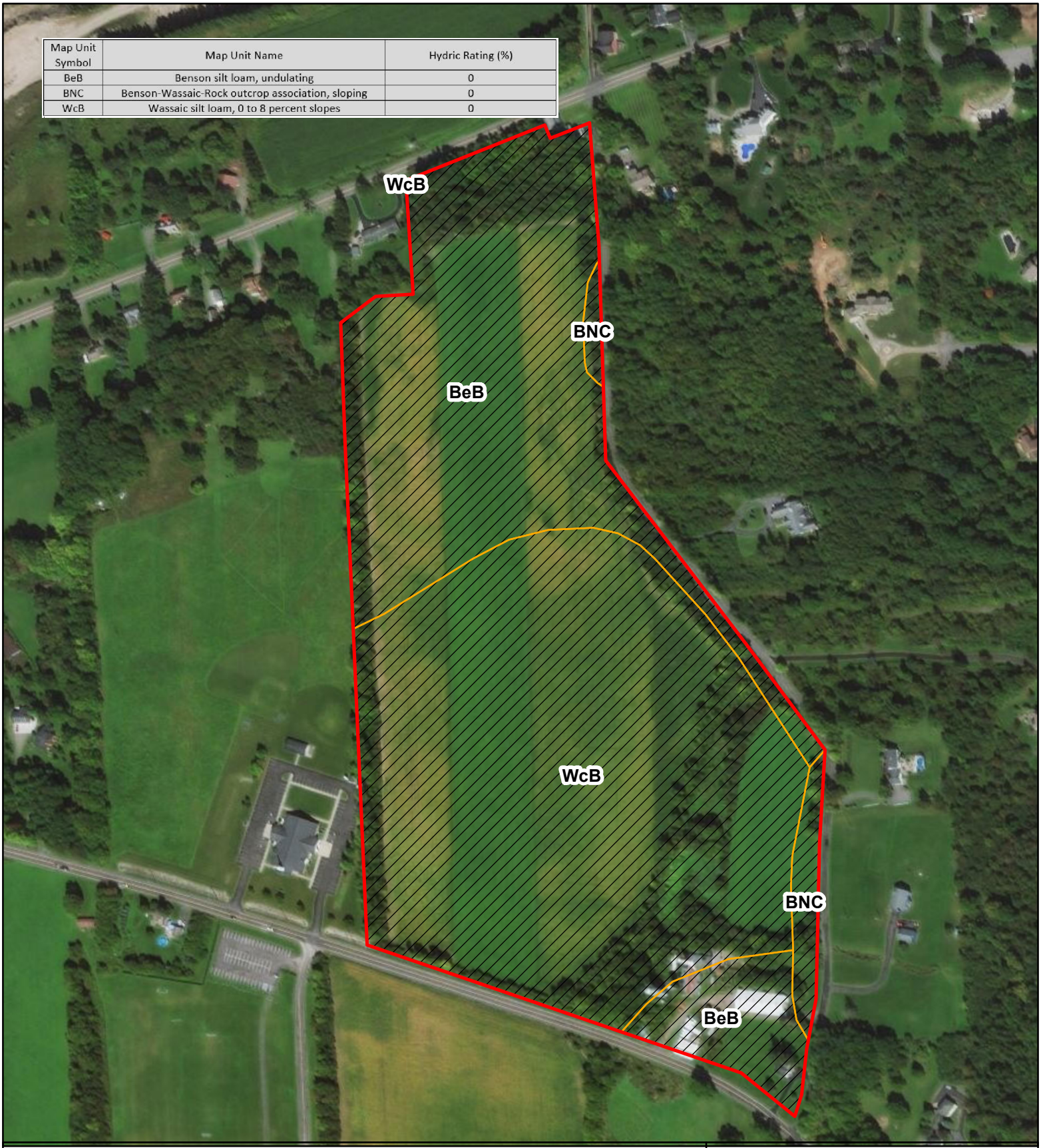
North Eagle Solar
5062 North Eagle Village Road
Manlius, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Figure 3

NRCS Soil Units

Map Unit Symbol	Map Unit Name	Hydric Rating (%)
BeB	Benson silt loam, undulating	0
BNC	Benson-Wassaic-Rock outcrop association, sloping	0
WcB	Wassaic silt loam, 0 to 8 percent slopes	0



Legend

Site Boundary

NRCS Soils

Approximate Scale:

0 0.05 0.1 0.2 Miles

TETRA TECH

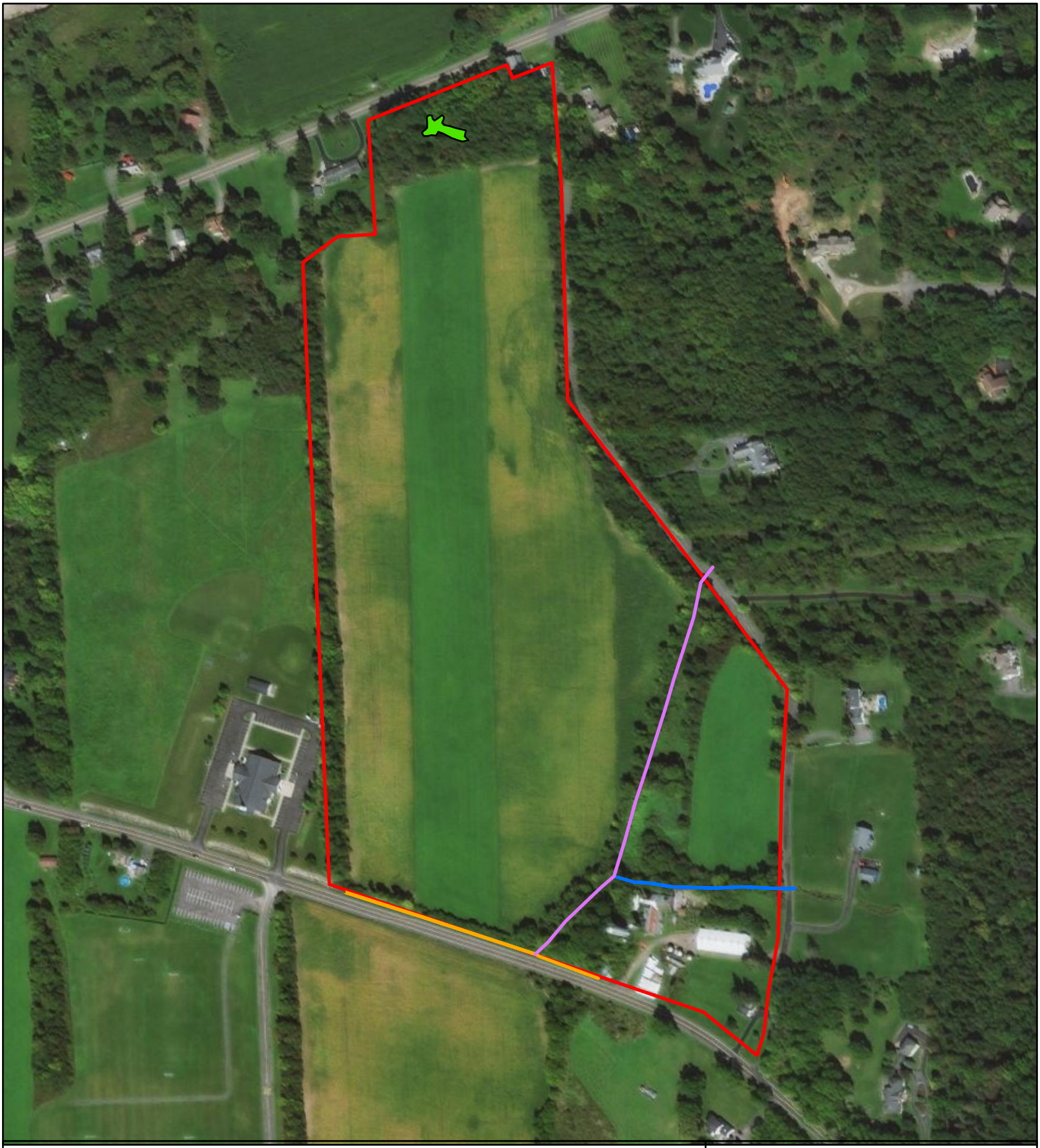
Figure 3
NRCS Soil Units

North Eagle Solar
5062 North Eagle Village Road
Manlius, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Figure 4

Field Observations



Legend

- Site Boundary
- W-1
- S-1
- S-2
- S-3

Approximate Scale:

0 0.05 0.1 0.2 Miles

TETRA TECH

Figure 4
Delineated Wetlands and Streams

North Eagle Solar
5062 North Eagle Village Road
Manlius, NY

Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors

Appendix A

Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: North Eagle Solar City/County: Manlius, Onondaga Sampling Date: 4/1/2020

Applicant/Owner: Falck Renewables State: NY Sampling Point: W-1

Investigator(s): Drew Timmis and Sean Meegan Section, Township, Range:

Landform (hillslope, terrace, etc.): Pond Local relief (concave, convex, none): concave

Slope (%): 2 Lat: 43.026424 Long: -75.958594 Datum:

Soil Map Unit Name: Benson silt loam, undulating (BeB) NWI classification: PUB

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

Pond found in northern forested area, evidence of dumping within pond. Leaf litter and green algae within.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- X Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 24
Water Table Present?	Yes ____	No ____	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No ____	Depth (inches): ____

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water, leeches observed.

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Green Algae species	100	Y	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- [X] Rapid Test for Hydrophytic Vegetation
- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/1	100					silt loam	Restrictive layer hit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- X Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 2

Hydric Soil Present? **Yes** X **No** _____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: North Eagle Solar City/County: Manlius, Onondaga Sampling Date: 4/1/2020

Applicant/Owner: Falck Renewables State: NY Sampling Point: Up-1

Investigator(s): Drew Timmis and Sean Meegan Section, Township, Range: _____

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave

Slope (%): 4 Lat: 43.026484 Long: -75.958615 Datum: _____

Soil Map Unit Name: Benson silt loam, undulating (BeB) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes _____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): 0
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer saccharum	80	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	80	= Total Cover	
Sapling/Shrub Stratum (Plot size: _____)			
1. Lonicera morrowii	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	_____	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- [X] Rapid Test for Hydrophytic Vegetation
- [ ] Dominance Test is >50%
- [ ] Prevalence Index is ≤3.0[1]
- [ ] Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [ ] Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

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Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** _____ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: _____

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/3	100					silt loam	Restrictive layer hit

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) (**LRR R, MLRA 149B**)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 3

Hydric Soil Present? **Yes** _____ **No** X

Remarks:

Area has little soil over exposed bedrock

Appendix B

Stream Data Forms

STREAM ID S-1	**STREAM NAME** unnamed tribuarty
LAT 43.022902 **LONG** -75.956257	**DATE** 04/01/2020
PROJEC North Eagle Solar	**CLIENT** Falck Renewables
INVESTIGATORS Drew Timmis and Sean Meegan	
FLOW REGIME Perennial ___ Intermittent ✓ Ephemeral ___	**WATER TYPE** TNW ___ RPW ___ NRPW ✓

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 5.0 ft
Top of Bank Height:
LB 9.0 in RB 9.0 in
Water Depth: 8.00 in
Water Width: 4.0 ft
High Water Mark: 11.0 in
Flow Direction: South

Stream Erosion
✓ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✓ Yes ___ No

Dam Present ___ Yes ✓ No

Sinuosity ✓ Low ___ Medium ___ High

Gradient
✓ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✓ Flowing water

Velocity
___ Fast ___ Moderate
✓ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 0 % Run 100 %
Pool 0 %

Turbidity
✓ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	10
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	60
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	10
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
___ Forest ___ Commercial
___ Field/Pasture ___ Industrial
✓ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✓ Shaded ___ Open

Indicate the dominant type (Check one)
✓ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✓ Narrow <16ft

Wetland Present ___ Yes ___ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

STREAM ID S-2	**STREAM NAME** unnamed tributary
LAT 43.020960 **LONG** -75.955801	**DATE** 04/01/2020
PROJEC North Eagle Solar	**CLIENT** Falck Renewables
INVESTIGATORS Drew Timmis and Sean Meegan	
FLOW REGIME Perennial ___ Intermittent ✓ Ephemeral ___	**WATER TYPE** TNW ___ RPW ___ NRPW ✓

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 10.0 ft
Top of Bank Height:
LB 6.0 in RB 6.0 in
Water Depth: 5.00 in
Water Width: 8.0 ft
High Water Mark: 9.0 in
Flow Direction: West

Stream Erosion
✓ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✓ Yes ___ No

Dam Present ✓ Yes ___ No

Sinuosity ✓ Low ___ Medium ___ High

Gradient
✓ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✓ Flowing water

Velocity
___ Fast ___ Moderate
✓ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 0 % Run 100 %
Pool 0 %

Turbidity
✓ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	15
Gravel	2-64 mm (0.1"-2.5")	35
Sand	0.06-2mm (gritty)	
Silt	0.004-0.06 mm	50
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	5
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
___ Forest ___ Commercial
___ Field/Pasture ___ Industrial
✓ Agricultural ___ Residential
___ Other:

Canopy Cover
___ Partly open ___ Partly shaded
✓ Shaded ___ Open

Indicate the dominant type (Check one)
✓ Trees ___ Shrubs
___ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✓ Narrow <16ft

Wetland Present ___ Yes ___ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Channelized stream with small man-made dam present at one section, made from stone.

STREAM ID S-2	**STREAM NAME** unnamed tributary
LAT 43.020758 **LONG** -75.958941	**DATE** 04/01/2020
PROJEC North Eagle Solar	**CLIENT** Falck Renewables
INVESTIGATORS Drew Timmis and Sean Meegan	
FLOW REGIME Perennial ___ Intermittent ✓ Ephemeral ___	**WATER TYPE** TNW ___ RPW ___ NRPW ✓

CHANNEL FEATURES

Estimate Measurements
Top of Bank Width: 6.0 ft
Top of Bank Height:
LB 4.0 ft RB 4.0 ft
Water Depth: 1.20 ft
Water Width: 3.5 ft
High Water Mark: 2.0 ft
Flow Direction: Northwest

Stream Erosion
✓ None ___ Moderate ___ Heavy

Artificial, Modified or Channelized
✓ Yes ___ No

Dam Present ___ Yes ✓ No

Sinuosity ✓ Low ___ Medium ___ High

Gradient
✓ Flat (0.5/100 ft) ___ Moderate (2 ft/100 ft) ___ Severe (10 ft/100 ft)

FLOW CHARACTERISTICS

Water Present
___ No water, stream bed dry
___ Stream bed moist
___ Standing water
✓ Flowing water

Velocity
___ Fast ___ Moderate
✓ Slow

Proportion of Reach Represented by Stream Morphology Types
Riffle 0 % Run 100 %
Pool 0 %

Turbidity
✓ Clear ___ Slightly turbid ___ Turbid
___ Opaque ___ Stained
___ Other_____

INORGANIC SUBSTRATE COMPONENTS (should add up to 100%)

Substrate Type	Diameter	% Composition in Sampling Reach
Bedrock		
Boulder	> 256 mm (10")	
Cobble	64-256 mm (2.5"-10")	20
Gravel	2-64 mm (0.1"-2.5")	30
Sand	0.06-2mm (gritty)	10
Silt	0.004-0.06 mm	40
Clay	< 0.004 mm (slick)	

ORGANIC SUBSTRATE COMPONENTS (does not necessarily add up to 100%)

Substrate Type	Characteristic	% Composition in Sampling Area
Detritus	sticks, wood, coarse plant materials (CPOM)	15
Muck-Mud	black, very fine organic (FPOM)	
Marl	grey, shell fragments	

WATERSHED FEATURES

Predominant Surrounding Landuse
___ Forest ___ Commercial
___ Field/Pasture ___ Industrial
___ Agricultural ___ Residential
✓ Other: Public Road

Canopy Cover
___ Partly open ___ Partly shaded
___ Shaded ✓ Open

Indicate the dominant type (Check one)
___ Trees ___ Shrubs
✓ Grasses ___ Herbaceous

Floodplain Width
___ Wide > 30ft ___ Moderate 15-30ft
✓ Narrow <16ft

Wetland Present ___ Yes ✓ No
Wetland ID

AQUATIC VEGETATION

Indicate the dominant type and record the dominant species present
___ Rooted emergent ___ Rooted submergent ___ Rooted floating ___ Free floating
___ Floating algae ___ Attached algae

MACROINVERTEBRATES OR OTHER WILDLIFE OBSERVED/OTHER OBSERVATIONS AND NOTES

Roadside ditch flowing across N Eagle Village Road.

Appendix C

Select Site Photography

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of wetland W-1 found in the northern forested area facing west.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of surrounding upland forested area around wetland W-1 facing west. Abundant exposed bedrock within the area.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of agricultural fields (soybean) that make up the majority of the Site facing northeast.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of stream S-1 looking downstream facing south.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of stream S-1 looking upstream facing north.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of stream S-2 looking upstream facing east. Stream originates off-site through culvert under Townsend Road.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of stream S-2 looking downstream facing west. Eventual confluence with stream S-1.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of small dam placed in stream S-2.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of maintained field in eastern portion of Site facing northeast. Townsend Road can be seen along the Site boundary.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of drainage ditch S-3 looking downstream off-property facing west.

Photograph taken by Drew Timmis on April 1, 2020.

PHOTOGRAPHIC DOCUMENTATION			
Client:	Falck Renewables	**Project No:**	194-7179.01.03
Site Name:	North Eagle Solar Site	**Location:**	Manlius, NY



Description:	View of drainage ditch S-3 looking upstream facing east. N Eagle Village Road is southern adjacent.

Exhibit G

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

TOWN OF MANLIUS

SPECIAL PERMIT APPLICATION – EXHIBIT "G"

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

As a condition of the application(s) to the Town of Manlius, its Zoning Board of Appeals, Planning Board, codes administration/planning office, and/or Town Board (the **"**Town**"**) for various zoning, land use, construction and related reviews, approvals, certificates, permits and related consideration(s) (including for any local governmental assisted funding) related to the request of EF NY CDG 001, LLC: (the "Application"), North Eagle Solar Facility [name], One Bridge Street, Suite 11, Irvington, New York 10533 [legal address] ("Applicant") relative to proposed development at 5062 North Eagle Road, Manlius, New York 13104 [project address], Tax Parcel # 098-01-15.0**,** Manlius, New York, and related matters (the "Project") agrees as follows:

The Application and Project may or will likely entail that the Town incur legal, engineering, architectural, administrative and related expense(s) including, without limitation, for both on staff and third party consultants involved in the consideration of the Application and Project, and including, without limitation, attendance at Zoning Board of Appeals, Planning Board, and Town Board meetings, consultation with the Applicant, its or the Town's engineer, architect, attorney, and/or other Town officers and employees, or consultants or professional service providers, incidental to the Application from the earlier of the filing of the Application for and/or first presentation of the Project to Town, and through final completion and issuance of all Town and other governmental permits, certifications and approvals.

In connection with and consideration of the foregoing, Applicant agrees to bear all cost and expense for such administrative, legal, engineering, architect and other professional and consulting assistance to the Town incidental to the Application and Project, and including that expense incurred by the Town for Town employees and officers performing reasonable and necessary work on behalf of the Town incident to the Application or Project.

In connection with the foregoing, Applicant shall reimburse the Town for time spent by outside consultants and professionals at the usual rate charged by them to private clientele, or if none, then the usual rate charged to municipalities. Reimbursement for the cost of Town employees and officers shall be based upon the cost to Town for the services of such persons, including salary and fringe benefits, reduced to an hourly rate and including overtime where directly attributable to the Application or Project.

Should the Town determine, in its sole discretion, that additional services are required to represent, supervise, inspect, evaluate and/or consult, including in order to protect the rights and/or interests of the Town such as relative to an enforcement or violation proceeding, the Applicant shall likewise bear all costs associated with such services.

This Agreement shall be effective as of _____, 20__. The Applicant shall deposit an initial sum of **$**_____, and such other amounts as from time to time the Town may determine, payable to and deposited with the Town and which sum or sums shall be applied against those sums reimbursable to the Town pursuant to the terms of this Agreement (the "Deposit"). Upon completion or discontinuance of the Application and Project and payment of all fees incurred, any unused Deposit shall be returned to the Applicant.

The Applicant shall receive periodically, one or more statements detailing charges for which reimbursement has been made against the Deposit, detailing unpaid amounts, if any, and setting forth any additional Deposit required by the Town. Failure to pay any amounts due the Town of Manlius within twenty (20) days of the date of statement may result in the termination of work/services by Town relative to the Application, the non-issuance suspension or revocation of any certificates, permits or approvals, and/or denial of applications, the Town's commencement of collection efforts, and/or the exercise of any other rights or remedies available to Town hereunder or pursuant to applicable law, including under the Town Code. No certificates, approvals or permits, including, without limitation, Certificates of Occupancy/Compliance, may be issued until all fees due hereunder are paid or sufficient Deposit for same made.

Notwithstanding any provision hereof to the contrary or otherwise, the intent of this Agreement is to subject all of those subject matter areas under applicable provisions of Federal, State, and County laws, rules and regulations whatsoever, the Town Code including as any of same may be amended from time to time, and without limitation, those provisions under Chapters 59, 63, 72, 83, 95, 96, 104, 119, 123, 125, 126, 127, 131, 147, and 155 of the Town Code to the provisions hereof; in addition any financing or funding applications incidental to the Application or Project and requiring sponsorship or support of Town, and review under the State Environmental Quality Review Act or other State or Federal environmental, historical or related laws, rules or regulations shall likewise be subject to the provisions hereof.

In addition, and notwithstanding any provisions hereof to the contrary or otherwise, any provisions of the Town Code or other laws, rules or regulations providing rights more favorable to and protective of Town shall be deemed incorporated herein by reference, and shall not be deemed superseded by less protective provisions herein.

In the event of a breach or default by Applicant, Town shall be entitled to pursue any and all legal rights and remedies pursuant to applicable law including, without limitation, the Town Code and shall be entitled to recover, in addition to any sums due, reasonable attorney's fees ,costs and disbursements incurred in any such efforts.

If any part of this Agreement or the application thereof to any person or entity or circumstance is adjudged invalid, illegal or unconstitutional by any court of competent jurisdiction, such order or judgment shall be confined in its operation to the part of this law or in its application directly involved in the controversy in which such judgment shall have been rendered and shall not affect or impair the validity of the remainder of this Agreement or the application thereof to other persons, entities or circumstances. Further, in adjudging such invalid, illegal or unconstitutional provision or part thereof, the court shall attempt to modify same to a provision or part which is not illegal, invalid or unconstitutional and which best achieves the intent of such illegal, invalid or unconstitutional provision or part thereof.

The Town Supervisor has executed this agreement pursuant to a blanket Resolution adopted by the Town Board at a meeting thereof held on _____, 20__, and is duly authorized and empowered to execute this instrument and enter into this Agreement on behalf of the Town of Manlius.

In the event Applicant is a closely held corporation, partnership or limited liability company, its three (3) largest principals shall be signatories to this Agreement, as joint and severable parties with Applicant and Town.

This instrument shall be executed in triplicate. At least one original shall be permanently filed, after execution thereof, in the office of the Town Clerk and one in the Code Enforcement Office.

Dated: 4/15/2020

_____	_____
Print Applicant Name	**Applicant's Authorized Signature/Title**

Applicant Address: One Bridge Street, Suite 11, Irvington, New York 10533

_____

_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**
_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**
_____	_____
Print Applicant (Principal) Name	**Applicant's Principal Signature**

TOWN OF MANLIUS

By: _____

Name: _____

Title: _____

Exhibit H

DISCLOSURE AFFIDAVIT

DISCLOSURE AFFIDAVIT

North Eagle Solar Facility Application
5062 North Eagle Village Road, Manlius, New York
13104

State of New York

Mr. Jonathan Koch, as a representative of the Applicant, EF NY CDG 001, LLC (Falck Renewables), who having been first duly sworn says:

I reviewed General Municipal Law §809 and am familiar with the provisions contained therein, that no state officer, or any officer or employee of the County of Onondaga or Town of Manlius has any interest in the person, partnership or association owning the premises subject of the application or making such application, and that no other violation of §809 shall result from such application

Jonathan Koch
Falck Renewables

Subscribed and sworn to before me this day 4/1/2020

Notary Public

ERIN Q. SANCHEZ
Notary Public, State of New York
No. 1SA6035943
Qualified in Dutchess County
Commission Expires January 10, 2022

My Commission Expires on: 1/10/22



Special Use Permit and Site Plan Approval Application

Proposed North Eagle Solar Site
5062 North Eagle Village Road
Manlius, New York 13104

Submitted April 16, 2020

Prepared by:

TETRA TECH

Tetra Tech, Inc.
3163 South Winton Road, Suite 303
Rochester, NY 14623
Phone: (585) 417-4007

Prepared for:

EF NY CDG 001, LLC
One Bridge Street, Suite 11
Irvington, New York 10533

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1.0 PROJECT OVERVIEW

EF NY CDG 001, LLC (Falck Renewables) is seeking a Special Use Permit and Site Plan approval for the construction of the North Eagle Solar 5 megawatt (MW) alternating current (AC) photovoltaic (PV) array located at 5062 North Eagle Village Road, Manlius, New York (hereafter referred to as the "Site"). Falck Renewables proposes the development of approximately 21.3 acres of a larger approximately 44.71-acre parcel of agricultural land in the Town of Manlius, Onondaga County into a ground-mounted PV solar farm.

The proposed PV solar farm would be capable of delivering about 5,000 kW AC into the local electrical distribution system, which is sufficient to provide renewable energy to approximately 600 households. The PV solar modules proposed for this project are fixed-tilt modules that would be placed on a racking system that is either pile driven or screw mounted to the ground surface. The PV solar modules will be directly interconnected to and provide energy to the local electric distribution system via a typical 13.2 kilovolt, overhead electrical service. Prior to utility interconnection, direct current (DC) electric power generated by the PV solar modules will be transformed to AC electric power by inverters and modified as necessary to safely supply the local electrical distribution system. The PV solar farm would also include an equipment pad, a gravel access road, a vegetative soil cover, and it will be surrounded by a chain-linked security fence per code.

The following sections and Exhibits provide information 1) about the proposed PV solar farm and 2) required as part of the Special Permit application criteria and Section 155-27.2 of the Town Code.

2.0 SITE DESCRIPTION

The Site located 5062 North Eagle Village Road, Manlius, New York, consists of an approximately 44.71-acre parcel assigned Assessor Parcel Number (APN) 313889-098-000-0001-015-000-0000 and Property Identifier 098.-01-15.0. According to the Onondaga County Image Mate Online database the property class is listed as "field crops" and is zoned as restricted agricultural.

The Site includes agricultural and wooded land with several farm related buildings and a residential home. The Site is bounded by wooded land followed by residential properties and Salt Springs Road to the north, Townsend Road followed by wooded land and residential properties to the east, North Eagle Village Road followed by agricultural land to the south, and wooded land followed by agricultural land and a church to the west.

A map showing the location of the Site is presented in *Attachment A*.

3.0 COMMUNITY CHARACTER AND SURROUNDING LAND USE

The general area at the Site consists of agricultural and undeveloped land. The Site is located within a rural residential area in the Village of Manlius in Onondaga County, New York. The Site is bounded by wooded land followed by residential properties and Salt Springs Road to the north, Townsend Road followed by wooded land and residential properties to the east, North Eagle Village Road followed by agricultural land to the south, and wooded land followed by agricultural land and a church to the west.

Table 4-1 Adjacent Properties and Addresses

Direction from the Site	Street Address	Description
North	N/A 8204 Salt Spring Road 8232 Salt Spring Road	Wooded and Agricultural Land Residential Residential
East	N/A 5240 Townsend Road	Wooded and Agricultural Land Residential
Southeast	5062 North Eagle Village Road	Farm and Residence
South	N/A	Agricultural Land
West	5070 North Eagle Village Road	Church and Agricultural Land

The installation and operation of a solar facility is consistent with the Town's vision to *"...promote the safe, effective and efficient use of solar photovoltaic energy systems that reduce on-site and off-site consumption of utility-supplied energy while protecting the health, safety and welfare of adjacent and surrounding land uses and properties."* (Section 155-27.2 of the Town Code).

Falck Renewables and its affiliates have worked closely with the landowner to locate the Site in the least productive area of farmland on the designated land parcel. In addition, the PV solar farm will be decommissioned after its useful life (designed for 40 years) and the land may be readily reused for agriculture. During the PV solar farm's useful life, native nutrient-rich plant blends can be used as ground cover to enhance soil erosion measures and increase future farm production.

The proposed PV solar farm is harmonious with the Site's adjoining parcels' existing agricultural use, will not depreciate or alter those properties' essential character, and presents no conflict with residentially zoned areas of Town of Manlius.

While research is limited on the effect of ground-mounted PV solar farms on surrounding land values, a 2013 nationwide study of wind farms and surrounding property values within viewing range showed no evidence of affected property values. Due to PV solar farms' smaller profile and lack of flicker and shadow potential on surrounding lands, PV solar farms are anticipated to have even less of an impact than wind farms on surrounding land values.

4.0 NATURAL AND CULTURAL RESOURCES

4.1 Threatened and Endangered Species

Tetra Tech, on behalf of Falck Renewables, consulted with the New York State Department of Environmental Conservation (NYSDEC) online Environmental Assessment Form (EAF) Mapper on March 31, 2020. The NYSDEC review stated that there is no record of unique geological features, wetlands or waterbodies, State listed rare species of plant or animal, or critical environmental areas on the project Site. The review did identify Northern Long-eared Bat as a listed endangered or threatened species that could potentially be contained or have identified habitat for the species within the Site. The proposed work will not include tree clearing and will not affect Northern Long-eared Bat or its potential habitat. The NYSDEC EAF Form is included as Exhibit E to the Special Permit Application.

Tetra Tech submitted a consultation request to the United States Department of the Interior Fish and Wildlife Service (USFWS) on March 4, 2020. The USFWS responded that there are no critical habitats for threatened or endangered species in the vicinity of the Site (*Attachment B)*.

4.2 Cultural Resources

Tetra Tech, on behalf of Falck Renewables, submitted a consultation request to the New York State Office of Parks, Recreation, and Historic Preservation's (OPRHP) Cultural Resource Information System (CRIS) database to identify properties listed on the State and National Register of Historic Places (NRHP) on or in the vicinity of the Project Site. OPRHP responded to the consultation by issuing a "No Effect" letter dated March 17, 2020 (*Attachment C*) stating that no archaeological surveying was required, and the proposed solar facility would have no effect on historic cultural resources.

5.0 OPERATION AND MAINTENANCE CONSIDERATIONS

While PV solar farms of this capacity are typically considered to be fairly low-maintenance, routine operation and maintenance services, including locally contracted vegetation management, will be performed per industry codes and manufacturers' specifications, ensuring the safe and efficient operation of equipment. The PV solar farm will be continuously monitored such that unexpected issues may be addressed immediately.

5.1 Noninterference

The Site will not produce an electromagnetic interference in the existing microwave communications operation.

5.2 Proximity to radio, television and telephone systems

The Site will not interfere with existing fixed broadcast, retransmission, or reception antennae for radio, television or wireless phone.

5.3 Fencing and security

The Site will be surrounded by a chain-link fence in compliance with all Federal, State, and Municipal codes.

5.4 Lighting

No artificial lighting will be needed for the normal operations at the Site.

5.5 Utility Interconnection and Considerations

In general, the greatest challenge in siting economically viable PV solar farm is associated with utility interconnection capacity and requirements. Falck Renewables and its affiliates have been working in close coordination with the National Grid and the 25% interconnection down payment associated with the Site has been paid per D. Payment and Construction Milestones of the New York State Standardized Interconnection Requirements and Application Process For New Distributed Generators and Energy Storage Systems 5 MW or Less Connected in Parallel with Utility Distribution Systems.

5.6 Traffic Impacts

Traffic impacts are generally limited to the PV solar farm construction period, which is estimated to last approximately three months. Once the PV solar farm is operational, traffic is typically limited to less than 10 visits per year to monitor operation, provide maintenance/repair, and maintain vegetation, as necessary.

5.7 Noise

There may be some noise associated with PV solar farm construction – truck entry/exit, earthmoving equipment, etc. – but it is expected to be temporary in duration and limited to normal working hours.

The solar collection modules themselves are quiet. The greatest potential source of noise is anticipated to be from the power inverter at the Site. The inverter will be located central to the array of solar modules and more than 700 feet from the nearest residential receptor. Noise levels at a typical inverter will be approximately 55 decibels at a distance of three feet and the noise will dissipate quickly as distance from the inverter increases. As a point of comparison, engaging in normal face-to-face conversation generates a noise level of approximately 60 decibels, and typical city traffic inside a car has a noise level of approximately 80 decibels (Center for Disease Control and Prevention, 2017). At a distance of 40 feet, which is closer than the nearest receptors, the inverter's noise level calculates to approximately 35 decibels, which is comparable to a soft whisper. Thus, noise impacts from the facility's operation are expected to be insignificant.

5.8 Solid Waste

Some minor amount of solid waste generation may occur during the construction process, but it will be disposed of off-site at an appropriate location. Once operational, the PV solar farm will not generate an appreciable amount of solid waste.

5.9 Fire Protection and Emergency Access

Coordination with emergency services is an important part of any PV solar farm development process and this coordination will be conducted as part of the Building Permit application process. Local emergency services will be provided with notification that the Site is undergoing review and invited to visit the Site. Equipment specifications will be provided to responders during the building permit application and implementation process.

The following measures will be taken regarding response to potential emergencies at the proposed facility:

- Local emergency responders will be invited to tour the Site during construction and after construction is completed. The Site tour will agenda will include descriptions of the system components, emergency shut-down, system isolation, etc.;
- The facility will be provided with a 'Knox-Box" or other similar locking mechanism to provide Site access to emergency responders;
- Emergency telephone numbers will be posted on the perimeter fence;
- System components will be marked in order to provide emergency responders with appropriate warning and guidance with respect to isolating the electrical systems;
- A Site access road will be constructed in a way that allows for the passage of emergency vehicles in the event of an emergency; and
- A Site access road will be maintained to allow emergency vehicle access to the Site.

6.0 VISUAL IMPACTS ANALYSES

6.1 Viewsheds and screening

Tetra Tech, on behalf of Falck Renewables conducted a full dimensional viewshed analysis and developed a conceptual landscape/screening plan to address concerns of visibility from residences in proximity to the proposed Site. The viewshed map analyzes the potential visibility of the solar modules and screening provided by topography as well as existing vegetation. A profile that depicts the terrain and other existing features that may influence visibility of the Site was developed to provide a graphical representation of the line of sight from points selected along Salt Springs Road, Townsend Road, and North Eagle Village Road. The viewshed map is provided in *Attachment D* and the Landscaping plan is included in *Attachment E*.

6.2 Federal Aviation Administration & Glare Analysis

With growing numbers of solar energy systems being proposed and installed throughout the United States, the potential impact of glint and glare from photovoltaic modules is receiving increased attention. The Federal Aviation Administration (FAA) developed *Technical Guidance for Evaluating Selected Solar Technologies on Airports* in 2010 (FAA Guidance). The FAA Guidance recommends that glare analyses should be performed on a site-specific basis using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This guidance applies to PV solar farm located on/near airport property but is also considered to be an industry best practice for solar facilities in general.

Sandia developed SGHAT v. 3.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g. anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard (Sandia Laboratories, 2016).

The SGHAT (GlareGauge) was utilized to evaluate the potential for glare at several locations along nearby roads, residences, and any commercial facilities. The modules to be used on the Site are smooth glass surface material with an anti-reflection coating (ARC), which is noted in the glare analysis. The modules will be on a south-facing fixed-tilt array with an approximate height not to

exceed nine feet from the ground surface. The modules will have a maximum 25-degree tilt. Two separate glare analyses were conducted for a module height of nine feet (maximum height) with applicable panel specifications. The SGHAT Report is included as *Attachment F.*

The Federal Aviation Administration (FAA) Notice Criteria Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed solar facility would require formal filing to the FAA. The FAA Notice Criteria Tool Report is included as *Attachment G.*

7.0 REFERENCES

Adolf Goetzberger and Volker Hoffman (2005). "Photovoltaic Solar Energy Generation." Springer, New York.

The Federal Aviation Administration (FAA) developed *Technical Guidance for Evaluating Selected Solar Technologies on Airports* in 2010

Fthenakis, V.M. (2003). Practical Handbook of Photovoltaics: Fundamentals and Applications: Overview of Potential Hazards. Available at http://www.bnl.gov/pv/files/pdf/art_170.pdf .

U.S. Dept. of Energy (2010). "Photovoltaic Basics." Available at http://www1.eere.energy.gov/solar/pv_basics.html .

Vasilis Fthenakis, Hyung Chul Kim and Erik Alsema (2008). "Emissions from Photovoltaic Life-Cycles." *Environmental Science and Technology* 2008 42 (6):2168-2174. Available at: http://pubs.acs.org/doi/full/10.1021/es071763q .

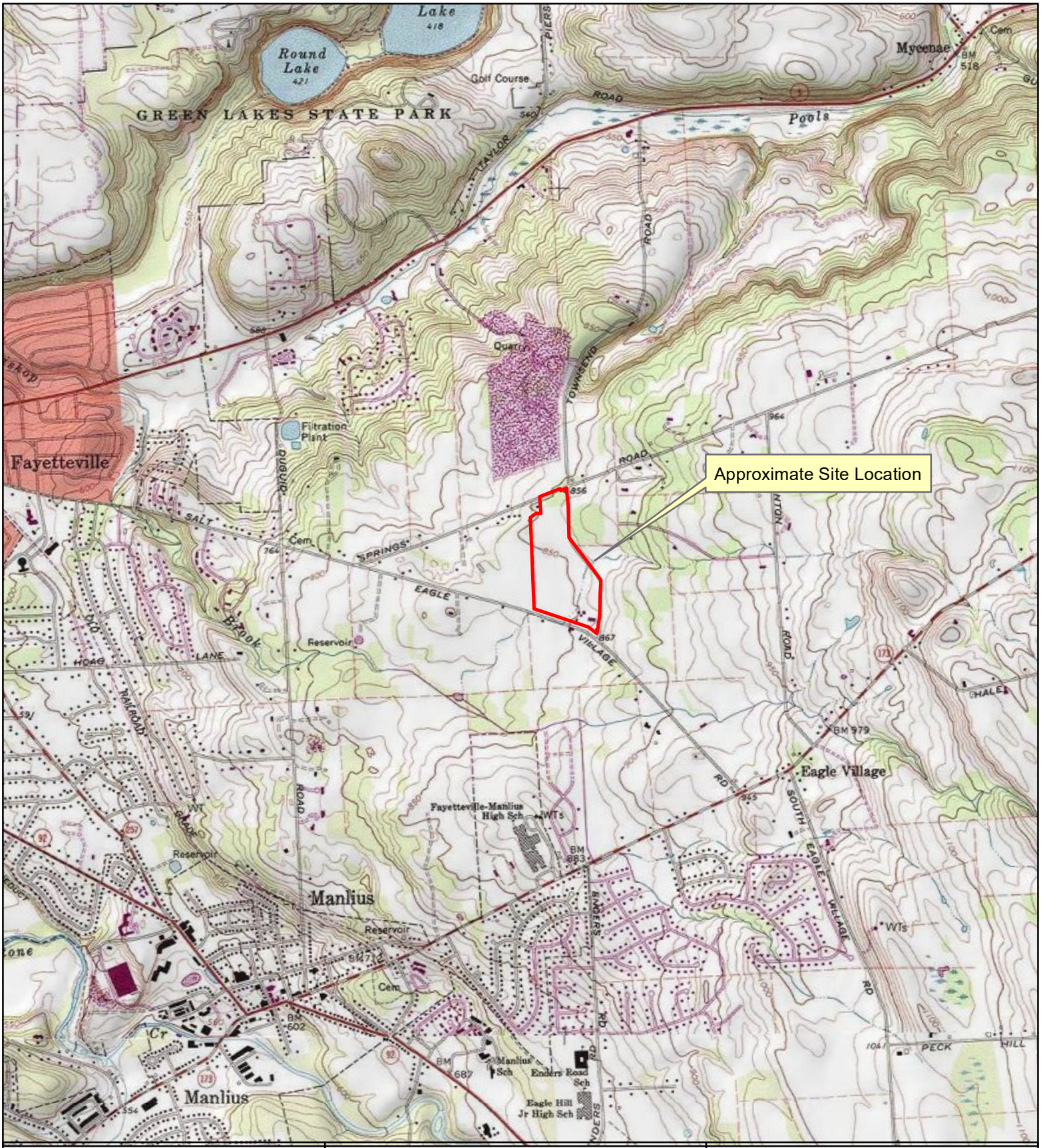
Hoen et al. (2013). "A Spatial Hedonic Analysis of the Effects of Wind Energy Facilities on Surrounding Property Values in the United States". Ernest Orlando Lawrence Berkeley National Laboratory.

8.0 ATTACHMENTS

ATTACHMENT A – SITE LOCATION MAP
ATTACHMENT B – USFWS THREATENED AND ENDANGERED SPECIES
ATTACHMENT C – SHPO CONSULTATION LETTER
ATTACHMENT D – VIEWSHED ANALYSIS
ATTACHMENT E – LANDSCAPING PLAN
ATTACHMENT F – GLARE ANALYSIS
ATTACHMENT G – FEDERAL AVIATION ADMINSTRATION SCREEN

ATTACHMENT A

SITE LOCATION MAP





Legend

Approximate Site Boundary

Approximate Scale:

0 0.25 0.5 1 Miles

TETRA TECH

Attachment A
Site Location

North Eagle Solar
5062 North Eagle Village Road
Manlius, NY

Service Layer Credits: Esri, HERE, Garmin, © OpenStreetMap contributors

ATTACHMENT B

USFWS THREATENED AND ENDANGERED SPECIES

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: March 04, 2020
Consultation Code: 05E1NY00-2020-SLI-1929
Event Code: 05E1NY00-2020-E-05800
Project Name: North Eagle Solar Site

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2020-SLI-1929

Event Code: 05E1NY00-2020-E-05800

Project Name: North Eagle Solar Site

Project Type: POWER GENERATION

Project Description: Potential area for ground-mounted solar project on current agricultural field

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.02331470901816N75.95813217765661W



Counties: Onondaga, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

ATTACHMENT C

SHPO CONSULTATION LETTER

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 17, 2020

Charles Vandrei
Agency Historic Preservation Officer
NYS Environmental Conservation
625 Broadway
Albany, NY 12233

Re: DEC
North Eagle Solare Site/44.71 Acres
5062 N Eagle Rd., Manlius Onondaga County
20PR01564

Dear Charles Vandrei:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the submitted materials in accordance with the New York State Historic Preservation Act of 1980 (section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Division for Historic Preservation and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6NYCRR Part 617).

We note that the proposed project at 5062 N Eagle Village Road is within a half mile of 8142 Salt Springs Road, which is eligible for listing in the State and National Registers of Historic Places. We have reviewed the submission received on March 4, 2020. Based on that review, it is the OPRHP's opinion that the project, as described, will have No Adverse Impact on historic resources. If you have any questions, I can be reached at (518) 268-2170.

Sincerely,

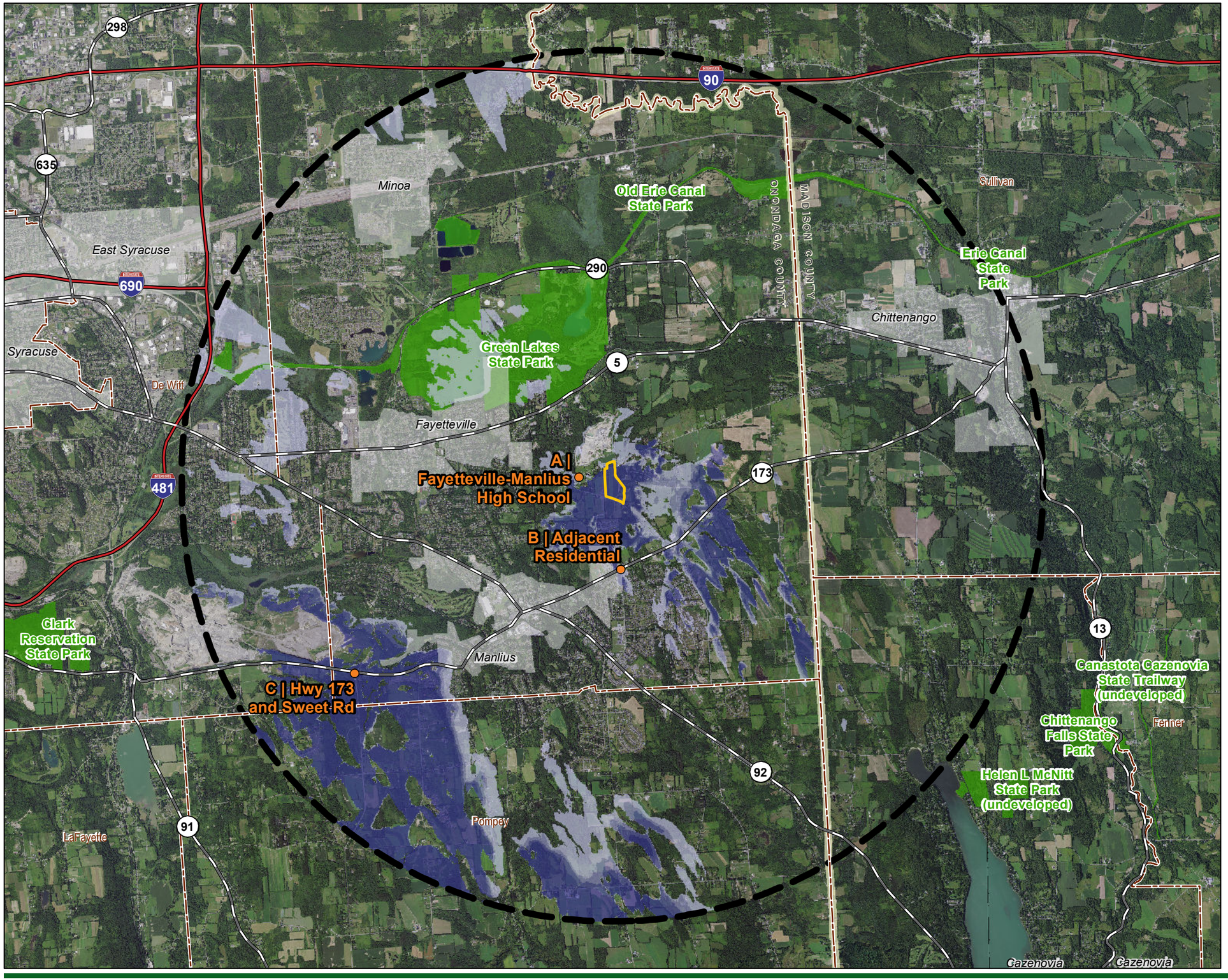
Robyn Sedgwick
Historic Site Restoration Coordinator
e-mail: robyn.sedgwick@parks.ny.gov via e-mail only

cc: D. Timmis – Tetra Tech

ATTACHMENT D

VIEWSHED ANALYSIS

North Eagle Solar Project | Onondaga County, NY



Project Area | **Viewshed Analysis**

- Line-of-Sight Location
- Project Area
- State Park

Transportation

- Interstate Highway
- U.S. Highway
- State Highway

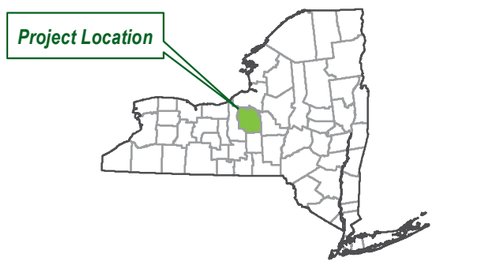
% of PV Panels Potentially Visible

- < 25%
- 25% - 50%
- 50% - 75%
- > 100%

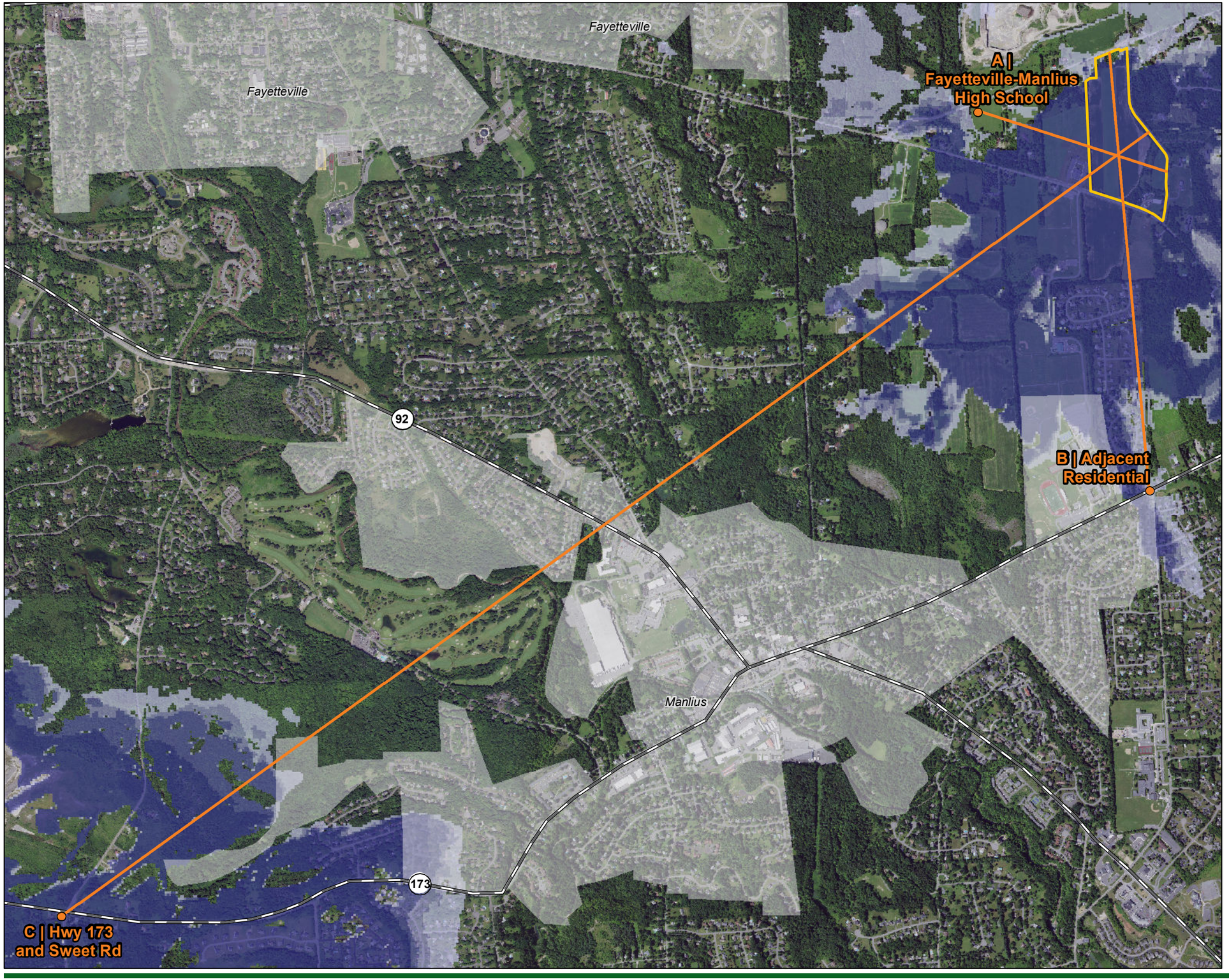
*Viewshed analysis is based on topography (bare earth; no vegetation or intervening structures) and a maximum 10' height of solar panels to evaluate the potential visibility of the proposed project. Areas that are not shaded in purple indicate that there is likely no visibility.

NOT FOR CONSTRUCTION

0 1.5 3 Miles



North Eagle Solar Project | Onondaga County, NY



Project Area | Viewshed Analysis

- Line-of-Sight Location
- Line of Sight
- Project Area
- State Park

Transportation

- State Highway

% of PV Panels Potentially Visible

- < 25%
- 25% - 50%
- 50% - 75%
- > 100%

*Viewshed analysis is based on topography (bare earth; no vegetation or intervening structures) and a maximum 10' height of solar panels to evaluate the potential visibility of the proposed project. Areas that are not shaded in purple indicate that there is likely no visibility.

NOT FOR CONSTRUCTION

0 0.375 0.75 Miles

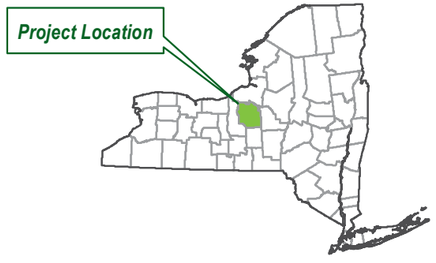


Figure 1: Line of Sight A | Fayetteville-Manlius High School

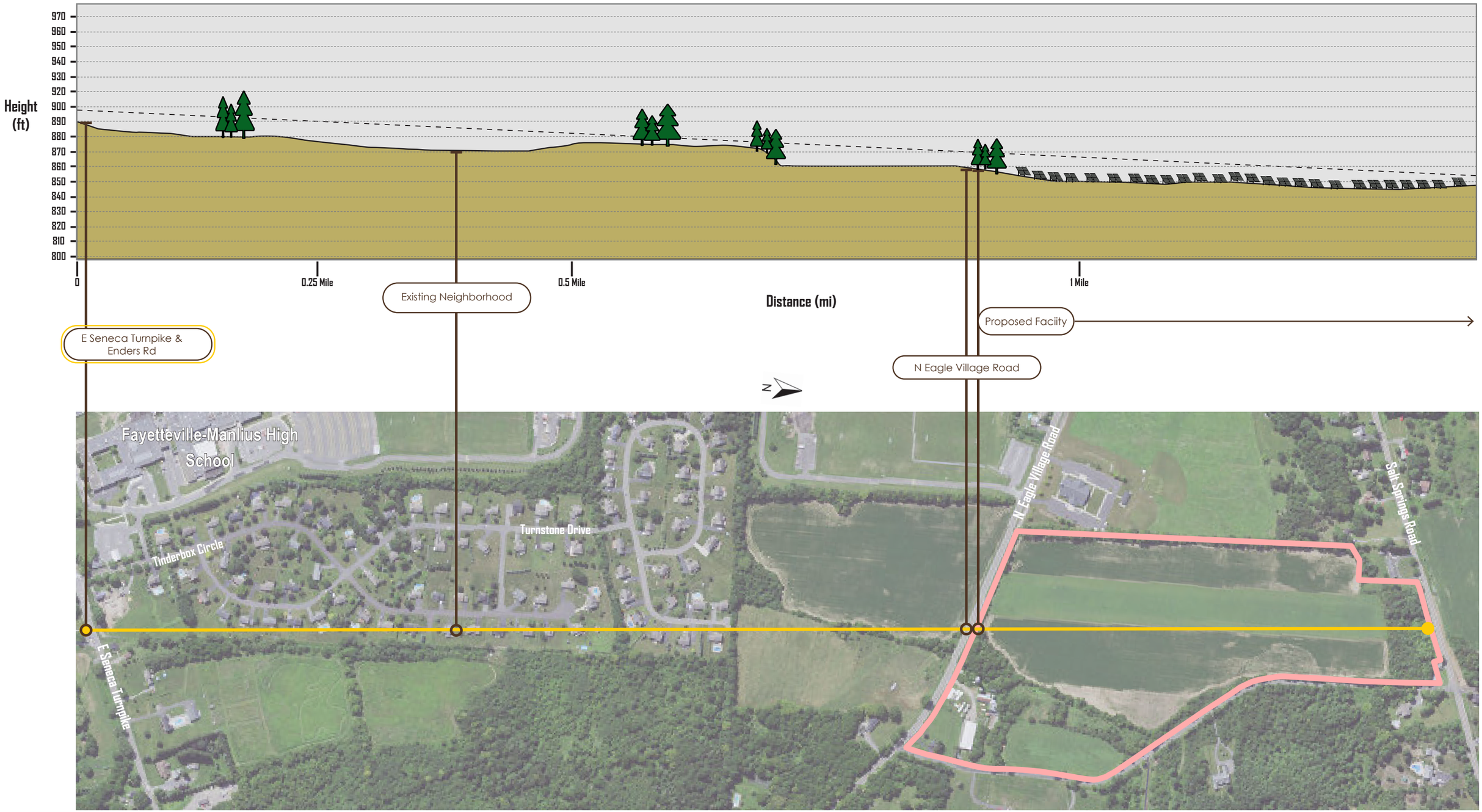


Figure 2: Line of Sight B | Adjacent Residential

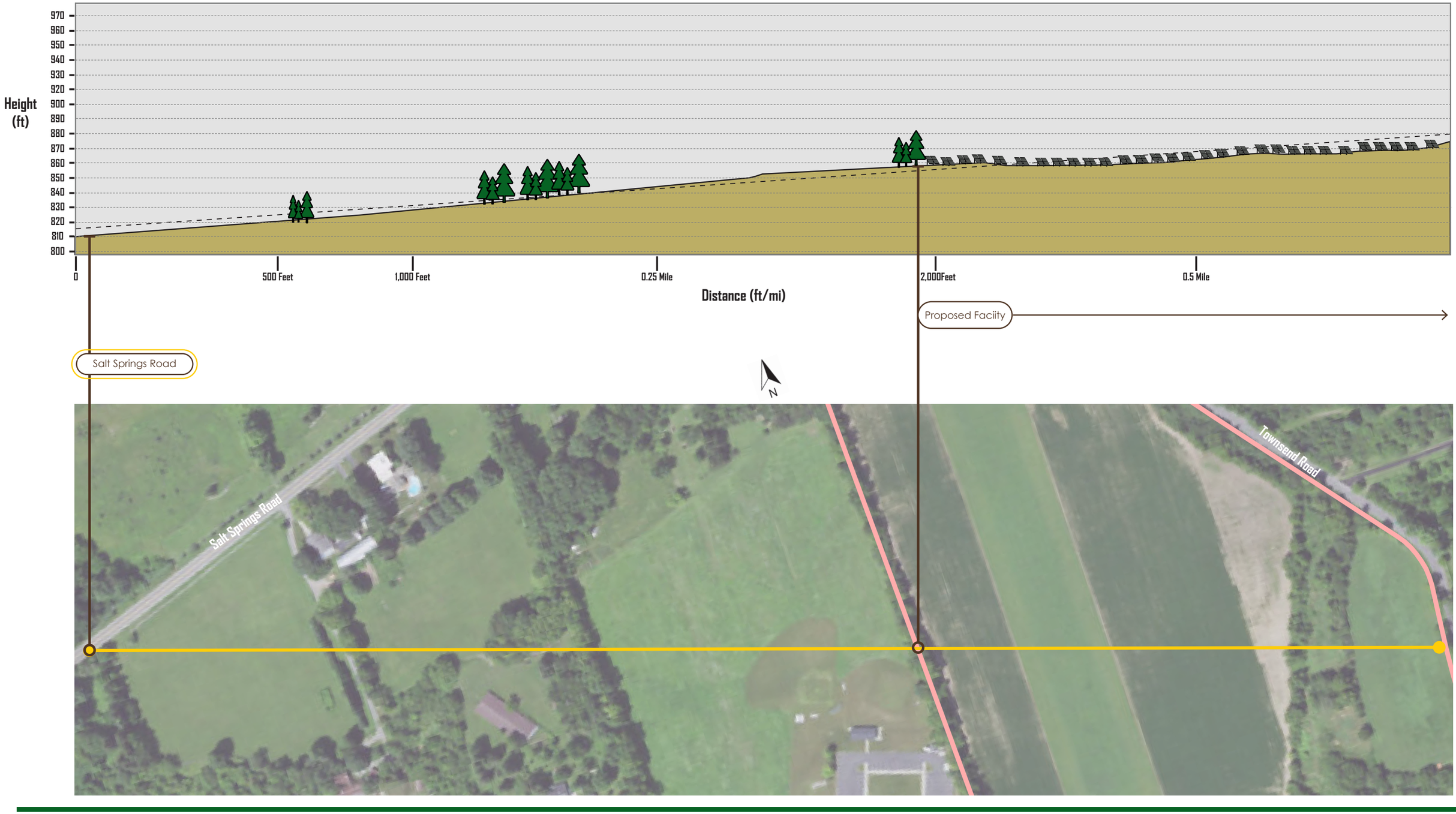
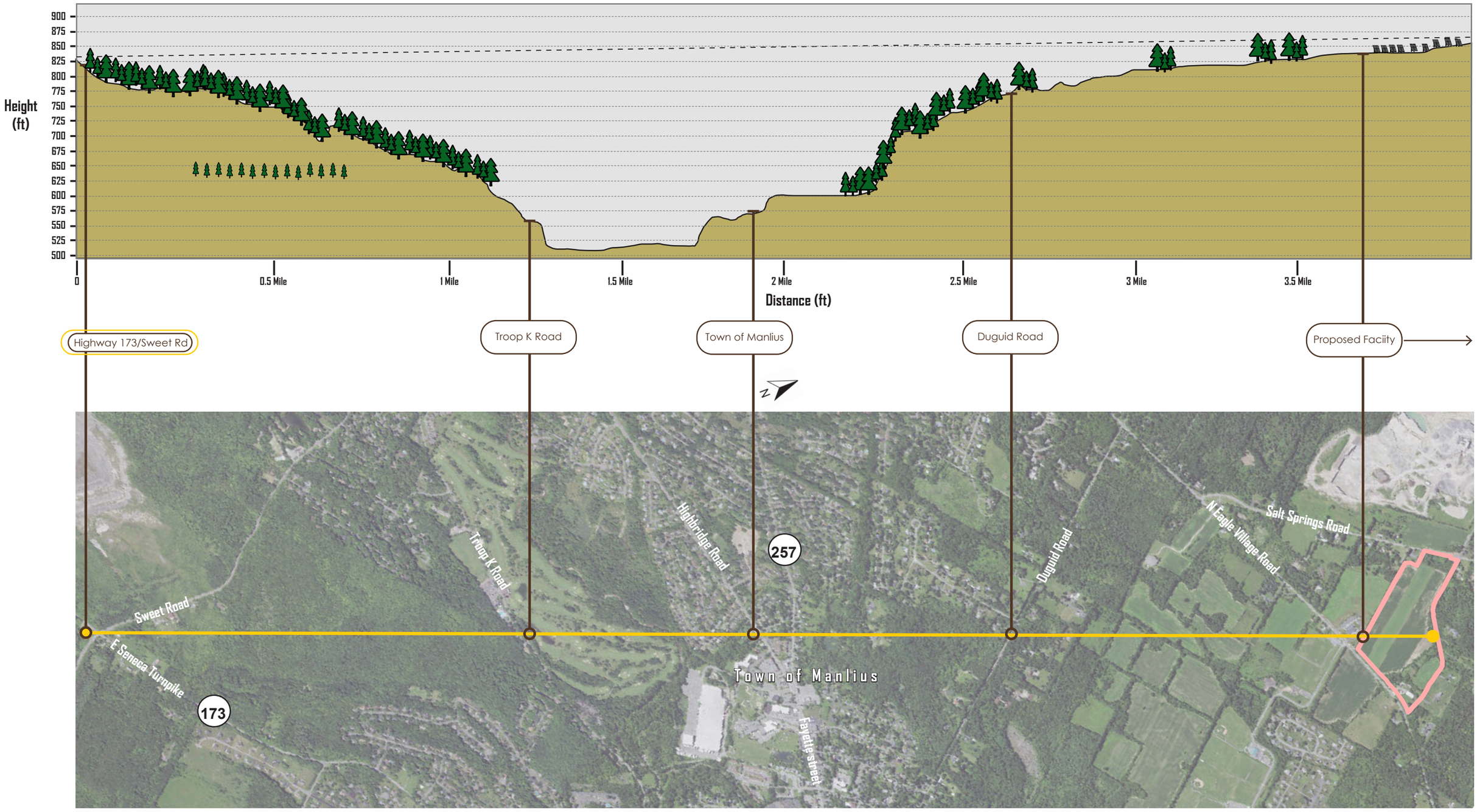


Figure 3: Line of Sight C | State Highway 173/Sweet Road



ATTACHMENT E

LANDSCAPING PLAN

TETRA TECH
ARCHITECTS & ENGINEERS

April 10, 2020

Mrs. Jodi L. Hunt, Project Manager
Tetra Tech Engineering Corporation, P.C.
3136 South Winton Road, Suite 303
Rochester, New York 14623

Re: North Eagle Solar Project
5062 North Eagle Village Road
Manlius, New York 13104
Tt Project Number 194-7179

Dear Mrs. Hunt:

On April 8, 2020 I visited the above referenced project for the purposes of determining whether landscape materials are recommended to be installed to screen the proposed solar array development from North Eagle Village Road, Salt Springs Road and Townsend Road as shown on the Sheet C-201.

I evaluated the existing site against the proposed site plan in order to determine where the solar units might be visible from North Eagle Village Road and Salt Springs Road. Views onto the property from these roads were primarily from the adjacent Church property to the west corner of the proposed site. It appears the Church property extends to Salt Springs Road. The property boundary separating the Church property including Salt Springs Road was heavily screened with vegetation ranging from approximately 10 feet to 20 feet in width. The property areas along Eagle Village Road which front the property consisted of open field and Fayetteville Manlius athletic fields.

The visibility to the solar development from the intersection of North Eagle Village Road and Townsend Street is extremely limited. The development is located behind an existing farm and is heavily vegetated between the farm and proposed solar development. Townsend Road is heavily vegetated on either side of the road creating a buffer between the development and residences along the roadway. The development terminates approximately 625 feet from Salt Springs Road.

The placement of this solar development on this site utilizes existing vegetation to limit overall visibility to the solar development. Given the vegetative buffer distance surrounding the solar development overall visibility is limited to the point where placing additional plant material to enhance screening of this development will not be effective. Attached photographs will offer a perspective onto the property illustrating the existing vegetative buffering surrounding the site.

Tetra Tech Architects & Engineers
Cornell Business & Technology Park
10 Brown Road, Ithaca, New York 14850
Tel 607.277.7100 Fax 607.277.1410 www.tetratech-ae.com

If you should have any questions on the enclosed, please do not hesitate to contact me at our **Ithaca** Office.

Sincerely,

James R. Stephenson

James R. Stephenson
Senior Landscape Architect
jim.stephenson@TetraTech.com

JRS:adm

cc: Project 194-7179, File 46b



SITE PHOTOGRAPHS



View to the south along North Eagle Village



View from the Church property onto the solar development.
Typical vegetated buffer surrounding the property.

ATTACHMENT F

GLARE ANALYSIS

TETRA TECH

MEMO

To:	EF NY CDG 001, LLC
From:	Tetra Tech, Inc.
Date:	March 13, 2020
Subject:	Glint and Glare Analysis of the North Eagle Solar Project in Onondaga County, Manlius, NY

At the request of EF NY CDG 001, LLC (Falck Renewables), Tetra Tech, Inc. (Tetra Tech) conducted a glint and glare analysis of the proposed North Eagle Solar Project (Project) located in Onondaga County, New York. The Project site consists of approximately 21 acres of undeveloped land approximately 1.4 miles northeast of downtown Manlius, New York. The Project is bounded by rural residential land to the north and east; undeveloped land and sport fields to the south and a church to the west. Topography throughout the Project site is relatively flat and ranges from approximately 854 to 844 feet above mean sea level with the highest elevations along the northern Project site boundary, gradually sloping down to the southwest.

This memorandum provides a description of the glint and glare anticipated from use of the Project site as a solar energy generating facility. Included are a Site Plan (Attachment A), the Sandia glare analysis reports (Attachment B), and the Federal Aviation Administration (FAA) Notice Criteria Tool Output (Attachment C).

GLARE ANALYSIS METHOD

With growing numbers of solar energy systems being proposed and installed throughout the United States, the potential impact of glare (a continuous source of bright light) from photovoltaic modules is receiving increased attention. As an industry standard, the term “glint and glare” analysis is typically used to describe an analysis of potential ocular impacts to defined receptors. As a point of clarification ForgeSolar defines glint and glare in the following statement:

> *Glint is typically defined as a momentary flash of bright light, often caused by a reflection off a moving source. A typical example of glint is a momentary solar reflection from a moving car. Glare is defined as a continuous source of bright light. Glare is generally associated with stationary objects, which, due to the slow relative movement of the sun, reflect sunlight for a longer duration.*

Based on the ForgeSolar definitions of glint and glare and the stationary nature of the Project modules (tracking arrays do not rotate faster than the relative movement of the sun), the potential reflectance from the Project modeled throughout this report will be referred to as glare.

The Federal Aviation Administration (FAA) developed Technical Guidance for Evaluating Selected Solar Technologies on Airports in 2010 (FAA Guidance). The FAA Guidance recommends that glare analyses should be performed on a site-specific basis using the Sandia Laboratories Solar Glare Hazard Analysis Tool (SGHAT). This guidance applies to solar facilities located on federally-obligated airport property but is also considered to be an industry best practice for solar facilities in general. The SGHAT complies with FAA 78 FR 63276. Tetra Tech

utilized the SGHAT technology as part of an online tool (GlareGauge) developed by Sandia National Laboratories and hosted by ForgeSolar. GlareGauge provides a quantitative assessment of the following:

- When and where glare has the potential to occur throughout the year for a defined solar array polygon; and
- Potential effects on the human eye at locations where glare is predicted.

Based on the predicted retinal irradiance (intensity) and subtended angle (size/distance) of the glare source to receptor, the GlareGauge categorizes potential glare where it is predicted by the model to occur in accordance with three tiers of severity (ocular hazards) that are shown by different colors in the model output:

- Red glare: glare predicted with a potential for permanent eye damage (retinal burn)
- Yellow glare: glare predicted with a potential for temporary after-image
- Green glare: glare predicted with a low potential for temporary after-image

The following statement was issued by Sandia Laboratories regarding the SGHAT technology:

> *Sandia developed SGHAT v. 3.0, a web-based tool and methodology to evaluate potential glint/glare associated with solar energy installations. The validated tool provides a quantified assessment of when and where glare will occur, as well as information about potential ocular impacts. The calculations and methods are based on analyses, test data, a database of different photovoltaic module surfaces (e.g. anti-reflective coating, texturing), and models developed over several years at Sandia. The results are presented in a simple easy-to-interpret plot that specifies when glare will occur throughout the year, with color indicating the potential ocular hazard (Sandia Laboratories, 2016).*

According to the Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports (78 FR 63276), the FAA has determined that "glint and glare from solar energy systems could result in an ocular impact to pilots and/or air traffic control (ATC) facilities and compromise the safety of the air transportation system." The FAA has developed the following criteria analyzed by SGHAT as it pertains to the Project:

- No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATCT) cab; and
- No potential for glare or "low potential for after-image" along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two miles from 50 feet above the landing threshold using a standard three-degree glidepath.

The SGHAT was utilized to evaluate the potential for glint and glare at Syracuse Hancock International (SYR) as noted in the FAA Notice Criteria Tool Output (Attachment C). SYR contains 4 two-mile final approach path runways (RWY 10/28 and RWY 15/33) which were modeled according to the direction, threshold crossing height and glide path noted in the FAA Airport Database. In addition, 4 representative surrounding observation points (OPs) and segmented routes along North Eagle Village Road and Townsend Road were modeled to provide a representation of potential impacts to the surrounding viewshed. The SGHAT input parameters are noted in Table 1 and Table 2.

Table 1: SGHAT Input Parameters - Surrounding Properties

Racking Type	Module Type	Module Orientation[1]	Tilt	Panel Centroid Height[2]	Observation Point Height[2]	Route Receptor Height[2]
Fixed Tilt	Smooth Glass with Anti-Reflective Coating	180˚	25˚	5 feet	6 feet	5 feet

1. South-facing modules throughout Project
2. Height above ground surface: OP height of 6 feet represents standing on ground or first story views; route receptor height represents average views from a standard vehicle.

Table 2: SGHAT Input Parameters - Syracuse Hancock International

Module Orientation[1]	Tilt	Panel Centroid Height[2]	Air Traffic Control Tower Height[2]	Runway Direction (true direction)	Runway Threshold Crossing Height[2]	Runway Glide Path[3]
180˚	25˚	5 feet	50 feet	RWY 10: 87˚ RWY 28: 267˚ RWY 15: 134˚ RWY 33: 314˚	RWY 10: 55 feet RWY 28: 60 feet RWY 15: 53 feet RWY 33: 53 feet	RWY 10: 3˚ RWY 28: 3˚ RWY 15: 3˚ RWY 33: 3˚

1. Fixed-tilt, south-facing, smooth glass modules with anti-reflective coating throughout the Project.
2. Height above ground surface: ATCT height assumed to be approximately 50 feet.
3. Glide path is the angle of aircraft decent along the two-mile final approach path into the designated runway.

GLARE ANALYSIS RESULTS

The SGHAT GlareGauge modeled the results for the Project. Based on conservatisms and assumptions in the software, the Project was split into two photovoltaic (PV) array areas (PV 1 and PV 2) and Townsend Road was split into three segments. The SGHAT did not produce any results for glare along the two-mile final approach paths into SYR nor at the SYR ATCT; therefore, the Project complies with the minimum standards set for solar projects on airport property (FAA 78 FR 63276, as outlined above).

In addition, red glare and green glare were not predicted at any surrounding OPs or route receptors modeled in the SGHAT; however, yellow glare was predicted at the OPs and route receptors as outlined in Table 3.

Table 3: Glare Analysis Summary

Receptor	Annual Green Glare Minutes	Annual Yellow Glare Minutes	Annual Red Glare Minutes
SYR RWY 10	0	0	0

SYR RWY 28	0	0	0
SYR RWY 15	0	0	0
SYR RWY 33	0	0	0
SYR ATCT	0	0	0
North Eagle Village Road	0	349	0
Townsend Road - 1	0	0	0
Townsend Road - 2	0	3,723	0
Townsend Road - 3	0	3,617	0
OP 1 (northern residential)	0	0	0
OP 2 (church)	0	5,569	0
OP 3 (southeastern farm)	0	1,304	0
OP 4 (eastern residential)	0	8,190	0

It is important to note that the SGHAT is bound by conservative limitations. The SGHAT does not consider obstacles (either man-made or natural) between the defined Project and the observer during analysis such as vegetative screening (existing or proposed), buildings, rolling topography, etc. In addition, the SGHAT does not account for varying ambient conditions (i.e. cloudy days, precipitation, etc.). The Project is located in an agricultural field that is surrounded by existing vegetation on all sides. The glare analysis results summarized in Table 3 are a conservative representation as it is anticipated that many (if not all) of these predicted annual glare minutes will be obstructed by existing vegetation and topography.

FAA NOTICE CRITERIA CONSULTATION

The FAA Notice Criteria Tool allows the user to determine if a proposed structure would require a formal submission to the FAA under CFR Title 14 Part 77.9 (Safe, Efficient Use, and Preservation of the Navigable Airspace). This online tool was utilized to determine if the proposed solar facility is recommended to formally file to the FAA based on the Project's central location and height above ground surface. The FAA Notice Criteria Tool Report (Attachment C) stated that a formal filing with the FAA Obstruction Evaluation Group is recommended due to the Project's proximity to SYR. As demonstrated by the results of the SGHAT, the Project is not anticipated to have adverse effects on SYR's two-mile final approach paths or ATCT. Formal filing of the Project to the FAA is recommended with the SGHAT output appended to demonstrate no adverse effects.

SUMMARY

The Project Site layout was modeled on the SGHAT GlareGauge in order to evaluate the potential extent of glare the proposed Project may have upon the two-mile final approach paths to SYR, approximately 9 miles northwest of the Project as well as on the surrounding properties and roadways. The final approach paths were generally defined as 2 miles from approximately 50 feet above the landing thresholds (78 FR 63276) using a standard 3-degree glide path. The land thresholds were defined from Runway 10/28 and 15/33 as noted in the FAA Airport

Database and summarized in Table 2. In addition, the SGHAT was used to model potential extents of glare at representative residential properties to the north and east; a farm to the southeast; a church to the west; and segmented vehicular traffic routes along North Eagle Village Road and Townsend Road. Based on the results noted in Table 3, no glare was predicted at the SYR receptors and, therefore, the Project is in compliance with FAA 78 FR 63276. Since the Project was recommended to formally file to the FAA OEG from the results of the FAA Notice Criteria Tool, Tetra Tech recommends that this formal filing be conducted with the glare analysis appended to demonstrate no adverse effects on navigable airspace.

Yellow glare (glare predicted with a potential for temporary after-image) was predicted at North Eagle Village Road, Townsend Road - 2, Townsend Road - 3, OP 2, OP 3 and OP 4. In general, the yellow glare predicted at these receptors occurs in the evening hours (from 5:00 PM to 7:00 PM) from March through mid-October. The greatest amount of predicted glare (8,190 annual minutes) is at OP 4 totaling no more than 40 minutes per day, which equates to approximately 3.1% of annual daylight minutes. As noted above, the SGHAT is a conservative model and does not account for varying ambient conditions and/or screening due to existing or proposed vegetative cover or other objects, rolling topography between the Project and receptor, etc. Based on the Project location surrounded by existing mature vegetation and undeveloped land, it is anticipated that many (if not all) of the predicted annual glare minutes will be obstructed by existing vegetation and rolling topography.

REFERENCES

Sandia Solar Glare Hazard Analysis Tool, GlareGauge hosted by ForgeSolar. Accessed online https://www.forgesolar.com/.

Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports. 78 FR 63276. October 23, 2013.

Federal Aviation Administration. CFR Title 14 Part 77.9 Notice of Proposed Construction or Alteration Requiring Notice. 2010.

Federal Aviation Administration. Technical Guidance for Evaluating Selected Solar Technologies on Airports. 2010.

Federal Aviation Administration Notice Criteria Tool. Obstruction Evaluation Version 2018.1.4. Accessed online https://oeaaa.faa.gov/oeaaa/external/gisTools/gisAction.jsp?action=showNoNoticeRequiredToolForm

Federal Aviation Administration Airport Database. Accessed online on March 9, 2020. https://www.faa.gov/air_traffic/flight_info/aeronav/aero_data/Airport_Data/

FORGESOLAR GLARE ANALYSIS

Project: **Falck Renewables - New York**
Site configuration: **North Eagle - Surrounding**
Analysis conducted by Josh Burdett (joshua.burdett@tetratech.com) at 17:04 on 09 Mar, 2020.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	N/A	No flight paths analyzed
ATCT(s)	N/A	No ATCT receptors designated

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 36585.6727



PV Array(s)

Name: PV 1
Description: Northern
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.024640	-75.959609	849.50	5.00	854.50
2	43.023801	-75.959556	844.23	5.00	849.23
3	43.022609	-75.959491	843.74	5.00	848.74
4	43.022052	-75.959470	844.08	5.00	849.08
5	43.022123	-75.956906	851.37	5.00	856.37
6	43.022758	-75.956691	852.25	5.00	857.25
7	43.023291	-75.956713	852.48	5.00	857.48
8	43.024217	-75.957775	851.01	5.00	856.01
9	43.024727	-75.957839	853.48	5.00	858.48

Name: PV 2
Description: Southern
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.022048	-75.959473	844.08	5.00	849.08
2	43.021264	-75.959443	842.51	5.00	847.51
3	43.021060	-75.958692	844.37	5.00	849.38
4	43.020952	-75.958209	844.71	5.00	849.71
5	43.020938	-75.957609	846.55	5.00	851.55
6	43.021279	-75.957249	847.03	5.00	852.03
7	43.022113	-75.956909	851.38	5.00	856.38

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
OP 1	1	43.026085	-75.959600	851.79	6.00
OP 2	2	43.021697	-75.960491	846.23	6.00
OP 3	3	43.020505	-75.956704	855.51	6.00
OP 4	4	43.022125	-75.954676	885.25	6.00

Route Receptor(s)

Name: N. Eagle Village Road
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.019932	-75.956339	860.26	5.00	865.26
2	43.020113	-75.956822	855.19	5.00	860.19
3	43.020242	-75.957261	851.05	5.00	856.05
4	43.020379	-75.957760	848.23	5.00	853.23
5	43.020497	-75.958216	847.01	5.00	852.01
6	43.020673	-75.958935	845.02	5.00	850.02
7	43.020819	-75.959557	844.55	5.00	849.55
8	43.020995	-75.960308	844.05	5.00	849.05
9	43.021273	-75.961435	843.71	5.00	848.71

Name: Townsend Road - 1
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.026189	-75.957497	861.77	5.00	866.77
2	43.025801	-75.957455	862.48	5.00	867.48
3	43.025326	-75.957422	859.20	5.00	864.20
4	43.024958	-75.957428	856.35	5.00	861.35
5	43.024750	-75.957406	855.40	5.00	860.40

Name: Townsend Road - 2
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.024725	-75.957417	855.24	5.00	860.24
2	43.024478	-75.957337	856.46	5.00	861.46
3	43.024238	-75.957186	856.51	5.00	861.51
4	43.023940	-75.956891	862.08	5.00	867.08

Name: Townsend Road - 3
Path type: Two-way
Observer view angle: 50.0°



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.023909	-75.956859	862.46	5.00	867.46
2	43.023666	-75.956591	862.48	5.00	867.48
3	43.023140	-75.956033	862.92	5.00	867.92
4	43.022807	-75.955679	864.10	5.00	869.10
5	43.022497	-75.955379	870.05	5.00	875.05

GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV 1	25.0	180.0	0	17,427	-
PV 2	25.0	180.0	0	5,325	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
OP 1	0	0
OP 2	0	5569
OP 3	0	1304
OP 4	0	8190
N. Eagle Village Road	0	349
Townsend Road - 1	0	0
Townsend Road - 2	0	3723
Townsend Road - 3	0	3617

Results for: PV 1

Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	2413
OP 3	0	0
OP 4	0	7595
N. Eagle Village Road	0	79
Townsend Road - 1	0	0
Townsend Road - 2	0	3723
Townsend Road - 3	0	3617

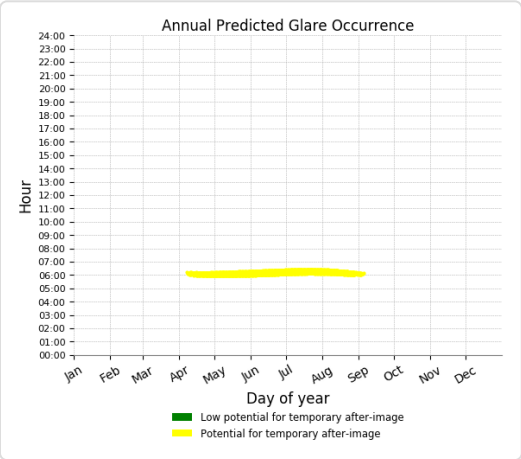
Point Receptor: OP 1

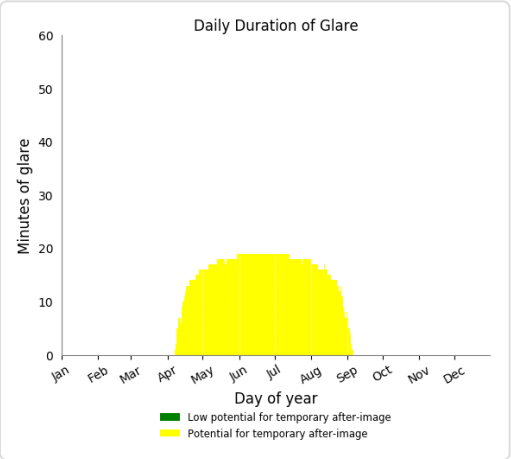
0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

2413 minutes of yellow glare

0 minutes of green glare





Point Receptor: OP 3

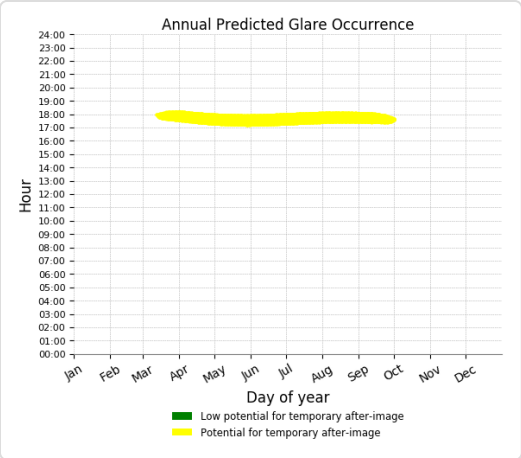
0 minutes of yellow glare

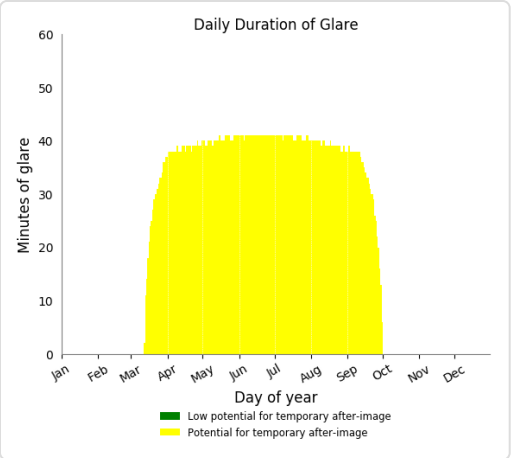
0 minutes of green glare

Point Receptor: OP 4

7595 minutes of yellow glare

0 minutes of green glare

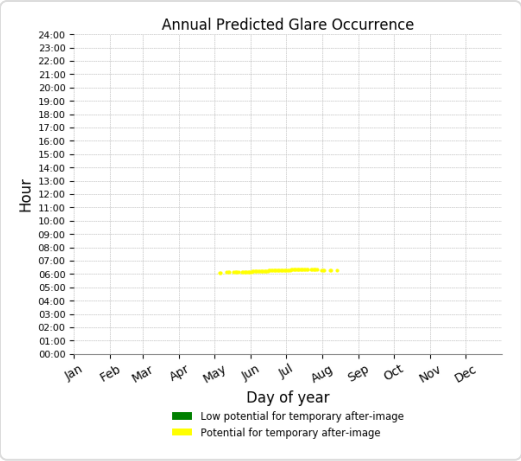




Route: N. Eagle Village Road

79 minutes of yellow glare

0 minutes of green glare

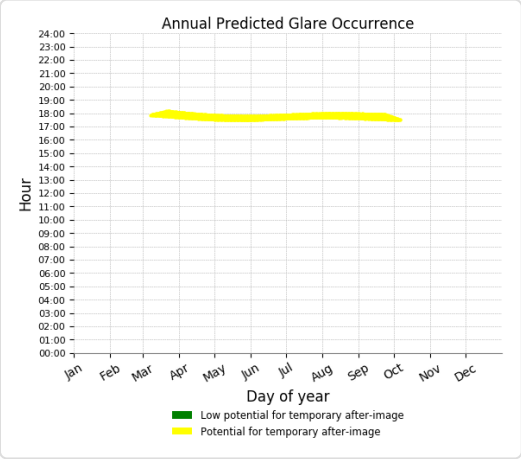


Route: Townsend Road - 1

0 minutes of yellow glare
0 minutes of green glare

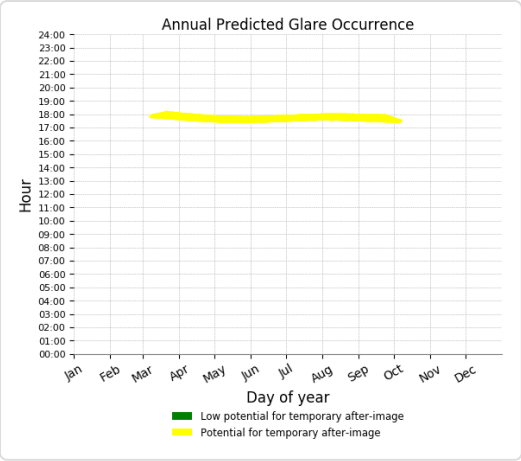
Route: Townsend Road - 2

3723 minutes of yellow glare
0 minutes of green glare



Route: Townsend Road - 3

3617 minutes of yellow glare
0 minutes of green glare



Results for: PV 2

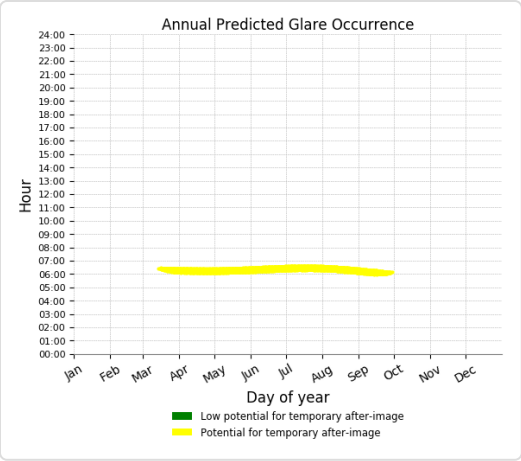
Receptor	Green Glare (min)	Yellow Glare (min)
OP 1	0	0
OP 2	0	3156
OP 3	0	1304
OP 4	0	595
N. Eagle Village Road	0	270
Townsend Road - 1	0	0
Townsend Road - 2	0	0
Townsend Road - 3	0	0

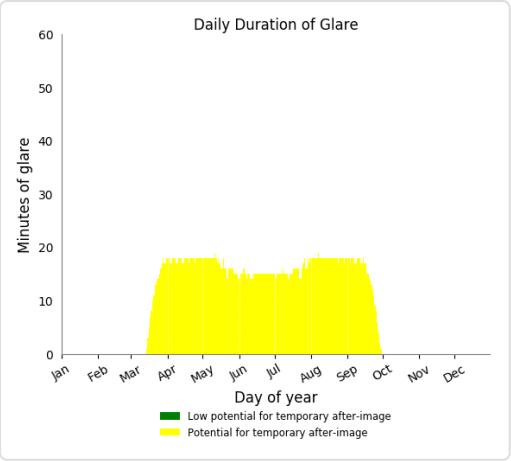
Point Receptor: OP 1

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: OP 2

3156 minutes of yellow glare
0 minutes of green glare

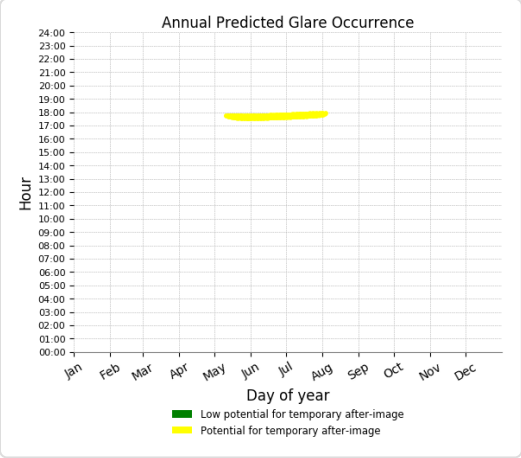


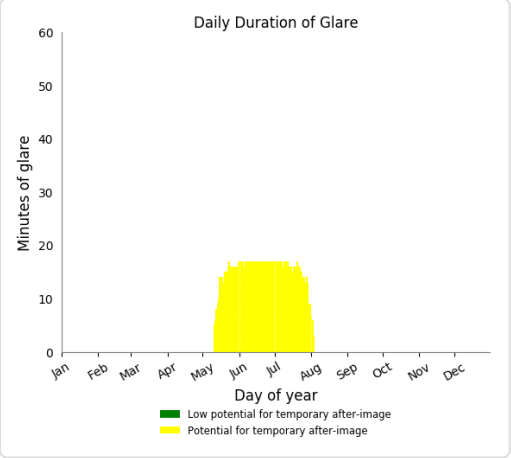


Point Receptor: OP 3

1304 minutes of yellow glare

0 minutes of green glare

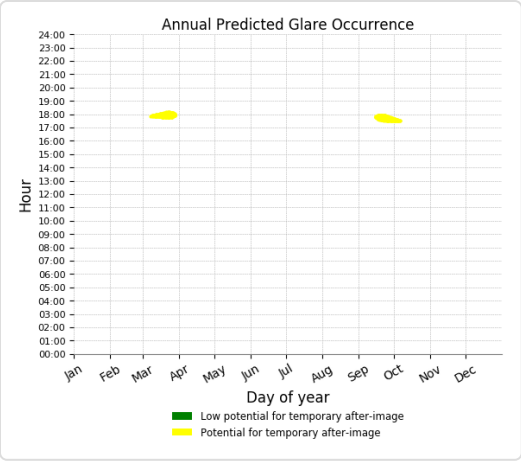


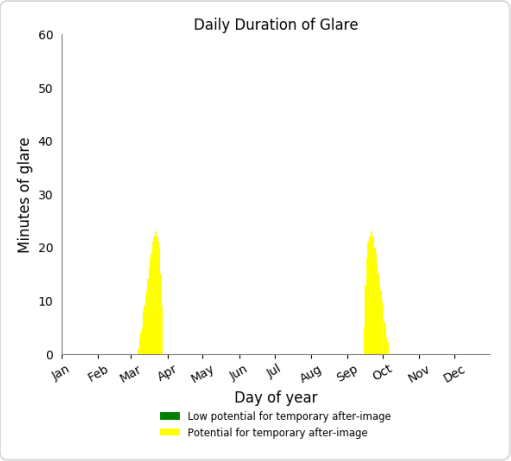


Point Receptor: OP 4

595 minutes of yellow glare

0 minutes of green glare

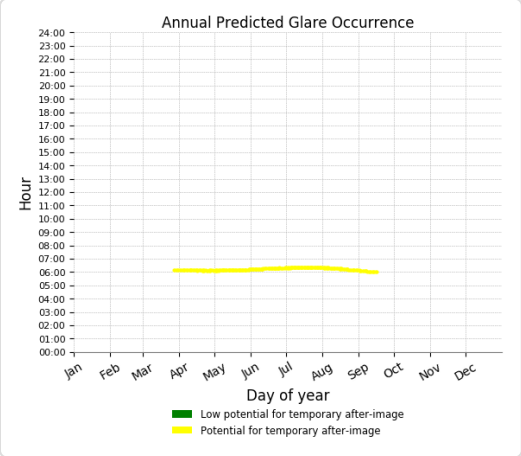




Route: N. Eagle Village Road

270 minutes of yellow glare

0 minutes of green glare



Route: Townsend Road - 1

0 minutes of yellow glare

0 minutes of green glare

Route: Townsend Road - 2

0 minutes of yellow glare

0 minutes of green glare

Route: Townsend Road - 3

0 minutes of yellow glare

0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
Glare analyses do not account for physical obstructions between reflectors and receptors. This includes buildings, tree cover and geographic obstructions.
Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare.
The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

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FORGESOLAR GLARE ANALYSIS

Project: **Falck Renewables - New York**
Site configuration: **North Eagle - FAA**
Analysis conducted by Josh Burdett (joshua.burdett@tetratech.com) at 16:11 on 09 Mar, 2020.

U.S. FAA 2013 Policy Adherence

The following table summarizes the policy adherence of the glare analysis based on the 2013 U.S. Federal Aviation Administration Interim Policy 78 FR 63276. This policy requires the following criteria be met for solar energy systems on airport property:

- No "yellow" glare (potential for after-image) for any flight path from threshold to 2 miles
- No glare of any kind for Air Traffic Control Tower(s) ("ATCT") at cab height.
- Default analysis and observer characteristics (see list below)

ForgeSolar does not represent or speak officially for the FAA and cannot approve or deny projects. Results are informational only.

COMPONENT	STATUS	DESCRIPTION
Analysis parameters	PASS	Analysis time interval and eye characteristics used are acceptable
Flight path(s)	PASS	Flight path receptor(s) do not receive yellow glare
ATCT(s)	PASS	Receptor(s) marked as ATCT do not receive glare

Default glare analysis parameters and observer eye characteristics (for reference only):

- Analysis time interval: 1 minute
- Ocular transmission coefficient: 0.5
- Pupil diameter: 0.002 meters
- Eye focal length: 0.017 meters
- Sun subtended angle: 9.3 milliradians

FAA Policy 78 FR 63276 can be read at https://www.federalregister.gov/d/2013-24729

SITE CONFIGURATION

Analysis Parameters

DNI: peaks at 1,000.0 W/m^2
Time interval: 1 min
Ocular transmission coefficient: 0.5
Pupil diameter: 0.002 m
Eye focal length: 0.017 m
Sun subtended angle: 9.3 mrad
Site Config ID: 36585.6727



PV Array(s)

Name: PV 1
Description: Northern
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.024640	-75.959609	849.50	5.00	854.50
2	43.023801	-75.959556	844.23	5.00	849.23
3	43.022609	-75.959491	843.74	5.00	848.74
4	43.022052	-75.959470	844.08	5.00	849.08
5	43.022123	-75.956906	851.37	5.00	856.37
6	43.022758	-75.956691	852.25	5.00	857.25
7	43.023291	-75.956713	852.48	5.00	857.48
8	43.024217	-75.957775	851.01	5.00	856.01
9	43.024727	-75.957839	853.48	5.00	858.48

Name: PV 2
Description: Southern
Axis tracking: Fixed (no rotation)
Tilt: 25.0°
Orientation: 180.0°
Rated power: -
Panel material: Smooth glass with AR coating
Reflectivity: Vary with sun
Slope error: correlate with material



Vertex	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
1	43.022048	-75.959473	844.08	5.00	849.08
2	43.021264	-75.959443	842.51	5.00	847.51
3	43.021060	-75.958692	844.37	5.00	849.38
4	43.020952	-75.958209	844.71	5.00	849.71
5	43.020938	-75.957609	846.55	5.00	851.55
6	43.021279	-75.957249	847.03	5.00	852.03
7	43.022113	-75.956909	851.38	5.00	856.38

Flight Path Receptor(s)

Name: RWY 10
Description:
Threshold height: 55 ft
Direction: 87.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.108223	-76.125583	415.27	55.00	470.27
Two-mile	43.106710	-76.165178	431.53	592.20	1023.73

Name: RWY 15
Description:
Threshold height: 53 ft
Direction: 134.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.120898	-76.112378	410.71	53.00	463.71
Two-mile	43.140982	-76.140905	399.19	617.97	1017.16

Name: RWY 28
Description:
Threshold height: 60 ft
Direction: 267.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°



Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.109292	-76.093172	397.59	60.00	457.59
Two-mile	43.110805	-76.053576	406.93	604.12	1011.05

Name: RWY 33
Description:
Threshold height: 53 ft
Direction: 314.0°
Glide slope: 3.0°
Pilot view restricted? Yes
Vertical view: 30.0°
Azimuthal view: 50.0°

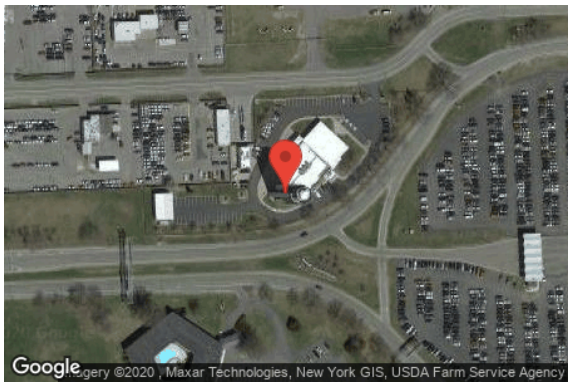


Point	Latitude (°)	Longitude (°)	Ground elevation (ft)	Height above ground (ft)	Total elevation (ft)
Threshold	43.107299	-76.093052	399.17	53.00	452.17
Two-mile	43.087214	-76.064531	416.71	588.91	1005.62

Discrete Observation Receptors

Name	ID	Latitude (°)	Longitude (°)	Elevation (ft)	Height (ft)
1-ATCT	1	43.114199	-76.117231	419.16	50.00

Map image of 1-ATCT



GLARE ANALYSIS RESULTS

Summary of Glare

PV Array Name	Tilt (°)	Orient (°)	"Green" Glare min	"Yellow" Glare min	Energy kWh
PV 1	25.0	180.0	0	0	-
PV 2	25.0	180.0	0	0	-

Total annual glare received by each receptor

Receptor	Annual Green Glare (min)	Annual Yellow Glare (min)
RWY 10	0	0
RWY 15	0	0
RWY 28	0	0
RWY 33	0	0
1-ATCT	0	0

Results for: PV 1

RWY 10	0	0

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 15	0	0
RWY 28	0	0
RWY 33	0	0
1-ATCT	0	0

Flight Path: RWY 10

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 15

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 28

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 33

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Results for: PV 2

Receptor	Green Glare (min)	Yellow Glare (min)
RWY 10	0	0
RWY 15	0	0
RWY 28	0	0
RWY 33	0	0
1-ATCT	0	0

Flight Path: RWY 10

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 15

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 28

0 minutes of yellow glare
0 minutes of green glare

Flight Path: RWY 33

0 minutes of yellow glare
0 minutes of green glare

Point Receptor: 1-ATCT

0 minutes of yellow glare
0 minutes of green glare

Assumptions

"Green" glare is glare with low potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
"Yellow" glare is glare with potential to cause an after-image (flash blindness) when observed prior to a typical blink response time.
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Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. Actual results and glare occurrence may differ.
Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid based on aggregated research data. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.

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ATTACHMENT G

FEDERAL AVIATION ADMINSTRATION SCREEN

Notice Criteria Tool

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

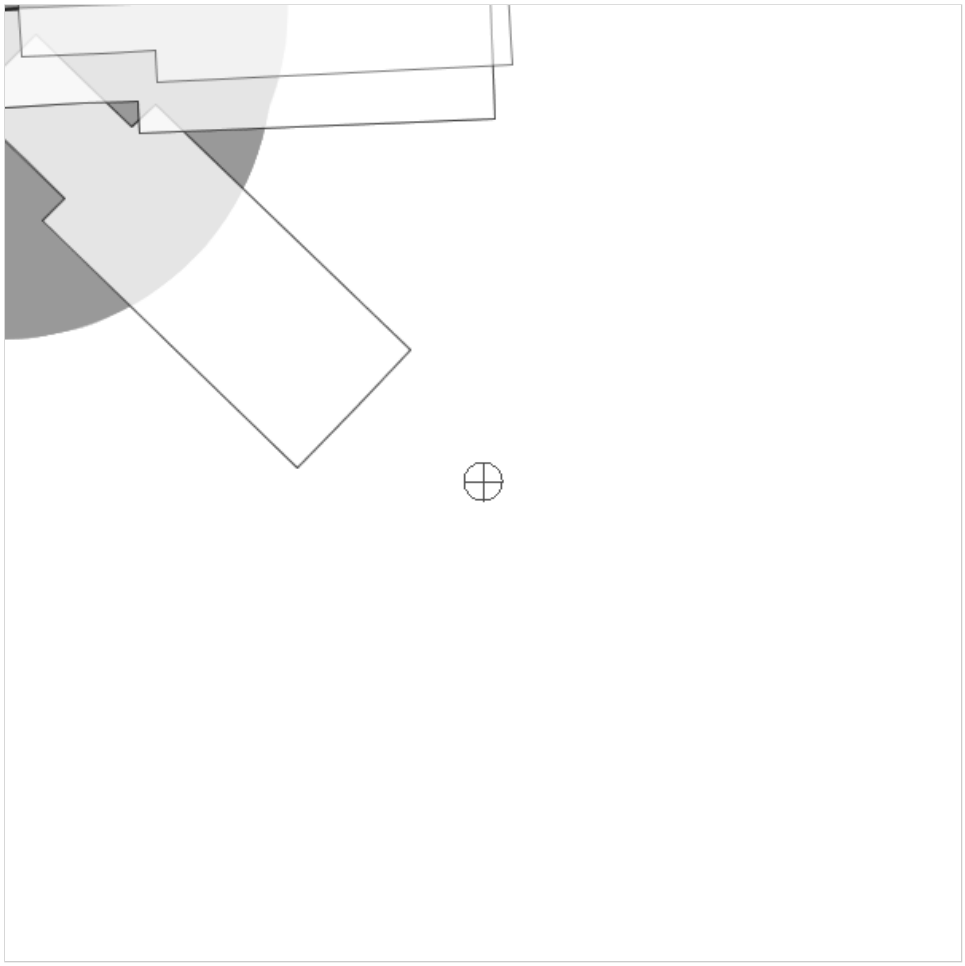
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Longitude:	75 Deg 57 M 30.62 S W ▼
Horizontal Datum:	NAD83 ▼
Site Elevation (SE):	854 (nearest foot)
Structure Height :	7 (nearest foot)
Traverseway:	No Traverseway ▼ (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

Results

You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

The FAA requests that you file



Obstruction Evaluation
Version 2020-MAR

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FAA OE/AAA Offices
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Add New Case (On Airport)
Add Supplemental Notice (7460-2 Form)
Add Multiple Cases (Off Airport)
My Case Transfer History
My Landing Area Proposals (LAP)

Project Submission Success
Project Name: FALCK-000573769-20

faa.gov Tools: Print this page

Project FALCK-000573769-20 has been submitted successfully to the FAA.

Your filing is assigned Aeronautical Study Number (ASN):
2020-AEA-4038-OE

Please refer to the assigned ASN on all future inquiries regarding this filing.

Please return to the system at a later date for status updates.

It is the responsibility of each e-filer to exercise due diligence to determine if coordination of the proposed construction or alteration is necessary with their state aviation department. Please use the link below to contact your state aviation department to determine their requirements:
State Aviation Contacts

To ensure e-mail notifications are delivered to your inbox please add noreply@faa.gov to your address book. Notifications sent from this address are system generated FAA e-mails and replies to this address will NOT be read or forwarded for review. Each system generated e-mail will contain specific FAA contact information in the text of the message.

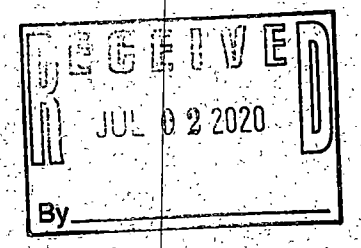
Return to Portal

9:15 AM
4/2/2020

Gary Mazurkowitz, R.A.
Architect

4860 Armstrong Road
Manlius, New York 13104
315/637-9380

30 June 2020



Town of Manlius
Planning Board
301 Brooklea Drive
Fayetteville, NY 13066

Re: Proposed location for The Village Groomer
8064 East Genesee Street, Fayetteville, NY

Gentlemen:

I am attaching herewith (12) twelve copies of Drawing **SK-1,** dated 6/30/2020 and (12) twelve copies of Drawing **SK-2,** dated 6/30/2020. Drawing **SK-1** is an enlargement of the property survey as prepared by Rowell and Associates, dated March 29, 1983. It shows the property and the existing structure. I have added the following to the drawing:

- Existing trees
- Existing decks
- Existing bridge
- Existing gravel driveway

Drawing **SK-2** shows photos of the building elevations from various vantage points.

The proposed exterior improvements shown are as follows:

- Additional gravel to both enlarge the area and neaten up the overall appearance. Employee parking will be alongside the garage. There will be one space for the owner and one for the groomer. The balance of the gravel area will be used for drop off and pick up. Business hours are 7:30 to 5:30 Monday thru Friday with drop-off hours usually between 7:30 and approximately and 9:00. Pick-up times are scheduled at 12:00, 2:00, 4:00 and 5:30.
- The drop off area is large enough to accommodate (5) five cars. The area is sized to be compliant with The Manlius Town Zoning Code. In addition there is an area 28' deep to provide additional space to comfortably turn vehicles around for exiting. It is rare that there will be any more that (3) three vehicles there at a time. I have been a client for over twenty years at her current location (8122 East Genesee Street).
- The existing decks will undergo remedial work. Work such as replacing boards as required, leveling, adding hand rails to the existing stair and adding (1) stair and railings where steps were removed.
- The garage door will be replaced.
- The building color will be changed.

Gary Mazurkowitz, R.A.
Architect

4860 Armstrong Road
Manlius, New York 13104
315/637-9380

- An ADA compliant walkway (partially elevated) will be added for client access to the entrance. The walk is intended to be constructed of wood to add character to the entry approach. The entrance is somewhat hidden from drop off area. In addition a pergola will be constructed over the walkway to add character to the approach. The pergola will be similar in character to the one in the attached photo.
- Ground cover planting will be added between the walkway and the structure. Additional coniferous and ornamental plant material will be located along the west side of the walkway as shown.

This presentation is meant to show intent as the purchase is contingent upon Planning Board approval.

If you have any questions or need clarification please contact me at (315) 415 2300.

Sincerely,

Gary Mazurkowitz

Expected Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

RECEIVED
MAY 26 2020
By _____

DATE: May 14, 2020

Name of Project: Dog grooming Business / Buying house

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 8064 Genesee TPke. Fayetteville Ny. 13066

Type of Project:

○ Division of Land ○ Subdivision ○ Accessory Use ○ Zone Change ○ Site Review ○ Other Buying House move my business of Dog grooming

Developer: _____ Phone: _____

Address: 8064 Genesee TPke Fayetteville Ny. Zip: 13066

Tax Map Number(#)/s: 090.-01-10.2

313889090.-01-10.2

Present Zoning: RA Desired Zoning: RA

Total Acreage: 0.93 Total Number of Lots: 1

Property Owner/s: Tom Kinsella Phone: 315 637-3390

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

_____ Printed Name: _____

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

_____ Printed Name: _____

Use next page for additional known property owners' information

---

Planning Board Meeting Date Assignment: _____

_____

Fee: _____ Paid: _____ Per: ○ Credit/Debit Card ○ Check ○ Cash

617.20
Appendix B
Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

More grooming business.

Name of Action or Project:
Dog Grooming

Project Location (describe, and attach a location map):
8064 Genesee Fayetteville, NY. 13066

Brief Description of Proposed Action:
Owner of Village Groomer 8122 E. Genesee St. Fayetteville, NY 13066 purchasing 8064 E. Genesee to move my grooming business. Fayetteville.

Home: 315 682-7218

Name of Applicant or Sponsor:	Telephone: 315-412-9609
Sarah Williams	E-Mail: DOGLOVERS@windstream.Net

Address: 3370 Oran Gulf Road Manlius, NY. 13104

City/PO:	State:	Zip Code:
Manlius	NY.	13104

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3.a. Total acreage of the site of the proposed action? 0.93 acres
b. Total acreage to be physically disturbed? 0.93 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 0.93 acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☐ Residential (suburban)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____
☐ Parkland

	NO	YES	N/A
5. Is the proposed action, a. A permitted use under the zoning regulations?	☐	☑	☐
b. Consistent with the adopted comprehensive plan?	☐	☑	☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	☐	☑	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area?	☑	☐	
If Yes, identify: _____			
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	☑	☐	
b. Are public transportation service(s) available at or near the site of the proposed action?	☑	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☑	☐	
9. Does the proposed action meet or exceed the state energy code requirements?	☑	☐	
If the proposed action will exceed requirements, describe design features and technologies: _____			
10. Will the proposed action connect to an existing public/private water supply?	☑	☐	
If No, describe method for providing potable water: Well			
11. Will the proposed action connect to existing wastewater utilities?	☑	☐	
If No, describe method for providing wastewater treatment: Septic System			
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	☑	☐	
b. Is the proposed action located in an archeological sensitive area?	☑	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	☑	☐	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody?	☑	☐	
If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____			

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:
☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional
☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	☑	☐
16. Is the project site located in the 100 year flood plain?	☑	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources?	☑	☐
If Yes, a. Will storm water discharges flow to adjacent properties? ☑NO ☐YES		
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? ☑NO ☐YES		
If Yes, briefly describe: _____		

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	☑	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☑	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☑	☐

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: _____ Date: _____

Signature: _____

STOP

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☐	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☐	☐
3. Will the proposed action impair the character or quality of the existing community?	☐	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☐	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☐	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☐	☐
7. Will the proposed action impact existing: a. public / private water supplies?	☐	☐
b. public / private wastewater treatment utilities?	☐	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☐	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☐	☐

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on an attached sheet.

Date: _____, 20 ____.

_____
(Print Name)

_____
(Signature)

_____
(Entity Name)

_____
By (Officer) (Title)

_____
(Mailing Address of Applicant)

_____
(Telephone Number)

Date: _____, 20____.

_____
(Print Name)

_____
(Signature)

_____
(Entity Name)

_____
By (Officer) (Title)

_____
(Mailing Address of Applicant)

_____
(Telephone Number)

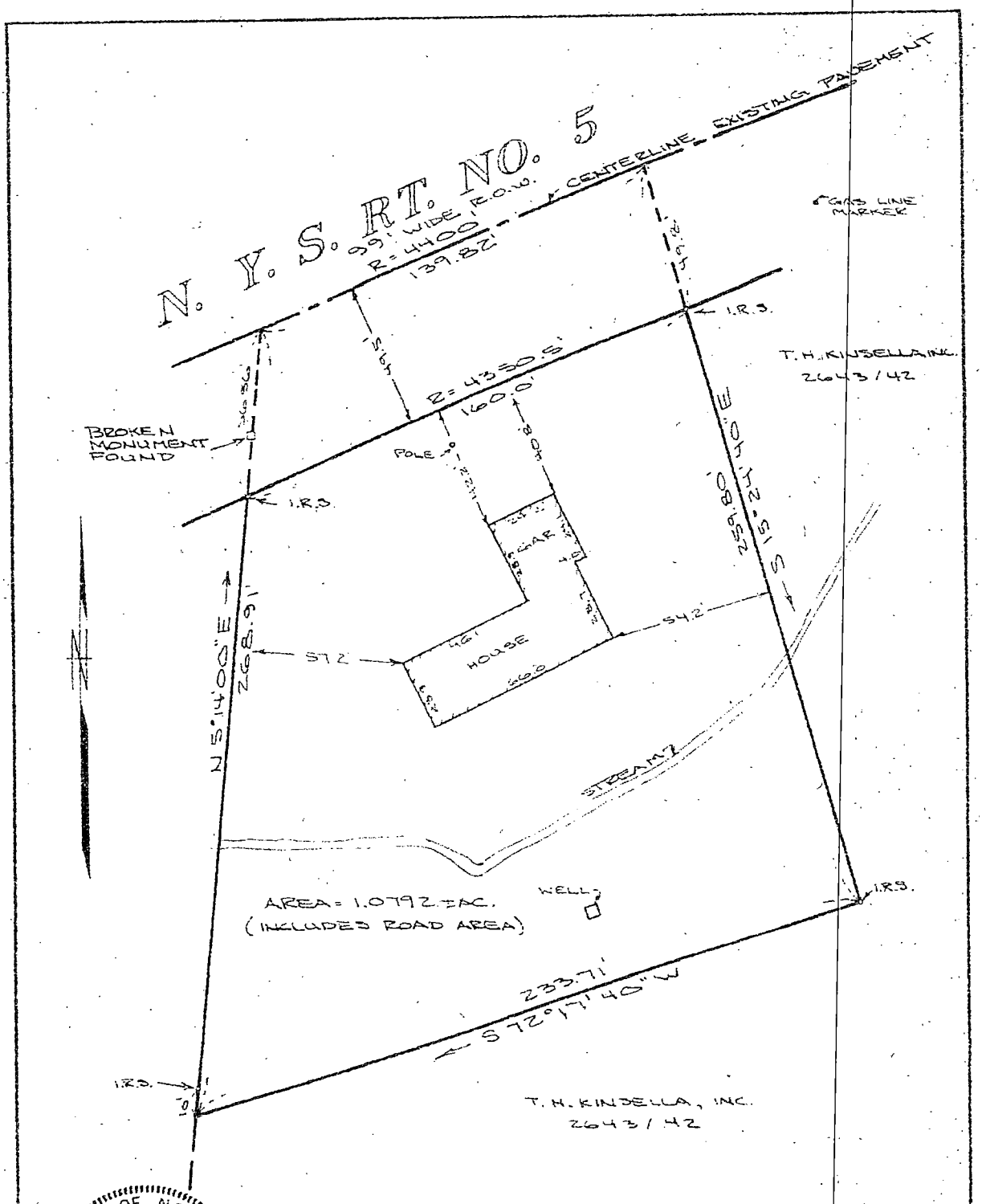
ACKNOWLEDGEMENTS

STATE OF NEW YORK)
) SS:
COUNTY OF ONONDAGA)

On this 14 day of May in the year 2020, before me, the undersigned, a notary public in and for said state, personally appeared Sarah Williams, _____, and _____ personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me the he/she/they executed the same in his/her/their capacity, and that by his/her/their signature(s) on the Petition, the individual or the persons upon behalf of which the individual acted executed the instrument.

_____
Notary Public

LINDA J ROSENBERG
Notary Public - State of New York
NO. 01RO6096032
Qualified in Onondaga County
My Commission Expires July 21, 2023



DEED REF. JANET L. WELLS TO T. H. KINSELLA, INC.; BK. 2643, PG. 42; REC. JUNE 28, 1978.

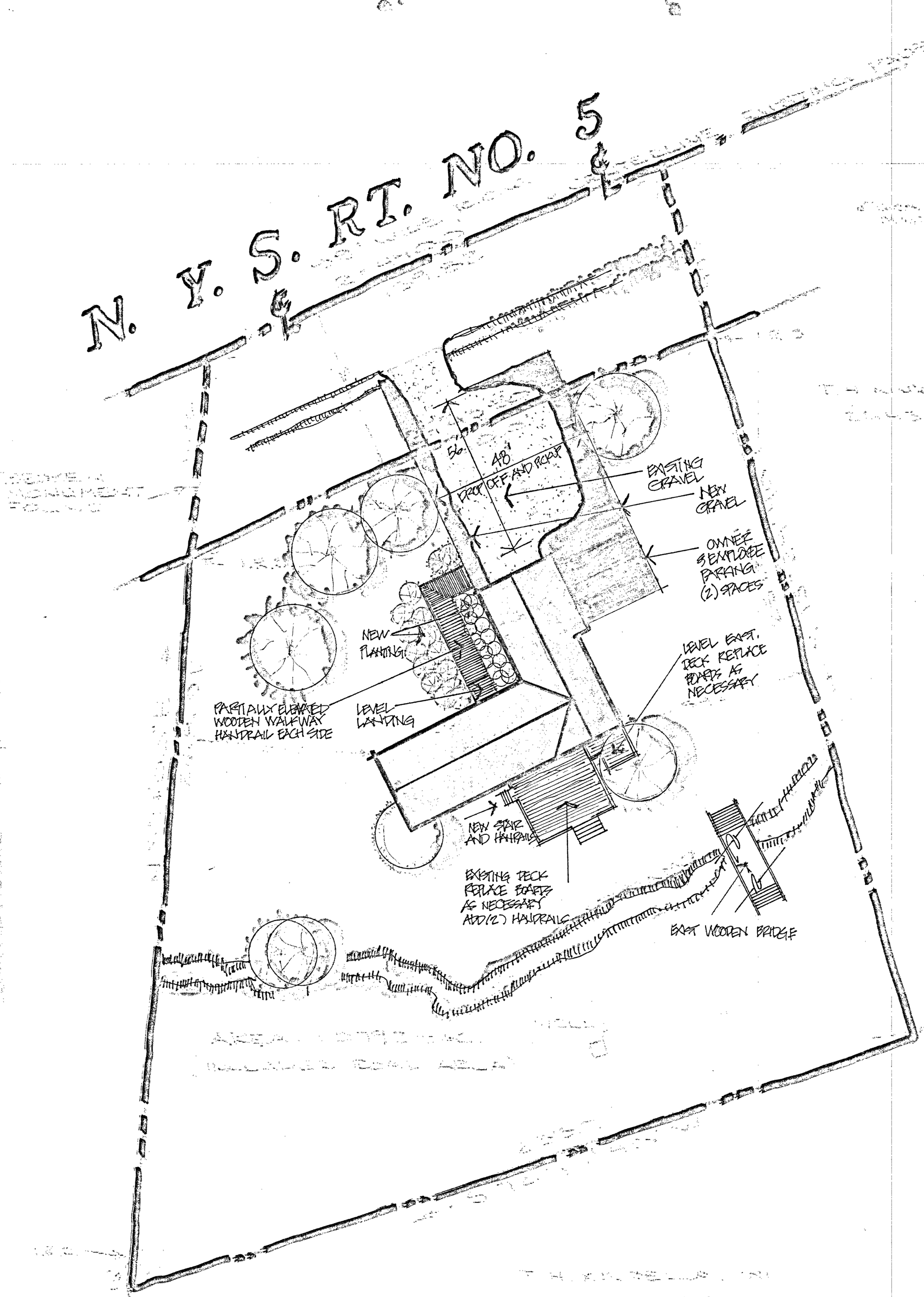
STATE OF NEW YORK
MICHAEL J. WRIGHT
No. 049159
LAND SURVEYOR

THE UNDERSIGNED SURVEYOR HEREBY CERTIFIES THAT THIS IS AN ACCURATE MAP OF AN ACTUAL SURVEY COMPLETED MARCH 25, 1983 SUBJECT TO ANY STATE OF FACTS AN ACCURATE AND UP TO DATE ABSTRACT OF TITLE WOULD SHOW.

MAP OF
PART OF THE LANDS OF
T. H. KINSELLA, INC.

Part of Lot 67 Town of MANLIUS
County of ONONDAGA State of New York
Scale of 1 inch = 40 Feet Date MARCH 29, 1983

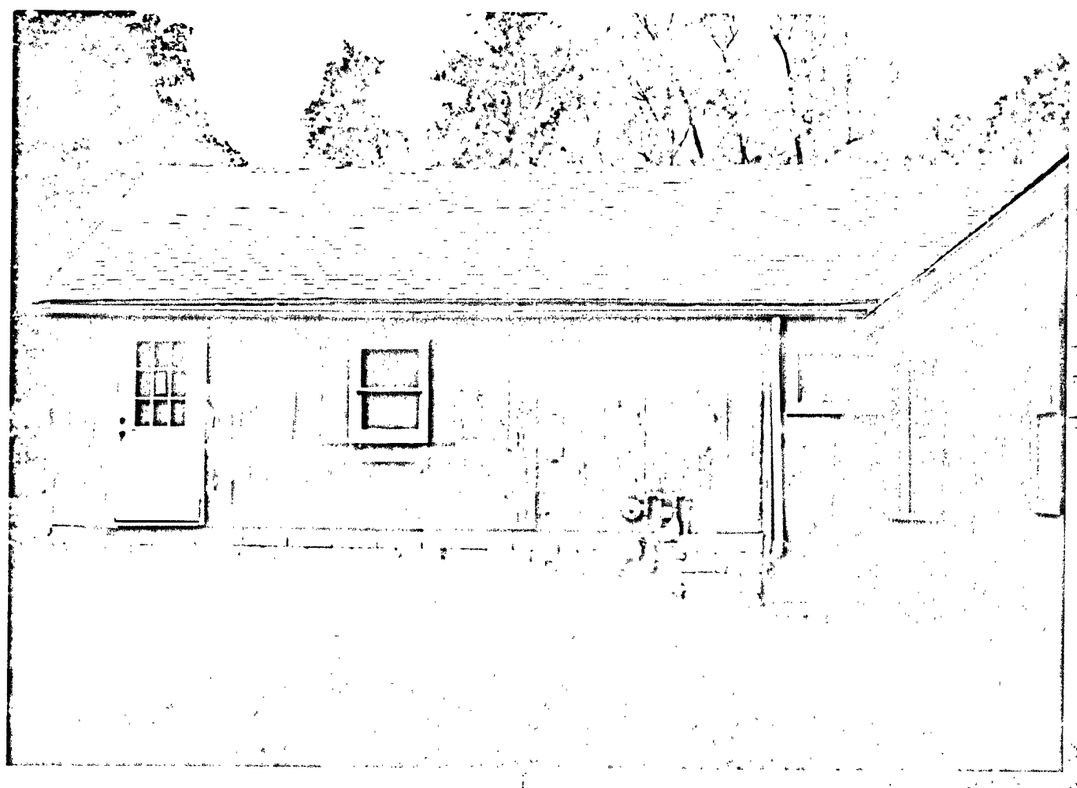
What I am looking to do is move my dog grooming business from 8122 E. Genesee Street to 8064 E Genesee. I am buying the property from Tom Kinsella. The transactin will take place when this permit is approved.



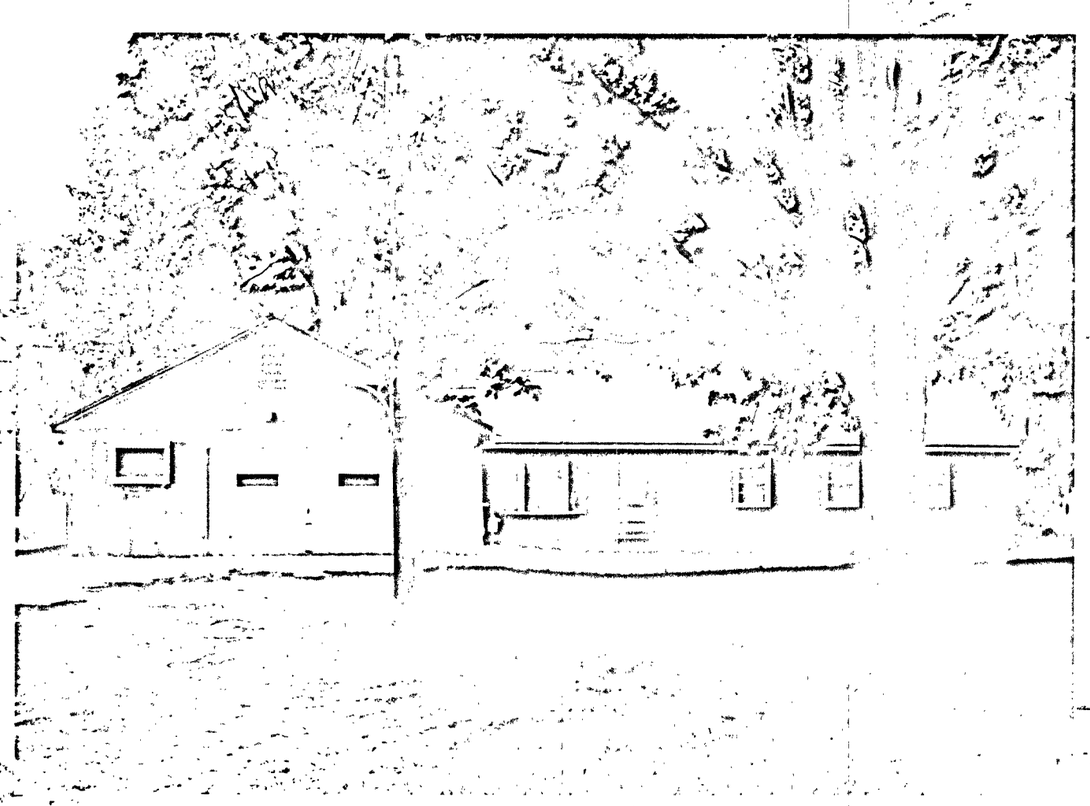
8064 EAST GENESSEE STREET
FAYETTEVILLE, N.Y. SCALE 1"=20'

SK-1
6/30/2020

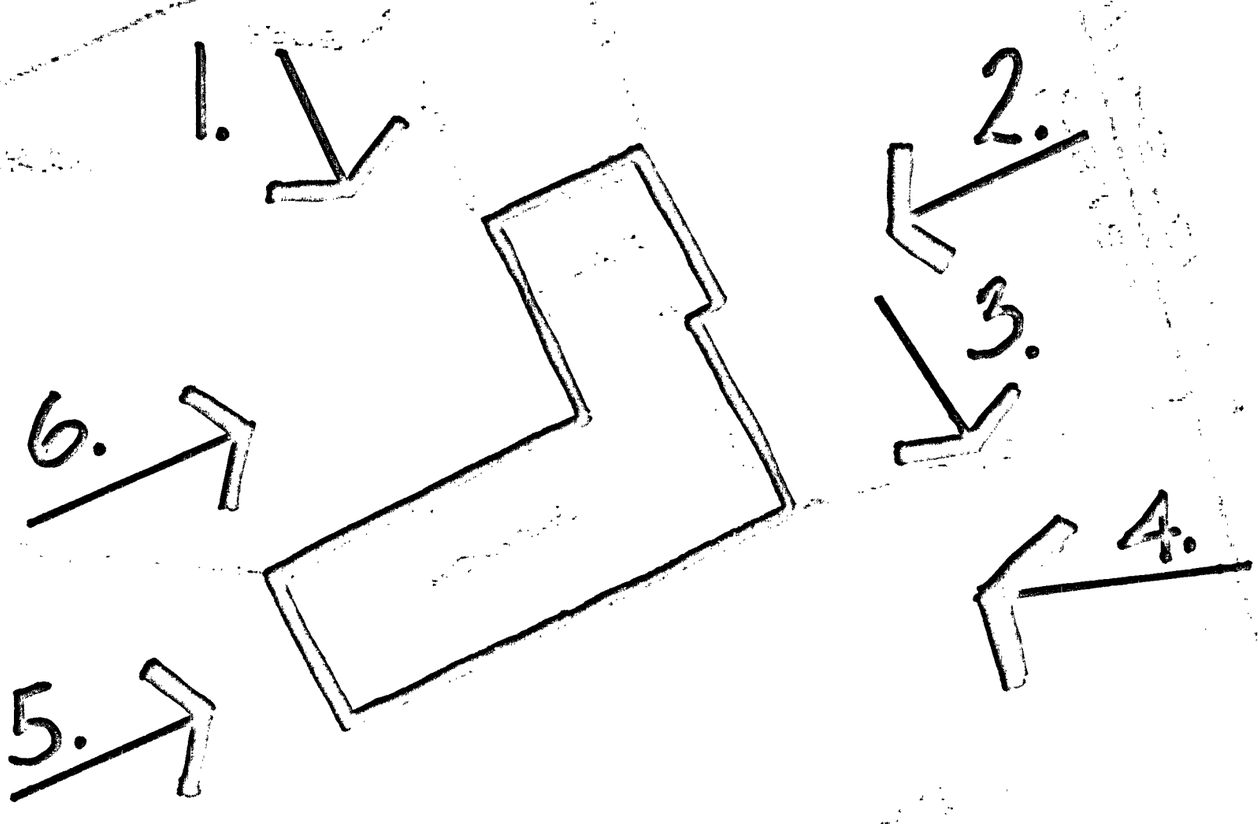
RECEIVED
JUL 02 2020
By

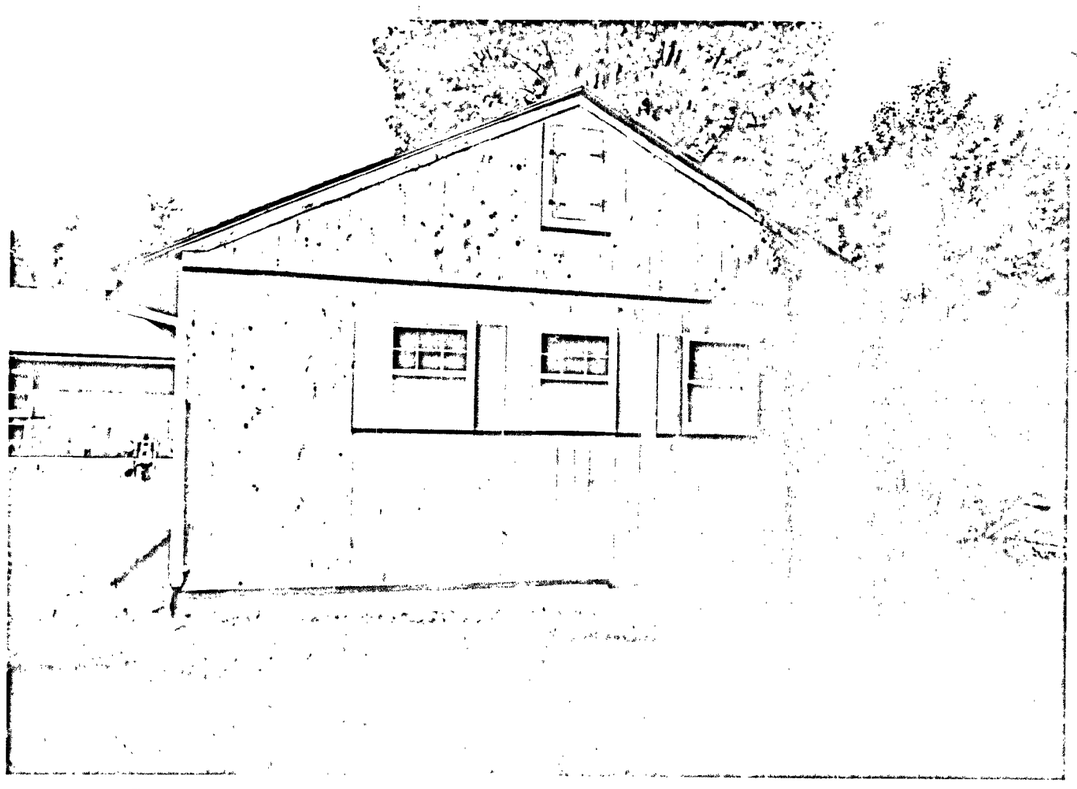


6.

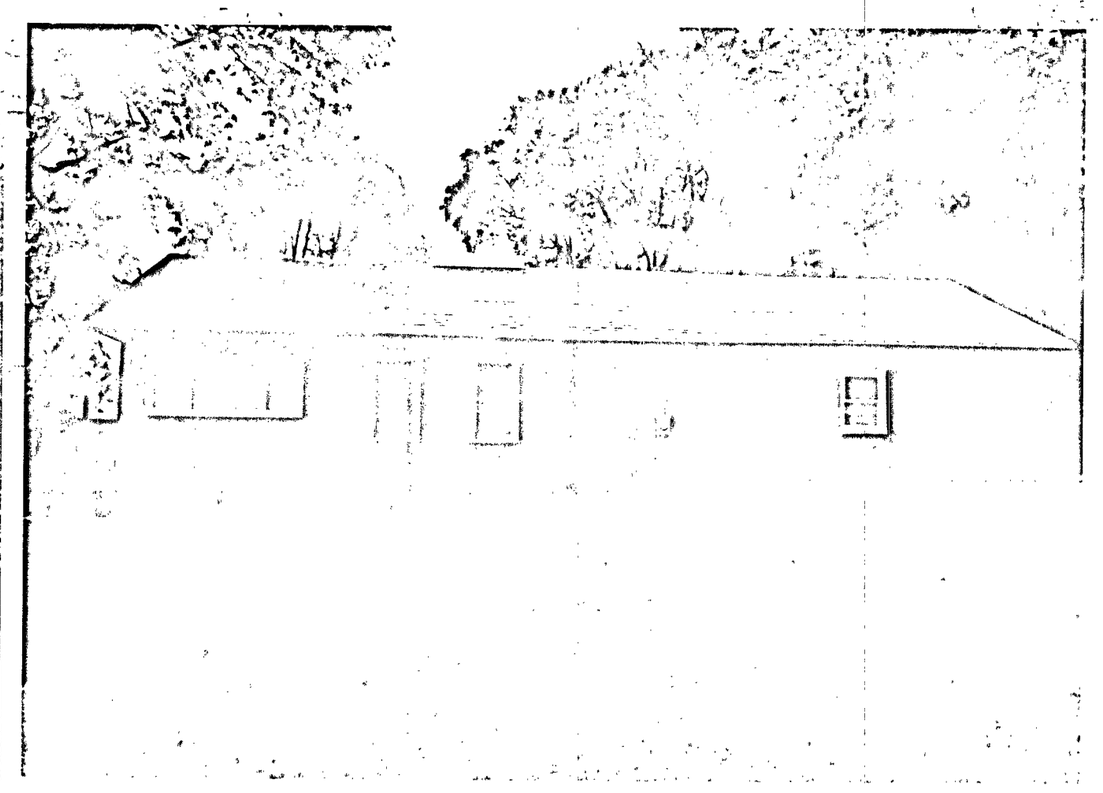


1.





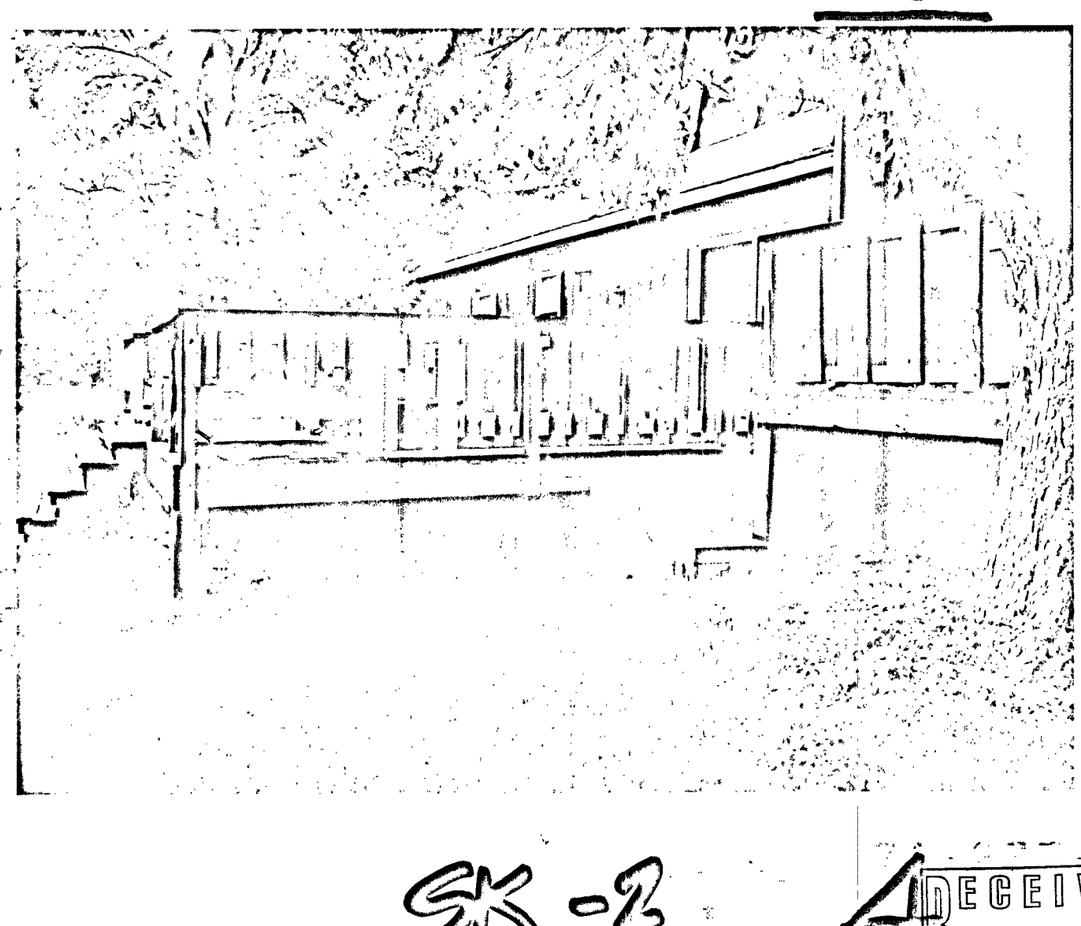
5.



2.



3.



4.

SK-2
6/30/2020

RECEIVED
JUL 02 2020
By

TOWN OF MANLIUS
SPECIAL PERMIT APPLICATION
(Original or Renewal)

DATE: 8/27/20 Tax Map # 090-01-10.2

I Sarah Williams as applicant relative to property located at 8044 East Genesee Street Fayetteville N.Y 13066 hereby request/apply for issuance/renewal (CIRCLE ONE) of a **SPECIAL PERMIT** from the Town of Manlius Town Board as required by the Town of Manlius Code, submit the following application and documentary evidence and/or information, including comprising the Exhibits in support of this request and certify that it is correct, true and accurate to the best of my/our knowledge and after reasonable due diligence and investigation. I further knowledge and agree that should any such evidence or information be later determined as false or not credible in any material respect, any special permit issued/renewed based thereon may be determined by the Town Board as void from the start or revocable.

Sarah Williams
Applicant's Signature

A 1. Owner(s) of property: Tom Kinsella

A 2. Status (Owner, Lessee) of each applicant: I am purchasing from Kinsella

A 3. Present Zoning of Property: RA

A.4. Present Use of Property (describe in detail as best as reasonably possible- add additional pages as needed): Vacant house

A5Describe property condition at present: empty house

B 1. Proposed use of property: Dog Grooming

B 2. Anticipated number of employees, guests, customers on property:
2 employees
Customers drop of in morning pickup in afternoon.

B 3. Hours of Proposed Operation: Monday thru Friday 7:30am-5:30pm

B 4. Anticipated Automobile Parking: TWO (2) SPACES ADJACENT TO THE WEST SIDE OF THE GARAGE

B 5. Parking Area Buffer/Screening: THE TWO (2) SPACES ARE SCREENED BY THE GARAGE

B 6. Anticipated Vehicle Traffic Volume/Flow: * SEE ATTACHED NOTES

B 7. Proposed Site Lighting: THE HOURS OF OPERATION ARE 7:30 TO 5:30 NO SITE LIGHTING IS REQUIRED HOWEVER TWO SECURITY LIGHTS WILL BE MOUNTED WILL BE MOUNTED ON THE EXISTING POLE AND ON THE GARAGE BY PARKING SPACES * SEE NOTES ATTACHED

B 8. Anticipated noise sources, known decibel levels: NONE

B 9. Landscape:

a) Existing landscaping: AS SHOWN ON DRAWING SK-1

b) Proposed landscaping: AS SHOWN ON DRAWING SK-1

B 10. Proposed Signage: NONE CONTEMPLATED AT THIS TIME * SEE ATTACHED NOTES

B 11. Level of municipal and other services required to support the proposed activity (i.e., water supply sanitary sewage facilities): ALL EXISTING

B 12. Specific Requirements:

	Town Code (District) Requirement;	Proposal:
Parking Spaces	* SEE ATTACHED NOTES	TWO (2)
Lot Coverage	EXISTING BLDG	EXISTING BLDG
Front Yard Setback	↓	↓
Side Yard Setback		
Rear Yard Setback		
Maximum Height of Building		

NOTES:

The purpose of this application is to determine if the use is permitted prior to the purchase of the property.

B6: The Applicant is intending to relocate her business currently located 8122 East Genesee Street. The business hours are the same (7:30 AM to 5:30 PM) and the days of operation will be the same (Monday to Friday). The same traffic exists at her current location. The operation will remain the same.

B7: No site lighting is necessary. A pair of security lights will be mounted on the corner of the garage by the two (2) parking spaces. Another pair will be mounted on the existing pole (shown in Photo #1). The lights are motion sensing with a photocell override. The will be facing down at an angle much like residential security lights.

B10: No signage is contemplated at this time.

B12: The existing structure is 1,725 sq. ft. (not including the garage).The use doesn't fit into any of the categories in the Zoning Code for parking requirements. Since parking is a negative aesthetic I only showed what she needs and that is two (2).

TOWN OF MANLIUS

SPECIAL PERMIT APPLICATION – EXHIBIT "G"

PROFESSIONAL FEES REIMBURSEMENT AGREEMENT

As a condition of the application(s) to the Town of Manlius, its Zoning Board of Appeals, Planning Board, codes administration/planning office, and/or Town Board (the "Town") for various zoning, land use, construction and related reviews, approvals, certificates, permits and related consideration(s) (including for any local governmental assisted funding) related to the request of Special Permit: (the "Application"), Sarah Williams [name], 3370 Oran Golf Rd Manlius NY 13104 [legal address] ("Applicant") relative to proposed development at 8614 East Genesee St [project address], Tax Parcel # 090-01-102, Manlius, New York, and related matters (the "Project") agrees as follows:

The Application and Project may or will likely entail that the Town incur legal, engineering, architectural, administrative and related expense(s) including, without limitation, for both on staff and third party consultants involved in the consideration of the Application and Project, and including, without limitation, attendance at Zoning Board of Appeals, Planning Board, and Town Board meetings, consultation with the Applicant, its or the Town's engineer, architect, attorney, and/or other Town officers and employees, or consultants or professional service providers, incidental to the Application from the earlier of the filing of the Application for and/or first presentation of the Project to Town, and through final completion and issuance of all Town and other governmental permits, certifications and approvals.

In connection with and consideration of the foregoing, Applicant agrees to bear all cost and expense for such administrative, legal, engineering, architect and other professional and consulting assistance to the Town incidental to the Application and Project, and including that expense incurred by the Town for Town employees and officers performing reasonable and necessary work on behalf of the Town incident to the Application or Project.

In connection with the foregoing, Applicant shall reimburse the Town for time spent by outside consultants and professionals at the usual rate charged by them to private clientele, or if none, then the usual rate charged to municipalities. Reimbursement for the cost of Town employees and officers shall be based upon the cost to Town for the services of such persons, including salary and fringe benefits, reduced to an hourly rate and including overtime where directly attributable to the Application or Project.

Should the Town determine, in its sole discretion, that additional services are required to represent, supervise, inspect, evaluate and/or consult, including in order to protect the rights and/or interests of the Town such as relative to an enforcement or violation proceeding, the Applicant shall likewise bear all costs associated with such services.

This Agreement shall be effective as of _____, 20__. The Applicant shall deposit an initial sum of $_____, and such other amounts as from time to time the Town may determine, payable to and deposited with the Town and which sum or sums shall be applied against those sums reimbursable to the Town pursuant to the terms of this Agreement (the "Deposit"). Upon completion or discontinuance of the Application and Project and payment of all fees incurred, any unused Deposit shall be returned to the Applicant.

The Applicant shall receive periodically, one or more statements detailing charges for which reimbursement has been made against the Deposit, detailing unpaid amounts, if any, and setting forth any additional Deposit required by the Town. Failure to pay any amounts due the Town of Manlius within twenty (20) days of the date of statement may result in the termination of work/services by Town relative to the Application, the non-issuance suspension or revocation of any certificates, permits or approvals, and/or denial of applications, the Town's commencement of collection efforts, and/or the exercise of any other rights or remedies available to Town hereunder or pursuant to applicable law, including under the Town Code. No certificates, approvals or permits, including, without limitation, Certificates of Occupancy/Compliance, may be issued until all fees due hereunder are paid or sufficient Deposit for same made.

Notwithstanding any provision hereof to the contrary or otherwise, the intent of this Agreement is to subject all of those subject matter areas under applicable provisions of Federal, State, and County laws, rules and regulations whatsoever, the Town Code including as any of same may be amended from time to time, and without limitation, those provisions under Chapters 59, 63, 72, 83, 95, 96, 104, 119, 123, 125, 126, 127, 131, 147, and 155 of the Town Code to the provisions hereof; in addition any financing or funding applications incidental to the Application or Project and requiring sponsorship or support of Town, and review under the State Environmental Quality Review Act or other State or Federal environmental, historical or related laws, rules or regulations shall likewise be subject to the provisions hereof.

In addition, and notwithstanding any provisions hereof to the contrary or otherwise, any provisions of the Town Code or other laws, rules or regulations providing rights more favorable to and protective of Town shall be deemed incorporated herein by reference, and shall not be deemed superseded by less protective provisions herein.

In the event of a breach or default by Applicant, Town shall be entitled to pursue any and all legal rights and remedies pursuant to applicable law including, without limitation, the Town Code and shall be entitled to recover, in addition to any sums due, reasonable attorney's fees, costs and disbursements incurred in any such efforts.

If any part of this Agreement or the application thereof to any person or entity or circumstance is adjudged invalid, illegal or unconstitutional by any court of competent jurisdiction, such order or judgment shall be confined in its operation to the part of this law or in its application directly involved in the controversy in which such judgment shall have been rendered and shall not affect or impair the validity of the remainder of this Agreement or the application thereof to other persons, entities or circumstances. Further, in adjudging such invalid, illegal or unconstitutional provision or part thereof, the court shall attempt to modify same to a provision or part which is not illegal, invalid or unconstitutional and which best achieves the intent of such illegal, invalid or unconstitutional provision or part thereof.

The Town Supervisor has executed this agreement pursuant to a blanket Resolution adopted by the Town Board at a meeting thereof held on _____, 20__, and is duly authorized and empowered to execute this instrument and enter into this Agreement on behalf of the Town of Manlius.

In the event Applicant is a closely held corporation, partnership or limited liability company, its three (3) largest principals shall be signatories to this Agreement, as joint and severable parties with Applicant and Town.

This instrument shall be executed in triplicate. At least one original shall be permanently filed, after execution thereof, in the office of the Town Clerk and one in the Code Enforcement Office.

Dated: 6/29/20 Sarah Williams Sarah Williams

Print Applicant Name **Applicant's Authorized Signature/Title**

Applicant Address: 3370 Oran Gulf Rd
Manlius NY 13104

Print Applicant (Principal) Name **Applicant's Principal Signature**

Print Applicant (Principal) Name **Applicant's Principal Signature**

Print Applicant (Principal) Name **Applicant's Principal Signature**

TOWN OF MANLIUS

By: _____

Name: _____

Title: _____

dd/2017

617.20
Appendix B
Short Environmental Assessment Form

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

Name of Action or Project: VILLAGE GROOMER

Project Location (describe, and attach a location map): 8064 E. GENESEE ST. FAYETTEVILLE, NY 13066

Brief Description of Proposed Action: DOG & CAT GROOMING

Name of Applicant or Sponsor:	Telephone: 315 637-1775 BUSINESS
SARAH WILLIAMS	E-Mail: POGLOVERS@WINDSTREAM.NET

Address: 3310 ORAN GULF ROAD

City/PO:	State:	Zip Code:
MANLIUS, NY 13104	NY	13104

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☒	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☒	☐

3. a. Total acreage of the site of the proposed action? 0 acres
   b. Total acreage to be physically disturbed? 0 acres
   c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 1.0792 acres

4. Check all land uses that occur on, adjoining and near the proposed action.
   ☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☐ Commercial ☒ Residential (suburban)
   ☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): PRESENT ZONING RA
   ☐ Parkland

	NO	YES	N/A
5. Is the proposed action, a. A permitted use under the zoning regulations? SPECIAL USE	☐	☐	☐
b. Consistent with the adopted comprehensive plan?	☐	☒	☐
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	NO ☐	YES ☒	
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	NO ☒	YES ☐	
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	NO ☒	YES ☐	
b. Are public transportation service(s) available at or near the site of the proposed action?	☒	☐	
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	☒	☐	
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: EXIST. STRUCTURE	NO ☐	YES ☐	
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: EXIST. WELL	NO ☒	YES ☐	
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	NO ☐	YES ☒	
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	NO ☒	YES ☐	
b. Is the proposed action located in an archeological sensitive area?	☒	☐	
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	NO ☒	YES ☐	
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	☒	☐	
14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply: †☐ Shoreline † ☐Forest ☐ Agricultural/grasslands † ☐ Early mid-successional †☐ Wetland † ☐Urban ☒ Suburban			
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	NO ☒	YES ☐	
16. Is the project site located in the 100 year flood plain?	NO ☒	YES ☐	
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☒ NO ☐ YES	NO ☐	YES ☐	
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☒ NO ☐ YES	☐	☐	

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	☒	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	☒	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	☒	☐

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: GARY MAZURKOWITZ Date: 30 June 2020

Signature: Gary Mazurkowitz

Part 2 - Impact Assessment. The Lead Agency is responsible for the completion of Part 2. Answer all of the following questions in Part 2 using the information contained in Part 1 and other materials submitted by the project sponsor or otherwise available to the reviewer. When answering the questions the reviewer should be guided by the concept "Have my responses been reasonable considering the scale and context of the proposed action?"

	No, or small impact may occur	Moderate to large impact may occur
1. Will the proposed action create a material conflict with an adopted land use plan or zoning regulations?	☒	☐
2. Will the proposed action result in a change in the use or intensity of use of land?	☒	☐
3. Will the proposed action impair the character or quality of the existing community?	☒	☐
4. Will the proposed action have an impact on the environmental characteristics that caused the establishment of a Critical Environmental Area (CEA)?	☒	☐
5. Will the proposed action result in an adverse change in the existing level of traffic or affect existing infrastructure for mass transit, biking or walkway?	☒	☐
6. Will the proposed action cause an increase in the use of energy and it fails to incorporate reasonably available energy conservation or renewable energy opportunities?	☒	☐
7. Will the proposed action impact existing: a. public / private water supplies?	☒	☐
b. public / private wastewater treatment utilities?	☒	☐
8. Will the proposed action impair the character or quality of important historic, archaeological, architectural or aesthetic resources?	☒	☐
9. Will the proposed action result in an adverse change to natural resources (e.g., wetlands, waterbodies, groundwater, air quality, flora and fauna)?	☒	☐

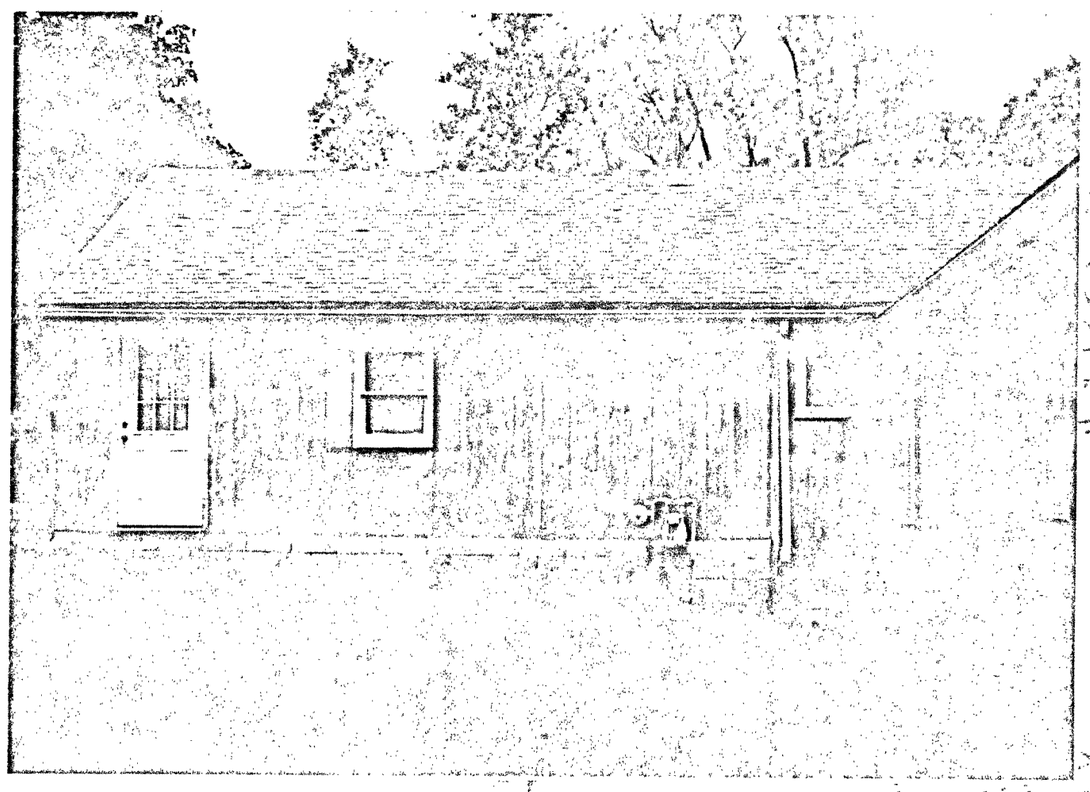
	No, or small impact may occur	Moderate to large impact may occur
10. Will the proposed action result in an increase in the potential for erosion, flooding or drainage problems?	☒	☐
11. Will the proposed action create a hazard to environmental resources or human health?	☒	☐

Part 3 - Determination of significance. The Lead Agency is responsible for the completion of Part 3. For every question in Part 2 that was answered "moderate to large impact may occur", or if there is a need to explain why a particular element of the proposed action may or will not result in a significant adverse environmental impact, please complete Part 3. Part 3 should, in sufficient detail, identify the impact, including any measures or design elements that have been included by the project sponsor to avoid or reduce impacts. Part 3 should also explain how the lead agency determined that the impact may or will not be significant. Each potential impact should be assessed considering its setting, probability of occurring, duration, irreversibility, geographic scope and magnitude. Also consider the potential for short-term, long-term and cumulative impacts.

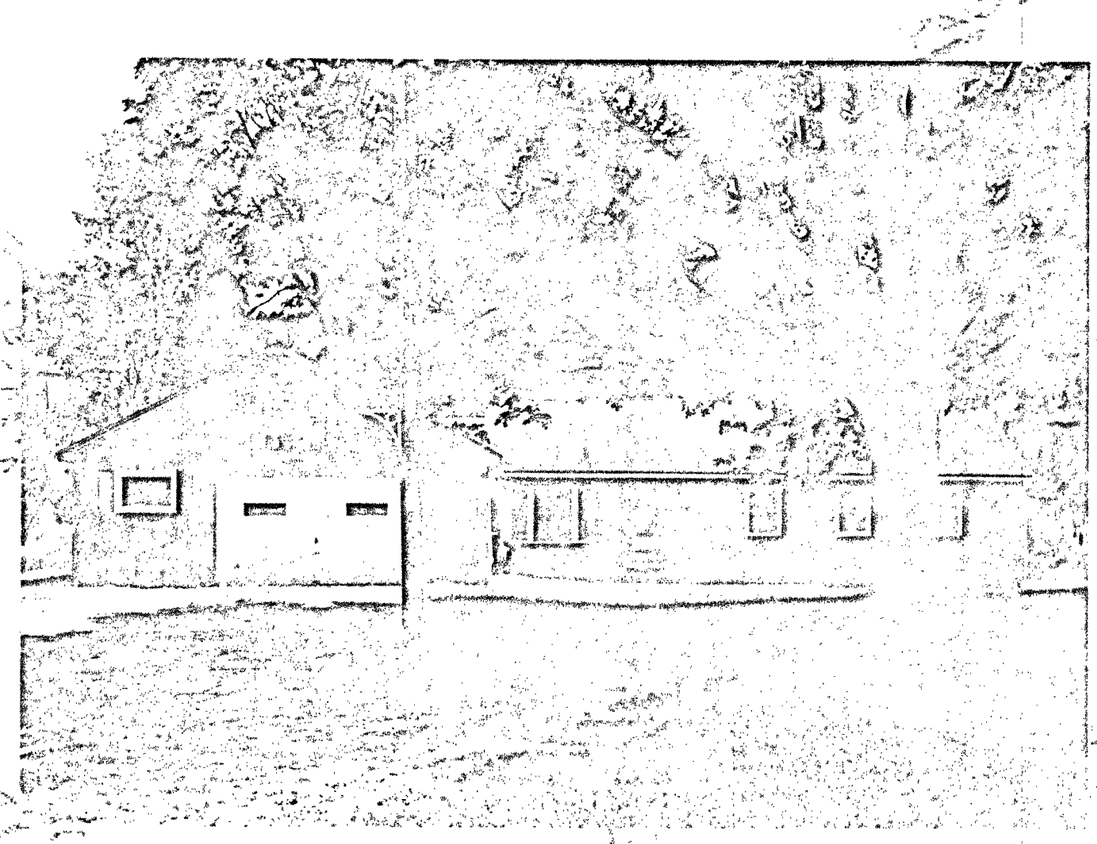
☐ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action may result in one or more potentially large or significant adverse impacts and an environmental impact statement is required.

☒ Check this box if you have determined, based on the information and analysis above, and any supporting documentation, that the proposed action will not result in any significant adverse environmental impacts.

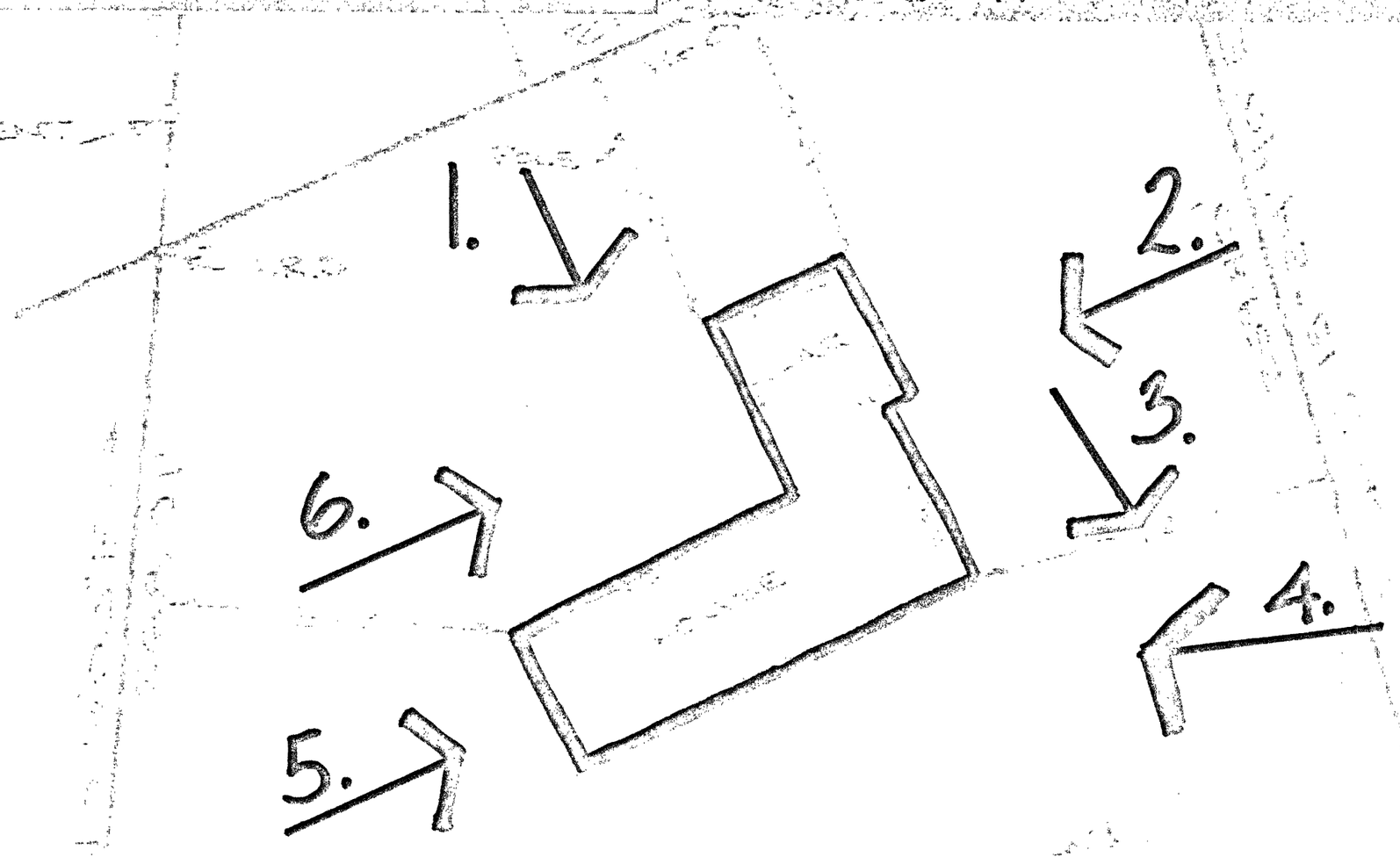
Name of Lead Agency	Date
Print or Type Name of Responsible Officer in Lead Agency	Title of Responsible Officer
Signature of Responsible Officer in Lead Agency	Signature of Preparer (if different from Responsible Officer)

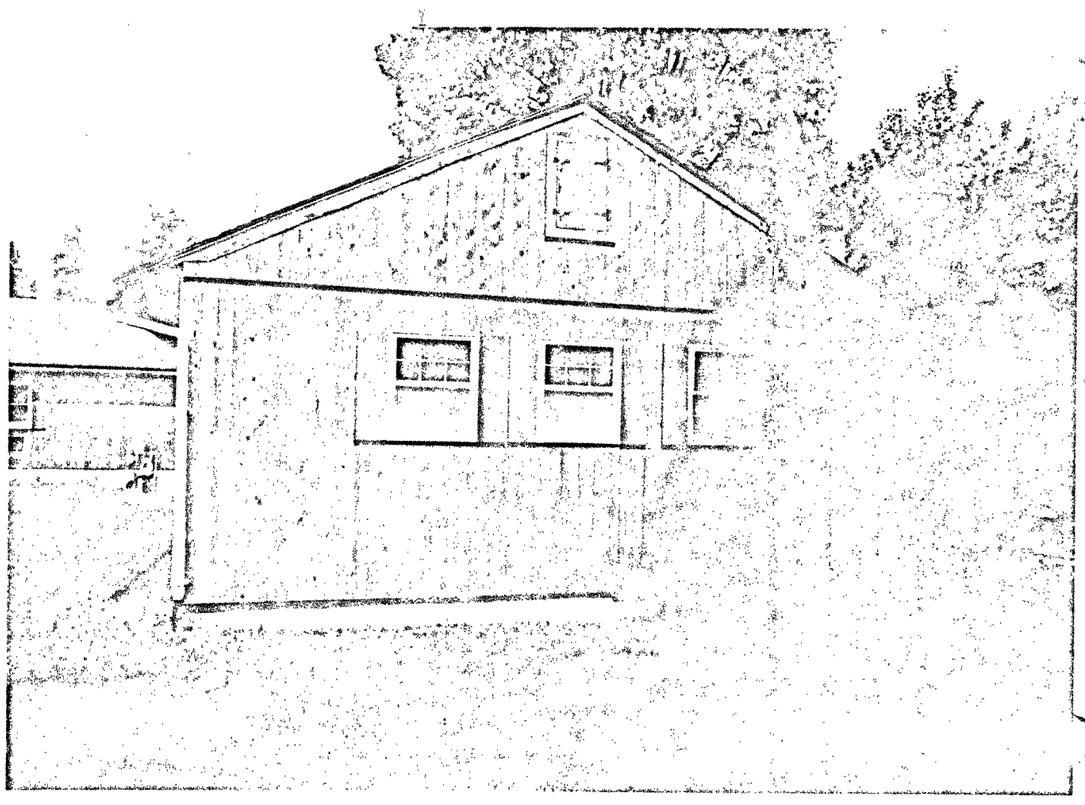


6.

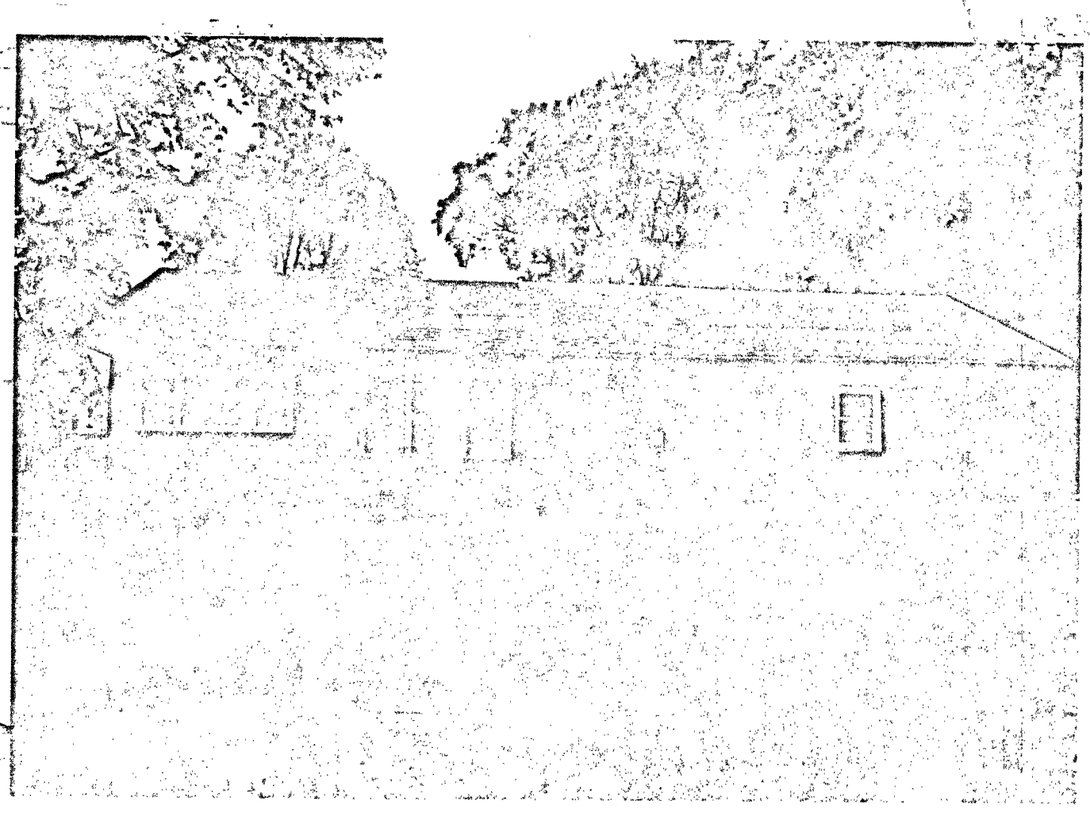


1.





5.



2.



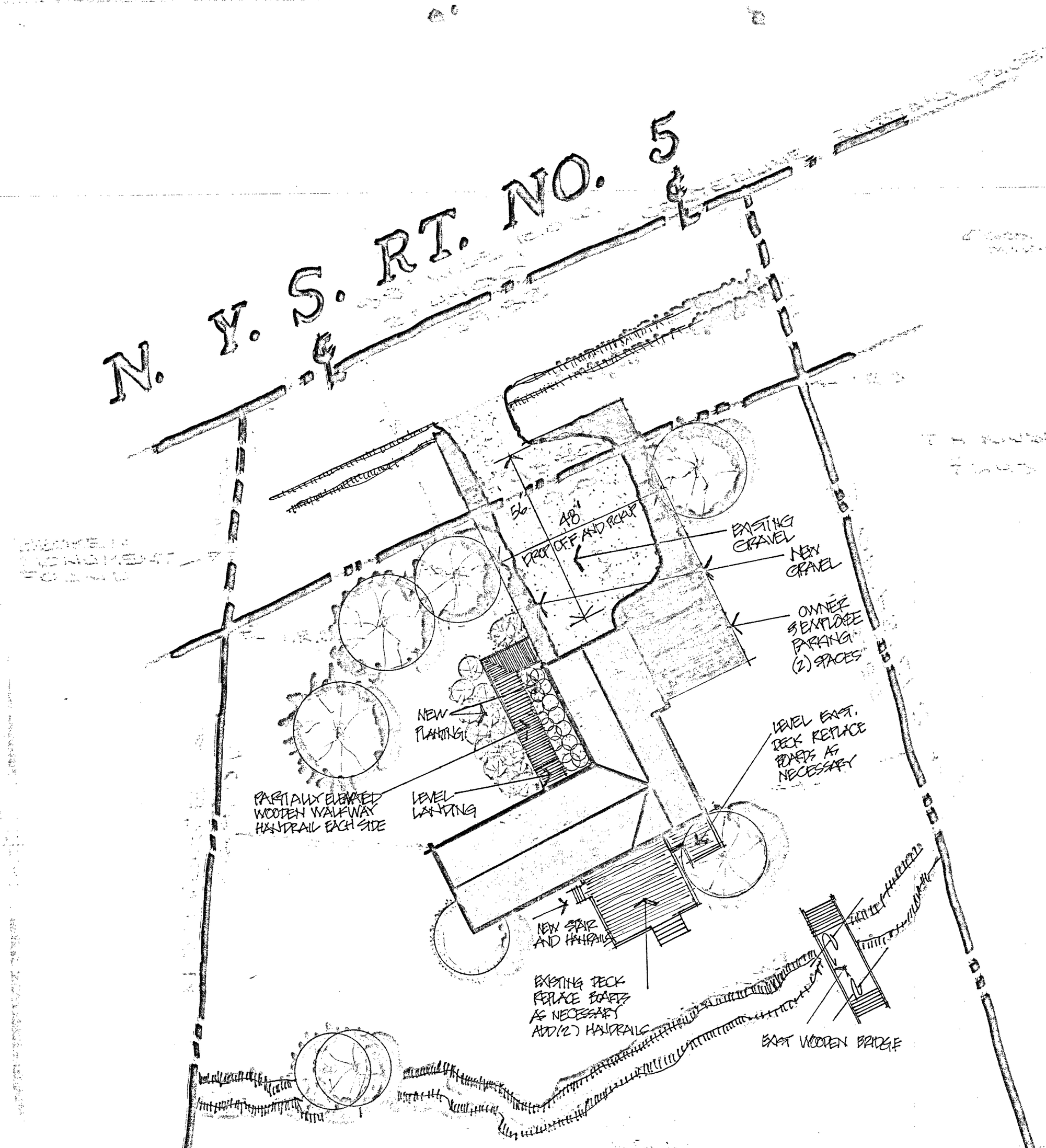
3.



4.

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JUL 02 2020
By

6/30/2020



8064 EAST GENESEE STREET
FAYETTEVILLE, N.Y. SCALE 1"=20'

SK-1
6/30/2020

RECEIVED
JUL 02 2020
By

Gary Mazurkowitz, R.A.
Architect

4860 Armstrong Road
Manlius, New York 13104
315/637-9380

3 August 2020

Town of Manlius
Planning Board
301 Brooklea Drive
Fayetteville, NY 1306

RECEIVED
AUG 04 2020
By

Re: Proposed location of "The Village Groomer"
Response to questions posed at the Public Hearing

Mr. Joseph Lupia

This submission is to intended answer the questions posed at the Public Hearing. The intent is to stain the building a shade of dark brown. The new garage door and walk will be brown as well but a lighter shade than the building. The railing will be black in color. A new entrance door with sidelights will be installed. That color will be red. The property is owned by T Kinsella, Inc. They were asked to provide a copy on the latest water test. As of this date we have not received one. It should be noted that the well is shared by Kinsella and the owner of the subject property. Kinsella uses the water for their domestic needs. The contract to purchase contingent on favorable opinion of the Board and the issue of a Special Use Permit. When a permit is granted the property closing will take place at the earliest possible date. Work will also commence. We have estimated that the renovation work will take place over the next 3 to 4 months subject to the availability of materials. The lease with her current Landlord is scheduled to be renewed at the end of this month. With that said I am submitting (12) copies of:

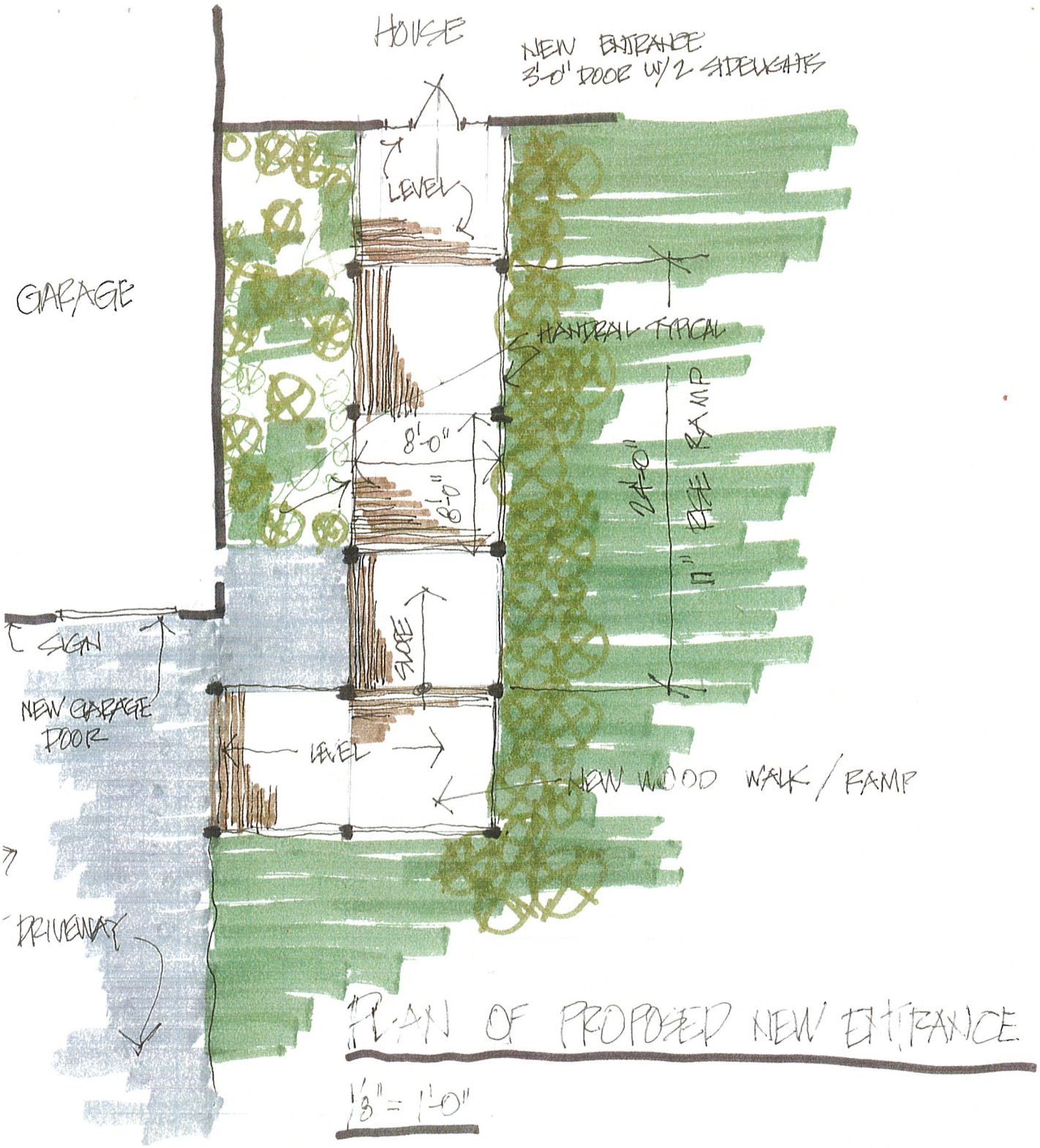
- Revised sketch plan of the walkway. The pergola has been removed.
- Pages from composite deck manufacturers' brochure showing the deck and railing material and color.
- A page from a garage door manufacturers' catalogue.
- A photo of the existing sign to be relocated. The sign approximately 18" x 30" and will not be illuminated. It will be placed in the area where the garage window currently exists. The window is being removed.
- A page from an Olympic stain catalog showing a dark brown stain.

All of the material selections and their colors are subject to availability.

If you need additional information or clarification prior to the meeting please do not hesitate to contact me.

Sincerely,

Gary Mazurkowitz, Architect (315 415 2300)



PLAN OF PROPOSED NEW ENTRANCE

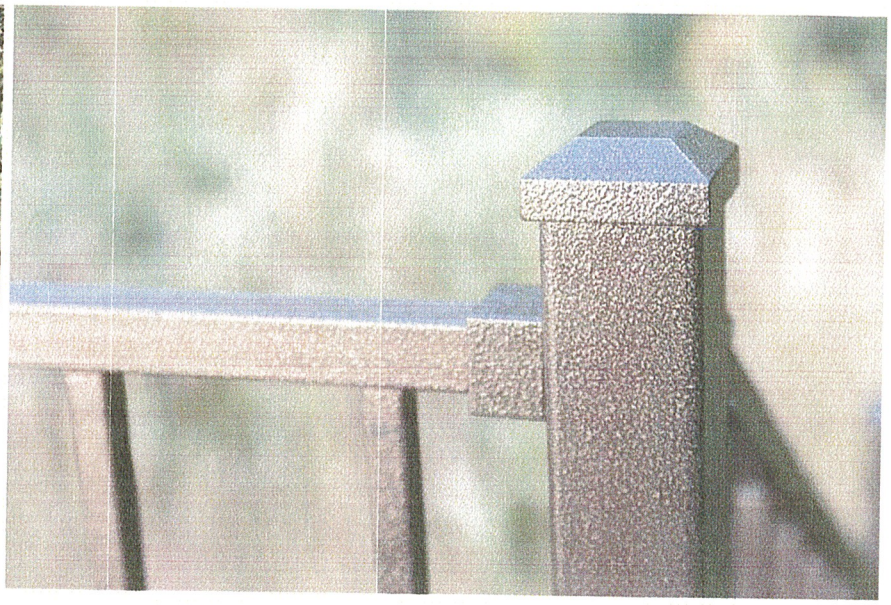
1/8" = 1'-0"

The Concord Railing System

Made from powder-coated steel, this railing is built to look great and stand the test of time.

Concord Railing is a steel railing system with pre-welded panels and posts with pre-attached brackets. Available in 2 finishes, it'll add strength and timelessness to your deck.





Select Your Color

Select from our 2 color options: Matte Black and Hammered Bronze.

DuraLife Landscapes Collection

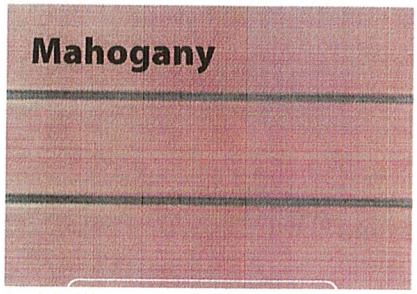
LEARN MORE (/samples/)

Coastal Grey

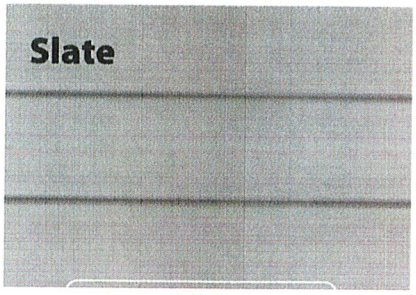
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Landscapes™ eco-friendly decking is available in four earth tones.

DuraLife® Landscapes™ Collection is available in a range of earth-tone colors to complement any outdoor living space. Landscapes Collection colorLock™ Finishing System resists staining, fading, mold and mildew, compared to ordinary composite decking products. Maintenance is easy.



LEARN MORE (/samples/)



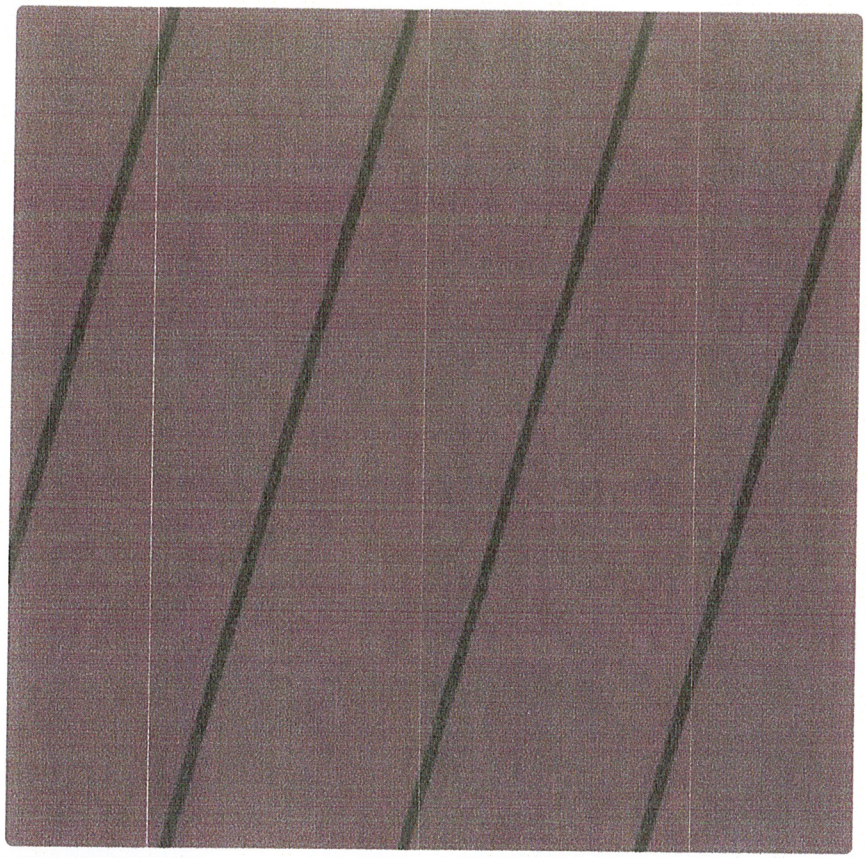
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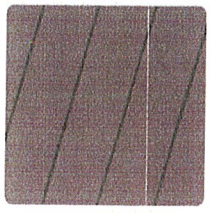
Try our deck & rail visualizer

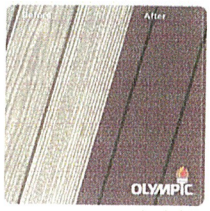
Deck Visualizer (/composite-decking/visualizer/)

Get some inspiration

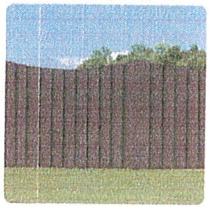
Photo Gallery (/inspiration/gallery/)









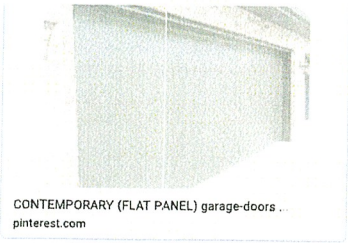


Mahogany

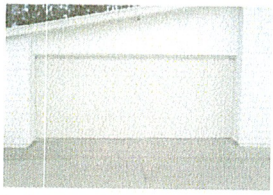
Solid Stain Color

Mahogany is a Solid Exterior Wood Stain Color from our Brown & Tan wood stains color family. Our high quality wood stains & deck stains look beautiful when used in Exterior Wood Stain jobs like staining your deck.

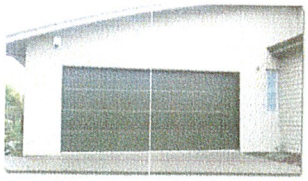
RECOMMENDED WOOD STAIN PRODUCT



CONTEMPORARY (FLAT PANEL) garage-doors ...
pinterest.com



Flat Panel Wood Garage Door ...
pinterest.com



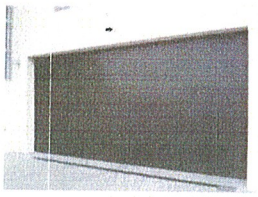
Garage doors, Garage door panels ...
pinterest.nz



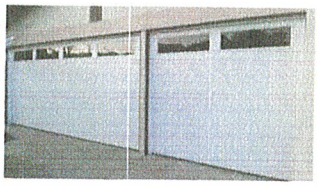
Sierra Flat Panel Garage Door ...
pinterest.ca



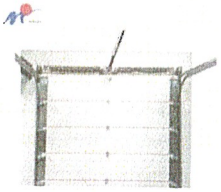
sectional Garage Door Panel ...
alibaba.com



Flat panel door glideaway offers an ...
in.pinterest.com



flash panel garage | 5 Stars Garage ...
5starsgaragedoor.com



Solid Simple Garage Door Window Covers ...
alibaba.com



Flush Panel Steel Garage Door – Lux ...
luxgaragedoors.com



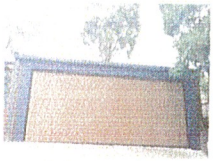
Tilt Up Flat Panel Garage D...
alibaba.com



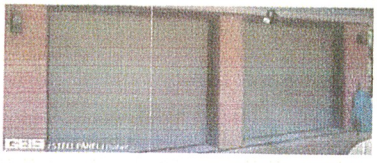
Waterproof Sectional Gara...
cnxufeng.en.made-in-china.c...



Insulated Garage Doors | Overhead Door ...
overheaddoor.com



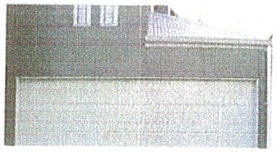
European Country Modern Flat Panel ...
alibaba.com



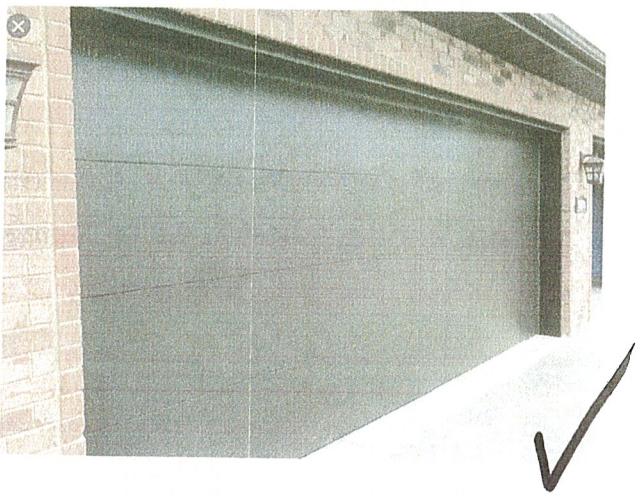
Steel Panel | GEIS Garage Doors ...
geisdoors.com



Duke Flat Panel Sectional Garage Doors ...
facebook.com







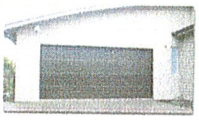
Pinterest

CONTEMPORARY (FLAT PANEL) garage-doors | Custom Homes by Tompkins ...

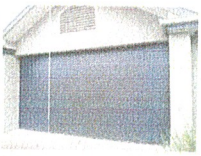
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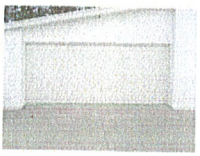
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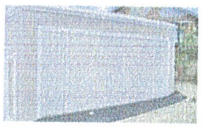
Residential Garage Doors | Gar...
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Panel Lift Door Installations - Ia...
iansgaragedoor.com.au



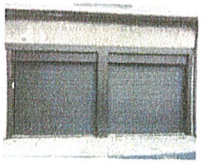
The Most Amazing along with ...
pinterest.com



Roller Doors | Facebook
facebook.com



Sierra Flat Panel Garage Door | ...
pinterest.nz



Skillman Doors Portfolio - Com...


GIFTS &
SUPPLIES
The Village
Groomer

GENERAL NOTES

X-GEN NOTES

1. TOPOGRAPHIC AND BOUNDARY SURVEY PREPARED BY C.T. MALE ASSOCIATES, SYRACUSE, NY, DATED MARCH 6, 2020.

2. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK. ADDITIONAL INFORMATION ON EXISTING CONDITIONS HAS BEEN ADDED TO THE DRAWINGS BASED ON THE LANDSCAPE ARCHITECT'S OBSERVATIONS BUT IS NOT INTENDED TO AND DOES NOT ALTER THE SURVEY INFORMATION. REFER TO SURVEY NOTES FOR ADDITIONAL INFORMATION.

3. SAW CUT FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED AS LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER PROPOSED OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL OR SUBBASE COURSE MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. ALL EXISTING FEATURES SHALL REMAIN UNLESS OTHERWISE NOTED. IF THE CONTRACTOR DAMAGES ANY OF THE EXISTING ON-SITE FACILITIES TO REMAIN (TREES, PAVEMENTS, UNDERGROUND UTILITIES, STRUCTURES, ETC...) WHETHER SHOWN ON THE PLANS OR NOT, THE CONTRACTOR SHALL REPAIR AND/OR REPLACE SUCH ITEMS AT HIS OWN EXPENSE AND ASSUME ALL RESPONSIBILITY FOR SUCH DAMAGE WITHOUT ANY ADDITIONAL COST TO THE OWNER. REPLACEMENT MATERIAL SHALL BE SAME QUALITY AND QUANTITY AS ORIGINAL.

7. THE CONTRACTOR SHALL CONFIRM EXISTING GRADES AND LOCATIONS OF ALL EXISTING FEATURES WITHIN THE CONTRACT LIMIT LINE. THE CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT IMMEDIATELY SHOULD ANY DISCREPANCIES BE FOUND AT (315) 445-1980.

8. ADJUST RIMS OF UTILITY STRUCTURES TO REMAIN WITHIN AREAS OF GRADE CHANGES TO MEET PROPOSED LINES AND GRADES.

9. ALL NON-PAVED AREAS ARE TO BE LAWN UNLESS OTHERWISE NOTED.

10. CONTRACTOR SHALL BLEND NEW WORK SMOOTHLY AND EVENLY WITH EXISTING LINES AND GRADES.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR LAWN MAINTENANCE WITHIN THE CONTRACT LIMIT LINE. EXISTING LAWNS SHALL BE MOWED AS MUCH AS PRACTICAL TO KEEP AREA FROM LOOKING UNSIGHTLY. ALL TRASH AND DEBRIS SHALL BE PICKED UP AND DISPOSED OF PROPERLY.

SITE PREPARATION NOTES

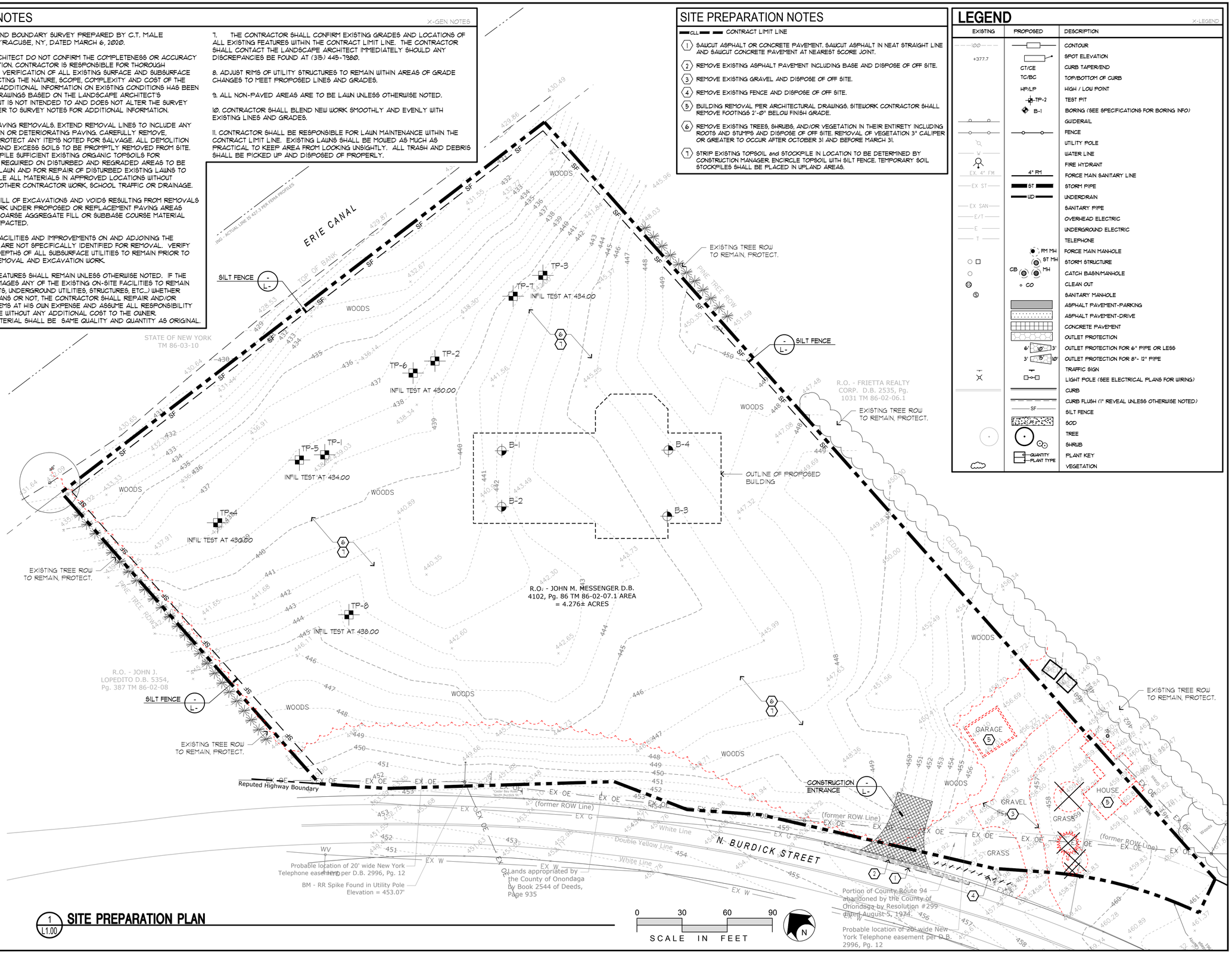
CLL — CONTRACT LIMIT LINE

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT INCLUDING BASE AND DISPOSE OF OFF SITE.
3. REMOVE EXISTING GRAVEL AND DISPOSE OF OFF SITE.
4. REMOVE EXISTING FENCE AND DISPOSE OF OFF SITE.
5. BUILDING REMOVAL PER ARCHITECTURAL DRAWINGS. SITEWORK CONTRACTOR SHALL REMOVE FOOTINGS 2'-0" BELOW FINISH GRADE.
6. REMOVE EXISTING TREES, SHRUBS, AND/OR VEGETATION IN THEIR ENTIRETY INCLUDING ROOTS AND STUMPS AND DISPOSE OF OFF SITE. REMOVAL OF VEGETATION 3" CALIPER OR GREATER TO OCCUR AFTER OCTOBER 31 AND BEFORE MARCH 31.
7. STRIP EXISTING TOPSOIL and STOCKPILE IN LOCATION TO BE DETERMINED BY CONSTRUCTION MANAGER. ENCIRCLE TOPSOIL WITH SILT FENCE. TEMPORARY SOIL STOCKPILES SHALL BE PLACED IN UPLAND AREAS.

LEGEND

X-LEGEND

EXISTING	PROPOSED	DESCRIPTION
430		CONTOUR
+377.7		SPOT ELEVATION
	CT/CE	CURB TAPER/END
	TC/BC	TOP/BOTTOM OF CURB
	HP/LP	HIGH / LOW POINT
	TP-2	TEST PIT
	B-1	BORING (SEE SPECIFICATIONS FOR BORING INFO)
		GUIDERAIL
		FENCE
W		UTILITY POLE
W		WATER LINE
EX. 4" FM		FIRE HYDRANT
	4" FM	FORCE MAIN SANITARY LINE
EX ST	ST	STORM PIPE
	UD	UNDERDRAIN
EX SAN		SANITARY PIPE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	FM MH	FORCE MAIN MANHOLE
	ST MH	STORM STRUCTURE
CB	MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
S		SANITARY MANHOLE
		ASPHALT PAVEMENT-PARKING
		ASPHALT PAVEMENT-DRIVE
		CONCRETE PAVEMENT
		OUTLET PROTECTION
	6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	15" 3'	OUTLET PROTECTION FOR 8"- 12" PIPE
		TRAFFIC SIGN
		LIGHT POLE (SEE ELECTRICAL PLANS FOR WIRING)
		CURB
		CURB FLUSH (1" REVEAL UNLESS OTHERWISE NOTED)
	SF	SILT FENCE
		SOD
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION



1 L1.00 **SITE PREPARATION PLAN**

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Project Breckenridge

New Dental Office

5538 N Burdick St
Fayetteville, NY 13066

PRELIMINARY

MK	DATE	DESCRIPTION
A	05.28.20	MUNICIPAL REVIEW

SHEET ISSUES

VIP PROJECT NO.	
FILE NAME	40013
DRAWN BY	NPL
CHECKED BY	SLF

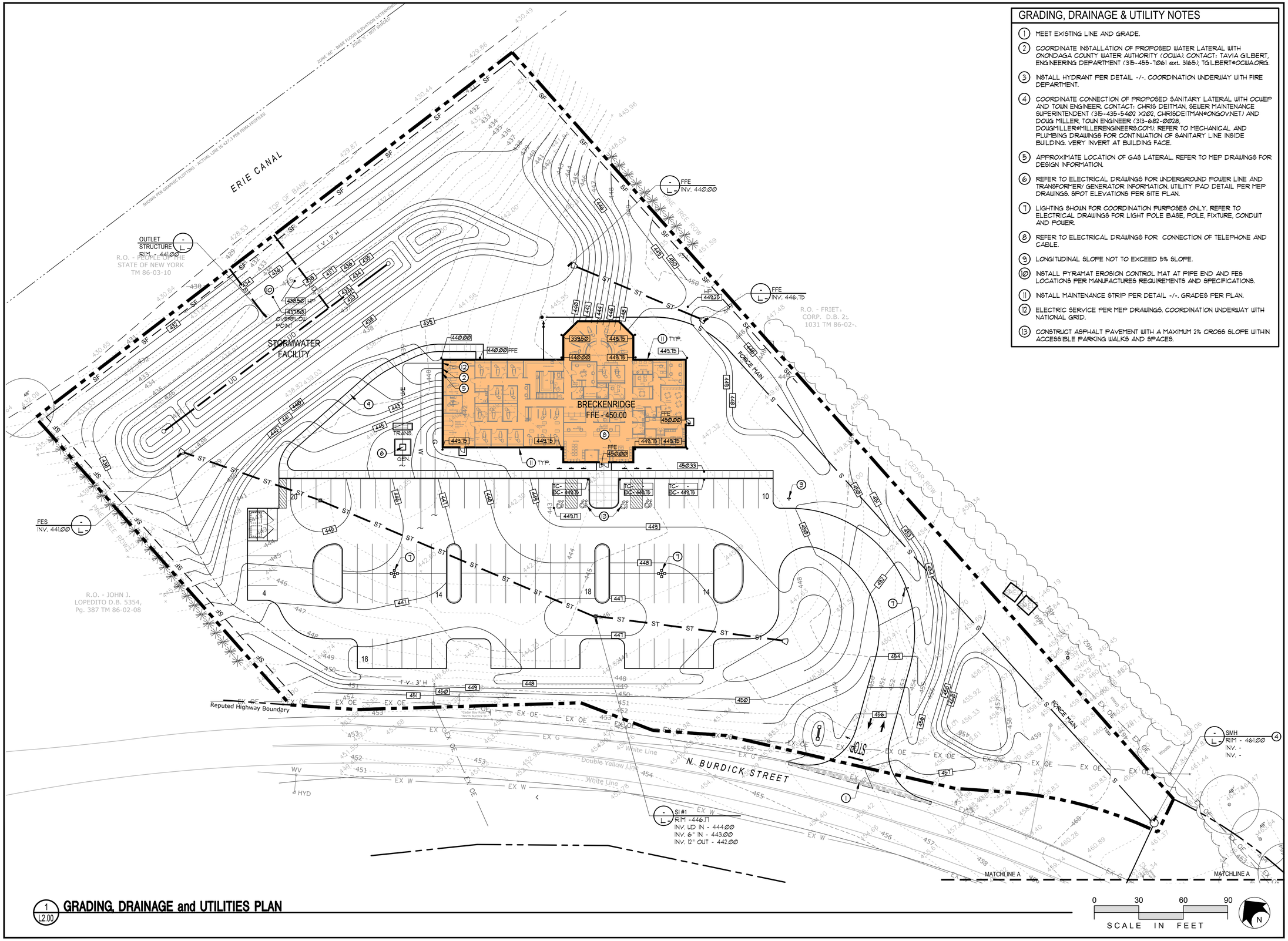
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SHEET TITLE

SITE PREPARATION PLAN

SHEET NUMBER

L1.00



GRADING, DRAINAGE & UTILITY NOTES

1. MEET EXISTING LINE AND GRADE.
2. COORDINATE INSTALLATION OF PROPOSED WATER LATERAL WITH ONONDAGA COUNTY WATER AUTHORITY (OCWA). CONTACT: TAVIA GILBERT, ENGINEERING DEPARTMENT (315-455-7061 ext. 3165), TGILBERT@OCWA.ORG.
3. INSTALL HYDRANT PER DETAIL -/-. COORDINATION UNDERWAY WITH FIRE DEPARTMENT.
4. COORDINATE CONNECTION OF PROPOSED SANITARY LATERAL WITH OCWEP AND TOWN ENGINEER. CONTACT: CHRIS DEITMAN, SEWER MAINTENANCE SUPERINTENDENT (315-435-5402 X202, CHRISDEITMAN@ONGOV.NET) AND DOUG MILLER, TOWN ENGINEER (313-682-0028, DOUGMILLER@MILLERENGINEERS.COM). REFER TO MECHANICAL AND PLUMBING DRAWINGS FOR CONTINUATION OF SANITARY LINE INSIDE BUILDING. VERIFY INVERT AT BUILDING FACE.
5. APPROXIMATE LOCATION OF GAS LATERAL. REFER TO MEP DRAWINGS FOR DESIGN INFORMATION.
6. REFER TO ELECTRICAL DRAWINGS FOR UNDERGROUND POWER LINE AND TRANSFORMER/ GENERATOR INFORMATION. UTILITY PAD DETAIL PER MEP DRAWINGS. SPOT ELEVATIONS PER SITE PLAN.
7. LIGHTING SHOWN FOR COORDINATION PURPOSES ONLY. REFER TO ELECTRICAL DRAWINGS FOR LIGHT POLE BASE, POLE, FIXTURE, CONDUIT AND POWER.
8. REFER TO ELECTRICAL DRAWINGS FOR CONNECTION OF TELEPHONE AND CABLE.
9. LONGITUDINAL SLOPE NOT TO EXCEED 5% SLOPE.
10. INSTALL PYRAMAT EROSION CONTROL MAT AT PIPE END AND FES LOCATIONS PER MANUFACTURES REQUIREMENTS AND SPECIFICATIONS.
11. INSTALL MAINTENANCE STRIP PER DETAIL -/-. GRADES PER PLAN.
12. ELECTRIC SERVICE PER MEP DRAWINGS. COORDINATION UNDERWAY WITH NATIONAL GRID.
13. CONSTRUCT ASPHALT PAVEMENT WITH A MAXIMUM 2% CROSS SLOPE WITHIN ACCESSIBLE PARKING WALKS AND SPACES.

1 L2.00 **GRADING, DRAINAGE and UTILITIES PLAN**

0 30 60 90
SCALE IN FEET

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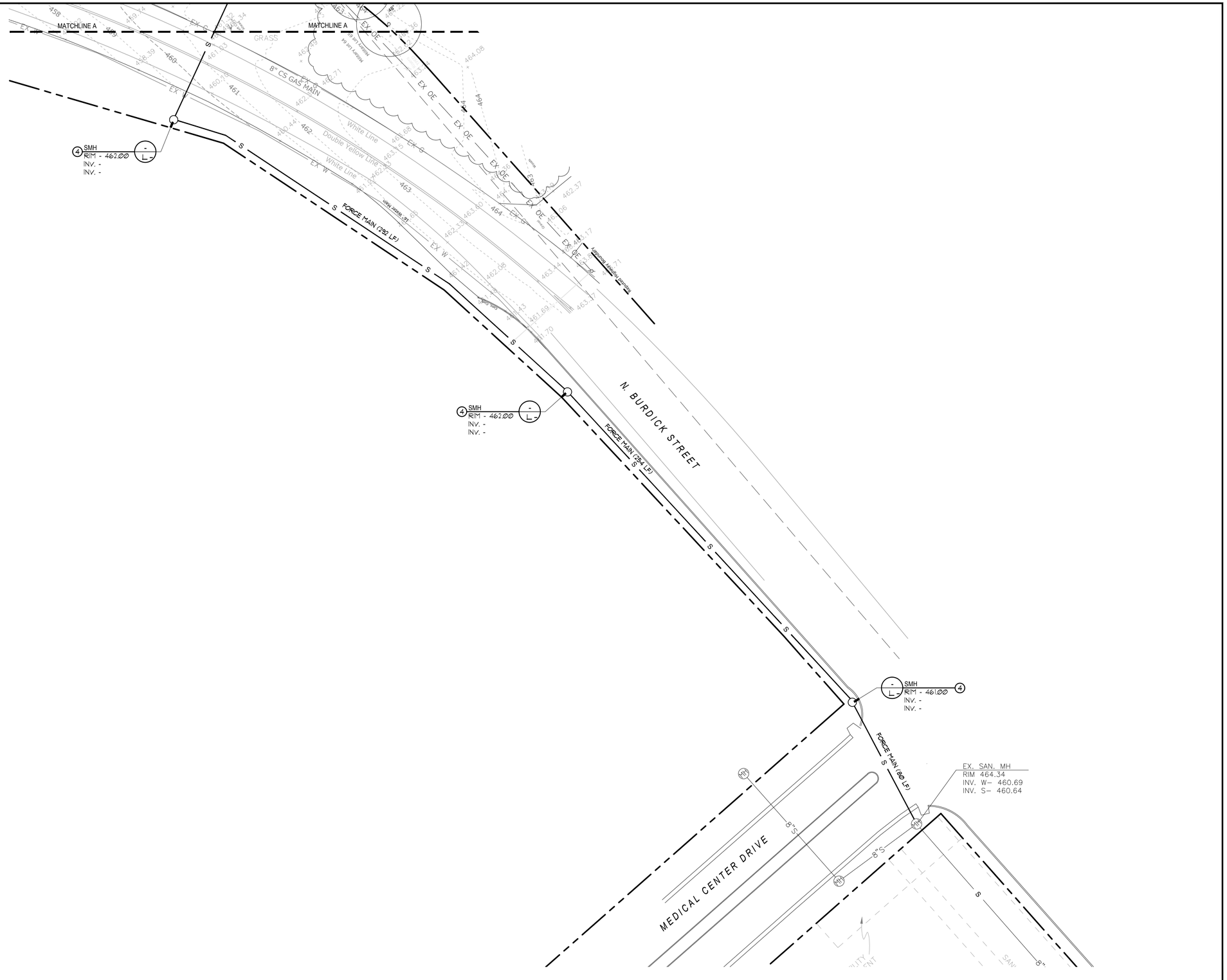
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GRADING, DRAINAGE and UTILITIES PLAN

SHEET NUMBER

L2.00



1 L2.10 **PARTIAL UTILITIES PLAN**

0 30 60 90
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SHEET TITLE

PARTIAL UTILITIES PLAN

SHEET NUMBER

L2.10

PLANT LEGEND

X-CONCEPT PLANT LIST

SYMBOL	DESCRIPTION
	LARGE DECIDUOUS SHADE TREE
	SMALL/ MEDIUM ORNAMENTAL TREE
	EVERGREEN TREE

LAYOUT CONSTRUCTION NOTES

X-LAYOUT NOTES

1. 4" WIDE PAINTED LINES (TYP.).
2. PAINT 4" WIDE LINES AT 45° @ 2' O.C.
3. INSTALL GRANITE CURB PER DETAIL -/-.
4. ACCESSIBLE PARKING STALL PER DETAIL -/-.
5. LIGHT POLE, FIXTURE AND BASE PER ELECTRICAL DRAWINGS.
6. INSTALL OCDOT ASPHALT PAVEMENT PER DETAIL -/-.
7. INSTALL INTEGRAL CONCRETE CURB/ PAVEMENT PER DETAIL -/-.
8. MONUMENT SIGN PER DETAIL -/-.
9. INSTALL WASTE ENCLOSURE PER DETAIL -/-.
10. INSTALL ASPHALT PAVEMENT-PARKING PER DETAIL -/-.
11. INSTALL CONCRETE PAVEMENT PER DETAIL -/-.
12. CONCRETE DOWELING AT DOORWAY PER DETAIL -/-.

ZONING DATA CHART

X-ZONING DATA

EXISTING ZONING (RA) PROPOSED ZONING (RM)	TOWN REQUIRED	PROPOSED
FRONT YARD SETBACK	40 FT.	> 150 FT.
SIDE YARD SETBACK	20 FT.	50 FT.
REAR YARD SETBACK	40 FT.	135 FT.
MINIMUM LOT FRONTAGE	150 FT.	597 FT.
MINIMUM LOT SIZE	40,000 SF.	180,000 SF.
MAXIMUM LOT COVERAGE	35%	32%

PARKING DATA CHART

X-PARKING DATA

- PARKING STALL SIZE 20'-0" x 10'-0"	TOWN REQUIRED PER TOWN REGS.	NEEDS BASED / PROVIDED
PROPOSED BLDG. (11,000 SF.)	58 SPACES	98 SPACES (4 ADA)
- PERSONAL SERVICE ESTABLISHMENTS (1 SPACE PER 200 SQ. FT.)		

SIGN SCHEDULE

KEY	SIGN PLATE		SIGN SIZE MOUNTING HT.	N.Y.S.D.O.T. M.U.T.C.D. NO. / COMMENTS
A	RESERVED PARKING	RESERVED PARKING W/ HANDICAP SYMBOL	12" X 18" 7'-0" HT.	SIGN NO: P4-6 COLORS: COMMENTS:
B	NO PARKING ANY TIME	NO PARKING ANY TIME	12" X 18" 7'-0" HT.	SIGN NO: R7-1 COLORS: WHITE BACKGROUND, RED TEXT AND BORDER
C	STOP	STOP SIGN	24" X 24" 7'-0" HT.	SIGN NO: R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

ERIE CANAL
TOP OF BANK
40' REAR YARD SETBACK
R.O. - PEOPLE OF THE STATE OF NEW YORK TM 86-03-10
STORMWATER FACILITY
BRECKENRIDGE
R.O. - FRIET, CORP. D.B. 2:. 1031 TM 86-02-.
PINE TREE ROW
20' SIDE YARD SETBACK
CEDAR ROW
R.O. - JOHN J. LOPEDITO D.B. 5354, Pg. 387 TM 86-02-08
40' FRONT YARD SETBACK
ENTRY DRIVE
Reputed Highway Boundary
N. BURDICK STREET
White Line
Double Yellow Line
White Line
(Highway Boundary)
EX OE
EX G
EX OHW
EX W
EX GAS
EX T
EX S
EX SSMH
EX CB
EX Woods
EX Bldg.
TYP.
5'-0"
5'-1"
5'-6"
24'-0"
40'-0"
44'-0"

1 L3.00 **LAYOUT PLAN**

0 30 60 90
SCALE IN FEET

N

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PRELIMINARY

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SHEET ISSUES

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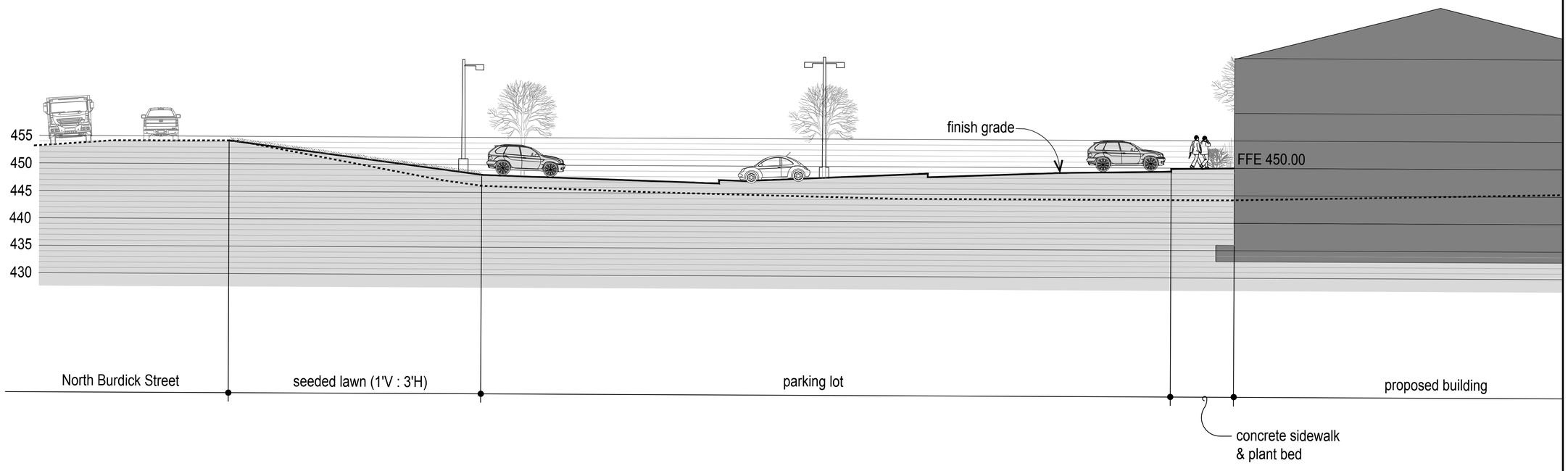
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LAYOUT PLAN

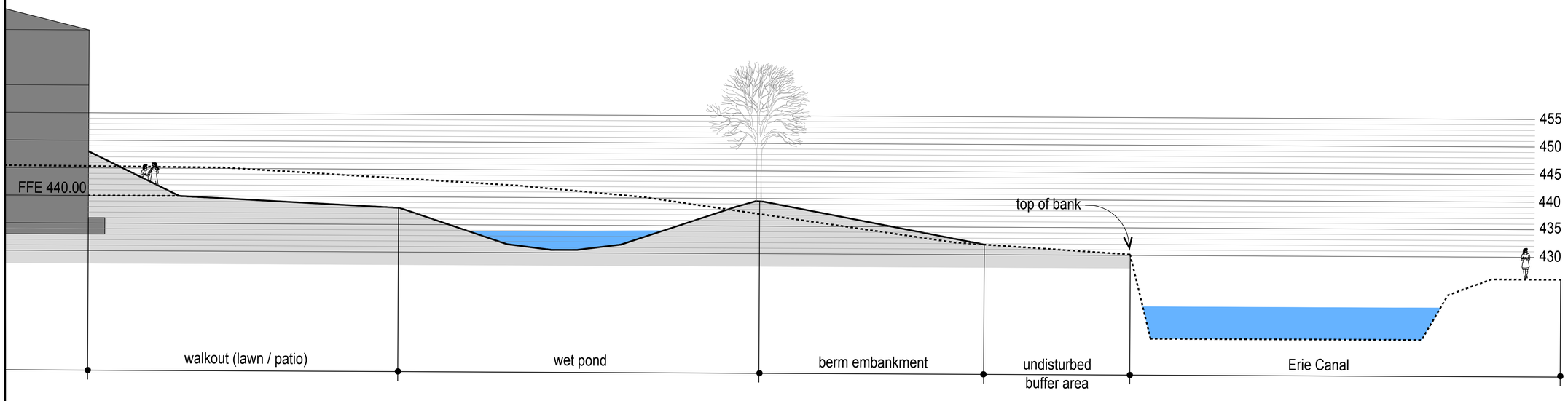
SHEET NUMBER

L3.00



2 L5.00 **SITE SECTION**

0 10 20 30
SCALE IN FEET



1 L5.00 **SITE SECTION**

0 10 20 30
SCALE IN FEET

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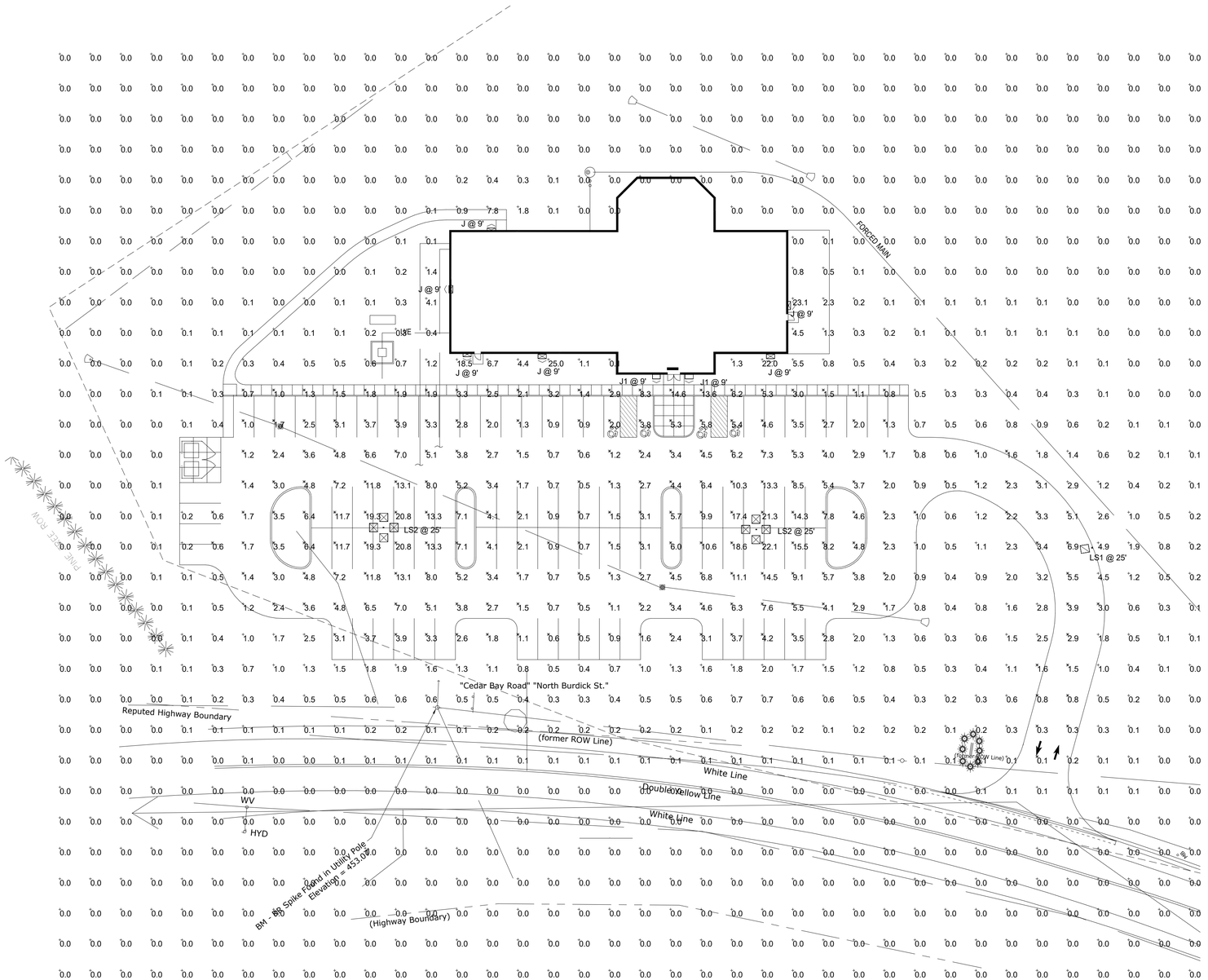
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SHEET TITLE

SITE SECTION

SHEET NUMBER

L5.00



1 SITE PLAN - PHOTOMETRIC CALCULATION
1" = 30'-0"

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
DRIVEWAY	+	2.3 fc	6.9 fc	0.1 fc	69.0:1	23.0:1
PARKING LOY	+	4.8 fc	22.1 fc	0.5 fc	44.2:1	9.6:1
SITE CALCULATIONS	+	1.1 fc	25.0 fc	0.0 fc	N/A	N/A

Schedule											
Symbol	Label	Quantity	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens Per Lamp	Light Loss Factor	Wattage
	LS2	2	Lithonia Lighting	RSX2 LED P6 40K R4	RSX Area Fixture Size 2 P6 Lumen Package 4000K CCT Type R4 Distribution		1	RSX2_LED_P6_40K_R4.ies	30662	0.9	986.52
	J	6	Lithonia Lighting	WDGE2 LED P5 40K 80CRI VF	WDGE2 LED WITH P5 - PERFORMANCE PACKAGE, 4000K, 80CRI, VISUAL COMFORT FORWARD OPTIC		1	WDGE2_LED_P5_40K_80CRI_VF.ies	5996	0.9	48.44
	J1	2	Lithonia Lighting	DSXW2 LED 30C 1000 40K T3M MVOLT	DSXW2 LED WITH 3 LIGHT ENGINES, 30 LED's, 1000mA DRIVER, 4000K LED, TYPE 3 MEDIUM OPTIC	LED	1	DSXW2_LED_30C_1000_40K_T3M_MVOLT.ies	11279	0.9	109
	LS1	1	Lithonia Lighting	RSX2 LED P6 40K R3	RSX Area Fixture Size 2 P6 Lumen Package 4000K CCT Type R3 Distribution		1	RSX2_LED_P6_40K_R3.ies	30266	0.9	246.63

Note
1. Readings shown are based on a total LLF as shown at grade. Data references the extrapolated performance projections in a 25c ambient based on 10,000 hrs of LED testing (per IESNA LM-80-08 and projected per IESNA TM-21-11) 2. Please refer to the "luminaire locations" table for mounting heights. 3. Product information can be obtained at www.Lithonia.com or through your local agency. 4. Please note this analysis does not comply with minimal IESNA levels for parking and pedestrian safety. Acuity Brands will not be liable for any safety issues that may arise from the installation of this design.

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VIP
ARCHITECTURE

Project Breckenridge

5538 North Burdick Street
Fayatteville, NY 13066

MK	DATE	DESCRIPTION
SHEET ISSUES		
VIP PROJECT NO.	19102	
FILE NAME		
DRAWN BY	GB	
CHECKED BY		

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ELECTRICAL SHEET TITLE

SITE PLAN - PHOTOMETRIC CALCULATION

SHEET NUMBER

E-900

5/19/2020 10:17:20 AM

J.Ryan McMahon II
County Executive

Onondaga County Planning Board

RESOLUTION OF THE
ONONDAGA COUNTY PLANNING BOARD

Meeting Date: June 10, 2020
OCPB Case # Z-20-167

WHEREAS, the Onondaga County Planning Board, pursuant to General Municipal Law, Section 239 l, m and n, has considered and reviewed the referral for a SITE PLAN from the Town of Manlius Planning Board at the request of 5538 N. Burdick St., LLC for the property located at 5538 North Burdick Street; and

WHEREAS, General Municipal Law Section 239-m allows the County Planning Board to review approval of site plans and the site is located within 500 feet of North Burdick Street (Route 94), a county highway, and the Old Erie Canal State Park; and

WHEREAS, the applicant is proposing constructin of a 10,000 sf dental office with associated infrastructure on a 4.1-acre parcel in a Restricted Agriculture (RA) zoning district; and

WHEREAS, the Board recently offered no position with comment for a zone change referral (Z-20-135) to change the zoning of the subject parcel from Restricted Agriculture (RA) to Residential Multiple Use (RM) in order to facilitate construction of the proposed dental office; in 2016, the Board recommended modification of concurrent referrals (Z-16-42, Z-16-44) for Excavation, Grading, and Filling permits for the subject parcel and a parcel to the south; the Board cited permit requirements for proposed temporary construction access and drainage requirements; and

WHEREAS, the site is located along North Burdick Street, a county road, northeast of the Northeast Medical Center and Towne Center Retirement Community in the Town of Manlius; the site abuts the Old Erie Canal State Park and canal trail to the north, with other surrounding residential and commercial land uses; and

WHEREAS, aerial imagery and the submitted survey map dated March 2020 show the site contains an existing house and a detached garage, all to be demolished; there is an existing gravel driveway onto North Burdick Street; the remainder of the site appears to be undeveloped with treed areas;
ADVISORY NOTE: per the Onondaga County Department of Transportation, all existing or proposed driveways on North Burdick Street must meet Department requirements; any work in the county right-of-way, including removal of the existing driveway, will be subject to a work permit from the Department; and

WHEREAS, per the Town Zoning Code, the proposed RM zoning district is intended to “retain the existing residential character of established neighborhoods while permitting unobtrusive uses of a commercial, nonretail nature which are to be regulated in such a manner as to maintain and preserve the residential character of adjacent areas as well as to provide a transition between residential areas and nonresidential areas”; dental offices are a permitted use in the RM district subject to site plan review; and

WHEREAS, the submitted Concept Site Plan dated February 5, 2020 shows the proposed building (10,000 sf) with a large front yard parking lot (100 spaces) and a proposed full access driveway onto North Burdick Street; the plan shows available sight distance to extend 600' from the proposed driveway to the northwest and 550' to the south; from the plans, it appears that some trees/vegetation on the site will have to be cleared for the proposed project; a vegetative buffer is shown to remain along the side and rear lot lines; 12 new trees are shown to occur in landscape islands in the parking lot, along the North Burdick Street frontage, and at the perimeter of the driveway and parking lot;
ADVISORY NOTE: the proposed driveway onto North Burdick Street requires highway access and work permits from the Onondaga County Department of Transportation and will be subject to the availability of sight distance; and

WHEREAS, per the submitted Environmental Assessment Form (EAF) dated March 30, 2020, proposed hours of operation for the dental office will be Monday through Friday 7am to 4pm; proposed lighting will include building-mounted dark sky compliant lighting directed towards the parking lot; lights will be mounted 10' above ground; and

WHEREAS, the EAF notes that 4.0 acres of the site will be disturbed by the proposed project; stormwater will be directed to a proposed on-site stormwater facility, shown in the Concept Site Plan to occur along the western lot line;
ADVISORY NOTES: per the Onondaga County Department of Transportation, additional stormwater runoff into the county's drainage system is prohibited; any project that cumulatively disturbs one acre or more of land must be covered under the NYS SPDES Permit, and the municipality is advised to ensure that the applicant has obtained the appropriate permits from the NYS Department of Environmental Conservation prior to municipal approval; and

WHEREAS, the existing house is served by public drinking water and an individual septic system; the site also has access to public sewers and is located in the Meadowbrook-Limestone Wastewater Treatment Plant service area; new connections to the public drinking water and sewer infrastructure are proposed as part of the project; per the EAF, anticipated drinking water usage and liquid waste generation are each estimated at 4,000 gallons per day; an existing sanitary sewer line is located approximately 1,000' south of the project site and will be extended to serve the proposed project;
ADVISORY NOTES: the Onondaga County Department of Water Environment Protection asks that the applicant contact the Department's Flow Control office to determine sewer availability and capacity; the applicant is advised to contact OCWA's Engineering Department to determine the activities and structures permitted within OCWA easements/right-of-ways, water availability and service options, obtain hydrant flow test information, evaluate backflow prevention requirements, and/or request that the Authority conduct hydrant flow testing to assess fire flow availability; and

WHEREAS, per the Onondaga County Department of Water Environment Protection, the submitted project is located in an area designated as flow constrained or impacted by excessive wet weather flow or is tributary to a Combined Sewer Overflow (CSO);
ADVISORY NOTE: per the Onondaga County Department of Water Environment

Protection, the applicant must develop a 2 gallon to 1 gallon sanitary flow offset plan/project in coordination with the municipal engineer; and

WHEREAS, the site may contain the Northern long-eared bat, or its associated habitat, which has been listed by the state or federal government as a threatened or endangered animal species (per EAF Mapper); impacts to bat species are often associated with tree clearing and from aerial imagery it appears that the site contains some significant wooded areas;
ADVISORY NOTE: per the NYS Department of Environmental Conservation (DEC), if the site contains a threatened or endangered species and/or associated habitat, and the project requires review under the State Environmental Quality Review Act (SEQRA), a request for a project screening should be submitted to the New York Natural Heritage Program or to the regional DEC Division of Environmental Permits office; and

WHEREAS, the site or a portion of it is located in or adjacent to an area designated as sensitive for archaeological sites on the NYS Historic Preservation Office archaeological site inventory (per EAF Mapper); a letter from the NYS Office of Parks, Recreation and Historic Preservation (OPRHP) dated March 14, 2020 indicates that the project has been reviewed by the OPRHP and the office concludes that there will be no impact to NYS parklands or properties, including archaeological and/or historic resources, listed on or eligible for the State or National Registers of Historic Places; and

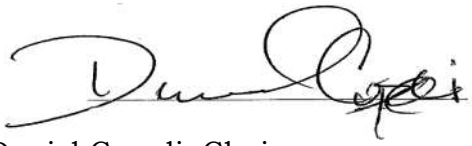
NOW THEREFORE BE IT RESOLVED, that the Onondaga County Planning Board recommends the following MODIFICATION(S) to the proposed action prior to local board approval of the proposed action:

1. The applicant is required to coordinate North Burdick Street access plans with the Onondaga County Department of Transportation. To further meet Department requirements, the applicant must submit a copy of the Stormwater Pollution Prevention Plan (SWPPP), traffic data, and a lighting plan to the Department for review. The municipality must ensure any mitigation as may be determined by the Department is reflected on the project plans prior to, or as a condition of, municipal approval.

2. Any extension of public wastewater infrastructure must be approved by the Onondaga County Health Department and Onondaga County Department of Water Environment Protection prior to municipal approval.

The Board also offers the following comment:

The Board encourages the applicant to minimize potential stormwater and aesthetic impacts of parking by considering reductions to the number of parking spaces, hold some parking in reserve, installing planting islands within parking areas, using pervious pavement, and locating parking to the side and rear of the buildings rather than in the front yard.



Daniel Cupoli, Chairman
Onondaga County Planning Board
Transmittal Date: 06-10-2020

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.net

GML 239 Report of Final Action

NYS GML § 239-m.6. and n.6. require the referring body to file a report of the final action it has taken on a referred matter with the county planning agency within 30 days after the final action (separate from the minutes taken at the meeting). A referring body which acts contrary to a County Planning Board recommendation of MODIFICATION or DISAPPROVAL of a referred matter shall also set forth the reasons for the contrary action in such report.

This section to be completed by the Syracuse-Onondaga County Planning Agency

To: Onondaga County Planning Board **From:** Town of Manlius Planning Board

Fax: 435-2439 **Phone:** 435-2611

Re:

Applicant:	5538 N. Burdick St., LLC
Address:	at 5538 North Burdick Street
Referral Type:	SITE PLAN
OCPB Date:	June 10, 2020
OCPB Action:	Modification
OCPB Case #:	Z-20-167

The local board took the following action regarding the above referenced referral (Check one box. If checking Other, please specify the final action taken. Use the space at the bottom of the report to identify reasons if acting contrary to the OCPB recommendation.):

☐ Approved the proposed action with regard to the OCPB's No Position or No Position with Comment.
☐ Approved the proposed action as modified by the OCPB.
☐ Approved the proposed action contrary to some of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to all of the modifications recommended by the OCPB.*
☐ Approved the proposed action contrary to the disapproval recommended by the OCPB.*

☐ Disapproved the proposed action with regard to the OCPB's no position or no position with comment.
☐ Disapproved the proposed action with regard to the recommended modification(s) by the OCPB.
☐ Disapproved the proposed action as recommended and for reasons set forth by the OCPB.
☐ Disapproved the proposed action as recommended but for reasons other than those set forth by the OCPB. (Please list reasons below for local disapproval.)

☐ Other _____

Local Board Date: _____

*List reasons for acting contrary to the OCPB recommendation and include a copy of the local board resolution. Attach additional reasons on a separate sheet of paper as necessary.

_____

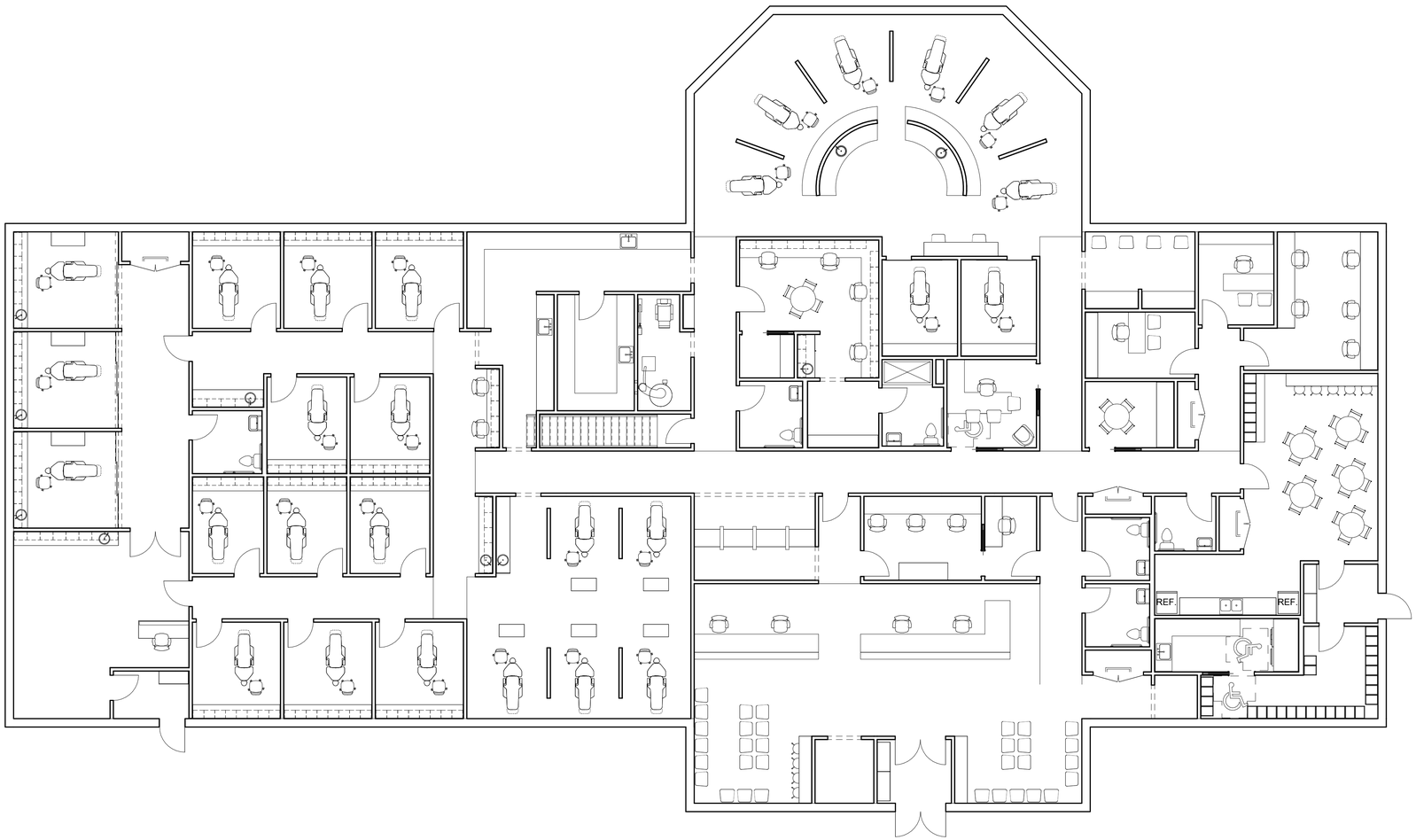
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1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439

E-mail Address: countyplanning@ongov.net



1 FLOOR PLAN
A-101 1/8" = 1'-0"

VIP
STRUCTURES
ONE WEBSTERS LANDING
SYRACUSE, NEW YORK 13202
315.471.5338

VIP
ARCHITECTURE

JOE
ARCHITECT

Project Breckenridge

New Dental Office

5538 N Burdick St
Fayetteville, NY 13066

MK	DATE	DESCRIPTION
A	05.28.20	MUNICIPAL REVIEW

SHEET ISSUES

VIP PROJECT NO.	20-2893
FILE NAME	2893_Model_ARCH.rte
DRAWN BY	Author
CHECKED BY	MM

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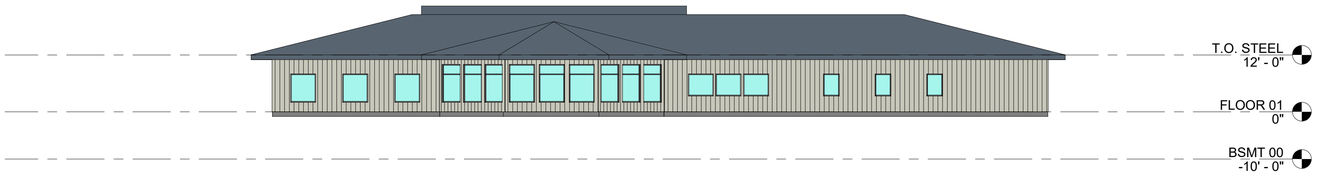
SHEET TITLE

FIRST FLOOR PLAN

SHEET NUMBER

A-101

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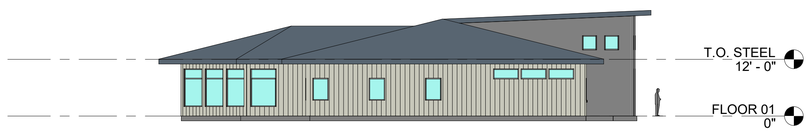
2 EXTERIOR ELEVATION NORTH
X-501 1/16" = 1'-0"



3 EXTERIOR ELEVATION EAST
X-501 1/16" = 1'-0"



1 EXTERTIOR ELEVATION SOUTH
X-501 1/16" = 1'-0"



4 EXTERIOR ELEVATION WEST
X-501 1/16" = 1'-0"

VIP
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ONE WEBSTERS LANDING
SYRACUSE, NEW YORK 13202
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VIP
ARCHITECTURE

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Project
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MK	DATE	DESCRIPTION
A	05.28.20	MUNICIPAL REVIEW

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VIP PROJECT NO.	20-2893
FILE NAME	2893_Model_ARCH.rte
DRAWN BY	KT
CHECKED BY	MM

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SHEET TITLE

ELEVATIONS

SHEET NUMBER

X-501

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TOWN OF MANLIUS

DISCLOSURE AFFIDAVIT

This affidavit is a part of and must be completed and attached to every application, petition, request submitted to a site plan, variance, amendment, change of zoning, approval of a plat exemption from a plat or official map, license or permit.

STATE OF NEW YORK)
COUNTY OF ONONDAGA)

I. ***SCOTT DUMAS,*** being duly sworn deposes and says that (s)he is:

An authorized signatory for the applicant 5538 NBurdick, LLC.

II. That deponent has read and is familiar with the provisions of the General Municipal Law, Section 809 which states:

I have reviewed §809 of the General Municipal Law and am familiar with the provisions contained therein.

A. Every application, petition or request submitted for a site plan, variance, amendment, change of zoning, approval of a plat, exemption from a plat or official map, license or permit, pursuant to the provision or any ordinance, local law, rule or regulation constituting the zoning and planning regulations of a municipality shall state the name, residence and the nature and extent of the interest of any state officer or any officer or employee of such municipality is a part, in the person, partnership or association making such application, petition or request (hereinafter called the applicant) to the extent known to such applicant.

B. For the purpose of this action an officer or employee shall be deemed to have an interest in the applicant when (s)he, his/her spouse, or their brothers, sisters, parents, children, grandchildren, or the spouse of any of them:

   1) Is the applicant, or
   2) Is an officer, director, partner or employee of the applicant, or
   3) Legally or beneficially owns or controls stock of a corporate applicant or is a member of a partnership or association applicant, or
   4) Is a party to an agreement with such an applicant, express or implied, whereby (s)he may receive any payment or other benefit, whether or not for services rendered, or contingent upon the favorable approval of such application, petition or request.

C. Ownership of less than five percent (5%) of the stock of a corporation whose stock is listed on the New York or American Stock Exchanges shall not constitute an interest

for the purposes of this section/.A person who knowingly and intentionally violates this section shall be guilty of a misdemeanor.

III. That no Town of Manlius officer, employee or a relative of either, as defined in Section 809 General Municipal Law has any interest in this application.

-OR-

If a Town of Manlius officer, employee or relative of either as defined in Section 809 General Municipal law has any interest in this application, the full particulars are provided on the attached sheet.

Date: March 25, 2020

Scott Dumas, Authorized Signatory
5538 NBurdick, LLC
124 E. Jefferson Street, Suite 150, Syracuse, NY 13202
315-877-5113

State of New York)
County of Onondaga)

On the 25th day of March in the year 2020, before me the undersigned, a notary public in and for said state, personally came SCOTT DUMAS personally known to me or provided to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within Petition and acknowledged to me that he executed the same in his capacity and that by his signature on the Petition, the individual or the person upon behalf of which the individual acted executed the instrument.

Notary Public

PRISCILLA MARIE ALLEN
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 01AL6233564
Qualified in Onondaga County
Commission Expires December 27, 2022

LIMITED LIABILITY COMPANY/CORPORATE ACKNOWLEDGMENT

State of New York)
) ss.
County of Onondaga)

SCOTT DUMAS, being by me duly sworn, deposes and says that he is an Authorized Party for 5538 NBurdick, LLC, the limited liability company described in the within Application/Petition, that s(he) has read the foregoing affidavit and knows the contents thereof, that the same is true of s(he) own knowledge, except as to those matters therein stated to be alleged upon information and belief, and as to those matters s(he) believes it to be true.

Applicant Signature

Sworn to me this 25 day of March, 2020

Notary Public

PRISCILLA MARIE ALLEN
NOTARY PUBLIC, STATE OF NEW YORK
Registration No. 01AL6233564
Qualified in Onondaga County
Commission Expires December 27, 2022

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the applicant or project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Applicant/Sponsor Information.

Name of Action or Project:		
Project Location (describe, and attach a general location map): 5538 N Burdick Street, Fayetteville, NY 13066		
Brief Description of Proposed Action (include purpose or need): Project includes the construction of a new 10,000 sf+/- building. Site work includes a 100 stall parking lot, utilities, landscaping, and a storm water management facility.		
Name of Applicant/Sponsor: Keplinger Freeman Associates	Telephone: 315.445.7980 E-Mail: sf@keplingerfreeman.com	
Address: 6320 Fly Road		
City/PO: East Syracuse	State: NY	Zip Code: 13057
Project Contact (if not same as sponsor; give name and title/role): Scott Dumas	Telephone: 315.877.5113 E-Mail: scottdumas107@gmail.com	
Address: 5015 Campuswood Drive Suite 101		
City/PO: East Syracuse	State: NY	Zip Code: 13057
Property Owner (if not same as sponsor): John Messenger	Telephone: E-Mail:	
Address: 440 South Warren St. Ste 703		
City/PO: Syracuse	State: NY	Zip Code: 13202

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Counsel, Town Board, or Village Board of Trustees ☑Yes ☐No	Manlius Town Board zone change	3-30-20
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town of Manlius Planning Board Approval	May 2020
c. City, Town or Village Zoning Board of Appeals ☐Yes ☐No		
d. Other local agencies ☐Yes ☐No		
e. County agencies ☑Yes ☐No	Onondaga County DOT, OCWA, OCWEP	TBD
f. Regional agencies ☐Yes ☐No		
g. State agencies ☑Yes ☐No	NYS DEC SPDES Permit	TBD
h. Federal agencies ☐Yes ☐No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☑Yes ☐No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☐Yes ☑No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway; Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Restricted Agriculture

b. Is the use permitted or allowed by a special or conditional use permit? ☐ Yes ☑ No

c. Is a zoning change requested as part of the proposed action? ☑ Yes ☐ No
If Yes,
i. What is the proposed new zoning for the site? RM

C.4. Existing community services.

a. In what school district is the project site located? Fayetteville - Manlius

b. What police or other public protection forces serve the project site?
Town of Manlius Police Department

c. Which fire protection and emergency medical services serve the project site?
Fayetteville Fire Department, EAVES Ambulance

d. What parks serve the project site?
Old Erie Canal State Park, Pools Brook Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? commercial

b. a. Total acreage of the site of the proposed action? 4.10 acres
b. Total acreage to be physically disturbed? 4.00 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 4.10 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☐ Yes ☑ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
ii. Is a cluster/conservation layout proposed? ☐ Yes ☐ No
iii. Number of lots proposed? _____
iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will the proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 12 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☐ Yes ☑ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase				
At completion of all phases				

g. Does the proposed action include new non-residential construction (including expansions)? ☑ Yes ☐ No

If Yes,

i. Total number of structures 1

ii. Dimensions (in feet) of largest proposed structure: 25 height; 75 width; and 140 length

iii. Approximate extent of building space to be heated or cooled: 10,500 square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: storm water

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: storm water

iii. If other than water, identify the type of impounded/contained liquids and their source.

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: .5 acres

v. Dimensions of the proposed dam or impounding structure: 6 ' deep height; 320' length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): earth fill

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging?

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards):
- Over what duration of time?

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe.

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan:

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description):

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

_____

_____

_____

_____

iii. Will the proposed action cause or result in disturbance to bottom sediments? ☐Yes ☐No

If Yes, describe: _____

iv. Will the proposed action cause or result in the destruction or removal of aquatic vegetation? ☐Yes ☐No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____

_____

- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

_____

c. Will the proposed action use, or create a new demand for water? ☑Yes ☐No

If Yes:

i. Total anticipated water usage/demand per day: 4,000 gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑Yes ☐No

If Yes:

- Name of district or service area: CWR40-County Water, WT050-Manl cons water sup
- Does the existing public water supply have capacity to serve the proposal? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No
- Do existing lines serve the project site? ☑Yes ☐No

iii. Will line extension within an existing district be necessary to supply the project? ☐Yes ☑No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

_____

- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐Yes ☑No

If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

_____

vi. If water supply will be from wells (public or private), what is the maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑Yes ☐No

If Yes:

i. Total anticipated liquid waste generation per day: 4,000 gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

sanitary wastewater

_____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑Yes ☐No

If Yes:

- Name of wastewater treatment plant to be used: Meadowbrook-Limestone Wastewater Treatment Plant (WWTP)
- Name of district: SW012-Consolidated Sewer
- Does the existing wastewater treatment plant have capacity to serve the project? ☑Yes ☐No
- Is the project site in the existing district? ☑Yes ☐No
- Is expansion of the district needed? ☐Yes ☑No

- Do existing sewer lines serve the project site? ☐Yes ☑No
- Will a line extension within an existing district be necessary to serve the project? ☑Yes ☐No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: Sanitary is available approximately 1000' south of our project site along N. Burdick St. The sanitary line will be extended to the site.

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge or describe subsurface disposal plans):

_____

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 1.32 acres (impervious surface)

_____ Square feet or 4.10 acres (parcel size)

ii. Describe types of new point sources. storm water associated with building and parking lot

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

Storm water will be directed to an on-site storm water facility.

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☐Yes ☑No

iv. Does the proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:
- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of truck trips/day and type (e.g., semi trailers and dump trucks): _____

_____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☑Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

125,000 KWHR

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

grid

iii. Will the proposed action require a new, or an upgrade, to an existing substation? ☐Yes ☑No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7:00am - 6:00pm
- Saturday: -
- Sunday: -
- Holidays: -

ii. During Operations:

- Monday - Friday: 7:00am - 4:00pm
- Saturday: closed
- Sunday: closed
- Holidays: closed

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☐ Yes ☑ No

If yes:

i. Provide details including sources, time of day and duration:

_____

_____

ii. Will the proposed action remove existing natural barriers that could act as a noise barrier or screen? ☐ Yes ☐ No

Describe: _____

_____

n. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Building mounted dark sky compliant lighting directed towards the parking lot. Lights will be mounted 10' off the ground. Lights will not impact nearby/adjacent properties.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☐ Yes ☑ No

Describe: _____

_____

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

_____

_____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally, describe the proposed storage facilities:_____

_____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

_____

_____

_____

_____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☑ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____

  _____
- Operation: _____

  _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____

  _____
- Operation: _____

  _____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will the proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☐ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☑ Other (specify): vacant land

ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	.10	1.32	+1.22
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	4	2.78	-1.22
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____			

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☑ Yes ☐ No

If Yes,

i. Identify Facilities:

Town Center Retirement Community, North East Medical Center

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >6 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

Cazenovia Silt Loam	85.4 %
Palmyra Gravelly Loam	14.6 %
	%

d. What is the average depth to the water table on the project site? Average: >6 feet

e. Drainage status of project site soils:

☑	Well Drained:	85.4 % of site
☑	Moderately Well Drained:	14.6 % of site
☐	Poorly Drained	% of site

f. Approximate proportion of proposed action site with slopes:

☑	0-10%:	90 % of site
☐	10-15%:	% of site
☑	15% or greater:	10 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name Federal Waters Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☑ Yes ☐ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site:
insects, mammals, birds

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑ Yes ☐ No

If Yes:

i. Species and listing (endangered or threatened):

Northern Long-eared Bat

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

If Yes:

i. Species and listing:

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on the National or State Register of Historic Places, or that has been determined by the Commissioner of the NYS Office of Parks, Recreation and Historic Preservation to be eligible for listing on the State Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☑ Yes ☐ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Old Erie Canal State Park, Butternut Creek Trail, Ryder Park, Green Lakes State Park, Canal Landing Park

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): State Park / Local Park

iii. Distance between project and resource: <5 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

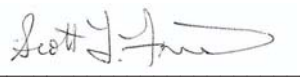
Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

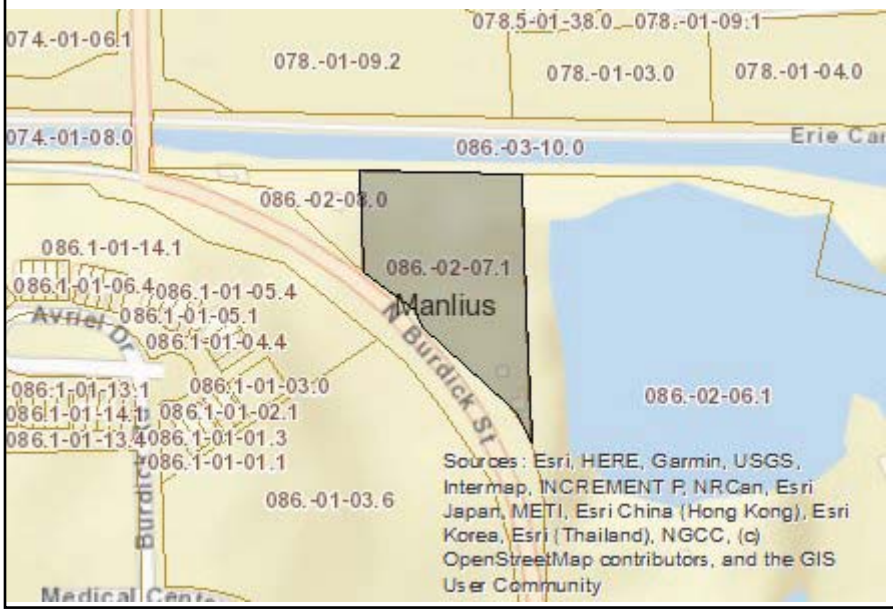
Applicant/Sponsor Name Scott Freeman - Keplinger Freeman Associates Date 3-30-20

Signature  Title Landscape Architect

PRINT FORM

EAF Mapper Summary Report

Thursday, March 26, 2020 1:00 PM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	Yes
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.iv [Surface Water Features - Wetlands Name]	Federal Waters
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	Yes
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes

E.2.o. [Endangered or Threatened Species - Name]	Northern Long-eared Bat
E.2.p. [Rare Plants or Animals]	No
E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National or State Register of Historic Places or State Eligible Sites]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	Yes
E.3.i. [Designated River Corridor]	No

Nathan LaPierre

From: Nathan LaPierre
Sent: Tuesday, June 30, 2020 3:22 PM
To: Christopher Deitman
Subject: RE: 5538 N Burdick Street - tax map # 086.-02-07.1

Chris,
Thanks for reviewing this, I'll send the profiles and final detailing over once completed. The force main is only serving one property and we have confirmed with OCDOT that it will be private. They require a use and occupancy agreement and they've directed us to contact Dig Safe so the private line will be in the database.

Thanks.

Nathan P. LaPierre, RLA
Keplinger Freeman Associates
315.445.7980 ext. 4

From: Christopher Deitman <ChrisDeitman@ongov.net>
Sent: Tuesday, June 30, 2020 10:40 AM
To: Nathan LaPierre <nl@Keplingerfreeman.com>
Subject: RE: 5538 N Burdick Street - tax map # 086.-02-07.1

Hi Nathan,

I have no problem with the routing. If this force main is going to serve one property it can be private unless the road owner will not allow it to be private.

Thanks

Chris Deitman
Sewer Maintenance Superintendent
Onondaga County Department of Water Environment Protection
7120 Henry Clay BLVD.
Liverpool, NY 13088
T:(315) 435-5402 ext 202
F: (315) 435-5458

From: Nathan LaPierre [mailto:nl@Keplingerfreeman.com]
Sent: Monday, June 29, 2020 4:25 PM
To: Christopher Deitman
Subject: RE: 5538 N Burdick Street - tax map # 086.-02-07.1

NOTICE: This email originated from **outside** of Onondaga County's email system. **Use caution** with links and attachments.

Chris,
Attached is our preliminary sanitary force main routing for the North Burdick Street project. We're working on the profiles and final detailing. Please review proposed routing in red and let me know if you see any issues with this path.

Thanks.

Nathan P. LaPierre, RLA
Keplinger Freeman Associates
315.445.7980 ext. 4

From: Nathan LaPierre
Sent: Wednesday, June 24, 2020 4:17 PM
To: Christopher Deitman <ChrisDeitman@ongov.net>
Subject: RE: 5538 N Burdick Street - tax map # 086.-02-07.1

Good afternoon Chris,
Have you had a chance to take a look at the capacity for this project?

Also, we're starting to put together our sanitary plan and profile for your review. We should have a preliminary plan for you to look at next week.

Thanks.

Nathan P. LaPierre, RLA
Keplinger Freeman Associates
315.445.7980 ext. 4

From: Christopher Deitman <ChrisDeitman@ongov.net>
Sent: Friday, April 10, 2020 1:30 PM
To: Nathan LaPierre <nl@Keplingerfreeman.com>
Subject: RE: 5538 N Burdick Street - tax map # 086.-02-07.1

Hi Nathan,

Attached is an overview of the sewers in the area, black lines with green and purple squares for manholes. Also I have included what drawings I have for the Town of Manlius owned sewers. Unfortunately I do not have access to the drawings for the Town owned sewers to the South near Burdick Road.

I'm working on the capacity request.

Thanks

Chris Deitman
Sewer Maintenance Superintendent
Onondaga County Department of Water Environment Protection
7120 Henry Clay BLVD.
Liverpool, NY 13088
T:(315) 435-5402 ext 202
F: (315) 435-5458

From: Nathan LaPierre [mailto:nl@Keplingerfreeman.com]
Sent: Friday, April 03, 2020 1:36 PM
To: Christopher Deitman
Subject: 5538 N Burdick Street - tax map # 086.-02-07.1

NOTICE: This email originated from **outside** of Onondaga County's email system. **Use caution** with links and attachments.

Good afternoon Chris,
We're working on a project at 5538 N Burdick Street in the Town of Manlius. We plan on tying into the sanitary structure approximately 1000' to the south in front of Medical Center Drive. Do you have any information/drawings for this area?

Also, can you confirm the system has capacity for this. The proposed building is approximately 10,500 sf and we're looking at 4,000 GPD. I've attached a rough site plan for your use. Please let me know if you have any questions.

Thanks.

Nathan P. LaPierre, RLA
Keplinger Freeman Associates
315.445.7980 ext. 4

Onondaga County Department of
WATER ENVIRONMENT PROTECTION

J. Ryan McMahon, II, County Executive
Frank M. Mento, P.E., Commissioner
Flow Control Division
7120 Henry Clay Boulevard
Liverpool, NY 13088-5344
(315) 435-5402
FAX (315) 435-5458
http://www.ongov.net/wep/

July 6, 2020

Nathan LaPierre, RLA
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Via-E-mail

Re: Request for Capacity Assurance; 5538 N. Burdick Street
Town of Manlius

Nathan:

In response to your request, this is to confirm the Onondaga County sanitary sewer system has adequate capacity to accept the projected increase in sanitary sewer (average) daily flow of 4,000 GPD from the proposed 10,500 square foot building. Since this project is tributary to the Meadow Brook Limestone WWTP, which is currently under an active Consent Order by the NYSDEC. We expect to secure a 2:1 wet weather offset. In accordance with Local Law # 1 of 2011, the developer must coordinate with the Town of Manlius to offset the projected 4,000 GPD of sanitary flow by removing the same amount of inflow and infiltration from within this service area. The proposed offset plan shall be submitted with the sanitary sewer plan review submission.

Changes as a result of modifications to the proposed plans or changes in laws, regulations or permit(s) that are beyond this Department's control or impact this project will be the responsibility of the applicant.

This acceptance is based on County infrastructure capacity only. Capacity of existing Town owned infrastructure is the responsibility of the Town. The engineering of this project is the responsibility of the design engineer.

This capacity assurance is only for the above proposed building. There is no acceptance, or suggestion of future acceptance - expressed or implied, for any future phases or development. While we intend to honor capacity assurances, we can make no commitments to the likelihood of future approvals, due to growth of capacity utilization and the considerable regulatory changes which may affect future treatment facility regulations. This letter shall be valid for a period of 24 months commencing July 6, 2020. If construction has not been completed in this 24 month period, please contact this department to apply for an extension. We expect that the developer will comply with the Town of Manlius offset program prior to any sanitary sewer discharge from this project.

If you need further assistance, please do not hesitate to contact me at 435-5402 x202.

Sincerely,

ONONDAGA COUNTY DEPARTMENT OF
WATER ENVIRONMENT PROTECTION

Chris Deitman
Sewer Maintenance Superintendent

CD/
c: File (T) Manlius

Expected Fee: _____

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION

DATE: May 27, 2020

Name of Project: 5538 North Burdick Street

Applicant must submit 12 copies of all site plans, surveys, and supporting data with the final application before a planning board meeting can be scheduled.

Location of Project: 5538 North Burdick Street, Manlius, New York

Type of Project:

○ Division of Land ○ Subdivision ○ Accessory Use ○ Zone Change ⊗ Site Review ○ Other _____

Developer: 5538 NBurdick, LLC Phone: (315) 877-5113

Address: 125 East Jefferson Street, Suite 1510, Syracuse, New York Zip: 13202

Tax Map Number(#)/s: 086.-02-07.1

Present Zoning: Residential Agricultural (RA) Desired Zoning: Residential Multiple Use (RM)

Total Acreage: 4.1 Ac Total Number of Lots: 1 Lot

Property Owner/s: John Messenger Phone: (315) 471-3030

Address: c/o James Messenger, Esq., 440 South Warren St, Syracuse, NY Zip: 13202

Tax Map#(s): 086.-02-07.1 Owner's Signature: John Messenger

Printed Name: John Messenger

Property Owner/s: _____ Phone: _____

Address: _____ Zip: _____

Tax Map#(s): _____ Owner's Signature: _____

Printed Name: _____

Use next page for additional known property owners' information

---

Planning Board Meeting Date Assignment: _____

Fee: _____ Paid: _____ Per: ○ Credit/Debit Card ○ Check ○ Cash

TOWN OF MANLIUS
PLANNING DEPARTMENT
INITIAL APPEARANCE APPLICATION
(continued)

Developer
~~Property Owner/s:~~ 5538 N Burdick, LLC Phone: 315-877-5113

Address: 125 East Jefferson St., Suite 1510, Syracuse, NY Zip: 13202

Tax Map#(s): 086.-02-07.1 Owner's Signature: Scott E. Dumas

Printed Name: Scott Dumas, Authorized Signatory

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

Property Owner/s: Phone:

Address: Zip:

Tax Map#(s): Owner's Signature:

Printed Name:

MBM Dental Office

5538 North Burdick Street
Town of Manlius
Onondaga County, NY 13066

RZE# 20014

SWPPP

07/09/2020

Prepared for:
5538 North Burdick, LLC
125 East Jefferson St
Syracuse, NY 13202

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

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1.0 – SUMMARY

5538 North Burdick, LLC proposes to develop a site located at 5538 North Burdick St in the Town of Manlius, Onondaga County, NY. The existing site consists of an existing residence as well as woods/grass cover. Proposed for development is a new dental office building with associated parking and access off of North Burdick St. Proposed site improvements within the project will also include stormwater facilities, general utilities, and general site landscaping. Site disturbance is estimated at approximately 4.0± acres. An aerial photo and USGS Topographic Map have been provided in the report, see Figures 1 and 2. This report has been prepared with supporting documentation and calculations for the stormwater design of the site.

2.0 – OBJECTIVE

The purpose of this Report is to describe the additional stormwater management and erosion control measures for the site and the rationale for their use. This Report has been prepared in accordance with the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS) "NYS Standards and Specifications for Erosion and Sediment Control," the New York State Department of Environmental Conservation (NYSDEC) "NYS Stormwater Management Design Manual," and the NYSDEC "SPDES General Permit for Stormwater Discharges from Construction Activities."

This report will provide a narrative description of the proposed site improvements including stormwater management structures and erosion control methods to be temporarily or permanently employed at the site.

A copy of this SWPPP shall be maintained on site by the owner/contractor for the duration of the construction process.

3.0 – EXISTING SITE CONDITIONS

Existing Site Use

5538 North Burdick, LLC proposes to develop a site located at 5538 North Burdick St in the Town of Manlius, Onondaga County, NY. The location of the site in relation to major roads and other points of reference are presented in Figures 1-3 along with an aerial photo of the site, general environmental mapping, and general vicinity. The existing site consists of an existing abandoned residence as well as woods/grass cover.

For the purposes of analysis, one watershed was delineated in existing conditions. EXDA-1 consists of the existing site including the existing structures and woods cover. Stormwater within EXDA-1 travels via sheetflow generally north toward the Erie Canal where it discharges.

According to soil information provided by the National Cooperative Soil Survey the site soils consists of Cazenovia Silt Loam – HSG Type C and Palmyra gravelly loam – HSG

Type A. A representative of RZ Engineering performed infiltration tests at the site with results found in Appendix A. Additional soil testing has been performed by Kenny Geotechnical and also provided in Appendix A. Testing has been further discussed in Section 6.0 below.

The existing land-surface cover descriptions and totals for this site within the site watershed(s) are described as follows:

Area (acres)	CN	Description (subcatchment-numbers)
0.928	39	>75% Grass cover, Good, HSG A (1S)
0.110	98	Paved parking, HSG A (1S)
2.930	30	Woods, Good, HSG A (1S)
0.674	70	Woods, Good, HSG C (1S)
4.642	**39**	**TOTAL AREA**

4.0 –PROPOSED SITE USE AND IMPROVEMENTS

Proposed Site Use

The site improvements proposed for the proposed development will require stormwater quality controls for the site development and proposed stormwater bypass conveyance. For purposes of analysis, the onsite and offsite watersheds were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities. Further discussion of the analysis is discussed in the next few report sections. The site is proposed to be connected to water and sanitary sewer systems. Access to the site during construction will be made via the proposed entrance along North Burdick Street.

Due to site development, some of drainage areas may change in size somewhat and Tc Flowpaths altered but the downstream discharge points will remain the same.

Site Improvements

The proposed grading and drainage plan for the site is designed to maintain the site drainageways within it, attempting to improve existing storm runoff conditions. Onsite stormwater runoff from site improvements in PRDA-1 will flow to the proposed stormwater practices via sheet flow, shallow concentrated flow, and channel flow through the proposed drainage system. All stormwater runoff from the subject site eventually discharges to the Erie Canal and subsequent Butternut Creek.

The proposed land-surface cover descriptions and totals for this site within the site watershed are described as follows:

Area (acres)	CN	Description (subcatchment-numbers)
2.794	39	>75% Grass cover, Good, HSG A (2S)
0.606	74	>75% Grass cover, Good, HSG C (2S)
1.407	98	Paved parking, HSG A (2S)
4.807	**61**	**TOTAL AREA**

5.0 – STORMWATER RUNOFF COMPUTATIONS

This section of the Report outlines the results of a stormwater runoff analysis that was conducted for the proposed site. The analysis includes a comparison of pre-development hydrologic conditions with those of the post-development conditions. This analysis is based on the site watershed's total area under both Pre- and Post-Development Conditions.

HydroCAD Version 10.00 was utilized in this Report for estimating runoff and peak discharges from the site disturbed area watershed. This computerized model was developed by the USDA-SCS to determine runoff volumes and peak rates of discharge, and takes into account watershed area, rainfall frequency, runoff coefficients characterizing land surfaces, flow duration or time of concentration, and average watershed slopes. Pre- and post-development calculations were generated for a 1, 2, 5, 10, 25, 50 and 100-year frequency, 24-hour storm event. Exhibits outlining stormwater runoff information referenced from the New York Standards and Specifications for Erosion and Sediment Control are presented in Appendix I.

The SCS has developed curve numbers characterizing land surfaces for urban areas and agricultural lands, which were utilized in the computer modeling of this site.

The time of concentration (t_c) value is utilized in the modeling of stormwater runoff for a site. Time of concentration is the duration that it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest (outfall) within the watershed. It is also the sum of the travel time from the various consecutive flow segments along the flow path of the watershed to the outfall. The time of concentration is dependent on the velocity of the runoff, and is a function of the surface roughness, slope of the surface, and flow segment length.

Pre-Development Analysis

For purposes of analysis, the site watersheds were analyzed to determine the existing site peak runoff rate to the downstream discharge point(s). This peak runoff rate at the downstream discharge point was used as the limiting factor when comparing the post-development rates from the site.

The computer modeling results of the pre-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year, 24-hour storm event indicates that the following peak runoff rates in cubic feet per second (cfs) are anticipated to discharge from the pre-site condition

drainage area(s). Calculations are presented in Appendix C.

Pre-Development Site Watersheds

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
EXDA-1	4.642	0.00	0.00	0.00	0.01	0.03	0.13	0.51

Post-Development Analysis

For purposes of analysis, the proposed site construction limits were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities.

The computer modeling results of the post-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year 24-hour storm event indicates that the following peak runoff rates are anticipated to discharge from the post-site condition drainage area. Calculations are presented in Appendix D.

Post-Development Site Watersheds

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
PRDA-1	4.807	0.07	0.33	1.33	2.66	5.22	7.98	11.58

Comparison of Pre- and Post-Development Runoff

The peak flow conditions for the pre- and post-development watershed areas of the project site are summarized below:

Pre-Development Watershed vs. Post-Development Watersheds (Pre Routing)

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Year Storm Peak Flow (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-1	4.64	4.81	0.00	0.07	0.00	0.33	0.00	1.33	0.01	2.66	0.03	5.22	0.13	7.98	0.51	11.58

The above table reflects both an increase in peak runoff conditions for all storms in DA-

1. The increases in peak runoff conditions are due to proposed site development. Therefore PRDA-1 will require quality and quantity controls to be discussed in the next section in accordance with Chapter 10 of the NYS Stormwater Design Manual.

6.0 – STORMWATER MITIGATION AND BMP'S

As can be found in Appendix A, the results of the soil testing revealed favorable infiltration results at several different soil depths. Therefore we have proposed an infiltration basin for DA-1 to provide onsite stormwater water quantity and quality requirements with proposed depths of witnessed favorable infiltrations rates to meet NYSDEC standards. A summary of the stormwater flows post routing are found in the table below with calculations found in Appendix E. As can be seen in the table below, the proposed stormwater measures will provide necessary water quantity controls to limit overall peak flows to the overall downstream discharge point in post-development conditions to levels at or below pre-development downstream peak flows.

Pre-Development Watershed vs. Post-Development Watershed (Post Routing)

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Year Storm Peak Flow (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-1	4.64	4.81	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.11	0.13	0.51	0.21

DA-1 I-2 Infiltration Basin

The I-2 Infiltration Basin for DA-1 contains 44,337 +/- cubic feet of total storage. A proposed 6" HDPE underdrain has been set at 430.50. A proposed concrete outlet structure has been proposed for location at the northern end of the swale. The outlet structure has a proposed 3" diameter orifice at invert elevation 435.40 to discharge any non-infiltrated flows. The concrete structure will also have an open rim at elevation 437.10. Any flows entering the outlet structure will discharge through a proposed 12" HDPE outlet pipe at invert 430.50. An emergency spillway at has been set at invert 437.50 to allow for extreme storm passage. The water quality volume for this watershed is 0.126 ac-ft. The WQv provided below the invert of the basin is 0.218 ac-ft. Two forebays at inlets have been provided with permanent checkdams to provide the minimum 25% of the WQv of the watershed. See contract drawings for check dam location. Per the NYS Stormwater Design Manual, the WQv must be drained from the infiltration basin within 48 hours as shown in the following calculation.

Percolation Rate = 34 min. / inch.

Total inches percolation per hour = 60/34 = 1.76 inches / hour
Total inches percolation per 48 hours = 1.76x48 = 84.48 inches = 7 feet
Total Basin Basal Area at bottom elevation = 1,614 sf
Total Volume capable of being discharged by percolation=7ft x 1,614 sf =11,298 cf
Total WQv/CPv storage volume provided= 8,924 cf

Check ----------8,924 cf < 11,298 cf ----------ok

7.0 – PROPOSED STORMWATER DRAINAGE FACILITIES

All on site drainage facilities are designed to transmit flows from a 10 year storm event to downstream stormwater Best Management Practices. The location, size and type of all pipes and structures are provided on the contract drawings. The calculations and basis for analysis of these systems are presented in Appendix F.

8.0 – STORMWATER QUALITY VOLUME

Typically, the water quality volume (denoted as WQ_V) is designed to improve water quality, sized to capture and treat 90% of the average annual stormwater runoff volume. The WQ_V is directly related to the amount of impervious cover created at the site. The following equation is used to estimate water quality storage volume WQ_V in acre feet of storage:

$$WQ_V = \frac{(P)(R_V)(A)}{12}$$

Where:

- WQ_V = water quality volume (in acre-feet)
- P = 90% Rainfall Event Number (Figure 4.1 – Appendix G)
- R_V = 0.05 + 0.009(I), where I is the percent of impervious cover
- A = site area in acres

It is assumed that by meeting the WQ_V requirements thru the employment practices outlined in Table 5.1 of the "New York State Stormwater Management Design Manual", a project will, by default, meet water quality objectives. Calculations of water quality volume can be found in Appendix G. The proposed BMP is also succesful in achieving CPv requirements. Calculations of CPv can be found in Appendix G.
It is assumed that by meeting the WQ_V requirements thru the employment practices outlined in Table 5.1 of the "New York State Stormwater Management Design Manual", a project will, by default, meet water quality objectives.

9.0 – PHOSPHORUS REMOVAL

Chapter 10 of the NYS Stormwater Design Manual outlines the requirements for treatment of phosphorus in stormwater. Enhanced Phosphorus Removal requires calculation of the 1 year, 24 hour design storm in the post development watershed. The site is not located in a TMDL Phosphorous watershed and therefore, no additional phosphorus treatment volume for the 1 year storm event has been provided.

10.0 – RUNOFF REDUCTION VOLUME AND GREEN PRACTICES

Since standard infiltration practices are being employed on this site, 100% of the water quality volume may be taken as RRv. As a result, no additional RRv/Green Infrastructure practices are required for this site and the site meets RRv requirements.

Green Practices

PRACTICE	WATERSHEDS	TYPE OF REDUCTION
• Tree Planting	Post Development DA-1	Area Reduction
• Standard Infiltration Practice	Post Development DA-1	Source Control

Soil Restoration Requirements **

According to Section 5 of the NYS Stormwater Design Manual, soil restoration practices must be applied across the site in areas of soil disturbance. This is necessary to reclaim the origional properties and porosity of the soil before construction. The benefits of soil restoration include but are not limited to:

- Less stormwater runoff
- Increased porosity on redevelopment sites where impervious cover is converted to pervious
- Achieves performance standards on runoff reduction practices
- Healthier, asthetically pleasing landscapes
- Enhances direct groundwater recharge
- Promotes sucessful long term revegitation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout durring dry periods

Table 5.3 Soil Restoration Requirements			
Type of Soil Disturbance	**Soil Restoration Requirement**		**Comments/Examples**
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A &B	HSG C&D	Protect area from any ongoing construction activities.
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A &B	HSG C & D	
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

** taken from the NYS Stormwater Management Manual (version 2010)

Many of the Runoff Reduction practices will require soil restoration measures applied in and around the practice inorder to reach the desired runoff reduction performance. Table 5.13 on page 5-22 of the NYS Stormwater Design Manual has been included below that higlights these requirements and provides guidance on when to implement soil restoration techniques. Also included is the NYS Stormwater Design Manual section on Practice implimentation, Maintenece and Inspection.

Soil Restoration Practice Implementation:

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil
2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractormounted disc, or tiller, mixing, and circulating air and compost into subsoils

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site
4. Apply topsoil to a depth of 6 inches
5. Vegetate as required by approved plan.

Figures 5.16 and 5.17 above show two attachments used for soil decompaction. Tilling (step 2 above) should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Soil Restoration Inspection:

At the end of the project an inspector should be able to push a 3/8” metal bar 12 inches into the soil just with body weight.

Compost Specifications

Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

Soil Restoration Maintenance:

The maintenance agreement with the town should identify where Soil Restoration has been applied (in addition to already being shown on the contract documents), where newly restored areas are/cannot be cleared, who the responsible parties are to ensure that routine vegetation improvements are made (i.e., thinning, invasive plant removal, etc.). Soil compost amendments within a filter strip or grass channel should be located in public right of way, or within a dedicated stormwater or drainage easement.

First Year Maintenance Operations Includes:

• Initial inspections for the first six months (once after each storm greater than half- inch)
• Reseeding to repair bare or eroding areas to assure grass stabilization
• Water once every three days for first month, and then provide a half inch of water per week during first year. Irrigation plan may be adjusted according to the rain event.
• Fertilization may be needed in the fall after the first growing season to increase plant vigor

Ongoing Maintenance:

Two points help ensure lasting results of decompaction:

1. Planting the appropriate ground cover with deep roots to maintain the soil structure
2. Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few years)

11.0 – POSSIBLE CONTAMINANTS FROM CONSTRUCTION ACTIVITIES

During construction contaminants from materials and equipment could enter the stormwater drainage system unintentionally. The contractor should store construction materials and equipment in the designated staging area and all possible contaminants should be stored to prevent damage.

This particular project will require construction equipment such as a backhoe, drum roller, dump trucks, a grader, and bull dozer. These vehicles use oil and petroleum products which if not treated carefully could enter the storm drainage system. Accidental spills should be reported to the Department of Environmental Conservation 24 hour spill response hotline at 1-800-457-7362. On site fueling of construction equipment shall be limited to a bermed/ diked area located within the project staging area. The table below provides a guide for quantities that should be reported. Should a spill incident occur, the employee or party responsible for the spill should contain the spill, start cleanup and report the spill to his/ her superiors. The spill should be reported to the appropriate governing agency should the spill exceed the reportable quantity or enter surface waters.

Examples of Reportable Quantities		
Material	*Media Released To*	*Reportable Quantity*
Engine oil, fuel, hydraulic and brake fluid	Land Water	25 gallons Visible Sheen
Antifreeze	Land	100 lbs (13 gal.)
Battery Acid	Land, Water	100 lbs.
Refrigerant	Air	1 lb.
Gasoline	Air, Land, Water	100 lbs.
Engine Degreasers	Air, Land, Water	100 lbs.

All construction waste material such as housing materials and utility installation materials shall be disposed of as required by law.

Wastewater from concrete washout areas is prohibited from discharging directly to any site areas not managed by an appropriate stormwater control measure. Also prohibited are washouts from stucco, paint, form release oils, curing compounds, and other construction materials. Soaps, solvents, fuels, oils, or other pollutants used in vehicle operations or maintenance shall also be controlled by an appropriate stormwater control measure. Staging areas are designated on the plans for storage of equipment and vehicles. Locations subject to the above contaminants outside the staging area shall require additional measures and should be reviewed with the SWPPP inspector and MS4 representative prior to commencement of activities that may result in contamination.

12.0 – EROSION CONTROL MEASURES

Structural erosion and sediment control measures are classified as either temporary or permanent, according to how they are used. Temporary structural measures shall be used during construction of the site to prevent off-site sedimentation. Permanent structural measures shall be utilized following construction and shall be implemented to convey surface water safely to the existing drainage ways present in the pre-development condition. The permanent structural measures shall remain in-place and continue to function after the completion of construction. General construction notes and maintenance plan for implementing the temporary and permanent stormwater and erosion control structures during and after construction have been developed for the project.

Erosion control measures shall be inspected once weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. The owner shall file a Notice of Intent (NOI) with the NYS DEC prior

to commencement of further construction activities. The NOI shall be sent to:

NYSDEC- Notice of Intent
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

Temporary Structural Measures

This subsection will describe the specific temporary control measures to be implemented to reduce and/or eliminate erosion and sedimentation during the construction phase of this project. Example details of the following erosion control measures are presented in Appendix I. As construction progresses more site areas may be opened after already constructed areas are permanently stabilized in accordance with the New York State Standards and Specifications for Erosion and Sediment Control.

Silt Fence

A temporary barrier of geotextile fabric (filter cloth) fence shall be used to intercept sediment-laden runoff along the borders of disturbed site areas during construction. A geotextile fabric fence shall also be placed around all permanent stormwater drainage structures, in the absence of straw bale dikes, (catch basins and manholes) to intercept sediment and protect the structure during construction. The geotextile filter fabric fence requires periodic maintenance and should be checked for tears or clogging with silt or debris. Silt can be removed from the woven filter cloth with a stiff brush if clogging occurs.

Stabilized Construction Entrance

A stabilized pad of aggregate underlain with filter cloth shall be positioned at points where traffic will be entering or leaving the construction site area onto public roads. This measure will reduce the tracking of soils onto public roads or streets.

Dust Control

Construction activities should be scheduled to minimize the amount of disturbed area at a single time. If vegetated areas can be left in tact to serve as a buffer zone these areas should be maintained where practical. During dry conditions, open soil areas may require hosing down with water to prevent excessive dust. Spray adhesives may be utilized as outlined in the NYS Standards and Specifications for Erosion and Sediment Control. Fences or vegetation may be required to minimize dust pollution to adjacent properties and should be incorporated into the site erosion control plan as required.

Drop Inlet Protection

A temporary, somewhat permeable barrier shall be installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and to prevent heavily sediment laden water from entering a storm drain system through inlets. The barrier should be inspected after each rain event and repairs shall be made as necessary. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the area around the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Maintenance of Temporary and Permanent Control Structures

Temporary and Permanent Stormwater Facilities during Construction

Temporary stormwater and erosion control structures must be constructed in accordance with their design intent and maintained to prevent sediment-laden runoff from leaving the site during construction. In general, the temporary structures during construction should be inspected on a routine basis and maintained as follows:

- Temporary silt fences, straw bale dikes, and sediment interceptors shall be installed prior to earth disturbance to reduce runoff velocity and transportation of sediment. The stabilization structures shall be inspected weekly and after every rainfall; and the structures cleaned, repaired, or replaced as required. Temporary stabilization structures shall be removed when their contributory drainage area is stabilized.

- Temporary storm drain inlet protection shall be installed to prevent heavily sediment laden water from entering a storm drain through inlets. Inspections shall be bi-weekly and after major storms to insure that sediment is not being allowed into the storm system. The inlet protection shall be cleaned, repaired, and or replaced as required until the contributing drainage area is stabilized. When this occurs, the devices shall be removed and the area around the inlet shall be stabilized in the manner appropriate the site.

- All permanent drainage structures, installed as part of the site improvements, shall be inspected weekly and after every rainfall to insure structural integrity, detect vandalism and damage, and for cleaning. Permanent drainage structures shall be repaired or replaced, as required.

- All disturbed soil areas, upon final grading of topsoil, shall be seeded, and mulched. All seeded areas shall be inspected monthly and after every rainfall and the areas repaired and re-seeded, as required.

- Stabilized construction entrance shall be installed to control erosion at location where traffic will be entering or leaving the construction area. The temporary construction entrance shall be inspected periodically and after each rainfall; and the entrance cleaned, repaired, or replaced, as required. The temporary construction entrance shall be removed when construction is completed and all

disturbed areas are stabilized.

Permanent Stormwater Facilities after Construction

Permanent stormwater control structures must be constructed in accordance with their design intent and maintained on a routine basis to remain effective. This site has employed stormwater management facilities. Prior to submission of the Notice of Termination to NYSDEC the contractor shall provide as built drawings of all stormwater best management practices and facilities to allow verification of construction in compliance with this SWPPP and the contract drawings. **It is the responsibility of the owner to maintain these facilities as required by the NYS Stormwater Design Manual. Maintenance requirements and design information is included in Appendix K of this report.**

In general, the structures after construction should be inspected periodically and maintained as follows:

- Permanent stormwater drainage structures shall be inspected semi-annually and after every 0.5 inches of rainfall to insure structural integrity, detect vandalism and damage, and for cleaning. The structures shall be repaired or replaced, as required.

- Permanent lawns and grassed areas shall be inspected and maintained on a regular basis, consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed, and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

- **Stormwater Best Management Practices used on this site; their design intents and inspection and maintenance punch list forms have been included in Appendix K.**

Site Stabilization

The Owner/Contractor shall initiate stabilization measures as soon as practicable in a portion of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as possible;

b. Where disturbed area is 5 acres or more, stabilization measures must be employed no more than 7 days after construction activities have temporarily or permanently ceased.

Site Assessment and Inspection

Initial Inspection

The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction. The qualified professional shall certify that the appropriate erosion and sediment controls described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Post Construction Inspection

The Owner shall have a qualified professional conduct an assessment of the site after construction is complete. The qualified professional shall be a Licensed Professional Engineer or possess the appropriate certifications for inspection. The qualified professional shall certify that the appropriate erosion and sediment controls and stormwater BMP’s described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. If the site is located in an area governed by a traditional MS4, the MS4 must also make a final inspection and sign the Notice of Termination.

In addition, the owner must ensure that a properly qualified inspector is performing inspections of post construction stormwater practices as outlined in the NYS Stormwater Design Manual. The owner shall ensure that a binding maintenance agreement is in place for inspection and maintenance of all stormwater practices and ensure that the inspection and maintenance is performed by a qualified professional. The owner must then identify the responsible party for these inspections and maintenance on the Notice of Termination.

As-Builts

Prior to Submission of the Notice of Termination by a Licensed Professional Engineer and upon completion of the site, a surveyor or appropriate inspector shall be required to produce an Autocad or paper as-built map to the design engineer for verification that stormwater items and BMP’s were installed as per the approved plans.

Stormwater BMP Inspection and maintenance punch list forms are provided behind the appropriate design intent page in Appendix K.

Inspections and Records during Construction

Inspection Frequency

After commencement of construction, site inspections shall be conducted by the qualified professional at least once per week if under 5 acres disturbance or twice per week if above 5 acres of disturbance. Two consecutive working days shall be given between site inspections per week. Prior to filing a Notice of Termination (NOT) or at the end of the permit term, the owner shall have the qualified professional perform a final site inspection.

Records during Inspection

A site map shall be maintained on site indicating the extent of all disturbed onsite areas and drainageways throughout the duration of construction. The site map shall contain all areas expected to undergo initial disturbance or significant site work within every 7-day period. The map shall indicate all areas of the site that have undergone temporary or permanent stabilization. All disturbed areas that have not undergone active site work during the previous 7-day inspection period shall be noted on the map. All sediment control measures shall be inspected and the degree of accumulation as a percentage of the sediment storage volume shall be recorded. Inspector must describe and inspect all points of discharge to natural surface water bodies located within, or immediately adjacent to property boundaries. Photographic record of inspections and any deficiencies shall be included in the inspection reports and photos of corrective action must be recorded upon compliance. Any maintenance required for installed erosion and sediment control structures shall be noted, and documentation of areas where adjustments are needed to those measures shall be provided. Any deficiencies identified with the implementation of the SWPPP shall be recorded. Erosion control measures shall be inspected weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. These inspection reports should be in compliance with the requirements set forth under part IV.C-4 of the general permit. A copy of the general permit is included in Appendix J.

Inspection Log Book

The Owner/ contractor shall maintain an inspection logbook which shall contain a record of all inspection reports. The site logbook shall be maintained on site and shall be made available to the permitting authority upon request. The Owner shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.

Certifications

At the final site inspection the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods, and that all temporary erosion and sedimentation measures have been removed. Final

certification requires completion of the Notice of Termination form. The Notice of Termination shall be signed by the qualified professional. The owner shall provide the qualified professional with as built drawings in AutoCAD format so that the qualified professional can verify that all stormwater practices have been installed in accordance with the approved plans, SWPPP and the General Permit. The owner shall certify that the requirements of the permit have been satisfied within 48 hours of actually meeting such requirements and sign the Notice of Termination.

RELIANCE

Engineer's Certification

The undersigned agrees that this SWPPP has been prepared in accordance with all applicable standards outlined in this report. The undersigned understands that the owner intends to use this SWPPP to support his application for a New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Prepared By: Helen McMillen Date: 07/06/2020

Helen McMillen
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Reviewed By: _____ Date: 07/06/2020

Rudy L. Zona, P.E.
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Owner's Certification

I certify that I have read and understand the requirements outlined in this SWPPP report. The undersigned agrees that I have employed the above professional to prepare this SWPPP and that the recommendations within this Report and accompanying documents support the requirements set forth by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. I certify that I intend to employ a contractor who will follow the recommendations of this SWPPP and any requirements set forth by the New York State SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Owner: _____

Owner's Representative: _____ Date: 7/5/20

Title: Owners Representative

Contractor's / Sub-Contractor's Certification

Contractor's/Sub-Contractor's Certification "I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor: _____

Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Contractor's "trained contractor":_____Date:_____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Contractor is responsible for SWPPP components identified:

SWPPP Inspections_____
_____
_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor":_____Date:_____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor":_____Date:_____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor":_____Date:_____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor":_____Date:_____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____



RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

N

MBM BURDICK ST DENTAL OFFICE
USGS MAP
SCALE 1:800

FIGURE 1

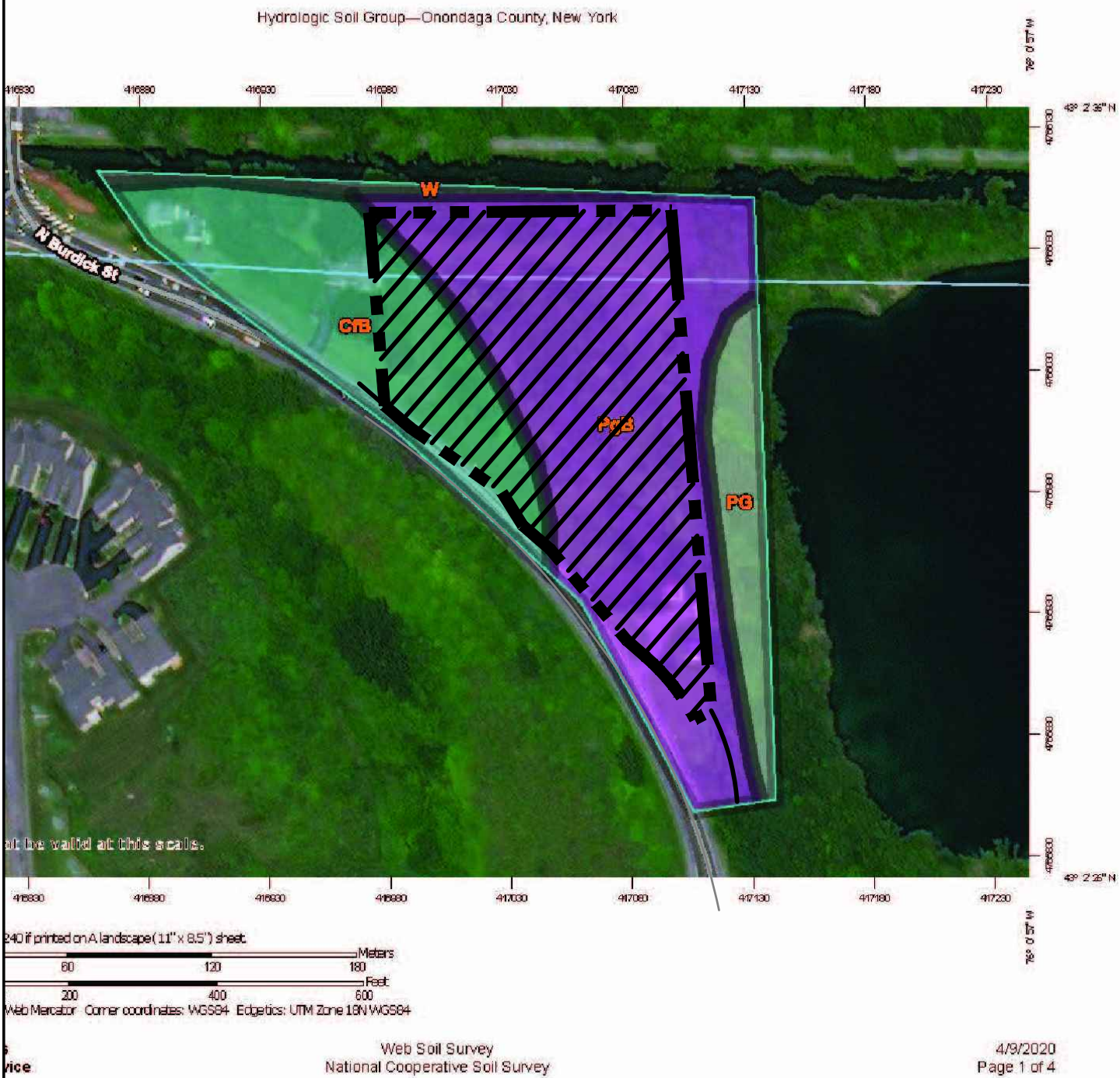


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MBM BURDICK ST DENTAL OFFICE
AERIAL MAP
SCALE 1:150

FIGURE 2

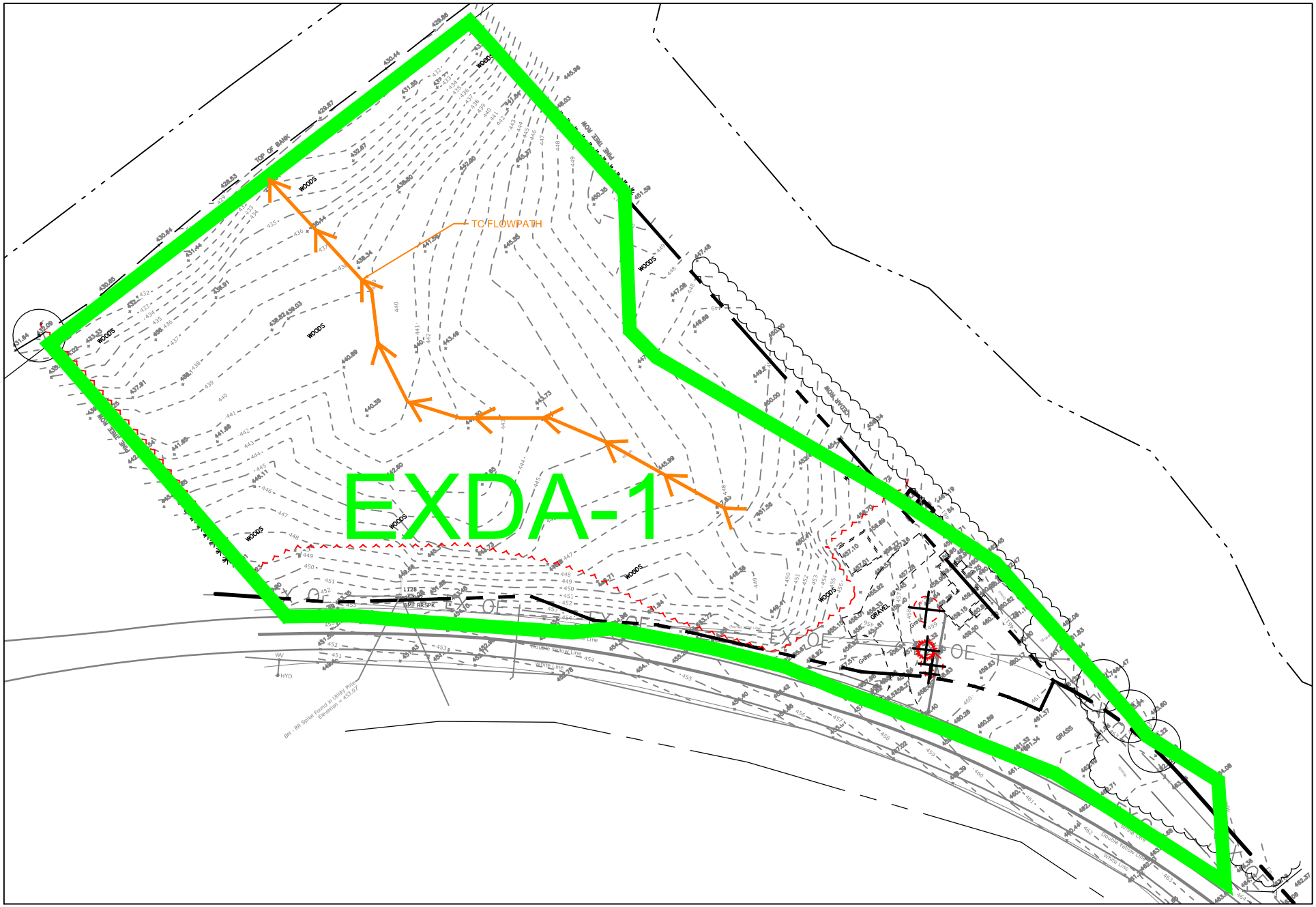


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MBM BURDICK ST DENTAL OFFICE
SOILS MAP
SCALE 1:200

FIGURE 3

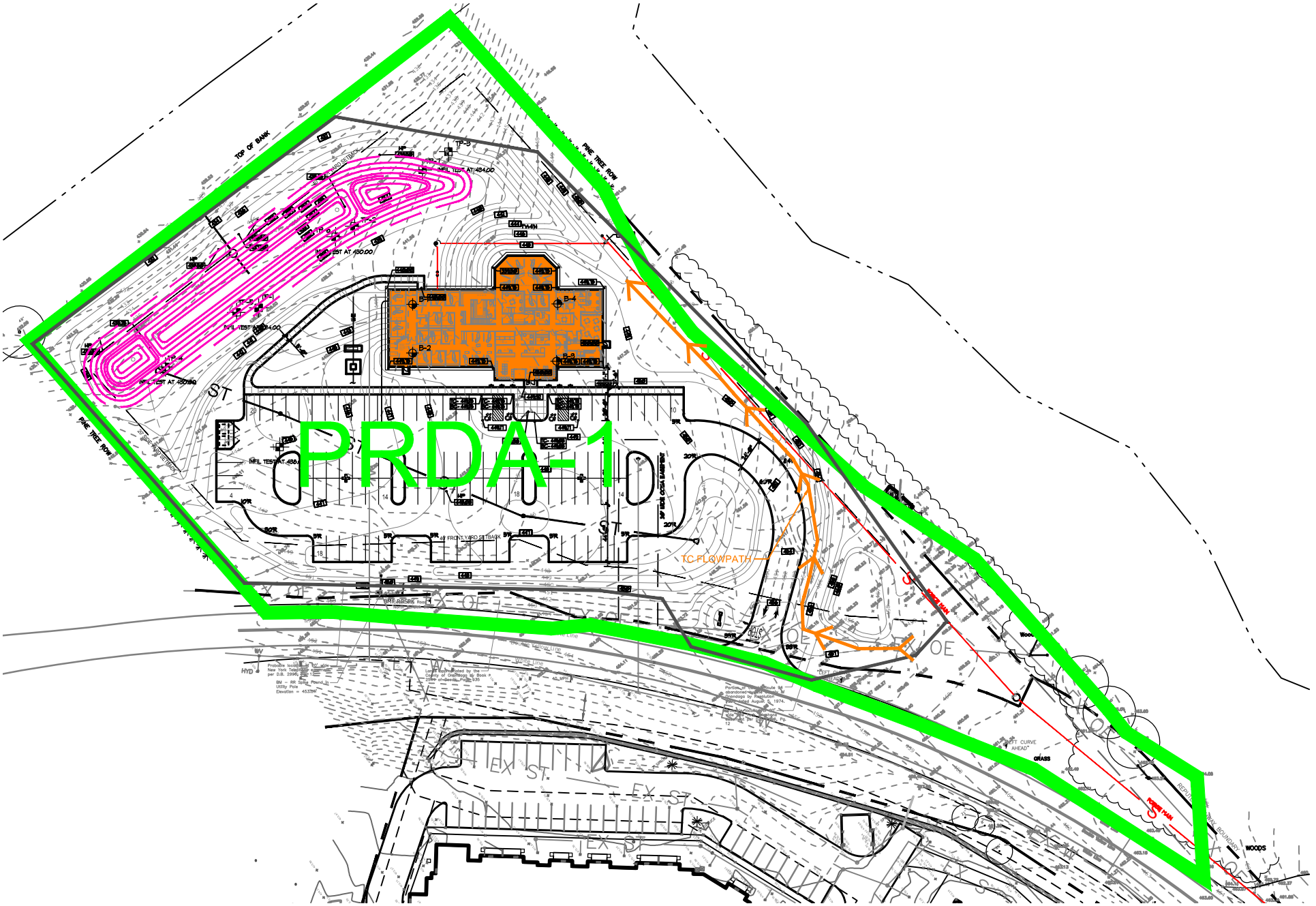


MBM Dental Office
Town of Morrisville, Onondaga County, NY

Figure 4: Existing Site Watersheds

SCALE: 1:100

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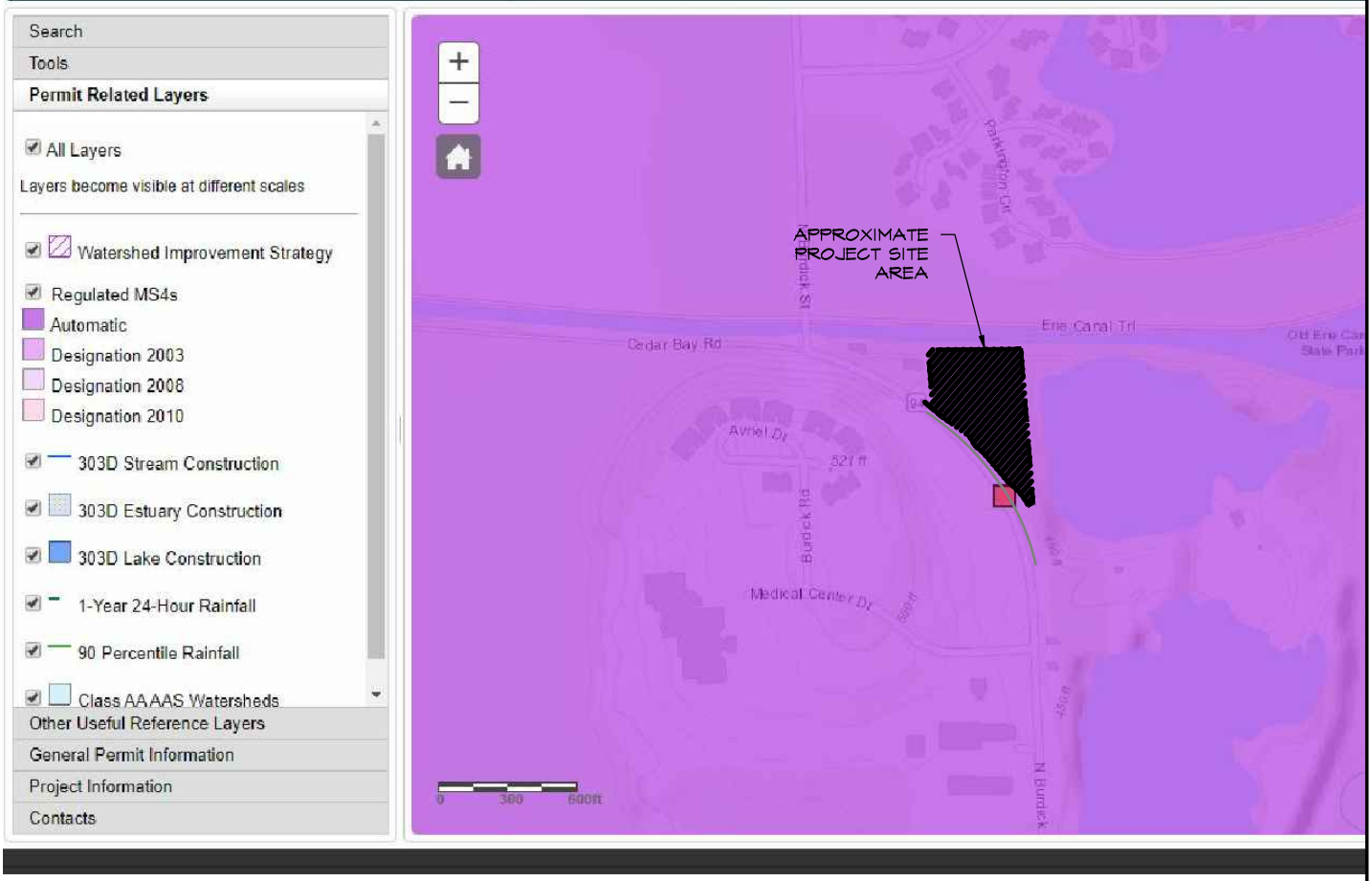
MBM Dental Office
Town of Morrisville, Onondaga County, NY

Figure 5: Proposed Site Watersheds

SCALE: 1:100

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Stormwater Interactive Map



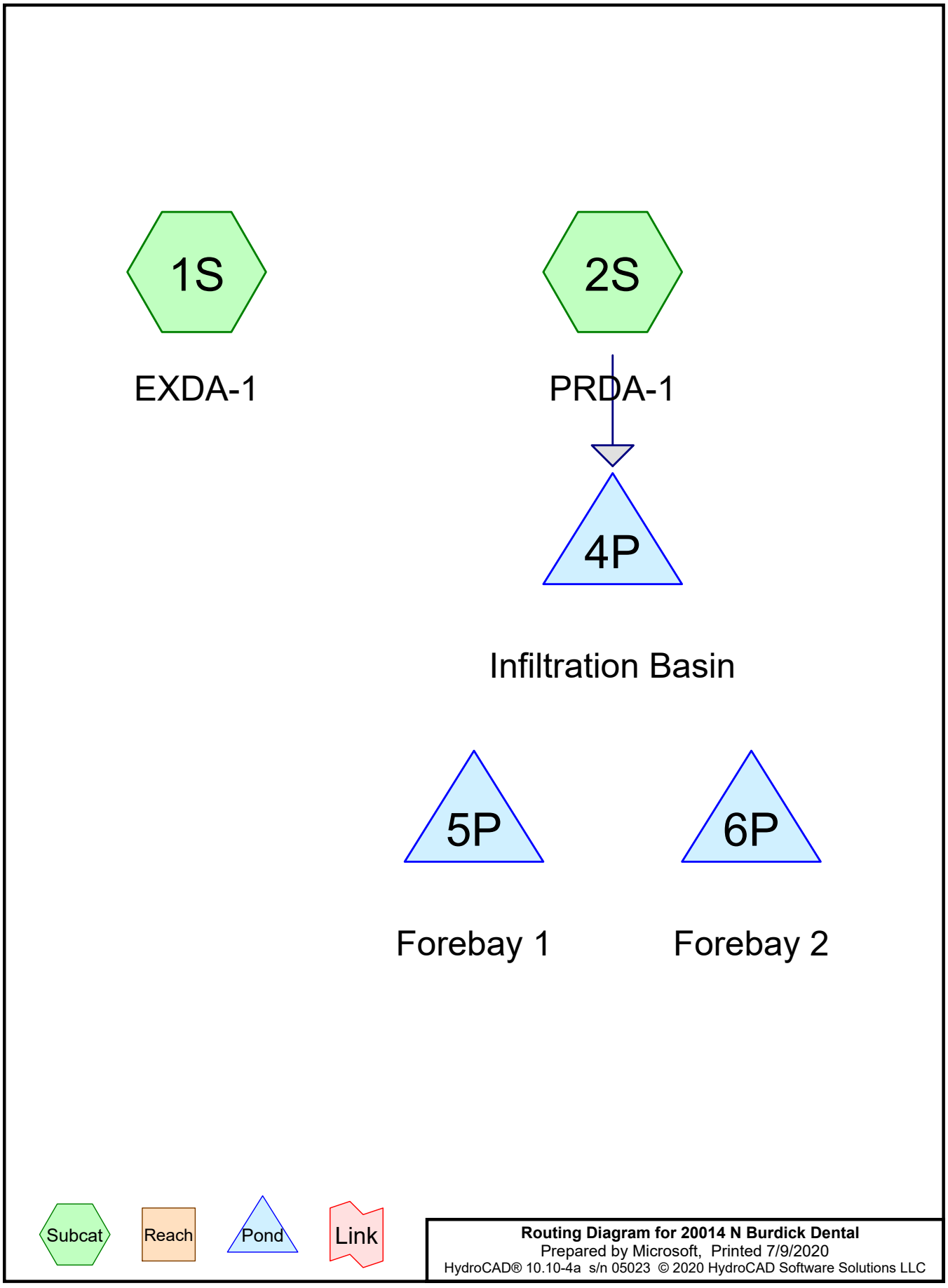
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FAX (315) 445-7981

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MBM BURDICK ST DENTAL OFFICE
NYSDEC STORMWATER MAP
SCALE 1:800

FIGURE 6

UPDATED: 8 / 23 /17



Routing Diagram for 20014 N Burdick Dental
Prepared by Microsoft, Printed 7/9/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

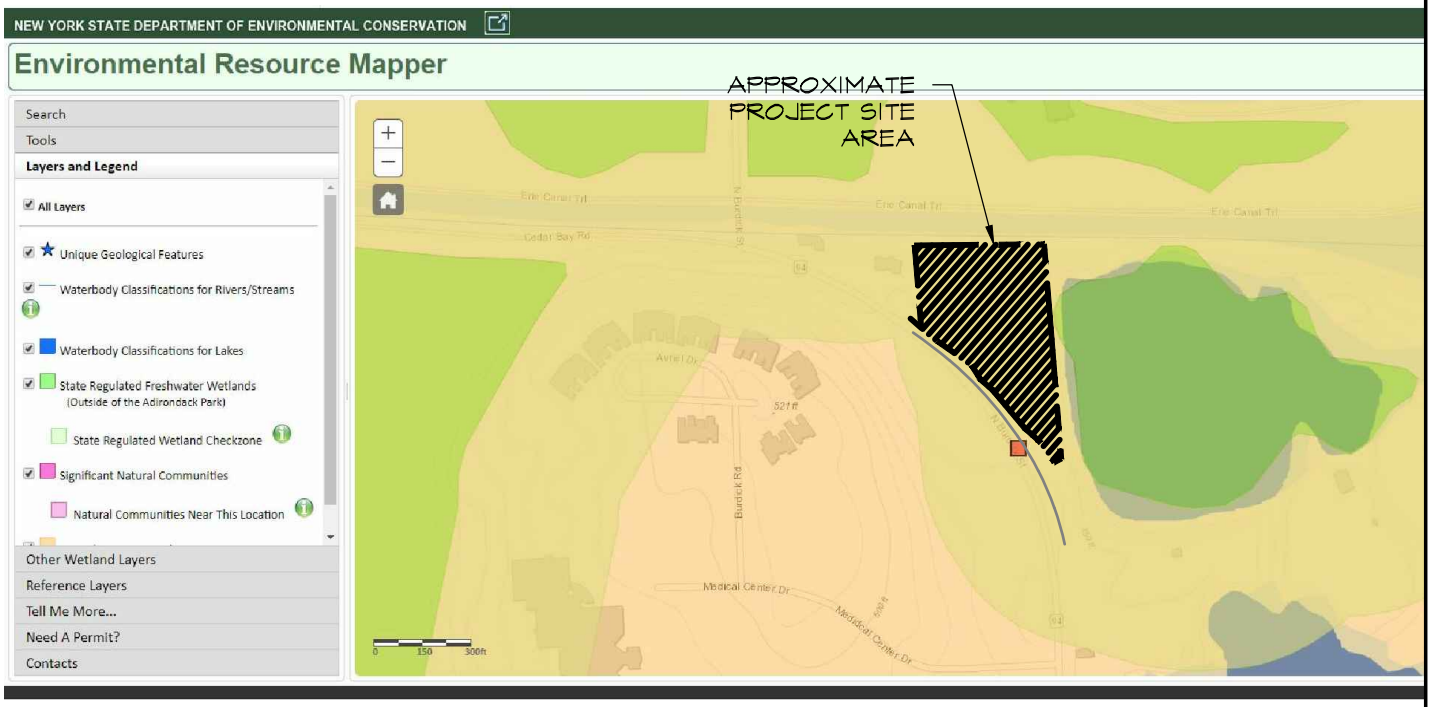


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N

CROUSE COMMUNITY HOUSING
SHPO MAP
SCALE 1:600

FIGURE 8

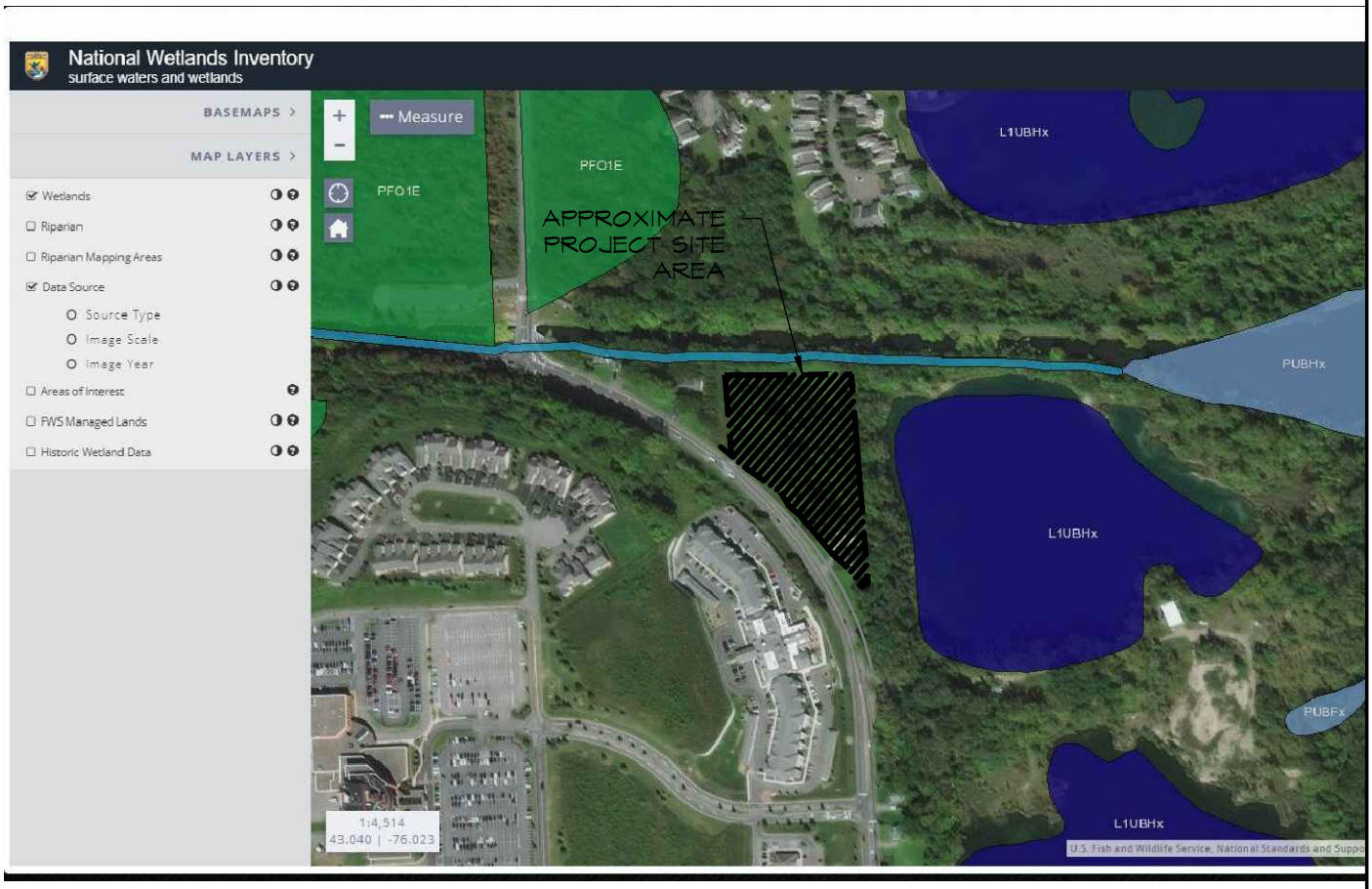


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FAX (315) 445-7981

N

MBM BURDICK ST DENTAL OFFICE
NYSDEC WETLANDS AND ENDANGERED SPECIES MAP
SCALE 1:600

FIGURE 9

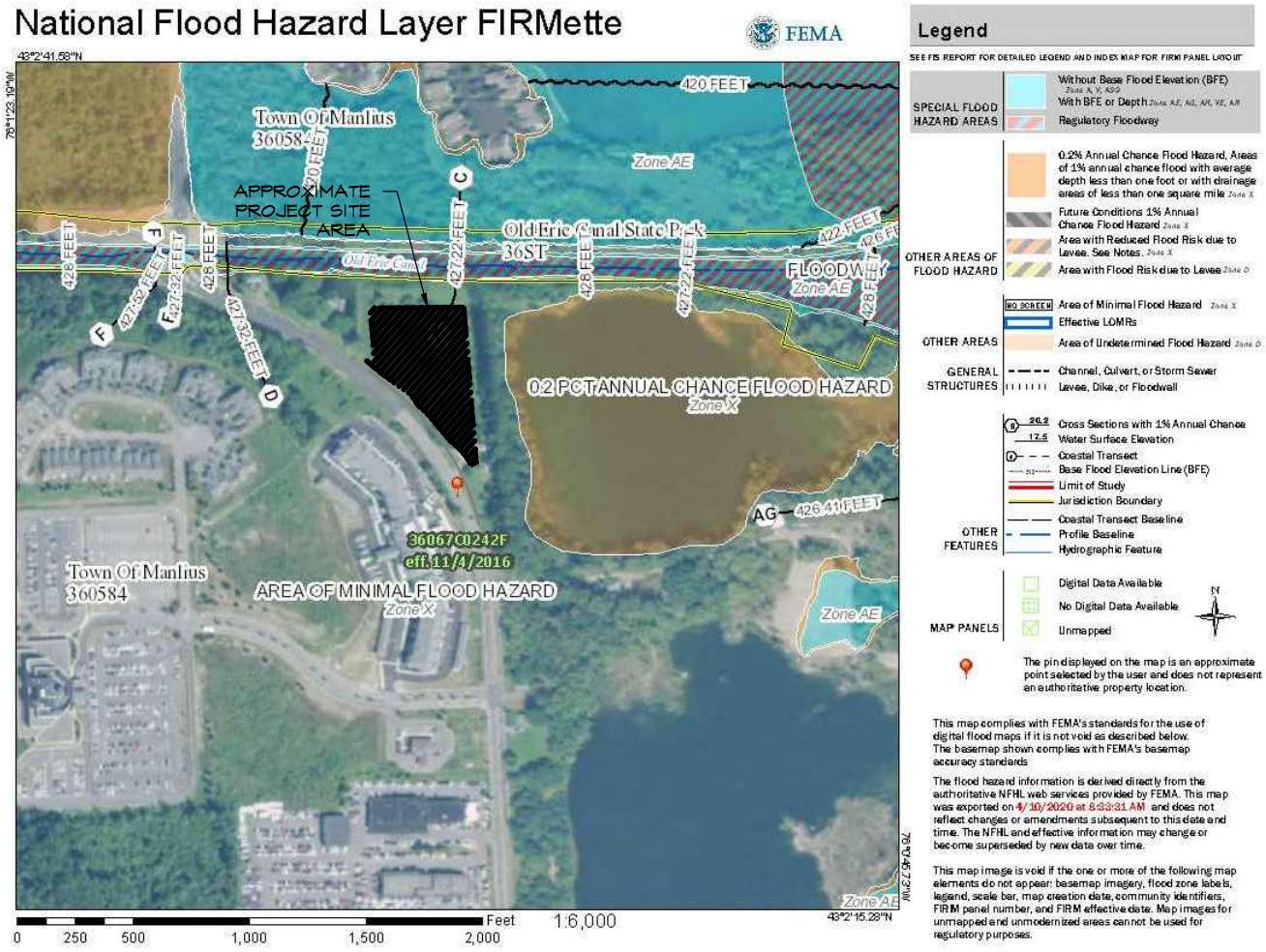


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6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
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FAX (315) 445-7981

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MBM BURDICK ST DENTAL OFFICE
FEDERAL WETLANDS MAP
SCALE 1:600

FIGURE 10



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EAST SYRACUSE, NY 13057
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FAX (315) 445-7981

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MBM BURDICK ST DENTAL OFFICE
NATIONAL FLOOD INSURANCE MAP
SCALE 1:800

FIGURE 11

APPENDIX A



Map Scale: 1:2,240 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CfB	Cazenovia silt loam, 2 to 8 percent slopes	C	2.6	30.1%
PG	Gravel pits		0.9	10.3%
PgB	Palmyra gravelly loam, 3 to 8 percent slopes	A	5.0	57.6%
W	Water		0.2	2.0%
Totals for Area of Interest			**8.6**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New York
Location	
Longitude	76.018 degrees West
Latitude	43.041 degrees North
Elevation	0 feet
Date/Time	Thu, 09 Apr 2020 10:38:58 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	0.99	**1yr**	0.75	0.97	1.11	1.39	1.68	2.04	2.28	**1yr**	1.81	2.20	2.62	3.16	3.68	**1yr**
2yr	0.33	0.51	0.62	0.84	1.04	1.19	**2yr**	0.90	1.16	1.31	1.63	1.97	2.38	2.68	**2yr**	2.11	2.58	3.03	3.64	4.20	**2yr**
5yr	0.39	0.60	0.75	1.03	1.31	1.47	**5yr**	1.13	1.44	1.63	2.01	2.44	2.93	3.31	**5yr**	2.59	3.19	3.71	4.38	4.99	**5yr**
10yr	0.45	0.70	0.86	1.20	1.56	1.73	**10yr**	1.34	1.69	1.92	2.35	2.86	3.43	3.89	**10yr**	3.03	3.74	4.33	5.04	5.69	**10yr**
25yr	0.55	0.84	1.05	1.49	1.97	2.15	**25yr**	1.70	2.10	2.39	2.89	3.54	4.21	4.82	**25yr**	3.73	4.63	5.32	6.07	6.77	**25yr**
50yr	0.64	0.97	1.21	1.74	2.35	2.53	**50yr**	2.03	2.47	2.83	3.39	4.16	4.93	5.66	**50yr**	4.37	5.45	6.21	6.99	7.72	**50yr**
100yr	0.75	1.13	1.42	2.04	2.80	2.99	**100yr**	2.42	2.92	3.35	3.97	4.89	5.78	6.66	**100yr**	5.11	6.41	7.27	8.05	8.81	**100yr**
200yr	0.87	1.31	1.66	2.40	3.35	3.53	**200yr**	2.89	3.45	3.96	4.65	5.76	6.76	7.84	**200yr**	5.98	7.54	8.50	9.28	10.05	**200yr**
500yr	1.07	1.60	2.05	2.98	4.25	4.41	**500yr**	3.66	4.31	4.96	5.74	7.14	8.33	9.73	**500yr**	7.38	9.36	10.46	11.20	11.98	**500yr**

Lower Confidence Limits

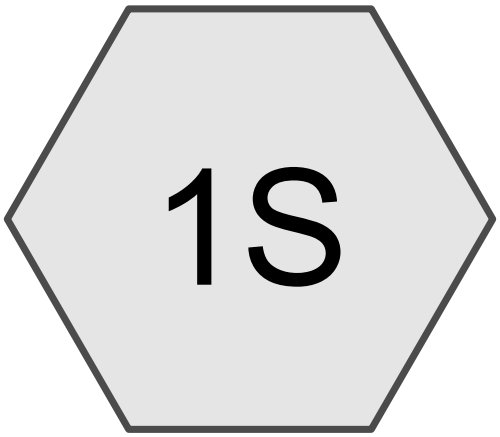
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.25	0.38	0.47	0.63	0.77	0.88	**1yr**	0.66	0.86	0.92	1.10	1.40	1.65	2.04	**1yr**	1.46	1.96	2.39	2.77	3.32	**1yr**
2yr	0.32	0.49	0.61	0.82	1.02	1.14	**2yr**	0.88	1.12	1.27	1.56	1.90	2.32	2.61	**2yr**	2.05	2.51	2.93	3.54	4.10	**2yr**
5yr	0.36	0.55	0.68	0.94	1.19	1.35	**5yr**	1.03	1.32	1.49	1.86	2.27	2.72	3.07	**5yr**	2.40	2.96	3.46	4.10	4.69	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.51	**10yr**	1.16	1.47	1.68	2.08	2.55	3.06	3.46	**10yr**	2.70	3.33	3.89	4.54	5.19	**10yr**
25yr	0.44	0.67	0.83	1.18	1.55	1.73	**25yr**	1.34	1.69	1.98	2.42	2.94	3.53	4.03	**25yr**	3.12	3.87	4.54	5.21	5.93	**25yr**
50yr	0.47	0.71	0.88	1.27	1.71	1.92	**50yr**	1.47	1.88	2.21	2.68	3.25	3.93	4.49	**50yr**	3.48	4.32	5.10	5.78	6.54	**50yr**
100yr	0.50	0.76	0.95	1.38	1.89	2.31	**100yr**	1.63	2.26	2.49	2.97	3.60	4.34	4.99	**100yr**	3.84	4.80	5.72	6.37	7.22	**100yr**
200yr	0.54	0.82	1.04	1.50	2.10	2.63	**200yr**	1.81	2.57	2.79	3.28	3.99	4.80	5.56	**200yr**	4.25	5.34	6.40	7.02	7.97	**200yr**
500yr	0.84	1.25	1.60	2.33	3.31	3.13	**500yr**	2.86	3.06	3.22	3.75	4.55	5.45	6.36	**500yr**	4.83	6.11	7.40	7.95	9.06	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.57	0.76	0.94	1.07	**1yr**	0.81	1.05	1.21	1.55	1.84	2.22	2.63	**1yr**	1.97	2.53	2.83	3.38	3.97	**1yr**
2yr	0.35	0.54	0.66	0.90	1.11	1.24	**2yr**	0.96	1.21	1.37	1.72	2.08	2.49	2.80	**2yr**	2.21	2.69	3.12	3.75	4.33	**2yr**
5yr	0.42	0.65	0.81	1.11	1.42	1.61	**5yr**	1.22	1.57	1.76	2.19	2.63	3.12	3.54	**5yr**	2.76	3.41	3.98	4.67	5.32	**5yr**
10yr	0.50	0.76	0.95	1.32	1.71	1.99	**10yr**	1.48	1.95	2.16	2.68	3.21	3.84	4.27	**10yr**	3.40	4.10	4.80	5.52	6.23	**10yr**
25yr	0.63	0.95	1.19	1.69	2.23	2.65	**25yr**	1.92	2.59	2.82	3.54	4.21	4.73	5.50	**25yr**	4.19	5.29	6.17	6.90	7.70	**25yr**
50yr	0.74	1.13	1.41	2.02	2.72	3.29	**50yr**	2.35	3.22	3.47	4.34	5.14	5.68	6.66	**50yr**	5.03	6.41	7.49	8.19	9.03	**50yr**
100yr	0.89	1.35	1.69	2.44	3.34	3.97	**100yr**	2.88	3.88	4.27	5.36	6.30	6.83	8.09	**100yr**	6.05	7.78	9.10	9.73	10.60	**100yr**
200yr	1.06	1.60	2.03	2.94	4.10	4.91	**200yr**	3.54	4.80	5.24	6.63	7.74	8.21	9.82	**200yr**	7.26	9.44	11.06	11.58	12.47	**200yr**
500yr	1.28	1.91	2.45	3.56	5.06	6.49	**500yr**	4.37	6.34	6.90	8.77	10.15	10.50	12.75	**500yr**	9.29	12.26	14.36	14.56	15.46	**500yr**

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Northeast Regional Climate Center

APPENDIX C



EXDA-1

Subcat Reach Pond Link

Routing Diagram for 20014 N Burdick Dental
Prepared by Microsoft, Printed 4/13/2020
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: EXDA-1

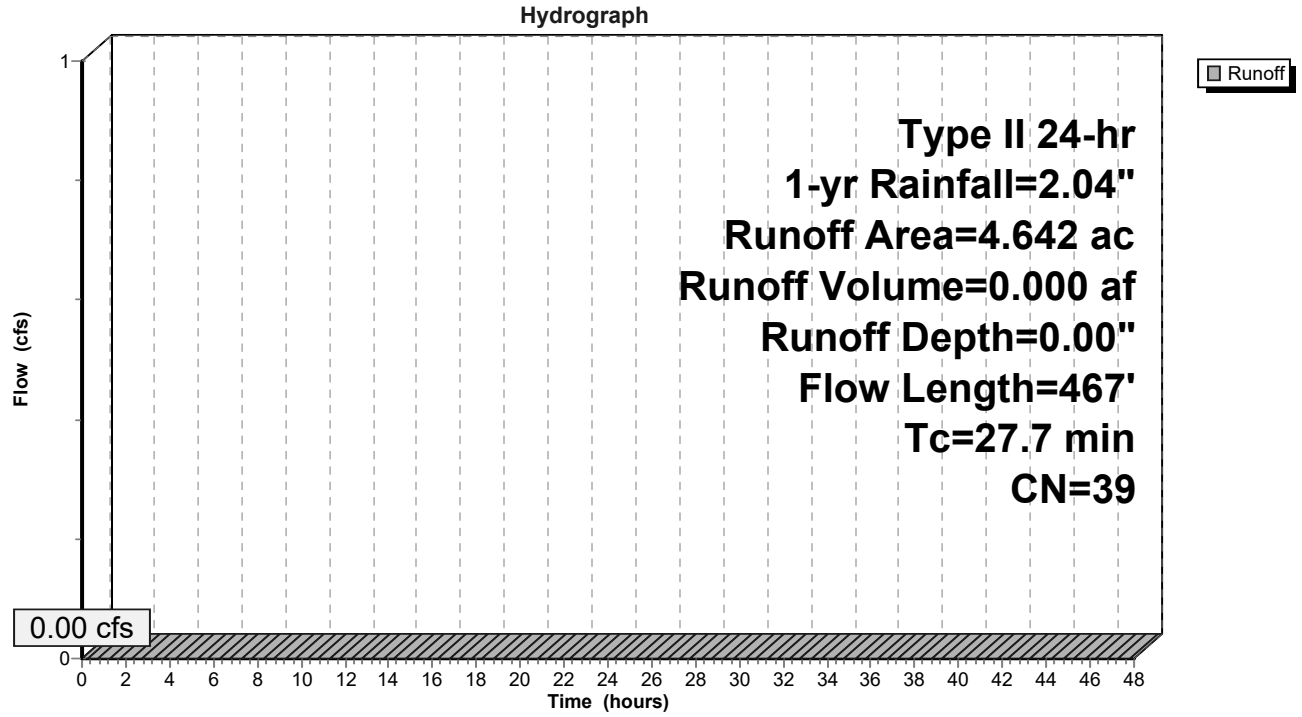
Runoff = 0.51 cfs @ 12.40 hrs, Volume= 0.149 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.78"

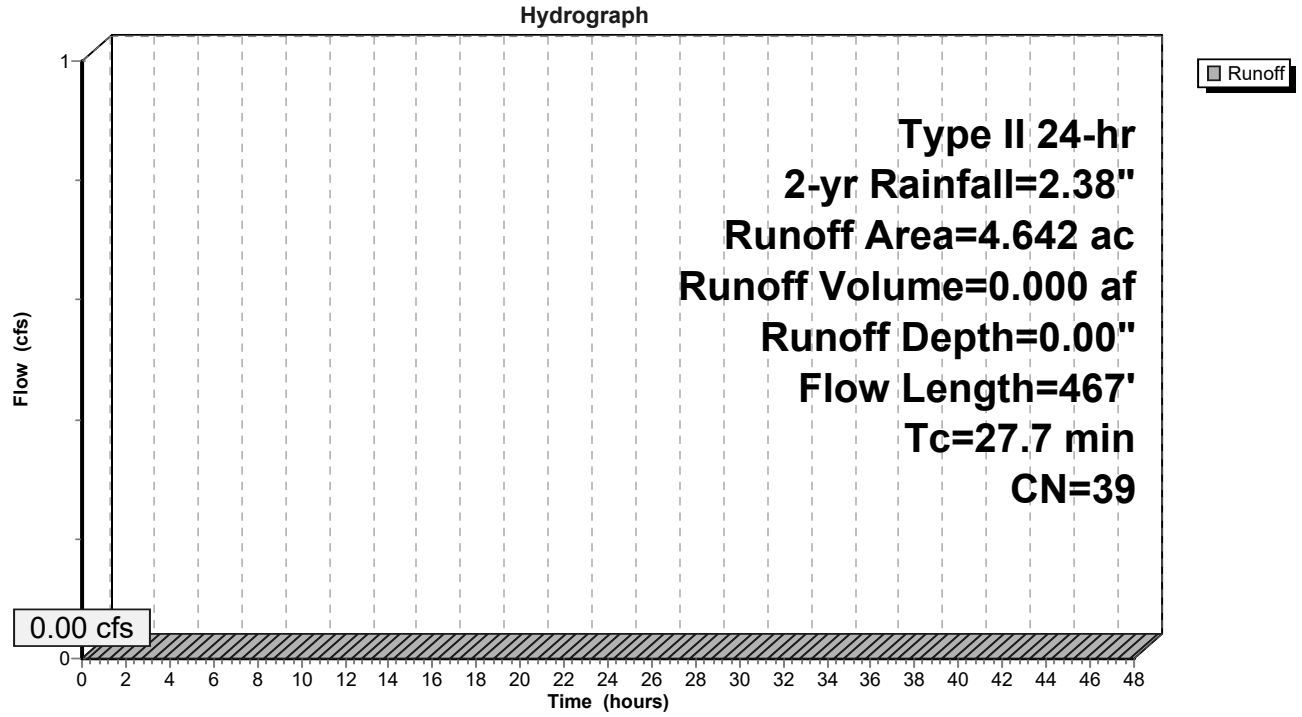
Area (ac)	CN	Description
2.930	30	Woods, Good, HSG A
0.674	70	Woods, Good, HSG C
0.110	98	Paved parking, HSG A
0.928	39	>75% Grass cover, Good, HSG A
4.642	39	Weighted Average
4.532		97.63% Pervious Area
0.110		2.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	100	0.0300	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.38"
6.5	367	0.0354	0.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
27.7	467	Total			

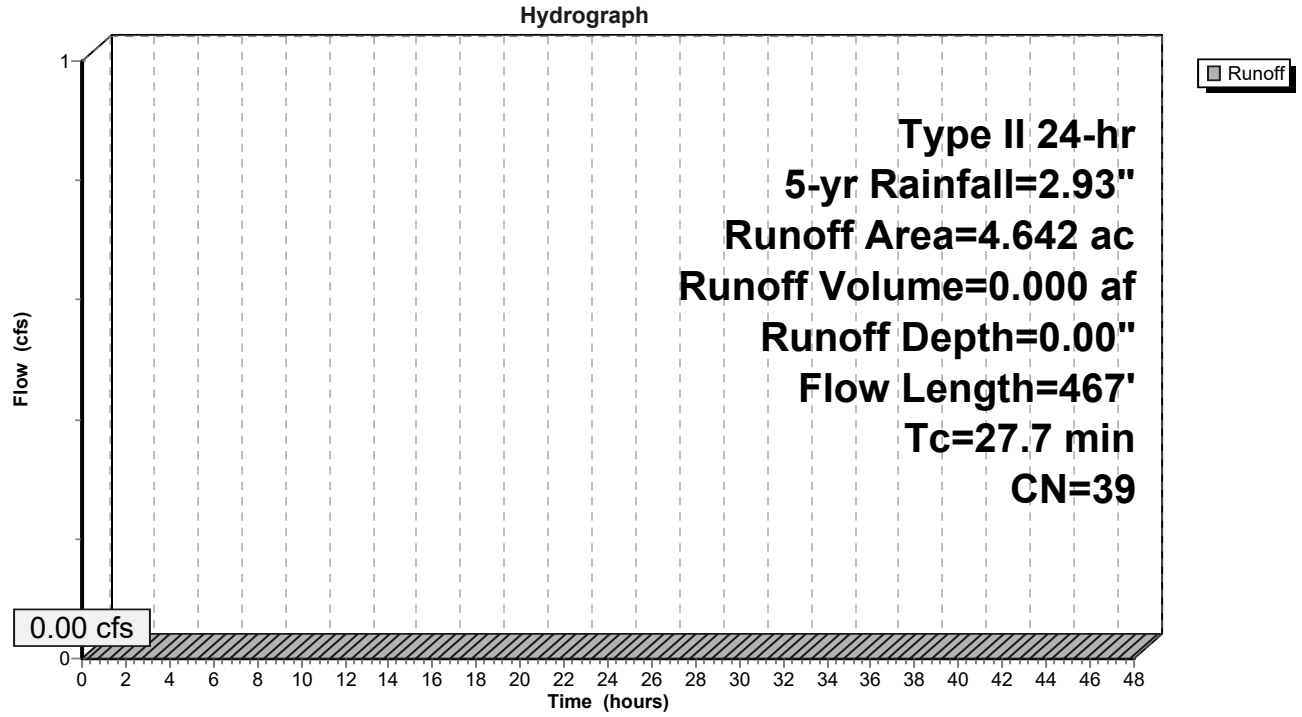
Subcatchment 1S: EXDA-1



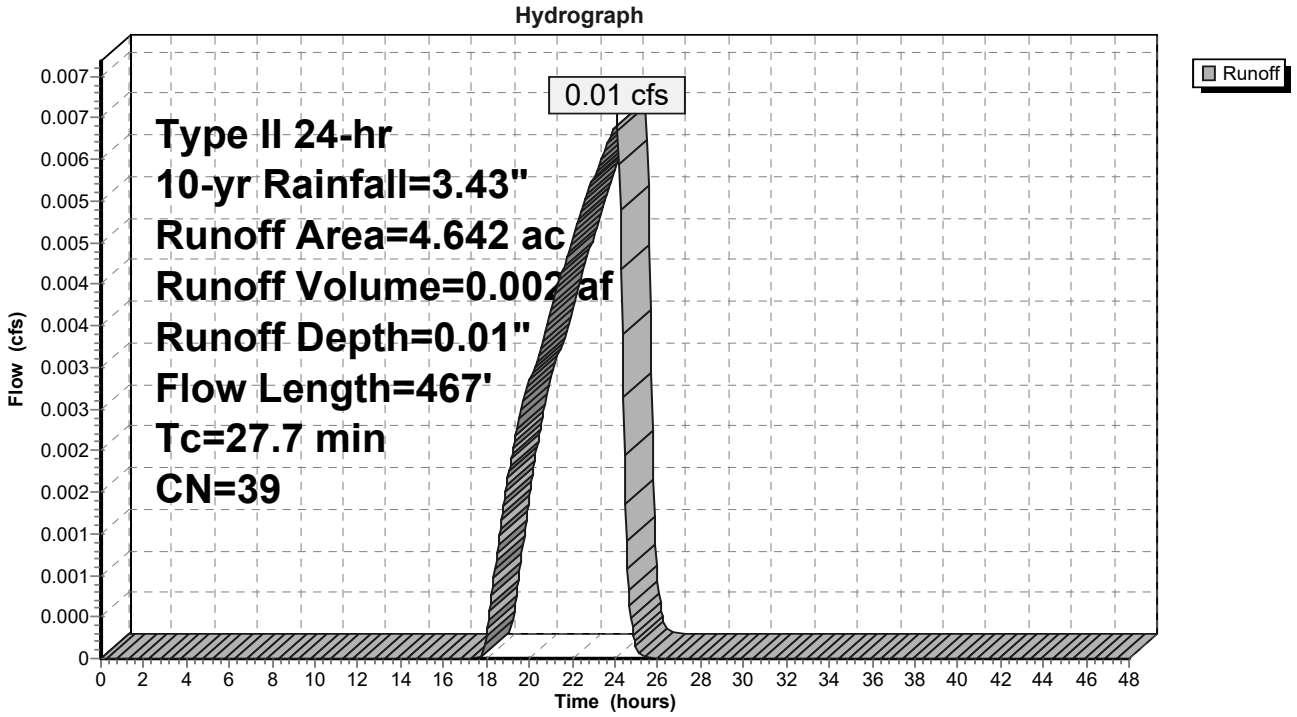
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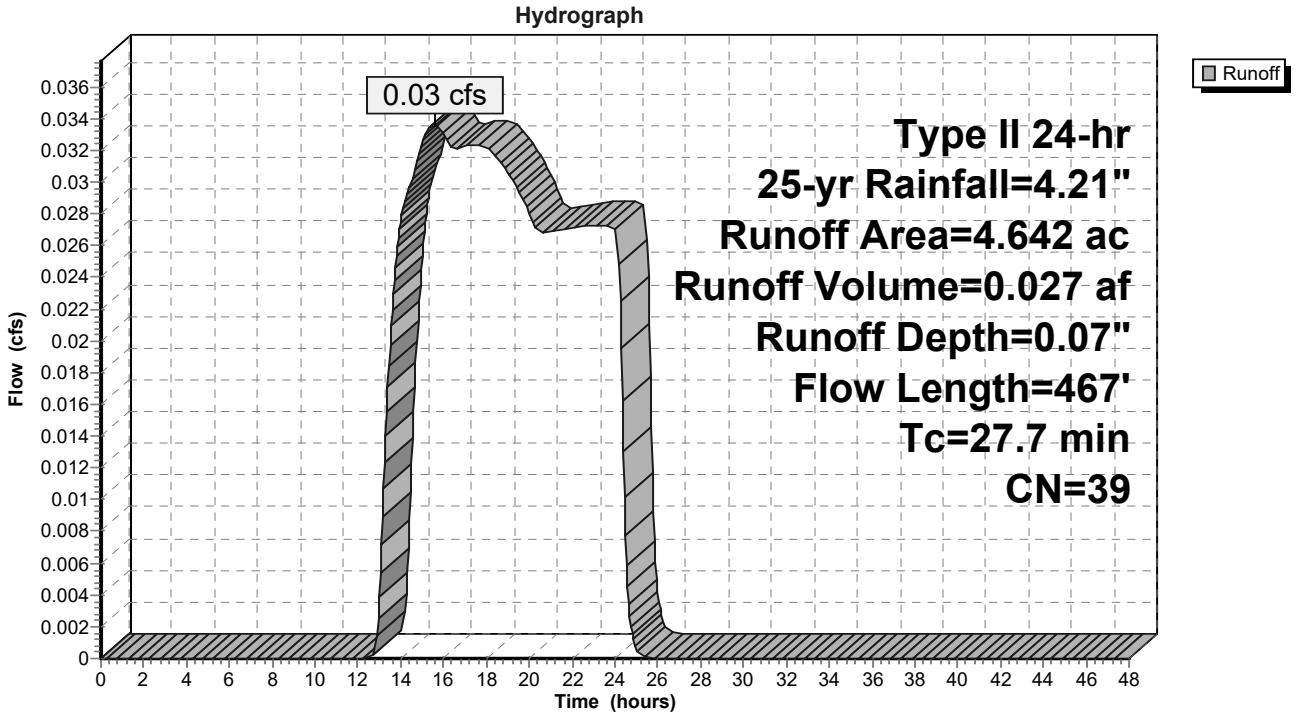
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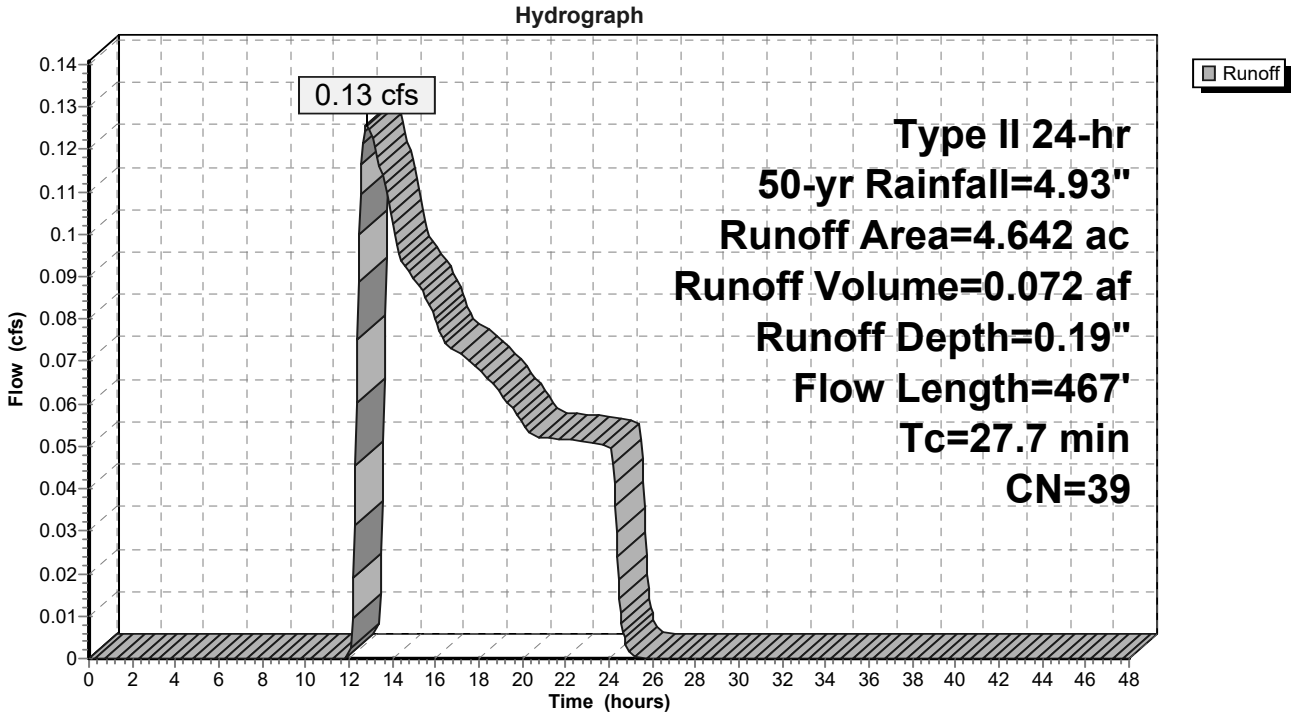
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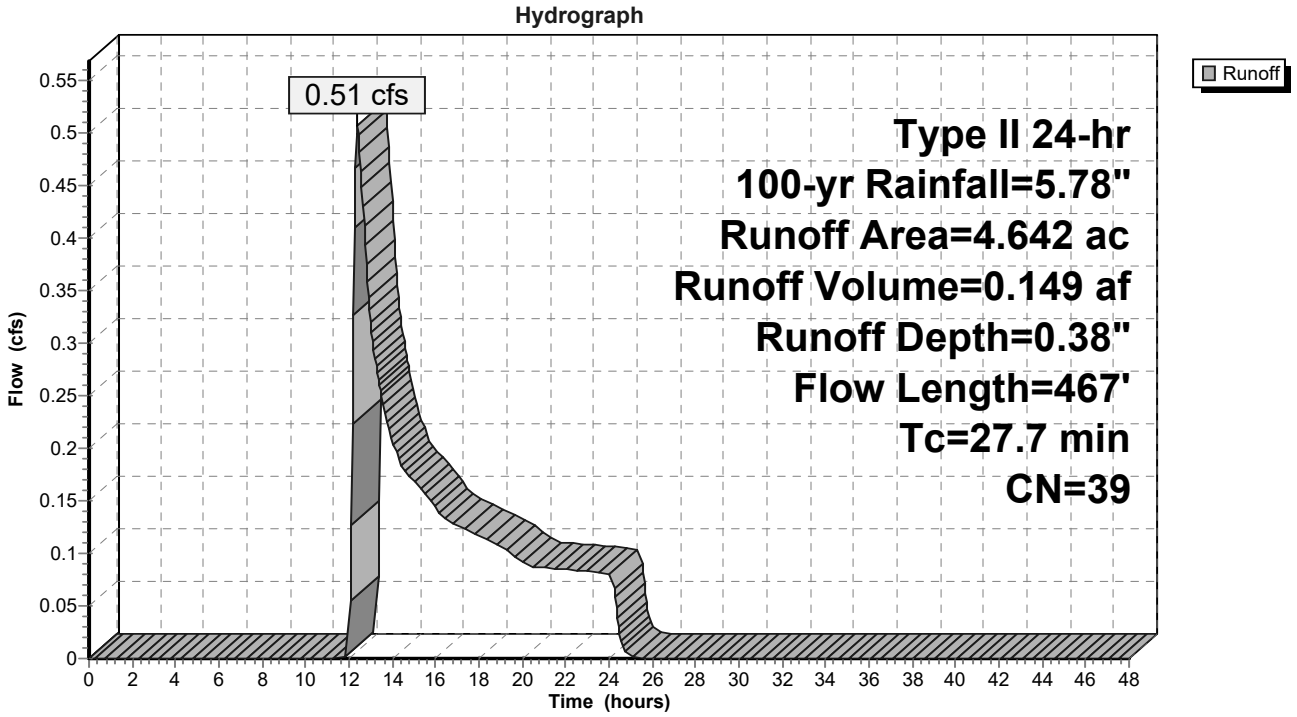
Subcatchment 1S: EXDA-1



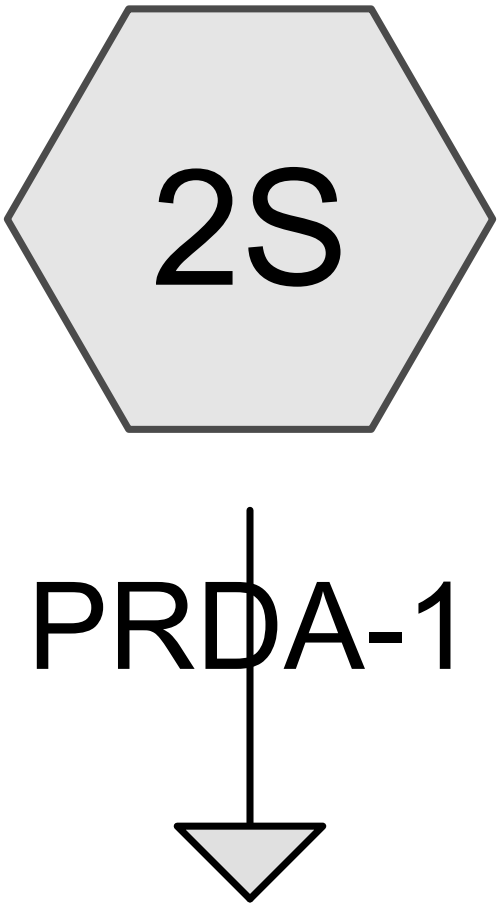
Subcatchment 1S: EXDA-1



Subcatchment 1S: EXDA-1



APPENDIX D



Subcat Reach Pond Link

Routing Diagram for 20014 N Burdick Dental
Prepared by Microsoft, Printed 7/2/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2S: PRDA-1

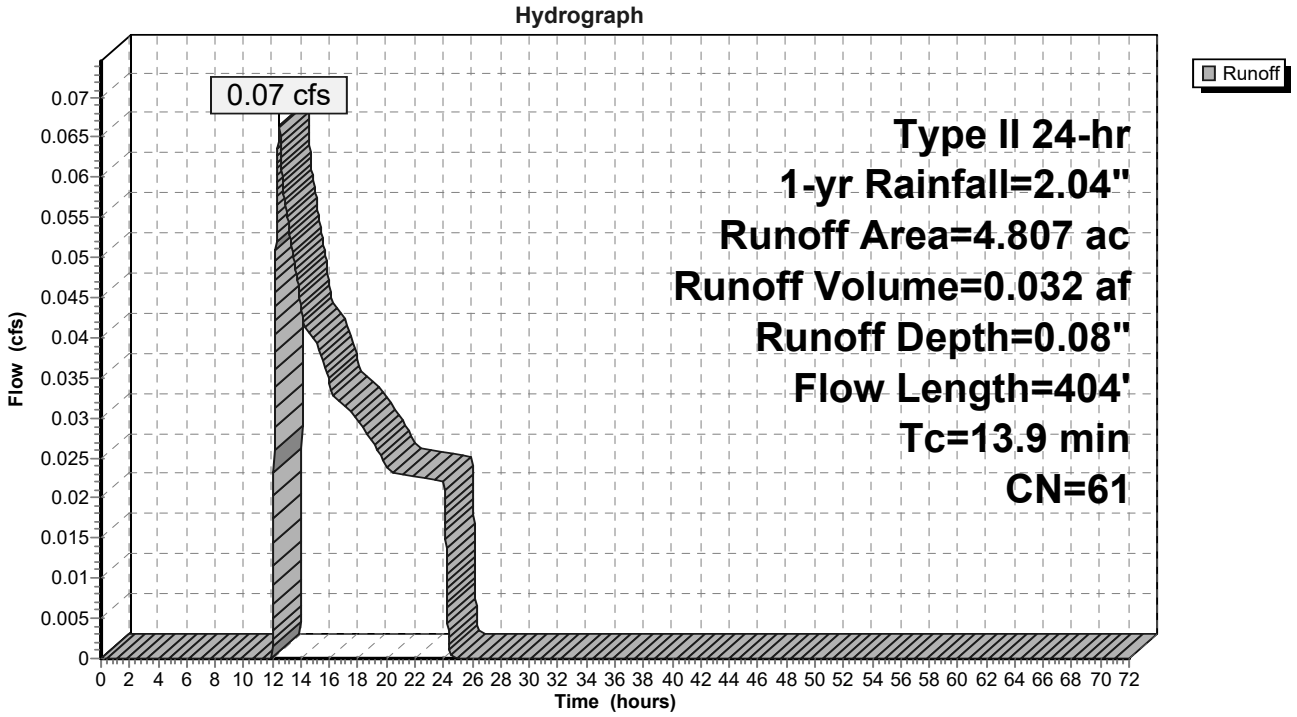
Runoff = 11.58 cfs @ 12.07 hrs, Volume= 0.745 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.78"

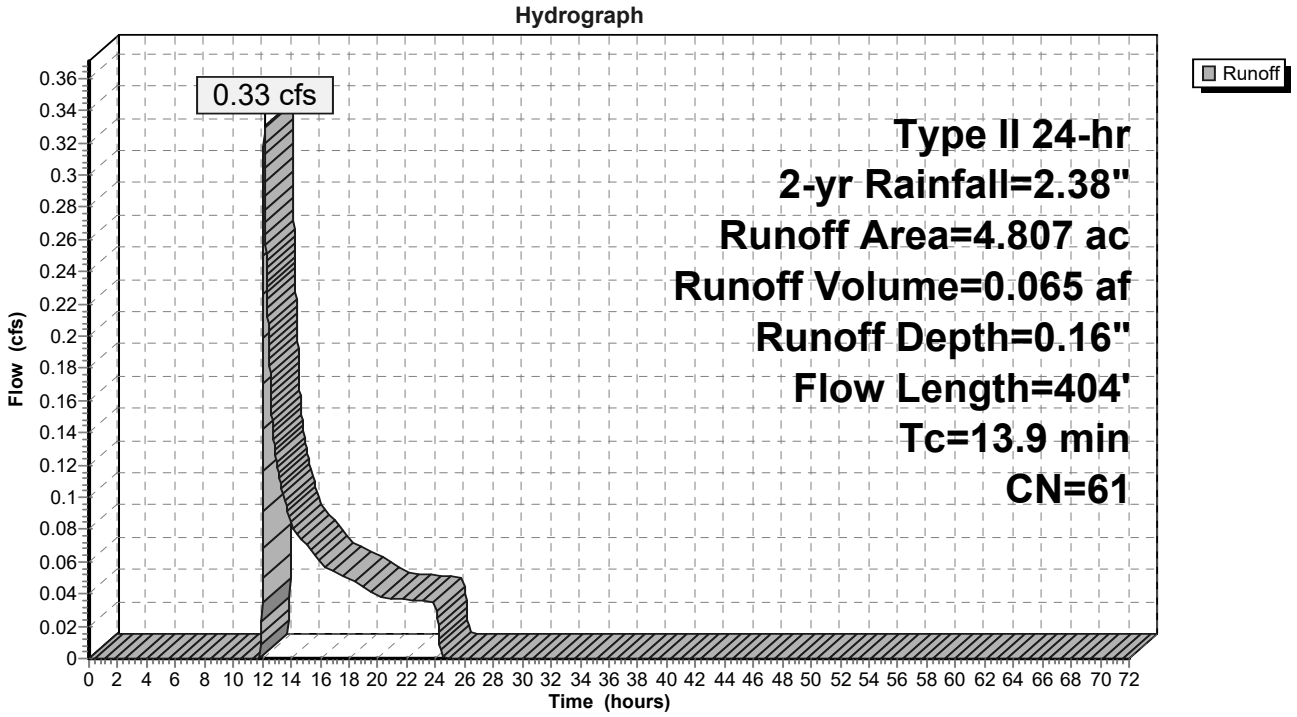
Area (ac)	CN	Description
1.407	98	Paved parking, HSG A
0.606	74	>75% Grass cover, Good, HSG C
2.794	39	>75% Grass cover, Good, HSG A
4.807	61	Weighted Average
3.400		70.73% Pervious Area
1.407		29.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.4	100	0.0320	0.18		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.38"
4.5	304	0.0260	1.13		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
13.9	404	Total			

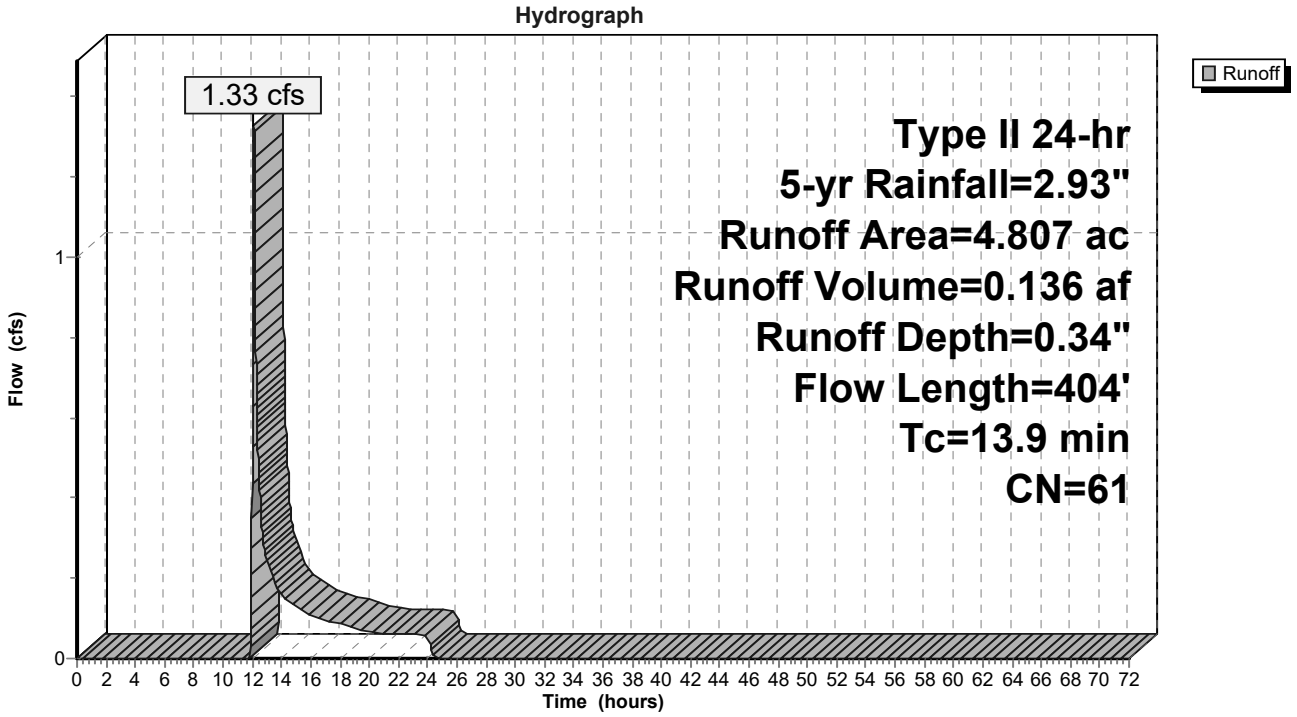
Subcatchment 2S: PRDA-1



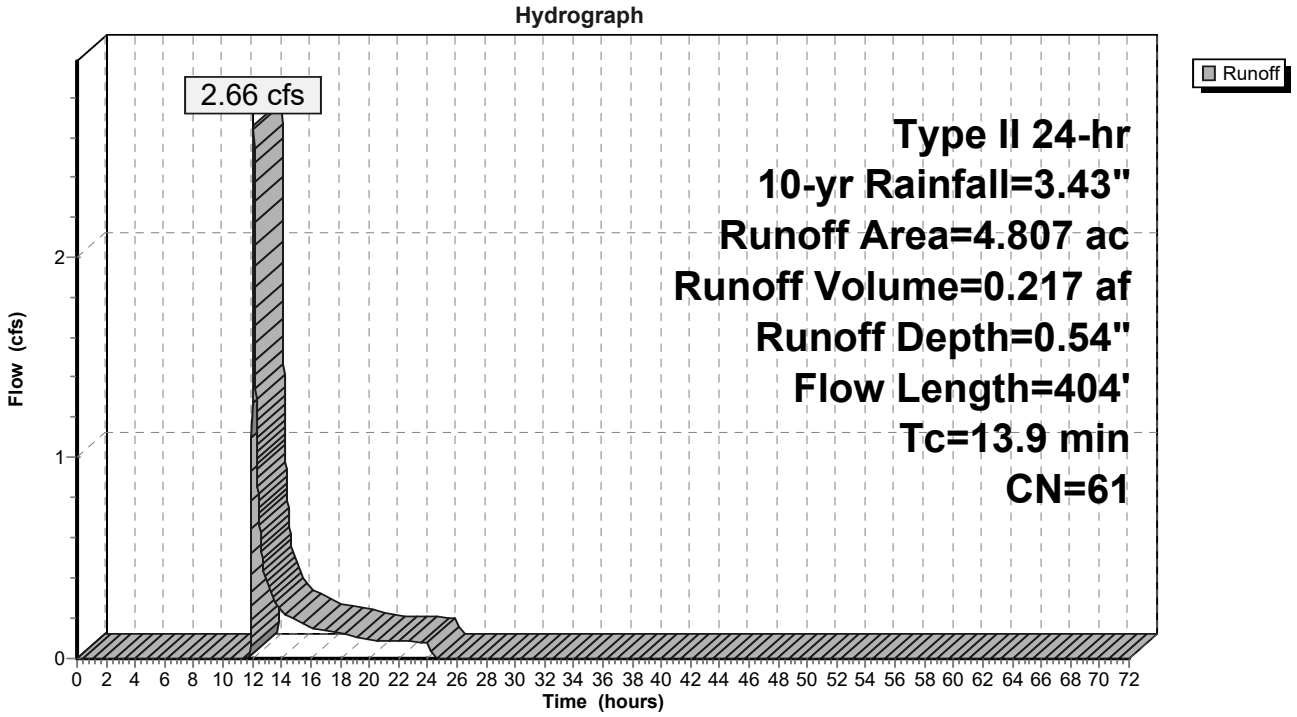
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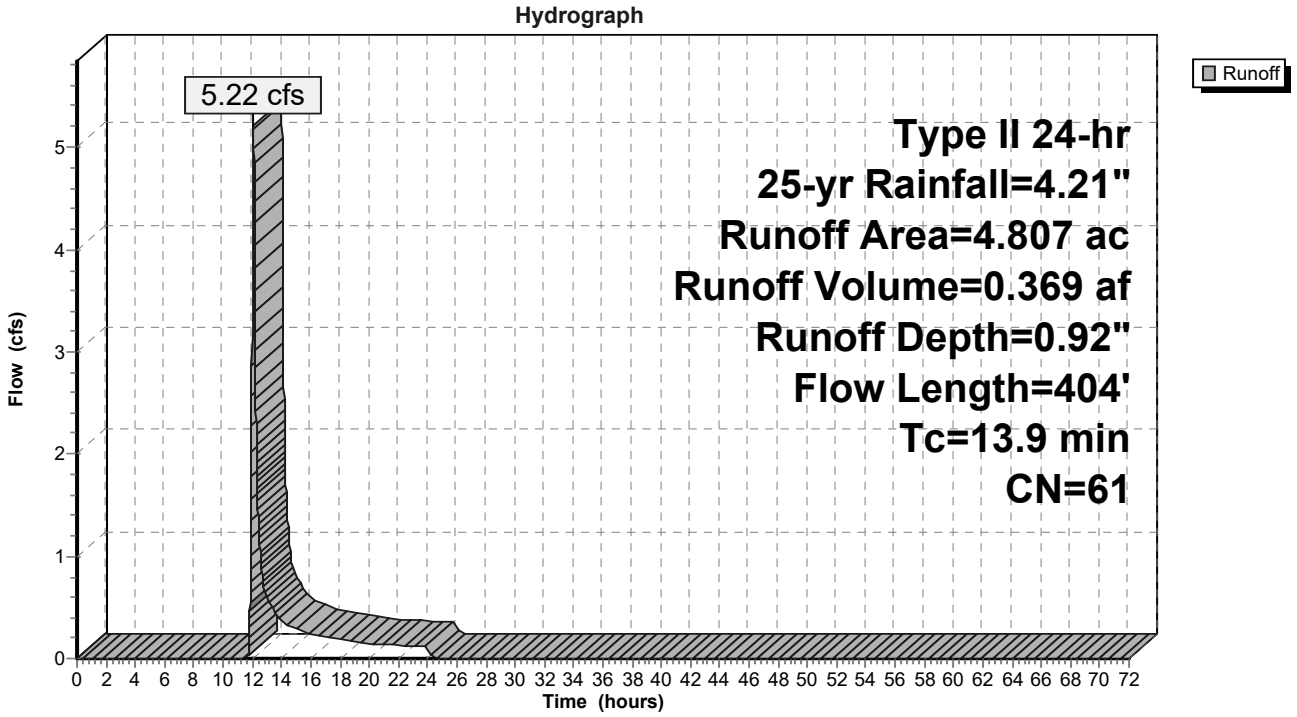
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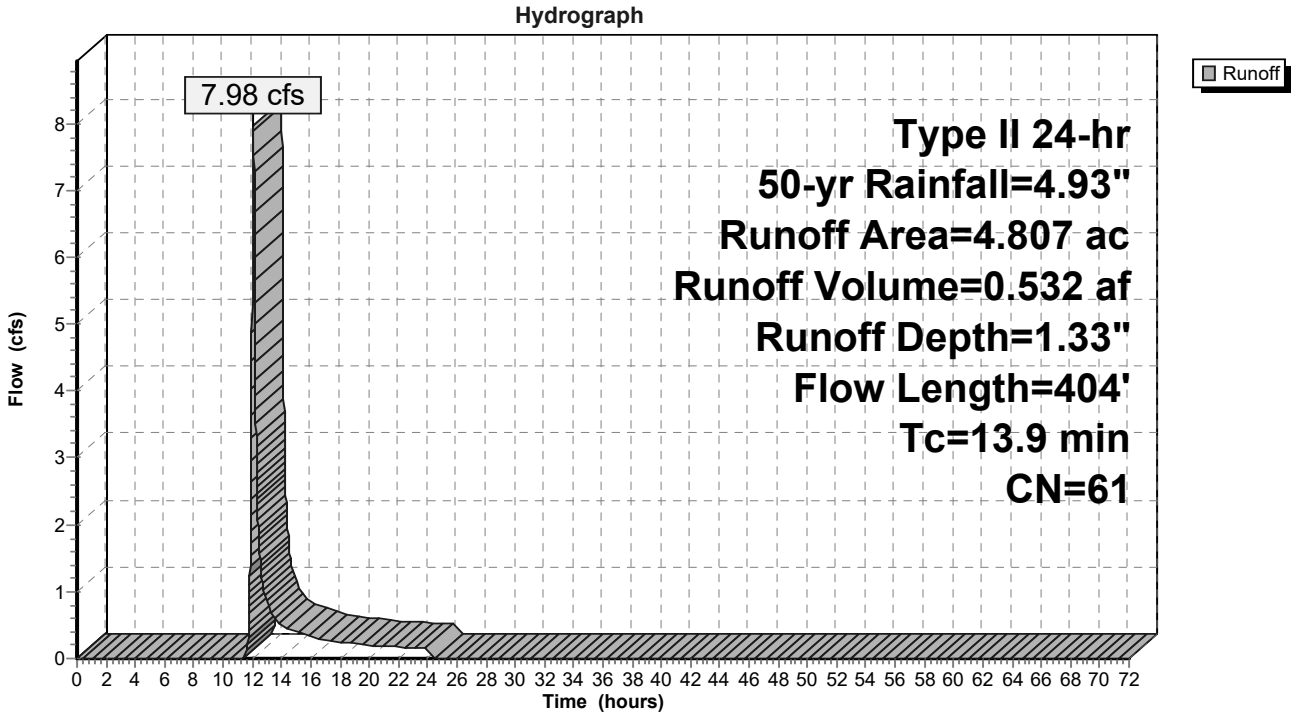
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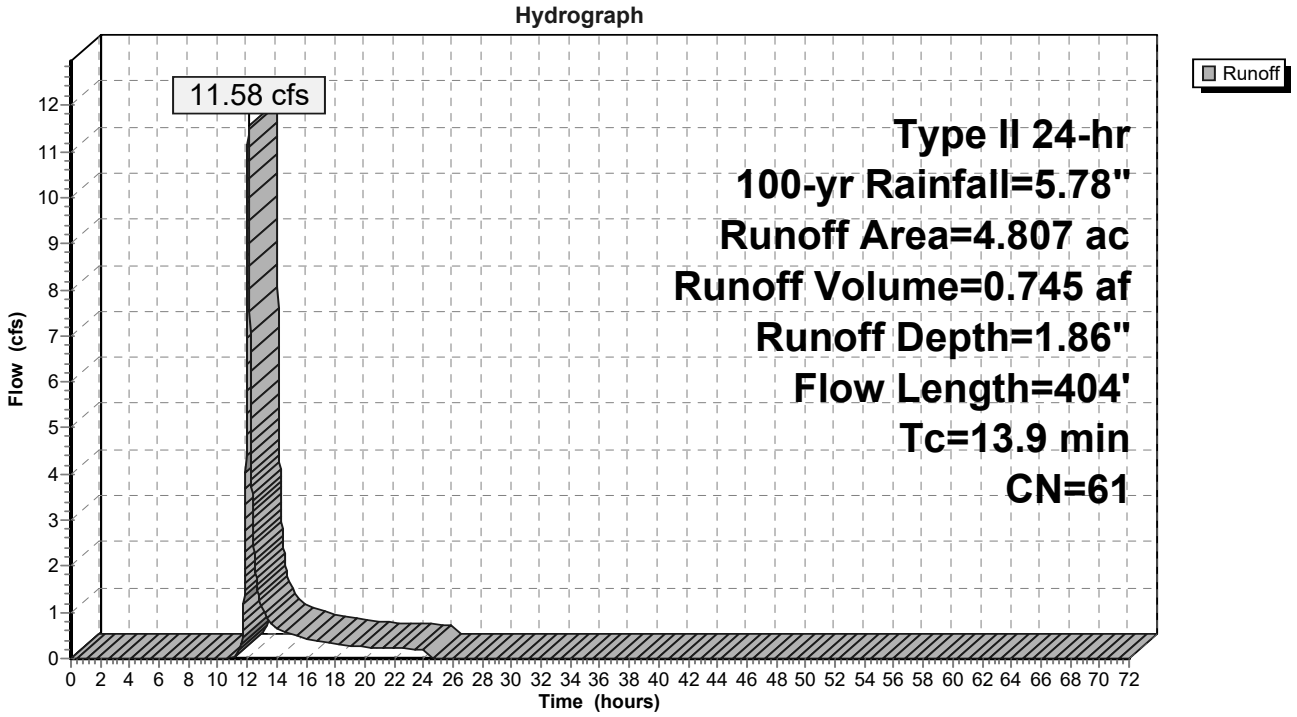
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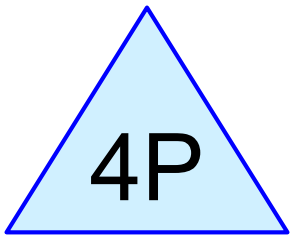
Subcatchment 2S: PRDA-1



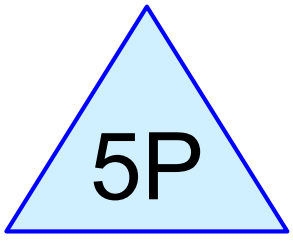
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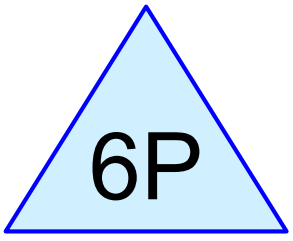
APPENDIX E



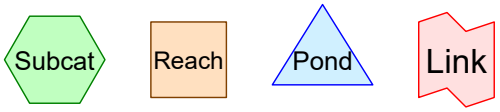
Infiltration Basin



Forebay 1



Forebay 2



Routing Diagram for 20014 N Burdick Dental
Prepared by Microsoft, Printed 7/9/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Pond 4P: Infiltration Basin

Inflow Area = 4.807 ac, 29.27% Impervious, Inflow Depth = 1.86" for 100-yr event
Inflow = 11.58 cfs @ 12.07 hrs, Volume= 0.745 af
Outflow = 0.54 cfs @ 14.80 hrs, Volume= 0.745 af, Atten= 95%, Lag= 163.9 min
Discarded = 0.33 cfs @ 14.80 hrs, Volume= 0.567 af
Primary = 0.21 cfs @ 14.80 hrs, Volume= 0.178 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 436.35' @ 14.80 hrs Surf.Area= 9,450 sf Storage= 17,275 cf

Plug-Flow detention time= 503.8 min calculated for 0.745 af (100% of inflow)
Center-of-Mass det. time= 503.9 min (1,370.5 - 866.5)

Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	44,337 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	1,614	0	0
434.00	3,298	2,456	2,456
435.00	5,747	4,523	6,979
436.00	8,534	7,141	14,119
437.00	11,143	9,839	23,958
438.00	13,916	12,530	36,487
438.50	17,485	7,850	44,337

Device	Routing	Invert	Outlet Devices
#1	Primary	430.50'	**12.0" Round Culvert** L= 39.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 430.50' / 430.00' S= 0.0128 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	437.50'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 15.00 25.00
#3	Device 1	437.10'	**24.0" Horiz. Rim** C= 0.600 Limited to weir flow at low heads
#4	Device 1	435.40'	**3.0" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#5	Discarded	433.00'	**1.500 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.33 cfs @ 14.80 hrs HW=436.35' (Free Discharge)
└**5=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.21 cfs @ 14.80 hrs HW=436.35' (Free Discharge)
└**1=Culvert** (Passes 0.21 cfs of 8.75 cfs potential flow)
  ├**3=Rim** (Controls 0.00 cfs)
  └**4=Orifice** (Orifice Controls 0.21 cfs @ 4.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=433.00' (Free Discharge)
└**2=Emergency Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 4P: Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
433.00	1,614	0
433.10	1,782	170
433.20	1,951	356
433.30	2,119	560
433.40	2,288	780
433.50	2,456	1,018
433.60	2,624	1,272
433.70	2,793	1,542
433.80	2,961	1,830
433.90	3,130	2,135
434.00	3,298	2,456
434.10	3,543	2,798
434.20	3,788	3,165
434.30	4,033	3,556
434.40	4,278	3,971
434.50	4,523	4,411
434.60	4,767	4,876
434.70	5,012	5,365
434.80	5,257	5,878
434.90	5,502	6,416
435.00	5,747	6,979
435.10	6,026	7,567
435.20	6,304	8,184
435.30	6,583	8,828
435.40	6,862	9,500
435.50	7,141	10,200
435.60	7,419	10,928
435.70	7,698	11,684
435.80	7,977	12,468
435.90	8,255	13,280
436.00	8,534	14,119
436.10	8,795	14,985
436.20	9,056	15,878
436.30	9,317	16,797
436.40	9,578	17,741
436.50	9,839	18,712
436.60	10,099	19,709
436.70	10,360	20,732
436.80	10,621	21,781
436.90	10,882	22,856
437.00	11,143	23,958
437.10	11,420	25,086
437.20	11,698	26,242
437.30	11,975	27,425
437.40	12,252	28,637
437.50	12,530	29,876
437.60	12,807	31,142
437.70	13,084	32,437
437.80	13,361	33,759
437.90	13,639	35,109
438.00	13,916	36,487
438.10	14,630	37,914
438.20	15,344	39,413
438.30	16,057	40,983
438.40	16,771	42,624
438.50	**17,485**	**44,337**

Summary for Pond 5P: Forebay 1

Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	1,362 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	100	0	0
434.00	373	237	237
435.00	845	609	846
435.50	1,222	517	1,362

Device	Routing	Invert	Outlet Devices
#1	Primary	437.50'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 15.00 25.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Emergency Spillway** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 5P: Forebay 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
433.00	100	0
433.10	127	11
433.20	155	25
433.30	182	42
433.40	209	62
433.50	237	84
433.60	264	109
433.70	291	137
433.80	318	167
433.90	346	201
434.00	373	237
434.10	420	276
434.20	467	321
434.30	515	370
434.40	562	423
434.50	609	482
434.60	656	545
434.70	703	613
434.80	751	686
434.90	798	763
435.00	845	846
435.10	920	934
435.20	996	1,030
435.30	1,071	1,133
435.40	1,147	1,244
435.50	**1,222**	**1,362**
435.60	1,222	1,362
435.70	1,222	1,362
435.80	1,222	1,362
435.90	1,222	1,362
436.00	1,222	1,362
436.10	1,222	1,362
436.20	1,222	1,362
436.30	1,222	1,362
436.40	1,222	1,362
436.50	1,222	1,362
436.60	1,222	1,362
436.70	1,222	1,362
436.80	1,222	1,362
436.90	1,222	1,362
437.00	1,222	1,362
437.10	1,222	1,362
437.20	1,222	1,362
437.30	1,222	1,362
437.40	1,222	1,362
437.50	1,222	1,362
437.60	1,222	1,362
437.70	1,222	1,362
437.80	1,222	1,362
437.90	1,222	1,362
438.00	1,222	1,362
438.10	1,222	1,362
438.20	1,222	1,362
438.30	1,222	1,362
438.40	1,222	1,362
438.50	1,222	1,362

Summary for Pond 6P: Forebay 2

Volume	Invert	Avail.Storage	Storage Description
#1	433.00'	1,258 cf	**Basin (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
433.00	120	0	0
434.00	382	251	251
435.00	759	571	822
435.50	985	436	1,258

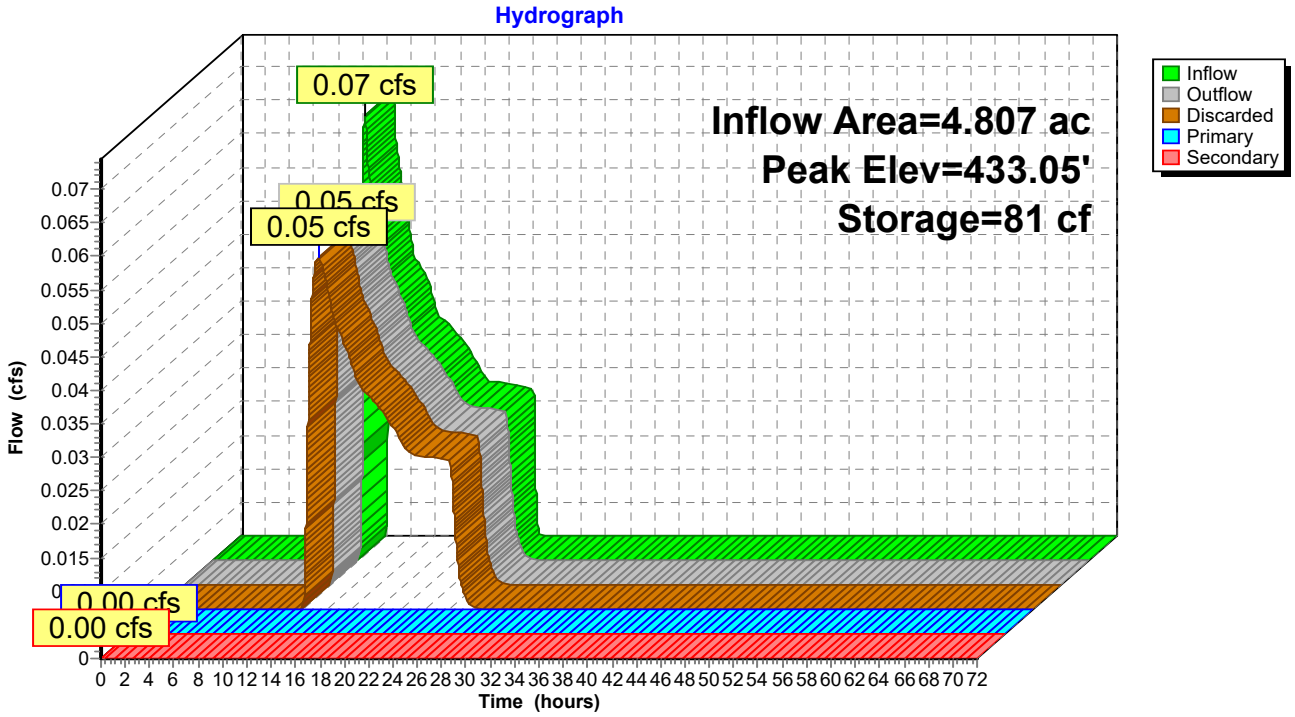
Device	Routing	Invert	Outlet Devices
#1	Primary	437.50'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 15.00 25.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Emergency Spillway** (Controls 0.00 cfs)

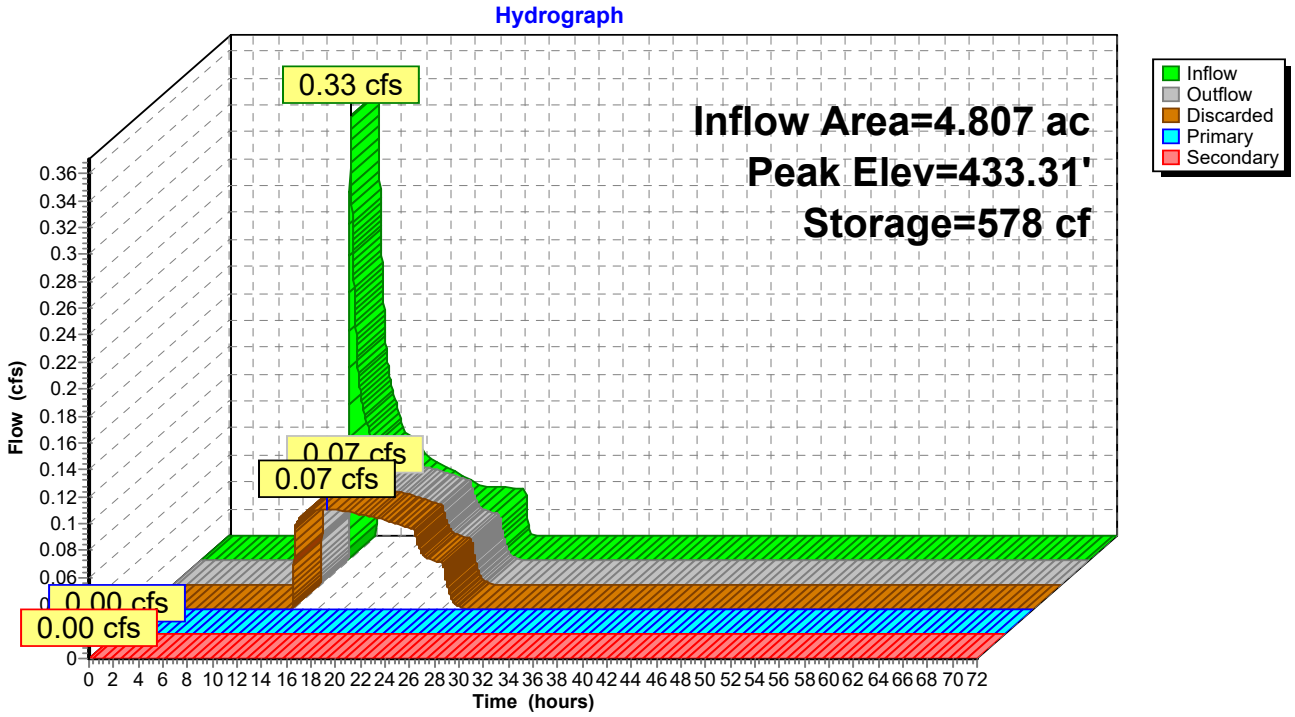
Stage-Area-Storage for Pond 6P: Forebay 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
433.00	120	0
433.10	146	13
433.20	172	29
433.30	199	48
433.40	225	69
433.50	251	93
433.60	277	119
433.70	303	148
433.80	330	180
433.90	356	214
434.00	382	251
434.10	420	291
434.20	457	335
434.30	495	383
434.40	533	434
434.50	571	489
434.60	608	548
434.70	646	611
434.80	684	677
434.90	721	747
435.00	759	822
435.10	804	900
435.20	849	982
435.30	895	1,070
435.40	940	1,161
435.50	**985**	**1,258**
435.60	985	1,258
435.70	985	1,258
435.80	985	1,258
435.90	985	1,258
436.00	985	1,258
436.10	985	1,258
436.20	985	1,258
436.30	985	1,258
436.40	985	1,258
436.50	985	1,258
436.60	985	1,258
436.70	985	1,258
436.80	985	1,258
436.90	985	1,258
437.00	985	1,258
437.10	985	1,258
437.20	985	1,258
437.30	985	1,258
437.40	985	1,258
437.50	985	1,258
437.60	985	1,258
437.70	985	1,258
437.80	985	1,258
437.90	985	1,258
438.00	985	1,258
438.10	985	1,258
438.20	985	1,258
438.30	985	1,258
438.40	985	1,258
438.50	985	1,258

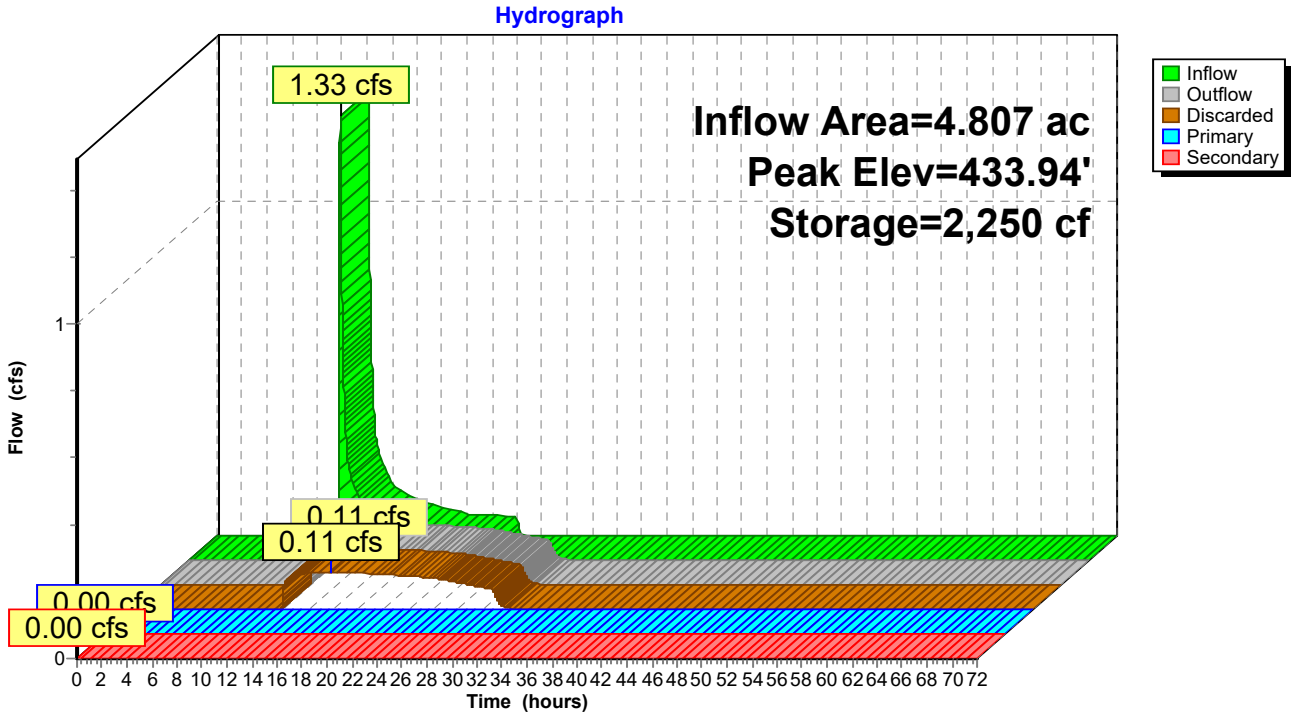
Pond 4P: Infiltration Basin



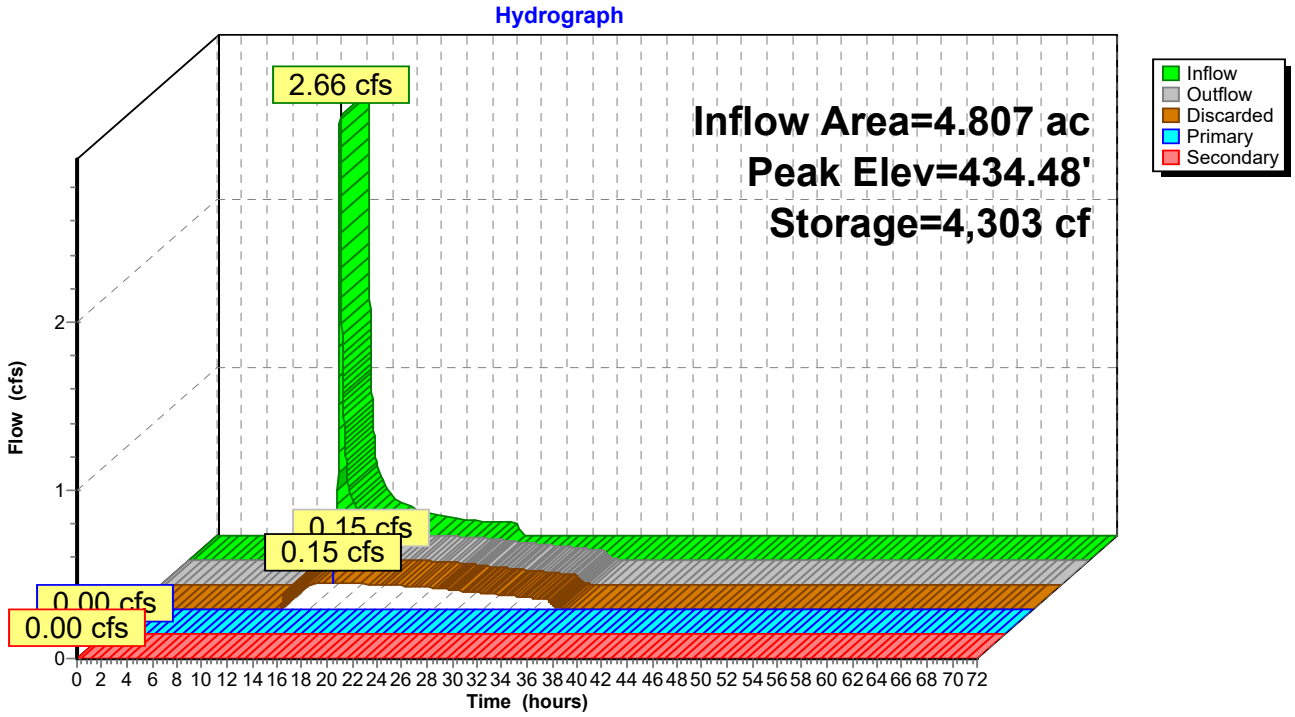
Pond 4P: Infiltration Basin



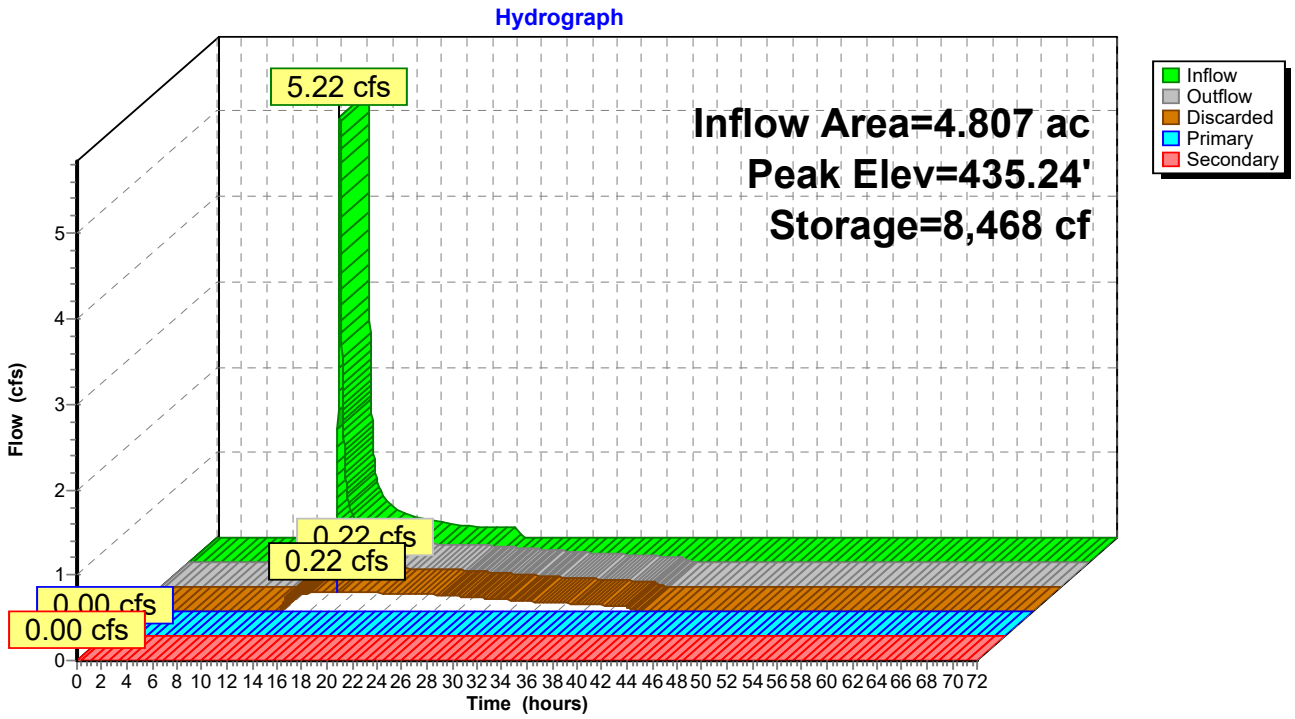
Pond 4P: Infiltration Basin



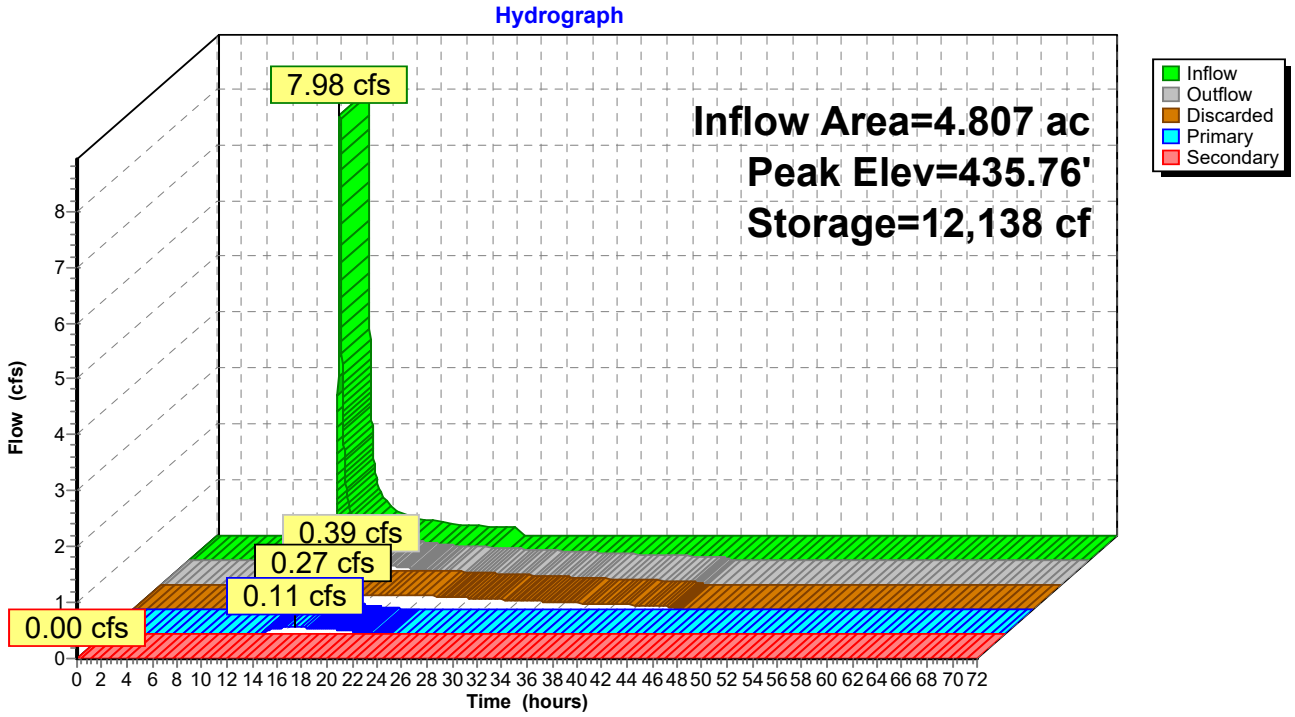
Pond 4P: Infiltration Basin



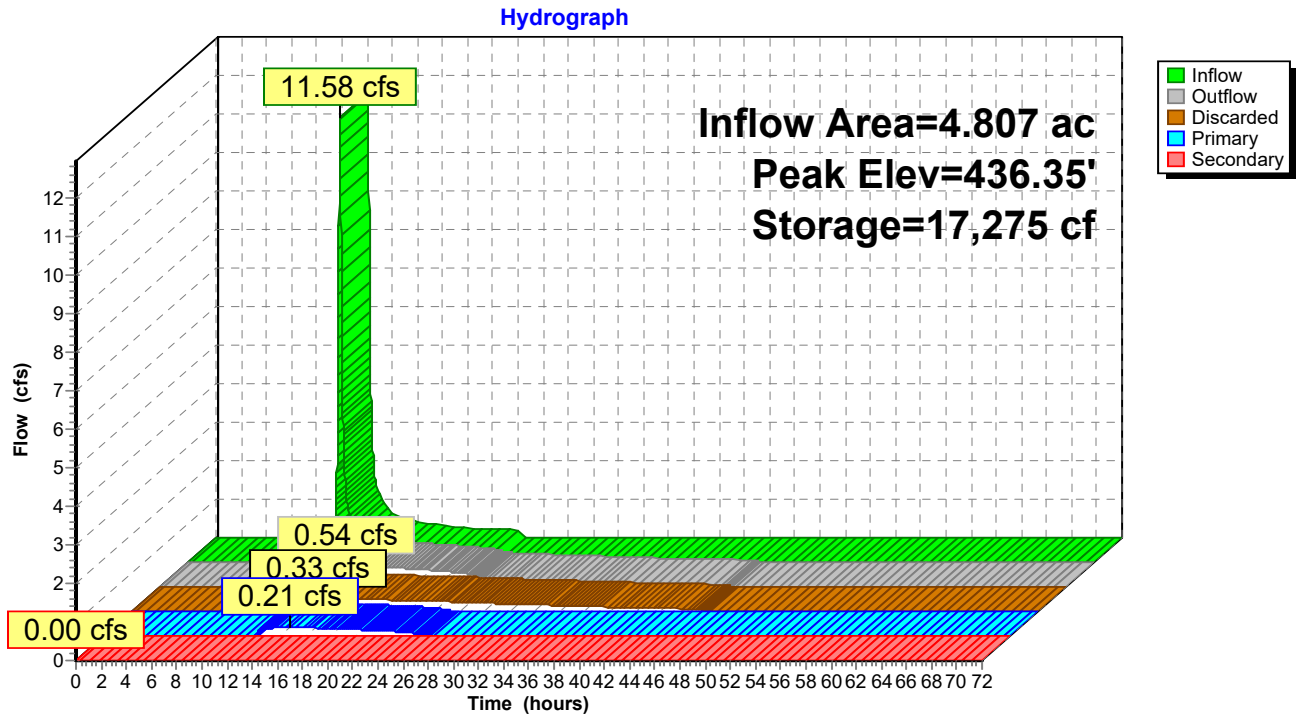
Pond 4P: Infiltration Basin



Pond 4P: Infiltration Basin



Pond 4P: Infiltration Basin



APPENDIX F

WATER & POLLUTION CONTROL FEDERATION (6) C-VALUES

storm, is common. The range of coefficients, classified with respect to the general character of the tributary area reported in use, is:

Description of Area	Runoff Coefficients
Business	
Downtown	0.70 to 0.95
Neighborhood	0.50 to 0.70
Residential	
Single-family	0.30 to 0.50
Multi-units, detached	0.40 to 0.60
Multi-units, attached	0.60 to 0.75
Residential (suburban)	0.25 to 0.40
Apartment	0.50 to 0.70
Industrial	
Light	0.50 to 0.80
Heavy	0.60 to 0.90
Parks, cemeteries	0.10 to 0.25
Playgrounds	0.20 to 0.35
Railroad yard	0.20 to 0.35
Unimproved	0.10 to 0.30

Downtown .95

Residential = 0.40

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

Character of Surface	Runoff Coefficients
Pavement	
Asphaltic and Concrete	0.70 to 0.95
Brick	0.70 to 0.85
Roofs	0.75 to 0.95
Lawns, sandy soil	
Flat, 2 percent	0.05 to 0.10
Average, 2 to 7 percent	0.10 to 0.15
Steep, 7 percent	0.15 to 0.20
Lawns, heavy soil	
Flat, 2 percent	0.13 to 0.17
Average, 2 to 7 percent	0.18 to 0.22
Steep, 7 percent	0.25 to 0.35

The coefficients in these two tabulations are applicable for storms of 5- to 10-yr frequencies. Less frequent, higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

(c) **Coefficients Varying with Time.**—Figure 11 shows the variation of the runoff coefficient with respect to length of time of prior wetting,

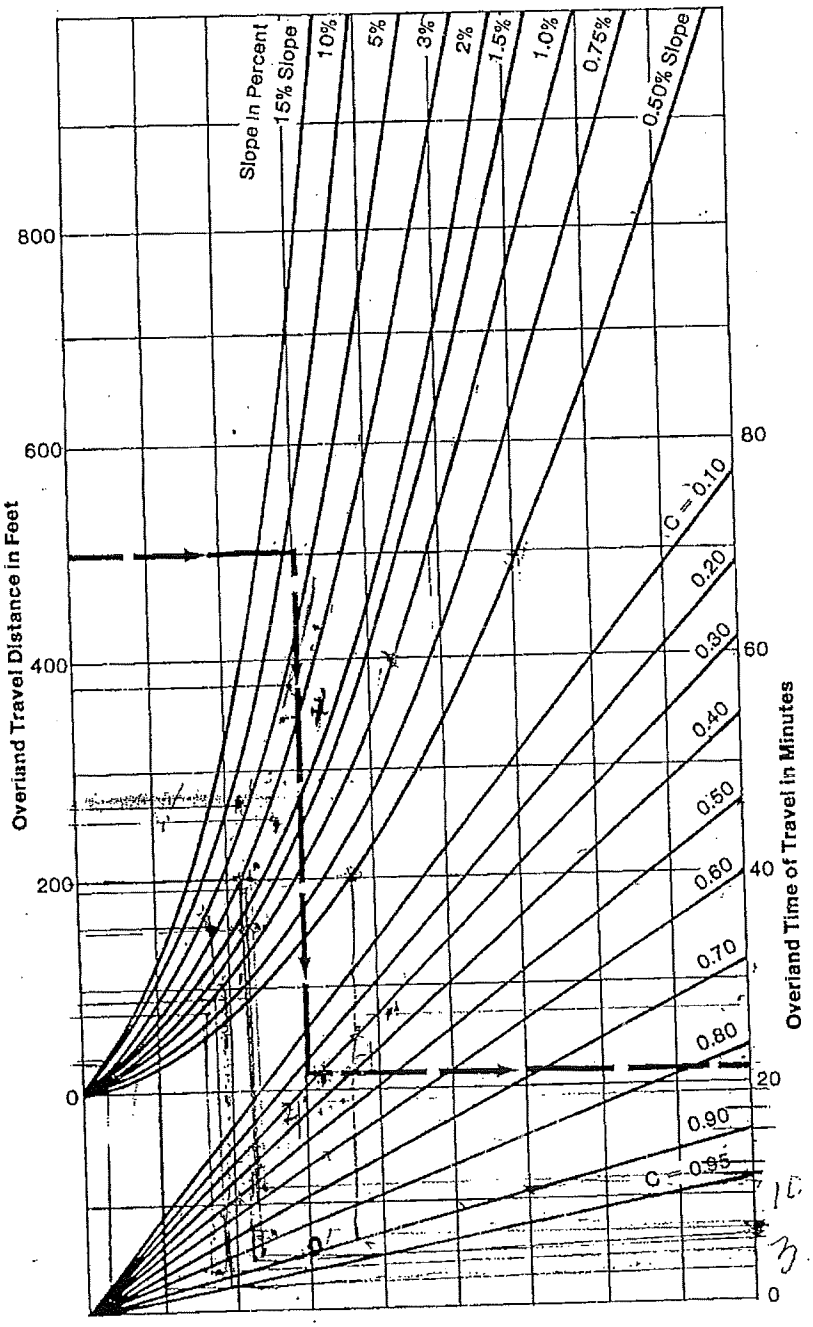
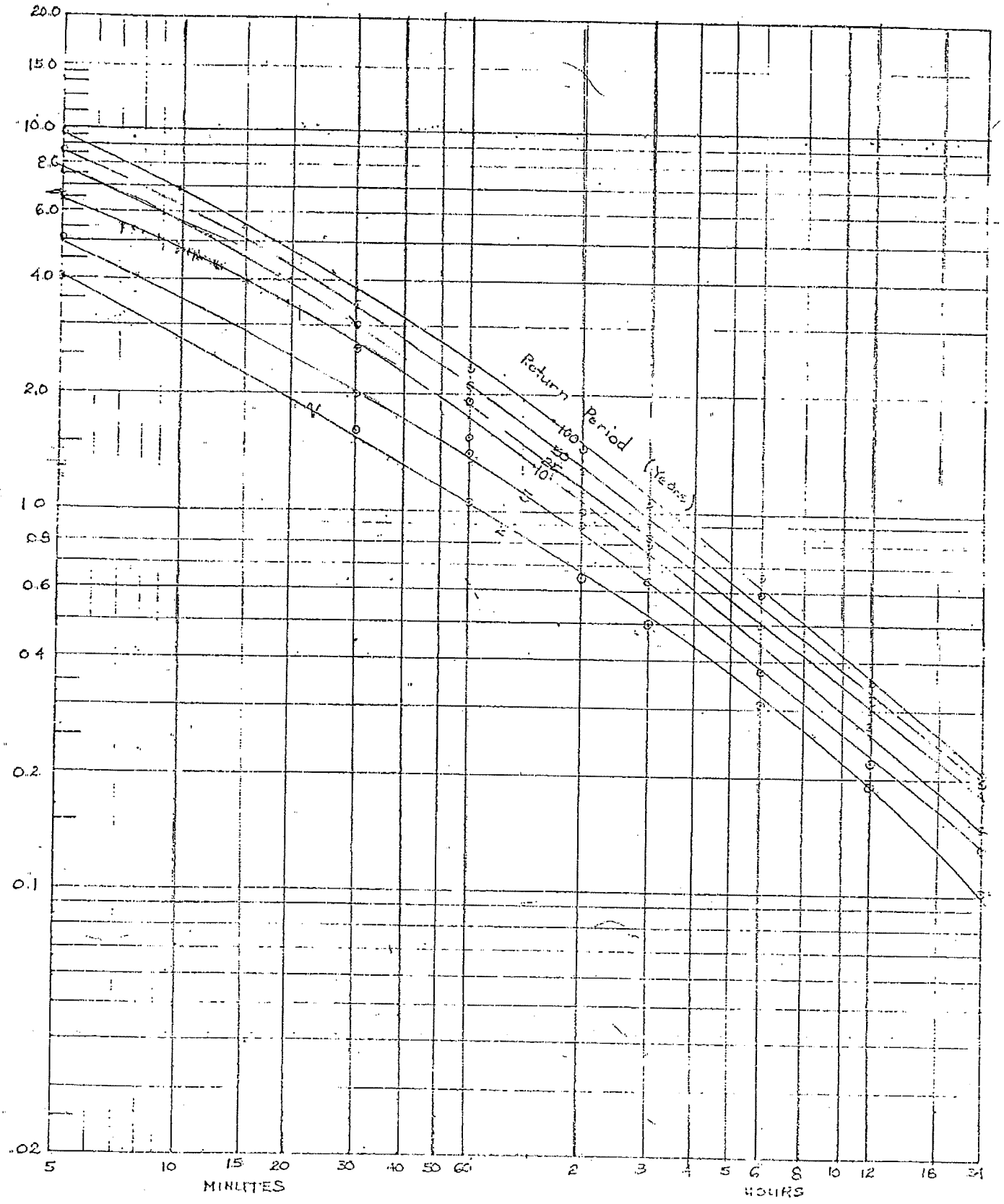


Figure 3-10 Overland time of flow graph

Syracuse, New York 1903-1970



Rainfall Intensity In Inches Per Hour

APPENDIX G

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **MBM Burdick Dental** Date: **7/3/2020**

Water Quality Calculations

Owner: Project No.: **20014**

Location: **5538 North Burdick St**

Drawings: **Grading and Site Plans** Estimated By: **HJM** **PRDA-1**

WQv = (P)(Rv)(A)/12

P= 90% Rainfall Number - Figure 4.1 = **1.00**

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

Impervious =	1.407	Acres
Total Site Area =	4.807	Acres
% Impervious=	0.293	

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(29.27 %)

Rv = **0.313**

A= Total Site Area = **4.807 Acres**

Therefore Water Quality Volume WQv =

WQv = [(P)(Rv)(A)]/12

= **0.126 acre feet**

or

= **5469.14 cubic feet**

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **MBM Burdick Dental** Date: **7/3/2020**

Channel Protection Volume Calculations

Owner: Project No.: **20014**

Location: **5538 North Burdick St**

Drawings: Estimated By: **HJM** **PRDA-1**

Calculate Unit Peak Discharge (qu) using TR-55 & Type II Rainfall Distribution

Curve Number (CN) from Hyrdocadd analysis	61
Initial Abstraction (Ia)	1.28
Rainfall (P) - 1 year storm	2.38
Ia/P	0.54
Tc from Hydrocadd analysis in hrs	0.23
Unit Peak Discharge (qu) from TR-55 Exhibit 4-II	300.00
Ratio of Outflow to Inflow (qo/qi) from qu and Figure 8.5)	0.060

Calculate Channel Protection Volume per Appendix B

$$V_s/V_r = 0.682 - 1.43*(q_o/qi) + 1.64*(qo/qi)^2 - 0.804*(qo/qi)^3$$

V_r = runoff volume 1 year post development(acre-feet) 0.032 acre-feet

V_s/V_r= 0.601930 (no units)

Therefore V_s = 0.019262 acre-feet

Cpv = **0.019 acre feet**

or

= **839.04 cubic feet**

Calculate Runoff Rate for 24 hr. detention time

Channel Protection Volume =	0.019 acre feet
Time to release Vs =	24 hours
Projected release rate =	**0.01 cfs**

APPENDIX H

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR **MUST SIGN FORM**

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
5538 North Burdick, LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Dumas

Owner/Operator Contact Person First Name
Scott

Owner/Operator Mailing Address
125 East Jefferson St Suite 1510

City
Syracuse

State
NY

Zip
13202-____

Phone (Owner/Operator)
315-877-5113

Fax (Owner/Operator)
___-___-____

Email (Owner/Operator)
scottdumas107@gmail.com

FED TAX ID
84-3770318 (not required for individuals)

Project Site Information

Project/Site Name
MBM Dental Office

Street Address (NOT P.O. BOX)
5538 North Burdick Street

Side of Street
● **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Manlius

State: NY
Zip: 13066-
County: Onondaga
DEC Region: 7

Name of Nearest Cross Street
Cedar Bay Road

Distance to Nearest Cross Street (Feet)
909

Project In Relation to Cross Street
○ **North** ○ **South** ● **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
086.-02-07.1

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-74.17081
Ex. -73.749

Y Coordinates (Northing)
42.76025
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
● FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
○ SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	● COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	○ OTHER

Number of Lots

***Note:** for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
4.3	3.8	0.1	1.4

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	88 %	12 %	%

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date 08/01/2020 – **End Date** 10/01/2021

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Butternut Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ● Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

State of NY

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
RZ Engineering, PLLC

Contact Name (Last, Space, First)
Zona Rudy

Mailing Address
6320 Fly Road Suite 109

City
East Syracuse

State NY Zip 13057-

Phone 315-432-1089 Fax --

Email
rzona@rzengineering.com

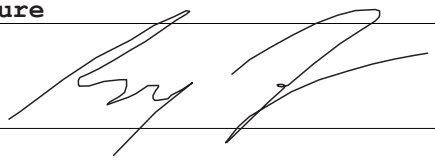
SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name Rudy **MI** L

Last Name Zona

Signature



Date 07/07/2020

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ○ Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ● Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ● Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ● **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	1	2	6	**acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area (acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/or	
○ Disconnection of Rooftop Runoff (RR-4)		and/or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			1.407
○ Dry Well (I-3)			
○ Underground Infiltration System (I-4)			
○ Bioretention (F-5)			
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended Detention (P-1)			
○ Wet Pond (P-2)			
○ Wet Extended Detention (P-3)			
○ Multiple Pond System (P-4)			
○ Pocket Pond (P-5)			
○ Surface Sand Filter (F-1)			
○ Underground Sand Filter (F-2)			
○ Perimeter Sand Filter (F-3)			
○ Organic Filter (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other** [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name [ ]

Manufacturer [ ]

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

[ ][ ]0.[2][1][8] **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

● **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

[ ][ ][ ].[ ][ ][ ] **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

[ ][ ][ ].[ ][ ][ ] **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). [ ][ ][ ].[ ][ ][ ]

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

[ ][ ][ ].[0][1][9] **acre-feet**

CPv Provided

[ ][ ][0].[2][1][8] **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

[ ][ ][0].[0][1][ ] **CFS**

Post-development

[ ][ ][0].[0][0][ ] **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

[ ][ ][0].[5][1][ ] **CFS**

Post-development

[ ][ ][0].[2][1][ ] **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ● **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Scott

MI: E

Print Last Name: Dumas

Owner/Operator Signature: 

Date: 07/05/2020

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	5538 North Burdick, LLC
2. Contact Person:	Scott Dumas
3. Street Address:	125 East Jefferson St Suite 1510
4. City/State/Zip:	Syracuse, NY 13202
II. Project Site Information	
5. Project/Site Name:	MBM Dental Office
6. Street Address:	5538 North Burdick St
7. City/State/Zip:	Fayetteville, NY 13066
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A _____	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

(NYS DEC - MS4 SWPPP Acceptance Form - January 2010)

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).
Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location: Municipality: County:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] _____

_____

_____

_____

_____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge_____

_____

_____

_____

_____

Describe any other water quality standards or permit violations _____

_____

_____

Additional Comments:_____

_____

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☐ Photographs attached

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

APPENDIX I

Erosion and Sedimentation Control Measures Maintenance Schedule

1. Temporary Construction Entrance: During Construction inspect periodically. Maintain entrance in a manner that will prevent tracking of sediment into public right of ways. Remove built up sediment deposits; and clean, repair, or replace temporary construction entrance as required.
2. Temporary Sediment Trap: During construction inspect weekly. Clean and restore traps to their original size when sediment has accumulated to one-half of the basin depth. Remove temporary sediment traps and stabilize areas when their contributory drainage area is stabilized.
3. Temporary Silt Fence: During construction inspect weekly. Remove built up sediment deposits; and clean, repair, or replace silt fence as required. Remove temporary silt fence when contributory drainage areas are stabilized.
4. Grass-Lined Drainage Channels: During construction inspect weekly to insure their stability and to locate points of scour, rodent-holes, breaches, and deposition of sediment or other obstructions. Clean, repair, and re-seed drainage channels as required. After construction inspect semi-annually and after every heavy rainfall.
5. Culvert: During construction inspect weekly to insure structural integrity, detect vandalism and damage, and for cleaning. Clean, repair, or replace culvert as required. After construction inspect semi-annually and after every heavy rainfall.
6. Stone Erosion Protection Aprons: During construction inspect weekly to insure structural integrity and to verify that stone is not by-passed, or developing excessive scour at the stone base or sediment build-up. Remove sediment accumulated within the riprap stone aprons at inlets and outlets of culverts and grassed waterways, or replace stone, as required, to allow the stormwater to drain through the stone to reduce erosive velocities and prevent large flows from carrying sediment over their tops. After construction inspect semi-annually and after every heavy rainfall.
7. Disturbed Soil Areas: Seed and mulch upon final grading of topsoil. During construction inspect weekly and repair and re-seed areas, as required. After construction inspect and maintain on regular basis permanent lawns and grassed areas consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION



Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.

2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.

3. Provide surface drainage and divert excess runoff to stabilized areas.

4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.

5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.

6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

STANDARD AND SPECIFICATIONS FOR DIVERSION



Definition & Scope

A drainage way of parabolic or trapezoidal cross-section with a supporting ridge on the lower side that is constructed across the slope to intercept and convey runoff to stable outlets at non-erosive velocities.

Conditions Where Practice Applies

Diversions are used where:

1. Runoff from higher areas has potential for damaging properties, causing erosion, or interfering with, or preventing the establishment of, vegetation on lower areas.

2. Surface and/or shallow subsurface flow is damaging sloping upland.

3. The length of slopes needs to be reduced so that soil loss will be kept to a minimum.

Diversions are only applicable below stabilized or protected areas. Avoid establishment on slopes greater than fifteen percent. Diversions should be used with caution on soils subject to slippage. Construction of diversions shall be in compliance with state and local drainage and water laws.

Design Criteria

Location

Diversion location shall be determined by considering outlet conditions, topography, land use, soil type, length of slope, seep planes (when seepage is a problem), and the development layout.

Capacity

Peak rates of runoff values used in determining the capacity requirements shall be calculated using the most current hydrologic data from the Northeast Regional Climate Center in an appropriate model.

The constructed diversion shall have capacity to carry, as a minimum, the peak discharge from a 10 year frequency rainfall event with freeboard of not less than 0.3 feet.

Diversions designed to protect homes, schools, industrial buildings, roads, parking lots, and comparable high-risk areas, and those designed to function in connection with other structures, shall have sufficient capacity to carry peak runoff expected from a storm frequency consistent with the hazard involved.

Cross Section

The diversion channel shall be parabolic or trapezoidal in shape. Parabolic Diversion design charts are provided in Tables 3.2, 3.3 and 3.4 on pages 3.10, 3.12 and 3.13**.** The diversion shall be designed to have stable side slopes. The side slopes shall not be steeper than 2:1 and shall be flat enough to ensure ease of maintenance of the diversion and its protective vegetative cover.

The ridge shall have a minimum width of four feet at the design water elevation; a minimum of 0.3 feet freeboard and a reasonable settlement factor shall be provided.

Velocity and Grade

The permissible velocity for the specified method of stabilization will determine the maximum grade. Maximum permissible velocities of flow for the stated conditions of stabilization shall be as shown in Table 3.1 on page 3.10 of this standard.

Diversions are not usually applicable below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with, or before, the diversions.

Outlets

Each diversion must have an adequate outlet. The outlet may be a grassed waterway, vegetated or paved area, grade stabilization structure, flow spreader, flow diffuser, stable watercourse, or subsurface drain outlet. In all cases, the outlet must convey runoff to a point where outflow will not cause damage. Vegetated outlets shall be installed before diversion construction, if needed, to ensure establishment of

vegetative cover in the outlet channel.

The design elevation of the water surface in the diversion shall not be lower than the design elevation of the water surface in the outlet at their junction when both are operating at design flow.

Stabilization

Vegetated diversions shall be stabilized in accordance with the following tables.

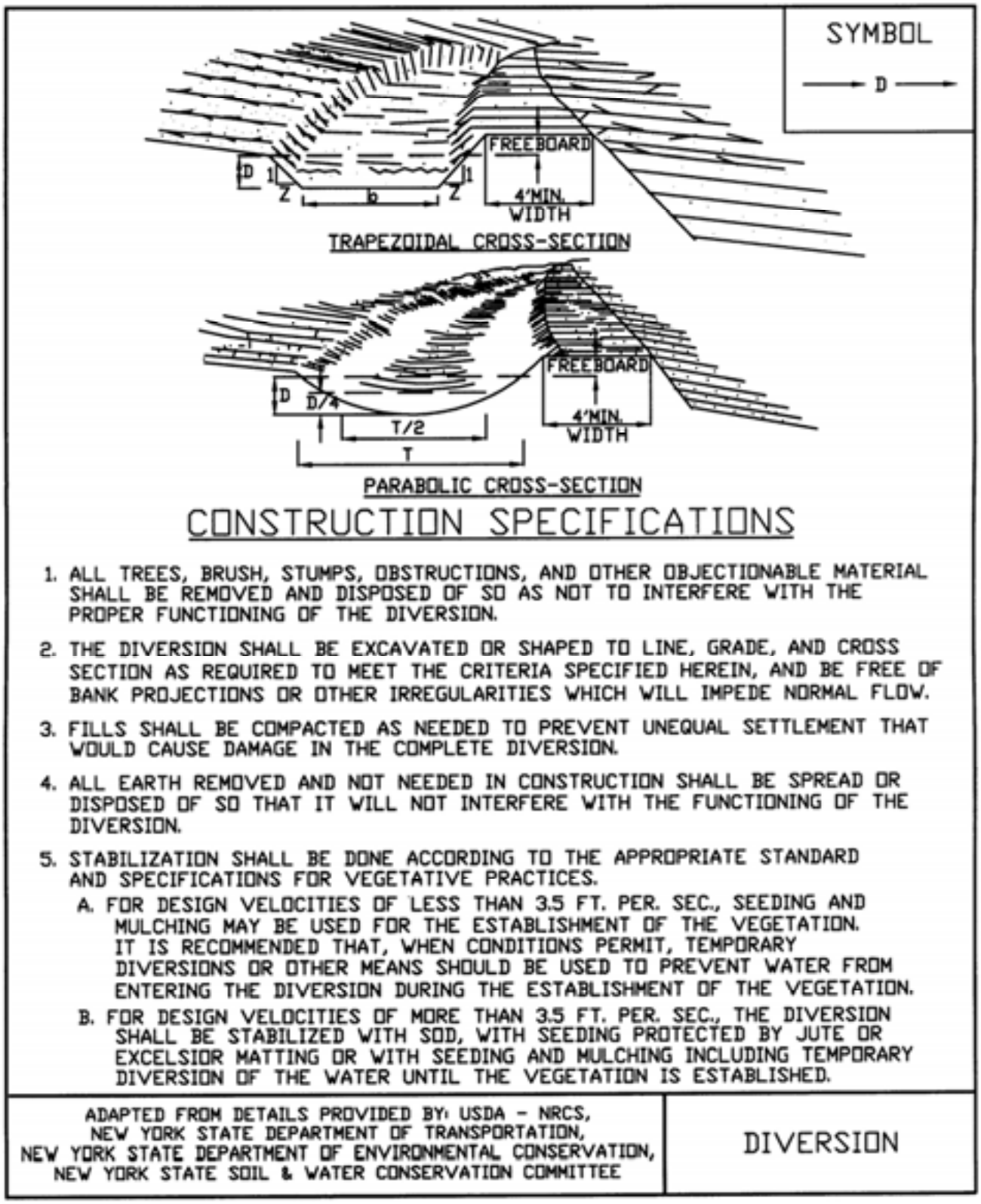
Table 3.1
Diversion Maximum Permissible Design Velocities Table

Soil Texture	Retardance and Cover	Permissible Velocity (ft / second) for Selected Channel Vegetation
Sand, Silt, Sandy loam, silty loam, loamy sand (ML, SM, SP, SW)	C-Kentucky 31 tall fescue and Kentucky bluegrass	3.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	2.5
Silty clay loam, Sandy clay loam (ML-CL, SC)	C-Kentucky 31 tall fescue and Kentucky bluegrass	4.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	3.5
Clay (CL)	C-Kentucky 31 tall fescue and Kentucky bluegrass	5.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	4.0
[1] Annuals—Use only as temporary protection until permanent vegetation is established.		

Table 3.2 - Retardance Factors for Various Grasses and Legumes Table

Retardance	Cover	Condition
A	Reed canarygrass	Excellent stand, tall (average 36 inches)
B	Smooth bromegrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue	Good stand, unmowed (average 18 inches)
	Grass-legume mixture—Timothy, smooth bromegrass, or Orchard grass with birdsfoot trefoil	Good stand, uncut (average 20 inches)
	Reed canarygrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue, with birdsfoot trefoil or ladino clover	Good stand, uncut (average 18 inches)
C	Redtop	Good stand, headed (15 to 20 inches)
	Grass-legume mixture—summer (Orchard grass, redtop, Annual ryegrass, and ladino or white clover)	Good stand, uncut (6 to 8 inches)
	Kentucky bluegrass	Good stand, headed (6 to 12 inches)
D	Red fescue	Good stand, headed (12 to 18 inches)
	Grass-legume mixture—fall, spring (Orchard grass, redtop, Annual ryegrass, and white or ladino clover)	Good stand, uncut (4 to 5 inches)

Figure 3.4
Diversion Detail



CONSTRUCTION SPECIFICATIONS

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETE DIVERSION.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. STABILIZATION SHALL BE DONE ACCORDING TO THE APPROPRIATE STANDARD AND SPECIFICATIONS FOR VEGETATIVE PRACTICES.
   A. FOR DESIGN VELOCITIES OF LESS THAN 3.5 FT. PER. SEC., SEEDING AND MULCHING MAY BE USED FOR THE ESTABLISHMENT OF THE VEGETATION. IT IS RECOMMENDED THAT, WHEN CONDITIONS PERMIT, TEMPORARY DIVERSIONS OR OTHER MEANS SHOULD BE USED TO PREVENT WATER FROM ENTERING THE DIVERSION DURING THE ESTABLISHMENT OF THE VEGETATION.
   B. FOR DESIGN VELOCITIES OF MORE THAN 3.5 FT. PER. SEC., THE DIVERSION SHALL BE STABILIZED WITH SOD, WITH SEEDING PROTECTED BY JUTE OR EXCELSIOR MATTING OR WITH SEEDING AND MULCHING INCLUDING TEMPORARY DIVERSION OF THE WATER UNTIL THE VEGETATION IS ESTABLISHED.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

DIVERSION

Table 3.3
Parabolic Diversion Design, Without Freeboard Tables - 1 (USDA– NRCS)

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 0.50

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 = 2.0			V_1 = 2.5			V_1 = 3.0			V_1 = 3.5			V_1 = 4.0			V_1 = 4.5			V_1 = 5.0			V_1 = 5.5			V_1 = 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	9	1.6	1.6																								
20	11	1.6	1.7																								
25	14	1.6	1.7	9	1.9	2.1																					
30	17	1.6	1.7	11	1.9	2.2	8	2.2	2.5																		
35	20	1.6	1.7	12	1.9	2.3	9	2.1	2.6																		
40	22	1.6	1.7	14	1.8	2.3	11	2.1	2.7																		
45	25	1.5	1.7	16	1.8	2.3	12	2.0	2.8																		
50	28	1.5	1.7	18	1.8	2.4	13	2.0	2.8	10	2.4	3.2															
55	31	1.5	1.7	19	1.8	2.4	15	2.0	2.8	11	2.4	3.3															
60	33	1.5	1.7	21	1.8	2.4	16	2.0	2.8	11	2.4	3.3															
65	36	1.5	1.8	23	1.8	2.4	17	2.0	2.9	12	2.4	3.3															
70	39	1.5	1.7	24	1.8	2.4	18	2.0	2.9	13	2.3	3.4															
75	42	1.5	1.8	26	1.8	2.4	19	2.0	2.9	14	2.3	3.4	11	2.7	3.7												
80	44	1.5	1.8	28	1.8	2.4	21	2.0	2.9	15	2.3	3.4	12	2.7	3.8												
90	50	1.5	1.8	31	1.8	2.4	24	2.0	2.9	17	2.3	3.4	13	2.7	3.8												
100	55	1.5	1.8	35	1.8	2.4	26	2.0	2.9	19	2.3	3.5	15	2.6	3.9	12	3.0	4.1									

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 1.0

V_1 based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 = 2.0			V_1 = 2.5			V_1 = 3.0			V_1 = 3.5			V_1 = 4.0			V_1 = 4.5			V_1 = 5.0			V_1 = 5.5			V_1 = 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	13	1.1	1.5	8	1.3	2.0																					
20	18	1.1	1.5	11	1.3	2.1	8	1.5	2.6																		
25	22	1.1	1.5	14	1.3	2.1	9	1.5	2.6	8	1.6	3.0															
30	27	1.1	1.5	17	1.3	2.1	11	1.5	2.7	9	1.6	3.0															
35	31	1.1	1.5	19	1.3	2.2	13	1.5	2.8	11	1.6	3.1	8	1.8	3.6												
40	35	1.1	1.5	22	1.3	2.1	15	1.4	2.8	12	1.5	3.1	9	1.8	3.7												
45	40	1.1	1.5	25	1.3	2.2	17	1.5	2.8	13	1.6	3.2	10	1.8	3.7												
50	44	1.1	1.5	28	1.3	2.2	19	1.4	2.8	15	1.6	3.2	11	1.8	3.7	9	2.0	4.2									
55	46	1.1	1.5	30	1.3	2.2	20	1.4	2.8	16	1.5	3.3	12	1.8	3.8	10	2.0	4.3									
60	53	1.1	1.5	33	1.3	2.2	22	1.4	2.8	18	1.5	3.3	14	1.7	3.8	10	2.0	4.3									
65	57	1.1	1.5	36	1.3	2.2	24	1.4	2.8	19	1.5	3.3	15	1.7	3.8	11	2.0	4.3	9	2.2	4.7						
70	61	1.1	1.5	38	1.3	2.2	26	1.4	2.8	21	1.5	3.3	16	1.7	3.9	12	2.0	4.4	10	2.2	4.7						
75	66	1.1	1.5	41	1.3	2.2	28	1.4	2.9	22	1.5	3.3	17	1.7	3.9	13	2.0	4.5	11	2.2	4.7						
80	70	1.1	1.5	44	1.3	2.2	29	1.4	2.9	24	1.5	3.3	18	1.7	3.9	14	2.0	4.4	11	2.2	4.9						
90	79	1.1	1.5	49	1.3	2.2	33	1.4	2.9	27	1.5	3.3	20	1.7	3.9	15	1.9	4.5	13	2.2	4.9	11	2.4	5.2			
100	87	1.1	1.5	55	1.3	2.2	37	1.4	2.9	29	1.5	3.3	22	1.7	3.9	17	1.9	4.5	14	2.2	4.9	12	2.4	5.3			

Table 3.4
Parabolic Diversion Design, Without Freeboard Tables - 2 (USDA– NRCS)

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 1.5

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 - 2.0			V_1 - 2.5			V_1 - 3.0			V_1 - 3.5			V_1 - 4.0			V_1 - 4.5			V_1 - 5.0			V_1 - 5.5			V_1 - 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	17	0.9	1.4	11	1.1	1.9	8	1.2	2.4																		
20	23	0.9	1.4	15	1.0	1.9	10	1.2	2.5	7	1.4	3.0	5	1.5	3.4												
25	28	0.9	1.4	19	1.0	1.9	12	1.2	2.6	8	1.4	3.2	7	1.5	3.6												
30	34	0.9	1.4	22	1.0	1.9	15	1.2	2.6	10	1.3	3.2	8	1.5	3.6	7	1.6	4.0									
35	40	0.9	1.4	26	1.0	2.0	17	1.1	2.6	12	1.3	3.3	10	1.4	3.7	8	1.6	4.1									
40	45	0.9	1.4	30	1.0	1.9	20	1.2	2.6	14	1.3	3.3	11	1.4	3.7	9	1.6	4.2	7	1.8	4.6						
45	51	0.9	1.4	33	1.0	2.0	22	1.1	2.6	15	1.3	3.4	12	1.4	3.8	10	1.5	4.3	8	1.8	4.6						
50	56	0.9	1.4	37	1.0	2.0	25	1.1	2.7	17	1.3	3.4	14	1.4	3.9	11	1.5	4.3	9	1.8	4.8						
55	62	0.9	1.5	41	1.0	2.0	27	1.1	2.6	19	1.3	3.4	15	1.4	3.9	12	1.5	4.3	10	1.7	4.9	8	1.9	5.1			
60	67	0.9	1.5	44	1.0	2.0	30	1.1	2.7	20	1.3	3.4	16	1.4	3.9	14	1.5	4.4	11	1.7	4.9	9	1.9	5.2			
65	73	0.9	1.5	48	1.0	2.0	32	1.1	2.7	22	1.3	3.4	18	1.4	3.9	15	1.5	4.4	11	1.7	5.0	10	1.9	5.3			
70	78	0.9	1.5	51	1.0	2.0	34	1.1	2.7	24	1.3	3.4	19	1.4	3.9	16	1.5	4.4	12	1.7	4.9	10	1.9	5.4	9	2.1	5.6
75	83	0.9	1.5	55	1.0	2.0	37	1.1	2.7	25	1.3	3.4	21	1.4	3.9	17	1.5	4.4	13	1.7	5.0	11	1.9	5.4	9	2.1	5.6
80	89	0.9	1.5	59	1.0	2.0	39	1.1	2.7	27	1.3	3.4	22	1.4	3.9	18	1.5	4.4	14	1.7	5.0	12	1.9	5.5	10	2.1	5.8
90	100	0.9	1.5	66	1.0	2.0	44	1.1	2.7	30	1.3	3.5	25	1.4	3.9	20	1.5	4.4	15	1.7	5.0	13	1.9	5.4	11	2.0	5.9
100				73	1.0	2.0	49	1.1	2.7	33	1.3	3.5	27	1.4	3.9	22	1.5	4.5	17	1.7	5.1	15	1.9	5.5	12	2.0	6.0

PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD

RETARDANCE - D & C
GRADE, % - 2.0

V_1 Based on Permissible Velocity of the Soil With Retardance "D"
Top Width, Depth & V_2 Based on Retardance "C"

Q	V_1 - 2.0			V_1 - 2.5			V_1 - 3.0			V_1 - 3.5			V_1 - 4.0			V_1 - 4.5			V_1 - 5.0			V_1 - 5.5			V_1 - 6.0		
cfs	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2	T	D	V_2
15	21	0.8	1.3	13	0.9	1.9	9	1.0	2.4	7	1.2	2.9															
20	28	0.8	1.3	17	0.9	1.9	12	1.0	2.4	9	1.1	3.0	7	1.3	3.5	5	1.4	3.8									
25	35	0.8	1.3	21	0.9	1.9	15	1.0	2.4	11	1.1	3.0	8	1.3	3.7	7	1.4	4.0									
30	41	0.8	1.3	26	0.9	1.9	18	1.0	2.5	13	1.1	3.0	10	1.2	3.7	8	1.3	4.2	7	1.5	4.5						
35	48	0.8	1.4	30	0.9	1.9	22	1.0	2.4	15	1.1	3.1	11	1.2	3.8	9	1.3	4.2	8	1.5	4.7						
40	55	0.8	1.3	34	0.9	1.9	25	1.0	2.5	18	1.1	3.1	13	1.2	3.8	11	1.3	4.3	9	1.5	4.7	7	1.7	5.0			
45	62	0.8	1.4	38	0.9	1.9	28	1.0	2.5	20	1.1	3.1	14	1.2	3.8	12	1.3	4.3	10	1.4	4.8	8	1.6	5.2			
50	68	0.8	1.4	42	0.9	1.9	31	1.0	2.5	22	1.1	3.1	16	1.2	3.9	13	1.3	4.3	11	1.4	4.8	9	1.6	5.3	8	1.7	5.6
55	75	0.8	1.4	46	0.9	1.9	34	1.0	2.5	24	1.1	3.1	17	1.2	3.8	14	1.3	4.3	12	1.4	4.9	10	1.6	5.3	8	1.7	5.8
60	82	0.8	1.4	51	0.9	1.9	37	1.0	2.5	26	1.1	3.1	19	1.2	3.9	16	1.3	4.4	13	1.4	4.8	11	1.6	5.3	9	1.7	5.7
65	88	0.8	1.4	55	0.9	1.9	40	1.0	2.5	28	1.1	3.1	21	1.2	3.9	17	1.3	4.4	14	1.4	4.9	11	1.6	5.4	10	1.7	5.7
70	95	0.8	1.4	59	0.9	1.9	43	1.0	2.5	30	1.1	3.1	22	1.2	3.9	18	1.3	4.4	15	1.4	4.9	12	1.6	5.4	10	1.7	5.8
75				63	0.9	1.9	46	1.0	2.5	32	1.1	3.2	24	1.2	3.9	20	1.3	4.4	16	1.4	5.0	13	1.6	5.5	11	1.7	5.9
80				67	0.9	2.0	48	1.0	2.5	35	1.1	3.2	25	1.2	3.9	21	1.3	4.4	17	1.4	4.9	14	1.6	5.4	12	1.7	6.0
90				75	0.9	2.0	54	1.0	2.5	39	1.1	3.2	28	1.2	3.9	23	1.3	4.4	19	1.4	4.9	16	1.6	5.5	13	1.7	5.9
100				83	0.9	2.0	60	1.0	2.5	43	1.1	3.2	31	1.2	3.9	26	1.3	4.4	21	1.4	5.0	17	1.6	5.5	15	1.7	6.0

STANDARD AND SPECIFICATIONS FOR GRASSED WATERWAY



Definition & Scope

A natural or **permanent** man-made channel of parabolic or trapezoidal cross-section that is below adjacent ground level and is stabilized by suitable vegetation. The flow channel is normally wide and shallow and conveys the runoff down the slope without causing damage by erosion.

Conditions Where Practice Applies

Grass waterways are used where added vegetative protection is needed to control erosion resulting from concentrated runoff.

Design Criteria

Capacity

The minimum capacity shall be that required to confine the peak rate of runoff expected from a 10-year 24 hour frequency rainfall event or a higher frequency corresponding to the hazard involved. This requirement for confinement may be waived on slopes of less than one (1) percent where out-of-bank flow will not cause erosion or property damage.

Peak rates of runoff values used in determining the capacity requirements shall be computed by appropriate methods. Where there is base flow, it shall be handled by a stone center, subsurface drain, or other suitable means since sustained wetness usually prevents adequate vegetative cover. The cross-sectional area of the stone center or subsurface drain size to be provided shall be determined by using a flow rate of 0.1 cfs/acre or by actual measurement of the maximum base flow.

Velocity

Please see Table 3.1, Diversion Maximum Permissible Design Velocities on page 3.10, for seed, soil, and velocity variables.

Cross Section

The design water surface elevation of a grassed waterway receiving water from diversions or other tributary channels shall be equal to or less than the design water surface elevation in the diversion or other tributary channels.

The top width of parabolic waterways shall not exceed 30 feet and the bottom width of trapezoidal waterways shall not exceed 15 feet unless multiple or divided waterways, stone center, or other means are provided to control meandering of low flows.

Structural Measures

In cases where grade or erosion problems exist, special control measures may be needed such as lined waterways (see page 3.27), or grade stabilization measures (see page 3.21). Where needed, these measures will be supported by adequate design computations. For typical cross sections of waterways with riprap sections or stone centers, refer to Figure 3.8 on page 3.24.

The design procedures for parabolic and trapezoidal channels are available in the NRCS Engineering Field Handbook. Figure 3.9 on page 3.25 also provides a design chart for parabolic waterway.

Outlets

Each waterway shall have a stable outlet. The outlet may be another waterway, a stabilized open channel, grade stabilization structure, etc. In all cases, the outlet must discharge in such a manner as not to cause erosion. Outlets shall be constructed and stabilized prior to the operation of the waterway.

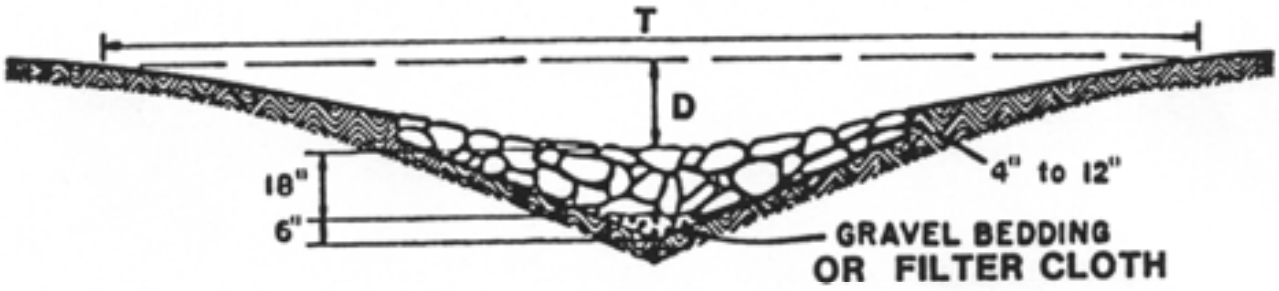
Stabilization

Waterways shall be stabilized in accordance with the appropriate vegetative stabilization standard and specifications, and will be dependent on such factors as slope, soil class, etc. See standard for Vegetating Waterways on Page 4.78.

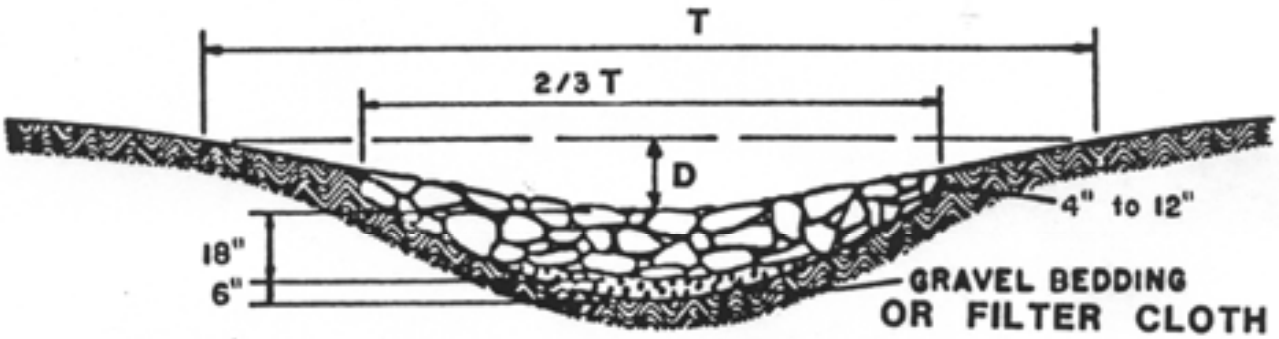
Construction Specifications

See Figure 3.10 on page 3.26 for details.

Figure 3.8
Typical Waterway Cross Sections Details



Waterway with stone center drain. "V" section shaped by motor grader.



Waterway with stone center drain. Rounded section shaped by bulldozer.

Figure 3.9
Parabolic Waterway Design Chart (USDA - NRCS)

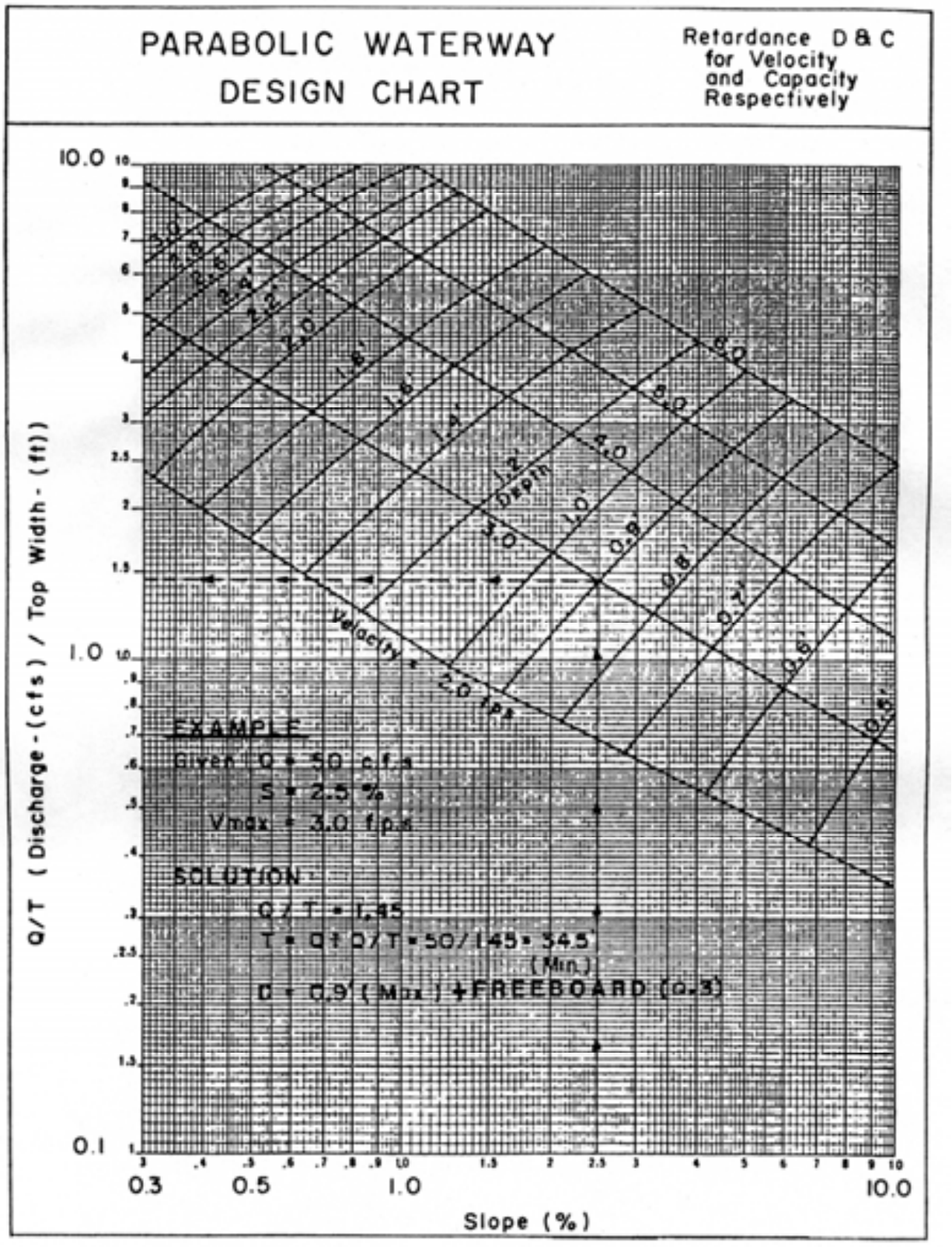
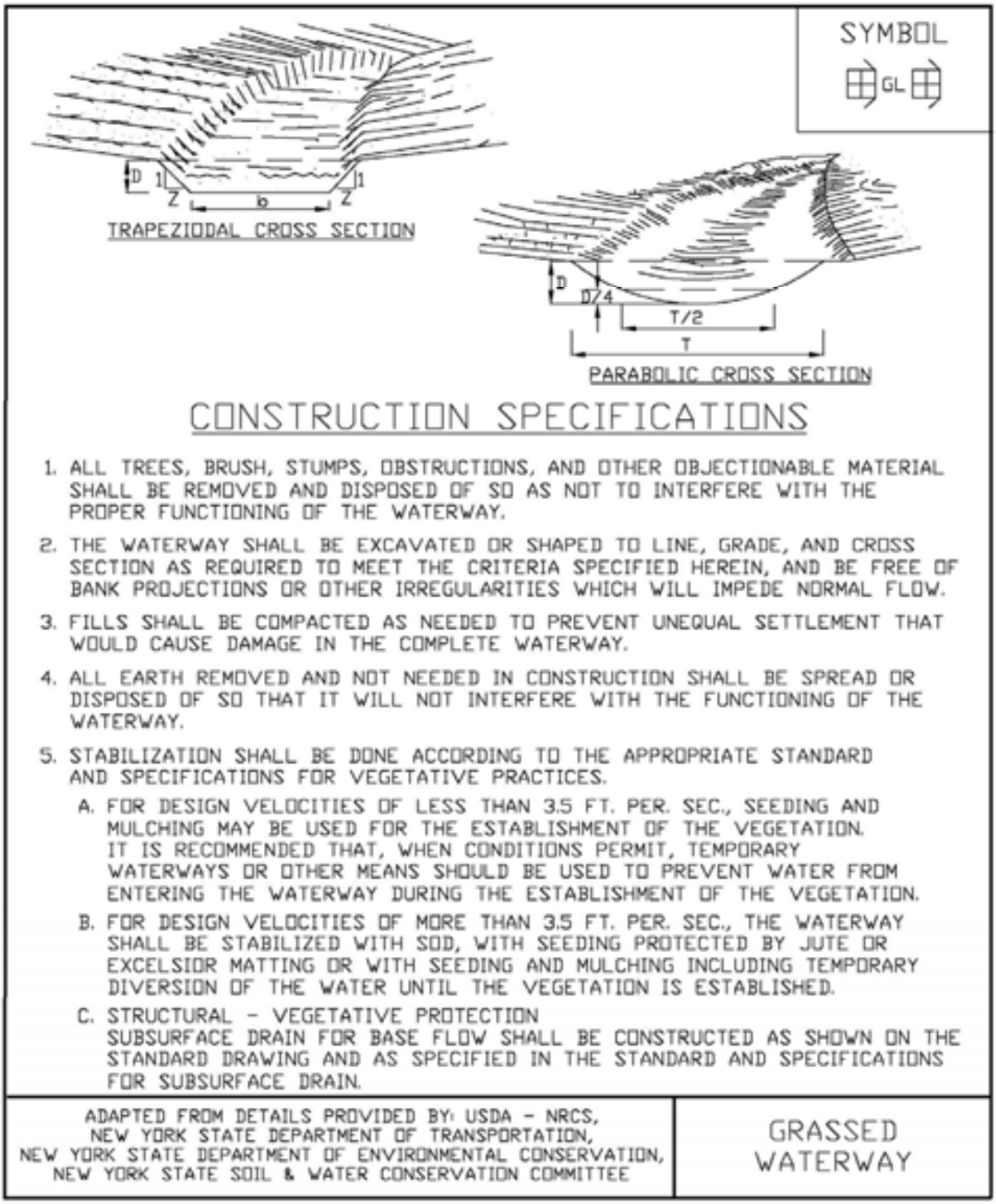


Figure 3.10
Grassed Waterway Detail



STANDARD AND SPECIFICATIONS FOR LINED WATERWAY



Definition & Scope

A **permanent** waterway or outlet with a lining of concrete, stone, or other durable, hardened material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

The lined waterway is constructed to provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Conditions Where Practice Applies

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. Lined waterways should not be used if they are directly discharging to C(T) or higher streams unless thermal impacts are mitigated by biotechnical practices (Section 4). The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.
2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion.
3. The location is such that damage from use by people or animals precludes use of vegetated waterways or outlets.
4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.
5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

Lined Material	"n"
Concrete (Type):	
Trowel Finish	0.015
Float Finish	0.019
Gunite	0.019
Flagstone	0.022
Riprap	Determine from Figure 3.11 on page 3.30
Gabion	0.030

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Zeeb Road, Ann Arbor, Michigan 48106, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

Design Flow Depth (ft.)	Maximum Velocity (ft./sec.)
0.0 - 0.5	25
0.5 - 1.0	15
Greater than 1.0	10

2. Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

1. Non-Reinforced Concrete
   Hand-placed, formed concrete
   Height of lining, 1.5 ft or less ..... Vertical
   Hand placed screened concrete or mortared
   In-place flagstone
   Height of lining, less than 2 ft ..... 1 to 1
   Height of lining, more than 2 ft ..... 2 to 1
2. Slip form concrete:
   Height of lining, less than 3 ft ..... 1 to 1
3. Rock Riprap ..... 2 to 1
4. Gabions ..... Vertical
5. Pre-cast Concrete Sections ..... Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

1. Concrete ..... 4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing)

2. Rock Riprap ..... 1.5 x maximum stone size plus thickness of filter or bedding.

3. Flagstone ..... 4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

Velocity (f.p.s.)	d_{max} (in.)
5.0	6
8.5	12
10	18
12	24
15	36

A complete listing riprap gradations is provided in Table 4.1, page 4.9.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

Construction Specifications

1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.

2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

3. No abrupt deviations from design grade or horizontal alignment shall be permitted.

4. Concrete linings shall be placed to the thickness shown on the plans and trowel finished. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.

5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.

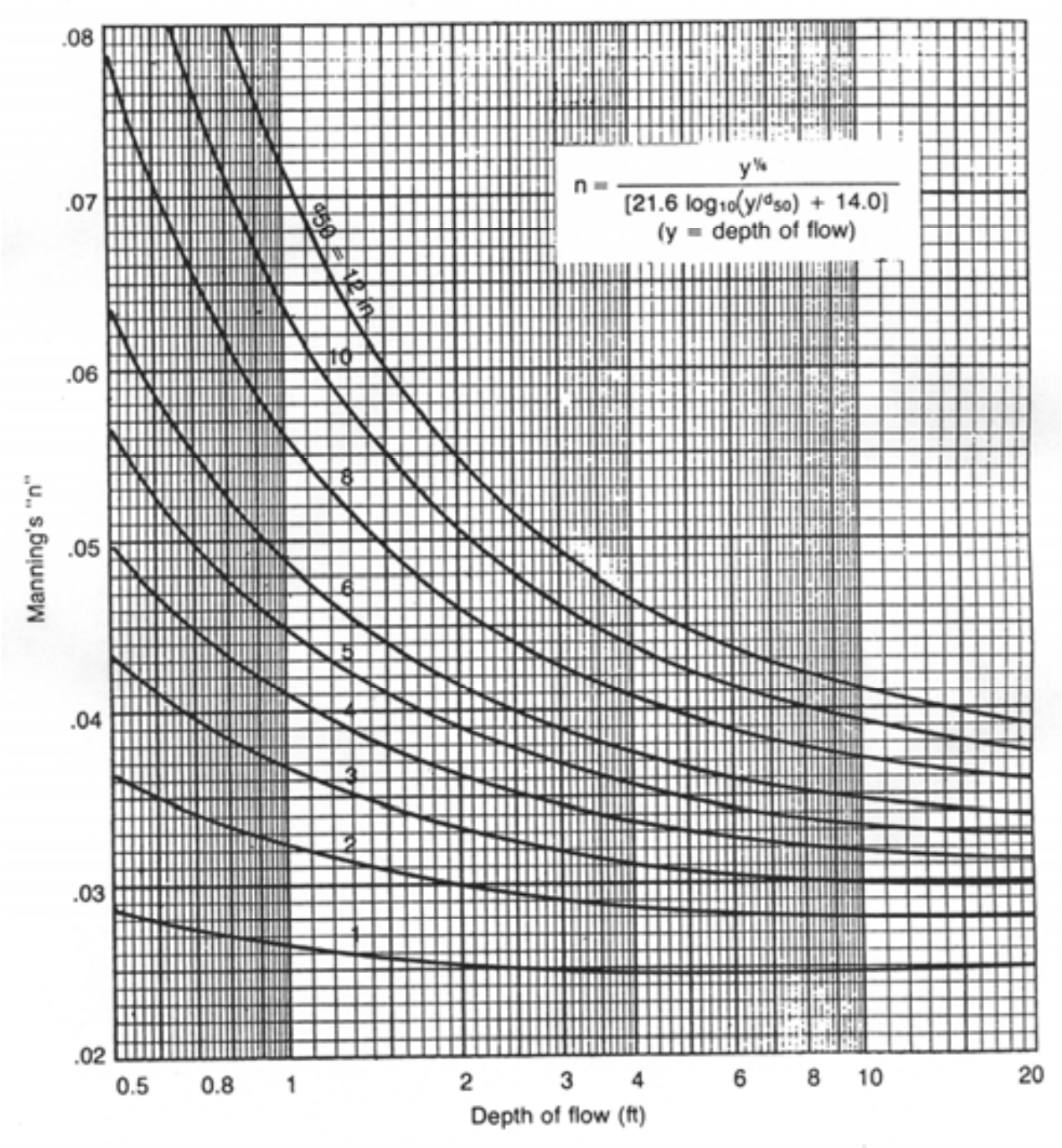
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall meet all design requirements for the appropriate finish. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage.

Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Construction Area Planting on page 4.42.

Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42
Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.

3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure 3.16
Outlet Protection Design—Minimum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)

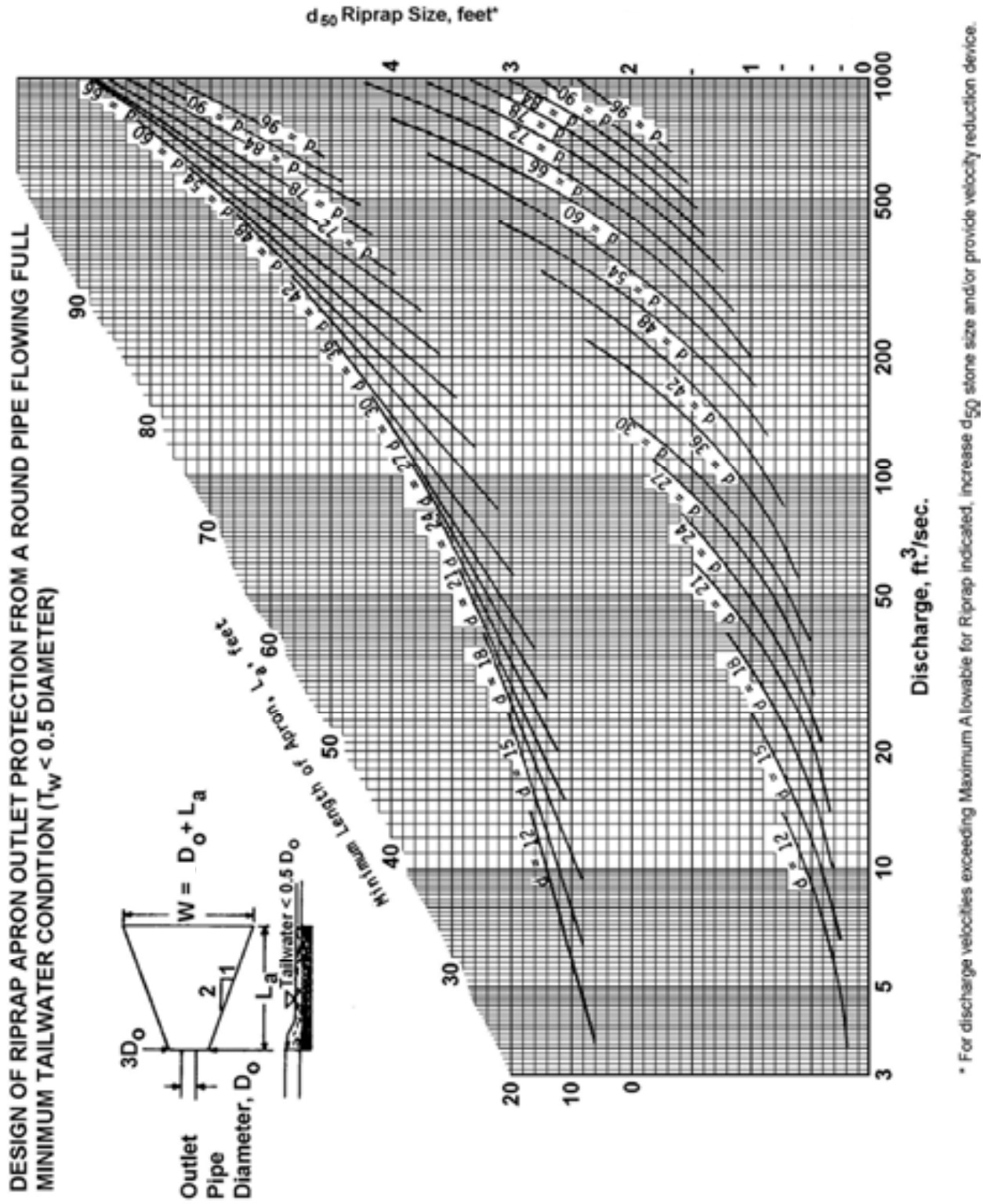


Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)

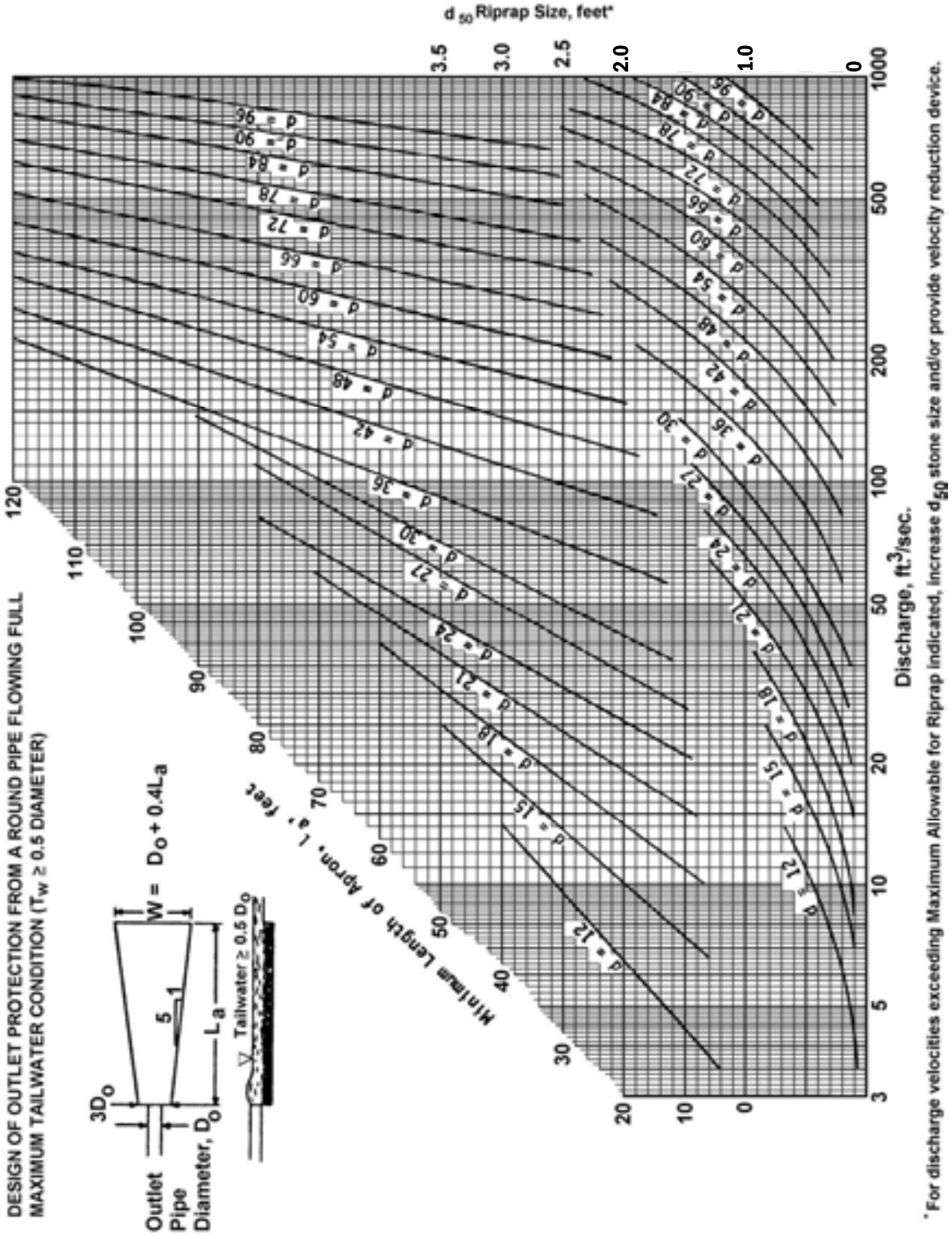


Figure 3.18
Riprap Outlet Protection Detail (1)

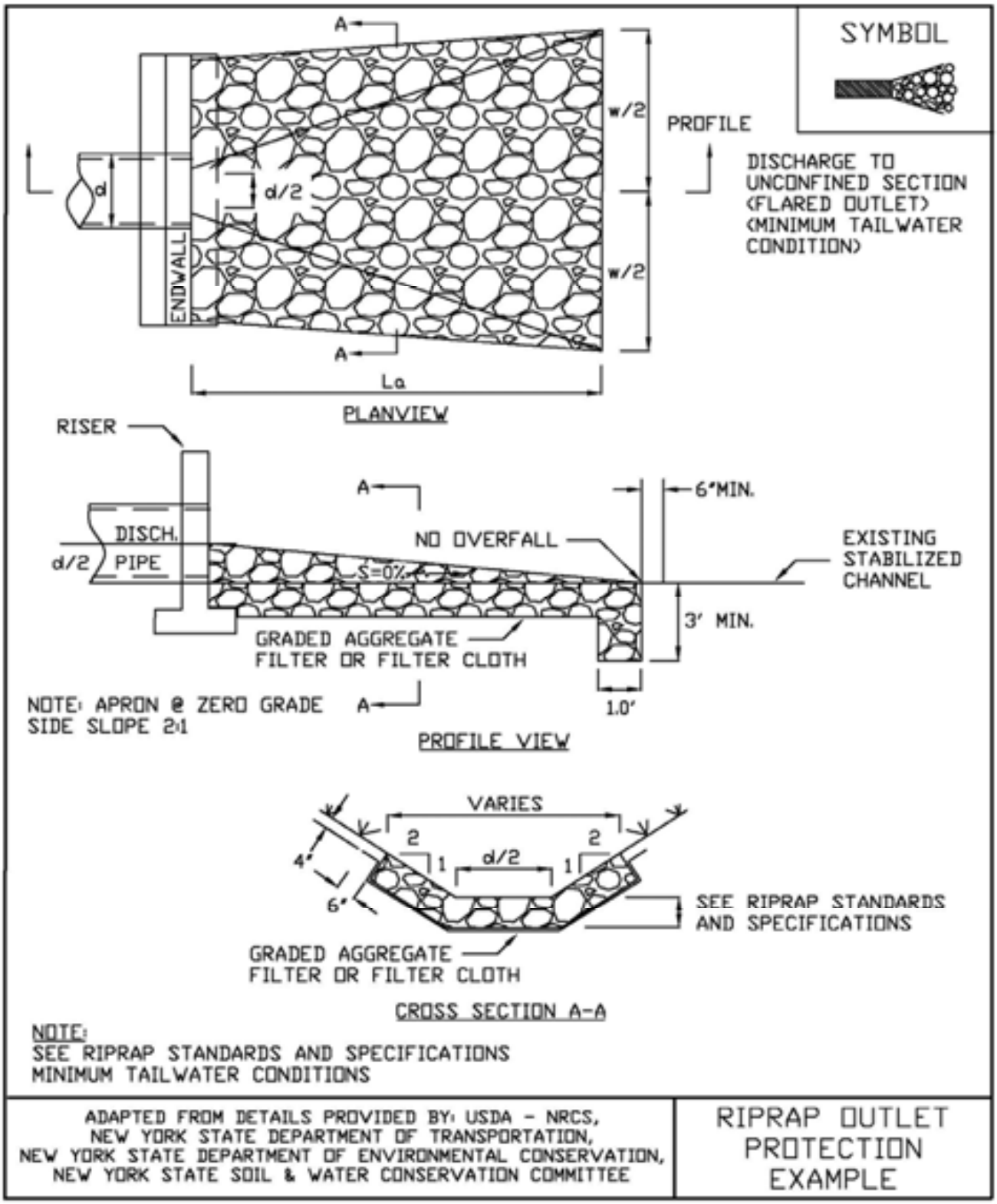


Figure 3.19
Riprap Outlet Protection Detail (2)

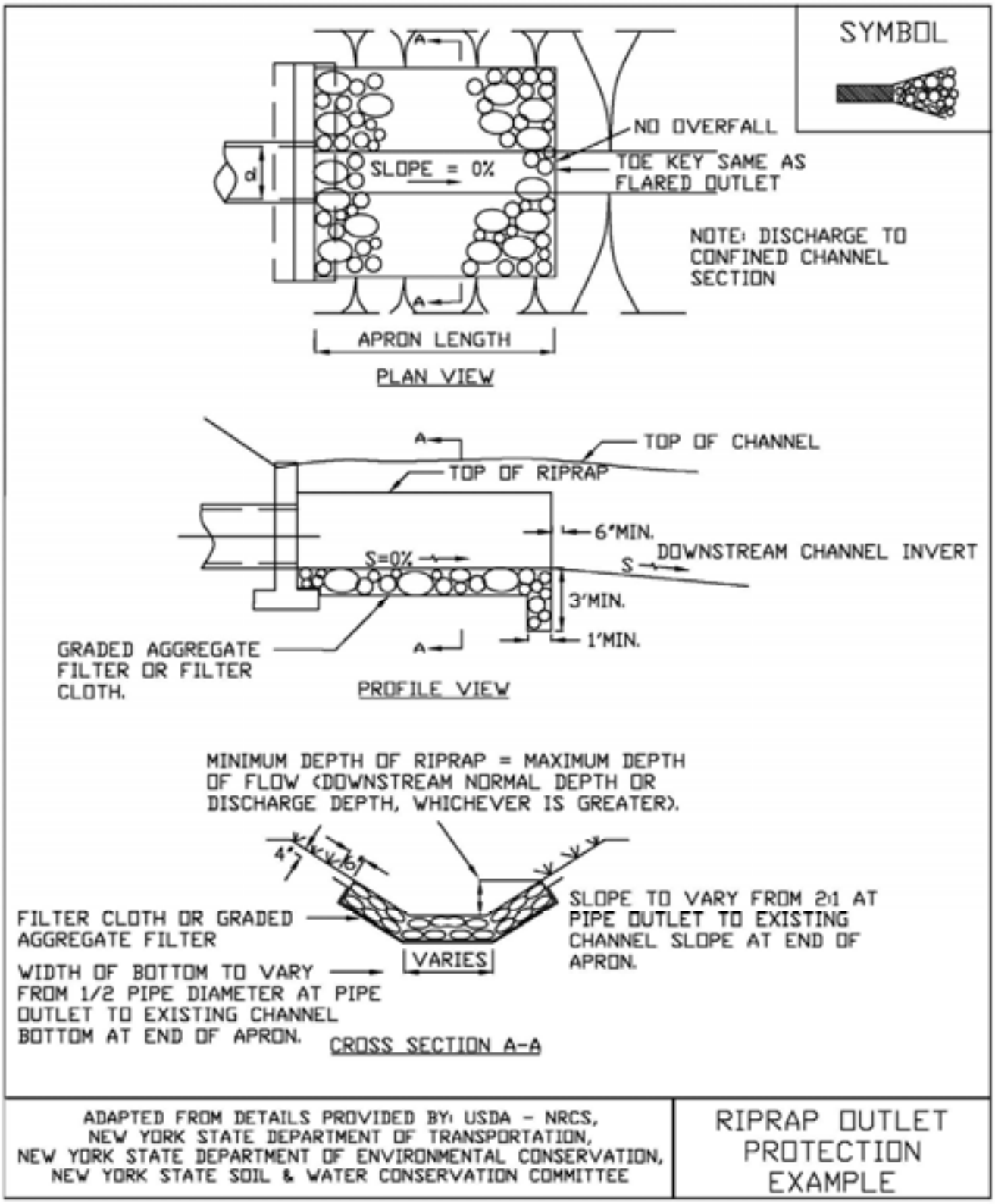
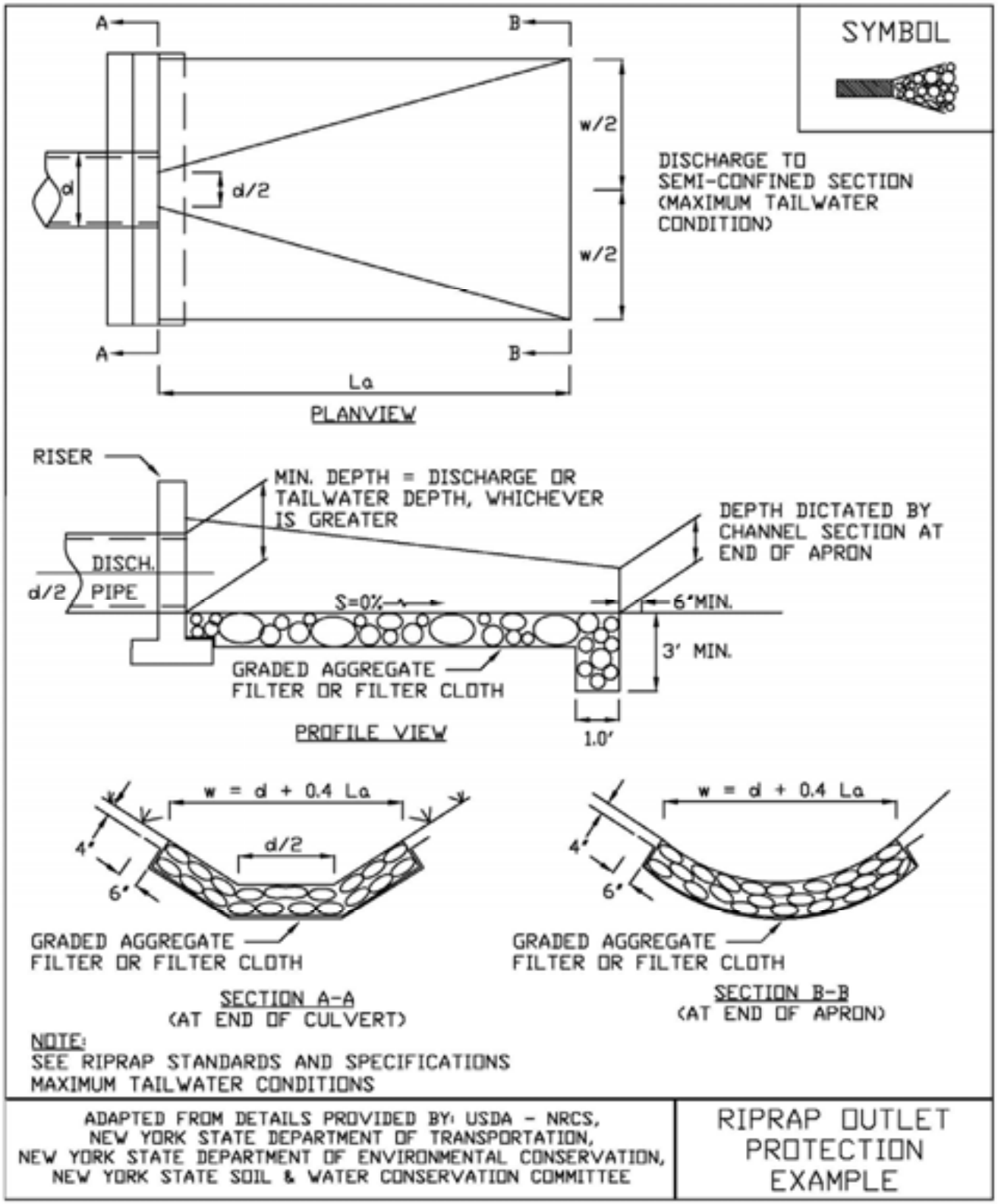


Figure 3.20
Riprap Outlet Protection Detail (3)



STANDARD AND SPECIFICATIONS FOR LANDGRADING



Definition & Scope

Permanent reshaping of the existing land surface by grading in accordance with an engineering topographic plan and specification to provide for erosion control and vegetative establishment on disturbed, reshaped areas.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal, and vegetative treatment, etc.

Many municipalities and counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely convey surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not damage slopes or other graded areas; see standards and specifications for Grassed Waterway, Diversion, or Grade Stabilization Structure.

2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization consideration are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.)

3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.

   A. Benches shall be a minimum of six feet wide to provide for ease of maintenance.

   B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.

   C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations; see Standard and Specifications for Diversion on page 3.9

4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:

   A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.

   B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded ditches, downspouts, etc.

   C. The face of the slope will be protected by anchored stabilization matting, sod, gravel, riprap, or other stabilization method.

5. Cut slopes occurring in ripable rock shall be serrated as shown in Figure 4.9 on page 4.26. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1 ½: 1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.

6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.

7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.

8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.

9. Stockpiles, borrow areas, and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Permanent Construction Area Planting Standard on page 4.42.

Construction Specifications

See Figures 4.9 and 4.10 for details.

1. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.

2. All erosion and sediment control practices and measures shall be constructed, applied and maintained in accordance with the erosion and sediment control plan and these standards.

3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.

4. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.

5. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.

6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, and conduits, etc., shall be compacted in accordance with local requirements or codes.

7. All fill shall be placed and compacted in layers not to exceed 9 inches in thickness.

8. Except for approved landfills or nonstructural fills, fill material shall be free of frozen particles, brush, roots, sod, or other foreign objectionable materials that would interfere with, or prevent, construction of satisfactory fills.

9. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.

10. Fill shall not be placed on saturated or frozen surfaces.

11. All benches shall be kept free of sediment during all phases of development.

12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain on page 3.48 or other approved methods.

13. All graded areas shall be permanently stabilized immediately following finished grading.

14. Stockpiles, borrow areas, and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.



Figure 4.9
Typical Section of Serrated Cut Slope

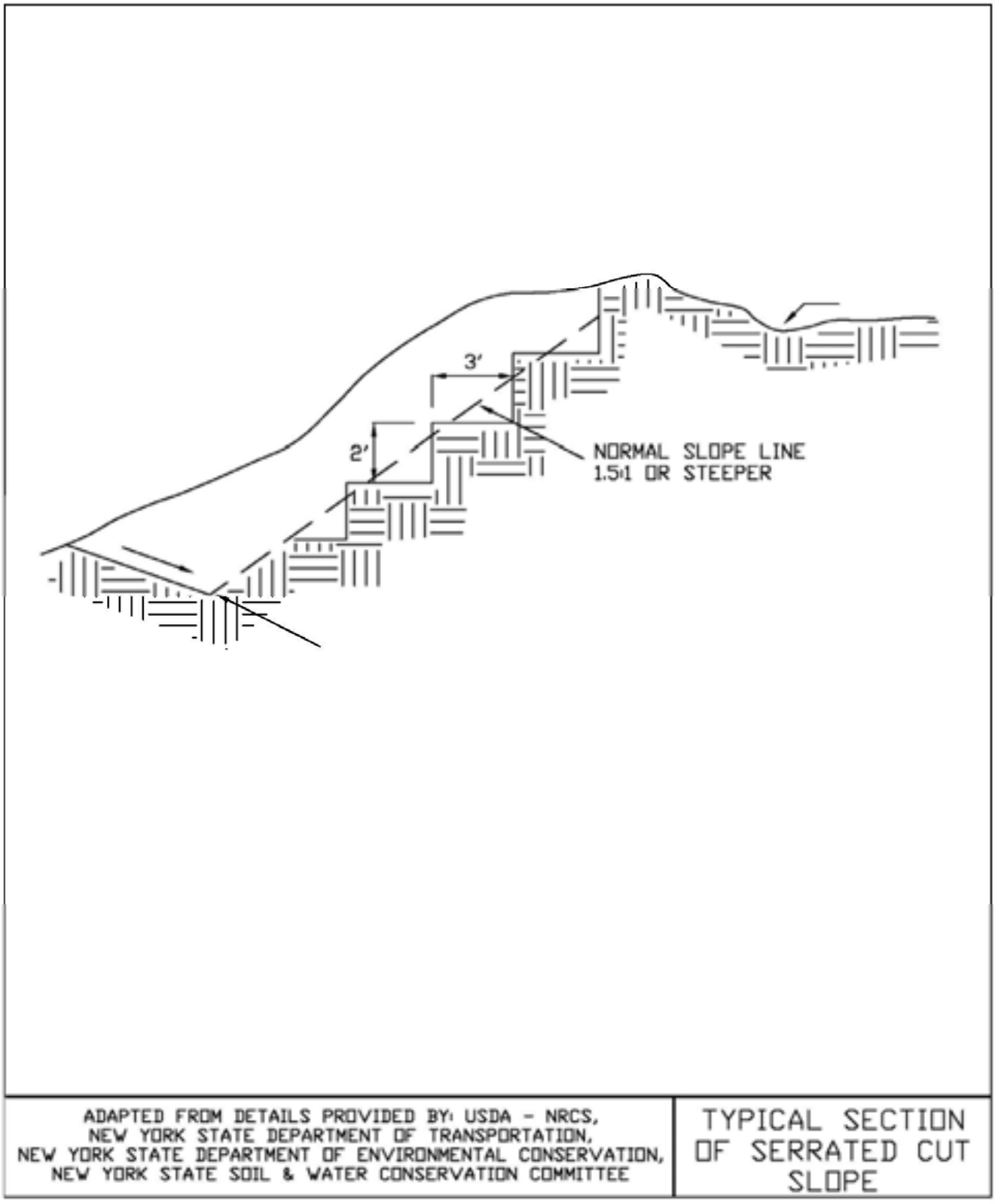


Figure 4.10
Landgrading

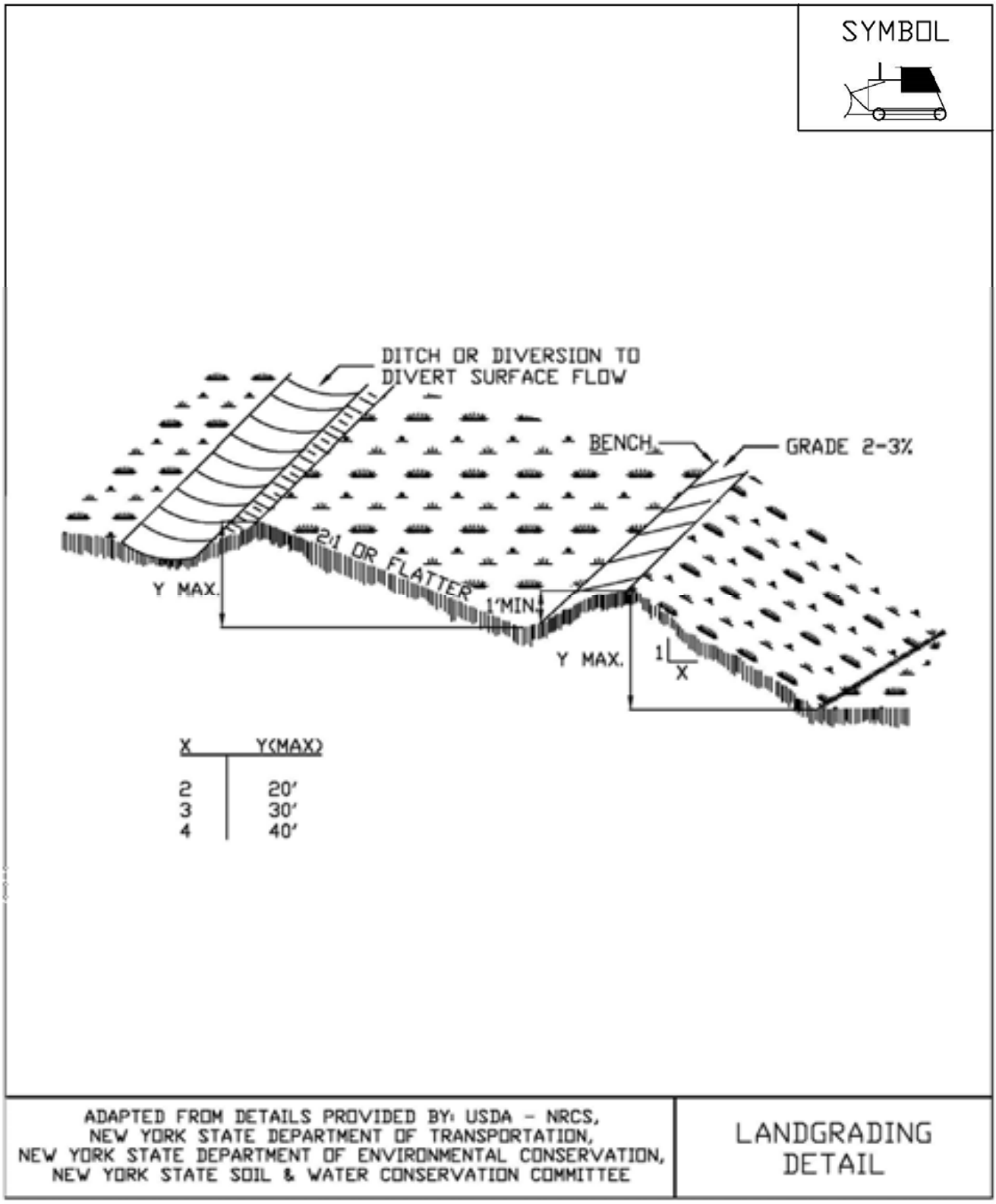
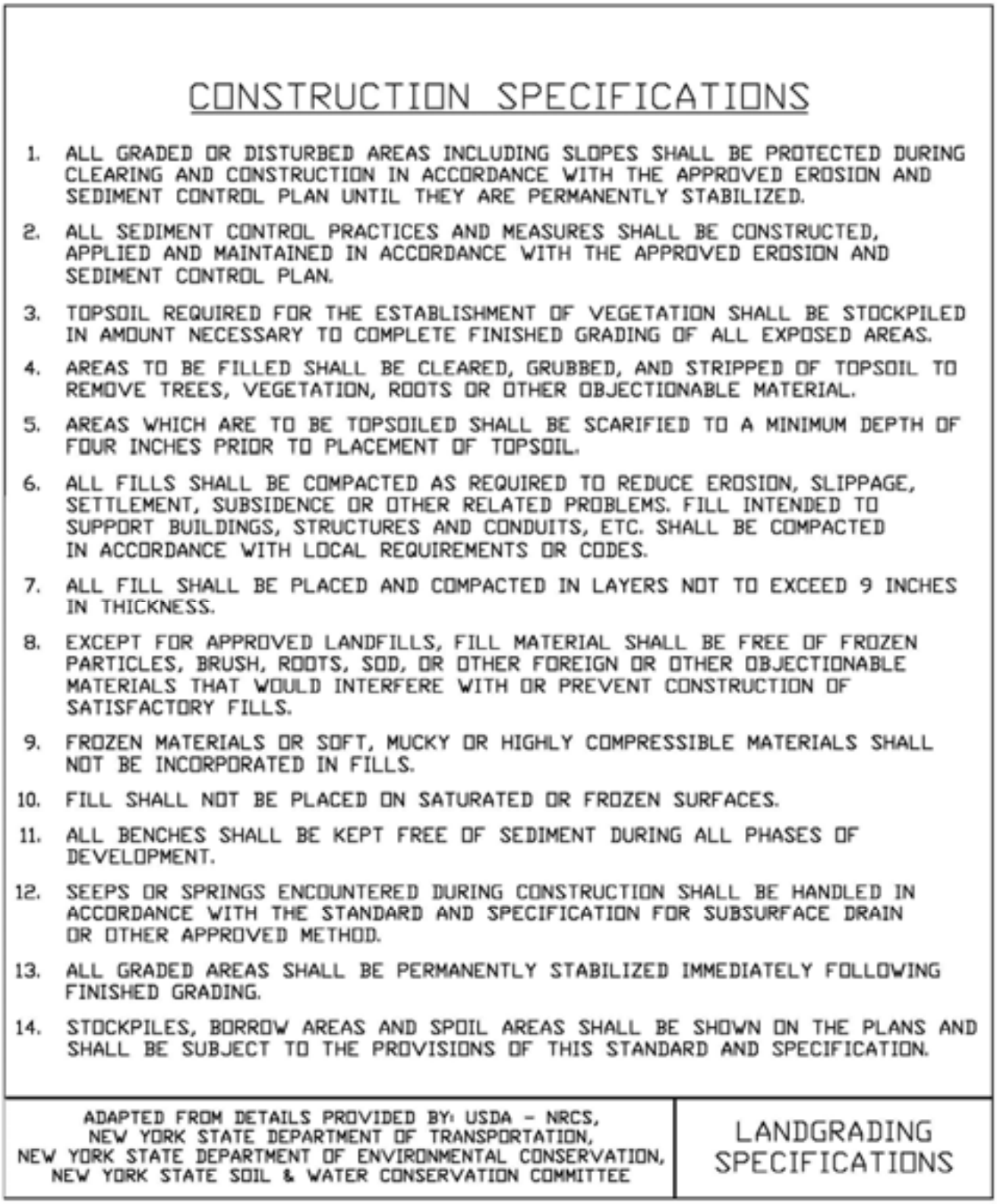


Figure 4.11
Landgrading - Construction Specifications



CONSTRUCTION SPECIFICATIONS

1. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED.
2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN.
3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNT NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS.
4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL.
5. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF FOUR INCHES PRIOR TO PLACEMENT OF TOPSOIL.
6. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES.
7. ALL FILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
8. EXCEPT FOR APPROVED LANDFILLS, FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
9. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED IN FILLS.
10. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
11. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT.
12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD.
13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING.
14. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

LANDGRADING
SPECIFICATIONS

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION



Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.



Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.
2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

STANDARD AND SPECIFICATIONS FOR STABILIZATION WITH SOD



Definition & Scope

Stabilizing restored, exposed soil surfaces by establishing long term stands of grass with sod to reduce damage from sediment and runoff to downstream areas and enhance natural beauty.

Conditions Where Practice Applies

On exposed soils that have a potential for causing off site environmental damage where a quick vegetative cover is desired. Moisture, either applied or natural, is essential to success.

Design Criteria

1. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch. Measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

4. Sod shall be free of weeds and undesirable coarse weedy grasses. Wild native or pasture grass sod shall not be used unless specified.

5. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved by the contracting officer or his designated representative prior to its installation.

Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test and the contracting officer agrees, fertilizer and lime materials may be applied in amounts shown in subsection 2 below. Slope land such as to provide good surface water drainage. Avoid depressions or pockets.

1. Prior to sodding, the surface shall be smoothed and cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, fertilizing or maintenance operations.

2. **The soil should be tested to determine the amounts of amendments needed.** Where the soil is acid or composed of heavy clays, ground limestone shall be spread to raise the pH to 6.5. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 20 lbs. of 5-5-10 (or equivalent) and mix into the top 3 inches of soil with the required lime for every 1,000 square feet. Soil should be moist prior to sodding. Arrange for temporary storage of sod to keep it shaded and cool.

Sod Installation

1. For the operation of laying, tamping, and irrigating for any areas, sod shall be completed within eight hours. During periods of excessively high temperature, the soil shall be lightly moistened immediately prior to laying the sod.

2. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly wedged against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with

staggered joints.

3. Secure the sod by tamping and pegging, or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface.

4. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Keep sod moist for at least two weeks.

Sod Maintenance

1. In the absence of adequate rainfall, watering shall be performed daily, or as often as deemed necessary by the inspector, during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done in the morning. Avoid excessive watering during applications.

2. After the first week, sod shall be watered as necessary to maintain adequate moisture and ensure establishment.

3. The first mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified. Avoid heavy mowing equipment for several weeks to prevent rutting.

4. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply fertilizer three to four weeks after sodding, at a rate of 1 pound nitrogen/1,000 sq.ft. Use a complete fertilizer with a 2-1-1 ratio.

5. Weed Control: Target herbicides for weeds present. Consult current Cornell Pest Control Recommendations for Commercial Turfgrass Management or consult the local office of Cornell Cooperative Extension.

6. Disease Control: Consult the local office of the Cornell Cooperative Extension.

Additional References

1. Home Lawns, Establishment and Maintenance, CCE Information Bulletin 185, Revised November 1994. Cornell University, Ithaca, NY.

2. Installing a Sod Lawn. CCE Suffolk County, NY. Thomas Kowalsick February 1994, Revised January 1999. www.cce.cornell.edu/counties/suffolk/grownet

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

APPENDIX J

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

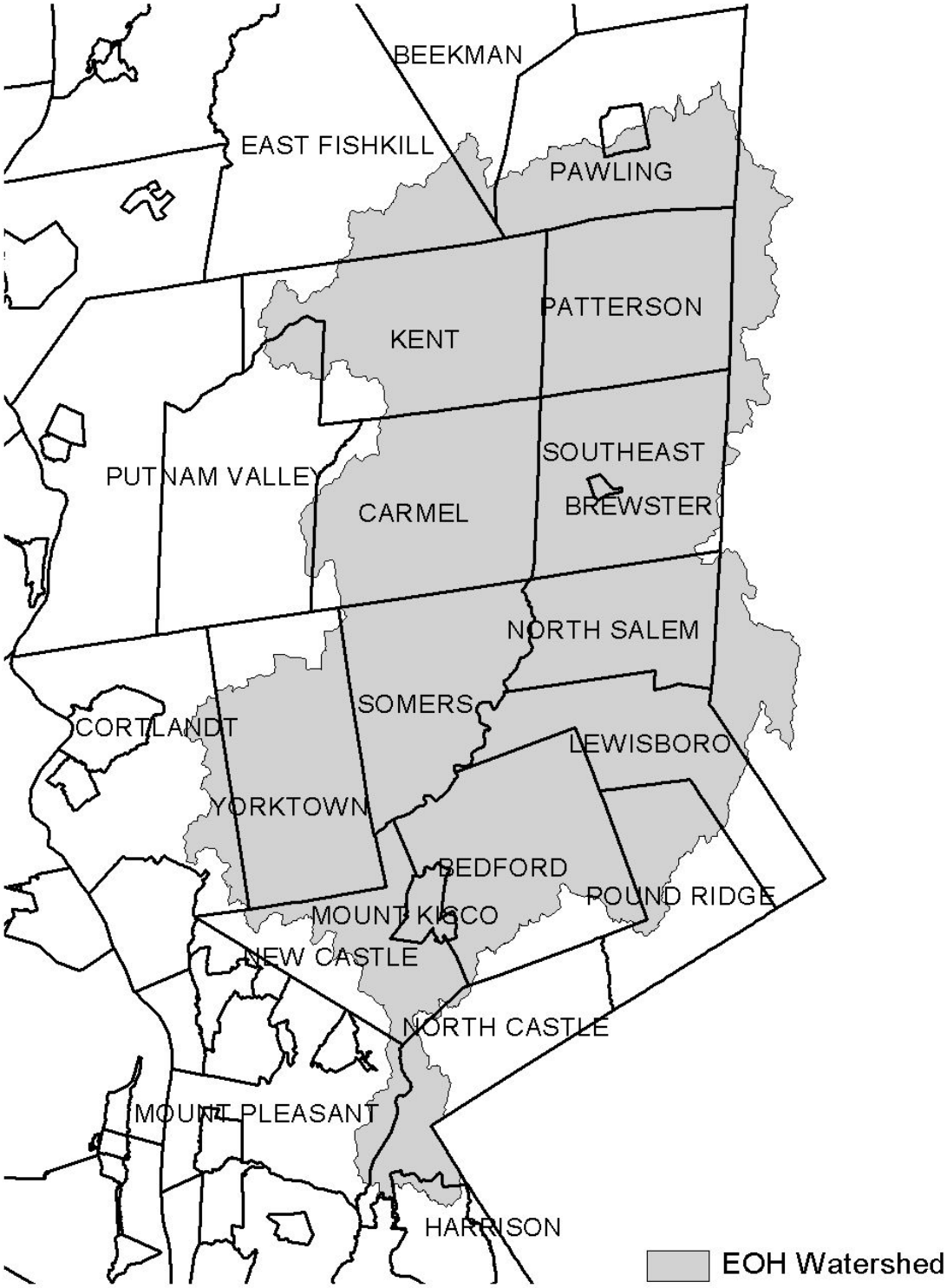


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

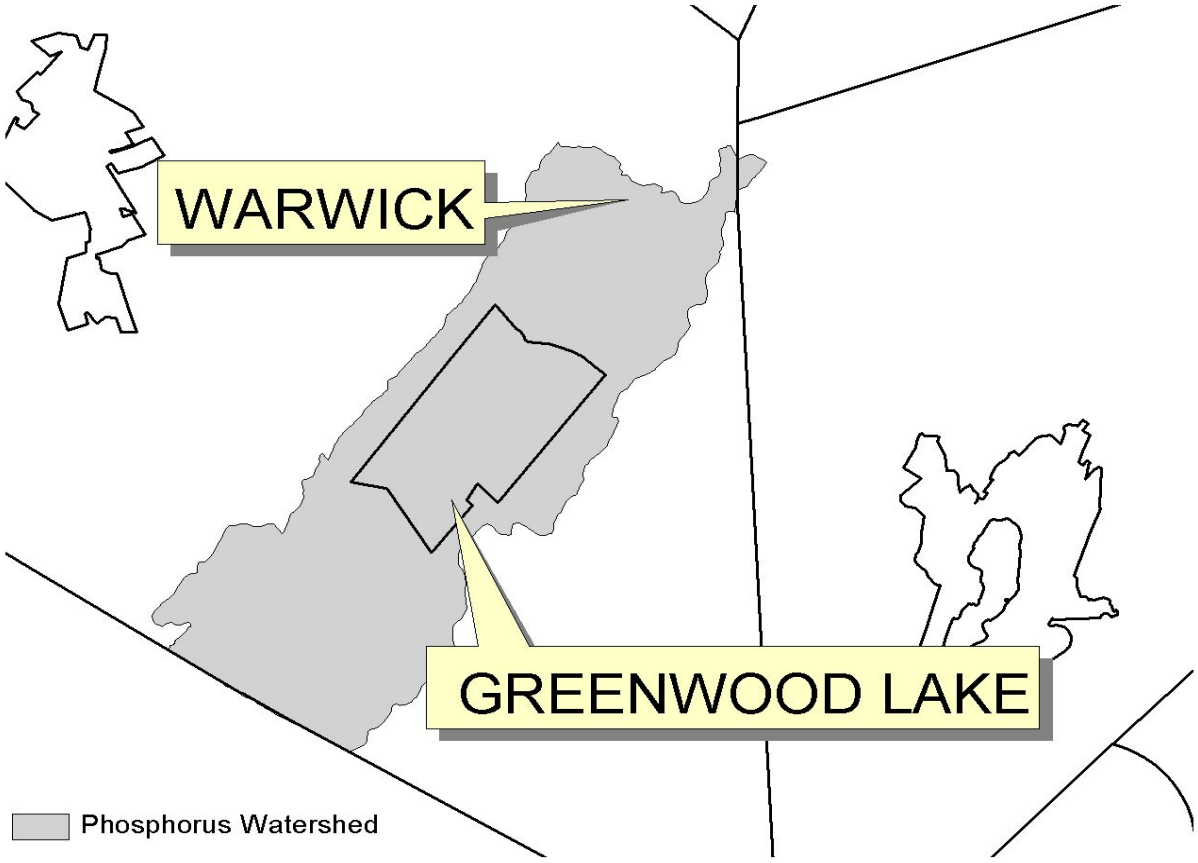


Figure 4 - Oscawana Lake Watershed

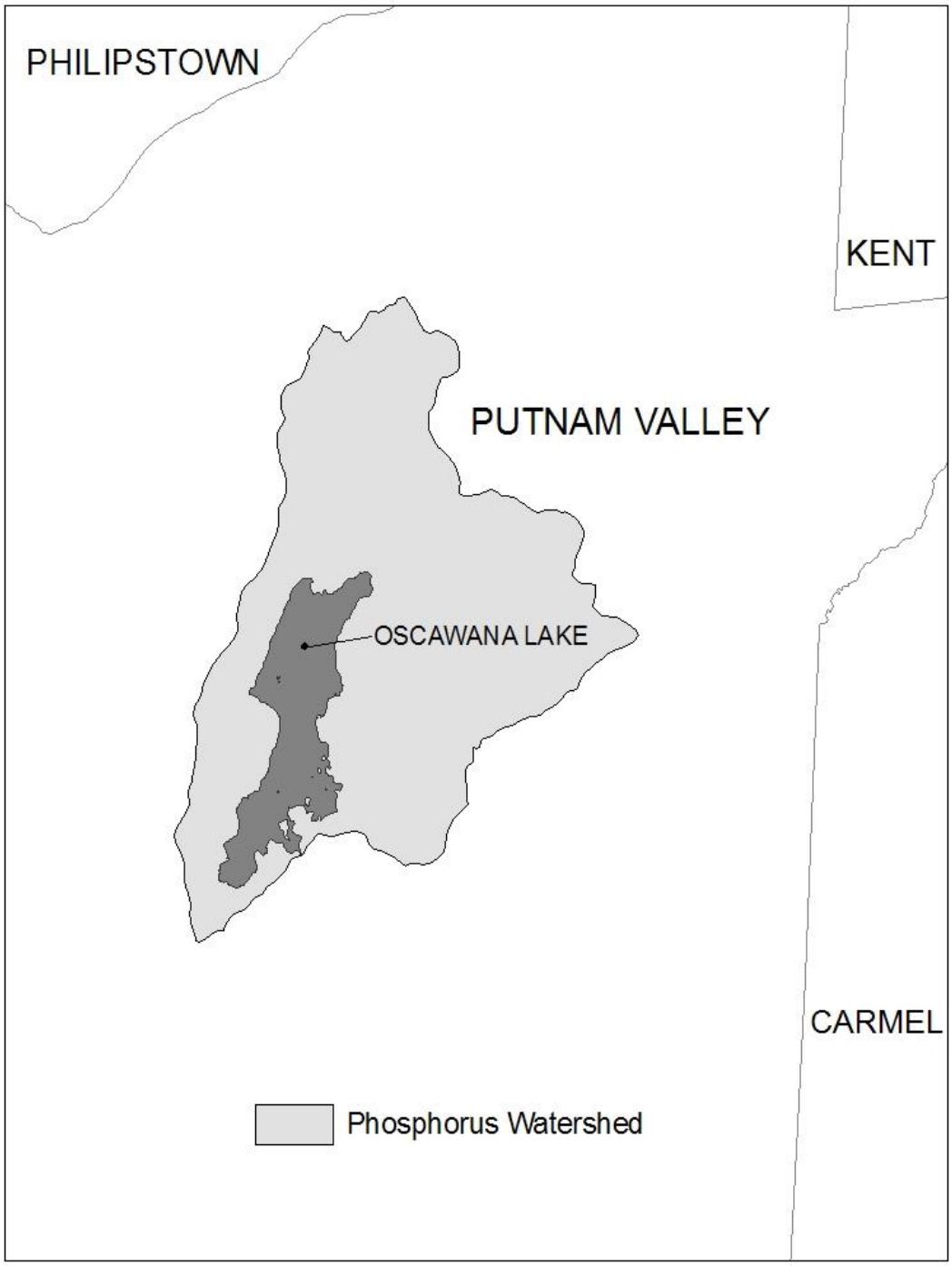
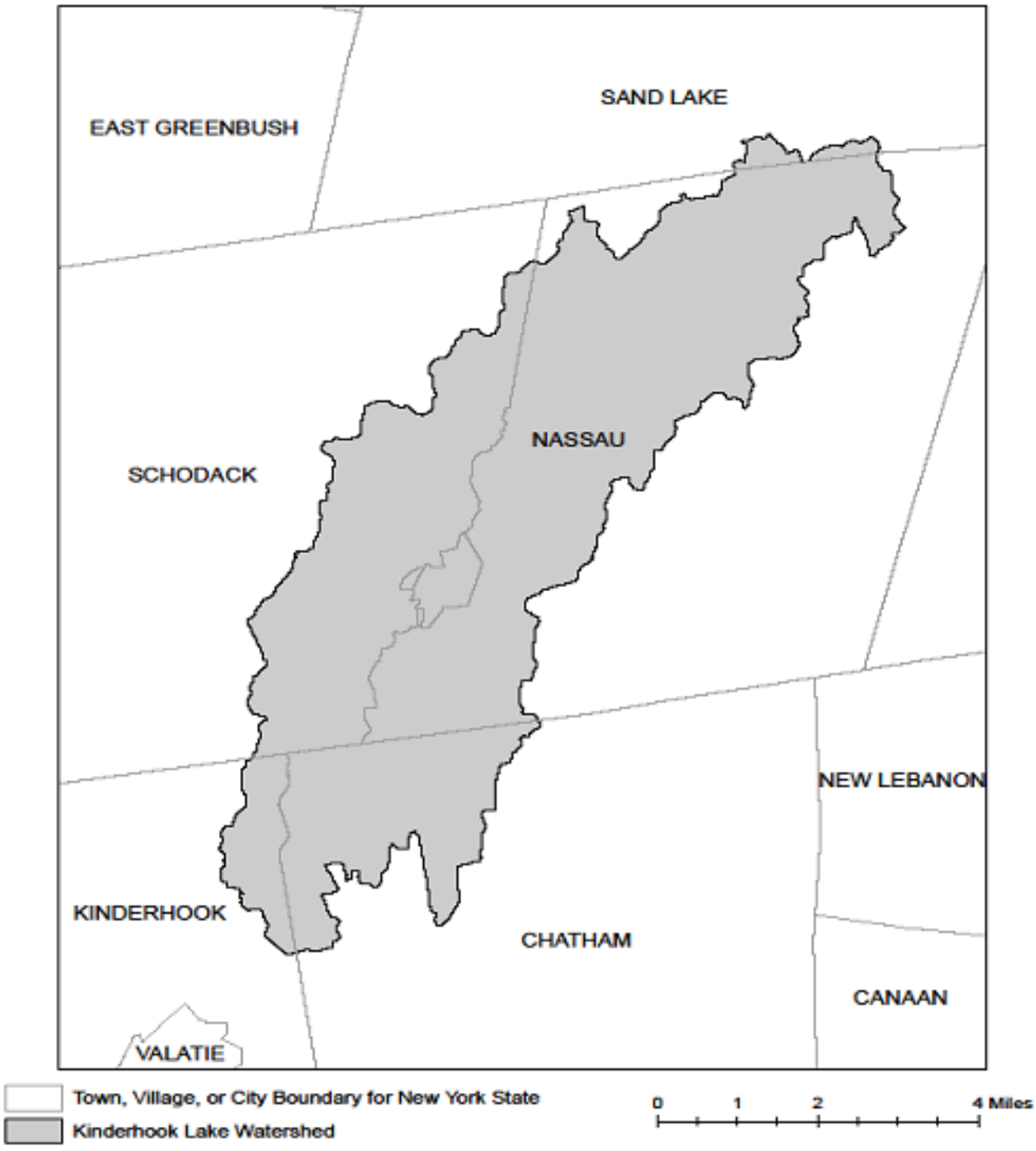


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Infiltration Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration cell.

Problem (Check if Present)		**Follow-Up Actions**
	☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to get vegetation established. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other:

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration cell.

Problem (Check if Present)		Follow-Up Actions
		☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
☐ For Dry Wells: Leaves, sticks, or other debris in gutters and downspouts		☐ Remove all debris by hand. ☐ Other:
	☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
	☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

IN Inlets

Look for all the places where water flows into the Infiltration practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are collecting grit and debris or grass/weeds are growing. Some water may not be getting into the Infiltration practice.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Infiltration practice. ☐ Dispose of all material properly in an area where it will not re-enter the practice. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Infiltration practice.
☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Infiltration practice.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ For grass-covered Infiltration practices: grass has grown very tall, *Photo credit: Stormwater Maintenance, LLC*	☐ Mow infiltration area at least twice per year. ☐ Other:
 ☐ For grass-covered Infiltration practices: sparse vegetation cover or bare spots	☐ Add topsoil (as needed), grass seed, straw, and water during the growing season to re-establish consistent grass coverage. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sparse vegetation cover can be a sign that the infiltration area is not infiltrating at the proper rate and water is standing too long after a storm. The surface may be saturated or squishy, and the conditions do not enable grass to grow. This situation should be evaluated by a Level 2 Inspection and likely corrected by a qualified contractor.
☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the surface.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Infiltration practice. ☐ If removing the material creates a hole or low area, rake the surface smooth and level. ☐ Remove trash, debris, and other undesirable materials. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the surface of the Infiltration area.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion on the surface; water seems to be carving out rills as it flows across the surface of the Infiltration area or sinkholes are forming in certain areas.	☐ For minor areas of erosion, try filling the eroded areas with clean topsoil, sand, or stone (whatever the existing cover is). ☐ If the problem recurs, you may have to use larger stone (e.g., river cobble) to fill in problem areas. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the infiltration area. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water but a collapse or sinking of the surface (e.g., “sinkhole”) due to some underground problem.
 ☐ Observation well is damaged or cap is missing	☐ Kick-Out to Level 2 Inspection: Requires replacing pipes or caps.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)	Follow-Up Actions
 ☐ Water still visible in the observation well more than 72 hours after a rain storm. The Infiltration practice does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

IN Outlets

Locate and inspect all outlets.

Problem (Check if Present)	Follow-Up Actions
 ☐ Outlet obstructed with sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the infiltration area. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Outlet is completely obstructed; there is too much material to remove by hand or with simple hand tools.
☐ Rills or gullies are forming at outlet.	☐ For minor rills, fill in with soil, compact, and seed and straw to establish vegetation. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Infiltration Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: INFILTRATION

Recommended Repairs	Triggers for Level 3 Inspection
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water For infiltration basins with soil, use a soil probe or auger to examine the soil profile. For gravel infiltration trenches or basins, use a shovel to dig into the gravel layer where the problem is occurring. If isolated areas have accumulated grit, fine silt, or vegetative debris or have bad soil or clogged gravel, try removing and replacing with clean material. If the practice is supposed to have grass cover, it will likely be necessary to replant once the problem is resolved. ☐ Condition 2: Standing water is widespread or covers entire surface Look in the observation well (if it exists) and use a tape measure to estimate the depth of water standing in the soil or gravel. Requires diagnosis and resolution of problem: • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Improper infiltration media? • Underlying soil not suitable for infiltration? As above, the resolution will likely require replanting and re-establishment of good grass cover if this is part of the design.	• Infiltration media is clogged and problem cannot be diagnosed from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or it is associated with the original design of the practice. ☐ Level 3 Inspection necessary
Observed Condition: Severe erosion of infiltration bed, inlets, or around outlets	
☐ Condition 1: Erosion at inlets The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a less erosive lining and/or extending the lining further down to where inlet slopes meet the infiltration surface. If problem persists, analysis by a Qualified Professional is warranted. ☐ Condition 2: Erosion of infiltration bed This is often caused by “preferential flow paths” along the surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads).	• Erosion (rills, gullies) is more than 12 inches deep • The issue is not caused by moving water but some sort of subsurface defect, which may manifest as a sinkhole or linear depression and be associated with problems with the underlying stone or soil. ☐ Level 3 Inspection necessary

Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

"I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected."

Inspector/Operator: _____ Date: _____

APPENDIX L

NEW YORK STATE OF OPPORTUNITY. | Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 14, 2020

Vincent Ryan
Project Manager
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
Syracuse, NY 13057

Re: DEC
Burdick St. Commercial Developlment
5538 N Burdick St, Town of Manlius, Onondaga County, NY
20PR01563

Dear Vincent Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation

XREFS: NONE

PROJECT NUMBER: 20.0155

MAP NOTES

1.) NORTH ORIENTATION IS BASED ON GRID NORTH FROM RTK GPS OBSERVATIONS.

2.)VERTICAL DATUM IS BASED ON NAVD 1988 DATUM FROM RTK GPS OBSERVATIONS.

3.) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF AN ABSTRACT OR UP TO DATE TITLE REPORT AND IS THEREFORE SUBJECT TO ANY EASEMENTS, RESTRICTIONS, COVENANTS OR ANY STATEMENT OF FACTS THAT SUCH DOCUMENTS MAY DISCLOSE.

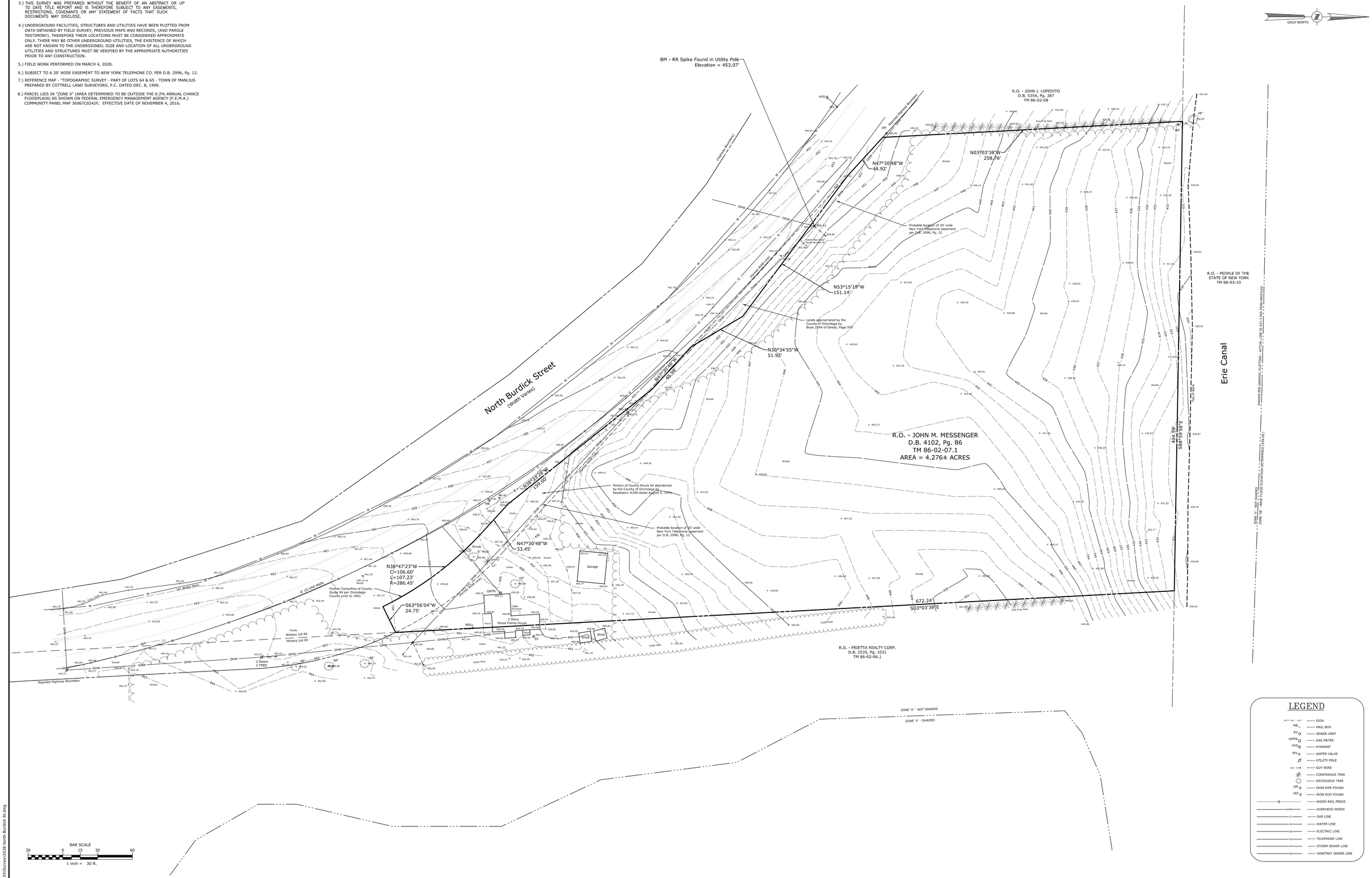
4.) UNDERGROUND FACILITIES, STRUCTURES AND UTILITIES HAVE BEEN PLOTTED FROM DATA OBTAINED BY FIELD SURVEY, PREVIOUS MAPS AND RECORDS, (AND PAROLE TESTIMONY). THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHER UNDERGROUND UTILITIES, THE EXISTENCE OF WHICH ARE NOT KNOWN TO THE UNDERSIGNED. SIZE AND LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES MUST BE VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO ANY CONSTRUCTION.

5.) FIELD WORK PERFORMED ON MARCH 4, 2020.

6.) SUBJECT TO A 20' WIDE EASEMENT TO NEW YORK TELEPHONE CO. PER D.B. 2996, Pg. 12.

7.) REFERENCE MAP - "TOPOGRAPHIC SURVEY - PART OF LOTS 64 & 65 - TOWN OF MANLIUS PREPARED BY COTTRELL LAND SURVEYORS, P.C. DATED DEC. 8, 1999.

8.) PARCEL LIES IN "ZONE X" (AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS SHOWN ON FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A.) COMMUNITY PANEL MAP 36067C0242F; EFFECTIVE DATE OF NOVEMBER 4, 2016.



BAR SCALE

30 0 15 30 60

1 inch = 30 ft.

LEGEND

- SIGN
- MB — MAIL BOX
- SV — SEWER VENT
- GMTR — GAS METER
- HYD — HYDRANT
- WV — WATER VALVE
- UTILITY POLE
- GUY WIRE
- CONIFEROUS TREE
- DECIDUOUS TREE
- IPF — IRON PIPE FOUND
- IRF — IRON ROD FOUND
- X — WOOD RAIL FENCE
- OHW — OVERHEAD WIRES
- G — GAS LINE
- W — WATER LINE
- E — ELECTRIC LINE
- OT — TELEPHONE LINE
- ST — STORM SEWER LINE
- SS — SANITARY SEWER LINE

I CERTIFY THAT THIS SURVEY WAS PREPARED FROM AN ACTUAL FIELD SURVEY AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND HAS BEEN PREPARED IN ACCORDANCE WITH THE EXISTING CODE OF PRACTICE OF THE N.Y.S. ASSOCIATION OF PROFESSIONAL LAND SURVEYORS.

03/10/20

DAVID M. SLISKI PLS # 50105 DATE

*ONLY COPIES OF THIS MAP SIGNED IN RED INK AND EMBOSSED WITH THE SEAL OF AN OFFICER OF C.T. MALE ASSOCIATES, OR A DESIGNATED REPRESENTATIVE SHALL BE CONSIDERED TO BE A VALID "TRUE COPY".

DAVID M. SLISKI
P.L.S. NO. 50105

STATE OF NEW YORK — DAVID MICHAEL SLISKI — 050105 — LICENSED LAND SURVEYOR

DATE	REVISIONS RECORD/DESCRIPTION	DRAFTER	CHECK	APPR.
	1			
	2			
	3			
	4			
	5			
	6			
	7			
	8			
	9			

UNAUTHORIZED ALTERATION OR ADDITION TO THIS DOCUMENT IS A VIOLATION OF THE NEW YORK STATE EDUCATION LAW.

© 2020 C.T. MALE ASSOCIATES

APPROVED:
DRAFTED : JAD
CHECKED : DMS
PROJ. NO : 20.0155
SCALE : 1" = 30 FT.
DATE : MARCH 6, 2020

BOUNDARY AND TOPOGRAPHIC SURVEY MAP

PART OF

LOTS 64 AND 65

5538 NORTH BURDICK STREET

PART OF MILITARY LOT 64

TOWN OF MANLIUS — ONONDAGA COUNTY, NEW YORK

C.T. MALE ASSOCIATES
Engineering, Surveying, Architecture, Landscape Architecture, & Geology, D.P.C.
200 GATEWAY PARK DRIVE, BLDG. C, P.O. BOX 3246
SYRACUSE, NY 13220-3246
315.458.6498 * FAX 315.458.4427

SHEET 1 OF 1

DWG. NO: 20-0205

CAD DWG. FILE NAME: \\Sv-fp\data\Projects\20015\Survey\5538 North Burdick St.dwg

CAD DWG. FILE NAME: 5538 North Burdick St.dwg

TOWN OF MANLIUS
ZONING BOARD OF APPEALS
CASE DECISION DOCUMENT

Name & Address of Applicant: 5538 North Burdick St. LLC, 5538 North Burdick St., Fayetteville NY

Address of Variance: Front yard parking lot

Tax Map #: 086.-02-07.1

Date of Variance Hearing: July 30, 2020

Request: Front Yard Parking for Medical Building

Approved: ✓ Approved with conditions: ____ Not Approved ____

Conditions Imposed: _____

_____

_____

_____

_____

Deborah Witzel, ZBA Clerk

8.5.20 Copy of decision given to Planning & Development
Date

DEEP HOLE TEST RESULTS

DH-#

DH -1 LAT/LONG: N43.0180° / W75.9836 EX. EL.=693.6, FN. EL.=692.1 Ø'-12" TOPSOIL 12"-36" GRAVEL LOAM 36'+66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 LAT/LONG: N43.0176° / W75.9835 EX. EL.= 688.2, FN. EL.= 688.6 Ø'-12" TOPSOIL 12"-36" GRAVEL LOAM 36'+80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 LAT/LONG: N43.0170° / W75.9849 EX. EL.=676.5, FN. EL.=666.5 Ø'-12" TOPSOIL 12'-48" GRAVEL LOAM 48'-72' GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 LAT/LONG: N43.0170° / W75.9829 EX. EL.=703.0, FN. EL.=697.0 Ø'-12" TOPSOIL 12'-36' SANDY SILT LOAM 36'-72' SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 LAT/LONG: N43.0172° / W75.9824 Ø'-6" TOPSOIL 6'-36' SANDY LOAM 36'-66' SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PT-#

PIT* / LAT/LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0183° / W75.9831	24" - SANDY LOAM EX. EL.= 716.5, FN. EL.= 708.5	35 MINUTES/INCH
PT-2 N43.0181° / W75.9832	24" - SILT LOAM EX. EL.= 705.0, FN. EL.= 703.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0165° / W75.9851	24" - SANDY SILT LOAM EX. EL.= 685.0, FN. EL.= 683.0	3 MINUTES/INCH
PT-4 N43.0168° / W75.9853	24" - SANDY SILT LOAM EX. EL.= 681.4, FN. EL.= 679.4	21 MINUTES/INCH
PT-5[2] N43.0169° / W75.9844	14' - SANDY SILTY CLAY EX. EL.= 678.4, FN. EL.= 664.4	Ø MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

IT-#

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0170° / W75.9855	18' - SANDY CLAY EX. EL.= 664.0, FN. EL.= 646.0	Ø MINUTES/INCH
OPT-2 N43.0170° / W75.9853	25.3' - SILT LOAM EX. EL.= 671.3, FN. EL.= 646.0	Ø MINUTES/INCH
OPT-3 N43.0168° / W75.9851	24' - SANDY SILT LOAM EX. EL.= 670.0, FN. EL.= 646.0	Ø MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-#

B-1 LAT/LONG: N43.0180° / W75.9829 Ø'-6" TOPSOIL 6'-24" SILTY CLAY 24'-96" SILTY CLAY 96'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT/LONG: N43.0175 / W75.9830 Ø'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48'-72" SILTY CLAY 72'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT/LONG: N43.0170 / W75.9839 Ø'-12" TOPSOIL 12'-72" SANDY SILTY CLAY 72'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4[2] LAT/LONG: N43.0169 / W75.9843 Ø'-6" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-114" SANDY SILTY CLAY 114'-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT/LONG: N43.0166 / W75.9840 Ø'-24" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT/LONG: N43.0169 / W75.9827 Ø'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48'-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT/LONG: N43.0171 / W75.9814 Ø'-6" TOPSOIL 6'-24" SANDY SILTY CLAY 24'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT/LONG: N43.0175 / W75.9823 Ø'-6" TOPSOIL 6'-24" SANDY SILTY CLAY 24'-72" SANDY SILTY CLAY 72'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9[2] LAT/LONG: N43.0169 / W75.9843 Ø'-6" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-114" SANDY SILTY CLAY 114'-168' GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2018 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISION TO B-4.

ADDITIONAL BORING TEST RESULTS

TPS-#

TPS -1 EX. EL.= 676.0', FN. EL.= 666.0' LAT/LONG: N43.0171 / W75.9844 Ø'-15" TOPSOIL 15'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -2 EX. EL.= 674.0', FN. EL.=664.0' LAT/LONG: N43.0169 / W75.9845 Ø'-15' TOPSOIL 15'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -3 EX. EL.= 680.0', FN. EL.=670.0' LAT/LONG: N43.0167 / W75.9844 Ø'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -4 EX. EL.=681.0', FN. EL.=671.0' LAT/LONG: N43.0169 / W75.9816 Ø'-1' TOPSOIL 1'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -5 EX. EL.=716.0', FN. EL.=709.0' LAT/LONG: N43.0181 / W75.9829 Ø'-1' TOPSOIL 1'-1' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -6 EX. EL.=704.0', FN. EL.= 693.0' LAT/LONG: N43.0169 / W75.9826 Ø'-1' TOPSOIL 1'-3' BROWN SILTY GRAVEL 3'-5' GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -7 EX. EL.=722.0', FN. EL.=715.0' LAT/LONG: N43.0169 / W75.9816 Ø'-1' TOPSOIL 1'-1' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -8 EX. EL.=683.0', FN. EL.=680.0' LAT/LONG: N43.0172 / W75.9831 Ø'-1' TOPSOIL 1'-3' BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. AND J.K. TOBIN.
2. SEGUIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE 83 AND DATUM NAD83.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS. REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOUN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT PER OCWA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCWA UPON RECEIPT OF SITE PLAN APPROVAL FOR DECOMMISSIONING AND WATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2018. APPROVED BY TOUN ON MARCH 7TH, 2018. REMOVAL OCCURRED MARCH 13TH, 2018. THE STUMPS, DOWNED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8L-5@0 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2018 CONDUCTED BY ENVIRONMENTAL RESOURCES, LLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM	SANITARY PIPE-LOW PRESSURE
E/T	3" LPS	OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
S	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 15'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	8" 15'	OUTLET PROTECTION FOR 8"- 12" PIPE
	X 15'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOUN OF MANLIUS SPECIFICATIONS.

9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

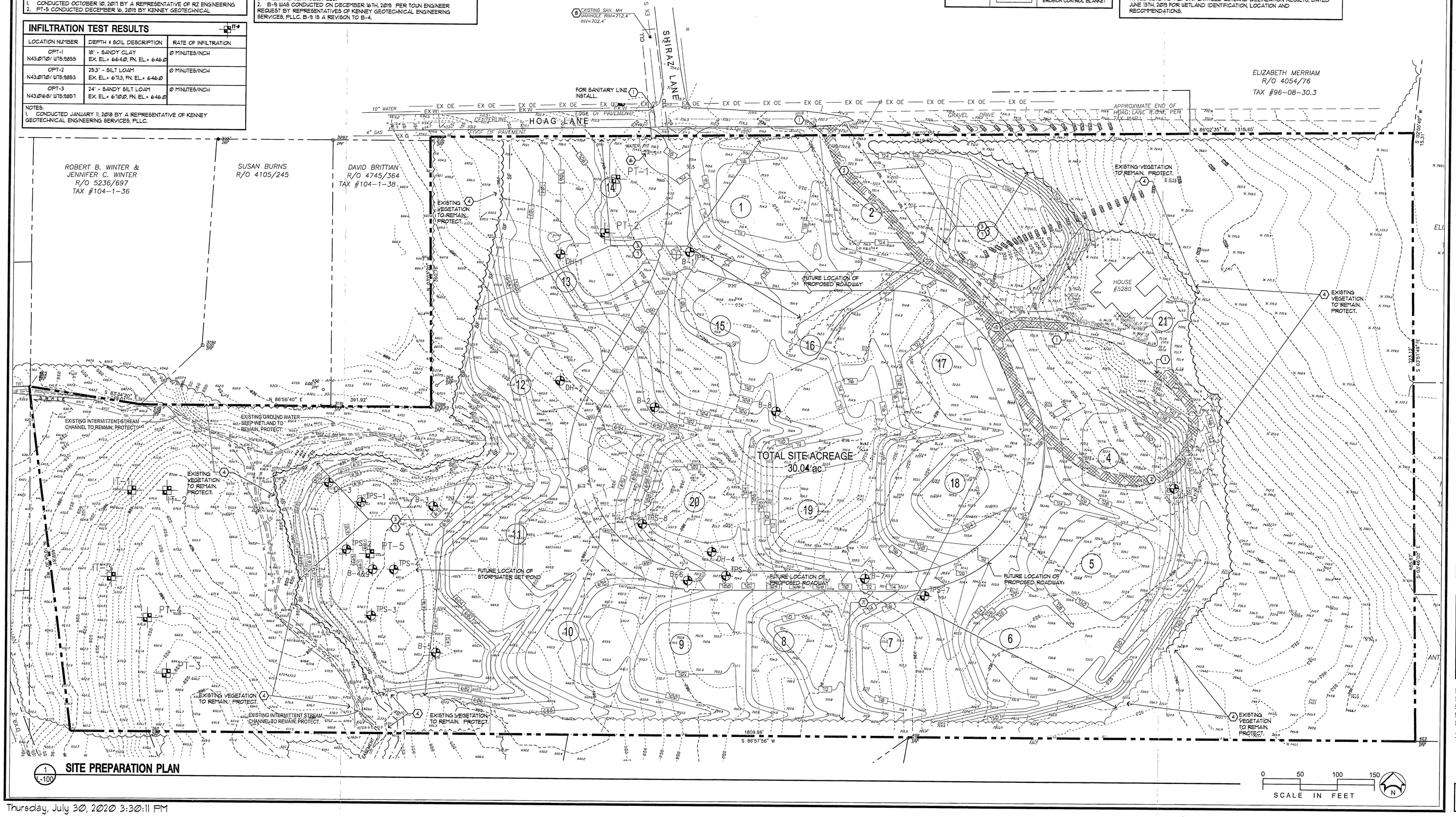
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.

14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2018 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-100 **SITE PREPARATION PLAN**

0 50 100 150 SCALE IN FEET

Thursday, July 30, 2020 3:30:11 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6339 FLY ROAD, SUITE 103 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7881 FAX: (315) 445-7881

RZ Engineering, PLLC
TURNING VISION INTO REALITY
6339 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH: 315.422.1389 FAX: 315.445.7981

From Vincent Ryan 7-30-20

STATE OF NEW YORK RUDY L. ZUZIK 079343 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

RECEIVED JUL 30 2020 By

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

⚠ - Symbol Indicates Revision Issued

No.	Rev.	Description	Date
1	1	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	MANLIUS-PLAN SUBMISSION	06/14/19
3	3	MANLIUS-PLAN SUBMISSION	07/12/19
4	4	MANLIUS-PLAN SUBMISSION	08/23/19
5	5	MANLIUS-PLAN SUBMISSION	12/18/19
6	6	MANLIUS-PLAN SUBMISSION	12/18/19
7	7	MANLIUS-PLAN SUBMISSION	05/15/20
	15	NOTE REMOVAL (NOTE 15)	07/30/20

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING-MANLIUS	03/29/18
4	4	PUBLIC HEARING-MANLIUS	05/04/18
5	5	PUBLIC HEARING-MANLIUS	09/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/20/18

REGISTERED LANDSCAPE ARCHITECT SCOTT L. FREEMAN 001473 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

MILLER
ENGINEERS

RECEIVED
JUL 28 2020
By

July 28, 2020

Mr. Joseph Lupia
Town of Manlius Planning Board Chairman
Town of Manlius, NY
301 Brooklea Drive
Fayetteville, NY 13066

Subj: Hoag Lane Woodland Hills

Dear Mr. Lupia

Please find outlined below response and review comments to the Hoag Lane Woodland Hills project received by our office on July 2, 2020. We apologize for the format of our correspondence, the applicant when requested for a word document to assist us to coordinate comments did not provide this information. We have included the referenced documents in the enclosed binder and numbered are responses to match the items in each document for you to follow. We have reviewed the following data:

- **June 15th Correspondence to Jamie Sutphen**
- **June 15, 2020 Correspondence to Joseph Lupia: E-Mail Correspondence**
- **June 15, 2020 Correspondence to Joseph Lupia: Earthwork Summary**
- **May 18, 2020 Correspondence Kenney Geotechnical Engineering Services to Tom Douglas**
- **May 27, 2020 Correspondence Kenney Geotechnical Berm Stability Evaluation to Tom Douglas**
- **June 15, 2020 Letter to Town of Manlius Engineer**
- **SWPPP**
- **Drawings: Title Sheet – Drawing 901 (33 drawings)**

Overlying General Comments

- Currently, we are not able to provide a positive recommendation to the request for a waiver from NYS Stormwater regulations for a 5-acre disturbance variance. We recommend standard stormwater requirements for the site as it is in an environmental sensitive area with the

Muirfield Drive drainage basin and due to the large earth moving operation with soils depicted as having high silt content by the applicant. Detail site specific plans on using on site soils susceptible of losing strength and requiring frost cover protection (outlined in the Kenney Geotechnical Report dated 5/18/20) are not addressed in the proposed scope of work by the applicant.

- The site is not being developed as a conservation/cluster development. Much of the site has been cleared prior to Planning Board approval and significant earthwork volumes (60,000 cubic yards cut and 40,000 cubic yards fill) are proposed. That relates to approximately 6,000 truck trips minimum on site. Cuts and fills average four feet. We recommend justification for significant earthwork and mass clearing for a conservation/cluster development. In addition, the applicant indicates over 8,000 cubic yards of structural fill material will be required for the project site. This does not include compost soil amendment that will be required for soil decompaction requirements of NYSDEC.
- Site storm drainage does not take into consideration the only outlet for the discharge point for the watershed is karst geology associated with the Muirfield Drive Retention Basin. Although peak flow may be attenuated in the current proposal, overall runoff volumes increase, and the Owner is seeking relief for the minimum RRv due to poor percolation. Most percolation tests conducted on site (although they are very limited) produce relatively good percolation rates and no indication of high groundwater table. We recommend runoff volumes from the site meet pre-development volumes due to the limited capacity of the Muirfield Drive Retention Basin.
- Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area, details follow in our project assessment. The developed area should be separated from all from undeveloped/undisturbed areas.
- Based upon the recent test pit excavations, we feel rock may be present on site. TPS-5 encountered shale at 3 feet in an area where 4 feet of cut is proposed. TPS-8 was only excavated to a depth of 3 feet and photographs may indicate the presence of bedrock. Borings B-6 and B-7 indicate significant resistant at 7.5 to 8.5 feet of depth and may be indications of bedrock. B-1 and TPS-5 are in direct conflict with each other. Specified borrow material may not be available on the project site to meet the contours shown for the site.
- Project specifications provided on drawings 800 and 801 appear incomplete with missing data and a lack of coordination with reports and drawings provided by the applicant
- Provide US Army Corps of Engineers verification and database inclusion of the delineated wetlands on the project site. USACOE indicate they have no confirmed record of the delineation.
- The on-site fill that is excavated and proposed to be used as backfill under the roads and utilities must have a stringent quality control program to ensure proper compaction, to allow for inspections and confirm all locations of the required performance testing. GPS coordination will be required for the work. It is recommended that a separate plan be prepared, as a field guidance, to outline how rocks encountered over 2 inches in size will be removed from the backfill (as dictated by the Kenney Geotechnical Report), the type of roller to be used on site for compaction, mitigation efforts to be used to control the soil water content to obtain optimum moisture content for compaction, etc. Strict adherence to the plan will be required to prevent future settlement of structures, roads and utilities.
- No on site backfill material is to be placed under house footings, catch basins, or manholes as shown on the plans. These are to be placed on undisturbed soil as the project details indicate. Standard industry practice. Drawings require modifications to match this on-site requirement as depicted by the applicant.

- On-site construction supervision should have access to all pertinent documents to include, but not limited to, the geologic report, Stormwater Pollution Prevention Plan, and any other referenced documents shown on the drawings and in the specifications. On-site inspection agencies will require the same.
- Discrepancies found on the drawings or between the drawings, SWPPP or geologic report, are to be brought to the Town's attention for resolution immediately.
- Maintaining dust control, traffic through the neighborhoods, noise (equipment back-up horns that can be heard as equipment is operated) and maintenance of storm water mitigation efforts will be critical during all phases of construction. It is advisable to employ noise meters on the project site.
- Drawings L-202, L-502, L-504, L-900, L-901 are all new drawings and are erroneously marked as resubmission drawings.
- Five Acre Waiver Request: The request for a waiver for disturbance of over 5 acres of soil is not approved at this time.
- Boring B-9 missing appears missing from the Drawing Set
- Provide detail and reason for drawings stamped by professional engineer to be noted as utilized for stormwater and sanitary design. This is odd and may not be acceptable to state education board
- Deposits and security for full time construction observation will be developed for the project accordingly

June 15th Correspondence to Jamie Sutphen

Constructability

1. Review of the current submission does not allow for a recommendation of approval of a 5-acre disturbance waiver to NYSDEC. Following comments on the project substantiate this request include but are not limited to:
    a. Depth to rock
    b. Time of exposure of non-vegetative soils
    c. Existing site slopes
    d. Sensitivity of the Muirfield karst topography retention facility
2. The project has its own unique characteristics and is required to meet current 2020 regulations federal, state and local
3. Exact locations with lot setbacks should be considered for the project. Geotechnical Engineering reports will be required from the Codes Officer in Manlius prior to any home construction and shall be confirmed by the applicant prior to any approvals
4. Cuts and fills remain extensive throughout the site. Contrary to conditions of a conservation/cluster development
5. The impoundment/Dam requires additional information as outlined below in this review. Including but not limited to
    a. Borings with properly labeled longitude, latitude and elevation data
    b. Materials of construction labeled on construction drawings
    c. Clear cross sections developed and drawn to scale

6. The entire 19 site to be developed as shown will be completely removed of any existing vegetation and all grades in the development will be part of an extensive cut and fill operation. This does not appear to confirm to the philosophy of keeping the natural features of the project site
    a. Information for soil compaction not provided on sheet L-503 as stated. No description of soil to be used nor any detail on test descriptions to be used for roads, utilities nor basements
        i. Waiver not recommended for approval at this time
        ii. Drawing L-503 notes that 7 of the 20 houses proposed require fill below the basement (Building lots 3,10,11,12,13,19, &20). Please confirm that OCWA and National Grid are aware of the cut and fill nature of the project site. We understand that special means and methods will most likely be required for this site. Work which will be financed by the owner/applicant who has authority for site means and methods of the fill operation
    b. Kenney reports dated 5/18/20 and5/27/20 were received by the Town with your July 1, 2020 submission. No latitude, longitude nor elevation data has been supplied by any of the field investigation work completed by the applicants. All Town of Manlius stormwater facilities are compliant with the regulations of which they were constructed to at the time of construction. MS Ross indicates that the impoundment/dam should be constructed in accordance with dam regulations but also states that a dam permit is not required from her office. The Town will require a person of the Town's choosing at developers' expense to on site at all times to ensure the soil movement and compaction is done properly.
    c. Project cost/securities will be required for the project

Technical Issues

1. Thought should be given to limit site stripping and grading
    a. Clear definition as to the applicant's definition of 80% coverage/density should be provided
    b. We are unable to find this information for all facilities on the drawings. Information does not appear to be included in the current SWPPP of July 1, 2020
    c. Bi-weekly SWPPP inspections are recommended throughout the duration of the project due to the complexity and sensitivity of the site
    d. Site soil restoration shall include compost amendment along all haul roads on the site and from 5-25 feet around all proposed houses and structures. This needs to be depicted on the drawings. Deep ripping of soils per NYSDEC is acceptable at other locations on the site
    e. Please depict on the drawings the longitude, latitude and elevation of your investigative activities
2. An updated SWPPP has been presented and is under review herewith
3. Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted through additional comments above could impact this number.
4. SWPPP remains inadequate and does not represent required stormwater mitigation properly for the project site

5. Drawing L-600 still shows a proposed storm pipe at over 13 feet deep.
6. Planning Board to consider use of grinder pumps as an alternative means of sewage disposal
7. Impoundment/Dam
    a. Agreed
    b. Drawings included for the impoundment do not include any materials of construction nor placement and compaction data requirements see dam comments
    c. We leave this to your Geotech engineer, see dam comments
    d. Seep collars need to be depicted on the drawings in plan and profile not only as a detail on sheet L-500
    e. Please indicate locations of all investigative work including longitude, latitude and elevation
    f. Drawings do not indicate materials of construction do not include any materials of construction nor placement and compaction data requirements see dam comments. Sections shown on drawing L-502 appear incomplete and do not show existing ground elevations nor locations and data on borings.
    g. Please confirm that the maintenance bench is 14 feet wide as shown on drawing L-400, not 12 feet as described in your memo
    h. Agreed
    i. As requested, numerous times, please provide latitude, longitude and elevations for your investigative work. Not included on sheet L-100
    j. There does not appear to be adequate energy dissipation for the outlet
    k. See comments under SWPPP review section of this correspondence
8. Agreed
9. Note for lot 3 is confusing – "Homeowner/Developer to install plant material to stabilize plants". Note 29 is note included in the lot 3 notes Plantings if required should be shown on the drawings. Road grades at lots 11,12,15,16,17 & 18 remain problematic
10. Mitigation of increased volume requires the applicant to address this issue due to the sensitivity of the Muirfield Basin

June 15, 2020 Correspondence to Joseph Lupia: E-Mail Correspondence

1. Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius
2. Correspondence from NYS Department of Environmental Conservation Matthew J Kazmierski: Our office has followed up with Mr. Kazmierski. He indicates that the use of amended soil for restoration of a 5-acre disturbance is required. He also indicates that deep ripping on a portion of the site may be acceptable to NYSDEC. Mr. Kazmierski also indicates that full decompaction including compost amendment of soils will be required by NYSDEC regulation for heavy traffic areas on site (especially in a zone 5-25 feet around buildings, haul roads, soil storage areas and temporary sedimentation ponds. Should the applicant propose to continue pursuit of a 5-acre waiver detailed plans for decompaction and soil amendment will be required including specific

details and locations of on-site activities required to meet or exceed regulations for the site. To date there has not been a receipt of these details. Mr. Kazmierski indicates a willingness to work with the Town and applicant in this endeavor.

3. Correspondence from Jennifer Ross NYS Department of Environmental Conservation: Ms. Ross indicates that the on-site dam is exempt from NYSDEC permitting. She also advises that the dam be designed by a professional engineer and that guidelines for design of dams 1989 be followed. We have reached out to the applicant and advised the applicant that the dam needs to be designed as a dam and as a minimum meet the guidelines for dam construction in the NYSDEC design manual

June 15, 2020 Correspondence to Joseph Lupia: Earthwork Summary

Information provided by the applicant in this correspondence indicates Stage 1 and Stage 2 summaries which direct attention to drawings L-102 and L-103. The drawing set indicates a 7-stage project, drawings L-102: Stage 1, L-103: Stage 2, L-104: Stage 3, L-105: Stage 4, L-106: Stage 5, L-107: Stage 6 and L-108 stage 7. The earthwork summary should be coordinated for each phase of the work. The detail provided from the site excavation reports do not appear to compensate for topsoil removal (by others?), soil expansion nor soil compression.

Work areas for the 2-stage proposal provided by JK Tobin/Kepplinger Freeman in this correspondence indicate work areas as follow:

- Stage 1 Attachment C: Area disturbed 6.1 Acres
- Stage 2 Attachment E: Area disturbed 7.7 Acres
- Summary Attachment A: Area disturbed 17.2 Acres

It appears that the total area disturbed does not match the summaries for the two-stage operation proposed by JK Tobin/Kepplinger Freeman in this exercise. Also, it appears that attachments B and D may be missing from the submission. Definition for terms in the submission should also be provided for print outs i.e.: Bank Cut Expanded Cut and Bank Fill. It appears that 107,807 cubic yards of material will be moved, stored, placed and compacted on the project site. This does not appear to include topsoil stripping, storage, movement (piles shown to be moved in the 7-stage proposal) or placement

Kenney Geotechnical Report indicates that there are gravels, cobbles and boulders beneath a thin layer of topsoil and that if this soil is to be used on site as engineering soils that all particles greater than 2 inches must be removed prior to use. This significantly has an impact on the earthwork numbers provided within this correspondence and needs to be addressed by the applicant. Additionally, the removed material will need to be disposed of properly. See John P Stopen document for additional site-specific comments

May 18, 2020 Correspondence Kenney Geotechnical Engineering Services to Tom Douglas

The findings of the Kenney Geotechnical Engineering services Report shall be incorporated and placed on the drawings. It appears that a screening operation may be required for the work as particles over 2" in size are noted to be removed from any engineered soils along with any organic materials. Many of the test pits indicate cobbles and boulders in the proposed borrow material apparently confirming the need for screened material. If test pits are intended to be used for on site engineering data for example: as road/utility subbase confirmation or structural documentation for basement subgrades, then latitude and longitude locations will be required. The report indicates that the dominant on-site till may be susceptible to saturation and freezing and as such temporary drainage swales, stabilized haul roads and protective layers of stone may be required for the project site. Permanent slopes shall be no greater than 3 horizontal:1 vertical unless reinforced with geosynthetic materials some areas of the proposed dam appear to exceed these criteria and shall be confirmed by the applicant for additional detail. See John P Stopen document for additional site-specific comments

May 27, 2020 Correspondence Kenney Geotechnical Berm Stability Evaluation to Tom Douglas

This correspondence appears to be a berm stability evaluation. We strongly recommend preparing a design report for the proposed dam documenting hydrology, water levels for analyses, spillway sizing, downstream safety, earthwork requirements and all structural aspects. At full level, the dam will hold back an impoundment of over 1,000,000 gallons and the water level will be higher than the homes downstream. See John P Stopen document for additional site-specific comments for design and constructability comments for the proposed dam.

June 15, 2020 Letter to Town of Manlius Engineer

Additional Comments

1. NYSDEC Jennifer Ross indicates that a dam permit is not required at this time. However, she indicates that the dam should be designed in accordance with NYSDEC dam guidelines
2. Longitude latitude and elevation surveyed/GPS data has not been provided to confirm
3. Kenney Geotechnical reports do not include specific location of the work with latitude and longitude information
4. Agreed
5. In accordance with NYSDEC guidelines and Mr. Kazmierski's input. Compost amended soils will be required on site. Correspondence from NYS Department of Environmental Conservation Matthew J Kazmierski: Our office has followed up with Mr. Kazmierski. He indicates that the use of amended soil for restoration of a 5-acre disturbance is required. He also indicates that deep ripping on a portion of the site may be acceptable to NYSDEC. Mr. Kazmierski also indicates that full decompaction including compost amendment of soils will be required by NYSDEC regulation for heavy traffic areas on site (especially in a zone 5-25 feet around buildings, haul roads, soil storage areas and temporary sedimentation ponds. Should the applicant propose to continue pursuit of a 5-acre waiver detailed plans for decompaction and soil amendment will be required including specific details and locations of on-site activities required

to meet or exceed regulations for the site. To date there has not been a receipt of these details. Mr. Kazmierski indicates a willingness to work with the Town and applicant in this endeavor.

6. No direction has been provided by the Town Engineer for phasing nor staging plans. All work to be completed in accordance with NYSDEC stormwater guidelines. The phasing/staging plans have been submitted by the applicant to seek a 5-acre waiver variance from stormwater regulations
7. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
8. The findings of the most recent Kenney Geotechnical Report dated May 18, 2020 shall be incorporated into the drawings
9. Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and does not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission.

Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius

General

1. Capacity does not appear to be an issue for the project site, and we concur. However, the Meadowbrook Limestone WWTP is under consent order and an acceptable offset plan is required for this project
2. District formation will be required for the proposed project. We are unaware of any required clarification on this topic, please advise of any necessary information need by you at this time
3. We are in receipt of the Reports you reference
4. Various information has been received for geotechnical reporting and is addressed by our responses herewith
5. Information requested for longitude, latitude and elevation remains absent for boring logs provided to the Town of Manlius for work completed to date
6. Plans require updates to include recent site findings from Kenney Geotechnical Services reports of 5/18/20 and 5/28/20. Also, requirements for soil decompaction and amendment requirements
7. District formation has not been initiated. It appears acceptable that formation can be completed prior to initiation of the work
8. Agreed
9. Survey has been received

10. Correspondence from Chris Deitmen OCDWEP: We concur with Mr. Deitman's statements. However, the Planning Board may wish to way the merits of the use of grinder pump stations in this instance. Under cluster development procedures, the Planning Board can rule on this item. Grinder pump stations in the Town of Manlius are an anomaly. Approval of use of grinder pump stations will nearly double the application of grinders in the Town of Manlius
11. Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and does not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission.
12. This project site has recently had all trees removed/cut on the site. The project SWPPP clearly states that vegetative plantings will be included as part of stormwater remediation. It is strongly recommended to the Town Planning Board that site specific landscape plans be developed for each proposed home site and be enforced as a part of any certificate of occupancy to comply and assist with stormwater reduction on the project site as depicted in the SWPPP. The request of the applicant for cluster development allows the Town Planning Board to request and review these environmental enhancement plans
13. Please refer to the Town of Manlius Town Code for the requirement of Land Marking Monuments.
14. Agreed
15. The Town will develop costs and schedules for securities in conjunction with the developer
16. The Town will develop costs and schedules for securities in conjunction with the developer
17. The Town will develop costs and schedules for securities in conjunction with the developer
18. All drawings have been received according to the project cover sheet of July 1, 2020
19. Revisions appear on drawings, however not all drawings appear to have been revised in this sequence. There are new drawings in this submission that do not appear to be revised drawings
20. Engineering design report for a dam conforming to NYS Dam regulations remains absent
21. Agreed
22. Agreed
23. SWPPP now dated 7/1/2020 accepted by owner 6/15/20 and certified by engineer on 6/15/20
24. Compost will be required on site. Please confirm how basement spoils will be incorporated into grading plans as this does not appear to have been addressed by JK Tobin takeoffs and requests for the 5-acre stormwater waiver.
25. Many drawings in the SWPPP do not mirror the current project. The documents should be consistent and work together as such
26. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
27. Agreed
28. Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted above could impact this number.

29. Agreed

SWPPP

1. Appendix A no latitude longitude or elevations are depicted on soil testing locations
2. Page 7 confirm offsite 31 acres on site 27 acres for stormwater calcs
3. Page 13 Green Practices appear contrary on the drawings to what is depicted in the SWPPP
    a. No trees proposed outside of 2 per lot. Drawings for the project indicate that all trees and vegetation is to be removed from the project site
    b. No conservation of natural areas inside the area of home building. All areas are shown stripped of all vegetation and regraded without any landscape plans or vegetative materials discussed in the SWPPP
    c. No roof top disconnections can be taken credit for as they do not currently exist
4. Page 13 & 14 Soil Restoration Requirements
    a. Shrubs and deep-rooted trees are required
5. Soil decompaction and amendment is required and shall be depicted on construction drawings
6. Page 15 Show where no clearing can be completed on the site on contract drawings. Provide proposed covenants for the project including requirements documented in the SWPPP
7. Page 15 SWPPP indicates 3" of compost over all sub soil. Confirm a decompaction program for the site as part of 5-acre waiver
8. Page 16 Document requires ground cover with deep roots. Confirm in a landscaping plan
9. Page 16 Appendix I appears to be a regurgitation of NYSDEC Stormwater standards additionally many items do not match the current drawing plans of 2020
10. Page 16 soil restoration locations required in HOA documents, please provide
11. Page 16 indicates stage 2 work to be 7.8 acres, information provided by the applicant from JK Tobin indicates 7.68 acres
12. Page 23 Provide proposed maintenance agreement for HOA along with projection of annual costs of the same
13. Page 24 Who is referenced as owner, provide description
14. Page 26 dust control monitoring costs to be paid by the applicant
15. Page 27 Place notes on the drawings that all on site haul trucks to be tarped on site per SWPPP
16. Page 65 no longitude latitude nor elevations coordinated nor noted on PT 1,2,3,4 and DH 1,2,3,4,5 logs
17. Page 65 soils can expect to have up to 20% rock fragments
18. Page 69 drawing of the site does not match current project. Drawings to be updated for the current project details
19. Page 71/72 Kenney testing of 1/18/18 appears to be clearly outside of project boundaries, please advise of significance to project or remove from the requested approvals
20. Page 73 Drawing does not match any current construction drawings
21. Page 74 Kenney logs of 1/11/17 do not have longitude, latitude or elevations of testing provided
22. Page 76 Please provide detail and insight as to definition of Road Construction California Bearing Basis 5
23. Table may be required in the SWPPP for longitude, latitude and elevations of all geotechnical test results

24. Page 91 show locations of all haul roads on site and indicate methods for stabilization as required in SWPPP and Kenney Geotechnical recommendations
25. Page 92 Majority of the site requires 95% compaction to modified proctor. Please provide a detailed mapping of locations that will only require the minimum 90% compaction of modified proctor
26. Page 9 summary table 50-year storm should be 73.12 cfs
27. Page 15 References compost and is not necessary in all areas. Indicate areas of compost in SWPPP
28. 2 or 4 dust monitoring stations. We recommend 4.
29. page 69 mapping shows old site layout. Revise to current design
30. Which is correct, B-4 or B-9
31. Page 11 90% compaction for pond, Page 93 95% compaction for pond
32. Page 99 Why is TPS-5 only 7 feet deep (rock encountered?)
33. Page 119 mapping shows old site layout. Revise to current design
34. Appendix T page 603 to 630. Only an example from NYSDEC. Do not include in report.
35. Appendix T page 632 - include watershed maps to verify calculations for sediment basin for Phase 2 and Phase 3
36. There is no energy dissipation structure at the pond outlet which has discharge velocities over 6 fps, which will lead to downstream erosion.
37. Phase 1 should only include Construction Access, Construction Staging Area, Access to wet pond area, borrow pit for embankment, wet pond construction and swales. Lot 12-14 should be included in a separate phase.
38. Haul roads require compost.
39. Lots are still lower than the road in some areas

Many portions of the submitted SWPPP are not site specific. Many are resubmissions of NYSDEC white papers and guidelines. Several other parts of the SWPPP include drawings from past submissions of the project. The intention of a SWPPP is to be site specific for the project to be undertaken so as not to produce confusion for the public, contractors, developers and Town officials. Review and care are recommended to develop a SWPPP for this project that is site specific.

We did not review the individual storm pipe calculations at this time due to what we feel are discrepancies in the watershed sub-areas/land use calculations. Individual storm pipe calculations will be reviewed later when watershed issues are addressed. We did review the Water Quality Volume and Runoff Reduction Volume. We also calculated the overall runoff volume as the outlet to this watershed is karst geology with limit downstream storage. This is important relative to impacts upon the Muirfield Drive retention area.

The watershed does not have the correct boundaries for developed site. It also does not include the correct land use areas. Attached are RZ Engineering's proposed watershed and our determination based upon proposed current grading. Additionally, (as we have always felt) the 2.6 acres of woods behind the existing house should be a separate and distinct sub-watershed, not part of the developed area. IN our calculations, we broke this area out. We feel 2.6 acres of watershed is a significant size, and in our designs, we would always try to focus on the developed area as single entity to ensure the calculations are best represented. The Tc route along with the weighted runoff coefficient of the upstream woods areas offers misleading calculations relative to the developed area.

We offer the following calculations in runoff rates prior to incorporation of the stormwater pond.

RZ Engineering 1-yr=12.93 cfs, 2-yr=19.26, 5-yr.=31.12, 10-yr.=43.25, 25-yr=64.57, 50-yr=86.03, 100-yr.=112.03

Our Calculations 1-yr=18.23 cfs, 2-yr=26.06, 5-yr.=40.46, 10-yr.=55.04, 25-yr=80.46, 50-yr=105.75, 100-yr.=136.48

We find a significant increase in peak runoff under proposed conditions. This will impact the stage-storage-discharge rates of the stormwater pond.

Regarding Water Quality Volume, we feel this is currently acceptable. However, changes in the watershed characteristics noted above could impact this number.

Regarding Runoff Reduction Volume, RZ Engineering is only providing the minimum, stating the site is limited by ground water. Based upon our review, the only soils information relative to limited soil infiltration was the deep hole percolation testing performed by Kenney in the stormwater pond area and PH-2 near the entrance. There is limited testing though. However, we feel more than the minimum should be provided based upon limited capacity of the watershed and the Muirfield Drive retention area.

Additionally, the project will increase total runoff volume in the watershed by 1.48 acre-feet. This could be an issue downstream as the storage volume of the Muirfield Drive retention area is currently 0.48 acre-feet with an unknown infiltration capacity. This increase runoff volume could severely impact the capacity the Muirfield Drive retention area even though water is released gradually from the stormwater pond. This watershed is not typical of the design criteria of the New York State Stormwater Guidelines and special considerations need to be in place to ensure the integrity of the existing stormwater system. We would strongly suggest incorporating rain gardens for each home as well as implementing bioretention areas within the developed site.

DRAWINGS

Cover Sheet

1. Deputy Supervisor is Karen Green
2. The new sheet labeled L-801 should be included on the cover sheet

Drawing L-100

1. Please correlate exact locations of test pits, borings and deep hole investigations to GPS locations on all plans and detailed sections and reports. This is extremely important for verification, layout and performance criteria details specified for the project during construction activity.
2. Agreed
3. Boring locations are not technically correct no latitude, longitude or elevations are depicted
4. Survey received

5. Finished floor elevations depicted on L200, L-300, L-400 and L-401. As the location of the home may dictate floor elevations side rear and front setbacks for house envelopes on the site appear desirable as a function of the cluster development
6. Agreed
7. Wood blocking for the interior of the boring is unacceptable. Properly designed pipe bracing specific to securing the pipe inside the casing is required for this application
8. Agreed
9. Agreed
10. Agreed
11. Does not match L-100 in the SWPPP
12. Note ten is on the drawings but not in the project notes
13. Note 7 is erroneous. The Town never approved removal of any trees on the project site. This note should be removed from the project drawings
14. Drawing L-100 in SWPPP does not match the Drawing L-100 in the drawing set
15. Boring Test Result table
    a. Boring B-9 was not requested by Town Engineer
16. Existing Conditions & Removal/Demolition Notes:
    i. Note 7 "4" caliper or larger plant material was cut down as of March 2019. Approved by Town on March 7th, 2019" Is a false statement and shall be removed from drawings as such. No approvals for this work were granted by the Town of Manlius
17. On the north and southside of the pond has a note "10", the notes in the key only go up to "9"
18. Note 7 should be taken off the plan. It is not only not true, but has no impact on subdivision approval

Drawing L-101

1. Boring information remains confusing. Detailed drawings and designs for the Dam may elevate this concern. Blow counts for borings, B-9 is missing from this submission. Borings B-6 and B-7 have large blow counts indicative of hard materials at a depth of 5-6 feet. Please explain
2. OCF shall be set in pace by surveyor with meets and bounds prior to any on site work
3. L-101 no longer is included in the SWPPP please explain. Perc tests are not taken in area of proposed pond nor have they been taken at the finish invert elevation of the pond which appears to be in the range of el 664-665
4. Please confirm with ACOE that the wall does not impact upstream gradient of the wetland that it is proposed to isolate from the project site
5. Agreed
6. All storm water easements shall be identified on this plan
7. The dotted line on the back of lots 21, 4 and 5 has no description and has no need to be on this plan
8. Provide access to the easement on the back of lots 5,6,7,8,9 and 10
9. Pond access for maintenance will require a backhoe with a minimum reach of 12-15 feet and will also require access around the entire site along with a dump truck confirm that the easement is wide enough for trucks to get to the pond and turn around
10. Easements, shall include the Town

11. Some type of structure is shown on lot 12, what is it
12. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
13. Notes for topsoiling need to also address decompaction efforts

Drawing L-102

1. Dam Basin details and cross sections are confusing. A detailed design document for the Dam including conformance to NYS Dam regulations in a report completed by a dam engineer is required
2. Stockpile notes contradict public discussions and drawings
3. Project has 7 Phases or Stages as depicted on numerous drawings
4. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events
5. Staging plan does not consider winter shutdowns and securing site environmentally. This has also been an area of concern in the Kenney Geotechnical earthwork memorandum
6. Requirements of the Kenney Geotechnical report of 5/27/20 shall be incorporated into the drawings
7. Five-acre waiver is a function of the local MS4 community; Town of Manlius and is not approved at this time
8. Remove the asphalt note from this drawing. Remove note D in construction staging notes. Final wear course for roads is required within one year of base & binder installation per Town of Manlius
9. All required erosion control required for all phases of the work
10. We understand that the developer retracts his statement for a two-year warranty of his work
11. Five-acre waiver is a function of the local MS4 community; Town of Manlius and is not approved at this time
12. Agreed
13. Information provided but is unclear how it coordinates with all phasing. Additionally, it does not speak to topsoil removal and removal of all material 2" and greater. Disposal of material 2" and greater and loss of assumed borrow material which affects current grades shown across the site. Accommodations for stockpile of material is required by the applicant for the phasing plan approvals. JK Tobin cuts and fills do not appear to match requirements of the Kenney Geotechnical report. Spoils of unusable gravels, cobbles and boulders will be required of the submission. Additional methods of soil stabilization may be required for hall roads, wet conditions and cold weather conditions
14. GPS coordination of all work is required. Dam work GPS coordination depiction in an engineering design report is critical
15. Details on locations using GPS or actual dimensions remain missing
16. agreed

17. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings
18. Please show what equipment will be placed in the staging area
19. Agreed
20. Agreed
21. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
22. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
23. All report information shall be incorporated into construction drawings
24. Remove note 4 from Earthwork and field-testing notice
25. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
26. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
27. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
28. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
29. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
30. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
31. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
32. Notes for topsoiling need to also address decompactions efforts

Drawing L-103

1. Agreed
2. Details on locations using GPS or actual dimensions remain missing
3. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events
4. Agreed
5. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings

6. Please show what equipment will be placed in the staging area
7. Agreed
8. Agreed and are under review in the SWPPP section of our comments
9. Please confirm with plan documentation on the drawings
10. Geotechnical information is under review via this correspondence
11. Drawings indicate different use of wood chips as use with topsoil. Please confirm if to be used as mulch and erosion material and depict same in drawings and the SWPPP
12. All required erosion control required for all phases of the work
13. Agreed
14. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
15. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
16. All report information shall be incorporated into construction drawings
17. Remove note 4 from Earthwork and field-testing notice
18. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
19. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
20. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
21. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
22. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
23. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
24. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
25. Notes for topsoiling need to also address decompaction efforts

Drawing L-104

1. Agreed
2. Basis for cut and fill work appears to contradict Kenney Geotechnical report information provided by the applicant. Additional decompaction using compost material will be required for the site
3. Details on locations using GPS or actual dimensions remain missing
4. Project appears to be a minimum of at least 6 years as proposed in tables labeled construction staging and construction staging notes. These tables have foot notes that the schedules may be impacted "subject to environmental events". Please provide a more realistic schedule incorporating anticipated environmental events

5. Agreed
6. Testing requirement scheduling is not indicative of potential on site activities. The Earthwork Field testing frequency shall be modified to meet the requirements of the Kenney Geotechnical Report for Earthwork the Kenney Geotechnical Report for earthwork provides a suggested frequency which shall be incorporated into the drawings
7. Please show what equipment will be placed in the staging area
8. Agreed
9. Basin remains missing
10. Grading plans do not appear to have been coordinated with the Kenney Geotechnical reports nor the information provided by your proposed contractor JK Tobin
11. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
12. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
13. All report information shall be incorporated into construction drawings
14. Remove note 4 from Earthwork and field-testing notice
15. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
16. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
17. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
18. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
19. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
20. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
21. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
22. Notes for topsoiling need to also address decompaction efforts

Drawing L-105

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report

6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Asphalt drive in proximity of House 5280 will require decompaction and compost amendment per requirements of NYSDEC
9. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
10. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
11. Lot 21 has several elevation spot marks please confirm
12. Lot 21 has note remove asphalt, no asphalt visible please confirm
13. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
14. No check dams shown on the drawings as required in previous phase/stage of the work
15. Notes for topsoiling need to also address decompaction efforts

Drawing L-106

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts

13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-107

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice
5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts
13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-108

1. Topcoat asphalt to be installed in all phases of the work one year after base coat is applied. Town Highway permit and security required for the work
2. Staging and storage area shall be required as shown and shall not be at the discretion of the contractor. This note to be removed
3. All report information shall be incorporated into construction drawings
4. Remove note 4 from Earthwork and field-testing notice

5. Construction staging note 3: Design recommendations for dam construction shall be incorporated into final approvable drawings not a reference to a design report
6. Construction staging note 4: the note is unacceptable. Staging areas on site are required to be noted for staging, environmental and construction activity as part of the review of a 5-acre stormwater waiver and cluster development. The note is unacceptable and an area that can stage maximum needed soils with a possible contingency shall be depicted on the drawings
7. Stockpile and storage areas shown on the drawing will require decompaction and compost amendment per requirements of NYSDEC
8. Confirm with ACOE that the boulder wall proposed at the headworks of the protected stream and wetlands will not impact flow characteristics of the same.
9. Provide narrative and detail as to what measures will be set in place to protect the stream near the toe of the dam and how the dam will be carefully constructed at this location
10. Lot 21 has several elevation spot marks please confirm
11. Drawings needed for decompaction requirements for each phase of the work. A detailed specific site drawing appears needed through all phases/stages of the work
12. Notes for topsoiling need to also address decompaction efforts
13. This is the first plan to show the subdivision sign, Planning Board will not be approving the location or design, it should be taken off of all plans
14. Stormwater easement is written on lots 3 and 14 but is not identified where they are located
15. Based on the design, it appears that a stormwater easement should also be placed on lot 4 please confirm. Also, drawings depict a single rock check dam on lot 4.

Drawing L-200

1. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
2. The dams are shown on some but not all drawings. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
3. Unclear of any clarifications. Please provide the detail requested
4. Note 5 appears meaningless

Drawing L-201 (New Drawing)

1. Most of the outside lot building envelopes are incorrect, they encroach on forever wild areas and easement areas
2. Not apparent what this drawing is for nor what it represents

Drawing L-202 (New Drawing)

Plan does not appear to be needed. The final location of the homes may be totally different than what is shown. If all are to be spec homes it might work, but if they sell the lots the homeowner may want to locate the house in a different position on the lot. Building envelopes should be provided with proper setbacks as required from property lines and specific lot features such as easements and ROW's

Drawing L-203 (New Drawing)

Plan does not appear to be needed. The final location of the homes may be totally different than what is shown. If all are to be spec homes it might work, but if they sell the lots the homeowner may want to locate the house in a different position on the lot. Building envelopes should be provided with proper setbacks as required from property lines and specific lot features such as easements and ROW's. Drawing appears to confirm the need for geotechnical engineering reports for each of the homes proposed within fills. Work would be better delineated using building envelopes as has been past practice in the Town of Manlius

Drawing L-300

1. We rely on RZ Engineering to provide calculations to support this statement. Additionally, accommodations shall be made for odor control to be provided by each homeowner on a grinder pump system if the planning board agrees to move forward with a grinder pump system in the is project
2. Manhole 3 may still appear to have a greater than 90-degree bend. Please confirm
3. Agreed also will require coordination with any proposed building permits
4. Plantings including trees are a major part of the project SWPPP. It is of concern that all trees have been removed from the site by the developer in spite of a request to cluster and promote use of the existing characteristics and features of the project site
5. Agreed
6. Grinder pumps inside of homes is not preferred and has been problematic in local applications
7. No open cut along Hoag Lane
8. Odor control for grinder pumps will be required for the project if grinder pumps are approved for the project site
9. Agreed
10. Easements are required in place for the work. Please clarify any additional insight if required by the design team
11. Please provide detail on operational characteristics of this device (Agri-Drain: we do not have any such applications within the Town of Manlius.
12. Lot 3 now identifies where the stormwater easement is approximately, but it appears that there should also be one on lots 1 & 2. Confirm stormwater flows in these areas
13. Lot 14 still does not identify the easement area
14. Confirm need for check dam in the back of lot 4

Drawing L-400

1. Jute mesh limits are not depicted on the drawings
2. Agreed
3. Stone dust walkways were discussed at previous public meetings. Removal of the walkways should be considered by planning board as part of cluster development approvals
4. There are no Town requirements for the fencing referenced. We are unfamiliar with NYSHD pool code please provide a reference and include the same on the drawings if required

5. There are no Town requirements for the fencing referenced. We are unfamiliar with NYSHD pool code please provide a reference and include the same on the drawings if required
6. Dimensions and location of monument signs shall conform to Town code for the same
7. Dimensions and location of monument signs shall conform to Town code for the same
8. Apparent proposed building envelopes encroach forever wild areas on lots21,4,5,6,7,8,9,1012,13 and 14 and are unacceptable
9. Drainage easement behind lots 5,6,7,8,9, and 10 are inaccessible and require at least to access points from the proposed street area
10. 20-foot drainage easement on lot 13 appears missing
11. Drainage easements shown on lots 13 & 14 should extend the distance of the entire lots
12. Deed restrictions for forever wild areas, easements and additional HOA restrictions shall be provided for legal review

Drawing L-401

1. Rain gardens and bioretention facilities will assist to reduce run off volume and are suggested to be incorporated into final design calculations
2. The plantings plan is somewhat confusing and not knowing exactly where the homes may go the plan may bring dramatic change to the plan. Please provide a detailed plan showing location of all plantings
3. Locations of seeded and sodded lawns requires detail locations on the drawings and clarification of where they are used
4. Rain gardens and bioretention areas may be beneficial to reducing volume flow to the Muirfield Drive area and should be considered by the applicant
5. A detailed drawing to scale is required for the dam area. Please coordinate all plantings in accordance with NYS Dam regulations
6. Landscaping plans shall be submitted by the applicant to meet requirements of the project SWPPP as presented by the applicant. Also, as a function of cluster development and a five-acre waiver this information will be required prior to approval of the project
7. The planning board advises that they do not intend to approve a project sign currently. The sign will be approved by the Town Codes Officer once a final project approval is received

Drawing L-500

1. Detail 8 and 9 have been deleted, however 8 appears on several pages of the staging plans
2. Requirements of the Kenney Report shall be incorporated into all drawings and specifications
3. Agreed
4. Agreed
5. Please coordinate this detail
6. Wet pond details missing/removed from drawing
7. Agreed
8. Agreed
9. Please confirm
10. Work to be coordinated with Kenney Geotechnical report within the construction drawings

Drawing L-501

1. Agreed
2. Agreed
3. Agreed
4. Pond/Dam area requires easement access
5. Overall, we feel the stormwater calculations for the developed site do not adequately represent the future developed area.
6. Agreed
7. Agreed. However, the dam needs further detail and a dam specific report completed by a dam professional engineer
8. Provide correct information for fencing proposed by the applicant where needed
9. Agreed
10. Hydrant details are a function of approval by OCWA
11. Agreed
12. This detail is not required for planning board approval
13. Town of Manlius does not have a code for fence posts
14. Town will not accept ownership or maintenance of grinder pumps. Remove detail 7 L-501

Drawing L-502 (New Drawing)

1. Drawing 502 is a completely new drawing. Please confirm where original Drawing L-502 has disappeared to. As a new drawing the revision box is not a true statement of the work Stormwater profiles in lieu of previous submissions of Pond & wall Profiles and earthwork. This is marked erroneously with revision dates and should be noted as a new drawing. Scale and detail are lacking for this new drawing. No existing grade elevations, no coordination of borings or notation of soil types, no materials of construction, no mention of soil plantings. Wetland limits are confusing. Sketch is confusing for construction drawings and lacks detail for the same. Drawing as submitted is unacceptable for construction and approval purposes.

Drawing L-503

1. Footer drain details are a function of building permit procedures
2. Fill locations may change due to impacts that do not appear to have coordinated with the Kenney Geotechnical Reports
3. Please provide specifics on your required clarification request
4. Road details require additional details for construction approval
5. Please provide professional design credentials for JK Tobin Construction referenced in the plans
6. Geotechnical data from Kenney Geotechnical shall be incorporated into all drawings and specifications

DrawingL-504 (New Drawing)

1. Please provide working details, maintenance and longevity of the proposed Agri Drain System

Drawing L-600

Cuts and fills of 7-10 feet appear throughout the profiles. Some storm piping remains and depths of 7-13 feet below finished grade and is unacceptable. The site is not being developed as a conservation/cluster development.

Drawing L-700

1. Acceptable

Drawing L-701 Conventional Site Preparation Plan

1. Acceptable

Drawing L-702 Conventional SWPPP Plan

1. Acceptable

Drawing L-703 Conventional Grading & Drainage Plan

1. Acceptable

Drawing L-704 Conventional Utilities Plan

1. Acceptable

Drawing L-705 Conventional Layout Plan

1. Acceptable

Drawing L-800

Many specification sections appear to be missing parts of there text i.e. General, Submittals, Products, Materials etc. Specification sections reference other specifications absent from this submission. Section 31 2301 is missing in its entirety as are many others. Specification sections do not appear to have been coordinated with reports and drawings provided by the applicant

Drawing L-801 (New Drawing)

Many specification sections appear to be missing parts of there text i.e. General, Submittals, Products, Materials etc. Specification sections reference other specifications absent from this submission. Section 31 2301 is missing in its entirety as are many others. Specification sections do not appear to have been coordinated with reports and drawings provided by the applicant

Drawing L-900 Wet Pond Comparisons (New Drawing)

Drawing L-900 shows 14 photos and a schematic of a grading and drainage plan for 21 housing lots. The photos appear to be an attempt to document drainage facilities within the Town of Manlius. At least 6 of the photos are not a part of the Town of Manlius NY. Photo 5 L-900; 6 L-900;4-8 L-900; 5-8 L-900; 6-8 L-900; 6-8 L-900; all are photos of the neighboring municipality of the Village of Manlius of which the Town has no jurisdiction. Of the remaining 8 photos depicted on sheet L-900, 2 L-900; 3 L-900; 4 L-900;

2-8 L-900; 3-8 L-900 predate stormwater regulations mandated by NYSDEC in 2000. Thus, the drawing 1 L-900 is the only site developed since 2000 regulations and subsequent updates have been made. A copy of the project SWPPP addressing concerns is available at the Town of Manlius. Additionally, drainage documentation for the Mallards Landing subdivision is available for review. Drawing L-900 is not a drawing required for subdivision approval and should be removed from the project submission. This drawing is dated December 2017, this drawing has not been a part of any previous submission

Drawing L-901 Sample Architecture (New Drawing)

Drawing L-901 shows photos of 9 homes apparently built by Thomas Allen Homes and dose not include any specifics pertaining to sample architecture. On numerous occasions architectural issues have been discussed by the developer with the planning board and the public. The developer has indicated that there would be architectural standards for the subdivision. To that end it has been discussed to provide details on architectural issues/standards. Items to be submitted generally should include but are not limited to landscaping requirements & restrictions, number of garages (attached or detached), building materials, color schemes, roofing materials, lighting, proposed setbacks and lot coverages. This drawing is dated December 2017, this drawing has not been a part of any previous submission

Please contact me at 315-558-8417 with any questions you may have.

Very Truly Yours,

Douglas A Miller, P.E.

MILLER ENGINEERS

Attachment: John P. Stopen Peer Review of Impoundment "Dam" and QA/QC Measures Hoag Lane-Woodland Hills Manlius, NY

JOHN P. STOPEN ENGINEERING, LLP

PRINCIPALS: JAMES F. KAPLAN, P.E. / JAMES P. STEWART, Ph.D., P.E. / ROBERT J. COSSELMAN, P.E. / MATTHEW W. McKEE, P.E.
ASSOCIATES: ERIK A. NELSON, P.E. / JASON P. THORPE, P.E.

July 27, 2020

via email to: dougmiller@millerengineers.com
Miller Engineers
131 W. Seneca St.
Suite B, Box 311
Manlius, NY 13104

ATTN: Mr. Doug Miller, P.E.

RE: Peer Review of impoundment "Dam"
and QA/QC Measures
Hoag Lane – Woodland Hills
Manlius, New York
#220164.00

Dear Mr. Miller:

As you requested and approved with respect to our July 7 Letter of Engagement, we agreed to review project documents for:

1. Geotechnical assessment of the storm water impoundment area "Dam"

2. Review of the QA/QC measures for earthwork

3. Respond to your questions with respect to other aspects of this project

We reviewed these documents:

1. Kepplinger Freeman Contract Documents L-000 to L-901 dated 6/15/2020

2. Kenny Geotechnical Services reports dated May 18 and 27, 2020

3. SWPP by RZ Engineering dated 6/15/2020

4. Hoag Lane Cluster Development Response Letter to Town of Manlius Engineer Letter by Kepplinger Freeman Associates dated June 15, 2020

5. Woodland Hills Summary of Outstanding Engineering Issues by Kepplinger Freeman Associates dated June 15, 2020

6. Wetland Report by Environmental Resources, LLC dated June 13, 2020

7. Woodland Hills Earthwork Summary by Kepplinger Freeman Associates dated June 15, 2020

Based on our review, we have these comments:

1. The L-700 Series Sheets by Kepplinger Freeman were not reviewed because we understand they were included for comparison purposes for others , and not intended for construction.

2. The 7-stage 21-lot hillside earthwork construction has many individual cut-and-fill area components.

3. Successful earthwork construction will require more than average care because of potentially moisture-sensitive soils and number of different cut-and-fill component areas while also meeting the SWPP requirements for each of the 7 stages.

4. Earthwork inspection will be required to document proper placement of structural fill in each of the variable component areas.

5. GPS or other detailed survey methods should be considered for Inspector(s) to adequately orient observations (in x-y-z coordinates) with respect to work shown on drawings. Otherwise it will be nearly impossible for inspectors to orient themselves.

6. In our opinion, full-time earthwork inspection should be considered to observe and document pertinent earthwork observations. We would expect that significant daily changes to the grades will occur.

7. We recommend preparing a Design Report for the dam documenting hydrology, water levels for analyses, spillway sizing, downstream safety, earthwork requirements, and all structural aspects. At full level, the dam will hold back an impoundment of over 1,000,000 gallons and the water level will be higher than the homes downstream.

8. Dam design should be stamped by the Engineer responsible for the design of all aspects of the dam.

9. Calculations in Kenney Geotechnical Services (KGS) dated May 27 should be scrutinized for Rapid Drawdown analyses wherein it appears that downstream slope was evaluated instead of the upstream slope.

10. Other KGS calculations should be included in, and explained better in the Design Report.

11. Consider providing a concrete water bar, or weir, for dam impoundment discharge.

12. Provide calculations for anti-seep collars through berm and hillside storm pipes.

13. Dimension bottom width of trench or detail 6/L-500. It appears 2-ft-wide, but calculations use 6-ft-wide, that is not consistent with contours or Plans.

14. Check if storm flows will be contained in SI1 to CBI System by Buildings 12, 13, 14, or if grade could be elevated to avoid this.

15. Scrutinize KGS May 18 report for third bullet point on page 3. Need to remove particles larger than 2 inches for structural fill. Seems like this could be a hardship for earthwork execution.

16. Define special procedures required for preparing subgrade and compacting soils on slopes or hillsides.

17. Identify and address concerns with water infiltration into bedrock from impounded water behind dam, if any. Is a liner required for the pond.

Thank you for this opportunity to be of service to Miller Engineers. Please contact me if you have questions or require additional service.

Sincerely,

JOHN P. STOPEN ENGINEERING, LLP

James P. Stewart

JAMES P. STEWART, Ph.D., P.E.
Partner, Geotechnical Engineer

JPS/jlw

EH/JPS/jlw

Correspondence

15th June 2020

Joseph Lupia
Town of Manlius Planning Board Chairperson
301 Brooklea Drive
Fayetteville, NY 13066
Phone: 315-637-3414
Fax: 315-637-0713

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Woodland Hills Email Correspondence

Dear Mr. Lupia,

Attached are copies of all email correspondence we have had with consultants and agencies over the past few months regarding the Woodland Hills Subdivision. We believe this correspondence puts to rest some of the major concerns the Town and Engineer had regarding proposed actions on the site. We understand the town may interpret these thoughts differently but we stand behind the policies & rules as indicated by these agencies. They are as follows:

1. Onondaga County Department of Water Environment Protection, Chris Deitman

   Subject: Low Pressure Sanitary System Applicability in Onondaga County

   Dated: June 2nd , 2020

2. NYS Department of Environmental Conservation, Matthew J. Kazmierski

   Subject: Compost requirements for subdivision development in Town of Manlius

   Dated: March 11th , 2020

3. NYS Department of Environmental Conservation, Jennifer E. Ross

   Subject: Dam permitting requirements Woodland Hills Subdivision

   Dated: March 25th , 2020

Vincent Ryan

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, June 12, 2020 1:52 PM
To: Vincent Ryan
Subject: FW: 200505 Hoag Lane subdivision

Follow Up Flag: Follow up
Flag Status: Completed

Here's Dietman's response.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Christopher Deitman <ChrisDeitman@ongov.net>
Sent: Tuesday, June 2, 2020 9:07 AM
To: Rudy Zona <rzona@rzengineering.com>; Jeffrey Till <JeffreyTill@ongov.net>
Subject: RE: 200505 Hoag Lane subdivision

Hi Rudy,

The only reference documents for number of lots for a public pump station refer to running a cost analysis for capital and operation and maintenance costs.

I can however offer the following.

Yes low pressure systems exist in many Towns with in the County's sanitary sewer district and are acceptable by the NYSDEC. Besides the Town's you mentioned Dewitt , Lysander and Manlius which has four or six houses on a low pressure system.

WEP does not provide any service for the Grinder pumps themselves but will flush out the low pressure force main if a flushing port was installed.

A public pump station for seven houses would have to be built to 10-State Standards. After the cost to build, the average yearly Operation and Maintenance costs are roughly $15,000.00-$17,000.00 for a duplex station.

For seven homes you are in the$2,140.00 to $2,430.00 per home per year to maintain the station, not including the capital cost to build it and rehab it in the future.

Thanks

Chris Deitman
Sewer Maintenance Superintendent

Vincent Ryan

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan
Cc: Gasper, David J (DEC); Scott Freeman; 'Rudy Zona (rzona@rzengineering.com)'
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating we apply full restoration per "deep Ripping and De-compaction, DEC 2008" and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
vr@keplingerfreeman.com
(p) 315 -445-7980 x 110

Vincent Ryan

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Wednesday, March 25, 2020 1:55 PM
To: Rudy Zona; dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen'; Scott Freeman; Vincent Ryan; 'Tom Douglas'
Cc: 'Joe Lupia'
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Good afternoon all:

I spoke with Rudy on the phone this afternoon and wanted to summarize our discussion for everyone's records.

I took a look at the drawings and noted that the invert of the outlet pipe is located at an elevation of 664 feet and the top of dam elevation was given as 676.5 feet. So based on my interpretation of the drawings, I had determined a dam height of 12.5 feet. Rudy added that there is some stone rip-rap below this pipe down to an elevation of 662 ft, so conservatively that would put the dam at a height of 14.5 feet. Since the maximum impoundment and dam height are under 3 million gallons and 15 feet the dam would be exempt from needing a DEC Dam Safety Permit. I have given the exemption below.

NYRCC Part 608.3 Dams
(b) Exceptions.
The requirement of a permit pursuant to subdivision (a) of this section does not apply to the following:
(1) the construction, reconstruction, repair, breach or removal of a dam that has a height less than 15 feet, and a maximum impoundment capacity less than three million gallons;

We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event.

Although the dam is below DEC permit thresholds, we always do advise that any dam be designed by a Professional Engineer and that our Guidelines for Design of Dams 1989 be followed as best practice. I would also offer to review any other material that may be developed with regard to the design and specifications for the impoundment if that is desired by any party.

Please feel free to contact me if further clarification is needed.

Best,

Jennifer

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Wednesday, March 25, 2020 12:26 PM
To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

June 11, 2020

TO: Doug Miller, PE
MS-4 Representative
Town of Manlius
AND
Val Murakami
NYSDEC Region 7
Syracuse, NY 13204

RE: RZE #17061
5-acre Disturbance Permit
Hoag Lane Subdivision
Hoag Lane
Town of Manlius
Onondaga County, NY 13066

NARRATIVE

Hoag Road Properties, LLC proposes to subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout. Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing residential driveway for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance (managed in 7 smaller stages), above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer. A wetland delineation provided by Environmental Resources. LLC in --- has provided limits of the existing wetland, see enclosed report by Environmental Resources. LLC The proposed construction does not propose any disturbance to the existing wetland limits or associated buffer. The purpose of this narrative is to describe the proposed site plan and the proposed staged construction sequence.

Construction of the proposed site will consist of one phase broken down into seven stages to limit the potential for erosion and sedimentation issues during the construction process. The seven stages have been outlined on the contract drawings L-102 through L-108. We anticipate that several stages will include disturbance exceeding 5 acres, however this time of open soils exceeding 5 acres will be limited and short.

(1.) As provided in drawings L-102 through L-108 of the site plan set, we anticipate the site to include approximately 7 stages. Each stage is a guide for erosion control and may require adjustments and alterations based on project schedule and field conditions.
   a. Stage 1 will generally consist of installing the proposed entrance drive, wet pond, the proposed bypass swale and general grading of lots 11 through 14. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this all stages. The anticipated disturbance of this stage will be approximately 6.4± acres with an anticipated duration of 6 weeks.
   b. Stage 2 will generally consist of maintaining the proposed temporary sediment basin, continuance of the proposed road and general grading of lots 4 through 10 and 18-19. The installed road will

6320 Fly Road Suite 109
East Syracuse, NY 13057
Ph: 315.432.1089
rzona@rzengineering.com

be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 7.8± acres with an anticipated duration of 6 weeks.

c. Stage 3 will generally consist of maintaining the proposed sediment basin, continuance of the proposed road and general grading of lots 15 through 17 and 1 through 3. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 4.1± acres with an anticipated duration of 6 weeks.
d. Stage 4 will generally consist of finishing all rough earthwork in non stabilized areas and filling in the temporary sediment basin. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 1.12± acres with an anticipated duration of 7 weeks.
e. Stage 5 will generally consist of installing all row utilizes including storm, sanitary and water. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.2± acres with an anticipated duration of 2 weeks.
f. Stage 6 will generally consist of installation of final road grade and base except top course which must be installed within 1 year of project completion. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.1± acres with an anticipated duration of 2 weeks.
g. Stage 7 will generally consist of individual lot construction on an as needed basis. Each lot will include individual erosion control measures during construction as outlined on drawing 2/L-108. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of each lot will differ based on the lot size and has an anticipated duration of 3 weeks.

(2.) Individual erosion and sediment control practices for each stage has been provided on drawings L-102 through L-108 of the site plan set.

Please feel free to contact my office with all questions and/or comments.

Very Truly Yours,

Rudy L. Zona, P.E.

6320 Fly Road Suite 109
East Syracuse, NY 13057

Ph: 315.432.1089
rzona@rzengineering.com

Reports

15th June 2020

Joesph Lupia
Town of Manlius Planning Board Chairperson
(315) 477-0100 / Fax (315) 477-5071
301 Brooklea Drive
Fayetteville, NY 13066
Tel. 315-637-3414

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: **Woodland Hills Earthwork Summary**

Dear Chairman Lupia and Planning Board Members,

Please refer to the attached earthwork calculations performed by Tobin Construction utilizing Earthworks Elements. Tobin construction has reviewed this project very closely with our design team, has performed several earthwork calculations for the site and is confident that the site will be able to balance.

A. **TOTAL SITE SUMMARY** - Site Excavation Report for the entire site, attachments A and B, show a cut of 39,308 cubic yards and a fill of 53,929 cubic yards with an import of 14,620 cubic yards which is ideal for a sitework contractor. Soil testing will be required for the use and placement of the 2,480 cubic yards required to construct the fill sections of the proposed right of way. According to Tobin Construction the on site soil materials will balance and import of fill material will not be required for general filling. The import quantity of 14,620 cubic yards will accounted for as follows by the items listed below:

   1 - Road pavement and driveway subbase materials, basement excavation – 3240 cubic yards

   2 – Driveway and subbase material – 740 cubic yards

   3 – Road Underdrain - 320 cubic yards

   4 – Basements– 9,300 cubic yards

   5 – Pipe voids and pipe bedding – 900 cubic yards

   14,500+/- cubic yards total

B. **STAGE 1 SITE SUMMARY** – Site Excavation Report for Stage 1 construction (drawing L-102) , attachments B and C, show a cut of 18603 cubic yards and a fill of 17,413 cubic yards. A surplus of 1189 cubic yards will be utilized to as fill during Stage 2 construction.

C. **STAGE 2 SITE SUMMARY** - Site Excavation Report for Stage 2 construction (drawing L-103), attachments E and F, show a cut of 16,779.8 cubic yards and a fill of 15,298.9 cubic yards. A surplus of 1480.9 cubic yards will be utilized to as fill during Stage 3 construction.

On-site material will be utilized within the right of way fill areas, utilities backfilling and fill below basement slabs based in accordance with project testing specifications and field testing which will be coordinated with the Town of Manlius selected testing agency. According to the earthwork material evaluation and berm stability evaluations performed by Kenney Geotechnical Engineering Services the on-site borrow material which meets the testing criteria can be utilized for fill within the right of way and constructing the embankment.

The earthwork operations will occur within the areas shown on the staged site plans (drawings L-102, L-103, L-104, L-105, L-106, L-107, and L-108. The stockpile areas shown within the staged drawings for stockpiled materials is sufficient based on or experience with similar project.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering

Scott L. Freeman, R.L.A. ASLA

Rudy Zona, P.E.

Attachment 'A' - Total Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 09:01 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

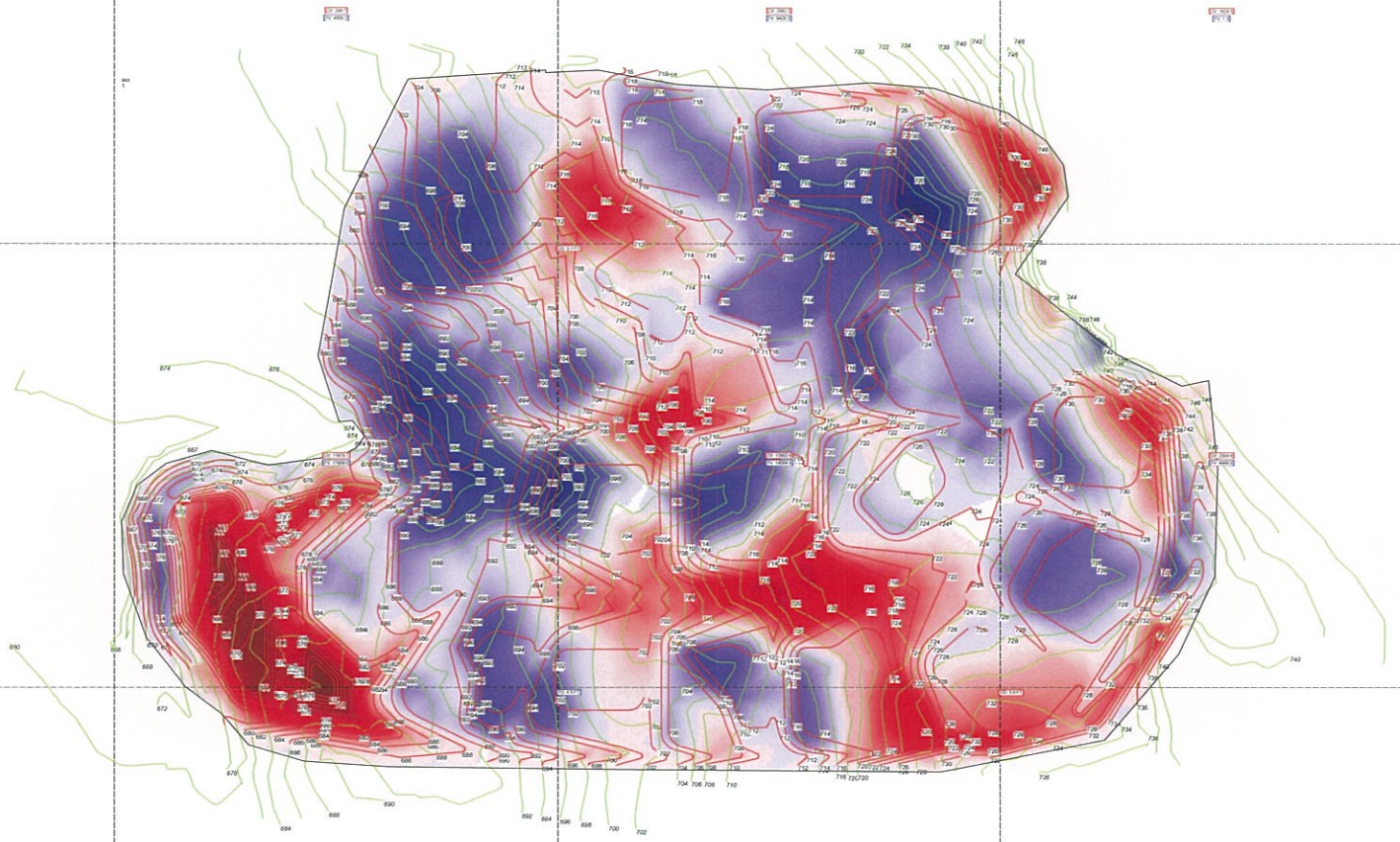
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Import Soil Compression:	0%

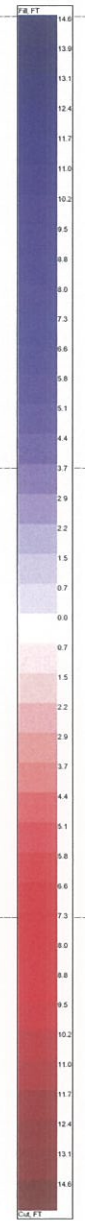
Cut Area:	306228.0	FT2
Fill Area:	439531.0	FT2
Work Area:	751864.0	FT2

Bank Cut:	39308.2	YD3
Expanded Cut:	39308.2	YD3
Bank Fill:	53929.1	YD3
Topsoil Stripped:	0.0	YD3
Topsoil Replaced:	0.0	YD3
Import:	14620.9	YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 09:06 A
Description: Untitled
Cut: 39308 YD3 Fill: 53829 YD3 Import: 14621 YD3

Attachment 'B' - Total Cut/Fill Earthwork





1500
1000
500
500
1000
1500
2000

Attachment 'C' - Stage 1 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 08:18 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

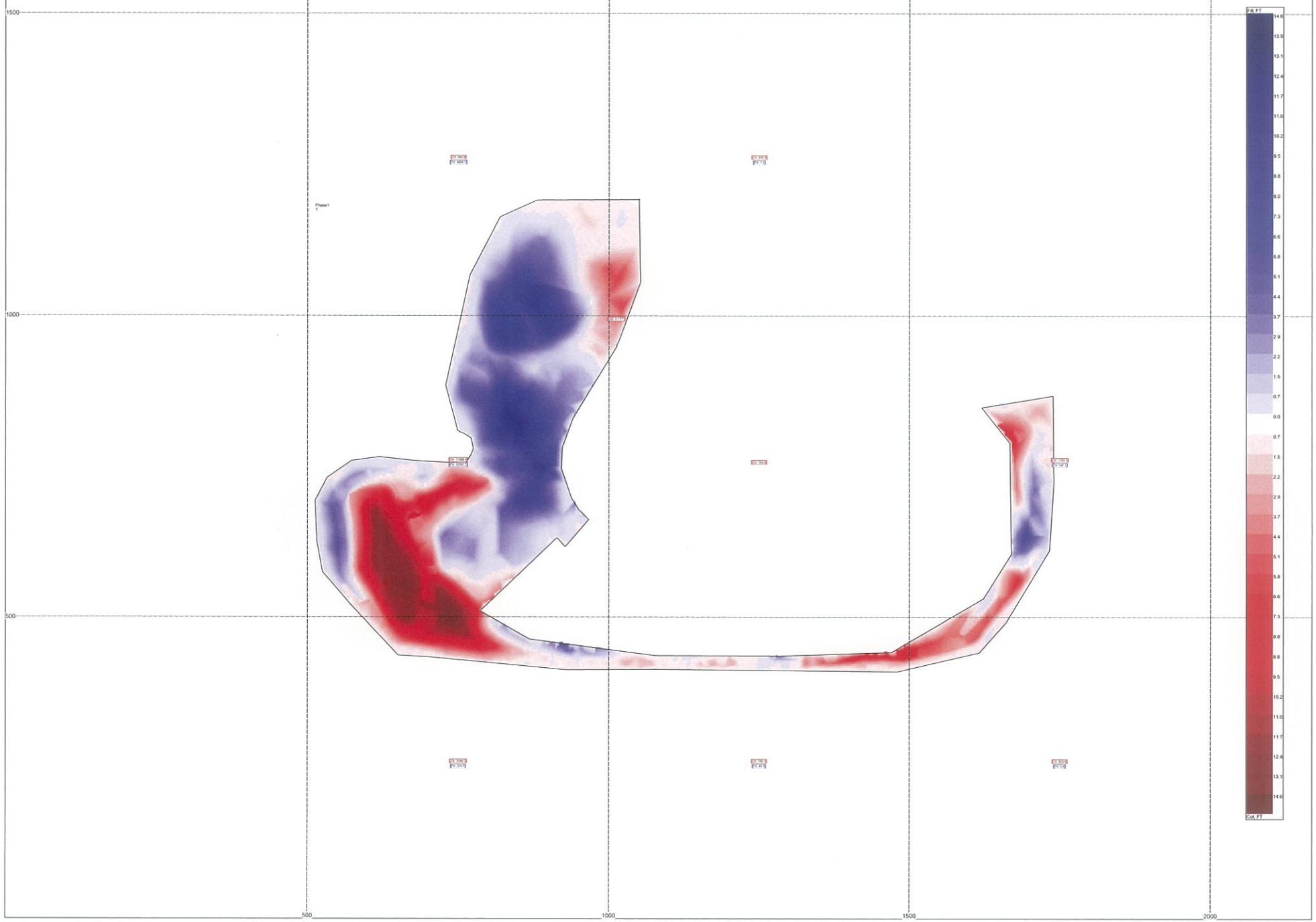
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 127234.0 FT2
Fill Area: 139320.0 FT2
Work Area: 267171.0 FT2

Bank Cut:	18603.2 YD3
Expanded Cut:	18603.2 YD3
Bank Fill:	17413.3 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1189.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 08:23 A
Description: Untitled
Cut: 18663 YD3 Fill: 17413 YD3 Export: 1190 YD3

Attachment 'D' - Stage 1 Cut/Fill Map



Attachment 'E' - Stage 2 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 10:22 AM

Job Filename: EW1
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

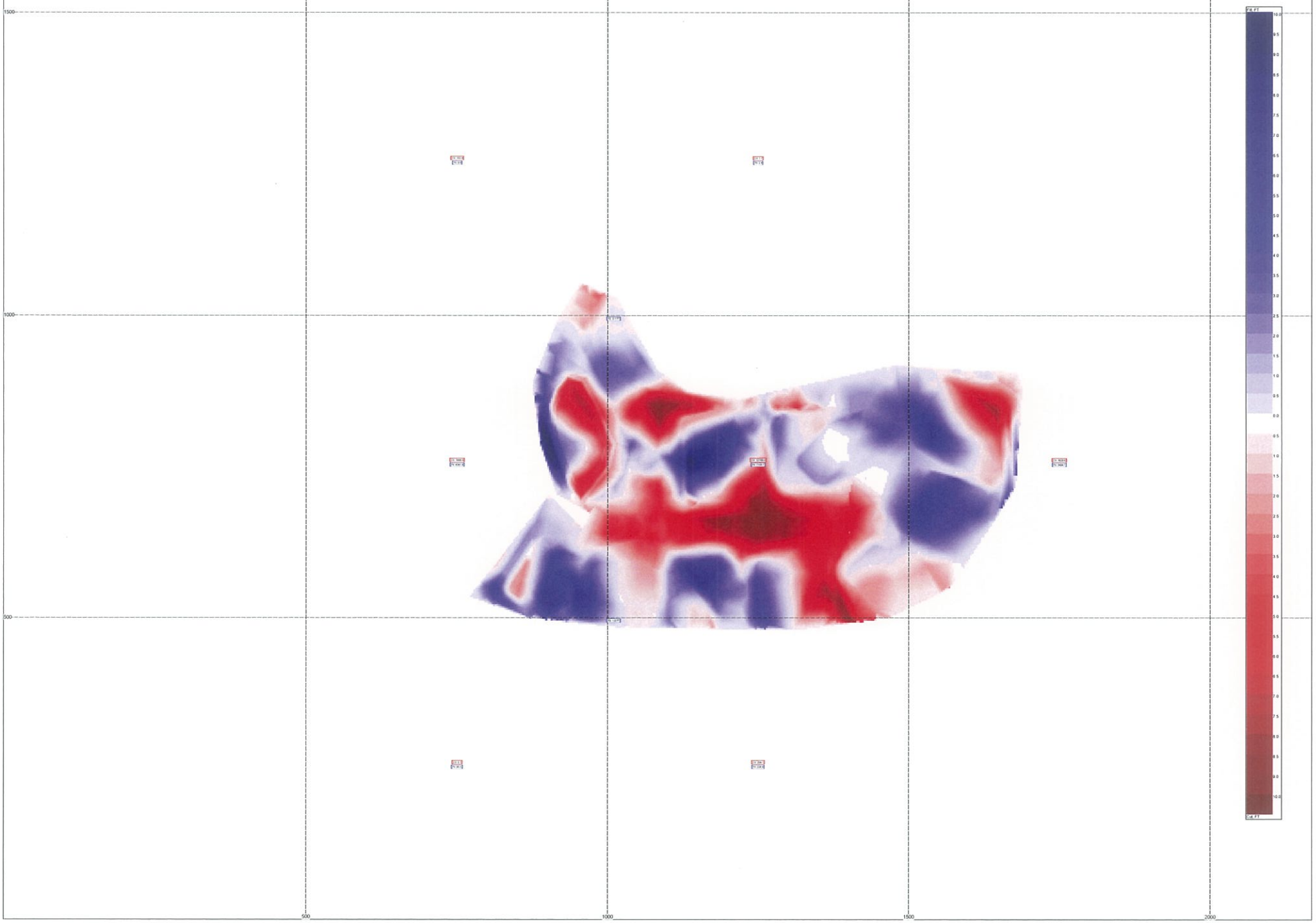
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 156400.0 FT2
Fill Area: 174060.0 FT2
Work Area: 334776.0 FT2

Bank Cut:	16779.8 YD3
Expanded Cut:	16779.8 YD3
Bank Fill:	15298.9 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1480.9 YD3

Cut and Fill Color Map
Filename: EW1 Date: 06/16/20 Time: 10:21 AM
Description: Untitled
Cut: 16760 YD3 Fill: 15299 YD3 Export: 1461 YD3

Attachment 'F' - Stage 2 Cut/Fill Map



Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 27, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Berm Stability Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed a geotechnical evaluation of the proposed berms to be constructed for stormwater management features at the referenced site. The purpose of our analysis was to evaluate the stability of the berms under anticipated loading conditions. This report presents the results of our evaluation and provides output from stability analyses.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Analysis Scenarios

The proposed berms are illustrated on drawings prepared by Keplinger Freeman Associates Landscape Architecture (see attached). It was assumed for the purposes of our analysis that the berms would be constructed to the lines and grades indicated on the design drawings using on-site material with the engineering characteristics described in our previously submitted Hoag Lane Earthwork Report.

The engineering characteristics of the on-site materials, when recompacted in accordance with our recommendations, are well suited for berm construction. The recompacted glacial till exhibited good undrained shear strength (greater than 2500 pounds per square foot) and low permeability (less than 1 x 10-6 cm/sec). It should be noted that the in-situ glacial till exhibited even higher strength and also had low permeability. Topsoil and organic matter, up to approximately 24 inches in thickness at the berm area, will be removed from beneath the berm footprint during construction.

The recompacted till will be in direct contact with the in-situ till. The interface between the two materials will be scarified to promote bonding and prevent the creation of a seepage interface. Seepage rates through the berm are anticipated to be very low based on the engineering characteristics of the in-situ glacial till and recompacted on-site materials. Therefore it is our opinion that a keyway at the base of the berm is not necessary.

The maximum slopes illustrated on the drawings are a 33% exterior berm grade, 20% interior berm grade, and a maximum berm height of 12 feet. We assumed water levels in the berm at flood stage were 1 foot below the crest. Water depth at typical service conditions is 6 feet.

Our analysis utilized the geotechnical evaluation guidelines presented in the NYSDEC Dam Design publication as requested by the Town of Manlius. Common geotechnical practice was also employed. The following evaluations were performed:

- Bearing Pressure and Settlement
- Sliding
- Soil Piping
- Slope Stability:
    - Water at Flood Level
    - Rapid Drawdown
    - Seismic Event

The analyses modeled the highest berm to be constructed (west slope of westernmost stormwater management feature). Soil used in berm construction was assumed to be the on site glacial till, a low plasticity sandy clay with gravel. The assumed geotechnical strength parameters are summarized in the following table.

Material	Condition	Unit Weight (pcf)	Cohesion (psf)	Internal Friction (degrees)
Recompacted Till (Engineered Fill)	Short Term	140	1000	0
	Long Term	140	100	32
Undisturbed Glacial Till	Short Term	145	2500	0
	Long Term	145	350	34

For seismic analysis, a ground acceleration factor of 0.05 was utilized.

Results

The geotechnical evaluations performed indicate the berm will remain stable under the modeled service scenarios. The following table summarizes evaluation results. Full output is attached for reference.

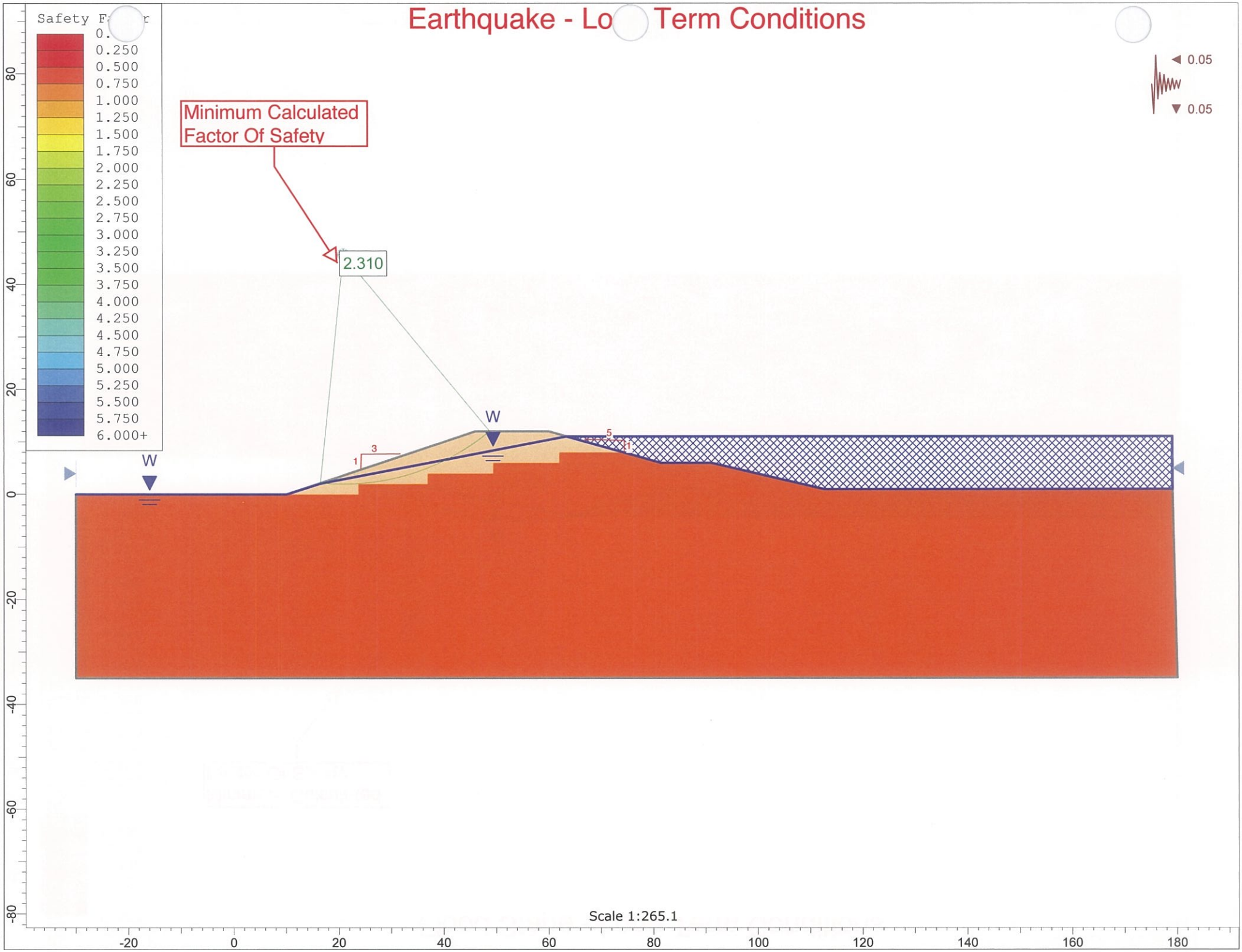
Scenario	Condition	Calculated Minimum Factor of Safety	Result
Service Condition with Full Pool	Short Term	9.4	Acceptable
Service Condition with Full Pool	Long Term	2.9	Acceptable
Flood Stage	Short Term	9.4	Acceptable
Flood Stage	Long Term	2.7	Acceptable
Rapid Drawdown after Flood Stage	Short Term	8.7	Acceptable
Rapid Drawdown after Flood Stage	Long Term	2.7	Acceptable
Earthquake	Short Term	2.3	Acceptable

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

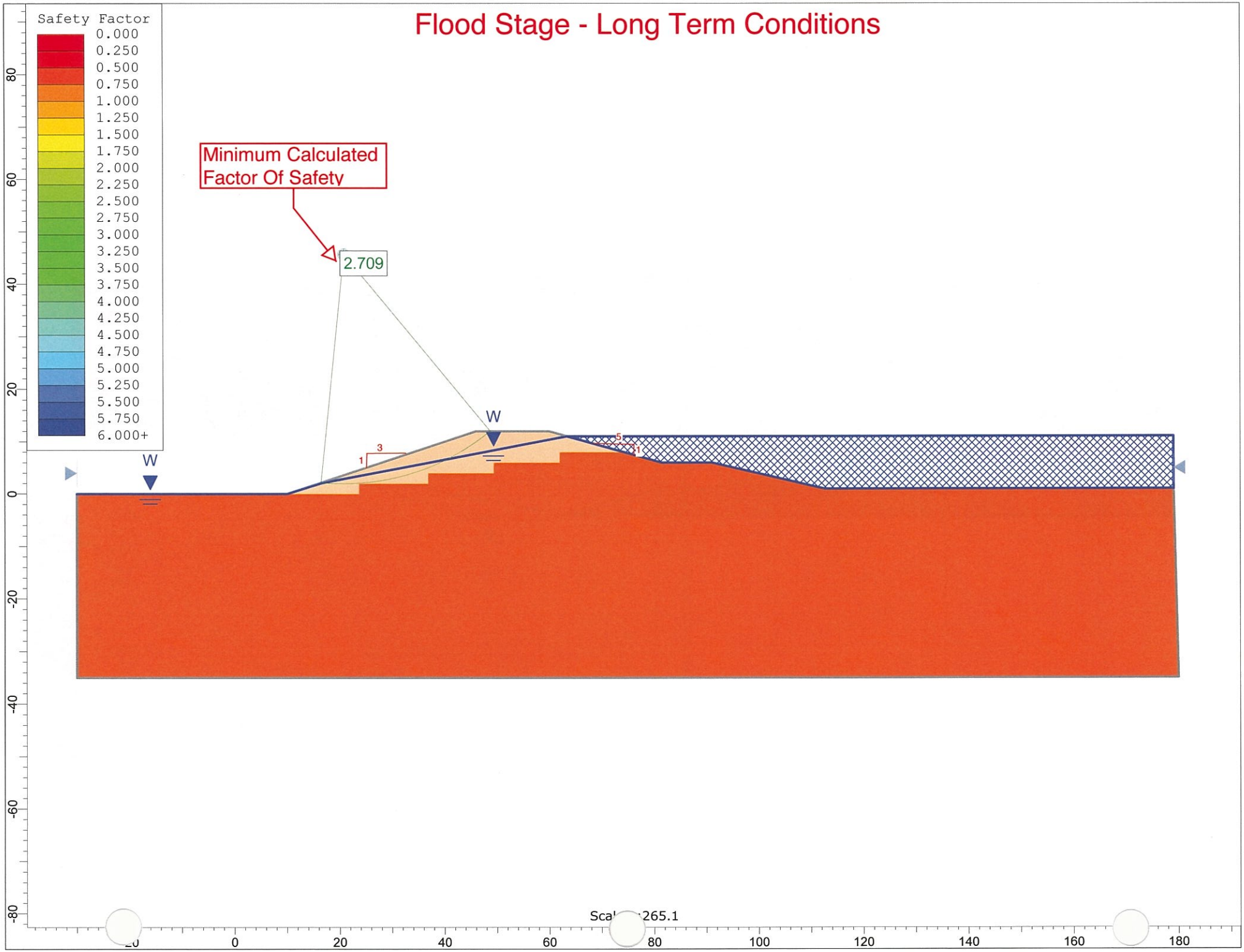
Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES PLLC

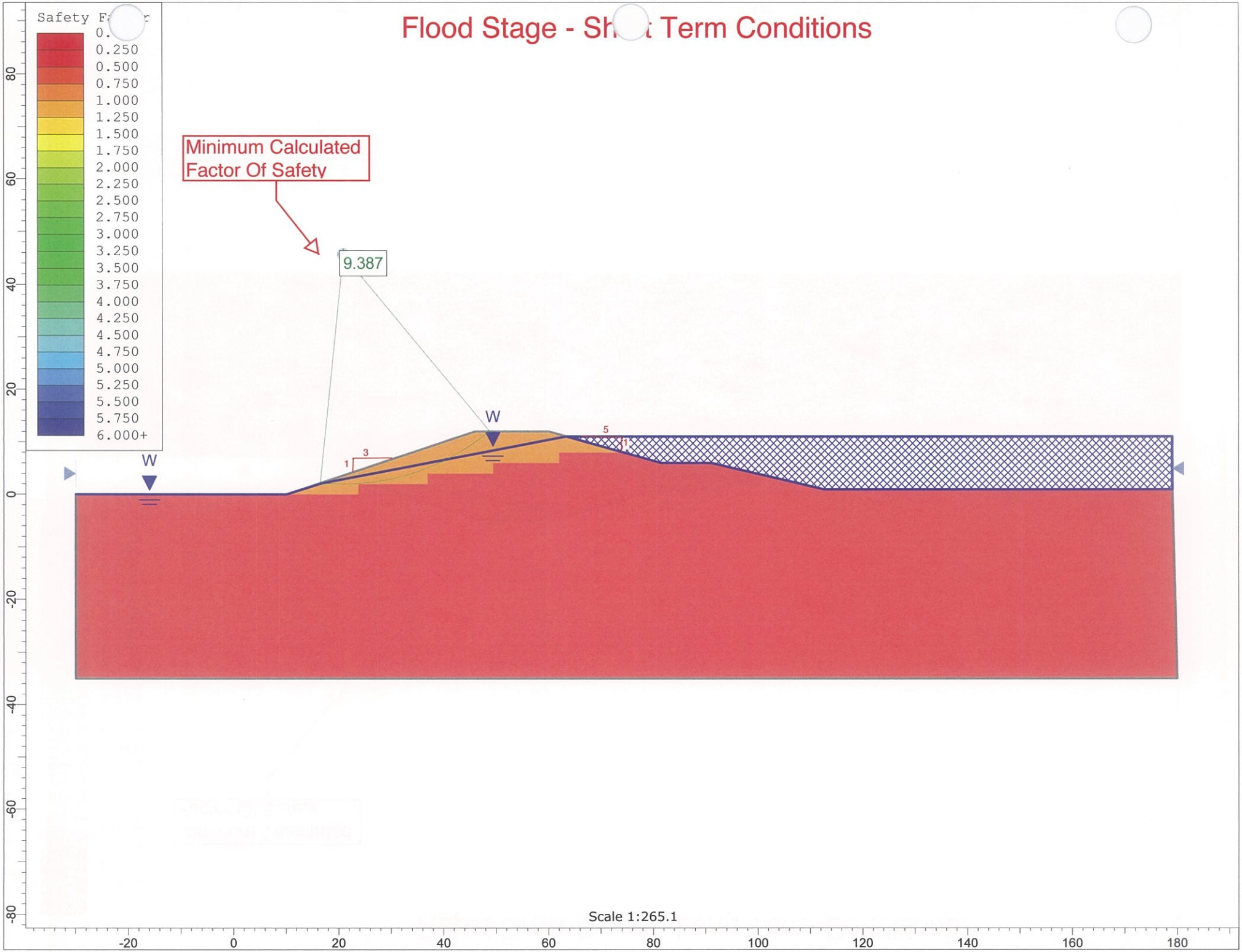
Christopher Kenney

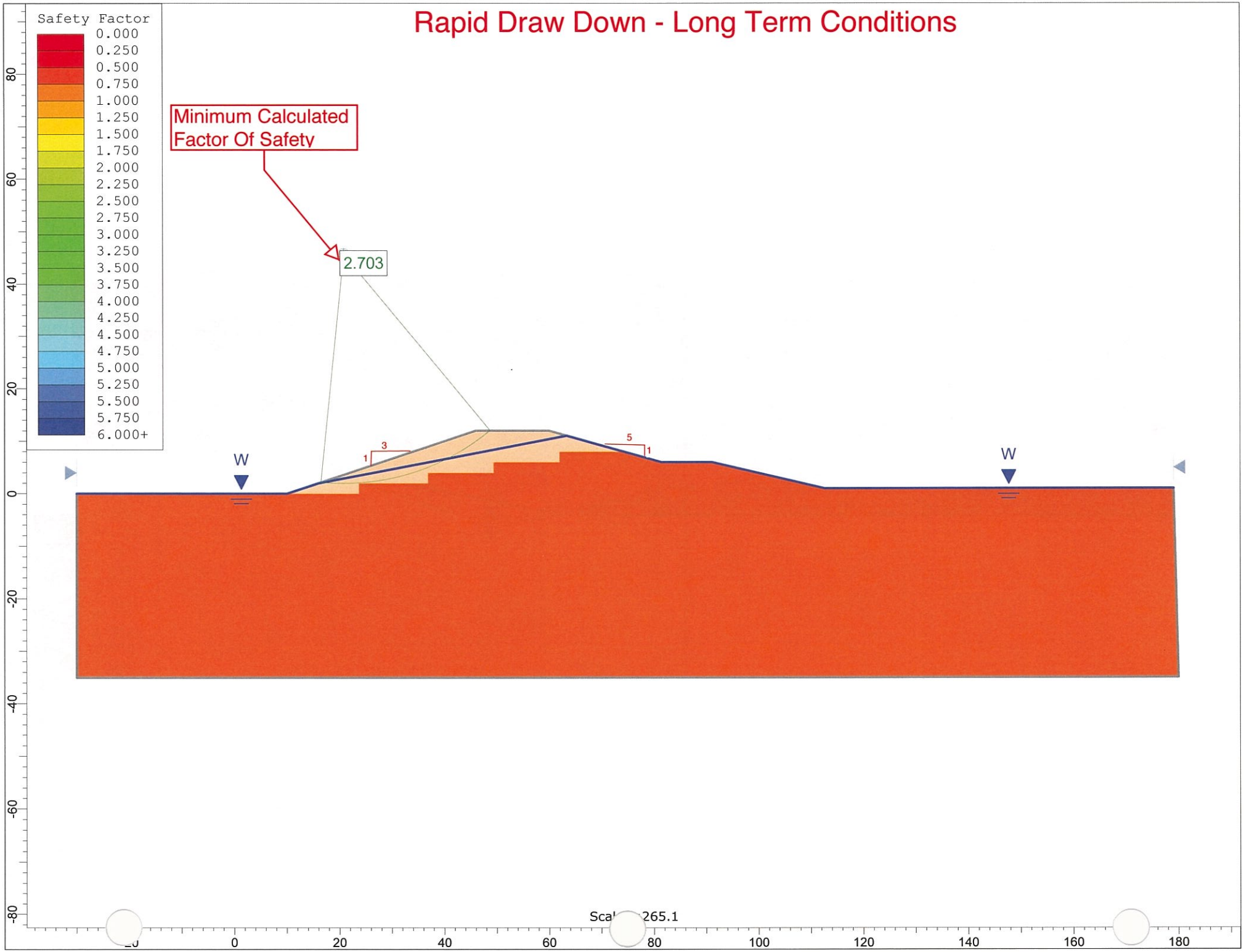
Christopher M. Kenney, P.E.
President

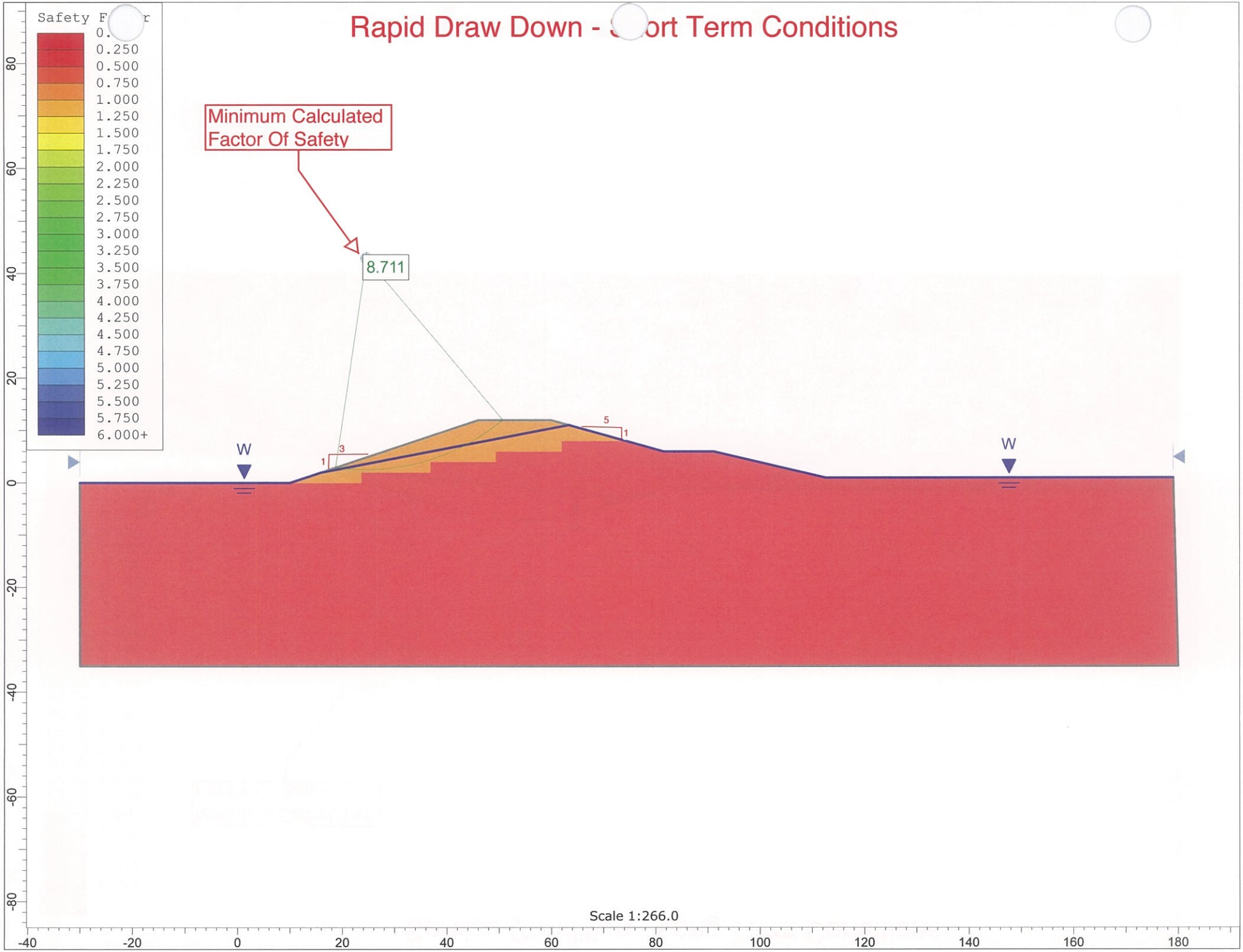

Earthquake - Lo Term Conditions
Safety F r
0.
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated
Factor Of Safety
2.310
0.05
0.05
W
W
3
1
5
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180

Flood Stage - Long Term Conditions

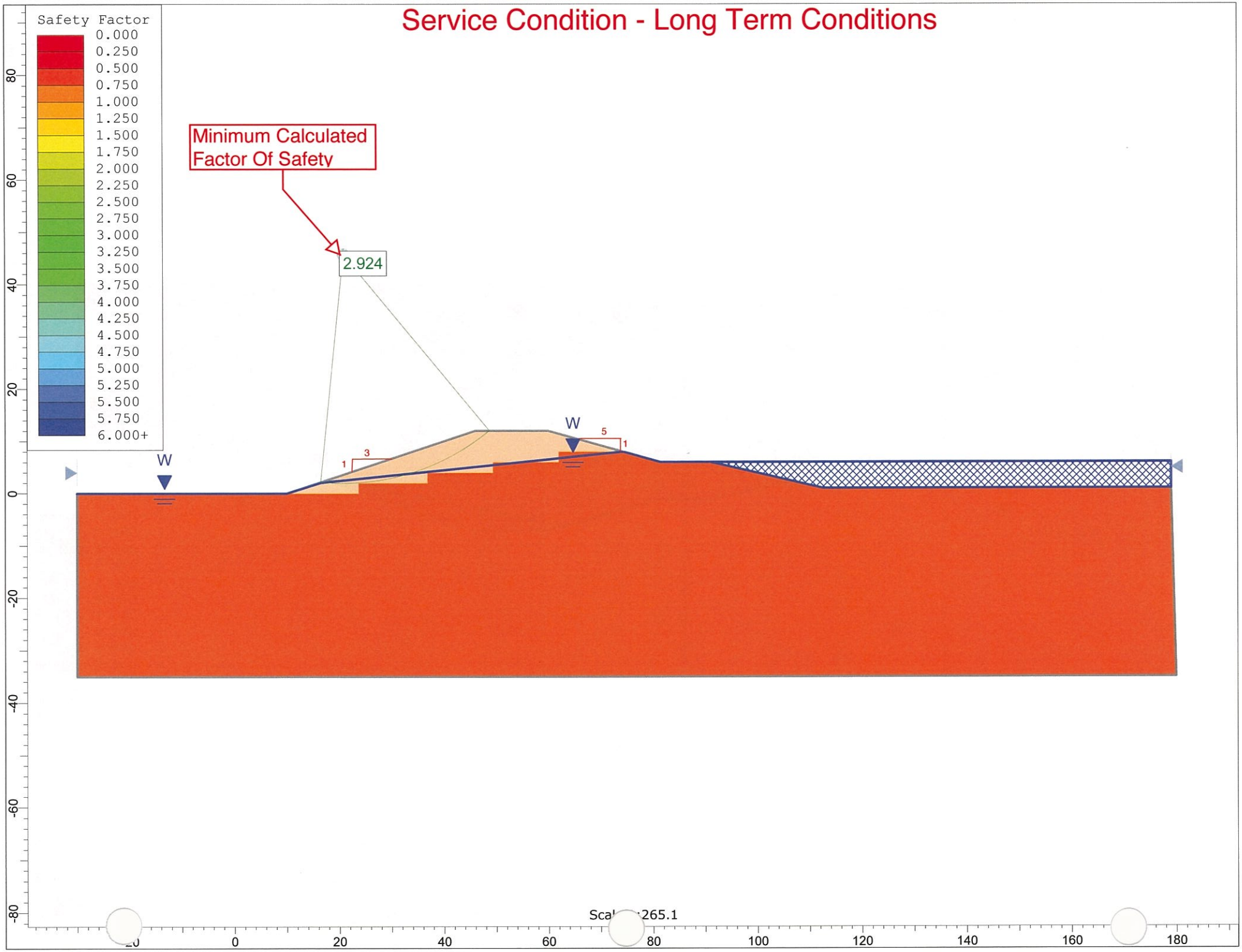



Flood Stage - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
9.387
W
W
5
1
3
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180


Rapid Draw Down - Long Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
2.703
W
W
3
1
5
1
80
60
40
20
0
-20
-40
-60
-80
0
20
40
60
80
100
120
140
160
180


Rapid Draw Down - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
8.711
W
W
3
1
5
1
Scale 1:266.0
-40
-20
0
20
40
60
80
100
120
140
160
180
80
60
40
20
0
-20
-40
-60
-80

Service Condition - Long Term Conditions



RZE/KFA SITE TESTING

DAM GUIDELINES SECTION & EVALUATION

PIT #		FINISH GRADE	FILL EVALUATION
TP-1	EX. GRADE	674.00	664.00 - 669.00 (5-10 DP)
TP-2		672.00	662.00 - 667.00
TP-3		677.00	667.00 - 672.00
TP-4		680.00	662 - 680.00
TP-5		715.00	709 707 - 715.00
TP-6		705.00	700 668.00 - 705.00
TP-7		724.00	716 715.00 - 725.00

ADD INFILTRATION TEST @ 662.00

TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7

HOAG - DOUG MILLER TESTING RQST.

PERCOLATION TEST RESULTS – PT-#

V:\PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14" - SANDY SILTY CLAY	∅ MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

TPS-# TPS-6

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-3	671.00	661.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-5	719.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	705.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-#

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-144" SANDY SILTY CLAY 144"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
		CONTOUR			UNDERDRAIN			PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		SPOT ELEVATION			SANITARY PIPE-GRAVITY			OUTLET PROTECTION
		HIGH / LOW POINT			SANITARY PIPE-LOW PRESSURE			OUTLET PROTECTION FOR 6" PIPE OR LESS
		PERCOLATION TEST PIT			OVERHEAD ELECTRIC			OUTLET PROTECTION FOR 8"- 12" PIPE
		DEEP HOLE			UNDERGROUND ELECTRIC			OUTLET PROTECTION FOR 15"- PIPE, DIMENSIONS PER PLANS
		FENCE			TELEPHONE			TRAFFIC SIGN
		UTILITY POLE			STORM STRUCTURE			SILT FENCE
		WATER LINE			INLET			EROSION CONTROL BLANKET
		FIRE HYDRANT			CATCH BASIN/MANHOLE			
		STORM PIPE			CLEAN OUT			
		TREE			SANITARY MANHOLE			
		SHRUBS			ASPHALT PAVEMENT-DRIVEWAY			
		PLANT KEY			ASPHALT PAVEMENT-ROAD			
		VEGETATION						

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

V:\SITE-PREP.NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN ITS ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN ITS ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAIN.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

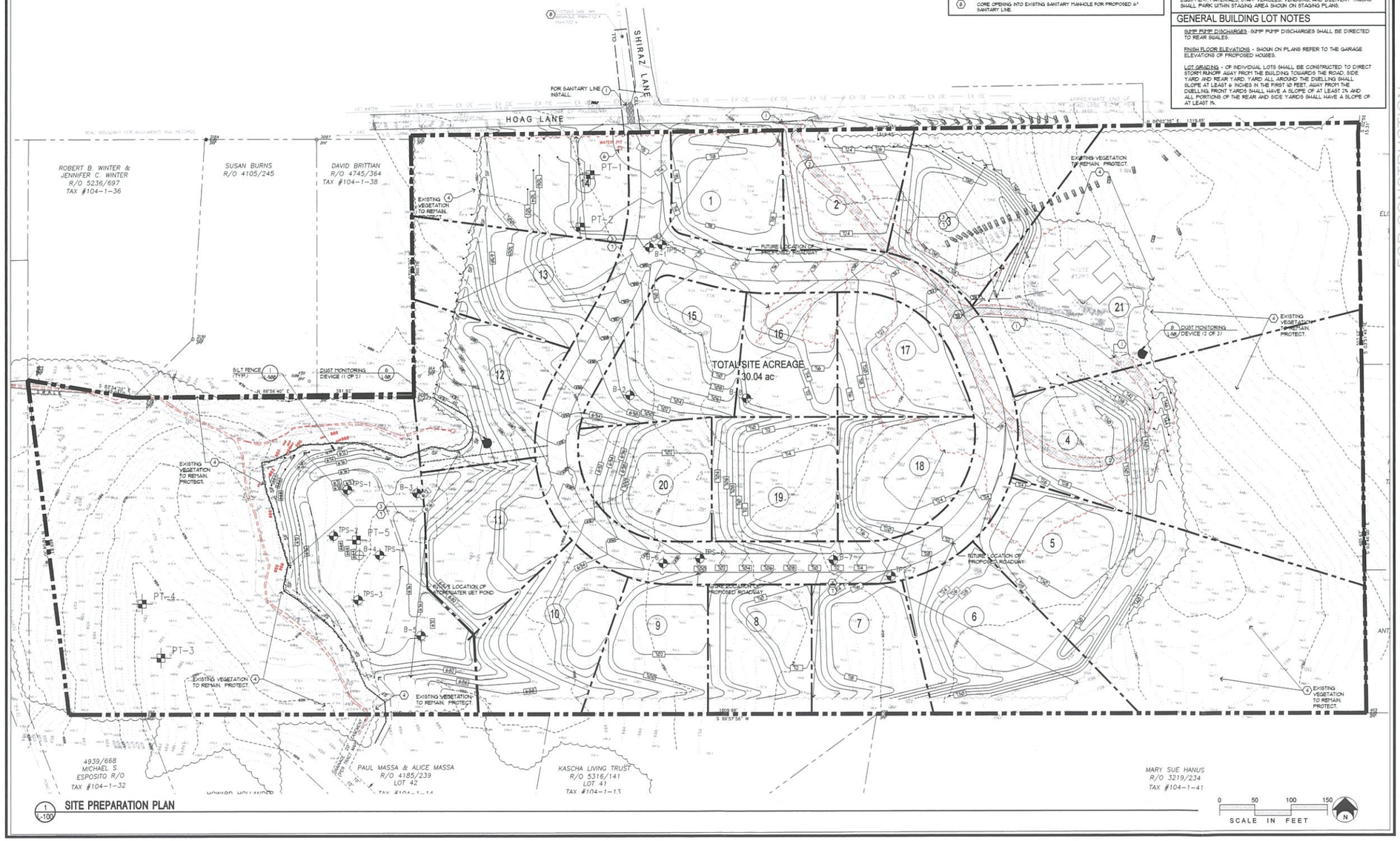
1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. U.F.P.C. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 SITE PREPARATION PLAN

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6226 FAYETTEVILLE ROAD, SUITE 108, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 446-7550 FAX: (315) 446-7551

RZ Engineering, PLLC
6226 FAYETTEVILLE ROAD, SUITE 108, EAST SYRACUSE, NY 13057
PH: 315.422.0289 FAX: 315.445.7861

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	05/22/18
2	2	CHECK SET-TOWN OF MANLIUS	06/26/18
3	3	PUBLIC HEARING, MANLIUS	03/06/19
4	4	PUBLIC HEARING, MANLIUS	05/04/19
5	5	PUBLIC HEARING, MANLIUS	06/03/19
6	6	TOWN REV. 21 LOTS-MANLIUS	09/23/19
7	7	MANLIUS P.I.LOTS-MANLIUS	12/18/19

No.	Rev	Description	Date
1	1	21 LOT SITE PLAN REVISIONS	01/04/18
2	2	MANLIUS PLAN SUBMISSION	07/13/18
3	3	MANLIUS PLAN SUBMISSION	09/23/19
4	4	MANLIUS PLAN SUBMISSION	12/18/19

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3706.0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Bearing Capacity Calculations

$q = N_c \cdot C$

$q = \frac{5.14 \cdot 2500}{3}$

$q = 4{,}283$ psf

$N_c = 5.14$

$C = 2500$ psf

F.S. $= 3$

Load applied by fill $= \gamma_{fill} \cdot H$

$H = 12'$ (maximum)

$\gamma_{fill} = 140$ pcf

Load applied by fill $= 140 \cdot 12$

$= 1{,}680$ psf

$1{,}680$ psf $< 4{,}283$ psf ✓

Settlement Calculations

- Elastic Settlement

$$P_e = \frac{\Delta\sigma (1-\nu^2)\sqrt{A}}{E B_z}$$

$$= \frac{1680 (1-0.35^2)\sqrt{14}}{160{,}000 (1.41)}$$

$= 0.29$ in. ✓

$\Delta\sigma = 1680$ psf

$\nu = 0.35$

$A = 14$ ft^2

$E = 160{,}000$ psf

$B_z = 1.41$

Soil Piping

Laboratory testing resulted in low plasticity cohesive soils that are non-dispersive and not prone to soil piping.

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 18, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Earthwork Material Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide evaluate the engineering characteristics of on site materials to determine if they are suitable for use during earthwork. The scope of the additional investigation included eight test pits (designated as TP-1 through TP-8) and laboratory testing. This report presents the results of the test pit investigation and laboratory testing and provides quality assurance/quality control recommendations for earthwork.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigation was performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture (see attached). Test pits were excavated by J. K. Tobin Construction.

Subsurface Conditions Encountered- Test Pits

In general the test pits encountered glacial till consisting of stiff to hard reddish brown sandy clay with gravel, cobbles and boulders beneath a thin layer of topsoil. Topsoil ranged from 12 inches to 23 inches in thickness at the test pit locations.

Differing subsurface conditions were encountered at location TP-6. At this location, silty gravel with sand was encountered beneath approximately one foot of topsoil and extended to a depth of three feet, where highly weathered grey shale was encountered. The shale was brittle and could be excavated to a depth of five feet.

Test pit logs are attached to this report.

Laboratory Testing

Bulk samples were obtained from the test pits and tested in our Syracuse laboratory. Testing performed included:

- Moisture- Density Relationship Testing (Modified Effort) (ASTM D-1557)
- Natural Moisture Content (ASTM D 2216)
- Particle Size Analysis with Hydrometer (ASTM D-422)
- Atterberg Limits (ASTM D4318)

Test results are attached. Results are summarized in the following table:

Sample ID	Description	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Fines (%)
TPS-1	Red-brown Till	9	21	15	6	-	-	57
TPS-2	Red-brown Till	10	22	15	7	-	-	53
TPS-3	Red-brown Till	11	21	14	7	-	-	56
TPS-4	Red-brown Till	10	23	19	4	-	-	54
TPS-5	Red-brown Till	10	-	-	-	136.2	7.2	57
TPS-6 TOP	Silty Gravel	35	-	-	-	104.4	17.5	38
TPS-6 BOTTOM	Weathered Shale	23	-	-	-	110.6	16.2	14
TPS-7	Red-brown Till	10	-	-	-	137.3	7.2	59
TPS-8	Sandy Silt w/ Gravel	20	-	-	0	122.3	11.9	55

Analysis and Recommendations

The on site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smoothdrum roller at the end of each work day.

Earthwork must be performed using methods that will result in a stable excavations and fills. Typical temporary earthwork measures such as temporary drainage swales, stabilized haul roads, and the use of protective layers of crushed stone can be employed at this site. It is recommended that earthwork is observed by geotechnical personnel to ensure that all organic material is removed from the structural and pavement areas. Additional recommendations are as follows:

- Strip existing topsoil, roots and organics from all areas that will receive new construction to establish subgrade.
- Proof-roll exposed subgrade with a fully loaded dump truck, or accepted alternative equipment, under the observation of geotechnical personnel. Areas that rut, weave, or deflect should be over-excavated and replaced with compacted structural fill (see below for structural fill characteristic requirements).
- Utilize engineered fill to raise site grades to the desired elevation. On site soil can be used as engineered fill provided that particles larger than 2 inches are removed and the material is placed, compacted, and maintained as described herein.
- Field moisture contents for engineered fill should be maintained within 2 percentage points of the optimum moisture content established by laboratory testing to provide adequate compaction. All fill should be placed in level lifts having a loose thickness no greater than 12 inches and should be compacted to at least the following minimum percentages of the Modified Proctor (ASTM D-1557) maximum dry density:

    - Below footings: 95%
    - Beneath slab-on-grade or pavements: 95%
    - Utility trench backfill: 95%
    - Beneath landscape areas: 90%
    - Beneath sidewalks and exterior slabs: 95%
    - Structural berms: 95%

    In-place density testing should be performed at a frequency of one test per 500 square feet per lift in open areas and one test per 25 feet per lift in trenches.
- If the structure is to be constructed during the winter months, or if the building interiors will be subjected to freezing temperatures after footer construction, adequate frost cover and protection must be provided. Earthwork cannot be performed with frozen material.
- Permanent slopes should be graded no steeper than 3 horizontal: 1 vertical unless reinforced with geosynthetic materials.

In utility trenches, or other confined areas, small compaction equipment may be necessary such as a vibratory plate, jumping jack or walk-behind vibratory roller. In-place density testing should be performed at a frequency of one test per 25 feet per lift in trenches. Utility trench fill should be placed in level lifts no greater than 8 inches in thickness and should be compacted to at least 95%the Modified Proctor (ASTM D-1557) maximum dry density. Adequate frost cover and protection must be provided during winter weather construction. Earthwork cannot be performed with frozen material.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher Kenney
Christopher M. Kenney, P.E.
President

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 676 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
			ML		(ML) TOPSOIL
1.5					674.5
					(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED AT 5-10 FEET
5.0					
			CL-ML		
7.5	GB 1	MC = 9% LL = 21 PL = 15 Fines = 57%			
10.0					10.0 666.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 674 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					672.5
					(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0			CL-ML		
7.5	GB 1	MC = 10% LL = 22 PL = 15 Fines = 53%			
10.0					10.0 664.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 680 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
			ML		(ML) TOPSOIL
1.0					679.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 11% LL = 21 PL = 14 Fines = 56%			
10.0					10.0 670.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 681 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
			ML		(ML) TOPSOIL
1.0					680.0
					(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
2.5					
5.0					
			CL-ML		
7.5	GB 1	MC = 10% LL = 23 PL = 19 Fines = 54%			
10.0				10.0	671.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 716 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					715.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST NO GROUNDWATER SEEPAGE OBSERVED BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
2.5					
5.0					
7.0		MC = 10% Fines = 57%			709.0



Bottom of test pit at 7.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 704 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
			ML		(ML) TOPSOIL
1.0					703.0
			GM		(GM) BROWN SILTY GRAVEL WITH SAND, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED. BULK SAMPLE RETRIEVED
		MC = 35% Fines = 38%			
2.5					
3.0					70
					GREY/OLIVE HIGHLY WEATHERED SHALE, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED
		MC = 23% Fines = 14%			
5.0				5.0	699.0

Bottom of test pit at 5.0 feet.



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 722 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0					
			ML		(ML) TOPSOIL
1.0					721.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
2.5					
5.0					
		MC = 10% Fines = 59%			
7.0					715.0
					Bottom of test pit at 7.0 feet.



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 683 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					682.0
			ML		(ML) BROWN SANDY SILT WITH CLAY AND GRAVEL, MOIST
					NO GROUNDWATER SEEPAGE WAS OBSERVED
2.5					BULK SAMPLE RETRIEVED
		MC = 20% Fines = 55%			
3.0					68[illegible]
					Bottom of test pit at 3.0 feet.



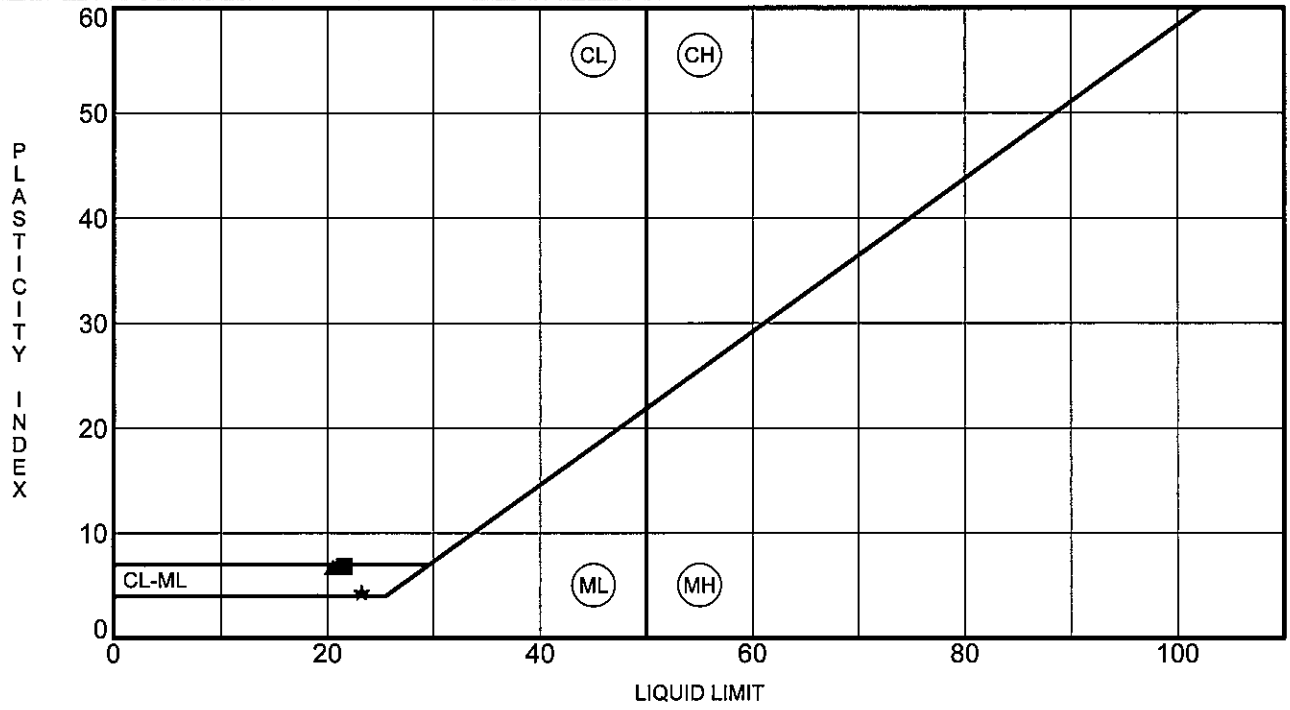
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ATTERBERG LIMITS' RESULTS

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**TPS-1**	**7.5**	**21**	**15**	**6**	**57**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
⊠	**TPS-2**	**7.5**	**22**	**15**	**7**	**53**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
▲	**TPS-3**	**7.5**	**21**	**14**	**7**	**56**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
★	**TPS-4**	**7.5**	**23**	**19**	**4**	**54**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**

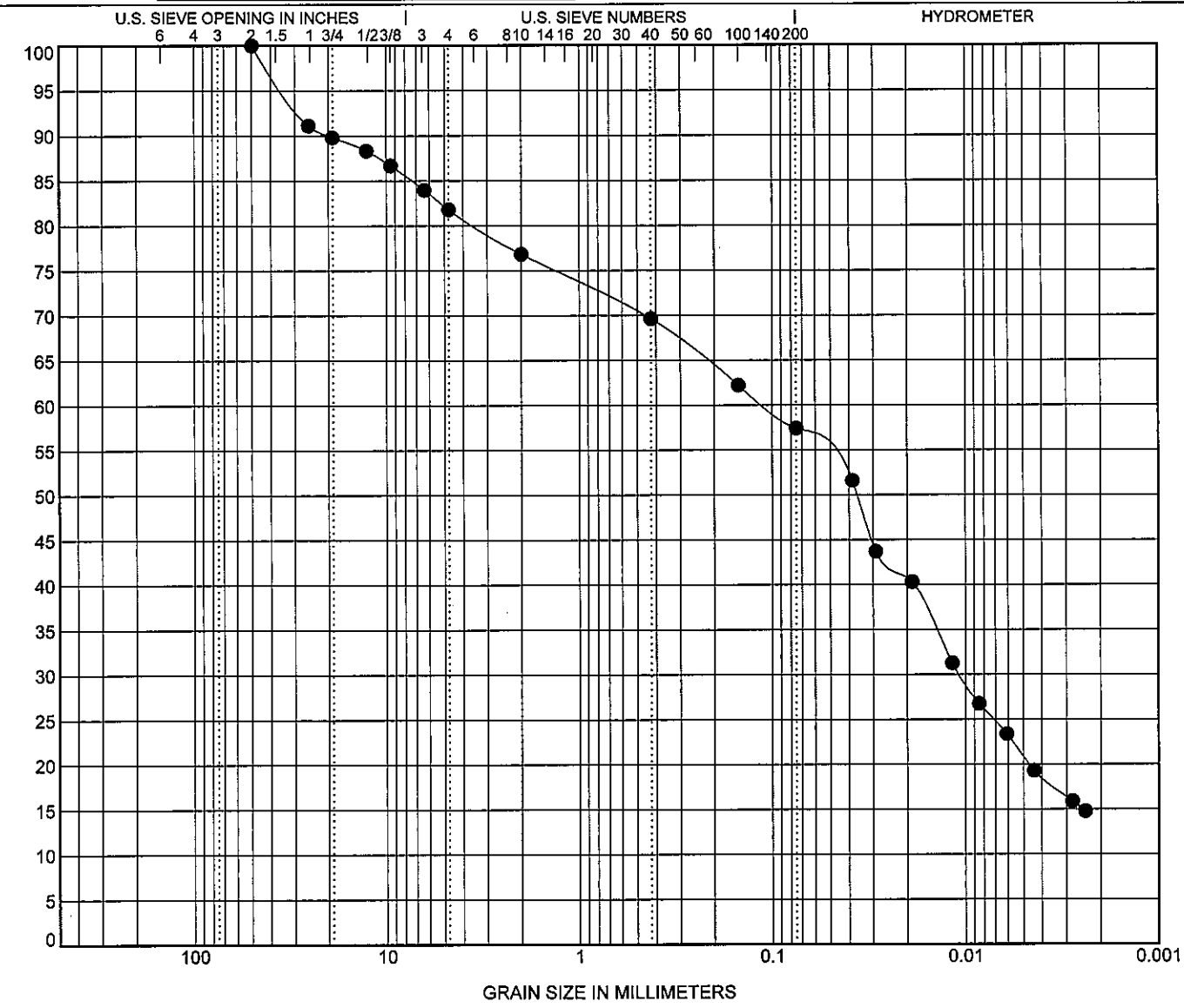
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-1	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**15**	**6**		
☒							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-1	7.5	**50**	**0.109**	**0.011**		**18.2**	**24.4**	**36.5**	**20.9**
☒									
▲									
★									
⊙									

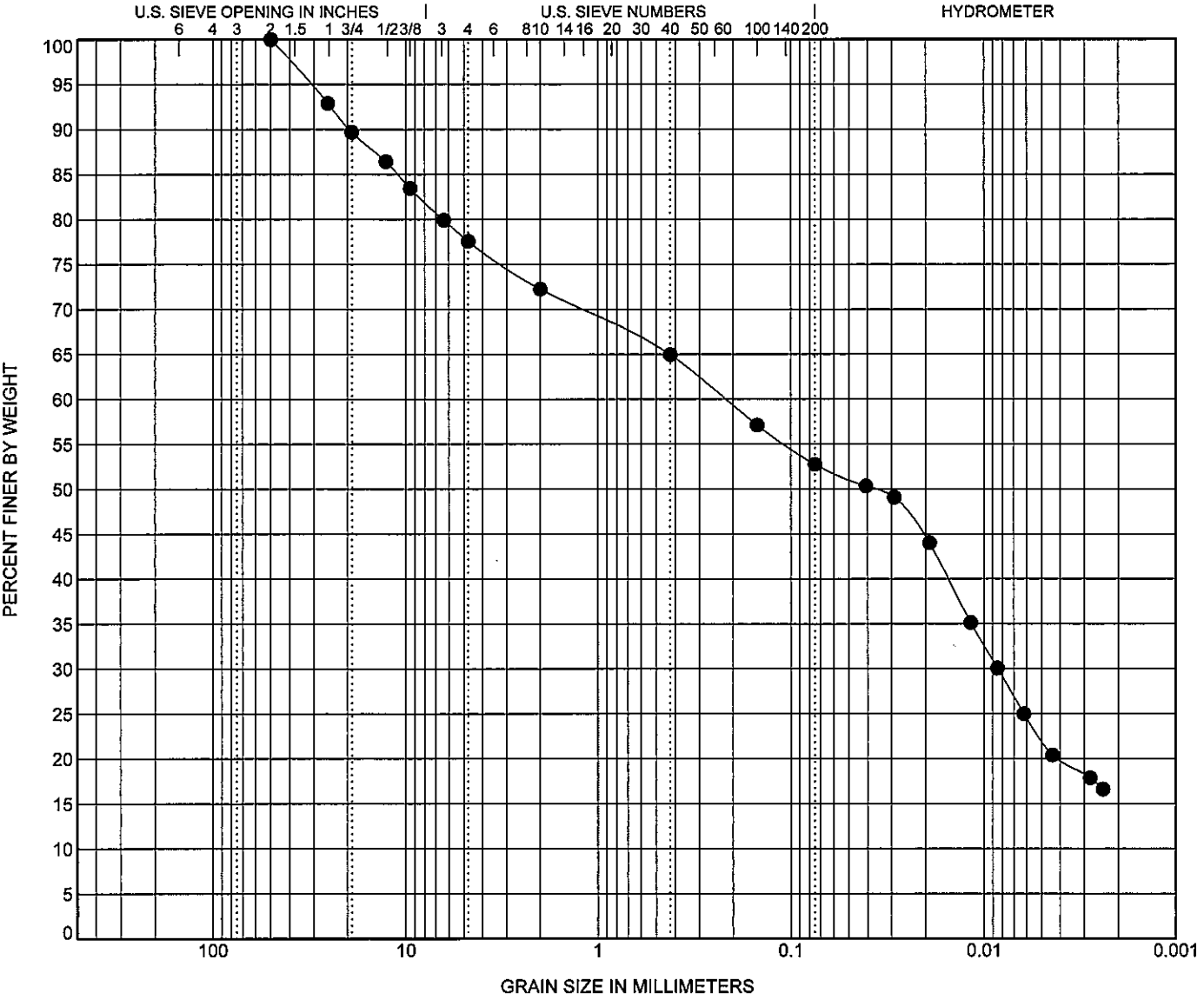
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-2	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**22**	**15**	**7**		
▣							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-2	7.5	**50**	**0.22**	**0.008**		**22.4**	**24.8**	**30.6**	**22.1**
▣									
▲									
★									
⊙									

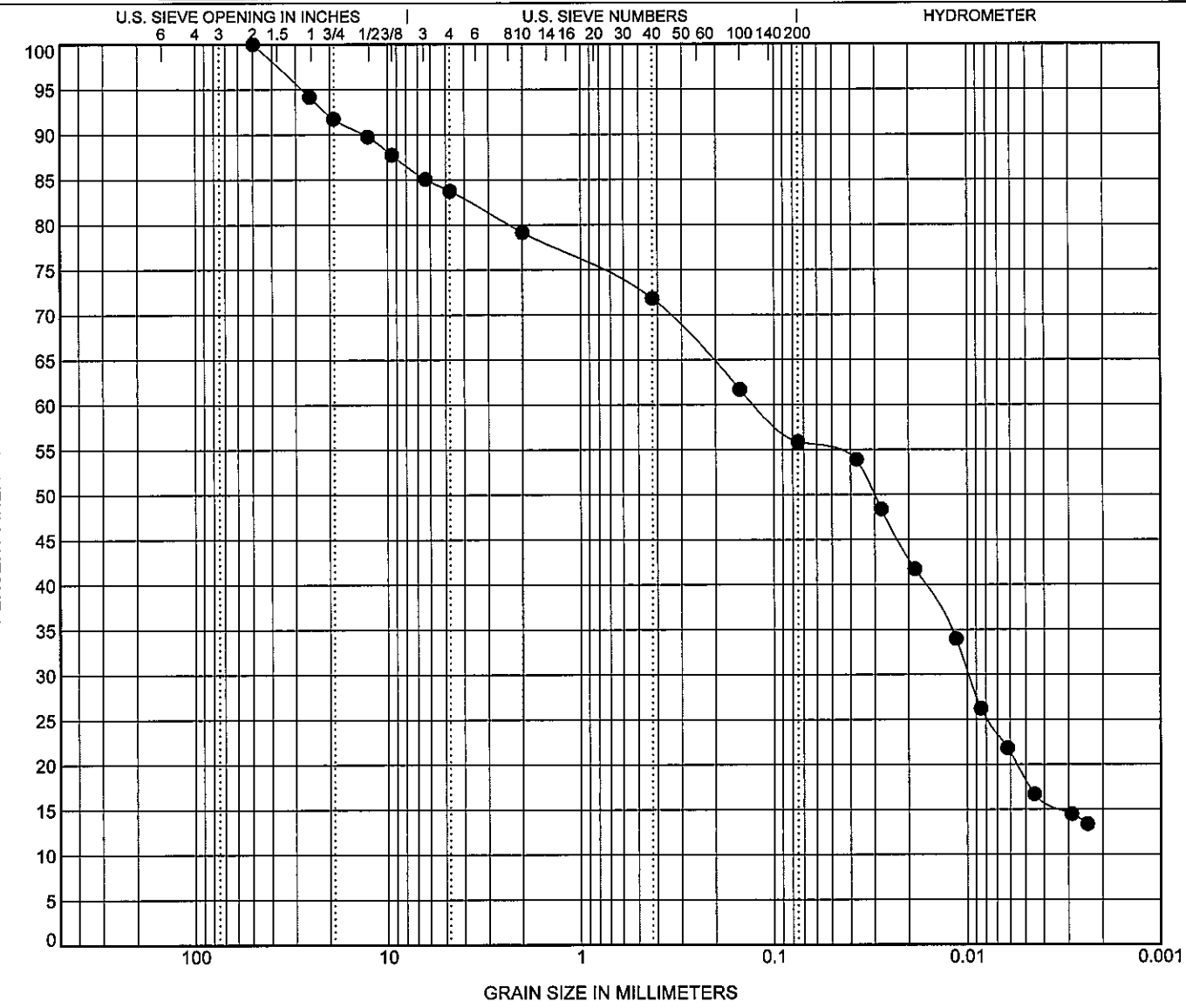
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-3	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**14**	**7**		
☒							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-3	7.5	**50**	**0.123**	**0.01**		**16.2**	**27.9**	**37.5**	**18.4**
☒									
▲									
★									
⊙									

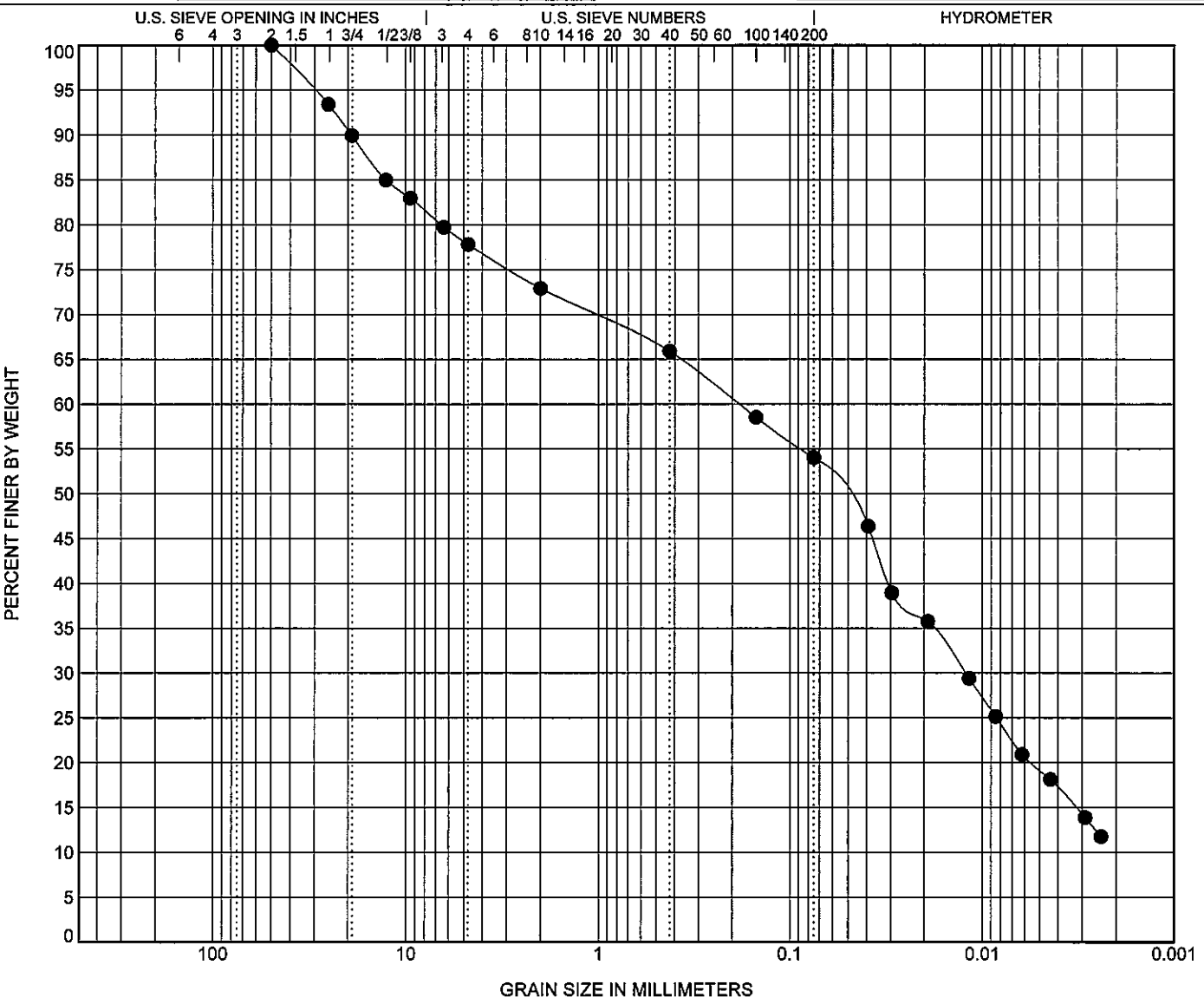
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GRAIN SIZE DISTRIBUTION

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PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-4	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**23**	**19**	**4**		
☒							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-4	7.5	**50**	**0.185**	**0.012**		**22.2**	**23.8**	**34.9**	**19.2**
☒									
▲									
★									
⊙									

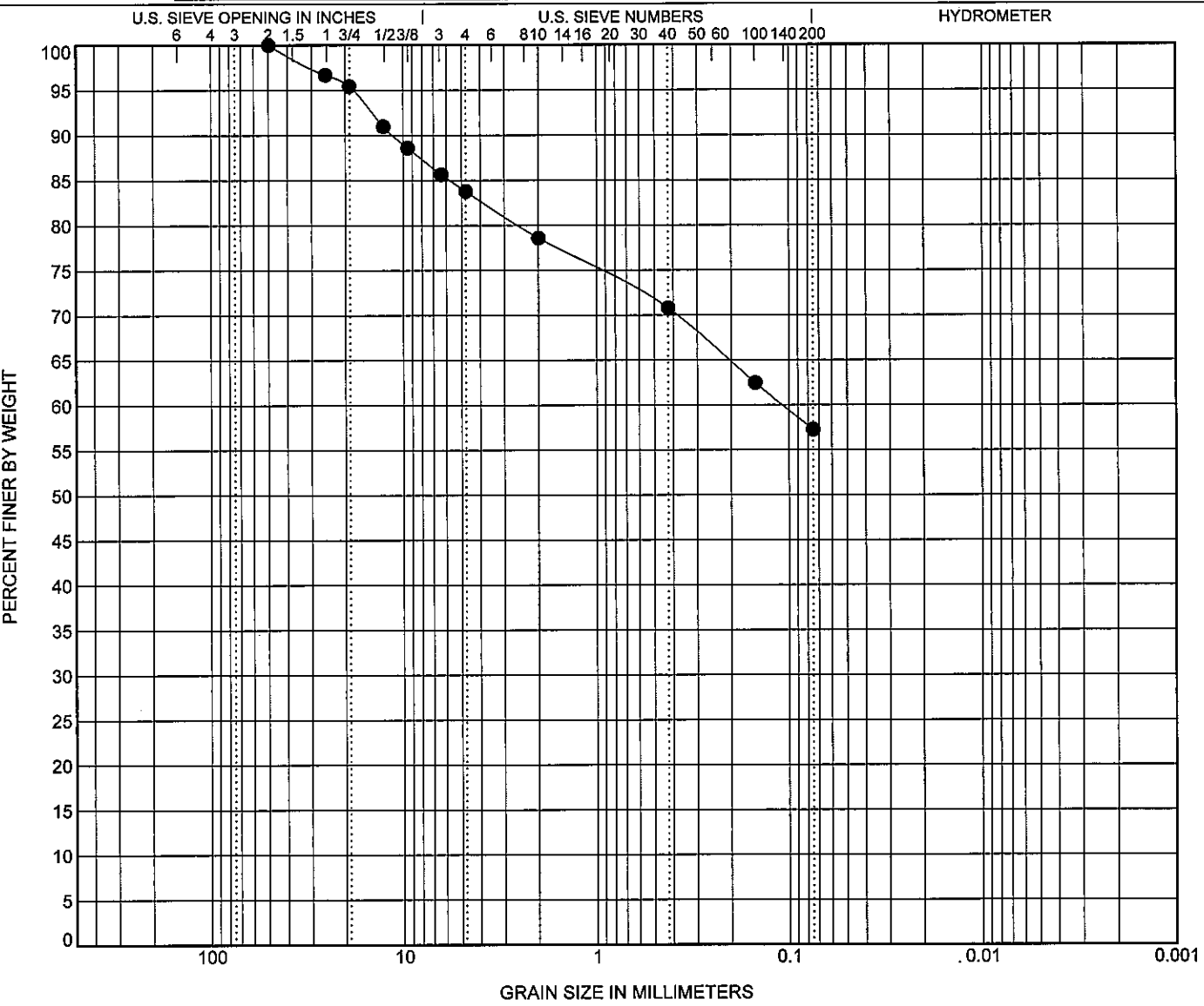
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GRAIN SIZE DISTRIBUTION

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PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-5	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-5	7.0	**50**	**0.108**			**16.2**	**26.5**	**57.3**	
⊠									
▲									
★									
⊙									

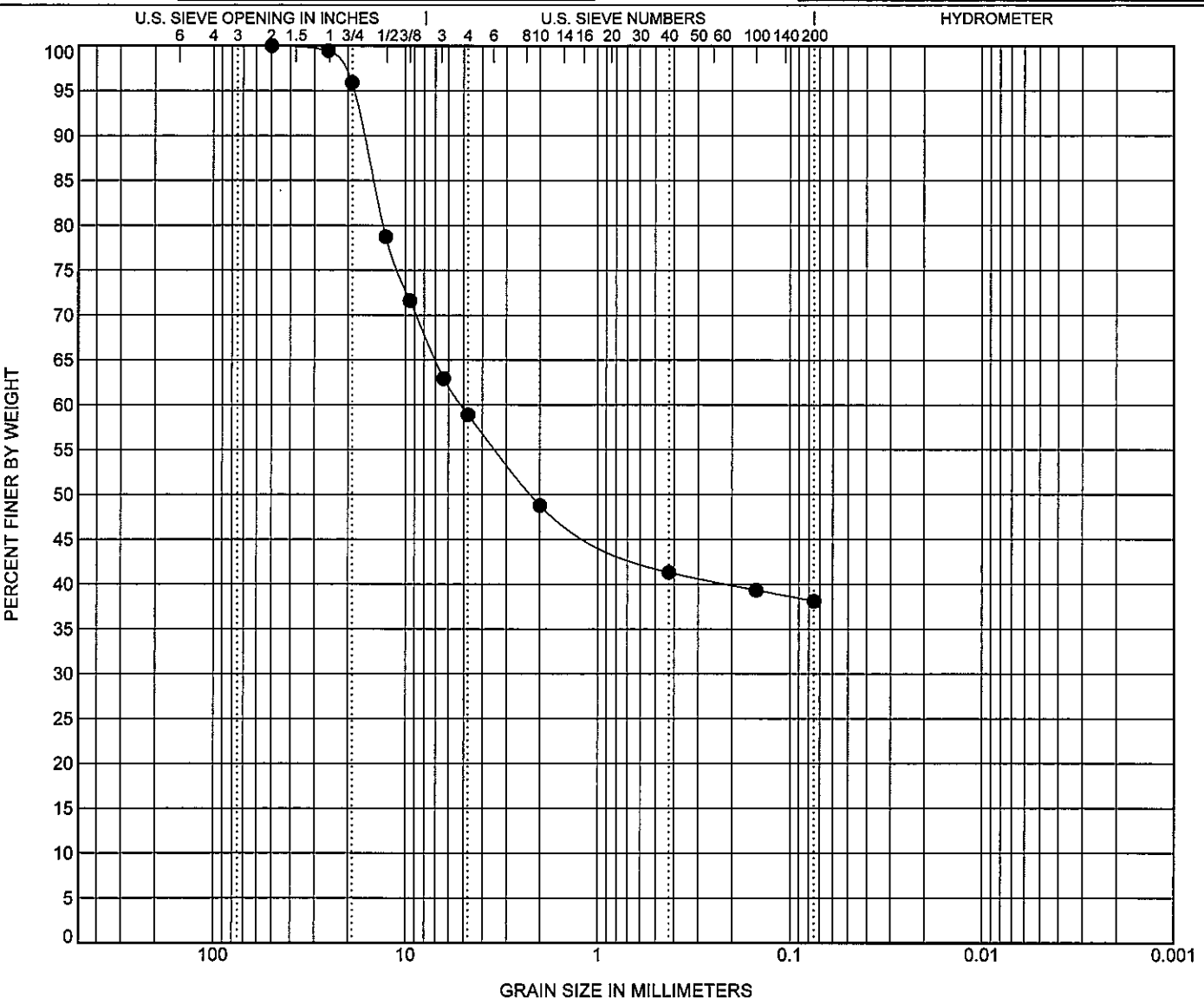
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	2.0	**BROWN SILTY GRAVEL WITH SAND**					
■							
▲							
★							
◎							

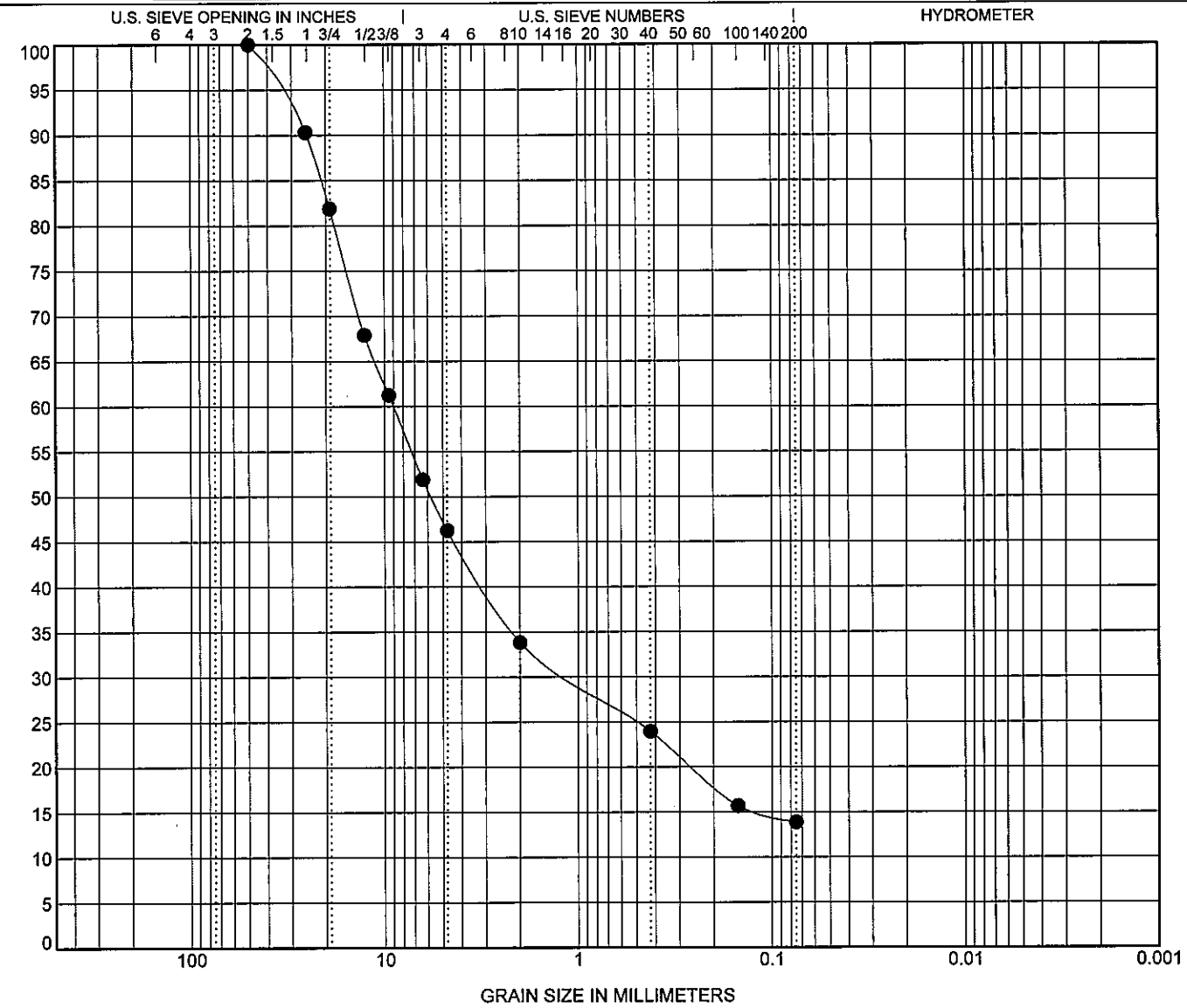
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	2.0	**50**	**5.144**			**41.1**	**20.8**	**38.1**	
■									
▲									
★									
◎									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	4.0	GREY/OLIVE HIGHLY WEATHERED SHALE					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	4.0	50	9.001	1.096		53.7	32.4	13.9	
⊠									
▲									
★									
⊙									

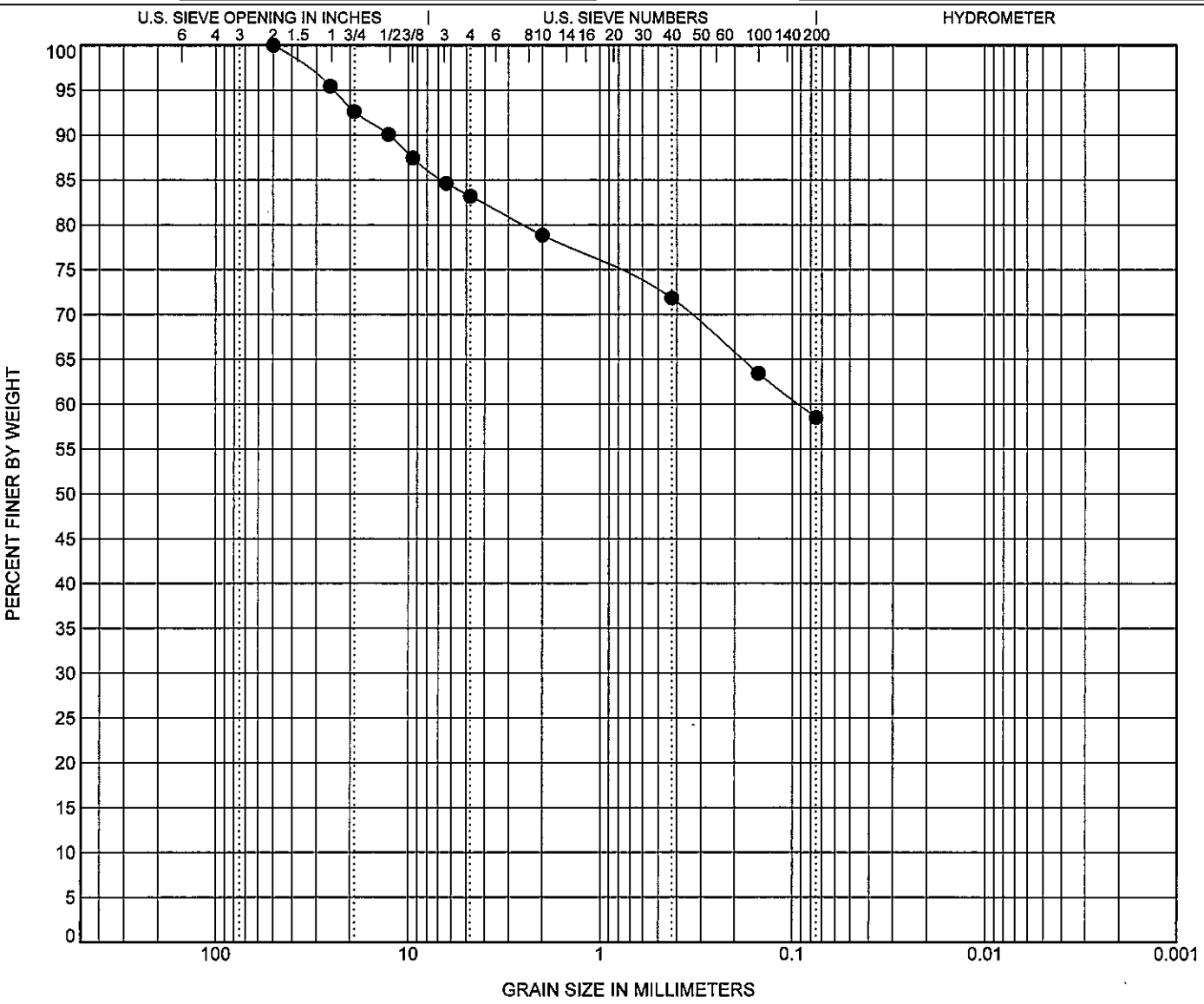
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-7	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

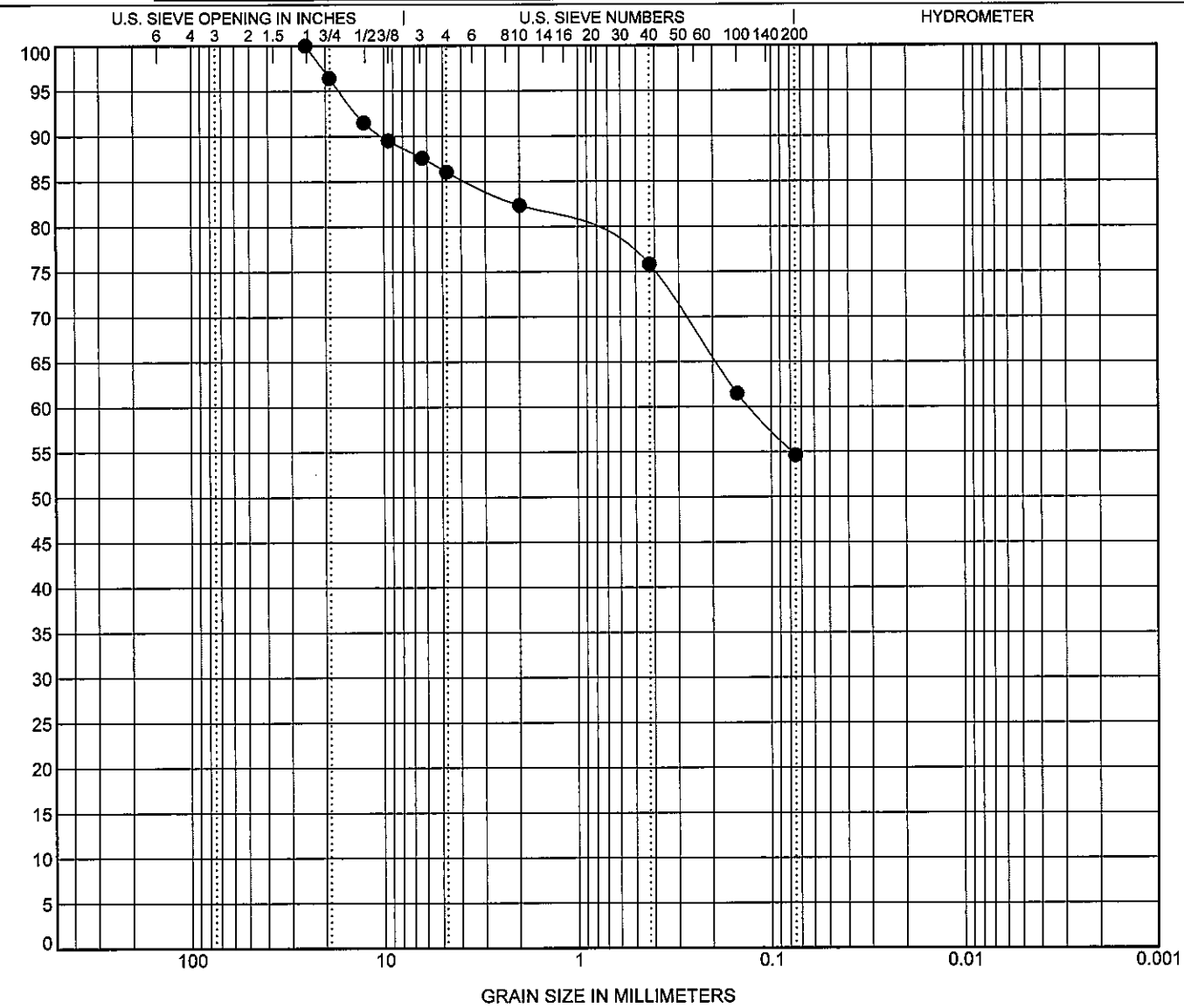
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-7	7.0	**50**	**0.092**			**16.8**	**24.7**	**58.5**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-8	3.0	**BROWN SANDY SILT WITH CLAY AND GRAVEL**					
⊠							
▲							
★							
⊙							

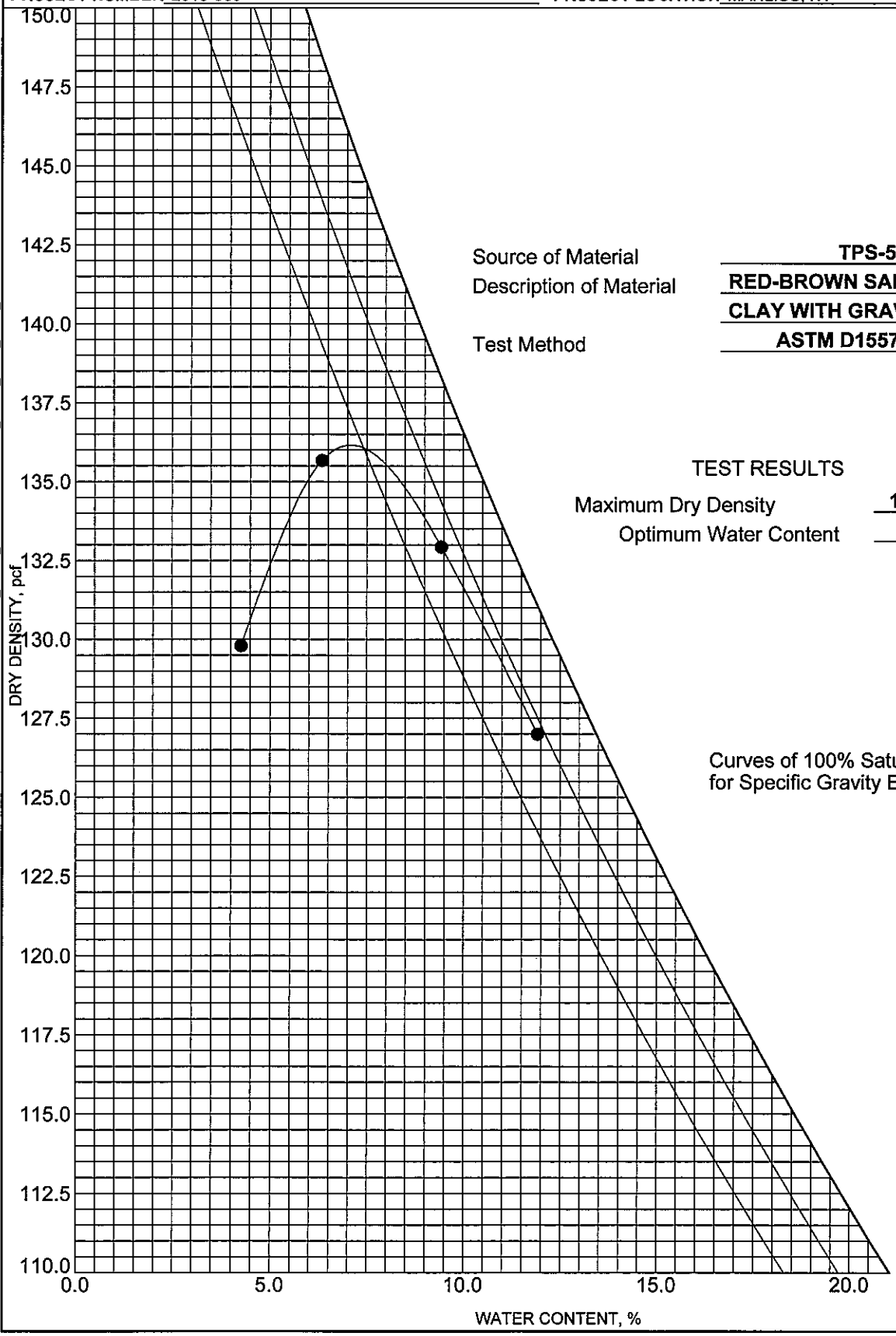
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-8	3.0	**25.4**	**0.129**			**13.9**	**31.4**	**54.6**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-5 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **136.2 PCF**
Optimum Water Content: **7.2 %**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

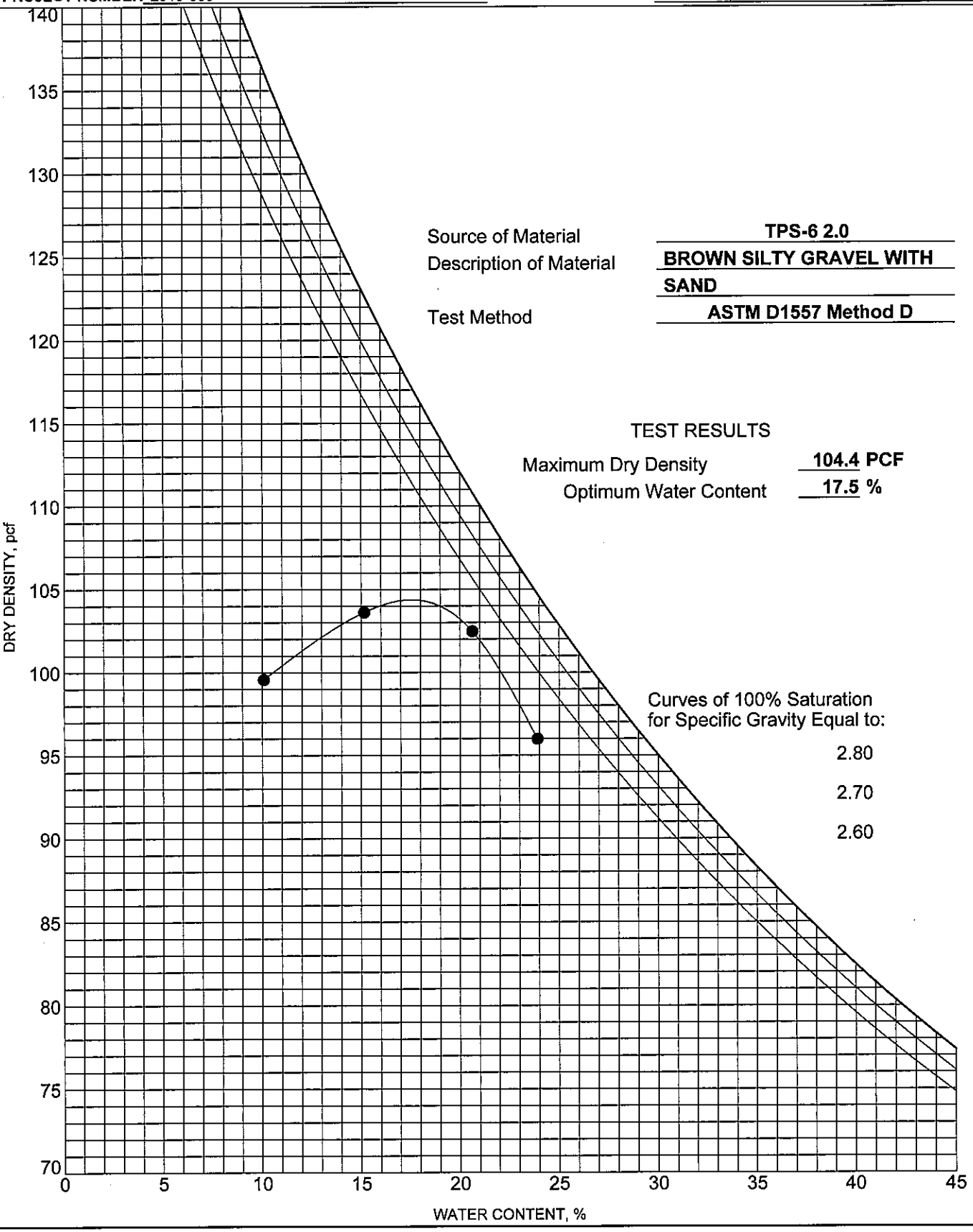
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:20 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 2.0**
Description of Material: **BROWN SILTY GRAVEL WITH SAND**
Test Method: **ASTM D1557 Method D**

TEST RESULTS
Maximum Dry Density: **104.4 PCF**
Optimum Water Content: **17.5 %**

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

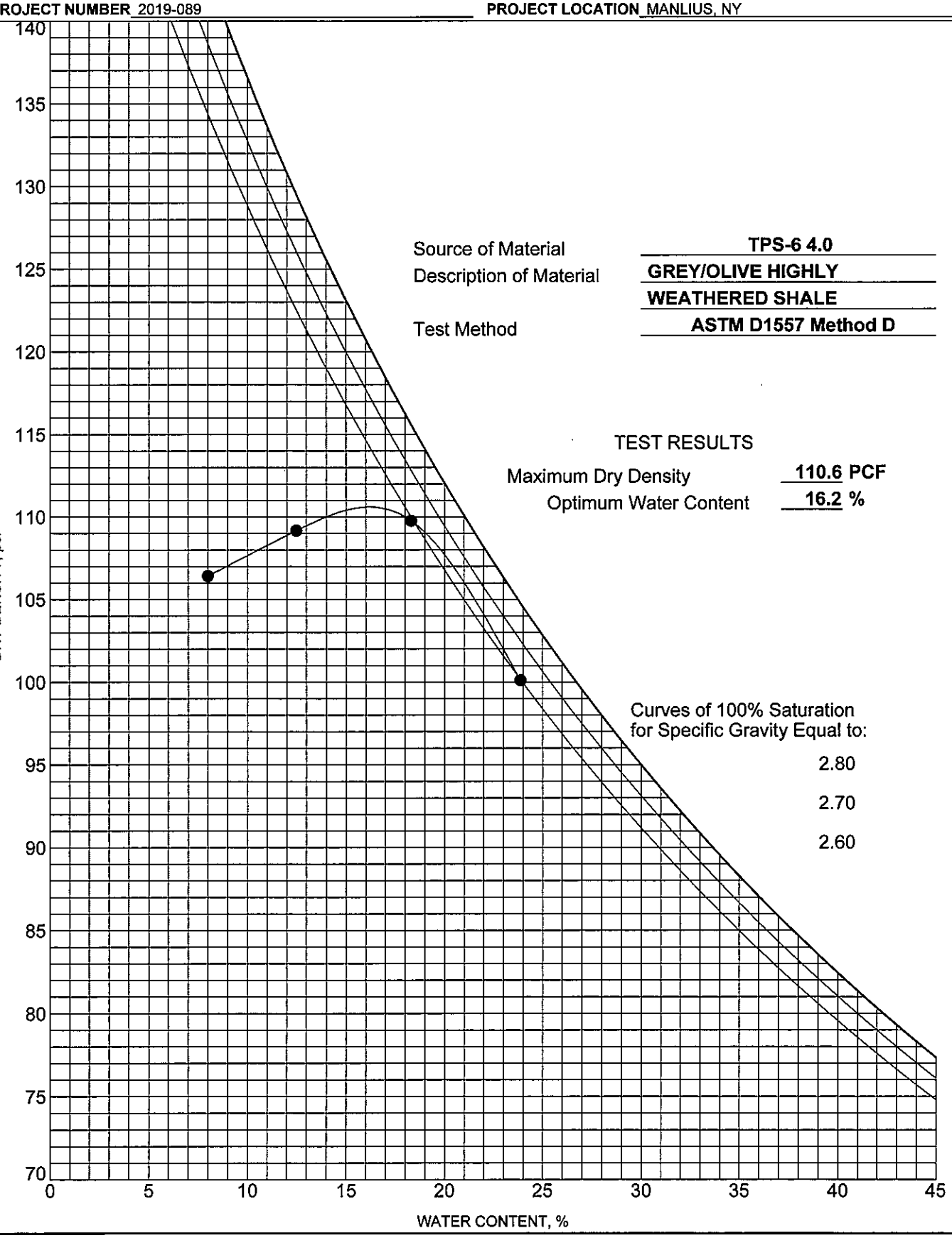
COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:21 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



Source of Material: **TPS-6 4.0**

Description of Material: **GREY/OLIVE HIGHLY WEATHERED SHALE**

Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **110.6** PCF

Optimum Water Content: **16.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

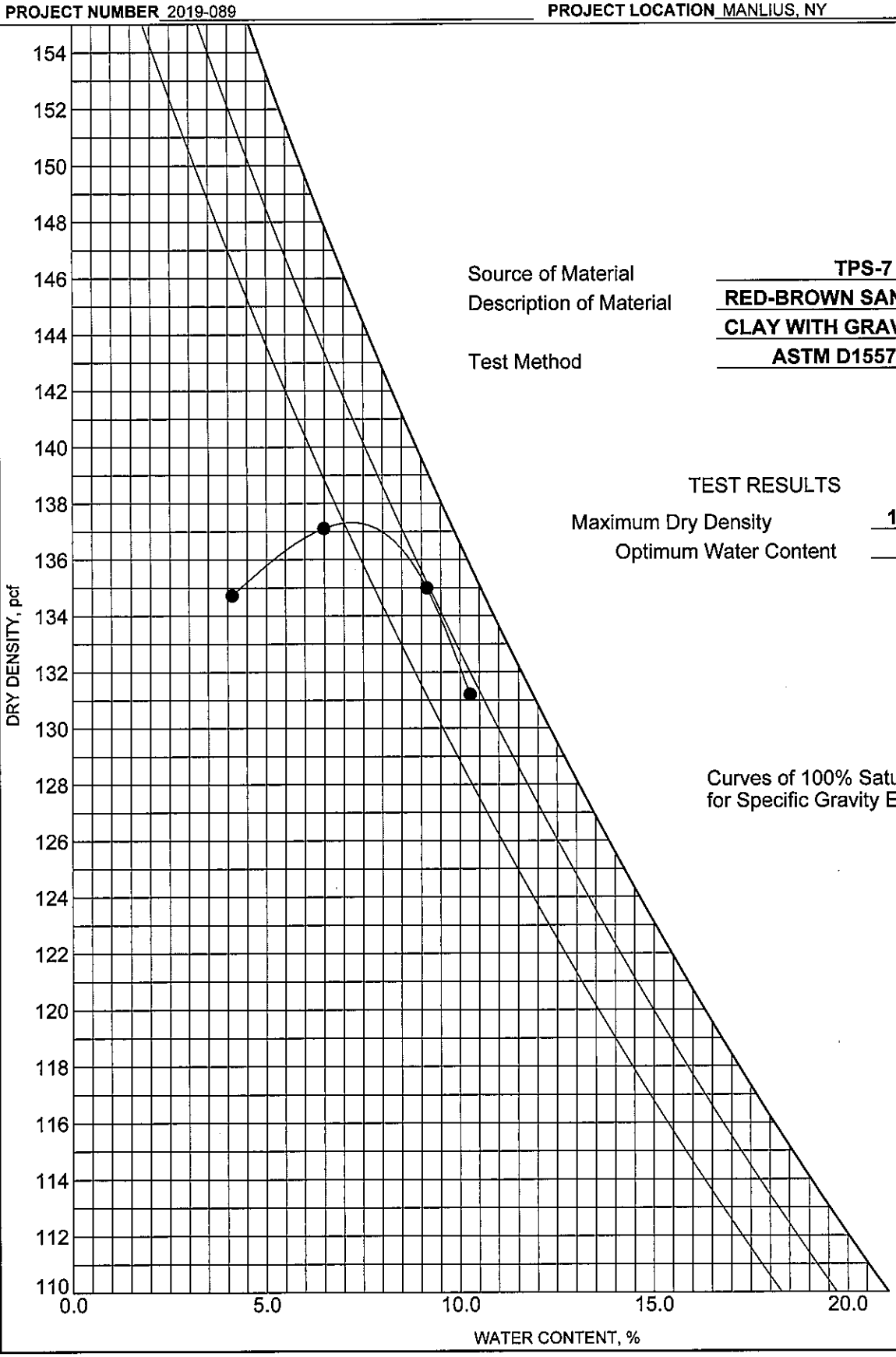
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-7 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **137.3 PCF**
Optimum Water Content: **7.2 %**

Curves of 100% Saturation for Specific Gravity Equal to:

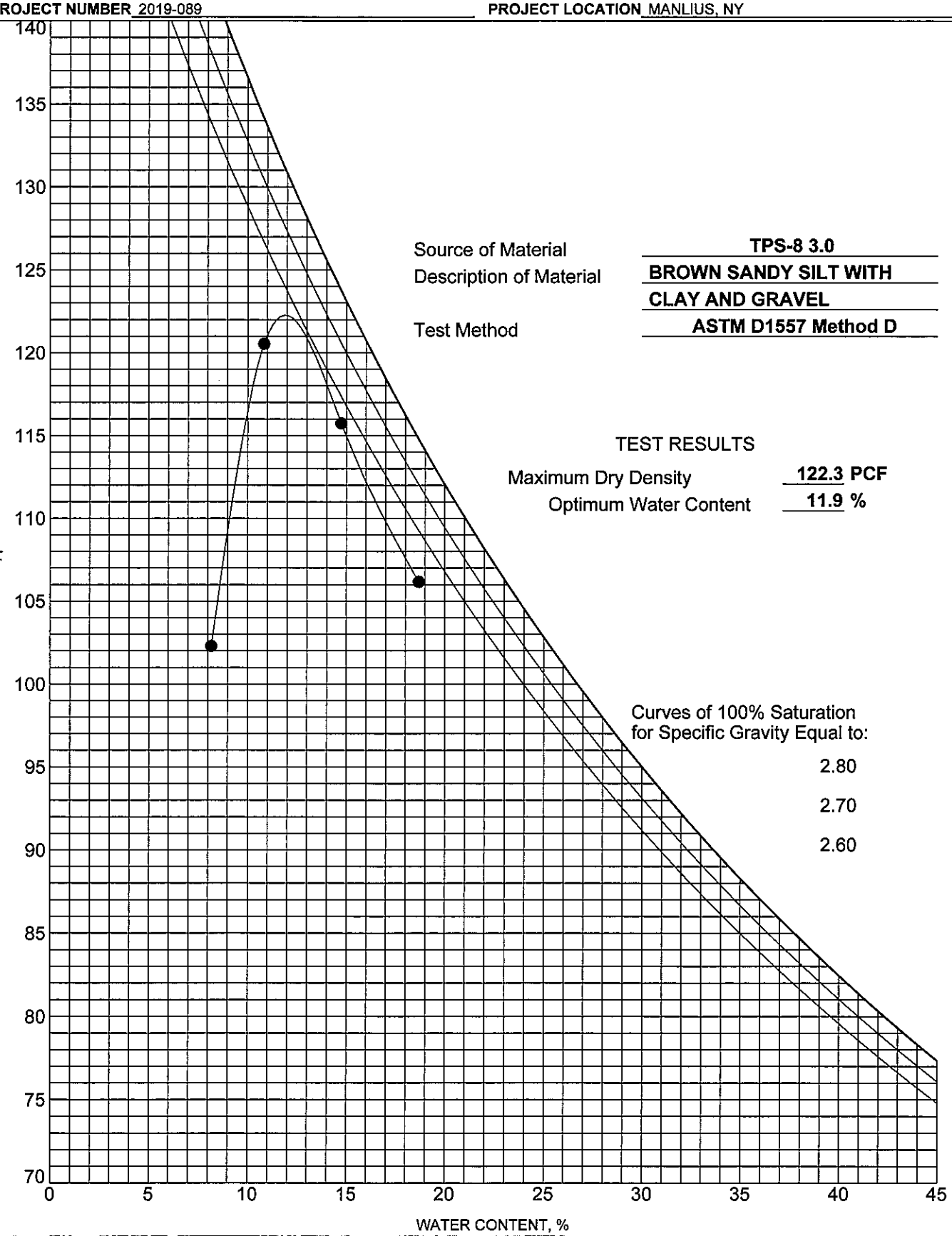
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-8 3.0**
Description of Material: **BROWN SANDY SILT WITH CLAY AND GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **122.3 PCF**
Optimum Water Content: **11.9 %**

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:24 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

PERCOLATION TEST RESULTS

PT-# — X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14" - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

TPS-# — X-PERC TEST DATA

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-2	673.00	662.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-3	671.00	661.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-4	660.00	652.00	5'-10" DEEP	DAH GUIDELINES SEC. 8
PT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-# — B-4

B -1 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-24" TOPSOIL 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-144" SANDY SILTY CLAY 144"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION	EXISTING	PROPOSED	DESCRIPTION
100	100	CONTOUR	EX. GAS	GAS	UNDERDRAIN			PEA GRAVEL DIAPHRAGM/STONE SHOULDER
+377.7	+377.7	SPOT ELEVATION	EX. S	S	SANITARY PIPE-GRAVITY			OUTLET PROTECTION
	HP/LP	HIGH / LOW POINT	EX. FM	FM	SANITARY PIPE-LOW PRESSURE		6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	PT-2	PERCOLATION TEST PIT	EX. OHE	OHE	OVERHEAD ELECTRIC		8" 12" 3'	OUTLET PROTECTION FOR 8"- 12" PIPE
	B-#	DEEP HOLE	EX. E	E	UNDERGROUND ELECTRIC		18" 3'	OUTLET PROTECTION FOR 18"+ PIPE, DIMENSIONS PER PLANS
		FENCE	EX. T	T	TELEPHONE			TRAFFIC SIGN
		UTILITY POLE			STORM STRUCTURE		SF	SILT FENCE
		WATER LINE		ST FM				EROSION CONTROL BLANKET
		FIRE HYDRANT			INLET			
	ST	STORM PIPE		CB FM	CATCH BASIN/MANHOLE			
		TREE		CO	CLEAN OUT			
		SHRUBS			SANITARY MANHOLE			
		PLANT KEY			ASPHALT PAVEMENT-DRIVEWAY			
		VEGETATION			ASPHALT PAVEMENT-ROAD			

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.

2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.

4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.

5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.

6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK, IF NECESSARY.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.

8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOUN OF MANLIUS SPECIFICATIONS.

9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.

10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.

11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.

12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

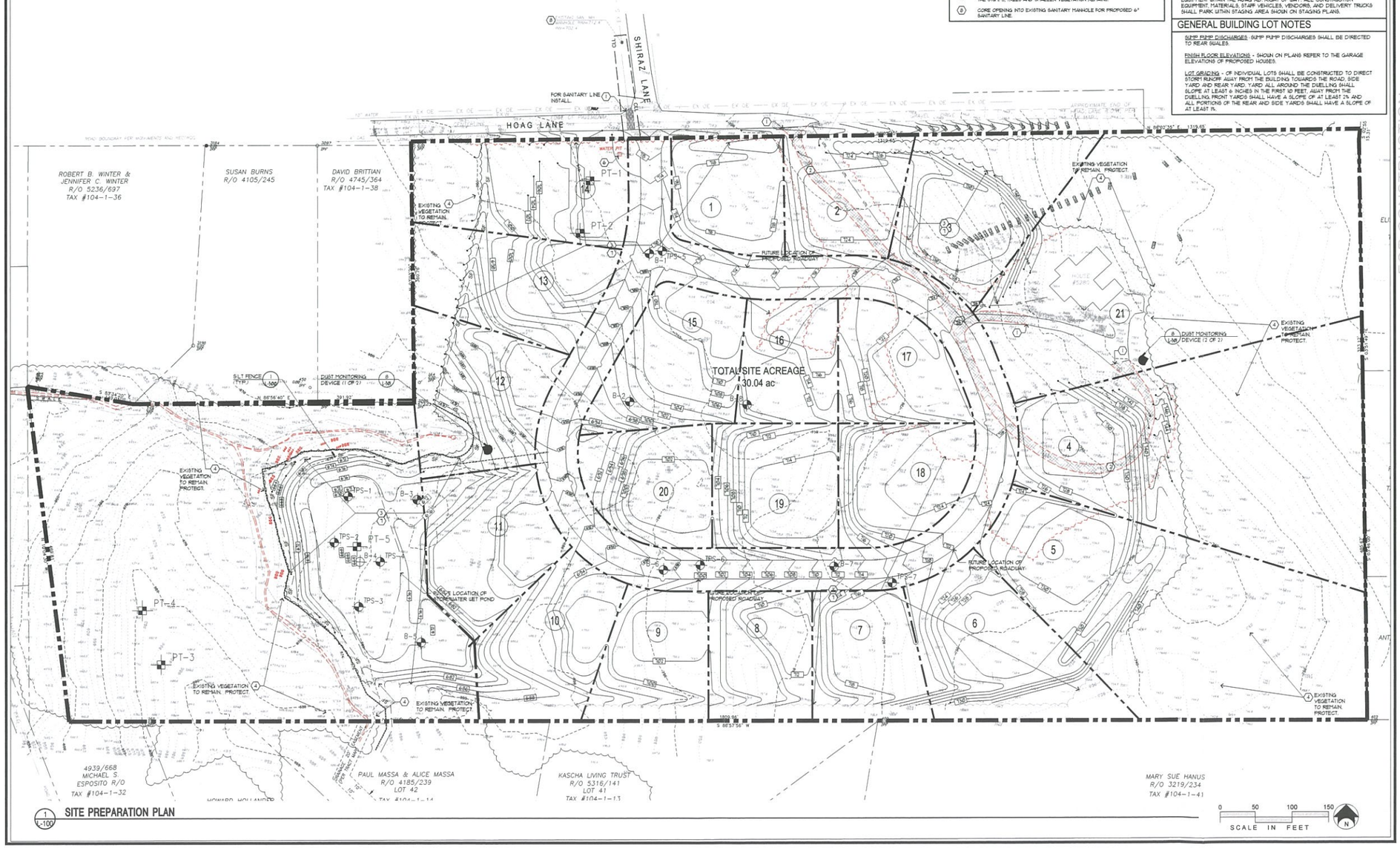
1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOUN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 SITE PREPARATION PLAN

KEPLINGER FREEMAN & ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
RZ Engineering, PLLC
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	EXECC SET TOWN OF MANLIUS	05/23/18
2	2	PUBLIC HEARING, MANLIUS	06/04/18
3	3	PUBLIC HEARING, MANLIUS	07/09/18
4	4	PUBLIC HEARING, MANLIUS	08/04/18
5	5	PUBLIC HEARING, MANLIUS	08/27/18
6	6	TOWN REV. 2'S LOTS MANLIUS	09/23/18
7	7	MANLIUS 2'S HOAG LOTS SUB	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS PLAN SUBMISSION	01/31/19
10	10	MANLIUS PLAN SUBMISSION	05/23/19
11	11	MANLIUS PLAN SUBMISSION	09/23/19
12	12	MANLIUS PLAN SUBMISSION	12/18/19
13	13	MANLIUS PLAN SUBMISSION	12/18/19

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37090
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

ENVIRONMENTAL RESOURCES, LLC
CONSULTING SERVICES

June 13, 2019

Mr. Tom Douglas
7241 Kendall Drive, East
East Syracuse, New York 13057

Subject: Wetland Delineation Results, 5280 Hoag Lane Project Site, Town of Manlius, Onondaga County, New York.

Dear Mr. Douglas:

At your request, Environmental Resources, LLC (ERS) conducted a field wetlands delineation and data collection at the above referenced 30± acre project site on May 31, 2019 to determine the on-site limits of state and/or federal jurisdictional wetlands and streams. The sites jurisdictional water resources were identified by the presence of hydrophytic vegetation, hydric soils, and physical indicators of wetland hydrology in accordance with the methodology described in the *1987 Corps of Engineers Wetland Delineation Manual*, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions,* and the New York State Department of Environmental Conservation *Wetland Delineation Manual.*

RESULTS

As shown on the attached survey map, the results of our investigation and data collection has determined that the study area supports a 745± linear foot (0.24± acres) intermittent stream channel in the west portion of the project site that enters the sites south property line, conveying surface waters northwest before existing the sites west boundary line. This intermittent stream channel has a low profile, and varies in width from 18" to 30" wide.

A second water resource was identified as a 0.10± acre ground water seep wetland that occurs at the west end of the site's north boundary line. This wetland discharges ground water to the surface, which then flows east before converging into the sites intermittent stream channel.

Remaining areas of the site are confirmed to be undulating site uplands that are dominated by upland vegetation, and exhibit no hydric soil characteristics or evidence of wetland hydrology.

REGULATORY GUIDANCE

The result of our investigation has determined that the site does not support New York State Department of Environmental Conservation regulated wetlands or streams.

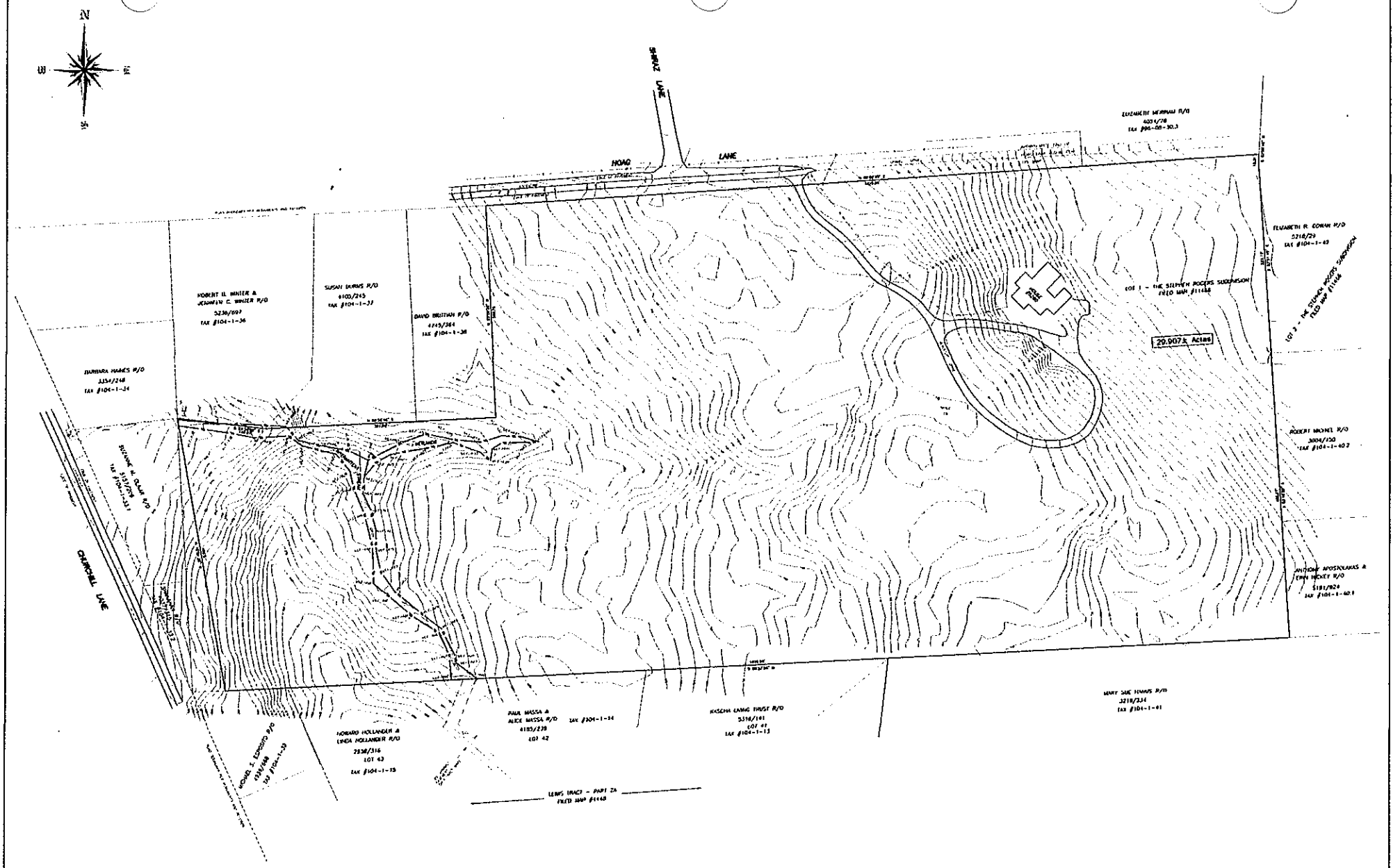
The sites delineated intermittent stream channel and ground water seep wetland are federal jurisdictional water resources regulated by Section 404 of the *Clean Water Act* under the jurisdiction of the U.S. Army Corps of Engineers (Buffalo District). The discharge of fill material into jurisdictional wetland areas and/or disturbance to stream channels will require a pre-construction notification and permit issuance from USACE.

This determination letter represents the conclusions of Environmental Resources, LLC based on existing site conditions. Feel free to contact me should you have any questions.

Sincerely,
Environmental Resources, LLC

Gene Pellett
Professional Wetlands Scientist

Attachment.



UTILITY NOTE

The Contractor shall be responsible to check the entire proposed utilities construction in order to locate any and all conflicts with existing utilities, whether underground or overhead, and shall be responsible for notifying the engineer of any conflicts in the vicinity of the proposed construction prior to the start of any construction. Contractor shall be responsible for coordinating relocations as necessary.

WETLAND NOTES:

- WETLANDS WERE DELINEATED BY ENVIRONMENTAL RESOURCES, LLC ON MAY 31, 2019
- INTERMITTENT STREAM LENGTH 245 L.F., AREA 0.288 ACRES
- WETLAND AREA 8.103 ACRES

MAP REVISIONS		
No.	Date	Remarks

LANDS OF HOAG ROAD PROPERTIES, LLC
TOWN OF MARLBORO
ORANGE COUNTY, NEW YORK

SAGUN LAND SURVEYING, P.L.L.C.

SCALE: 1" = 80'
DATE: 8/11/2020

Response Letters

June 15th, 2020 – REVISED

Doug Miller, P.E.
P.O. Box 422
Manlius, NY 13104
Miller Engineers
315-682-0028 | dougmiller@millerengineers.com
www.Millerengineers.com

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Hoag Lane Cluster Development

Response letter to Town of Manlius Engineer Letter

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **December 18th, 2019** and received on **January 6th, 2020.** Below is our response to each comment received. Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

Reviewed Documents: Miller Engineers received updated drawing set dated 12/18/19 and an updated project SWPPP dated 12/18/19.

1) Additional Comments

Miller Engineers has completed a review of submission received by the Town of Manlius dated December **18th**, 2019. Areas of immediate concern include the following follow:

- 1 - Confirm in Writing with a formal submission of the plan, determination from NYSDEC of any requirements for a dam permit at this location

  RESPONSE: On page 8 of the SWPPP text as part of our 9/19/19, 12/17/19 submissions we previously included the NYSDEC criteria for exemptions for dam permitting. We clearly meet two of the three exemption criteria. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. As part of our Upon request, the Project Team then provided an email from NYSDEC regarding our projects exemption from dam permitting in our most recent submission on 12/18/19. This email was provided to Planning Board Clerk for inclusion in the Town's 12 copies of this binder. The previous submission and NYSDEC email dated 10/18/19 was an actual review of our current Grading and Drainage plan included in our project drawings. Additionally, as of 3/25/20, the DEC (Jennifer Ross) has provided email final resolution that this project is NOT considered a Dam and that no permitting will be required. It is agreed that within the NYS Stormwater Design Manual it states that ALL SWMF designed and constructed in NYS must adhere to the NYS Dam Guidelines. Email references have been provided in Appendix V of the SWPPP provided with this submission.

- 2 - Wet Pond 1 appears to have boring refusal/rock at a depth of 14 feet. Bottom of pond is depicted as 18 feet below grade. As designed pond does not appear to meet design requirements
  RESPONSE: According to plans submitted in December of 2019, our grading plan proposed bottom of Pond to be 665. The highest existing grade causing the most significant cut would lie at elevation 680. This would indicate a maximum cut of at 15'. However, this condition only existed for a small 1000sf area at the easternmost bottom of the proposed SWMF. Grades have further been adjusted as part of this submission to reduce cuts to ± 13 feet or less. A review of the most recent soil investigation by Kenney Geotechnical for borings in the pond area does not include any refusal and contains borings to depths of approximately 15 feet.

- 3 - New sedimentation pond (volume 66,000 CF) is shown as 13 feet deep +/-. No details on safety, depth to rock or influence of ground water
  RESPONSE: The temporary basin has been regraded to create a shallower area of less than 4 feet. Grades are 3:1 or mowable and surrounding borings and Kenney Geotechnical reports do not raise concern for groundwater, stability or depth to bedrock.

- 4 - Excavation from new sedimentation pond not clearly shown staged on staging plans

  RESPONSE: Excavated cut/fill material will not be stockpiled. Material will be tested and placed in lifts and compacted to construct the sedimentation basin and balance earthwork within stage. Refer to Construction Staging Plan – Stage 1 L-102.

- 5 - Staging plans do not address storage (with clear delineation of volumes to be staged) or use of following materials
  a. Compost
  b. Planting Soil
  c. CU Structural Soil
  d. Sedimentation Pond Excavation

  RESPONSE:
  <u>Compost</u> - Stockpiling will not be required per DEC guidance. Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.
  <u>Planting Soil</u> – This section was removed (It is a City of Syracuse specification section utilized for right of way planters). Topsoil and Planting specifications sections were added to meet the needs of the project for the street tree plantings and monument sign planting.
  <u>CU Structural Soils</u> - This section is not required for the project and was removed (It is a City of Syracuse specification section utilized for right of way planters).
  <u>Sedimentation Pond Excavation</u> – See Additional Comment 1) bullet point 4, page 2, for response.

- 6 - Project is no longer one phase as described for several years by applicant
  RESPONSE: Project continues to be one phase as discussed by the owner. The single phase has been broken into 7 stages to limit disturbance and manage construction and erosion. The Town engineer has directed us to create construction documents for staged construction to

reduce the areas of open construction. All plans are identified as stages of the singular phase of the project. The seven stages of project construction are shown on drawings L-102 thru L-108.

- 7 - Time of Concentration assumptions by the applicant do not assist with local run-off issues. A more conservative approach is recommended by our review to increase mitigation of the proposed activity
  RESPONSE: This comment appears to refer to open soil conditions during construction as discussed in our clarification phone conversation on March 19, 2020. Page 15 of the SWPPP submitted in December of 2019 outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission and the SWPPP provided with this submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present.

- 8 - No definite QA/QC plan for structural fills has been submitted

  RESPONSE: A testing schedule has been added to the staged construction plans on drawing L-102 which is based off of Kenney Geotechincal's recommendations.

- 9 - Through use of cluster development and as discussed at public meetings applicant to provide architectural renderings of homes and landscape plans of parcels. Planning Board should also review merits of grinder pumps verses a traditional municipal duplex pump station at this location.

  <u>RESPONSE- ARCHITECTURAL</u>: Developer has presented architectural renderings at several meetings and has included these images within drawing L-901. Thomas Allen Homes will be constructing all of the homes within the subdivision. Landscape plans will be developed by each individual homeowner based on the custom homes constructed and individual family preferences for each of the lots. Street trees, a monument entry sign with plantings and wetland plantings will be installed as part of the project along with the establishment of lawn in all disturbed non paved areas. Refer to drawing L-401 entitled Planting Plan.

  <u>RESPONSE – GRINDER PUMPS</u>: Several lots cannot obtain gravity sewer service. Just like all over Central New York, not all sites reside in a location capable of gravity service for sewers. Individual grinder pumps will be owned and maintained by the private homeowner with no maintenance or responsibility by the town. This is not ***an atypical condition in that many septic systems utilize pumps to transmit effluent from septic tanks to leachfields and from basements to septic tanks. Homes in this subdivision are no different than other systems in Onondaga County and around Central New York that use pumps to discharge sewage into***

their septic systems or low pressure sewers. In addition, a review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 (provided with this submission) and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. Based on an email from Christ Dietman at WEP, dated 6/2/20, a traditional duplex municipal pumping station is not an economically viable solution for this development.

Details of the review of each drawing and the proposed SWPPP follow:

2) General

1. No sewer offset plan included in submission

RESPONSE: Sanitary Sewer offsets and correspondence from Chris Deitman at WEP have been provided to the town previously. On 4/2/18 OCWEP provided a letter (previously submitted to the board and readily available to the public under the FOIA) stating the current system and receiving WWTP contain sufficient capacity to support the proposed development. It should be noted that at the time the developer had proposed 25 lots and the letter is reflective of 25 lots which would indicate the existing facilities contain more than enough capacity for the current 21 lot proposal. Once WEP and the town coordinate the requirements of such plan the developer will make any arrangements to comply.

2. No district formation information for proposed special use districts

RESPONSE: We had requested clarification from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. We have received no other guidance to date.

3. Correspondence from Kenney Geotechnical dated September 17, 2019 appears to indicate incomplete work tasks

RESPONSE: A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review.

4. No updates received for geotechnical report for current proposed work

RESPONSE: Geotechnical report has been provided in last submission for proposed work. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. Updated report has been provided within binder. See Additional comment #1, bullet point 1 for distribution. Additionally, A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review **as well as Appendix A of the *SWPPP provided with this submission.***

5. On site bore hole completed by Kenney Geotechnical indicates refusal/rock at an elevation 14 feet below surface inside limits of the proposed wet pond on 12/13/19. Pond is proposed to be at least 18 feet at this location

RESPONSE: See Additional comment #1, bullet point 2 for response.

6. Site has significant cuts and fills in areas of infrastructure to be dedicated to Town, no approvable QA/QC plan submitted for this scope of work

RESPONSE: Refer to drawing L-202 entitled Right of Way Basement Slab, and Footer summary. The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A limited 125' long section (Station 4+25 to 5+50) will require fill in the 8' to 10' range and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202. No road areas require more than ± 9 feet, only right of way areas require up to 10 feet. The suggestion that significant cuts and fills for more than just a minor area is misleading and does not reflect the vast majority of the project. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill. Weekly testing will be coordinated with the developers engineer and town engineer.

7. Map plan and report missing for district formations

RESPONSE: it is our understanding that these documents are prepared after engineering review and SEQR during final approval. The developer will provide these documents at the appropriate time if the project is approved. Design Team requested feedback on this issue from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue.

8. No updates on revised plans from OCWA, OCDOH nor OCDWEP

RESPONSE: Our team is of the opinion that updates are not required from above agencies due to the consistent usage of the 21 home subdivision in all correspondence with agencies. Once site plan is approved, final drawings will be shared with these agencies to allow them to complete their designs and obtain necessary approvals.

9. No survey provided with submission

RESPONSE: Site survey is provided as part of this submission.

10. As a function of relief upon use of cluster development. The Planning Board should place strong consideration and review upon the use of private grinder pumps at this location. The proposed use of grinder pumps is an anomaly in the Town of Manlius. This proposal will nearly double the applications of grinder pumps in the community. If used pumps shall be private with generator back up & required holding tanks on private property with double access valves. USEPA fact sheet on grinder pumps is attached herewith. Installation of grinder pumps is not consistent with current Town O&M maintenance.

RESPONSE: The statement that the use of grinder pumps is an anomaly in the Town of Manlius or Onondaga County for that matter appears misleading. A large portion of the Town of Manlius and Onondaga County do not have access to Public Sewers. Grinder and Effluent pumps are utilized frequently for septic system distribution throughout the area in places where gravity is not feasible. Other local areas utilize low pressure sewers with

grinder pumps such as in the Town of Pompey (Abutus Park) and other towns like Dewitt, Lysander and Manlius according to WEP. Any septic system that does not operate by gravity in the county would also include a similar pump. As an experienced designer of these systems, most residences served by septic systems do not contain generator backups and do not require holding tanks. In addition, review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. In addition, email correspondence from Christopher Deitman, dated 6/2/20 verifies that a municipal pumping station is not economically beneficial to this project or other residents of this sewer district. Therefore, the proposed low pressure sewer is the preferred alternative. See Additional Comment #1, Bullet point 9 for additional information.

11. Architectural review compliance discussed at public meetings not addressed or depicted. Typical architectural rendering for proposed houses should be submitted for review

RESPONSE: Project Team has provided sample architectural within this submission. Client has built several homes in the Manlius community and submitted photos of work previously to the board at several presentations. Refer to architectural response #9 on page 2.

12. Landscape review parameters discussed at public meetings not addressed or depicted. Typical landscape rendering for proposed houses should be submitted for review

RESPONSE: Landscaping design parameters including recommended native plant materials, hardscape materials and green/permeable pavement items to be included in HOA document. Each house will have a custom footprint and will have a unique and custom landscape based on the needs of families moving into the houses. Each homeowner will address the landscape design and installation. Since each home is to be constructed with a unique footprint we feel that a typical landscape plan is not warranted.

13. Land marking monuments not depicted on drawings as requested

RESPONSE: Individual lot corners to be located with iron pipes during stage 7 (L-108, Construction Staging note E) of construction in coordination with the project surveyor Forrest Seguin.

14. No blasting nor rock removal allowed on project site, no rock removal required as discussed at public meetings by applicant

RESPONSE: Agreed. Project team has performed a thorough investigation of the site and is ready to construct the site without blasting or rock removal. No rock was encountered during any of the multiple soil investigations on the site. Notes outlining this request have been added to the staging plans.

15. Security to be provided for capital improvements for utility and road installation by applicant for all infrastructure to be dedicated to the Town.

RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss required security requirements.

16. Engineering observation during construction will be required. A developers deposit will be required for this activity.

RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss the level of services required and the compensation amount required.

17. Testing for structural fills and NYSDOH certification of sewers will be required through a developer's deposit for all work to be dedicated to the Town. Requested that the applicant submit actual QA/QC plan to help better define scope of testing services costs

RESPONSE: Kenny Geotechnical has provided a scope of testing services for the project. Refer to staged drawings (L-102) for construction duration and specification section 31 2301 shown on L-503 for testing requirements. Specification Section 33 02722 also outlines inspection and testing of sewers.

18. Drawings L-201, L-700, L-701, L-702, L-703, L-704, L-705 not submitted with this submission and require additional coordination as a total review

RESPONSE: These drawings were previously submitted and have not been updated. The design team forwarded a list of drawings to be submitted for the last submission. List did not include these drawings and a response to our list of drawings was not provided. Design team will include these drawings within the next submission set. It is our understanding that the 21 lot count shown (20 new/1 existing) is an agreed upon count. All drawings for the project have been provided within this submission.

19. Drawings show only revisions 5-11. Where are revisions 1-4

RESPONSE: KFA to show complete list of revisions.

20. Wet pond appears to be a dam over 10' tall and impoundment area of over 3.07-acre feet (16.5': 676.5 crest, 660.0 toe of slope pond bottom 664.0 & 3.3-acre feet impoundment) Pond profile requires location of borings, location of rock, location of water table, 25' buffer from perimeter of high water impoundment area to wetland boundaries, documentation of no undue influence of discharges to ACOE wetland area, landscaping plan, removable trash rack, access turnaround for maintenance, fence gate sizing for proposed equipment if fencing is proposed and location of safety bench

RESPONSE: See Additional Comment #1, Bullet point #1 for comments on dam and impoundment. We have previously provided a pond "section" as requested. A pond profile has been provided, see drawing L-502 and Appendix P of the SWPPP provided with this submission. See Additional Comment #1, Bullet point #2 for discussion on borings, depths etc. A buffer larger than 25'-0" has been provided from perimeter of high water impoundment area to wetland boundaries mapped by wetland professionals and located by the Licensed Land Surveyor. The pond itself allows the maintenance road to loop the facility and no turn arounds are required. Pond grades are 4:1 which allow for elimination of any safety bench per page 6-12 of the stormwater design manual, in response to your offices previous comments.

21. Foundation drain around footing not a part of this approval and shall be removed

RESPONSE: Foundation drain detail has been removed. Note added to L-200 and L-503 noting that all foundation drain and basement information is for coordination purposes only.

22. All drawings marked not for construction, unacceptable for approval submission

RESPONSE: Drawings to be marked "for construction".

23. SWPPP submission dated 12/17/19 accepted by applicant on 1/10/18 and certified by engineer on 12/26/17

RESPONSE: Appendix H of the SWPPP has been updated with current signatures and dates along with page 26 of the SWPPP narrative.

24. Project specifications provided by developer require the following which have not been incorporated into drawings or plans
    a. Compost (220,000 CF required for reclamation of site (3" thick))
    b. CU Structural soil
    c. Planting Soils
    d. Basement spoils (35,000 CF)
    e. Additional staging for new additional sediment pond (66,000 CF)

RESPONSE: See Additional comment #1, bullet point 5 for response.

25. No drawings in 12/17/19 SWPPP match current submission subdivision drawings of 12/17/19

RESPONSE: RZE Drawings in 12/17 SWPPP shall be updated to match submission package.

26. The proposed conditions plans in the SWPPP do not match the grading plan in the plan set.

RESPONSE: RZE Proposed conditions plans have been updated to match grading plans.

27. Are the calculations in the SWPPP based on the old drawings in the SWPPP or the new drawing set? This needs clarification.

RESPONSE: Calculations and SWPPP have been updated.

28. We believe more water quality volume will be required as there is more than 4 acres of impervious on site.

RESPONSE: WQv calcs have been updated to reflect off site impervious per discussion with town engineer, see Appendix G of the SWPPP provided with this submission.

29. A response letter is required on the items addressed herewith as it is very difficult to follow what has been changed with so many revisions.

RESPONSE: Agreed.

3) Sheet L-100

1. Boring information does not include logs nor elevations for borings

   RESPONSE: Boring information is located within Kenney Geotechnical Report which is located within the 3 ring binder, Appendix A of the SWPPP provided in the most recent submission. In addition, elevations locations and data appear on drawing L-100. See bullet point #2, additional comment #1.

2. Notes indicate removing all vegetation and hauling off site contrary to public discussions

   RESPONSE: Notes have been revised and note that all vegetation removed will be chipped and placed on site as mulch or blended with topsoil. Note #3 within the chart entitled EXISTING CONDITIONS AND REMOVAL/DEMOLITION NOTES located on drawing L-100 has been updated to address this comment.

3. What is the purpose of site preparation plan?

   RESPONSE: Site preparation plan shows the boring locations, existing survey information and includes a project legend and survey notes.

4. A site-specific survey is required for the proposed project

   RESPONSE: Site survey has been provided several times including the initial binder submission. Project team has included a survey within this submission.

5. Finished floor elevations depicted in notes but not shown on drawings

   RESPONSE: Finish floor elevations are shown on drawings L-200, L-300, L-400 and L-401.

6. General note referencing U.F.P.O., the agency no longer exists

   RESPONSE: Official agency name is now Dig Safely and has been updated.

7. Open cut of Hoag Lane for sewer connection unacceptable, provide detail for road boring at this location

   RESPONSE: KFA/ RZ has provided a boring detail 14, drawing L-500 for sewer connection at Hoag lane. However, contractor /developer would like to discuss open cut approach to ensure accurate elevation control and avoidance of existing utilities.

8. Decommissioning of Water Pit, provide insight or detail

   RESPONSE: Water Pit will be decommissioned in accordance with all OCWA requirements during OCWA's construction of the project.

9. Dust monitoring provide detailed QA/QC Dust Monitoring Plan

RESPONSE: A Dust monitoring plan was provided within the SWPPP under section 12.1 within the 12/17/19 submission. Pages 26-29 and Appendix R are dedicated to outlining the plan, frequency, monitoring practices and corrective action. The project staging plans provide information on the locations of monitoring devices.

10. Stage 6 not as directed by owner, plan needs to be on drawing

RESPONSE: Updated staging plans have been provided as shown with drawings L-102 thru L-108.

4) Sheet L-101

1. Wet pond borings appear to have been taken to a depth of 14 feet (168") where refusal was met. The proposed pond appears to be over 18 feet deep from existing land contours Confirm depth of rock consistent for final design

   RESPONSE: See Additional Comments #1, Bullet points 1 & 2 and item 20 for responses.

2. All wetland areas shall be delineated and protected during construction activities. Suggest orange construction fence to protect wetlands and all areas to remain forever wild to be shown on drawings

   RESPONSE: Agreed. Orange construction fence has been added around all wetland and protected wild areas.

3. L-101 does not match reference L-1 in SWPPP. Perc tests not taken in area of proposed pond nor at proposed elevations of construction of pond

   RESPONSE L-101: RZ/KFA have updated the SWPPP and Plans. All testing data and locations are provided on drawing L-100 and within Appendix A of the SWPPP.
   RESPONSE PERC TESTS: Provided within updated Kenney Geotechnical reports dated 5/18/20 and 5/27/20. See additional comment #1, bullet point #2.

4. Lot 12 appears to have an 8 foot +/- retaining wall, provide detail and ownership of same\staging plan wording is depicted on sheet L-101. Should be on sheet L-102 and in SWPPP

   RESPONSE: The proposed grading plan has been revised to reflect a 3-4 foot high boulder wall. Boulder wall detail and profile has been added to drawing L-502. Wall construction shall occur in Stage 1 of construction as noted on plans. Notes regarding wall will be included in construction staging plans.

5. Stormwater note indicates 20 homes not 21 per drawings

   RESPONSE: Notes to be updated to reference the 20 proposed lots and one existing residential lot.

6. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: KFA/RZ have updated notes based on public discussion. However, staging plans were developed after public discussion comments were made relative to stockpiling of materials. Sitework contractor, Tobin Construction, is in agreement with the locations.

7. Describe top soiling compost operation and acceptance criteria of same, specification for compost. Show staging area for composting operation

   RESPONSE: Site contractor will dress and final grade the site per NYSDEC email correspondence shown on drawing L-101 and within Appendix I of the SWPPP provided with this submission.

5) Sheet L-102

1. Transitions to forebay & Wet pond ground contours are needed in detail to confirm plans and profiles coordination with existing site contours

   RESPONSE: Proposed grades of forebays and spillways have been provided on drawing L-102 and L-200. An updated profile of the basin has been provided as details, 1-4 on drawing L-502.

2. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: Refer to response on 4) Sheet L-101, bullet point 6.

3. No longer a one phase project as discussed with public

   RESPONSE: Duplicate comment, Refer to response 1) Additional comment, bullet point #6.

4. Project appears to be at least 5-6 years in duration

   RESPONSE: Project is to be constructed in one phase. The stages shown are within one phase and laid out on drawing L-102 within the Stage Chart.

5. Staging plan does not consider winter shutdowns and securing site environmentally

   RESPONSE: Project continues to be one phase as indicated by all plans.

6. Confirm soil from pond being moved to staging area, stability factors of the large staged area nor haul roads

   RESPONSE: All soil removed from construction of pond will be retained on site in designated staging areas or moved directly to it's new location in accordance with grading provided on L-200 or L-102. All filling activity will be In accordance with drawing L-102 and the Kenney Geotechnical report provided on 5/27/20.

7. Work outlined in phasing plan appears to require a waiver from NYSDEC

   RESPONSE: Agreed. A 5 acre letter (Appendix W of the SWPPP) is provided within the SWPPP and will be submitted to NYSDEC/ MS-4 at the appropriate time.

8. Final wear course topping for roads is required to be placed within one year of base & binder installation per Town of Manlius

   RESPONSE: Additional note added to detail 1/L-503 (Typical Road Section).

9. All required erosion control for each phase of work to be included and detailed in drawings and SWPPP

   RESPONSE: Project is to be constructed within one phase with multiple stages. Additional staging drawings have been added to the set as requested. Each stage has detail references showing the erosion control measures required on Drawings L-102 thru L-108. Language has also been added to the 5 acre disturbance letter provided in the SWPPP, Appendix W).

10. Staging Plan requires discussion for schedule of dedicated facilities. Developer proposes 2-year warranty of all dedicated roads and infrastructure, timeline of each phase needed for acceptance.

    RESPONSE: According to the Town of Manlius specifications provided and shown on drawing L-503 (Section 31 23 01 (1.6F) – Sitework Excavation, Backfilling and Compaction) the pavement guarantee is for a one year period. The Asphalt Pavement specification section 32 1216, 3.2 includes a pavement guarantee which is contrary to the Town of Manlius specifications has been removed from drawing L-800.

11. Phasing plan appears to require a NYSDEC waiver

    RESPONSE: Agreed. See comment response for sheet L-102 bullet point 7 above.

12. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

    RESPONSE: SWPPP mailbox has been relocated to project entrance where it will be located throughout construction.

13. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

    RESPONSE: Sitework contractor has provided an earthwork analysis for the entire project which balances as well as stages 1 and 2. Stockpiled materials areas will be shown on the plans. However specific quantities for the stockpiles materials cannot be shown in specific quantities according to Tobin.

14. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

RESPONSE:

<u>GPS Coordinates</u> – Layout of project work to be performed by a licensed surveyor throughout construction. Tobin's construction equipment includes GPS mounted units with the project grading information to ensure proper grade control. During our 3/19/20 phone conversation with the town engineer and attorney it was determined that GPS coordinates for staging limits and fencing were not required.

<u>Fencing</u> – KFA to show detailed fencing for all staged areas. Silt fence and orange construction fencing will be shown within each stage as presented on Drawings L-102 thru L-108. The SWPPP document includes language which allows the SWPPP inspector to require movement of or additional erosion control measures based upon field and weather conditions. These modifications will be noted within the weekly SWPPP inspection reports which will be shared with the Town, developer, designers and contractors.

15. Provide a preliminary schedule for the work

RESPONSE: Refer to staging plans for duration of each stage. Exact calendar dates cannot be provided until site plan approval has been granted and a construction start date can be established.

16. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

RESPONSE: KFA has shown extents of silt fence and orange construction fence around soil disturbance areas as shown on the staging plans drawings L-102 through drawing L-108. Silt fence is not necessary for placement uphill of disturbance areas.

17. NOTE: Install road pavement subgrade .... In lifts per Town of Manlius..." Unacceptable Note

RESPONSE: Unacceptable note removed. KFA has added testing requirements the schedule on L-102. The specifications are based upon the Town of Manlius specifications provided by the Town of Manlius department of Public Works. In addition, the applicant has obtained a licensed Geotechnical engineer to provide a procedure and testing plan for areas to be dedicated to the town. It should be noted that the majority of areas within the right of way to be dedicated to the town requires cut or fill within 4'-6" of existing grade.

18. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

RESPONSE: Staging area provided is adequate for a sitework developer according to Tobin Construction. According to sitework contractors there is adequate space within staging areas to store equipment and construction materials. Contractor is aware of project requirement to keep all stockpiled materials, construction materials, equipment and employee cars on site. Duration of storage is not an item the design team has the ability to

provide. The staging area will be monitored weekly (and for some time bi-weekly) by the Qualified Professional responsible for SWPPP inspections. All inspections and mitigation measures will be in conformance with the SWPPP.

19. Provide hammerhead turn around at end of road construction

    RESPONSE: KFA has shown Town of Manlius turnaround at end of road at each phase per detail 9/L-501, where needed.

20. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Staging plans include transitional grades between stages and temporary measures which require removal moving into the next stage of construction.

6) Sheet L-103

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: see response to duplicate item L-102 bullet point #12.

   Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: Duplicate comment see response to L-102, item 13 above.

2. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:
   <u>GPS Coordinates</u> – See response L-102 note #14.
   <u>Staging Fencing</u> - See response L-102 note #14.

3. Provide a preliminary schedule for the work

   RESPONSE: See response L-102 note #15.

4. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: Detailed limits of silt and orange construction fencing are shown on the staging plans L-1-2 through L-108.

5. NOTE: Install road pavement subgrade .... In lifts per Town of Manlius..." Unacceptable Note

   RESPONSE: See response L-102 note #17.

6. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: See response L-102 note #18.

7. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate comment see response to L-102, item 19 above.

8. Provide details, sections and basis of design for 66.712 CF sedimentation basin

   RESPONSE: Site Plan documents include basin grading plans, erosion control plans, layout plans and sections including staged construction. Calculations for sizing and design of temporary basin including routing of outlet structure have been provided in Appendix T of the 12/17/19 and current SWPPP submitted.

9. Show location of excavation of 66,712 CF of spoil for the work

   RESPONSE: According to earthwork estimated by Tobin Construction the excavated material from the sedimentation basin will be utilized to construct the west side of the basin and fill areas within Stage 2.

10. Show depth to rock and depth to water table. Include safety precautions and any need for security fencing during the work

    RESPONSE: As previously noted within 1) Additional Comments, bullet point #2, an updated Geotechnical Investigation was provided within the submission on 12/17/19. All testing data, locations and information is included on drawing L-102. Additionally, supplemental geotechnical reports (earthwork 5/18/20 and pond analysis 5/27/20) have been provided. Safety Precautions - Contractor to excavate and trench in accordance with OSHA safety requirements. All deep trenches and excavated areas will be fenced in accordance with OSHA standards. Contractor to provide security fencing as needed.

11. Discuss where wood chips have been incorporated into the work formerly shown on drawing L-102

    RESPONSE: Wood chips to be utilized on site for erosion control measures and mulch.

12. Storm pipe el 695.5 to el 687.5 has no sedimentation basin attached

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. The pipe currently is proposed to discharge to a temporary sedimentation basin from a temporary swale on lot 10 within stage 2.

13. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: See response L-102 note #20.

7) Sheet L-104

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: See response to duplicate item L-102 bullet point #12.

2. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: See response L-102 note #13.

3. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:

   GPS Coordinates – See response L-102 note #14.

   Staging Fencing - See response L-102 note #14.

4. Provide a preliminary schedule for the work

   RESPONSE: Duplicate note. See response L-102 note #15.

5. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: KFA to show extents of silt fence around soil disturbance areas.

6. NOTE: Install road pavement subgrade .... In lifts per Town of Manlius..." Unacceptable Note

   RESPONSE: Duplicate note. See response L-102 note #17.

7. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: Duplicate note. See response L-102 note #18.

8. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate note. See response L-102 note #19.

9. NOTE: Fill temporary basin – No basin depicted

   RESPONSE: Basin not depicted within Stage 4 because it would be removed and filled at the end of stage 3. Refer to previous stages 2 and 3 for temporary basin location and Appendix T for sizing and design.

10. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Duplicate note. See response L-102 note #20.

8) Sheet L-105

1. Staging Plan 4,5, &6 does not provide any detail on staging requirements. Drawings looks quite similar to sheets L-101; L-200; L-300

   RESPONSE: KFA has provided additional drawings for stages 4, 5, 6 and 7 as drawing numbers L-105 to L-108.

9) Sheet L-200

1. Stormwater piping: No line or grade shown on plan, no delineation of pipe sizes lacking in several locations on plan, several unacceptable 90-degree or greater bends with problematic head loss, no stationing shown on plan

RESPONSE: Plan revised to comply with comment.

2. South side swale indicates apparent check dams. Das require detail and stationing location

RESPONSE: Check Dams are not required based on design calculations (Appendix F) but are provided as an additional protection in larger storm events. Locations have been chosen by the engineer who is a Certified Professional in Erosion and Sediment Control, a Certified Professional in Water Quality and a Certified Erosion, Sediment and Stormwater Inspector by professional councils in each discipline. No additional detail or stationing is required.

3. Geotech to include centerline of road ways for road and utility installation & all ponds

RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. KFA has added right of way and road centerline to drawings .

10) Sheet L-300

1. Air release valve locations

RESPONSE: Force Main sewer runs are short and do not include any locations for air release valves. None are required since no line crests exist.

2. MH #3 and MH#6 are unacceptable with greater than 90-degree bends depicted on drawings as shown are problematic for gravity flow.

RESPONSE: Pipe configuration has been amended to prevent greater than 90 degree bends.

3. Provide details for sump pump connections directly to storm sewers with backflow connections to compensate for overland discharges described in SWPP

RESPONSE: Information on sump pumps and discharge points is presented as Note 20 on Drawing L-200. No sump pumps are proposed to discharge to storm sewer; sump pumps to drain to daylight.

4. Show location of 10 – 15" caliper trees on lot 4

RESPONSE: Any of the larger caliper trees located within the buffer/forever wild area will be preserved. Those located beyond the buffer will be removed to construct the required drainage swales and construct housing lots. Most of the trees beyond the forever wild area as shown on the Site Preparation and Boring Location plan have been removed. We do not feel that location of the existing trees is necessary.

5. Lot 4 diagonal 125 sewer lateral across road is unacceptable

RESPONSE: Manhole has been relocated and lateral has been modified.

6. Show locations for proposed grinder pumps tanks and emergency generators disconnect valves off Town ROW

RESPONSE: Grinder pump chambers are within the residence as outlined in the E-One system design guidance. No emergency generators are provided unless desired by the individual property owners. A connection valve is provided at each property line per detail 7/L-501.

7. No open cut allowed across Hoag Lane

   RESPONSE: Duplicate note. See response L-100 note #7.
8. Provide detail for odor control for septage transport from grinder pumps and mechanism for grinder pump owners to pay in map plan and report for sewer district

   RESPONSE: All pumps are privately owned and not part of the municipal system. The E-One sewage system is a closed system and no odor control is required. Grinder pumps are not part of the municipal system and will not be identified in the map plan and report. Only payments for the municipal main will be required.
9. Laterals specified as 6" some shown as 4" confirm all are 6" and correct drawings

   RESPONSE: Plans have been updated to show all gravity laterals as 6" diameter.

10. Note 5 indicates incomplete submission with no easements in place for work

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Easements are typically granted after construction.
11. Note 23: provide detail on agridrain in-line water structure

    RESPONSE: A specification on agri-drain has been provided as detail 5 on drawing L-504. The spec has also been added to Appendix P of the SWPPP provided with this submission.

11) Sheet L-400

1. Cleary show limits and stationing of jute mesh requirements in southerly swale

   RESPONSE: The jute mesh detail shows a width of 6 feet. Hatching on drawings has been altered to reflect this width. Layout Note 6 on drawing states that the surveyor will layout the drainage easement prior to installation.

2. List all proposed traffic signs

   RESPONSE: KFA has provided a proposed signage schedule and two stop signs on the Layout Plan, drawing L-400.
3. Show locations of stone dust walkways and ownership of the same

   RESPONSE: There are not any stone dust walkways included within the current site plans. During early design review meetings with the town the design team was directed to remove the walkways.

4. Confirm NYS Pool requirements vs Town BOCA requirements for pools

RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

5. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

   RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

6. Provide detail on subdivision sign

   RESPONSE: Subdivision sign detail has been added to the Planting Plan, drawing L-401.

7. Show required monument locations

   RESPONSE: Monuments to be provided within stage 7 (drawing L-108, construction note 7) of construction and to be coordinated with the surveyor, town and contractor.

12) Sheet L-401

1. L-401 Rain Gardens: Show specific locations as discussed at public meetings

   RESPONSE: Rain Gardens have not been a part of project for several submissions. All rain garden references have been removed from plans.

2. L-401 wet pond plantings show detail, fencing, access to pond, maintenance around pond and equipment turn around areas

   RESPONSE: Wet pond planting locations, specifications and detail has been added to drawing L-401. Fenc

3. L-401 details 5&6 seeded and sodded lawns show locations for detail application

   RESPONSE: Project staged construction drawings and planting plan show seeded lawn locations. There will not be any sodded areas unless as deemed necessary for stabilization by the qualified inspector or desired by the individual homeowner within Stage 7.

4. Show locations of proposed rain gardens

   RESPONSE: No rain gardens are proposed for this project. See L-401 item #1 above

5. Show pond landscaping

   RESPONSE: Pond landscaping has been updated, see L-401, item #2 above.

6. Describe landscaping plans and a schematic for each house as discussed at public meetings

   RESPONSE: All of the 20 proposed homes for the project will be custom homes and have a customized footprint. Each landscape design will also be customized to meet the home footprint and the needs of the individual homeowner. Project plans include (2) street trees for each home. Images of the homes which were previously presented to the Town will be included within the next submission set.

7. Note 3 stating planting scheme for entrance at later date is unacceptable

RESPONSE: Note has been removed. A planting plan for the monument sign area has been provided, detail 2/L-401.

13) Sheet L-500

1. Sheet L-500 indicates traffic sign detail. Plan requires location of all signs

RESPONSE: KFA has added two stop signs (L-400) to the plan along with detail references and locations.

2. Detail 14 L-500 does not match detail 7 L-501. Compaction effort required. Lift height of fill/cut operations required. Proctor or modified proctor testing. Number and frequency of testing

RESPONSE: KFA has revised detail 1/503 to match criteria outlined in the Kenney Geotechnical report dated 5/18/20. Detail 14/L-500 has been removed along with detail 7/L501. Detail 1/L-503 now includes all pavement section information.

3. Detail A L-500 siltation sock use not referenced in SWPPP

RESPONSE: SWPPP has been updated to include siltation sock, see section 12.0.

4. Construction entrance 3 L-500 not detailed in staging/phasing plans

RESPONSE: KFA to show construction entrance location detail on all phasing plans L-102 thru L-108. During weekly/bi-weekly SWPPP inspections the condition of the entrance and cleanliness of Hoag Road at the entrance will be reviewed.

5. Detail 8 L-500 asphalt kick up detail does not match detail 14 L-500 nor detail 7 L-501

RESPONSE: Duplicate comment. See response to 13) Sheet L-500, item #2

6. Wet pond detail not to scale unacceptable requires scaled drawing with details

RESPONSE: See SWPPP comment 20 above for response to profile.

7. Confirm need for 2'-0" manhole sumps

RESPONSE: KFA has decreased sump depth to 1'-0". 2'-0" depth is not needed.

8. Concrete washout detail does not match plan sheet L-104 or L-105 nor NYSDEC suggested requirements

   RESPONSE: Detail has been updated to comply with the NYSDEC blue book, per detail 19, drawing L-500.

9. Lot Erosion Control Lacks detail i.e. curb, gutter and site silt fence

RESPONSE: KFA has updated NYSDEC Lot erosion control detail (detail 2, drawing L-108) to match the NYSDEC blue book plan for residential lots.

10. Catch basins depicted on undisturbed earth, confirm this requirement and discuss subbase compaction where required

RESPONSE: Detail 1 on drawing L-503 now addresses how to install catch basins in places where they are on fill.

14) Sheet L-501

1. Sheet L-501 dust monitoring device cut sheets to be included in SWPPP with dust plan. Dust plan data to be submitted daily to Town of Manlius Code department during work activities

RESPONSE: Dust monitoring cut sheets included in SWPPP within appendix R but they are also presented as Detail 8 drawing L-501. Site contractor to submit dust monitoring data daily to Town of Manlius. Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

2. Applicant has indicated no blasting or rock removal required for the project. This statement shall be placed on all drawings

RESPONSE: Note added to Earthwork Field Testing Notice on all phasing plans l-102 thru L-108. See 2) General Comments, item #14.

3. Detail 7 L-501 indicates road to be placed on undisturbed subbase. This does not match drawings. Road construction requires a detailed QA/QC plan

RESPONSE: Detail 7/L-501 is for a sanitary pump station. Detail 1/L-503 refers to construction in cut and fill conditions.

4. Pond requires easement access

RESPONSE: The wet pond is located within a HOA Forever Wild easement area controlled by the HOA in addition to, an HOA access easement which includes a 15 foot wide easement for the HOA to access the SWMF for maintenance. According to the surveyor all easements will be shown on a final survey at a later date.

5. Confirm basis for 14' maintenance berm. The maintenance bench does appear to be continuous. No safety bench indicated on drawings. Maintenance bench is bisected by overflow spillways. Maintenance bench requires a turnaround required by NYSDEC

RESPONSE: See SWPPP comment 20 above for response.

6. Provide detail on coarse aggregate fill around manhole detail

RESPONSE: Manhole details 1 & 10 on L-501 updated to show placement around manhole in conformance which Town of Manlius specifications.

7. Pond seep collar

RESPONSE: A pond seep collar detail has been added to the plans, see detail 16/L-500.

8. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

RESPONSE: Duplicate comment. See 11)Sheet L-400 bullets 4 and 5 for response.

9. Sanitary notes contradict project specifications on sheets L-800 and L-801

RESPONSE: Sanitary notes on L-501 and L-801 amended to not conflict with specifications.

10. Show location and requirement for Hydrant installation detail

RESPONSE: Preliminary hydrant locations are shown on drawing L-200 as discussed and detailed (drawing L-501, detail 4) per OCWA and fire department requests.

11. Detail 2-L501 sanitary lateral does not match plan details on utility drawings

RESPONSE: Laterals have edited to match plan details.

12. What is detail 5 L-501 depicting? Where is plan detail for this applied

RESPONSE: Detail 5/L-501 is for the sanitary lateral (House Trap-Gravity Lateral) and has been included per recent updates with Onondaga County Department of Health Guidance.

13. Detail 6 L-501 all fence posts to be noted as 4'-0" as shown

RESPONSE: KFA has shown all fence posts @ 4'-0" Height. Detail has been modified to a 4'-0" height chain link fence and gate which meets state and Town of Manlius code requirements.

14. Town will not accept ownership nor operation and maintenance of grinder pumps. Remove Detail 7 L-501

RESPONSE: Detail 7/L-501 has been updated to clarify the work.

15) Sheet L-502

1. Detail 2 L-502
    a. Show existing grades.
    b. Boring locations – depth & profile locations
    c. Distance barrier of proposed construction to wetlands
    d. Provide detail on "limits of cut"
    e. Provide vertical and horizontal stationing on drawings
    f. Coordinate outlet structure detail w/ 20-L-500 and details in project SWPPP
    g. Depth to rock, confirm need for any lining materials and maintenance thereof
    h. Pond profile requires reference to a plan section for clarification and constructability

RESPONSE:
See Additional Comment item #1, bullet points 1 & 2 and swppp item 20 above for response.

2. Detail 1 L-502
    a. Illegible provide drawing to scale at a legible size
    b. Drawing contours do not appear to match others in grading plans nor staging plans

RESPONSE: KFA/ JK TOBIN to provide a revised earthwork plan at a larger scale.

16) Sheet L-503

1. Delete basement details and footer details they are dictated by building permit applications

   RESPONSE: KFA to removed basement/footer details. Notes have been added to drawing L-503 stating that basement slab and footings are shown for coordination purposes and illustrative purposes only.

2. Confirm where is section "Fill Location" taken

   RESPONSE: Plans revised to show fill location on grading plan with section reference to drawing L-202.

3. Section 31 2301 is unacceptable when project moves forward Town will contract a testing agency using developer deposit for cost reimbursement and testing agency will use specifications and QA/QC plan developed by applicant initial indications are for an initial testing deposit of $50,000

   RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Town Attorney and developer to discuss with town.

4. Typical road sections are confusing coordinate with other similar details 14 L-500 and 8 L-500

   RESPONSE: KFA has consolidated road detailing information within drawing set. Much of the information has been added to the road section details shown on drawing L-503.

5. Please provide professional design credentials for JK Tobin Construction referenced in the plans

   RESPONSE: JK Tobin credentials to be provided at a later date. Our office has worked on many successfully constructed projects with Tobin Construction over the years including the Hamlet Housing neighborhood – Clay NY, Harbor Height Housing Neighborhood and DeWitt Community Library.

6. Provide QA/QC plan for all structural fills in Town proposed Rights of Way. Plan shall include but not be limited to the following, all lifts to be 6" as depicted by applicant in project specifications:
   a. Each proposed Manhole: Compaction results for embankment, subgrade, subbase and base in 6" lifts
   b. Each Catch Basin Compaction results for embankment, subgrade, subbase and base in 6" lifts
   c. Each Sanitary Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

d. Each Storm Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF
e. All Roadways to be dedicated to Town: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

RESPONSE: A construction duration column has been added to the Construction Staging chart shown on the Staging plans (drawing L-102). A testing summary chart, provided by Kenny Geotechnical, has also been added to each stage to summarize the testing required for each phase (drawings L-102 thru L-108). Testing criteria items a through e have been added to the specifications section 31 2301 SITEWORK EXCAVATION BACKFILL AND COMPACTING , 3.8 Field Quality Control, item 3 on Specification drawing L-503.

17) Sheet L-600

1. Stationing on profiles do not correlate to any plan views

   RESPONSE: Stationing now appears on drawings within the plan set and correlates to the profile on drawing L-600.

2. Storm lines have unacceptable cover of less than 1 foot at the following locations
   a. STA 0+50
   b. STA 1+50
   c. STA 6+00
   d. STA 7+25

   RESPONSE: Inverts have been adjusted to provide cover greater than 1'-0".

18) Sheet L-800

1. Road Specification 32 1100 Calls for 6" lifts for all road embankment. Please coordinate on all drawings

   RESPONSE: All drawings include reference to installation of materials in 6" lifts. See drawing L-503 for compaction in road areas.

2. Road Specification 32 1216 calls for 2-year warranty on all roads. Please coordinate on all drawings

   RESPONSE: Specification section 32 1216, 3.2, Pavement Guarantee, has been removed since it is in conflict with Town of Manlius specification section 312301, 1.6, F Highway Agreement Guarantee.

3. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

   RESPONSE: All construction specification sections shown within the revised construction set of drawings have been coordinated with drawings and Town of Manlius provided specifications. Town of Manlius specifications have been incorporated into section 31 2301 Sitework

Excavation, Compaction and Backfilling. Design Team discussed this item with both the town engineer and attorney during our phone call on 3/19/20. It was determined that Division 1 specifications were not required for this project.

19) Sheet L-801

1. Planting Soils: Show locations & account for impacts on cut and fill calculations

   RESPONSE: <u>Planting Soils</u> specification section is from a different project, is not required for this project and has been removed. <u>Plantings</u> specification section has been added to address the required installation of two street trees at each home and the plant bed for the monument sign. The amount of soil removed to install trees and the monument planter is minimal and will not have a significant impact on the earthwork calculations.

2. Structural Soil (CU): Show locations & account for impacts on cut and fill calculations

   RESPONSE: Structural soil section is from a different project, is not required for this project and has been removed. Structural soils are utilized within the city right of ways where trees are planted within small tree pits surrounded by sidewalk. Trees planted within the Hoag neighborhood will be surrounded by lawn and not require structural soils.

3. Pressure & Leakage Tests: Confirm locations of this specification requirement

   RESPONSE: As is customary with all sewer installations, all lines will be pressure and leakage tested per specification section 02722 and sanitary note 10 on drawing L-501.

4. Disinfection: Confirm locations of this specification requirement

   RESPONSE: As is customary with all water installations, all lines will be pressure and leakage tested in accordance with OCWA requirements and DOH regulations and per specification section 02722 and sanitary note 10 on drawing L-501 .

5. Provide detailed QA/QC plan for NYSDOH acceptance of sanitary sewer acceptance

   RESPONSE: see previous comments L-801, items 3 and 4.

6. Section 33 31000 – Sanitary- Does not match drawing requirements nor Section 02722 – Sanitary Sewer

   RESPONSE: Specification sections have been revised to focus on this project specifically.

7. Section 02722 Sanitary Sewers – Does not match drawings nor Section 33 31000 – Sanitary –

   RESPONSE: Specification sections will be revised to conform to each other and this project.

8. Section 33 4000 – Storm Drainage – Drawings do not comply nor match the specification

   RESPONSE: Specification sections have been updated to comply with project work shown within drawings.

9. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

RESPONSE: Duplicate comment. See 18) Sheet L-800, item 3 for response.

20) SWPPP

Appendix A

1. Soils investigation depicts soil investigation in area now to be forever wild and not in areas of stormwater capture area

RESPONSE: The data in Appendix A is reflective of all testing done at the site, including initial testing. The data is important and reflective of the general soil profile in the area showing limited to no encounters with bedrock or other impedances. We plan to leave this information within the report. The most recent Kenney Geotechnical report(s) have also been included in Appendix A of the SWPPP provided in this submission. Appendix A also now includes drawing L-100 depicting all soil testing data and locations.

2. Soil investigative activity currently on three separate non project maps. All to be coordinated on one map and one table boring locations and elevations to be tied to USGS elevations and coordinates by surveyor

RESPONSE: see response to SWPPP comment #1 above, however, drawing L-100, Site Preparation and Boring Plan has been included in the drawing set and Appendix A of the SWPPP provided in this submission to clarify all testing locations.

3. Boring info of 12/13/19 indicates refusal/rock at elevation 14 feet below existing grade. No certification of elevation nor longitude/latitude location

RESPONSE: See drawing L-100 and 1) Additional Comments, bullet point #2 above for response.

4. Site specific dust plan to supersede all other regulations shall be noted on site drawings as reference to all site activity

   RESPONSE: A note has been added to L-102 thru L-108 and L-501 which states 'Site specific dust plan to supercede all other regulations to all site activity'.

5. SWPPP dated 12/17/19 appears pre-certified by engineer and owner 1/11/18

RESPONSE: the signature page and NOI signatures have been updated.

6. Dust plan wording to be changed from proposed recommended etc. to required and to be submitted daily to Town of Manlius and posted on site as part of SWPPP reporting. Action limits and action plans to be included

RESPONSE: the SWPPP language has been updated to reflect "Required". Action plan and measures are included on page 23 of the SWPPP text.

7. Dust monitoring devices to be included in SWPPP documentation and describe depiction of locations of dust monitoring at each perimeter of the site

RESPONSE: Dust Monitoring device locations are shown on phasing plans (drawings L-102 thru L-108). Specific dust monitoring device is presented as detail 8, drawing L-501 and this cut sheet has also been included in the SWPPP appendix R.

8. No borings or documentation of 66,000 CF sedimentation pond. Information required for basis of design, pond appears to be 13 feet deep +/-.

RESPONSE: duplicate comment, see Additional Comment #1, bullet point 3 for response.

Appendix H

1. Confirm existing impervious as 1.2 acres and future impervious as 4.1 acres with new drawings of 12/17/19 as NOI has a preparers signature of 12/26/17

RESPONSE: Updated SWPPP has verified total impervious coverage and the NOI, hydrocadd and page 4 of the swppp have been updated as necessary.

2. Start and end dates for the project depicted as 2019 – 2020. Proposed schedule from drawings indicates a proposed schedule of development of 2020 through at least 2026. Start date of 11/1/19 has passed and is incorrect. NOI dated and signed by RZ Engineering 12/26/17 incorrectly with above information superseding the document.

RESPONSE: The planning process for this project has been extended and therefore, we will update forms however, based on future planning timetable this may require further updates. We will update accordingly as the process moves forward.

3. Long Term O&M WILL NOT be Town of Manlius as shown on page 12 of 14 on NOI

RESPONSE: Correct, the HOA will perform long term O&M, SWPPP pages have been updated along with the NOI.

4. Owner signature on NOI is 1/10/18

RESPONSE: Form signature has been updated

5. Preparer certified the SWPPP on 1/8/18 but SWPPP was not prepared until 12/17/19 nearly two years later. Please confirm and revise

RESPONSE: see response to Appendix H comment 2 above

Appendix I

1. Details in Appendix I do not match details shown on submitted subdivision drawings.

RESPONSE: As is typical in a swppp, our office provides the NYSDEC hand drawn details from the DEC's Blue Book and the NYSDEC Stormwater Design manual in our SWPPP manuals for the project. Our project plans include details prepared by our office, manufacturers and other sources which are based off of the NYSDEC manual. Our office requested clarification (specifically what if any, discrepancies were found between the NYSDEC details and our details so that we can update the drawings) on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix J

1. Why is this included. This is a copy of NYSDEC regulations SPDES General Permit

RESPONSE: It is included in every SWPPP we prepare so there is no confusion about what the permit requirements are. This was specifically suggested by NYSDEC personnel to our office. Is there any objection to the DEC's request? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix K

1. Confirm O&M procedures, resubmit using proposed agreement and develop site specific reporting criteria. Current data appears to be NYSDEC suggested tally of forms

RESPONSE: The information provided is the DEC's documented data. Is there a reason the DEC's information is not sufficient for this project or any specific requirement the town requires over and above the NYSDEC's requirements? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

2. Maintenance does not address site specific maintenance criteria nor site specific costs nor site ownership and easement responsibilities. Costs and set aside deposits shall also be addressed. Inclusion of maintenance agreement is also required

RESPONSE:. see Appendix K item #1 for response

3. Post maintenance construction plan missing from SWPPP see attached for possible reference material and sample plan

RESPONSE: see Appendix K item #1 for response

Appendix L

1. Worksheets do not match NOI in Appendix H

RESPONSE: it's unclear the relevancy of this comment. Our office requested clarification on this item (specifically how the calculation does not meet the DEC requirement) during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix M

1. Soil stockpiling shall not be at direction of contractor. Stockpiling shall be as per SWPPP and drawings

   RESPONSE: Soil Stockpiling locations are shown within the staging plans (drawings L-102 through L-108).

2. No changes in staging areas as directed by contractor. Staging areas to be completed in accordance with SWPPP and drawings approved

   RESPONSE: see Appendix M item 1 for response.
3. Topsoil required across entire site aerated to a depth of 6" as required by NYSDEC also as required on drawings. Provide a separate sheet depicting areas to be topsoiled with QA/QC requirement including placement of compost as specified

   RESPONSE: Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.

4. Show topsoil storage area of 18,000 +/- cubic yards to be stored and placed on site in drawings and SWPPP

   RESPONSE: see Appendix M item 3 for response

Appendix N

1. Confirm all cut/fill and topsoil calculations

RESPONSE: Tobin Construction and KFA have spent a considerable amount of time developing the staging of the single phased construction project. The construction staging and completed project site balances. Earthwork analysis has also been provided for stages and 2 which also balances.

2. Confirm slope stability and erosion stability of storage piles of soils

RESPONSE: A 1'v:3' h max slope note has been added to the staging plans. Stockpiles will be seeded and strawed. The stockpiled areas will also be monitored and reviewed during SWPPP inspections.

Appendix P

1. Pond profile not to scale

RESPONSE: Pond profile has been redrawn to scale. See comment L-102 item #1 for response

21) Traffic Study

1. Traffic study: No figure 6. Statement that the study information is valid for 3 years from data collection of October 11, 2017 (expires October 11, 2020)

RESPONSE: Agreed.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering

Scott L. Freeman, R.L.A. ASLA

Rudy Zona, P.E.

15th June 2020

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Re: Woodland Hills Summary of Outstanding Engineering Issues

Dear Mrs. Sutphen,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **April 28th, 2020** and received on **April 28th, 2020.** Below is our response to each comment received. Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

1) Constructability

1. Applicant is asking for a "5 acre disturbance waiver" from the NYSDEC stormwater regulations.

   Response: Agreed. The typical process is covered by the SWPPP for the project. KFA/ RZ have provided a draft Notice of Intent and letter within the SWPPP regarding a 5 acre disturbance waiver to Town of Manlius with this submission.

2. Soil movement and embankment compaction is extensive on this site and will change the grades of the entire developed area. The substantial amount of earthwork is not typical for a residential subdivision. Road profiles typically follow existing contours to limit both the cost and exposure for earth moving operations and minimize utility excavations.

   Response: Other Manlius projects such as Mallards Landing, Spruce Ridge had at least similar but likely, more extensive site work. The "Earthwork Material Evaluation" (referenced as EME) report, dated on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for road fill within the right of way. The road profiles and proposed grades generally follow existing grades within guidelines set forth by the Town of Manlius code. Earthwork is limited and the grading plan generally keeps earthwork within 4 feet of the current grades. One small area on site soil material was identified by Kenney Geotechnical as unsuitable and will not be utilized as fill within the proposed right of way, basin embankment or fill below basement slabs.

3. Some of the houses will be constructed on deep fills which causes concerns about stability of the foundations.

   Response: The term deep fill is confusing and could lead to public confusion regarding this project. 18 of the 20 proposed building foundations walls (footers) will be constructed at

an approximate 4 foot depth and will reside either below or on existing grade. Lots 12 and 13 will require deeper footings for a portion of the foundation wall. Lot #12 will require a four foot extension to the footer in the west corner of the home and Lot # 13 will also require a four foot extension to the footer in the southwest corner of the proposed home to meet existing grade. Refer to the text block Footer Depth Review on drawing L-202 entitled Right of way, Basement Slab and Footer Summary. A Cut/Fill Basement Slab Review text block along with basement slab elevations for each lot are provided on drawing L-202. There is a limited amount of basement slab area requiring more than 6 feet of cut or fill. The suggestion that major filling is required for more than just a house or two is misleading and does not reflect the vast majority of the lots. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use under residential structures as backfill. 12 of the 18 basement slabs will be constructed on existing soils. The remaining 8 basement slabs will be constructed utilizing the on site material which meets the project specifications.

4. Some road fills exceed 10 feet, and we have concerns about differential settlement related to utilities and road surfaces.

   Response: The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A 75' long section (Station 4+25 to 5+50) will require an approximate 8' to 10' fill depth and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202 (175' linear feet total for road fill 6 ' or greater. No road areas require more than 10 feet, only right of way areas require up to 10 feet. The EME report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill which meets the on-site testing process during construction. In addition, Tobin Construction representatives stated that the on site materials encountered during field testing are very suitable for placement in fill areas and the project can be constructed with standard construction practices.

5. The Impoundment/Dam proposed is significant in size and scope and is intended to hold back one million gallons of water, which is an unusual feature of this development.

   Response: The proposed stormwater management facility should be referred to as such. The facility is not a Dam and referring to it as one could be misleading to the board and the public. Drawing L-900 compares the proposed SWMF to other SWMF, impoundments and actual dams within the Town of Manlius. The suggestion that detaining this volume of water is unusual is misleading and incorrect. Several other facilities in the Town of Manlius contain more water at greater depths and with less safety features than the facility proposed.

6. This is a "Cluster Development" which requests/requires waivers from certain aspects of usual zoning. A goal of clustering is to preserve land and also to keep much in a natural state, which this development does not appear to accomplish.

Response: The 30.04 acre cluster development project includes 9.35 acres of HOA and homeowner owned designated 'Forever Wild Area'. The cluster project Forever Wild Area preserves 31% of the project site area including the preservation of an existing groundwater seep wetland, preservation of an existing intermittent stream channel and perimeter existing vegetative areas which are depicted on drawing L-400 entitled Layout Plan. The proposed cluster plan preserves the natural and scenic qualities of open lands through the creation of a significantly sized forever wild area, perimeter buffer and lot count reduction from the original conventional grading plan.

A. Critical to this site, is the manner and method of compacting of earth under what will eventually become the town's infrastructure (roads, pipes, etc).

   Response: The Kenney Geotechnical report dated May 18, 2020 provides a methodology for placement, compaction and testing of fill materials. The recommendations have been incorporated into drawing L-503 and include project specifications, a field testing summary table, typical local road sections for cut/fill conditions and a typical home foundation wall section. A significant portion of the right of way is to be graded within 4 to 5 feet of existing grades. According to the contractor this site can be constructed with standard construction practices, is almost ideal for a development of this size and does not foresee any significant concerns regarding construction of the town dedicated infrastructure.

   a. The waiver adds an element not present in many projects, and with the extent of soil movement/cuts and fills, drainage and grading will be very complex. (As a regulated MS4, the Town of Manlius has oversight of this NYSDEC regulation and must verify the work meets the NYSDEC SPDES Phase 2 permit requirements).

      Response: The draft waiver and NYSDEC Notice of Intent has been provided as noted on to Page 1, 1 Constructability, items 1 and 2.

   b. Certification of all fills are recommended to be coordinated with all anticipated utilities including but not limited to OCWA & National Grid. Geotechnical reports will be required of houses built in fill areas along with the proposed impoundment area.

      Response: As previously noted under other items within this letter, only 2 houses will be subject to this condition and deeper foundations will be extended to reside on natural grade will be provided. The owner has no authority over construction of utilities built by OCWA or National Grid.

B. Also, with the impoundment/dam holding back significant water that will seriously affect downstream property owners in the event of failure, its design and construction must be done properly. In light of these issues, the Town will require a person of Town's choosing, at developer's expense, to be on-site at all times to ensure the soil movement and compacting is done properly. This is especially critical due to the houses that will be built on the fill ensuring a safe foundation.

Response: Please refer to DEC email dated3/25/20 from DEC representative Jennifer Ross regarding the Dam ruling located in SWPPP appendix V. Several other facilities in the Town of Manlius contain more water at greater depths and steeper slopes with fewer safety features than the facility proposed as shown on drawing L-900 entitled Wet Pond Comparisons. In addition, the Kenney Geotechnical reports provided on 5/18/20 and 5/27/20 do not indicate any issues with on site soils, soil conditions or use of on-site materials to construct the proposed facility. The project sitework contractor has also performed several earthwork studies of the project site, reviewed the geotechnical studies for the project, performed many additional on site test pits, has reviewed the current set of construction drawings and has stated that the project is ready for construction. KFA and RZE have worked with Tobin development on the successful completion of the 37 unit Town of Clay Hamlet cluster housing project and the 163 unit Town of Van Buren planned unit housing development, Harbor Heights project which was constructed in many phases. Our design and construction team worked very closely with the municipal engineers and testing agencies and is prepared to do so on this 20 unit construction project.

C. Project cost/securities will need to be further discussed.

Response: Agreed.

2) Technical Issues

1. The stripping and grading plan has to be more detailed, including the phasing of same. There have not been sufficient details presented so far. The extent of the land stripping as thus far presented is of concern as the whole theory behind cluster development is to preserve the land in its natural state. The stripping of the entire parcel and the extensive cuts and fills seems to be contrary to the theory behind cluster development.

Response: The proposed project is to be constructed as one project, in one phase, within 7 distinct construction stages to minimize the site disturbance throughout construction. The staged approach to construction will limit the site disturbance areas as shown within the construction staging drawings and schedule shown on drawings L-102 through L-108. The entire site will not be stripped as noted in Page 2, 1 Constructability, item 6.

A. Phased work areas must have 80% coverage/density to be considered stabilized before proceeding the next work phase.

- **Response: Agreed. This is a NYSDEC requirement which our office field SWPPP inspectors are very familiar with. Drawings L-102 through L-108 depict a staged construction approach with each phase being stabilized before moving onto the next. Page 20 of the SWPPP states that all stages will be completely stabilized before advancing to the next stage.**

B. Indicate on the plans storage volumes equaling required storage for each sediment/erosion control feature in cubic feet for the tributary area.

Response: This data appears on drawing L-103 and L-104 and within the SWPPP under Appendix T of the December submission. These drawings and the SWPPP have been updated to reflect the current submission.

C. SWPPP inspections are required twice a week.

Response: Agreed during stages where disturbance is in excess of 5 acres, in accordance with the NYSDEC stormwater general permit provided in Appendix J. We anticipate the twice weekly inspections to occur during approximately 5 months of construction. A 5-acre disturbance letter has also been provided in Appendix W of the SWPPP included with this submission.

D. Site soils are type "C" soils. Per Table 4.6, soil restoration requirements must meet the NYSDEC deep ripping and decompaction manual dated April 2008.

Response: All soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 3/11/2020. See revised SWPPP provided with this submission, Appendix I and drawing L-101.

E. Both the wet pond and for the temporary sediment basin have deep cuts (Approx. 15 feet). Due to the limited number and depth of borings, we anticipate rock may be encountered and additional soil testing should be undertaken.

Response: The previous grading plan of the main basin only proposed cuts in the 15 foot range for a small 1000 sf area. The grading plan has been revised to limit all cuts to less than ± 13 feet. In addition, additional testing reflected in the Kenney Geotechnical report dated 5/27/20 supports all other testing on site (L-100) that no rock is encountered in any of the testing locations and a generous soil profile existing all over the site in excess of 15 feet. It has also been hypothesized, opined and theorized that Karst Topography may be a condition in the area. However, evidence such as available mapping, field testing and professional geotechnical analysis does not suggest such geologic conditions on the subject site. In addition, available mapping shows no evidence of rock outcroppings, land features or restrictive soil layers. Actually, it depicts a minimum soil profile of 18 inches for lands downstream of the subject site, with most downstream areas containing more than a 3-4 foot soil profile. Soil mapping does identify rock outcroppings and restrictive layers that could be considered Karst topography upstream of the site over ½ mile away to the south. It is a small area and is not on the subject site or within it's discharge flow path. Areas on site and surrounding the subject site are proven to contain a generous soil profile of over 15 feet (on site based on actual testing and geotechnical investigation) and soil mapping indicates a minimum of more than 6 feet in areas adjacent to the site. Therefore, we have not encountered any evidence of Karst Topography on the site, adjacent to the site or downstream of the site.

2. The existing SWPPP, which is part of the plans, presented is from last summer. It needs to be updated.

Response: Agree

3. Water quality volume calculations and RRv have to be re-done. On Page 12 of the of the permit it is stated WQv is only for site. NYSDEC requires all impervious upstream areas tributary to the wet pond be included within WQv. This is outlined on page 4-5 of the Stormwater Design Manual. The new permit should be refenced as GP-0-20-001. On Page 12 of the NOI question 38 should read "Homeowner's Association". It appears the runoff rate issues have generally been resolved and the calculations appear to be reasonable with the exception of revisiting time of concentration for the project site itself.

   Response: Agree. Both the pond and the water quality volume treatment capacity within it are both oversized and will accommodate all of the required Water Quality Volume. Also, the NOI and permit numbers have been updated.

4. SWPPP time to concentration calculations have to be updated and/or corrected for the project site to separate the disturbed area from the undisturbed area. We would anticipate a higher peak runoff rate from the disturbed area due to a reduced time of concentration and this could impact the calculated stage/storage/discharge rates from the wet pond.

   Response: Page 15 of the December 2019 SWPPP submission outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 +/- months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present and Appendix T has been updated for new shallower sediment pond contours.

5. In the area of Lots 11, 12 & 20 there is a stormwater pipe that is 13 ft. beneath the road with additional catch basins over 10 feet in depth. This is not a typical nor acceptable depth. A normal depth is 3-7 ft. and a deeper pipe could cause unnecessary expense to the Town in the future in the event repair is required.

   Response: Storm Pipe depths have been modified to depths less than 7'-0".

6. Individual grinder pumps for 7 lots remain a concern as, even though they are private systems, the Town is always called upon and spends time and resources on assisting residents in solving issues. Possibly combining the 7 grinder pumps into one pump station for all 7 would be a reasonable solution.

Response: A review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station in such a case. In addition, email correspondence from Christopher Deitman, dated 6/2/20 and provided with this submission, also indicates the lack of economic feasibility of using a municipally owned pumping station. These documents and correspondence support our proposal and contention that the low pressure sewer would be beneficial for the town, other members of the sewer district, the developer and the residents, providing the best solution for all parties with regards to construction, operation and maintenance.

7. Impoundment/Dam

A. While it may not technically qualify as a "NYSDEC regulated dam", Guidelines for the Design of Dams (NYSDEC) need to be followed according to not only the Town, but also per NYSDEC recommendations.

Response: We agree the SWMF does not qualify as a NYSDEC regulated dam and does not require permitting with NYSDEC. We also agree that the Guidelines for Design of Dams is to be followed since ALL stormwater management facilities designed in NYS are to follow those guidelines as outlined in the NYS Stormwater Design manual.

B. Technical information provided by the applicant appears to indicate that the Impoundment/dam will need to be lined with impervious materials to prevent seepage and leaking.

Response: Information submitted by the applicant both in the previous submission and as part of this submission within the Kenney Geotechnical Report dated 5/27/20 and soil testing results presented on drawing L-100 both indicate no infiltration capacity to the soils being proposed for the basin embankment or side walls and that no liner is recommended or required as a result of all of the completed field testing and geotechnical reports.

C. An appropriately sized key-way for embankment construction purposes is necessary.

Response: The Kenney Geotech report dated May 27, 2020, pages 1 and 2 of the report state that a keyway is not required.

D. A toe drain may be required to address seepage.

Response: Anti seep collar details have been added to the plans (detail 16/L-500). No other measures are required since the soils do not display any infiltrative properties and therefore no seepage is anticipated. See page 7, number 7, item C.

E. More test borings should be taken along the embankment to confirm basis of design. Please provide a detailed geotechnical report supporting the basis of the design for the impoundment area proposed.

Response: As mentioned within this response letter, Kenney Geotechincal has provided updated reports dated 5/18/20 and 5/27/20 verifying compliance with all DEC requirements. Reports are located in Appendix A within the SWPPP and all testing information is presented on Drawing L-100.

F. More cross sections should be done on the impoundment/dam and should include the existing and proposed ground elevations.

Response: Additional profiles and cross sections have been provided on Drawings L-202, L-502 and L-504.

G. The embankment top width should be shown.

Response: A dimension of 12 foot minimum embankment top is shown on Drawing L-400, verifying compliance with the Stormwater Design Manual. It is important to note that most areas exceed the 12 foot minimum.

H. If the developer follows the dam regulations, yearly inspections and testing will be required.

Response: Agreed, all SWMF designed in NYS require compliance with the NYS Dam Guidelines and all SWMF must be inspected per the NYS Stormwater design manual, General Permit and the SWPPP for the project.

I. Boring B-9 Dated 12/13/19 does not have proper elevation nor specific tie or longitude latitude information associated. The boring log also indicates the existence of glacial till at an approximate depth of 9.5 feet below the existing ground surface with apparent missing information from a depth of 9.5 feet below existing grade to 14 feet below existing grade. This provides a potential problem for the proposed design of the impoundment. Please provide further detail for drilling information through depths 9.5 – 14 for boring B-9 below surface along with actual elevations and location of the work.

Response: Kenney Geotechnical has provided two additional reports on soil investigation dated 5/18/20 and 5/27/20. All soil testing information to date, locations and elevations are provided on drawing L-100.

J. There does not appear to be any energy dissipation basin at the outlet of the pond which could lead to severe erosion and embankment failure.

Response: Rip rap aprons, appropriately sized have always been part of our design and submissions. Details and locations are provided on drawing L-200, and design sizing of rip rap outlet aprons are provided in appendix F of the SWPPP. Appendix F also provides calculations showing drainage facilities with non erosive velocities.

K. The impoundment spillway is used during the 100 year storm. We would typically see designs using pipes/weirs for the full range of storm discharges, but the dam regulations would allow it. However the spillway should be cut out of native soil, not embankment with limited velocities to prevent erosion. The SWPPP says the 100 year elevation of the pond is 676.06 and the plans (sheet 4) says is 676.22. This needs to be clarified. The pond should have a minimum of 1 foot of freeboard above the 100 year storm. It currently does not.

Response: The outlet structure has been modified to all passage of the 100 year event without use of the emergency spillway. The emergency spillway has been fitted with rip rap to manage and mitigate any flow thru it to non erosive velocities. Peak water elevation in the 100 year event is 675.42 per appendix E of the swppp and the plans (drawings L-200, L-202, L-502 and L-504 also reflect this elevation). Calculations proving non erosive velocity and rip rap sizing have been provided in appendix F.

8. Dust monitoring reporting requires verification for reporting and oversite procedures to the Town of Manlius.

Response: Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

9. Relative to lot grading, grading is not shown correctly on lot 3 adjacent to the existing house. A retaining wall may be necessary. Road grade at driveways for lots 11, 12, 15, 16, 17 and 18 are higher that the house finished floor. There may be issues with garage/house flooding.

Response: Lot 3 has been regraded without the construction of a retaining wall. The slope will be planted with plant material to stabilize the slope as note 29 states on drawing L-200.

10. The calculated amount of increased runoff volume from the site: 2-yr is 25,000 c.f, and 100-yr is 67,000 c.f. This may impact the long- term viability of the infiltration basin on Muirfield. Mitigation of increased total volume run off should be addressed.

Response: It is important to note that in any development runoff is increased in volume and in flow when impervious surfaces are created. Typically, volume is not the driving factor since runoff volume is mostly affected by the infiltrative capacity of the onsite soils and not necessarily indicative of how downstream areas will be affected by runoff. The flow rate is typically considered higher in importance due to its effects on downstream conveyance and

drainageways. Volume is not always a contributor to flooding if the rate at which it is conveyed is well managed. The DEC's Jennifer Ross in her email has specifically stated "that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event". We concur with the DEC that, a more broad analysis by the town with respect to downstream impacts and the long term viability of the infiltration basin on Muirfield, would be necessary to evaluate its operation. We fail to see the validity of how the subject site would impact this facility. The location of this facility is not hydraulically connected to the subject site discharge flows. Several local low points exist between the subject site discharge point and this facility including points on Churchill Road and Hoag Lane. The intersection of Hoag Lane and Muirfield is lower than other points on Muirfield by several feet between the intersection and the Muirfield infiltration facility. It is unlikely that runoff from the subject site would be able to travel uphill to reach the Muirfield facility from points along the discharge route. We have provided figures capturing available topography profiles of these areas as evidence of these conditions. These figures are readily available off of google earth and are presented in Appendix O.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering

Scott L. Freeman, R.L.A. ASLA

Rudy Zona, P.E.

Full Environmental Assessment Form
Part 1 - Project and Setting
Fourth Supplemental SEQRA
12-16-19 with supplemental
documentation

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Woodland Hills - Hoag Lane Subdivision		
Project Location (describe, and attach a general location map): 5280 Hoag Lane, Fayetteville NY 13066		
Brief Description of Proposed Action (include purpose or need): The Woodland Hills Subdivision is a 30.04 acre site which will be developed into a Cluster subdivision of 20 lots, and will also accommodate the inclusion of a pre-existing home. An internal roadway will be constructed to Town of Manlius specifications and offered for dedication to the Town. Necessary drainage improvements, including a stormwater basin will be developed to improve drainage conditions on site, and off. The subdivision will utilize Town of Manlius sewer and water transmission lines and will have natural gas lines extended to each lot.		
Name of Applicant/Sponsor: Hoag Road Development, LLC	Telephone: 315-263-6662 E-Mail: thomasallenhomes@yahoo.com	
Address: 201 Solar St.		
City/PO: Syracuse	State: New York	Zip Code: 13204
Project Contact (if not same as sponsor; give name and title/role): Scott Freeman - Keplinger, Freeman Associates	Telephone: 315-445-7980 E-Mail: sf@kelpingerfreeman.com	
Address: 6320 Fly Road, Suite 109		
City/PO: East Syracuse	State: New York	Zip Code: 13057
Property Owner (if not same as sponsor): Same as sponsor	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Council, Town Board, or Village Board of Trustees ☐Yes☐No		
b. City, Town or Village Planning Board or Commission ☑Yes☐No	Town of Manlius Planning Board	01/06/20
c. City Council, Town or Village Zoning Board of Appeals ☐Yes☐No		
d. Other local agencies ☐Yes☐No		
e. County agencies ☑Yes☐No	OCWA, OCWEP Onondaga County Health Department	Spring 2020 Spring 2020
f. Regional agencies ☐Yes☐No		
g. State agencies ☑Yes☐No	NYSDEC SWPPP	Spring 2020
h. Federal agencies ☐Yes☐No		

i. Coastal Resources.
i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☐Yes☑No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes☑No

If Yes, identify the plan(s):

_____

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Restricted Agriculture

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Fayetteville-Manlius

b. What police or other public protection forces serve the project site?
Manlius Police Dept.

c. Which fire protection and emergency medical services serve the project site?
Fayetteville Fire Dept. , Manlius Fire Dept.

d. What parks serve the project site?
Green Lakes State Park, Beard Park, Perry Springs Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Residential Subdivision

b. a. Total acreage of the site of the proposed action? 30.04 acres
b. Total acreage to be physically disturbed? 17.26 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 30.04 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
Residential
ii. Is a cluster/conservation layout proposed? ☑ Yes ☐ No
iii. Number of lots proposed? 21
iv. Minimum and maximum proposed lot sizes? Minimum 23,575.6 sf Maximum 148,742.2 sf

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 12 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	21			
At completion of all phases	21			

g. Does the proposed action include new non-residential construction (including expansions)? ☐ Yes ☑ No

If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____ height; _____ width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Stormwater Best Management Practices

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Stormwater

iii. If other than water, identify the type of impounded/contained liquids and their source.
None

iv. Approximate size of the proposed impoundment. Volume: 1.085 million gallons; surface area: 1.36 acres

v. Dimensions of the proposed dam or impounding structure: 12' height; 286' length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete):
Earthen Fill

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i. What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

iv. Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐ Yes ☐ No
If Yes, describe:

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐ Yes ☐ No
If Yes:

- acres of aquatic vegetation proposed to be removed:
- expected acreage of aquatic vegetation remaining after project completion:
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access):
- proposed method of plant removal:
- if chemical/herbicide treatment will be used, specify product(s):

v. Describe any proposed reclamation/mitigation following disturbance:

c. Will the proposed action use, or create a new demand for water? ☑ Yes ☐ No
If Yes:

i. Total anticipated water usage/demand per day: 10,395 (@110 gpd/bedroom) gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑ Yes ☐ No
If Yes:

- Name of district or service area: MANLIUS CONSOLIDATED, OCWA (District Extension per Town Engineer)
- Does the existing public water supply have capacity to serve the proposal? ☑ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☑ No
- Is expansion of the district needed? ☑ Yes ☐ No
- Do existing lines serve the project site? ☐ Yes ☑ No

iii. Will line extension within an existing district be necessary to supply the project? ☑ Yes ☐ No
If Yes:

- Describe extensions or capacity expansions proposed to serve this project:
  Subject to be determined by OCWA. Expansion of district to be requested.
- Source(s) of supply for the district: Ontario/Skyridge Wells

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☑ No
If, Yes:

- Applicant/sponsor for new district:
- Date application submitted or anticipated:
- Proposed source(s) of supply for new district: OCWA

v. If a public water supply will not be used, describe plans to provide water supply for the project:

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑ Yes ☐ No
If Yes:

i. Total anticipated liquid waste generation per day: 10,395 (110 gdp/bed gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each):
RESIDENTIAL SANITARY WASTEWATER

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑ Yes ☐ No
If Yes:

- Name of wastewater treatment plant to be used: Meadowbrook-Limestone, Onondaga County
- Name of district: OCWEP, District extension per Town Engineer
- Does the existing wastewater treatment plant have capacity to serve the project? ☑ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☑ No
- Is expansion of the district needed? ☑ Yes ☐ No

- Do existing sewer lines serve the project site? ☐Yes ☑No
- Will line extension within an existing district be necessary to serve the project? ☑Yes ☐No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: Subject to be determined by OCWEP.

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 3.89 acres (impervious surface)

_____ Square feet or 30.04 acres (parcel size)

ii. Describe types of new point sources. 24" outlet pipe and spillway

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

STORMWATER RETENTION POND CLAIMING ONSITE AND OFFSITE WATER

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☑Yes ☐No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:

- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend ☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7 AM - 5 PM
- Saturday: 7 AM - 5 PM
- Sunday: 7 AM - 5 PM
- Holidays: 7 AM - 5 PM if needed

ii. During Operations:

- Monday - Friday: N/A
- Saturday: _____
- Sunday: _____
- Holidays: _____

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

During Construction there will be temporary intervals of noise exceeding existing ambient noise levels relating to typical construction noises/activity.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☑ Yes ☐ No

Describe: Some land clearing and grading may result in increased potential neighborhood view-sheds and a reduction of a small amount of natural vegetative barriers, however select plantings and the maintenance of buffer areas will be undertaken to screen nearby structures.

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Low level garage and exterior yard lighting will be installed. This residential lighting will be typical of neighborhoods in the specific area.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☑ Yes ☐ No

Describe: Some land clearing and grading may result in increased potential neighborhood view-sheds and a reduction of a small amount of natural vegetative barriers, however select plantings and the maintenance of buffer areas will be undertaken in order to screen nearby structures.

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally describe proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☑ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

Suburban developments with pockets of undeveloped land.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.88	3.89	+3.01
• Forested	19.12	12.78	-6.34
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	5.60	0	-5.60
• Agricultural (includes active orchards, field, greenhouse etc.)	0		
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	1.36	+1.36
• Wetlands (freshwater or tidal)	0		
• Non-vegetated (bare rock, earth or fill)	0		
• Other Describe: Lawn, Porous Surfaces	4.44	12.00	+7.56

c. Is the project site presently used by members of the community for public recreation? ☐Yes ☑No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐Yes ☑No

If Yes,

i. Identify Facilities:

_____

_____

e. Does the project site contain an existing dam? ☐Yes ☑No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐Yes ☑No

If Yes:

i. Has the facility been formally closed? ☐Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐Yes ☑No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐Yes ☐No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures: _____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐Yes ☑No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >6.5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____ %

c. Predominant soil type(s) present on project site:

CfB - Cazenovia silt loam	51.7 %
CgD - Cazenovia Soils	24.9 %
CfC - Cazenovia Silt	9.4 %

d. What is the average depth to the water table on the project site? Average: >6.5 feet

e. Drainage status of project site soils:
☑ Well Drained: 14 % of site
☑ Moderately Well Drained: 86 % of site
☐ Poorly Drained _____ % of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 59.1 % of site
☑ 10-15%: 16.4 % of site
☑ 15% or greater: 24.9 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name Unmapped Delineated Drainageway Classification ACOE
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name FEDERAL WETLANDS (off-site Bishop Brook) Approximate Size <1 ac.
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site:

Deer | Birds (i.e. Sparrows, robins, crows) | various Insects
small mammals, (i.e squirrel, chipmunk) | Raccoons | Opossums

n. Does the project site contain a designated significant natural community? ☐Yes ☑No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑ Yes ☐No

Northern Long Eared Bat hibernaculum is within 3.5 miles of project site based on NYSDEC letter of Notice. No clear cutting of DEC identified potential nesting or roosting trees will occur outside of the October to April time frame.

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐Yes ☑No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐Yes ☑No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☑No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐Yes ☑No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐Yes ☑No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐Yes ☑No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Green Lakes State Park

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): State Park

iii. Distance between project and resource: 2.0 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

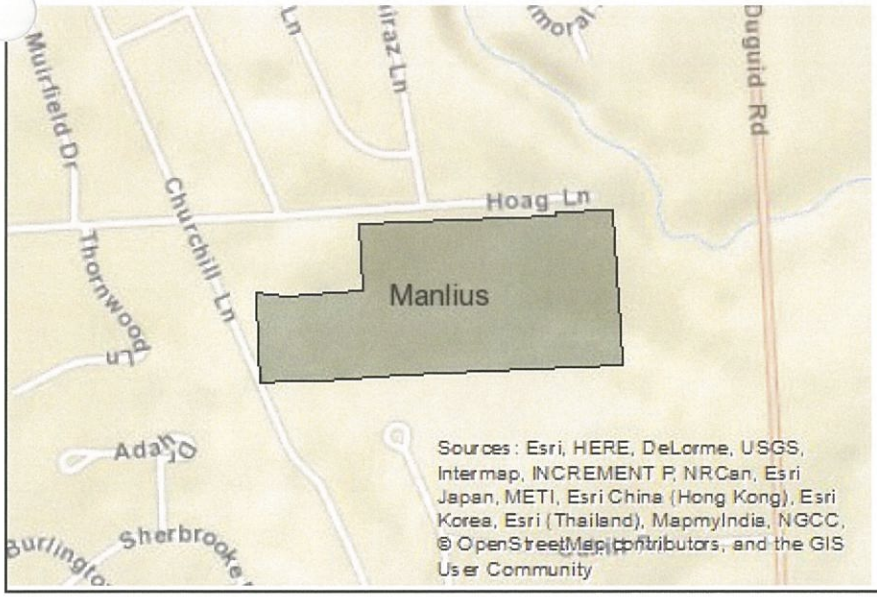
Applicant/Sponsor Name Tom Douglas Date 01/02/2020

Signature _____ Title Owner / Applicant

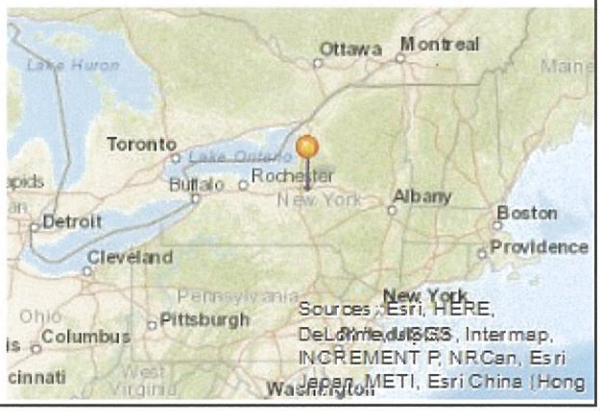
PRINT FORM

EAF Mapper Summary Report

Tuesday, September 26, 2017 10:10 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes
E.2.p. [Rare Plants or Animals]	No

E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National Register of Historic Places]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

NEW YORK
STATE OF
OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nick Conrad

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

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NYSDEC Spill Incident Database for Town of Manlius

	Spill Number	Date Spill Reported	Spill Name	County	City/Town	Address
1	1701501	5/16/2017	ROADWAY AND SHOULDER	Onondaga	MANLIUS	4674 WHETSTONE ROAD
2	1702139	6/3/2017	CUSTOMER@ 325 FAYETTE STREET	Onondaga	MANLIUS	325 FAYETTE STREET
3	1704039	7/25/2017	POLE TOP	Onondaga	MANLIUS	4457 WHET STONE RD
4	1704371	8/2/2017	RESIDENTIAL	Onondaga	MANLIUS	8900 PECK HILL RD
5	1704516	8/6/2017	POLE #22-2	Onondaga	MANLIUS	5118 DUGUID RD
6	1704883	8/16/2017	BUSINESS YMCA	Onondaga	MANLIUS	4795 SWEET RD
7	1708628	12/14/2017	STORM DRAIN	Onondaga	MANLIUS	FAYETTE AND PLEASANT ST
8	1711272	3/12/2018	PAVEMENT SOIL	Onondaga	MANLIUS	6026 MANLIUS CENTER RD
9	1800800	4/23/2018	UNKNOWN NAMED SMALL CREEK	Onondaga	MANLIUS	8241 EAST SENECA TURNPIKE

NYSDEC Environmental Site Remediation

	Site Code	Site Name	Program	Site Class	County	City/town	Address
1	C734122	Hollowick, Inc. Manufacturing Facility (Idle)	BCP	N	Onondaga	Manlius	314-316 Fayette Street
2	734024	Tuscarora Chemical Works	HW	N	Onondaga	Manlius	Route 5

NYSDEC_Wetland Mapper



April 30, 2018

1:4,514

0 0.0375 0.075 0.15 mi

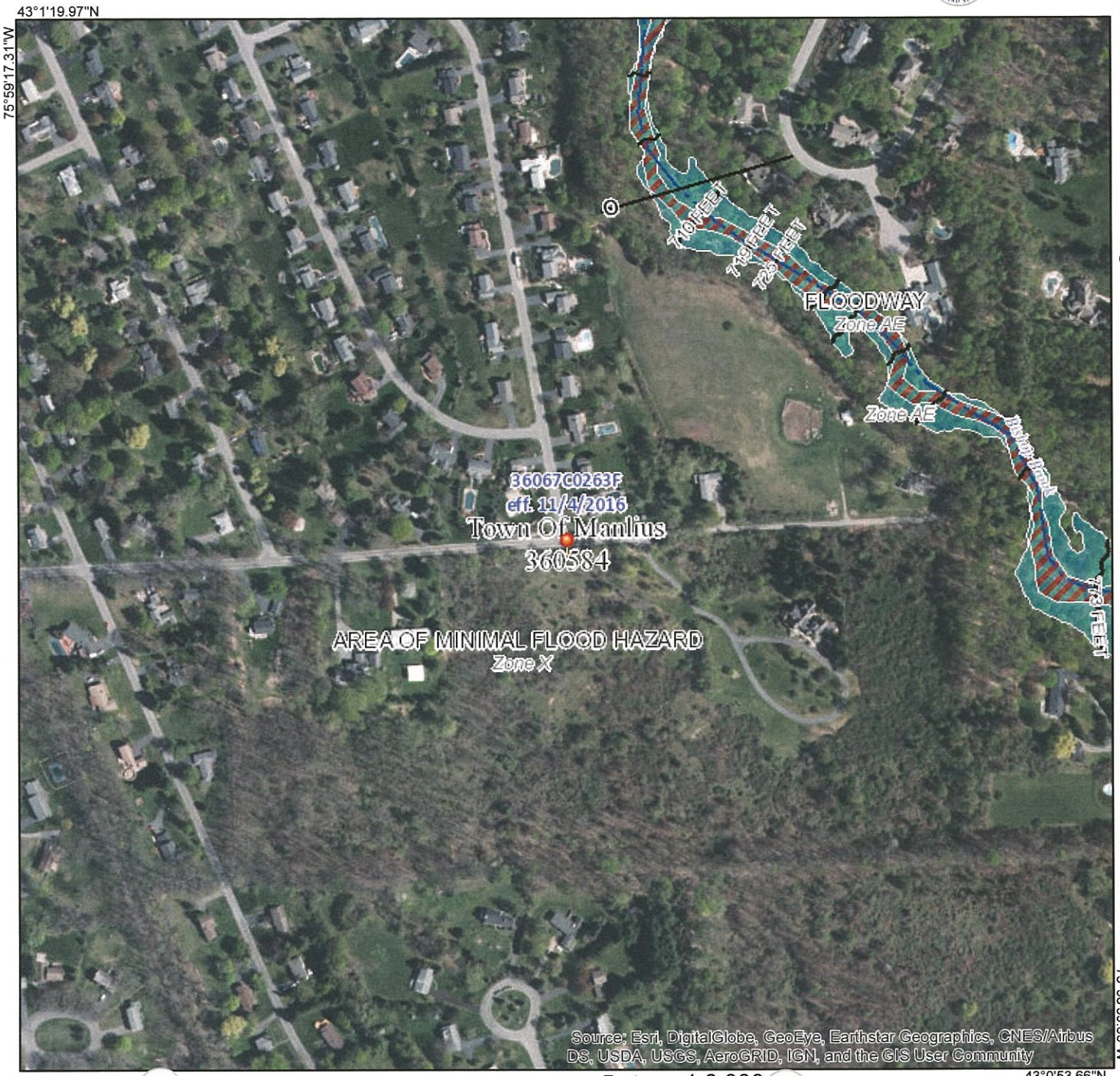
0 0.05 0.1 0.2 km

Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Author: Keplinger Freeman Associates
Not a legal document

National Flood Hazard Layer FIRMette

FEMA



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 — Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/30/2018 at 12:13:28 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

317

NEW YORK
STATE OF
OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To:
Consultation Code: 05E1NY00-2018-SLI-1465
Event Code: 05E1NY00-2018-E-04441
Project Name: Hoag Lane Subdivision

March 16, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2018-SLI-1465

Event Code: 05E1NY00-2018-E-04441

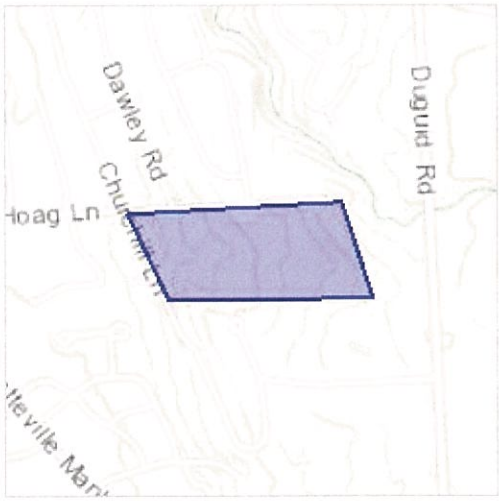
Project Name: Hoag Lane Subdivision

Project Type: DEVELOPMENT

Project Description: 23 new home construction on 30 acres of currently wooded land. Parts of property will be left free of disturbance approximately 7 acres.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.01732490964984N75.98284210518362W



Counties: Onondaga, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

NYSDEC Spill Incident Database for Town of Manlius

	Spill Number	Date Spill Reported	Spill Name	County	City/Town	Address
1	1701501	5/16/2017	ROADWAY AND SHOULDER	Onondaga	MANLIUS	4674 WHETSTONE ROAD
2	1702139	6/3/2017	CUSTOMER@ 325 FAYETTE STREET	Onondaga	MANLIUS	325 FAYETTE STREET
3	1704039	7/25/2017	POLE TOP	Onondaga	MANLIUS	4457 WHET STONE RD
4	1704371	8/2/2017	RESIDENTIAL	Onondaga	MANLIUS	8900 PECK HILL RD
5	1704516	8/6/2017	POLE #22-2	Onondaga	MANLIUS	5118 DUGUID RD
6	1704883	8/16/2017	BUSINESS YMCA	Onondaga	MANLIUS	4795 SWEET RD
7	1708628	12/14/2017	STORM DRAIN	Onondaga	MANLIUS	FAYETTE AND PLEASANT ST
8	1711272	3/12/2018	PAVEMENT SOIL	Onondaga	MANLIUS	6026 MANLIUS CENTER RD
9	1800800	4/23/2018	UNKNOWN NAMED SMALL CREEK	Onondaga	MANLIUS	8241 EAST SENECA TURNPIKE

NYSDEC Environmental Site Remediation

	Site Code	Site Name	Program	Site Class	County	City/town	Address
1	C734122	Hollowick, Inc. Manufacturing Facility (Idle)	BCP	N	Onondaga	Manlius	314-316 Fayette Street
2	734024	Tuscarora Chemical Works	HW	N	Onondaga	Manlius	Route 5

OCWEP Capacity Letter

Onondaga County Department of
WATER ENVIRONMENT PROTECTION

Joanne M. Mahoney, County Executive
Tom Rhoads, P.E., Commissioner
Flow Control Division
7120 Henry Clay Boulevard
Liverpool, NY 13088-5344
(315) 435-5402
FAX (315) 435-5458
http://www.ongov.net/wep/

April 2, 2018

Helen Caster
Project Manager
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Via E-mail

Re: Request for Capacity Assurance – 5290 Hoag Lane (T) Manlius

Dear Ms. Caster:

In response to your e-mail and attachment dated March 19, 2018, this is to confirm that The Onondaga County sewerage system this project is tributary to, currently has adequate capacity to accept the projected average daily flow from this 24 lot subdivision of 14,400 gpd. This project is subject to 1:1 wet weather offset for the service area it is tributary to, Meadow Brook Limestone WWTP. In accordance with Local Law # 1 of 2011This project is subject to 1:1 wet weather offset for the service area it is tributary to the developer coordinates with the Town of Manlius to offset the projected 14,400 gpd of sanitary flow within the Meadow Brook Limestone WWTP service area. The proposed offset plan shall be submitted with the sanitary sewer plan review submission.

Changes as a result of modifications or changes in laws, regulations or permit(s) that are beyond this Department's control that impact this project, will be the responsibility of the applicant.

This acceptance is based on County infrastructure capacity and maintainability of proposed new Town owned infrastructure only. Capacity of existing Town owned infrastructure is the responsibility of the Town. The engineering of this project is the responsibility of the design engineer.

This capacity assurance is only for the above indicated AND that there is no acceptance, or suggestion of future acceptance - expressed or implied, for any future phases or development. While we intend to honor capacity assurances, we can make no commitments to the likelihood of future approvals, due to growth of capacity utilization and the considerable regulatory changes we have heard circulating regarding treatment facility regulations. This letter shall be valid for 24 months from April 2, 2018. If construction has not commenced by that time frame, please contact this department to apply for an extension.

If you need anything else, please do not hesitate to contact me at 435-5402 x202.

Sincerely,

Chris Deitman
Sewer Maintenance Superintendent

ONONDAGA COUNTY DEPARTMENT OF
WATER ENVIRONMENT PROTECTION

CD/

c: File (T) Manlius

OCWA Capacity Letter

Central New York's Water Authority

200 Northern Concourse
Syracuse, NY 13212
(315) 455-7061 x3173

July 6, 2017

Re: Hydrant Flow test #680

On July 6, 2017 hydrant flow test was conducted at Hoag Lane in the town of Manlius, NY. All testing was performed in accordance with NFPA 291 standards.

Hydrant #4117 was flowed at a rate of 798 gallons per minute (gpm). The static pressure at Hydrant 4115 was measured at 62 pounds per square inch (psi) at the start of the test and a residual pressure of 51psi during the test. Based on this test, the calculated system capacity at the hydrant is approximately 1,644 gpm at 20psi residual pressure, under similar conditions. Please review all mapping and documentation included in this report. OCWA's records indicate the water main in this area is 10" diameter pipe.

Should you need any additional information or have questions, please reply via email or call me at 315-455-7061 ext 3173. Thank you for the inquiry and have a great day.

Best Regards,

Mike Oemcke
OCWA Water Systems Engineering

Enc.: Flow Test Worksheets
Water Dist. Mapping

Flow TEST #680

HYD. FIRE FLOWS

Blade Coef =1.0

Client: OCWA | Test #: 1 | Date: 07/06/17

Indicate Number of FLOW Hydrants: 1 | Engr: MJO

(3 Hydrants Max)

Pres Hyd Loc: 4117

Static (psi) 62 | Residual (psi): 51

FLOW HYDRANT

Flow Hyd #1: 4115

	Noz. Dia (Inches)	Blade Reading (Psi)	Quantity (GPM)
Flow Hyd #1:	2.310	31.0	798
Conn. to Steamer	2.310		
hose monster	2.000		

See chart for GPM

	GPM
Total Flow	798
Flow @ 20 psi	1,644
Flow @ 10 psi	1,845

Calculated

Location: Hoag Ln.

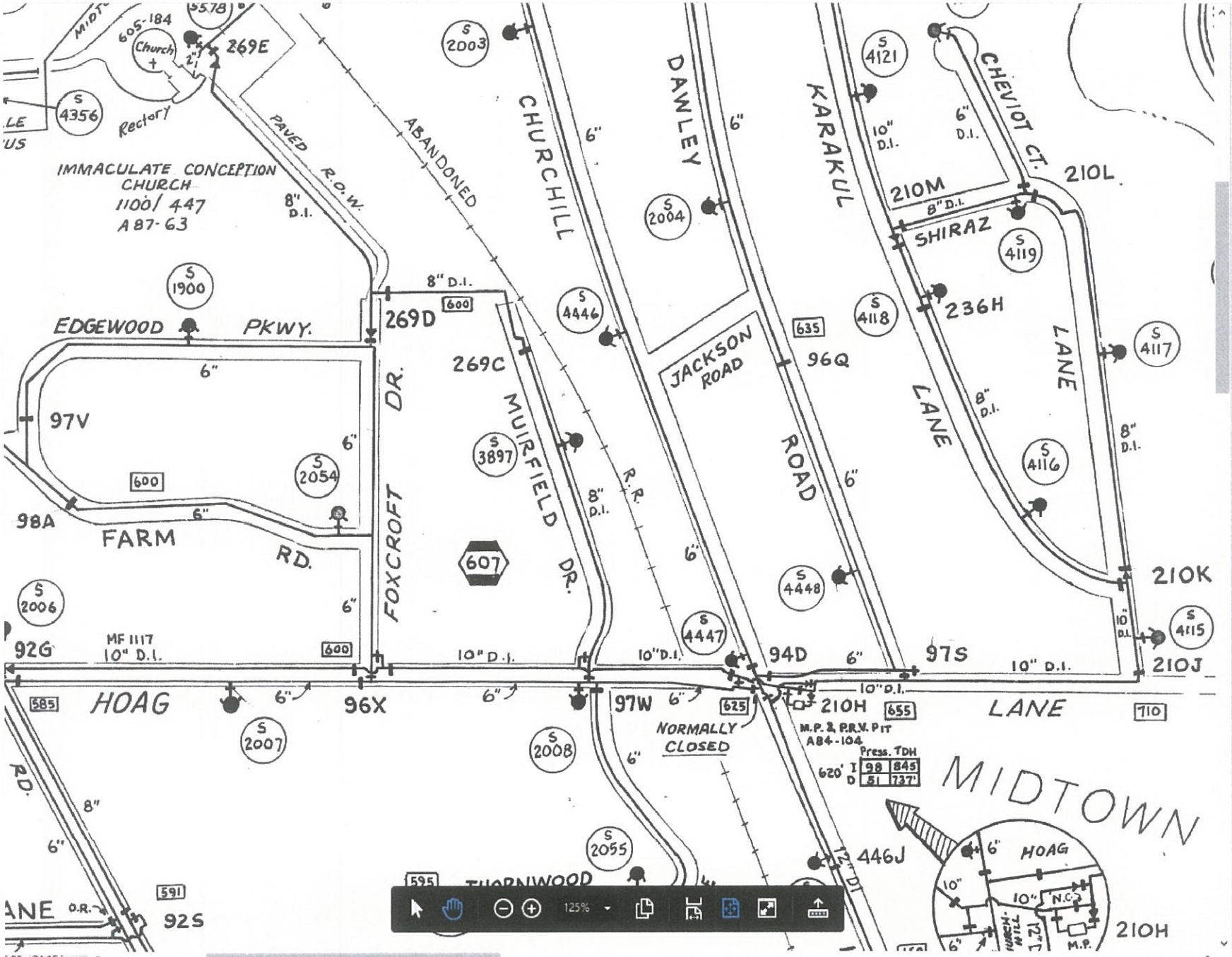
Town/Village: Fayetteville

Requested By: _

Notes:

Note: The 20psi Calculated Flow value represents the water available in the system near this hydrant, not always the maximum flow of this hydrant.

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Site Plans

N
W E
S

SHRAZ LANE

HOAG LANE

ELIZABETH MERRIAM R/O
4054/75
TAX #96-08-30.3

ELIZABETH R. COWAN R/O
5218/28
TAX #104-1-42

LOT 2 – THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11466

LOT 1 – THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11466

29.907± Acres

ROBERT MICHIEL R/O
3004/150
TAX #104-1-40.2

ANTHONY APOSTOLAKAS & ERIN HICKEY R/O
5191/924
TAX #104-1-40.1

MARY SUE HANUS R/O
3219/234
TAX #104-1-41

KASCHA LIVING TRUST R/O
5316/141
LOT 41
TAX #104-1-13

PAUL MASSA & ALICE MASSA R/O
4185/239
LOT 42
TAX #104-1-14

HOWARD HOLLANDER & LINDA HOLLANDER R/O
2938/316
LOT 43
TAX #104-1-15

MICHAEL S. ESPOSITO R/O
4939/688
TAX #104-1-32

SUZANNE M. GLANER R/O
5151/706
TAX #107-1-33.1

CHURCHILL LANE

ROBERT B. WINTER & JENNIFER C. WINTER R/O
5236/697
TAX #104-1-36

SUSAN BURNS R/O
4105/245
TAX #104-1-37

DAVID GRITTIAN R/O
4745/364
TAX #104-1-38

BARBARA HAINES R/O
3354/248
TAX #104-1-34

LEWIS TRACT – PART 2A
FILED MAP #4448

ROAD BOUNDARY PER MONUMENTS AND RECORDS

S 68°57'56" W 1908.98'

SANITARY MANHOLE RIM=715.0' INV=705.8'

10" WATER

4" GAS

CENTERLINE OF PAVEMENT

EDGE OF PAVEMENT

66.00' DR.E 741853

APPROXIMATE END OF HOAG LANE R.O.W. PER TAX MAP

HOAG ROAD PROPERTIES

CATCH BASIN RIM=719.0' INV=715.0'

CATCH BASIN RIM=719.0' INV=715.0'

SANITARY MANHOLE RIM=719.0' INV=715.0'

SANITARY MANHOLE RIM=719.0' INV=715.0'

SANITARY MANHOLE

2020

CONTRACT DOCUMENTS

WOODLAND HILLS - 21 LOT HOUSING SUBDIVISION

TOWN OF MANLIUS PLANNING BOARD

TOWN OF MANLIUS, ONONDAGA COUNTY, NY

SUPERVISOR
EDMOND J. THEOBALD

DEPUTY SUPERVISOR
COUNCILMAN JOHN R. LOEFFLER

PLANNING BOARD
JOSEPH LUPIA JR. - CHAIRMAN
FRED GILBERT
ANN KELLY
MIKE LEROY
FRANK MENTO
ARNOLD POLTENSON
RICHARD ROSSETTI

PLANNING BOARD CLERK
LISA BEEMAN

HIGHWAY SUPERINTENDENT
ROBERT CUSHING

TOWN ATTORNEY
TIM FRATESCHI, ESQ.

PLANNING BOARD ATTORNEY
JAMIE LYNN SUTPHEN, ESQ.

TOWN ENGINEER
DOUG MILLER, P.E.,



LOCATION PLAN
NOT TO SCALE

LIST OF DRAWINGS-REVISION SET

S-01	SITE SURVEY
L-000	TITLE SHEET
L-100	SITE PREPARATION AND BORING PLAN
L-101	SWPPP PLAN
L-102	CONSTRUCTION STAGING # 1 PLAN
L-103	CONSTRUCTION STAGING # 2 PLAN
L-104	CONSTRUCTION STAGING # 3 PLAN
L-105	CONSTRUCTION STAGING # 4 PLAN
L-106	CONSTRUCTION STAGING # 5 PLAN
L-107	CONSTRUCTION STAGING # 6 PLAN
L-108	CONSTRUCTION STAGING # 7 PLAN
L-200	GRADING and DRAINAGE PLAN
L-201	SHADE SLOPE PLAN
L-202	RIGHT OF WAY & BASEMENT SUMMARY
L-300	UTILITIES PLAN
L-400	LAYOUT PLAN
L-401	PLANTING PLAN
L-500	DETAILS
L-501	DETAILS
L-502	WET POND SECTION AND DETAILS
L-503	EXCAVATION AND BACKFILLING DETAILS
L-504	WALL DETAILS
L-600	ROAD AND SANITARY PROFILES
L-700	CONVENTIONAL SITE PREPARATION PLAN
L-701	CONVENTIONAL SWPPP PLAN
L-702	CONVENTIONAL GRADING AND DRAINAGE PLAN
L-703	CONVENTIONAL SLOPE PERCENTAGE PLAN
L-704	CONVENTIONAL UTILITIES PLAN
L-705	CONVENTIONAL LAYOUT PLAN
L-800	SPECIFICATIONS
L-900	COMMUNITY BASIN STUDY
L-901	ARCHITECTURAL SAMPLES

SPECIFICATIONS

SECTION 31 1000 - SITE DEMOLITION
SECTION 31 1001 - SITE PREPARATION
SECTION 31 1413 - TOPSOIL
SECTION 31 2213 - ROUGH GRADING
SECTION 31 2216 - FINE GRADING
SECTION 31 2301 - SITEWORK EXCAVATION, BACKFILLING & COMPACTING
SECTION 31 2500 - EROSION CONTROL (<5 AC.)
SECTION 31 2501 - EROSION,SEDIMENT & POLLUTION CONTROL (>5 AC.)
SECTION 32 1100 - BASE COURSES
SECTION 32 1216 - ASPHALT PAVEMENT
SECTION 32 9200 - LAWNS
SECTION 32 9300 - PLANTINGS
SECTION 32 9310 - WILDFLOWER SEEDING
SECTION 33 1300 - DISINFECTION
SECTION 33 3100 - SANITARY
SECTION 33 02722 - SANITARY SEWERS
SECTION 33 4000 - STORM DRAINAGE

APPROVED BY AUTHORIZATION
OF THE PLANNING BOARD

JOSEPH LUPIA JR. - CHAIRMAN DATE

SANITARY SEWER SYSTEM
APPROVED BY ONONDAGA COUNTY
DEPARTMENT
OF WATER ENVIRONMENT PROTECTION

COMMISSIONER DATE

BEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6329 FLY ROAD, SUITE 1B EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 446-7660 FAX: (315) 446-7661

RZ Engineering PLLC
5324 FLY ROAD SUITE 305
EAST SYRACUSE, NY 13057
PH: (315) 432-0580 FAX: 315.445.7501

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOT IFICATION

No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PLANNING BOARD MANLIUS	02/08/18	10	10	MANLIUS- PLAN SUBMISSION	07/19/19
4	4	PUBLIC HEARING MANLIUS	05/08/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/09/19
6	6	TOWN REV- 21 LOTS-MANLIUS	10/29/18	13	13	MANLIUS- PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PL	11/08/18	14	14	MANLIUS- PLAN SUBMISSION	06/22/20

Symbol indicates Revision Issued

Drawn By: VER
Checked By: BF
MFA Proj. No.: 37080
Date: DECEMBER 1, 2017
Scale: AS NOTED

TITLE SHEET

L-000

DEEP HOLE TEST RESULTS

DH-#

DH -1 LAT/LONG: N43d10'55" / W75d58'36" EX. EL.= 697.6, FN. EL.= 692.1 0'-2" TOPSOIL 2'-36" GRAVEL LOAM 36'-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 LAT/LONG: N43d10'56" / W75d58'39" EX. EL.= 698.2, FN. EL.= 691.6 0'-2" TOPSOIL 2'-36" GRAVEL LOAM 36'-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 LAT/LONG: N43d10'50" / W75d58'39" EX. EL.= 672.9, FN. EL.= 666.5 0'-2" TOPSOIL 2'-48" GRAVEL LOAM 48'-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 LAT/LONG: N43d10'50" / W75d58'39" EX. EL.= 703.8, FN. EL.= 697.5 0'-2" TOPSOIL 2'-36" SANDY SILT LOAM 36'-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 LAT/LONG: N43d10'52" / W75d58'04" 0'-6" TOPSOIL 6'-36" SANDY LOAM 36'-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PT-#

PITT / LAT./LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0183 / W75.9831	24" - SANDY LOAM EX. EL.= 710.9, FN. EL.= 708.9	39 MINUTES/INCH
PT-2 N43.0181 / W75.9832	24" - SILT LOAM EX. EL.= 705.0, FN. EL.= 703.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0169 / W75.9881	24" - SANDY SILT LOAM EX. EL.= 689.0, FN. EL.= 683.0	3 MINUTES/INCH
PT-4 N43.0169 / W75.9865	24" - SANDY SILT LOAM EX. EL.= 680.4, FN. EL.= 678.4	21 MINUTES/INCH
PT-5* N43.0169 / W75.9844	14" - SANDY SILTY CLAY EX. EL.= 678.4, FN. EL.= 664.4	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 18, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

IT-#

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0170 / W75.9858	18" - SANDY CLAY EX. EL.= 664.0, FN. EL.= 646.0	0 MINUTES/INCH
OPT-2 N43.0170 / W75.9893	28.5" - SILT LOAM EX. EL.= 673, FN. EL.= 646.0	0 MINUTES/INCH
OPT-3 N43.0168 / W75.9857	24" - SANDY SILT LOAM EX. EL.= 670.0, FN. EL.= 646.0	0 MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-#

B-1 LAT/LONG: N43.0180 / W75.9870 0'-6" TOPSOIL 6'-24" SILTY CLAY 24'-96" SILTY CLAY 96'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT/LONG: N43.0178 / W75.9830 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48'-72" SILTY CLAY 72'-108" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT/LONG: N43.0170 / W75.9830 0'-2" TOPSOIL 2'-72" SILTY CLAY 72'-108" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4* LAT/LONG: N43.0169 / W75.9843 0'-6" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-144" SANDY SILTY CLAY 144'-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT/LONG: N43.0166 / W75.9840 0'-24" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT/LONG: N43.0169 / W75.9807 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48'-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT/LONG: N43.0171 / W75.9814 0'-6" TOPSOIL 6'-24" SANDY SILTY CLAY 24'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT/LONG: N43.0173 / W75.9823 0'-6" TOPSOIL 6'-24" SANDY SILTY CLAY 24'-72" SANDY SILTY CLAY 72'-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9* LAT/LONG: N43.0169 / W75.9843 0'-6" TOPSOIL 24'-96" SANDY SILTY CLAY 96'-144" SANDY SILTY CLAY 144'-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISION TO B-4.

ADDITIONAL BORING TEST RESULTS

TPS-#

TPS -1 EX. EL.= 676.0, FN. EL.= 666.0 LAT/LONG: N43.0171 / W75.9844 0'-13" TOPSOIL 13'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -2 EX. EL.= 671.0, FN. EL.=664.0 LAT/LONG: N43.0169 / W75.9845 0'-13" TOPSOIL 13'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -3 EX. EL.= 680.0, FN. EL.=670.0 LAT/LONG: N43.0167 / W75.9844 0'-7" TOPSOIL 7'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -4 EX. EL.= 681.0, FN. EL.= 671.0 LAT/LONG: N43.0169 / W75.9846 0'-7" TOPSOIL 7'-10' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -5 EX. EL.= 716.0, FN. EL.=705.0 LAT/LONG: N43.0181 / W75.9879 0'-7" TOPSOIL 7'-1' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -6 EX. EL.= 704.0, FN. EL.= 693.0 LAT/LONG: N43.0169 / W75.9826 0'-1' TOPSOIL 1'-3' BROWN SILTY CLAY 3'-9' GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -7 EX. EL.= 722.0, FN. EL.= 715.0 LAT/LONG: N43.0169 / W75.9848 0'-1' TOPSOIL 1'-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -8 EX. EL.= 683.0, FN. EL.= 680.0 LAT/LONG: N43.0172 / W75.9831 0'-1' TOPSOIL 1'-3' BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. AND J.K. TOBIN.
2. SEGUIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE (E) AND DATUM (NAD83).

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

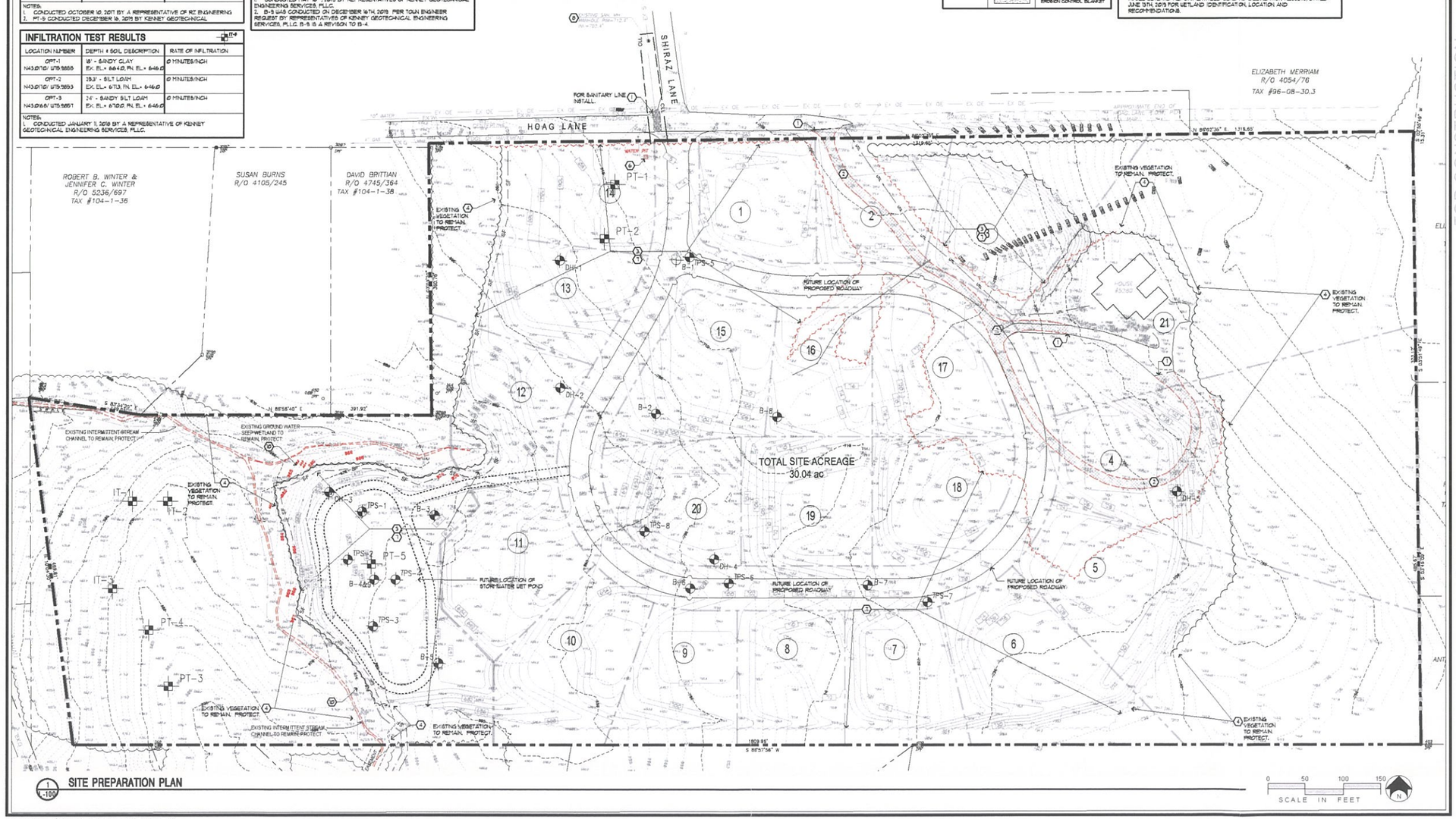
1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN ITS ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN ITS ENTIRETY INCLUDING ROOTS AND STUMPS. REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DISCONTINUSION EXISTING WATER PIT PER OCHA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCHA UPON RECEIPT OF SITE PLAN APPROVAL FOR DISCONTINUSIONING AND WATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019, APPROVED BY TOWN ON MARCH 7TH, 2019. REMOVAL OCCURRED MARCH 13TH, 2019. THE STUMPS, DOWNED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8/L-5400 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 CONDUCTED BY ENVIRONMENTAL RESOURCES, LLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
700		CONTOUR
+377.7	+377.7	SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
PT-1	PT-1	PERCOLATION TEST PIT
B-1	B-1	DEEP HOLE
		FENCE
		UTILITY POLE
		WATER LINE
		FIRE HYDRANT
ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION
UD	UD	UNDERDRAIN
S	S	SANITARY PIPE-GRAVITY
SP1 3" LPS	SP1 3" LPS	SANITARY PIPE-LOW PRESSURE
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		TELEPHONE
BT MH	BT MH	STORM STRUCTURE
CB DI	CB DI	INLET
MH GO	MH GO	CATCH BASIN/MANHOLE
		CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		MEA GRAVEL DIAPHRAGM/FORE SHOULDER
		OUTLET PROTECTION
	4" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 12'	OUTLET PROTECTION FOR 8"- 12" PIPE
	3' 20'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017, OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTORS' WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL PIT/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-100 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS & INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.
13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 9TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.
14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1/L-100 SITE PREPARATION PLAN

Tuesday, June 16, 2020 12:43:46 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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JOHN L. RUSH
NEW YORK
070923
LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/7/19	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/29/19	9	9	MANLIUS - PLAN SUBMISSION	04/14/19
3	3	PUBLIC HEARING - MANLIUS	02/5/19	10	10	MANLIUS - PLAN SUBMISSION	05/13/19
4	4	PUBLIC HEARING-MANLIUS	05/06/19	11	11	MANLIUS - PLAN SUBMISSION	05/29/19
5	5	PUBLIC HEARING-MANLIUS	06/01/19	12	12	MANLIUS - PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/29/19	13	13	MANLIUS - PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PLSE	11/20/19	14	14	MANLIUS - PLAN SUBMISSION	06/15/20

△ Symbol indicates Revision Issued

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

EROSION CONTROL NOTES and EROSION CONTROL SEQUENCING

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE SITE PLAN, AND AS OTHERWISE REQUIRED, SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL AND THE SUPPP PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. RAKE SOILS SHALL BE MULCHED WITH HAY AT A RATE OF TWO TONS PER ACRE WITHIN 7 DAYS OF DISTURBANCE. IF CONSTRUCTION ON AN AREA IS SUSPENDED, THE AREA SHALL BE SEEDED IMMEDIATELY.
3. SITE PREPARATION SHALL INCLUDE:
   A. SEEDBED PREPARATION - SCARIFY P COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROOTS OR STUMPS.
   B. SOIL AMENDMENTS:
      1. LIME TO PH 6.0
      2. FERTILIZE WITH 6-20-20 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (14 LBS/1000 SQ FT.)
   C. SEED MIXTURES:
      1. TEMPORARY SEEDINGS
         a. RYEGRASS (ANNUAL OR PERENNIAL) @ 30 LBS/ACRE (67 LBS/1000 SQ FT.)
         b. CERTIFIED VARIOUS BODY WINTER RYE (CEREAL RYE) @ 100 LBS/ACRE (2.3 LBS/1000 SQ FT.)
      2. PERMANENT SEEDINGS
         a. ROUGH OR OCCASIONALLY MOWED AREAS:

	LBS/ACRE	LBS/1000 SQ FT
BIRDSFOOT TREFOIL OR COTTON)	8	0.20
WHITE CLOVER PLUS-	6	0.20
TALL FESCUE PLUS	30	0.45
REDTOP	3	0.09
RYEGRASS (PERENNIAL)	3	0.10

ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING

   D. METHOD OF SEEDING: BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.
4. DISTURBED AREAS SHALL BE SEEDED AS NOTED ABOVE AND MULCHED WITH CLEAN STRAW AS OUTLINED IN THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL ON SLOPES GREATER THAN 3:1 SEEDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.
6. ACCESS TO DISTURBED AREAS SHALL BE LIMITED TO THE AREAS SHOWN ON THE PLAN. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THE LOCATION SHOWN ON THE PLAN. NO ACCESS IS PERMISSIBLE FROM BEACH ROAD.
7. ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.
8. TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO ½ THE DEPTH OF THE SEDIMENTATION BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
9. DIRECT ACCESS SHALL BE PROVIDED TO ALL BASIN/POND AREAS FOR MAINTENANCE AND REHABILITATION.
10. ALL DESIGN MAINTENANCE MEASURES OUTLINED IN THE SUPPP PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.
11. THE PERMITTEE (ITS SUBCONTRACTORS) ARE RESPONSIBLE FOR MEANS & METHODS OF EROSION CONTROL FACILITIES DURING CONSTRUCTION. IT SHOULD BE NOTED THAT FACILITIES ON THIS DRAWING ARE CONSIDERED MINIMUM + ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS CONSTRUCTION PROGRESSES. THE PERMITTEE (ITS SUBCONTRACTORS) ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.
12. PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJOINING PROPERTY, STREETS, WATERWAYS, AND ON SITE IMPROVEMENTS BEYOND THE LIMITS OF WORK. COMPLY WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL" AND THE NYSDEC'S "REDUCING THE IMPACTS OF STORMWATER RUNOFF FROM NEW DEVELOPMENT."
13. MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (1" RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING: REPLACING DAMAGED OR SILTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES, AND STABILIZING ERODED OR WASHED OUT SLOPED AREAS.
14. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE, LAWNS HAVE BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.
15. CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL."

EROSION CONTROL and CONSTRUCTION STAGING AND SEQUENCE:

THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 20.8± ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY SEVEN (7) STAGES. THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION ISSUES DURING THE CONSTRUCTION PROCESS. REFER TO SHEETS L-102 THRU L-108 STAGING PLANS FOR DISTURBANCE LIMITS IN EACH STAGE, BELOW IS A LISTING OF THE ANTICIPATED STAGES:

STAGE 1 - PROPOSED STORMWATER BASIN # ROUGH GRADING

1. STAGE 1 TO CONSIST OF CONSTRUCTION PROPOSED WET POND AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
2. PRIOR TO ANY SITE DISTURBANCE CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF BHNAU AND HOAG LANE AS SHOWN ON THE DRAWING.
3. SILT FENCE - INSTALL PERIMETER SILT FENCE AS SHOWN ON PLAN PRIOR TO EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK.
4. CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN STAGE 1 PRIOR TO EARTHWORK.
5. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN. DOMED TREES, BRANCHES, STUMPS AND VEGETATION TO BE CHIPPED AND BLENDED WITH STRIPPED TOPSOIL. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
6. EXCAVATE PROPOSED WET POND AND WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN(S). PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON THE DRAWING. FINE GRADE, SEED AND MULCH WITHIN SEVEN (7) DAYS OF DISTURBANCE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
7. REFER TO DRAWING L-103 FOR STAGING PLAN.

STAGE 2 - SITE ROUGH GRADING

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-103 FOR STAGING PLAN.

STAGE 3 - SITE ROUGH GRADING (CONT.)

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-104 FOR STAGING PLAN.

STAGE 4 - FINAL ROUGH EARTHWORK

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-105 FOR STAGING PLAN.

STAGE 5 - UTILITY INSTALLATION

1. PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING.
2. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 6 - ROAD BASE AND KICKUP GUTTERS

1. EXCAVATE AND FILL REST OF SITE AREAS FOR ROADWAY, FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE.
2. PLACE ROAD SUBBASE.
3. ANEAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE.
4. REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
5. CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
6. FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN AND ON THE DETAILS.
7. INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
8. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 7 - FINE GRADING AND LOT IMPROVEMENTS

1. CLEAR VEGETATION ON RESIDENTIAL LOTS TO BE CONSTRUCTED, STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
2. PREPARE BUILDING PAD AND DRIVEWAY AREA SUBGRADE.
3. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
4. CLEAN STORMWATER BMP'S AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
5. SEE DRAWING L-108 DETAIL 2 FOR INDEPENDENT LOT EROSION CONTROL PLANS.
6. SEE DRAWING L-108 FOR STAGING PLAN.

FINAL CLEAN UP & PREVENTATIVE MAINTENANCE

1. REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
2. REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
3. FINAL CLEAN UP - REMOVE EROSION CONTROL MEASURES AND CLEAN OUT ALL DRAINAGE STRUCTURES, PIPES, POND AND SWALES AFTER LAWN IS WELL ESTABLISHED. OWNER IS RESPONSIBLE FOR MAINTAINING SITE UNDER PROJECT CLOSEOUT.
4. CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SUPPP INSPECTION REPORTS.

SOIL RESTORATION NOTES

1. ACCORDING TO SECTION 6 OF THE NYS STORMWATER DESIGN MANUAL, SOIL RESTORATION PRACTICES MUST BE APPLIED ACROSS THE SITE IN AREAS OF SOIL DISTURBANCE. SOIL RESTORATION WILL BE COMPLETED IN ACCORDANCE WITH TABLE 6A ON PAGE 133.
2. SOIL RESTORATION REQUIREMENTS PER TABLE 6A OF NYS BLUEBOOK, 2010.

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED
AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO GRADING	HSG A/B - APPLY 4 INCHES OF TOPSOIL HSG C/D - APPLY 6 INCHES OF TOPSOIL
AREAS OF CUT OR FILL (PHASE I-V)	HSG A/B - AERATE AND APPLY 6 INCHES OF TOPSOIL HSG C/D - APPLY FULL SOIL RESTORATION
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 5-75 FEET AROUND BUILDINGS BUT NOT WITHIN A FOOT PERIMETER AROUND FOUNDATION BACKFILL PHASE I)	APPLY FULL SOIL RESTORATION (DESCOMPACTION AND COMPOST INCORPORATED)
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING TURF/HIGH AREA WILL BE CONVERTED TO PERVIOUS AREA.

AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR DRAWN IMPLEMENTS WITH COULTERS HAVING A NARROW BLADE TO THE SOIL, A ROLLER WITH PLANT SPIKES PULLED BEHIND IT, OR OTHER MEANS WHICH FUNCTION LIKE A MINI-SUB-SOILER.

HYDR DEEP RIPPING AND DE-COMPACTION, DISC SHEET SEE APPENDIX I IN SUPPP DATED 09/5/2008.

3. GENERAL SOIL RESTORATION PRACTICE IMPLEMENTATION:

DURING PERIODS OF RELATIVELY LOW TO MODERATE SUBSOIL MOISTURE, THE DISTURBED SUBSOILS ARE RETURNED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TILLCOMPANION DISC, OR TILLER/STONE PICKER. MINIMIZE COMPACTION AND COMPOST INTO SUBSOILS.
3. REMOVE FROM SITE ALL SPLITTER STONE/ROCK FRAGMENTS OF FOUR INCHES AND LARGER SIZE ARE CLEARED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
5. VEGETATE AS REQUIRED BY APPROVED PLAN.
6. COMPOST SHALL BE AGED, FINISH PLANT DERIVED MATERIALS FREE OF VISIBLE WEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLED, HAVE PARTICLE SIZES THROUGH 4 (1/4") INCH SCREEN AND HAVE A PH SUITABLE TO GROW DESIRED PLANTS.

FIGURES 5.6 AND 5.7 TO BE INCLUDED FOR ATTACHMENTS USED FOR SOIL DECOMPACTION TILLING (STEP 2 ABOVE) SHOULD NOT BE REINFORCED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATION THAT ARE WITHIN 24 INCHES OF THE SURFACE.

Figure 5. 16 Soil aerator implement.



Figure 5. 17 Soil aerator implement



4. AT THE END OF THE PROJECT AN INSPECTOR SHOULD BE ABLE TO PUSH A 3/8" METAL BAR 3 INCHES INTO THE SOIL JUST WITH BODY WEIGHT.
5. THE CONTRACTOR MUST KEEP THE SITE FREE OF VEHICULAR AND FOOT TRAFFIC OR OTHER HEAVY LOADS. CONCRETE PEDESTRIAN FOOTPATHS/SIDEWALKS IT MAY BE NECESSARY TO DE-THATCH THE TURF EVERY FEW YEARS.
6. ALL SOIL RESTORATION SHALL BE IN ACCORDANCE WITH NYSDEC REGULATIONS AND THE APPROVED SUPPP FOR THE PROJECT.

STORMWATER POLLUTION PREVENTION PLAN

PROJECT DESCRIPTION PROJECT SCOPE INCLUDES THE SITEWORK NECESSARY TO CONSTRUCT TWENTY (20) PROPOSED RESIDENTIAL HOMES AND ONE (1) EXISTING HOME. SITEWORK INCLUDES THE EXTENSION OF A SANITARY LINE, INSTALLATION OF ALL UTILITIES AND THE CONSTRUCTION OF A LIFT POND TO MITIGATE THE INCREASE IN STORM RUNOFF.

SPEDES REQUIREMENTS THE PROJECT REQUIRES A NOI (NOTICE OF INTENT) AND SUPPP (STORMWATER MANAGEMENT PREVENTION PLAN) TO COMPLY WITH NYSDEC'S SPEDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. ELIGIBILITY IS BASED ON A CONSTRUCTION DISTURBANCE AREA WHICH IS GREATER THAN (1) ACRE. THE PROJECT SITE DISTURBED AREA IS APPROXIMATELY 21 ACRES. RECOMMENDATION IS TO SUBMIT A NOI (NOTICE OF INTENT) TO BE AUTHORIZED TO DISCHARGE STORMWATER UNDER THIS PERMIT. THE SUPPP WILL BE SUBMITTED TO THE SITEWORK CONTRACTOR PRIOR TO CONSTRUCTION AND BE AVAILABLE ON THE PROJECT SITE DURING CONSTRUCTION. THE CONTRACTOR WILL ALSO MAINTAIN THE REQUIRED LOG BOOK COMPLETE WITH DOCUMENTATION OF WEEKLY SITE INSPECTIONS AND RAINFALL. ALSO, A 5 DAYS DISTURBANCE LETTER IS REQUIRED TO SUBMIT ALONG WITH THE NOTICE OF INTENT (NOI).

STORM WATER MANAGEMENT REPORT SUMMARY THE STORM WATER MANAGEMENT REPORT SUBMITTED WILL BE REVIEWED BY THE TOWN ENGINEER, DOUG HILLIKER URS HILLIKER ENGINEERS. THE STORM WATER IMPROVEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH NYSDEC'S PHASE II STORMWATER MANAGEMENT AND STORM WATER DRAINAGE COMPUTATION REQUIREMENTS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS. STORMWATER MANAGEMENT REPORT WILL BE MADE AVAILABLE IF REQUESTED.

EXISTING PROPERTY DESCRIPTION THE EXISTING PROPERTY CONSISTS OF MAINLY WOODED AREAS WITH ONE EXISTING HOUSE LOCATED AT THE NORTHEAST OF THE PROPERTY. 4" CALIPER VEGETATION HAS BEEN CUT DOWN TO STUMPS AS OF MARCH 2018 WITH TOWN APPROVAL REMAINING TREES AND VEGETATION UNLESS OTHERWISE IDENTIFIED AS GREEN SPACE WILL BE REMOVED PER STAGING PLANS.

SITE INFORMATION

SOIL TYPE - HYDROLOGIC SOIL TYPE C. REFER TO SUPPP FOR ADDITIONAL SOILS INFORMATION.

RECEIVING WATER BODY - LIMESTONE CREEK

STAGING, EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE DESIGNATED BY DEVELOPER. AREAS SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

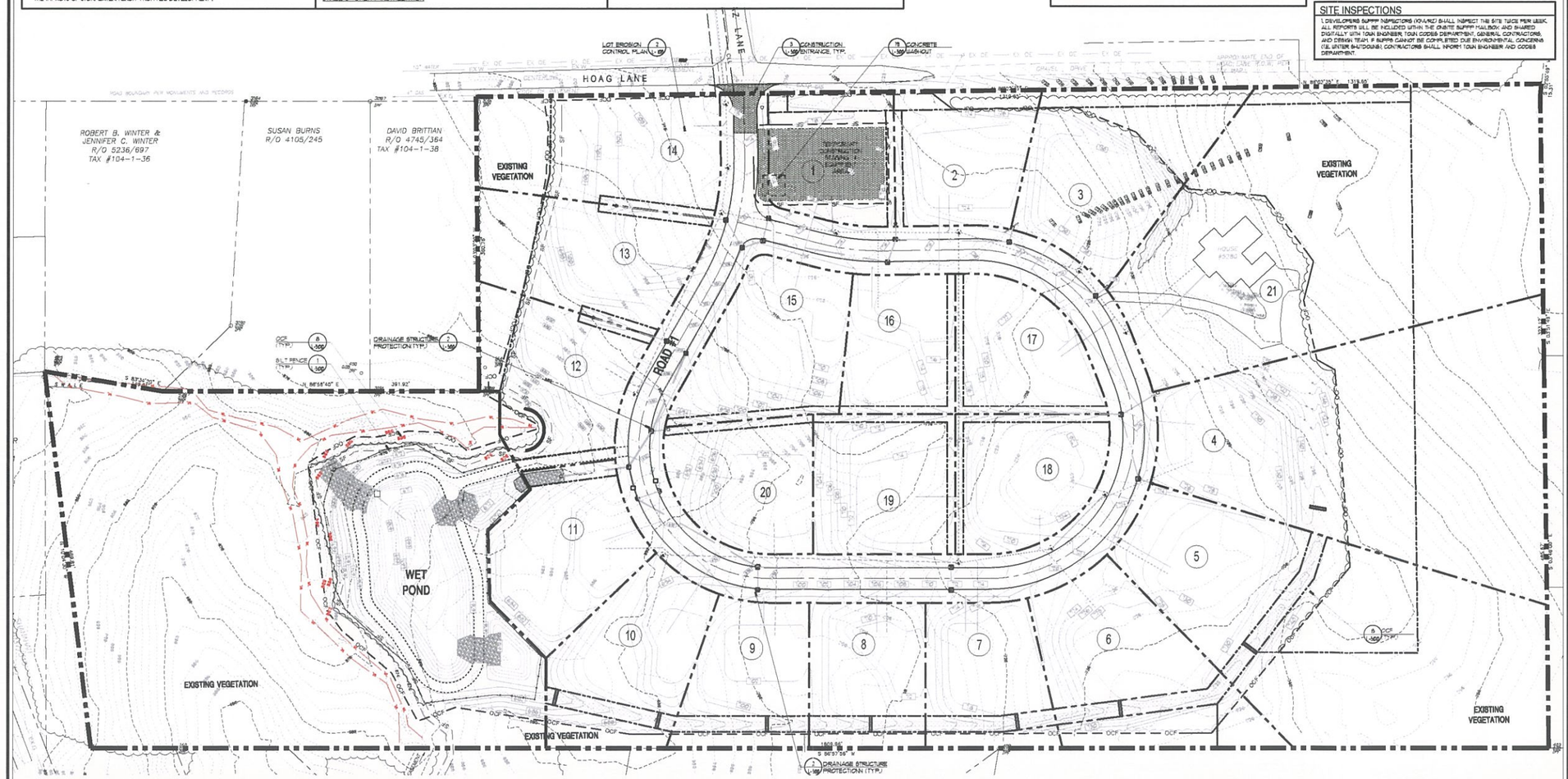
STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED MIXTURE. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

DUST MONITORING PLAN

1. UNIT LOCATION AND DETAIL SHOWN ON PHASING PLANS, SEE DETAIL 6/L-501 FOR SUPPLIER AND MODELS.
2. REFER TO SUPPP APPENDIX K, DATED 09/19/20 AS PREPARED BY KZ ENGINEERING FOR ADDITIONAL DUST MONITORING PROCEDURES.

SITE INSPECTIONS

1. DEVELOPERS SUPPP INSPECTORS (KW+KZ) SHALL INSPECT THE SITE TWICE PER WEEK. ALL REPORTS WILL BE INCLUDED WITHIN THE ON-SITE SUPPP MAILBOX AND SHARED DIGITALLY WITH TOWN ENGINEER, TOWN CODES DEPARTMENT, GENERAL CONTRACTORS, AND DESIGN TEAM. IF SUPPP CANNOT BE COMPLETED DUE ENVIRONMENTAL CONCERNS (I.E. UNTEN SAT/2008) CONTRACTORS SHALL NOTIFY TOWN ENGINEER AND CODES DEPARTMENT.



1/L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN

Tuesday, June 16, 2020 12:46:28 PM

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STATE OF NEW YORK — JOHN E. KOSKI — 075921 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/23/18
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18
3	3	PUBLIC HEARING-MANLIUS	03/26/18
4	4	PUBLIC HEARING-MANLIUS	04/23/18
5	5	PUBLIC HEARING-MANLIUS	05/31/18
6	6	TOWN REV. 21 LOTS-MANLIUS	10/29/18
7	7	MANLIUS-21 HOME (LOTS-FL.ED)	11/29/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/31/19
11	11	MANLIUS- PLAN SUBMISSION	09/03/19
12	12	MANLIUS- PLAN SUBMISSION	12/19/19
13	13	MANLIUS- PLAN SUBMISSION	12/19/19
14	14	MANLIUS- PLAN SUBMISSION	06/05/20

Symbol Indicates Revision Issued

NEW YORK LANDSCAPE ARCHITECTURE — 001173 — STATE OF NEW YORK

Drawn By:	VER
Checked By:	BF
KFA Proj. No.:	37080
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN

L-101

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proctrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-103 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 05/18/2020 AND 09/21/2020 RESPECTIVELY.

SWPPP LEGEND

Y:\HOAG-SUPPP LEGEND

- SILT FENCE
- SEDIMENT TRAP # CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO I-303 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- STABILIZED w/ SEED AREAS
- STABILIZED WORK AREAS
- DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

Y:\HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

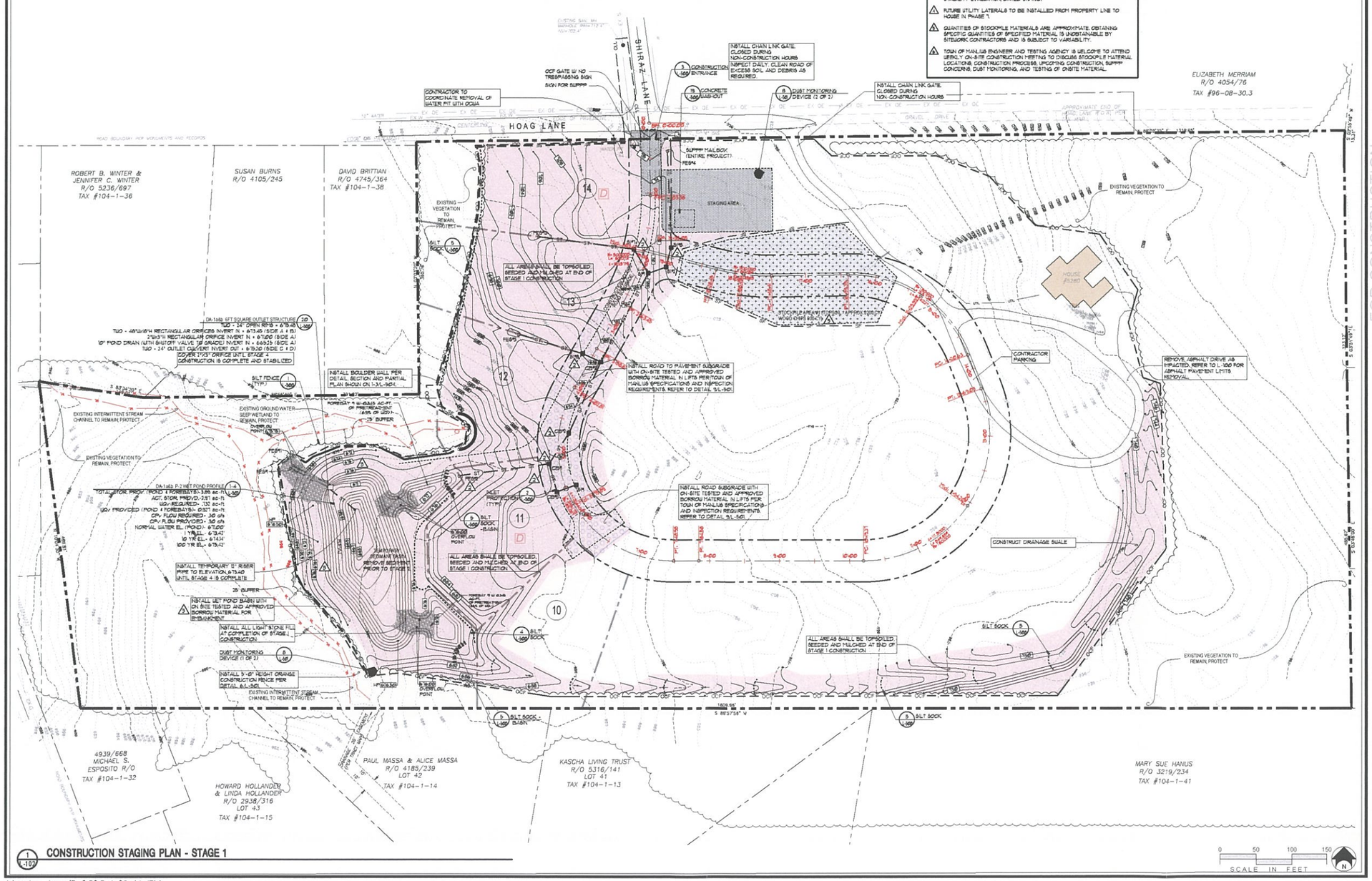
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.66	4.16	12.20
STAGE 4	TWO (2) MOS.	13.66	1.78	15.78
STAGE 5	TWO (2) MOS.	13.66	3.24	14.03
STAGE 6	TWO (2) MOS.	13.66	3.13	14.13
STAGE 7	THREE (3) MOS.	13.66	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNDERTAKABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. [BMC]
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. [BC]
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. [BC]
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 3 HOME CONSTRUCTIONS PER YEAR. [P, B]

NOTES:
- A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
- B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
- C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 05/18/20.
- D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
- E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/PK NAILS PER APPROVED PLAT PLAN.
- F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



CONSTRUCTION STAGING PLAN - STAGE 1

Monday, June 15, 2020 6:23:46 PM

Issued By:
Date Plotted:
Drawing File:

KEPLINGER ERESEMAN ASSOCIATES
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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/31/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING MANLIUS	02/28/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING MANLIUS	03/28/18	11	11	MANLIUS PLAN SUBMISSION	08/16/19
5	5	PUBLIC HEARING MANLIUS	05/01/18	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN REV-21 LOTS MANLIUS	10/23/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PLAN	11/09/18	14	14	MANLIUS PLAN SUBMISSION	06/25/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SF
KEA Proj. No. 3750
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title
CONSTRUCTION STAGING PLAN - STAGE 1

L-102

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	82
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.

** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

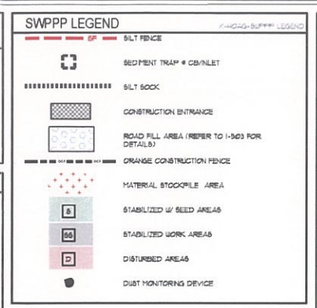
STAGING AND EQUIPMENT STORAGE AREA
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STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

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4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09-18-2020 AND 09-21-2020 RESPECTIVELY.

SWPPP LEGEND



CONSTRUCTION STAGING

DISTURBANCE AREA

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- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

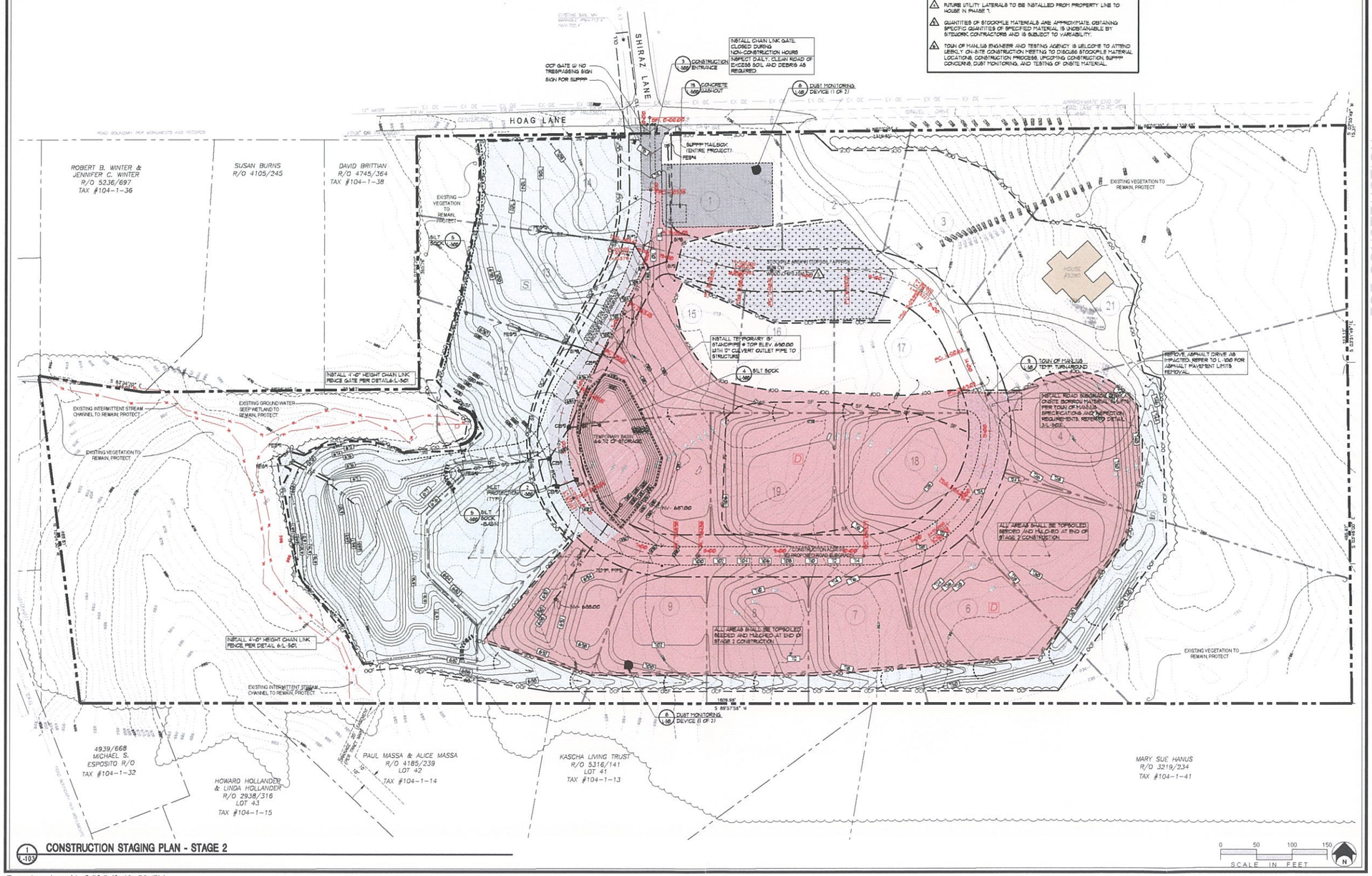
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) LKS.	22.45	6.44	1.11
STAGE 2	SIX (6) LKS.	15.40	7.82	6.82
STAGE 3	SIX (6) LKS.	13.66	4.16	12.20
STAGE 4	TWO (2) LKS.	13.66	1.76	15.78
STAGE 5	TWO (2) LKS.	13.66	3.24	14.03
STAGE 6	TWO (2) LKS.	13.66	3.13	14.13
STAGE 7	THREE (3) LKS.	13.66	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNSTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETINGS TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. BAC
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. BAC
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. BAC
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. DP B

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R DATED 09-18-20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 / L-103 CONSTRUCTION STAGING PLAN - STAGE 2

Tuesday, June 16, 2020 12:49:03 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
629 EX ROAD, SUITE 108 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 476-1881 FAX: (315) 476-1881

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5108 RT 298 E SUITE 201
EAST SYRACUSE, NY 13057
PH: 315.432.2385 FAX: 315.445.7961

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No	Rev	Description	Date	No	Rev
1	1	CHECK SET-TOWN OF MANLIUS	01/17/18	8	8
2	2	CHECK SET-TOWN OF MANLIUS	03/09/18	9	9
3	3	PUBLIC HEARING-MANLIUS	03/28/18	10	10
4	4	PUBLIC HEARING-MANLIUS	04/25/18	11	11
5	5	PUBLIC HEARING-MANLIUS	05/01/18	12	12
6	6	TOWN REV. 21 LOTS-MANLIUS	05/29/18	13	13
7	7	MANLIUS-21 HOME LOTS-PL SET	11/05/18	14	14

Description	Date
21 LOT SITE PLAN REVISIONS	01/04/19
MANLIUS-PLAN SUBMISSION	05/14/19
MANLIUS-PLAN SUBMISSION	07/12/19
MANLIUS-PLAN SUBMISSION	12/19/19
MANLIUS-PLAN SUBMISSION	12/19/19
MANLIUS-PLAN SUBMISSION	12/19/19
MANLIUS-PLAN SUBMISSION	04/22/20

△ Symbol Indicates Revision Issued

Drawn By	V.E.R.
Checked By	S.F.
KFA Proj. No	3708.0
Date	DECEMBER 1, 2017
Scale	AS NOTED

Title
CONSTRUCTION STAGING PLAN - STAGE 2

L-103

EARTHWORK FIELD TESTING SUMMARY TABLE

Construction Stage	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	121
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

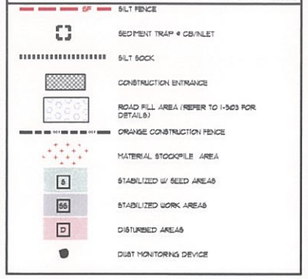
STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPERS AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLABS FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS (DATED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/16/2020 AND 09/17/2020 RESPECTIVELY.

SWPPP LEGEND



CONSTRUCTION STAGING

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

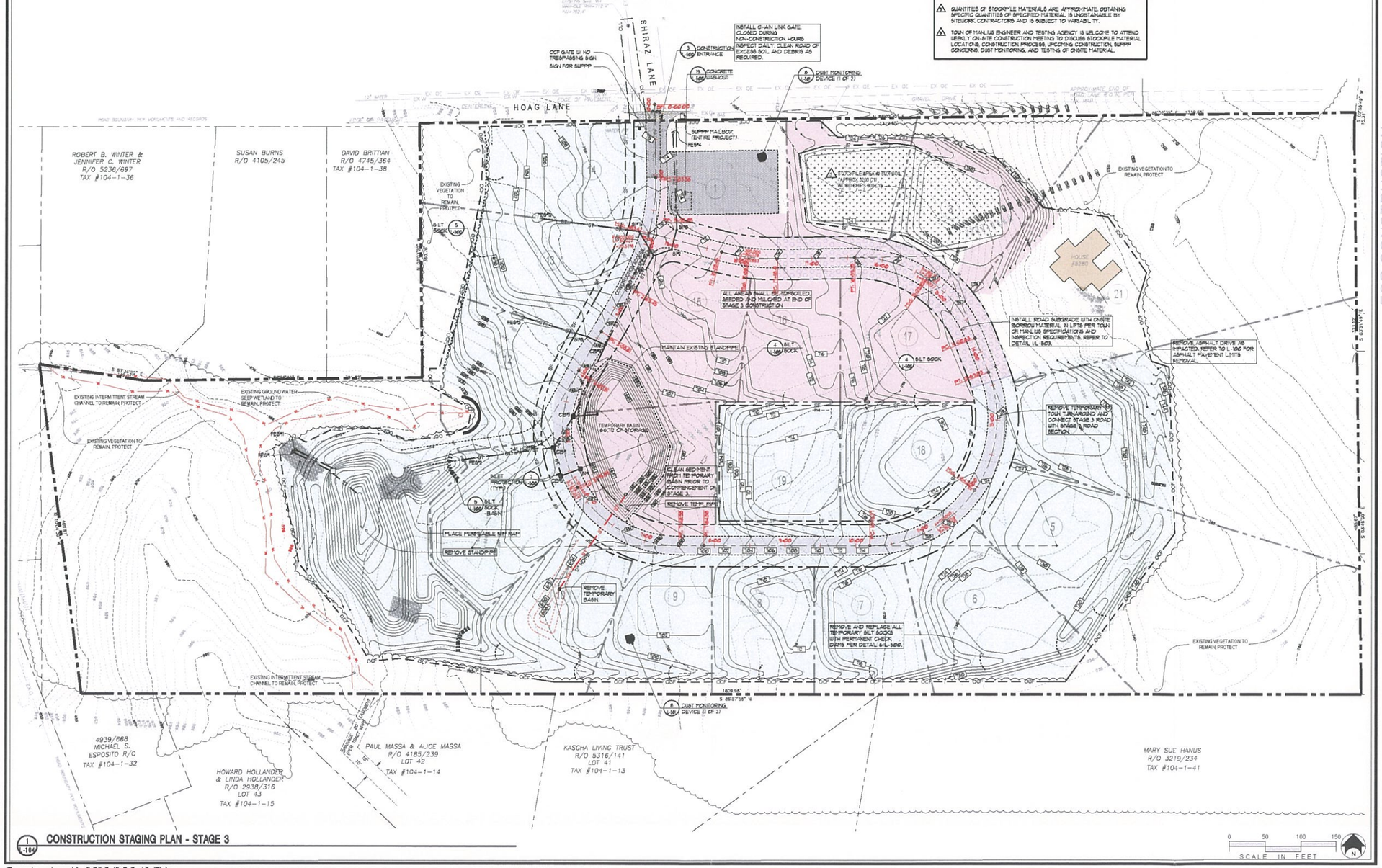
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR	36.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.45	6.44	1.71
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.66	4.16	12.20
STAGE 4	TWO (2) MOS.	13.66	1.78	15.78
STAGE 5	TWO (2) MOS.	13.66	3.24	14.03
STAGE 6	TWO (2) MOS.	13.66	3.13	14.13
STAGE 7	THREE (3) MOS.	13.66	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTORS RESPONSE, FIELD CONDITIONS, SCHEDULER AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/2/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 1.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES, BMP.
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN, INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN, BMP.
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN, INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. BMP.
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC (WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR.

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 09/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 / L-104 CONSTRUCTION STAGING PLAN - STAGE 3

0 50 100 150 SCALE IN FEET

Tuesday, June 16, 2020 12:50:48 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
RLA Engineering, PLLC
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	02/16/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV- 21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS- 21 HOME LOTS-PLBD	11/20/18
8	8	21 LOT SITE PLAN REVISIONS	5/06/19
9	9	MANLIUS PLAN SUBMISSION	09/14/19
10	10	MANLIUS PLAN SUBMISSION	09/27/19
11	11	MANLIUS PLAN SUBMISSION	12/18/19
12	12	MANLIUS PLAN SUBMISSION	12/18/19
13	13	MANLIUS PLAN SUBMISSION	12/18/19
14	14	MANLIUS PLAN SUBMISSION	06/15/20

Symbol Indicates Revision Issued

Drawn By:	VER
Checked By:	SF
KFA Proj. No:	31090
Date:	DECEMBER 1, 2011
Scale:	AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 3

L-104

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer.

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPERR. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH IV:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT BLABS FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATION, & THE TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2020 AND 09/21/2020 RESPECTIVELY.

SWPPP LEGEND

SWPPP-SUPPLY LEGEND

- SILT FENCE
- SEDIMENT TRAP # CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO I-303 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- STABILIZED W/ SEED AREAS
- STABILIZED WORK AREAS
- DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

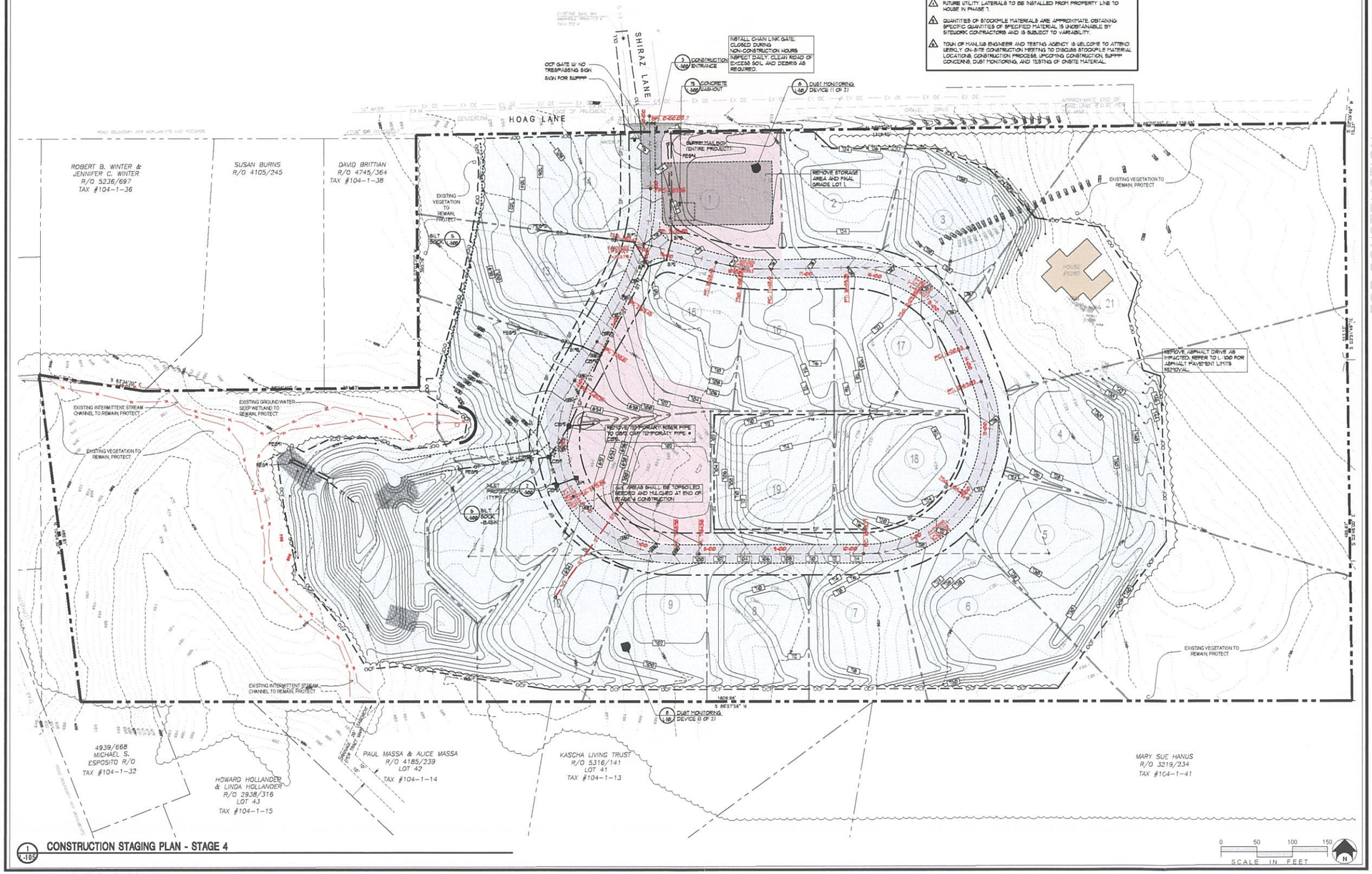
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.66	4.16	12.20
STAGE 4	TWO (2) MOS.	13.66	1.78	15.79
STAGE 5	TWO (2) MOS.	13.66	3.24	14.03
STAGE 6	TWO (2) MOS.	13.66	3.13	14.13
STAGE 7	THREE (3) MOS.	13.66	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. BMC
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. BC
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. BC
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D,F,G

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 09/18/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES UPON EVENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-105 CONSTRUCTION STAGING PLAN - STAGE 4

Tuesday, June 16, 2020 12:52:16 PM

Issued for:
Issued By:
Seal / Filed
Stamp/File

KEPLINGER FREEMAN ASSOCIATES
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RZ Engineering, PLLC
CIVIL ENGINEERING & LAND SURVEYING
109 N 19 N STE 315
EAST SYRACUSE, NY 13057
PH: 315.412.2385 FAX: 315.446.7811
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	6	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18	9	6	MANLIUS PLAN SUBMISSION	09/14/19
3	3	PUBLIC HEARING MANLIUS	05/09/18	10	11	MANLIUS PLAN SUBMISSION	09/23/19
4	4	PUBLIC HEARING MANLIUS	05/09/18	11	11	MANLIUS PLAN SUBMISSION	11/12/19
5	5	PUBLIC HEARING MANLIUS	06/01/18	12	12	MANLIUS PLAN SUBMISSION	12/18/19
6	6	TOWN REV. 21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS PLAN SUBMISSION	12/18/19
7	7	MAN.AUS-21 HOME LOTS-PLAN	1/18/19	14	14	MANLIUS PLAN SUBMISSION	09/15/20

Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SF
KFA Proj. No: 3708D
Date: DECEMBER 1, 2011
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 4

L-105

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (T-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND EMBANKMENT EVALUATION, DATED 09/18/2020 AND 09/17/2020 RESPECTIVELY.

STAGING, EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH MAX 3H:1V SLOPES.

SWPPP LEGEND

>>HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP # OR INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO L-503 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- 8 — STABILIZED W/ SEED AREAS
- 66 — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

>>HOAG-STAGING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

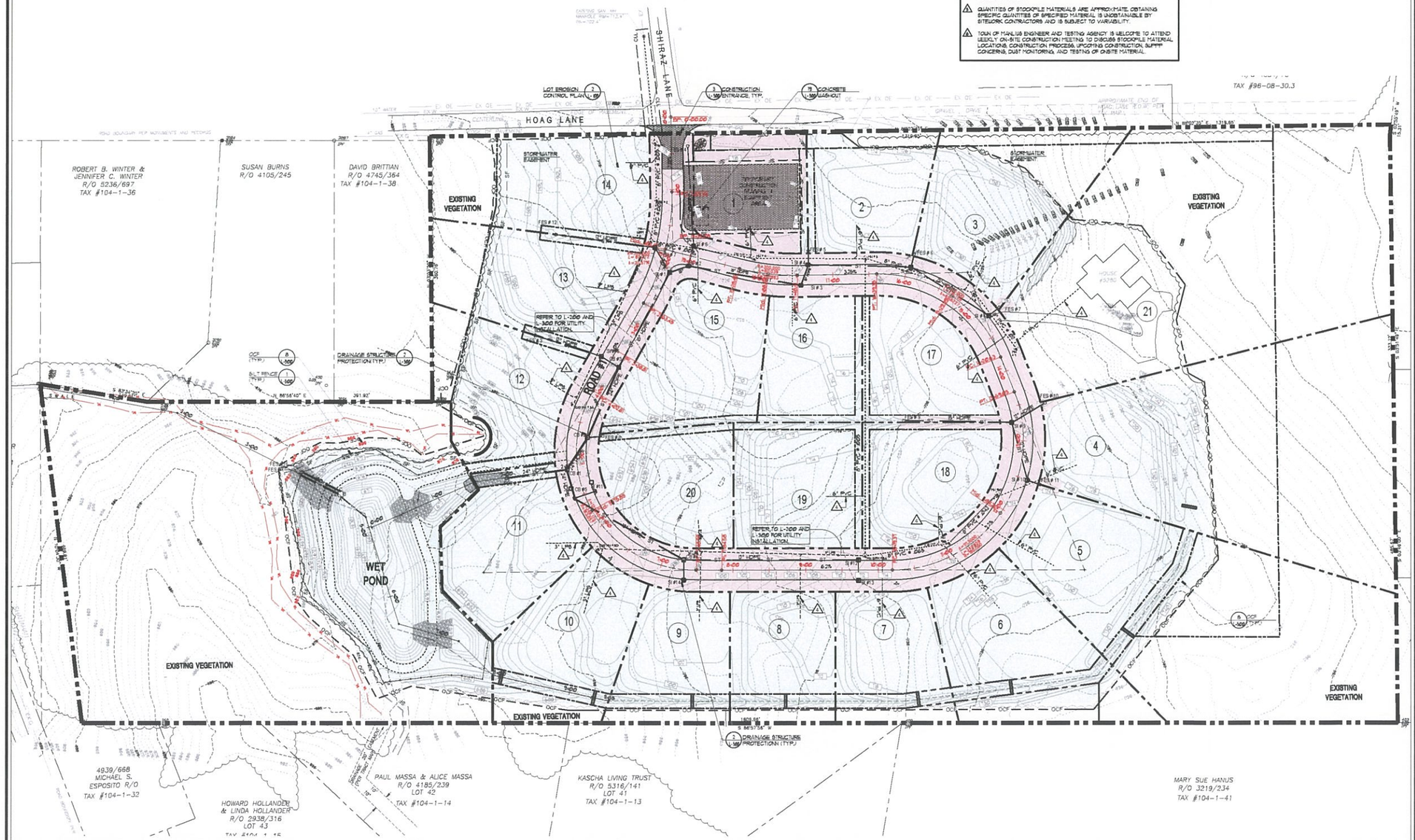
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	19.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.68	4.16	12.20
STAGE 4	TWO (2) MOS.	13.68	1.76	15.76
STAGE 5	TWO (2) MOS.	13.68	3.24	14.03
STAGE 6	TWO (2) MOS.	13.68	3.13	14.13
STAGE 7	THREE (3) MOS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL, AND DUST CONTROL MEASURES, ETC.
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN, ETC.
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES, ETC.
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR.[2][3]

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 09/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-106 CONSTRUCTION STAGING PLAN - STAGE 5

Tuesday, June 16, 2020 12:54:24 PM

KEPLINGER EREMAN ASSOCIATES
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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	8/17/18	8	8	21 LOT SITE PLAN REVISIONS	01/06/19
2	2	CHECK SET-TOWN OF MANLIUS	8/29/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING MANLIUS	9/04/18	10	10	MANLIUS PLAN SUBMISSION	08/13/19
4	4	PUBLIC HEARING MANLIUS	9/04/18	11	11	MANLIUS PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING MANLIUS	09/21/18	12	12	MANLIUS PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/25/18	13	13	MANLIUS PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PLEC	11/28/18	14	14	MANLIUS PLAN SUBMISSION	05/15/20

△ Symbol indicates Revision Issued

Drawn By: VER
Checked By: SF
KEA Proj. No.: 3706D
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 5

L-106

EARTHWORK FIELD TESTING SUMMARY TABLE

Construction Stage	Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
		Estimated Quantity			
		tests*	tests*	days**	tests**
	Stage 1	1	1	3	272
	Stage 2	1	1	3	62
	Stage 3	1	1	3	76
	Stage 4	~	~	~	34
	Stage 5	1	1	~	TBD
	Stage 6	~	~	~	171
	Stage 7	~	~	~	TBD
	Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT-OF-WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2020 AND 09/21/2020 RESPECTIVELY.

SWPPP LEGEND

- SILT FENCE
- SEDIMENT TRAP # CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO L-503 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- STABILIZED W/ SEED AREAS
- STABILIZED WORK AREAS
- DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

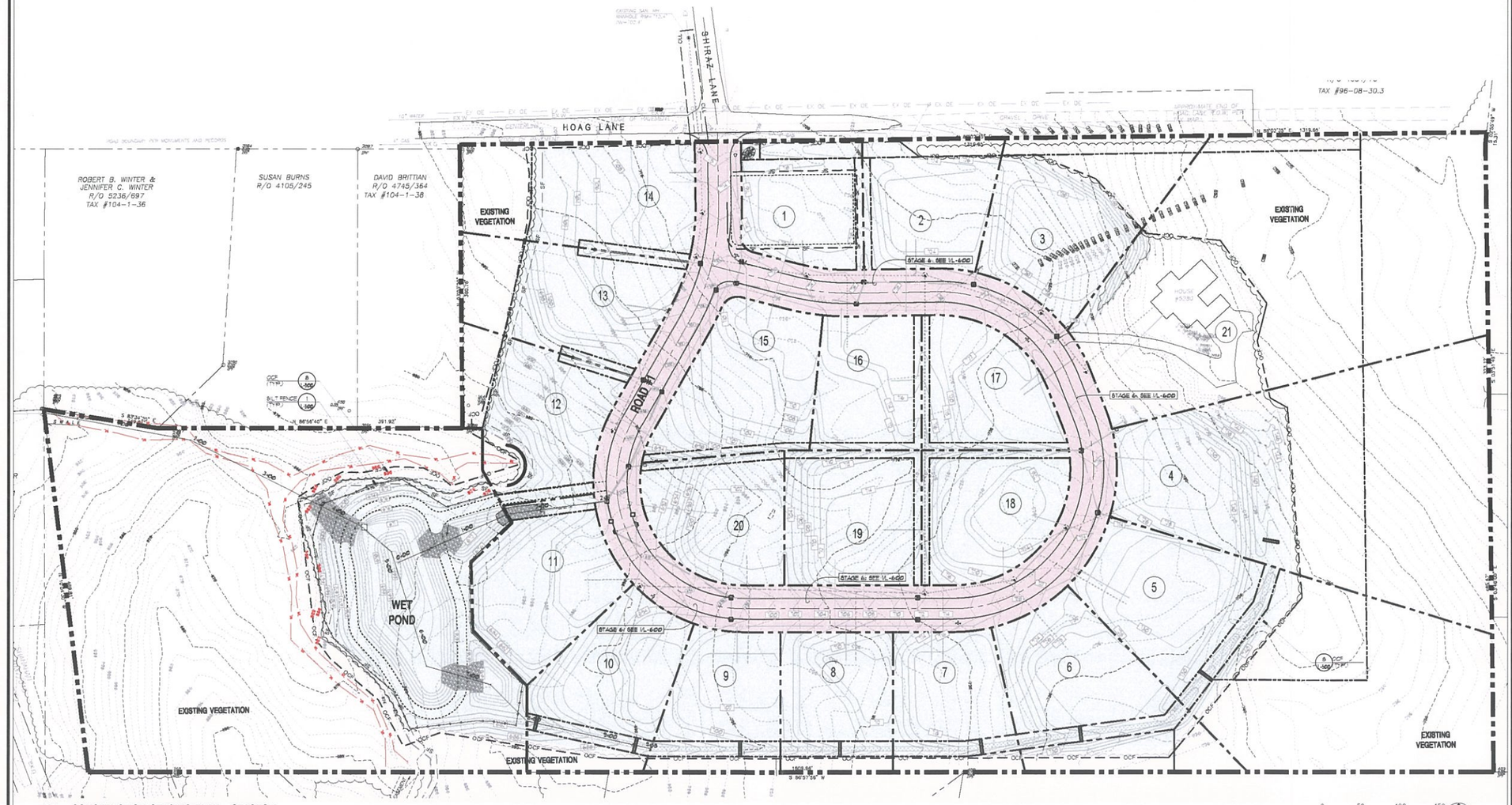
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	16.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.68	4.16	12.20
STAGE 4	TWO (2) MOS.	13.68	1.76	15.76
STAGE 5	TWO (2) MOS.	13.68	3.24	14.03
STAGE 6	TWO (2) MOS.	13.68	3.13	14.13
STAGE 7	THREE (3) MOS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-205 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. BMC
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. BMC
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. BMC
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER, GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. BMC

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 09/19/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PINS/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1/L-107 CONSTRUCTION STAGING PLAN - STAGES 6

SCALE IN FEET 0 50 100 150

Tuesday, June 16, 2020 12:56:22 PM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	07/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/09/18
3	3	PUBLIC HEARING MANLIUS	05/09/18
4	4	PUBLIC HEARING MANLIUS	05/21/18
5	5	PUBLIC HEARING MANLIUS	06/01/18
6	6	TOWN REV. 21 LOTS-MANLIUS	9/29/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/09/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/09/19
12	12	MANLIUS- PLAN SUBMISSION	12/19/19
13	13	MANLIUS- PLAN SUBMISSION	12/19/19
14	14	MANLIUS- PLAN SUBMISSION	06/05/20

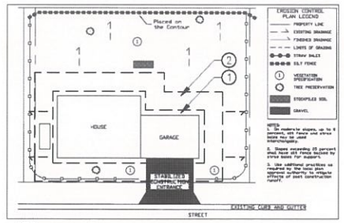
△ Symbol indicates Revision issued

Drawn By: V.E.R.
Checked By: R.F.
KFA Proj. No.: 3706B
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 6

L-107

Plotted By:
Date Plotted:
Drawing File:



NOTES:
1- FOUNDATION ZONE, 0-5 FEET FROM EDGE OF BUILDING, DRAINAGE IMPROVEMENTS AROUND FOUNDATION.
2- SOIL RESTORATION ZONE, 5'-25' FEET FROM EDGE OF BUILDING, REFER TO SOIL RESTORATION NOTES ON L-101.
3-POST CONSTRUCTION NOTES TO BE PROVIDED TO HOA/ HOMEOWNERS.

2 / L-101 **LOT EROSION CONTROL PLAN**
NOT TO SCALE

EARTHWORK FIELD TESTING SUMMARY TABLE

Construction Stage	Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
		Estimated Quantity			
		tests*	tests*	days**	tests**
Stage 1		1	1	3	272
Stage 2		1	1	3	52
Stage 3		1	1	3	76
Stage 4		~	~	~	34
Stage 5		1	1	~	TBD
Stage 6		~	~	~	171
Stage 7		~	~	~	TBD
Total		~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP # CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO L-503 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED SF SEED AREAS
- SC — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL, AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOWN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOWN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 08/18/2020 AND 09/17/2020 RESPECTIVELY.

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	LIT
STAGE 2	SIX (6) MOS.	15.40	7.82	6.80
STAGE 3	SIX (6) MOS.	13.60	4.36	12.20
STAGE 4	TWO (2) MOS.	13.66	1.78	15.76
STAGE 5	TWO (2) MOS.	13.66	3.24	14.03
STAGE 6	TWO (2) MOS.	13.66	3.13	14.13
STAGE 7	THREE (3) MOS.	13.66	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-302 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 9/17/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNDERTAKABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

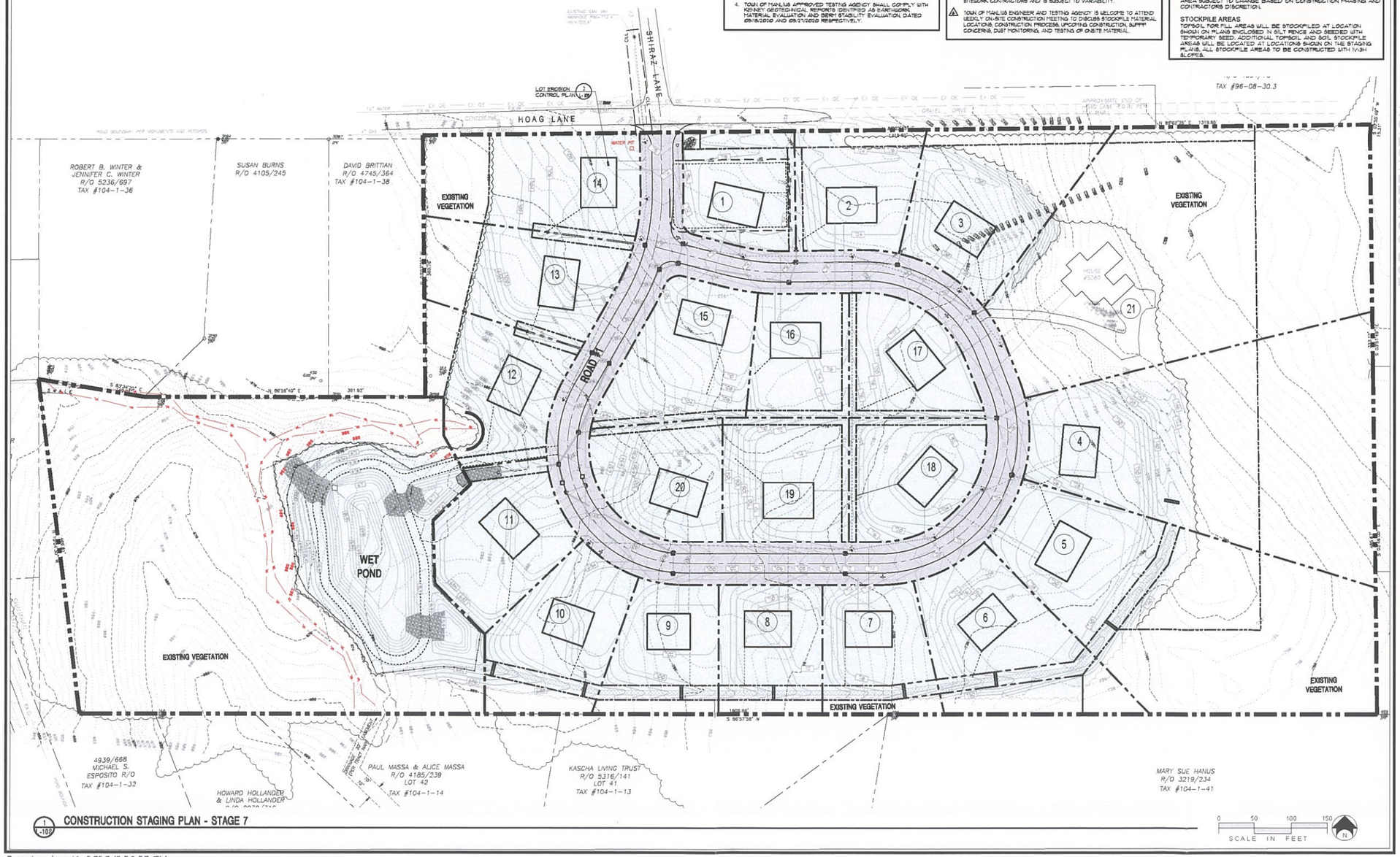
1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES, ETC.
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES, INSTALLATION OF TEMPORARY SEDIMENT BASIN, ETC.
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE, ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES, ETC.
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6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR.

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 09/15/20.
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E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.

STAGING, EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.



1 / L-108 **CONSTRUCTION STAGING PLAN - STAGE 7**

Tuesday, June 16, 2020 12:58:57 PM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING MANLIUS	02/26/18
4	4	PUBLIC HEARING MANLIUS	04/02/18
5	5	PUBLIC HEARING MANLIUS	06/01/18
6	6	TOWN REV. 21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PLBD	11/09/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS PLAN SUBMISSION	06/14/19
10	10	MANLIUS PLAN SUBMISSION	07/12/19
11	11	MANLIUS PLAN SUBMISSION	09/27/19
12	12	MANLIUS PLAN SUBMISSION	12/18/19
13	13	MANLIUS PLAN SUBMISSION	12/19/19
14	14	MANLIUS PLAN SUBMISSION	04/15/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37080
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title
CONSTRUCTION STAGING PLAN - STAGE 7

L-108

Plotted By:
Date Plotted:
Drawing File:

STORM STRUCTURE SCHEDULE

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT	STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [1]	N/A	-	24"- 665.00	SI # 1	STORM INLET [4]	708.79	LD -707.00 12"- 703.20	(SE) 12"- 703.16
DA-1A#3	18" DIA OUTLET STRUCTURE [1]	679.45	REFER TO DETAIL FOR ORIFICE INFORMATION	669.20	SI # 8	STORM INLET [4]	710.55	(N)-10"- 708.00 LD -706.51	(S)-12"- 707.50
FES # 2	FLARED END SECTION [1]	N/A	-	(E)-24"- 676.00					
CB # 1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"- 684.50 (S)-24"- 685.00 LD- 689.20	(W)-24"- 684.50	FES # 4	FLARED END SECTION [1]	N/A	10"- 713.00	-
					FES # 5	FLARED END SECTION [1]	N/A	12"- 715.00	-
					FES # 6	FLARED END SECTION [1]	N/A	12"- 721.00	-
CB # 2	CATCH BASIN - 4'-0" [3]	692.78	(NE)-24"- 688.78 (E)-18"- 688.50 LD- 690.00	(SW)-24"- 681.50	FES # 8	FLARED END SECTION [1]	N/A	-	(S)- 689.00
					FES # 9	FLARED END SECTION [1]	N/A	-	15"- 718.00
CB # 3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"- 690.50 (NE)-18"- 694.00 LD- 699.20	(SW)-24"- 690.50	SI # 5	STORM INLET [4]	706.10	(NE)-12"- 700.00 (S)-12"- 700.00 LD- 704.10	(W)-15"- 719.50
					SI # 10	STORM INLET [4]	712.69	(SE)-12"- 707.69 LD- 711.69	(N)-12"- 707.80
SI # 1	STORM INLET [4]	707.79	(NW)-12"- 700.10 (NE)-18"- 700.10	(S)-18"- 700.00	FES # 3	FLARED END SECTION [1]	N/A	12"- 722.00	
SI # 2	STORM INLET [4]	710.79	(N)-12"- 706.79 (E)-18"- 707.29	(SW)-18"- 706.00	FES # 10	FLARED END SECTION [1]	N/A	12"- 722.00	-
SI # 3	STORM INLET [4]	719.90	(N)-15"- 715.50 LD- 714.90	(W)-18"- 713.25	CB # 5	CATCH BASIN - 4'-0" [3]	691.42	(E)-18"- 689.30 (SE)-18"- 686.80 LD- 687.30	(N)-24"- 680.25
SI # 4	STORM INLET [4]	716.05	(N)-12"- 713.50 (E)-12"- 713.50 LD- 714.90	(S)-15"- 712.00	CB # 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10"- 693.75 (E)-12"- 693.75 LD- 694.90	(NW)-18"- 693.25
SI # 5	STORM INLET [4]	721.60	(N)-12"- 718.00 (SE)-12"- 718.60 LD- 719.00	(W)-12"- 717.00	SI # 12	STORM INLET [4]	711.75	(S)-12"- 708.25 LD- 708.25	(W)-12"- 708.00
					SI # 13	STORM INLET [4]	711.75	LD- 709.40	(N)-12"- 708.50
SI # 6	STORM INLET [4]	726.75	(NE)-12"- 722.10	(NW)-12"- 722.00	SI # 11	STORM INLET [4]	695.42	LD -687.50	(W)-10"- 686.00
			LD- 722.75		SI # 14	STORM INLET [4]	696.72	LD- 694.90	(N)-10"- 693.50
FES # 7	FLARED END SECTION [1]	N/A	-	12"- 729.00	SI # 15	STORM INLET [4]	697.72	(W) - 693.20 LD -696.00	(E)-12"- 693.00
FES # 3	FLARED END SECTION [1]	N/A	12"- 681.50	-					
FES # 12	FLARED END SECTION [1]	N/A	12"- 702.00		FES # 11	FLARED END SECTION [1]	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 2&L-500.
2. INSTALL FLARED END SECTION PER DETAIL 8&L-500.
3. INSTALL STORM INLET PER DETAIL 5&L-500.
4. INSTALL CATCH BASIN PER DETAIL 5&L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 2&L-500 & 3&L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

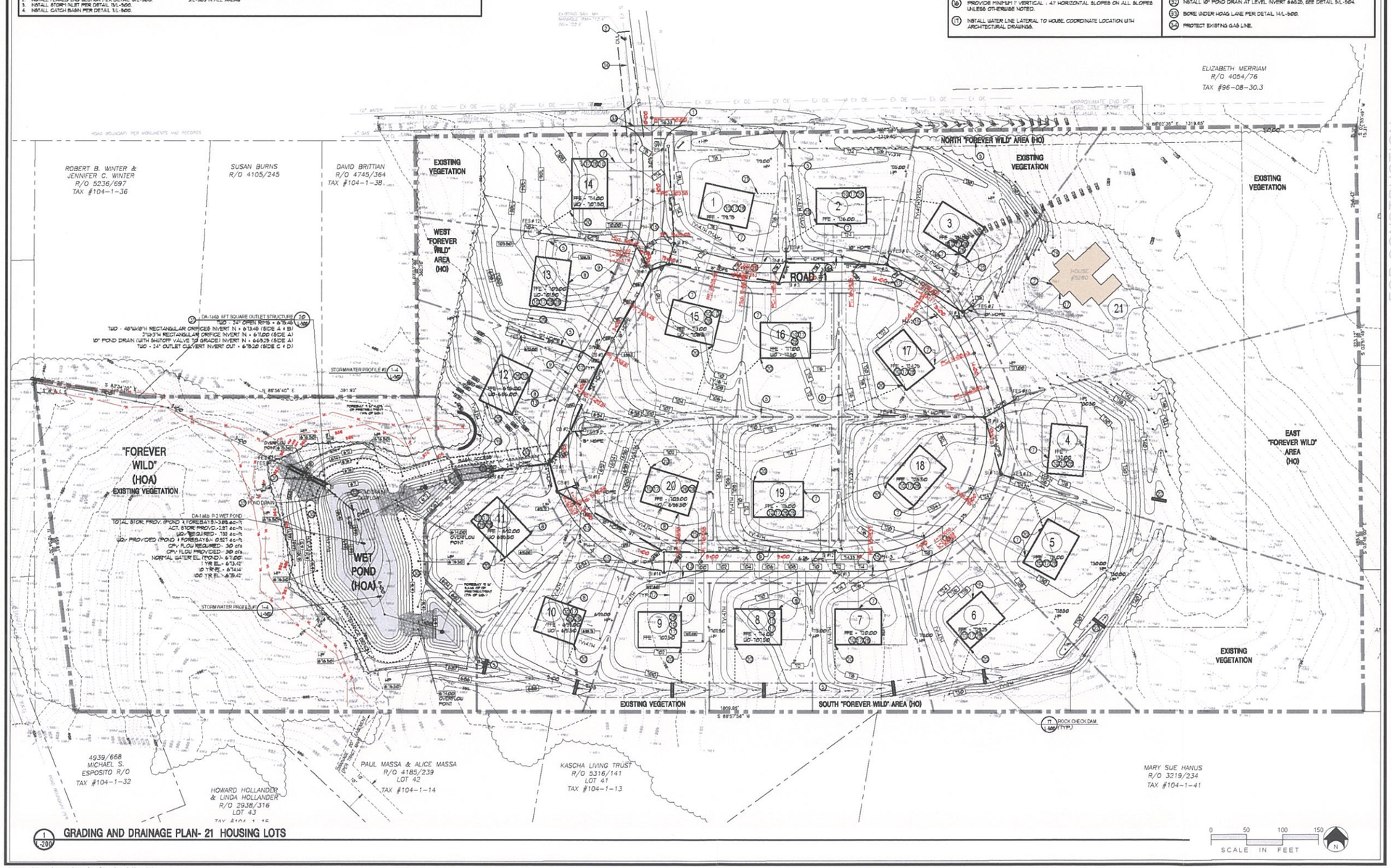
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2&L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (2" PER FT.). ALL LATERALS TO BE CAPPED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS 4 PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2&L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2&L-600.
10. SANITARY VENT AND TRAP PER DETAIL 8&L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3&L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCIA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4&L-501.
16. PROVIDE MINIMUM 1' VERTICAL - 4' HORIZONTAL SLOPES ON ALL SLOPES (4&L856 OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY (95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3&L-504 IN PHASE I PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP SHALL BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTLOW STRUCTURE AND PIPE PER DETAIL 2&L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6-1, 4-00.
26. LOTS 3, 10, 11, 12, 13, 15 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2&L-503.
27. REFER TO L-102 THRU L-105 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" SIDE 4 5% MAXIMUM MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 11+8% SLOPE (7.3%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 3&L-500.
32. INSTALL 12" POND DRAIN AT LEVEL INVERT 668.25, SEE DETAIL 5&L-504
33. BORE UNDER HOAG LANE PER DETAIL 14&L-500.
34. PROTECT EXISTING GAS LINE.



GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS

Tuesday, June 16, 2020 1:01:11 PM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET TOWN OF MANLIUS	01/26/18	9	9	MANLIUS PLAN SUBMISSION	05/14/19
3	3	PUBLIC HEARING MANLIUS	02/28/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING MANLIUS	04/23/18	11	11	MANLIUS PLAN SUBMISSION	09/13/19
5	5	PUBLIC HEARING MANLIUS	05/07/18	12	12	MANLIUS PLAN SUBMISSION	12/16/19
6	6	TOWN REV. 21 LOTS MANLIUS	10/23/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS 21 HOME LOTS PLAN	11/09/18	14	14	MANLIUS PLAN SUBMISSION	05/05/20

△ Symbol Indicates Revision Issued

Drawn By	VER
Checked By	SF
KFA Proj. No.	3705D
Date	DECEMBER 1, 2017
Scale	AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

SHADE RELIEF LEGEND - TOWN OF MANLIUS

§ 127-19 C FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 75 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES

HOAG LANE

SHIRAZ LANE

ELIZABETH MERRIAM
R/O 4054/76
TAX #96-08-30.3

ROBERT B. WINTER & JENNIFER C. WINTER
R/O 5236/697
TAX #104-1-36

SUSAN BURNS
R/O 4105/245

DAVID BRITTIAN
R/O 4745/364
TAX #104-1-38

4939/668
MICHAEL S. ESPOSITO R/O
TAX #104-1-32

HOWARD HOLLANDER & LINDA HOLLANDER
R/O 2938/316
LOT 43
TAX #104-1-15

PAUL MASSA & ALICE MASSA
R/O 4185/239
LOT 42
TAX #104-1-14

KASCHA LIVING TRUST
R/O 5316/141
LOT 41
TAX #104-1-13

MARY SUE HANUS
R/O 3219/234
TAX #104-1-41

1 L-201 **25% SHADE RELIEF PLAN**

0 50 100 150
SCALE IN FEET

Tuesday, June 16, 2020 1:02:05 PM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

FOR CONSTRUCTION

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

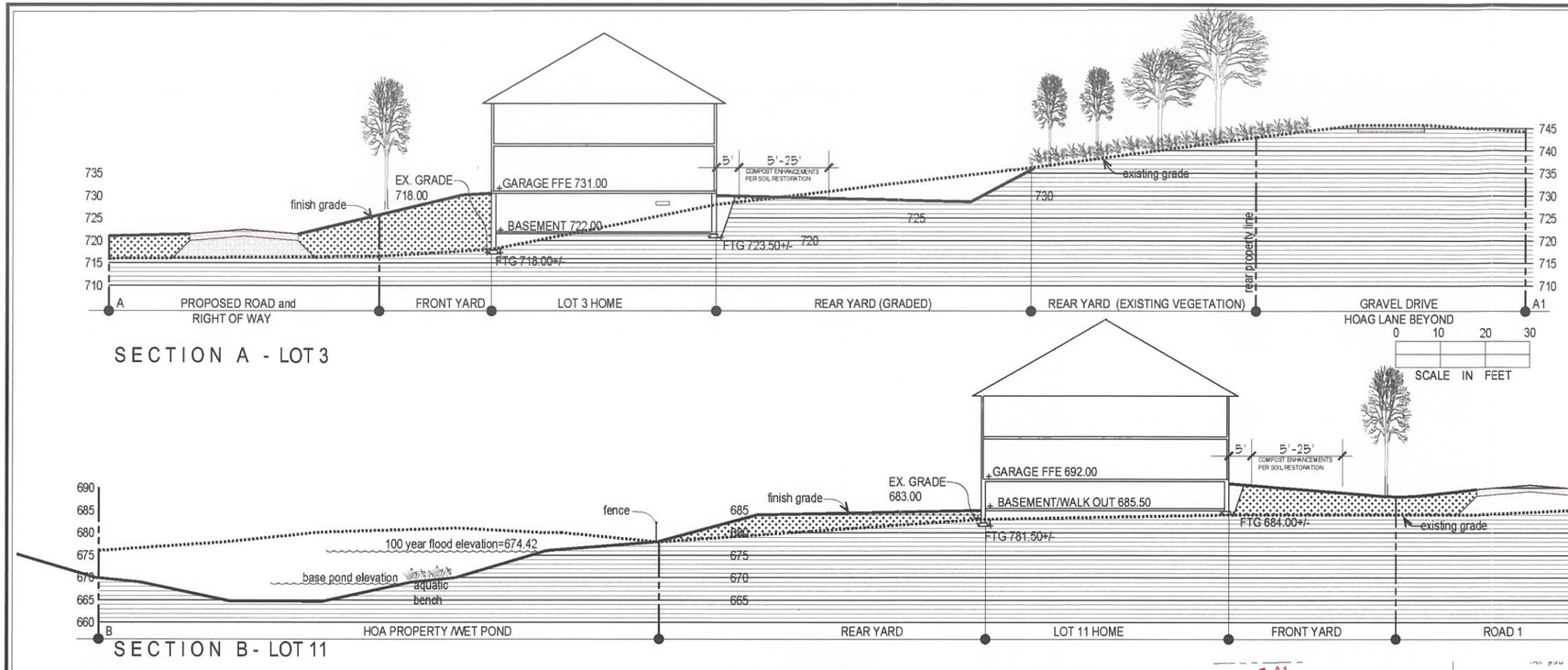
No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/30/18
3	3	PUBLIC HEARING-MANLIUS	02/28/18
4	4	PUBLIC HEARING-MANLIUS	04/04/18
5	5	PUBLIC HEARING-MANLIUS	05/01/18
6	6	TOWN REV. 21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PLBD	11/09/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS-PLAN SUBMISSION	06/14/19
10	10	MANLIUS-PLAN SUBMISSION	07/31/19
11	11	MANLIUS-PLAN SUBMISSION	09/06/19
12	12	MANLIUS-PLAN SUBMISSION	12/18/19
13	13	MANLIUS-PLAN SUBMISSION	12/19/19
14	14	MANLIUS-PLAN SUBMISSION	06/05/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: BF
KFA Proj. No: 3706D
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
25% SLOPE RELIEF PLAN

L-201



KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING

RZ Engineering, PLLC

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET/TOWN OF MANLIUS	01/31/19	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET/TOWN OF MANLIUS	01/29/19	9	9	MANLIUS PLAN SUBMISSION	05/14/19
3	3	PUBLIC HEARING MANLIUS	02/28/19	10	10	MANLIUS PLAN SUBMISSION	07/31/19
4	4	PUBLIC HEARING MANLIUS	03/07/19	11	11	MANLIUS PLAN SUBMISSION	12/18/19
5	5	PUBLIC HEARING MANLIUS	05/07/19	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN REV. 21 LOTS-MANLIUS	10/23/19	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-FA	11/05/19	14	14	MANLIUS PLAN SUBMISSION	05/25/20

△ Symbol indicates Revision Issued

Drawn By	YER
Checked By	SF
KFA Proj. No.	3190
Date	DECEMBER 1, 2017
Scale	AS NOTED

Title
RIGHT OF WAY, BASEMENT SLAB and FOOTER SUMMARY

L-202

Tuesday, June 16, 2020 1:03:32 PM

HOAG LANE DEVELOPMENT
SEWER SYSTEM TYPE

	SEWER SYSTEM TYPE	LOT NUMBERS
	FORCE MAIN SYSTEM SEWER	8, 9, 10, 11, 12, 13, 20 + (1) TOTAL
	GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 21 + (14)

SANITARY MANHOLE SCHEDULE

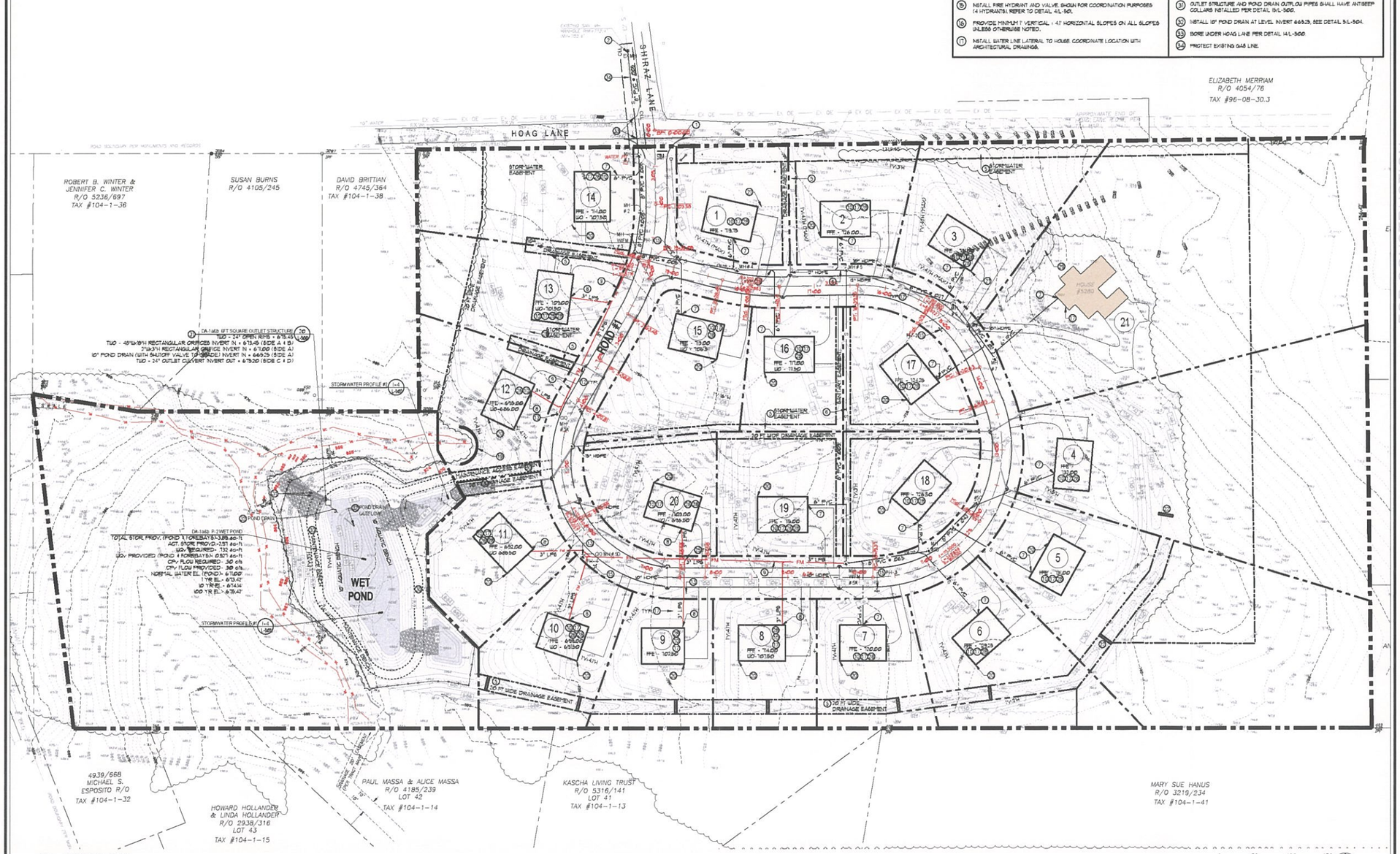
NOTES REFER TO SHEETS L-300

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
EX MH	EXISTING	702.40	8" @ 702.50 (S)	702.40 (EX)
MH# 1	MANHOLE[1]	715.20	8" @ 703.30 (S)	8" @ 703.20 (N)
MH# 2	MANHOLE[1]	712.00	8" @ 703.71 (S)	8" @ 703.61 (N)
MH W/FM# 3	MH W/ FORCED MAIN[2]	708.00	8" @ 704.29 (E) 3" @ 709.9 (S)	8" @ 704.19 (N)
MH# 4	MANHOLE[1]	714.00	8" @ 709.10 (E)	8" @ 709.00 (S)
MH# 5	MANHOLE[1]	720.00	8" @ 709.55 (E) 8" @ 709.39 (S)	8" @ 709.29 (S)
MH# 6	MANHOLE[1]	724.00	8" @ 714.70 (SE)	8" @ 714.60 (NE)
MH# 7	MANHOLE[1]	726.00		8" @ 720.00 (NE)
MH W/FM# 8A	MH W/ FORCED MAIN[2]	712.00	3" @ 708.80 (W) 8" @ 707.90 (E)	8" @ 707.80 (N)
MH# 8B	MANHOLE[1]	720.20	8" @ 719.20 (E)	8" @ 719.10 (W)
MH# 8C	MANHOLE[1]	723.90		8" @ 723.80 (SW)
C/O MH# 8D	CLEAN OUT MH	692.00		3" @ 684.50 (E)
C/O MH# 8A	CLEAN OUT MH	694.50		3" @ 689.50 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-501.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEY OR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL: COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL: COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS 4 PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 3/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501, FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE. ACCESS TO PIPES ONLY.)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL + 4' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 95% STANDARD MAXIMUM PROCTOR DENSITY (ASTM) IN SUBGRADE AREAS.
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504. IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 2/DL-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-105 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. NOTE BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" LESS THAN 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 7V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 9/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 669.23, SEE DETAIL 3/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 UTILITIES PLAN
L-300

Tuesday, June 16, 2020 11:24:05 AM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

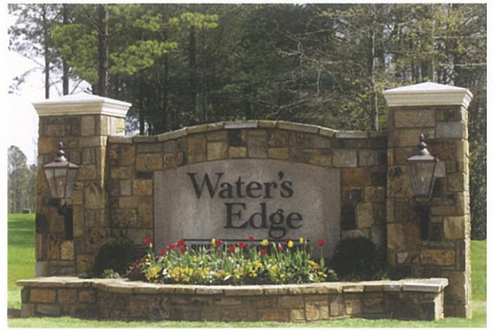
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING-MANLIUS	02/26/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	CHECK SET-TOWN OF MANLIUS	05/01/18	11	11	MANLIUS PLAN SUBMISSION	09/13/19
5	5	PUBLIC HEARING-MANLIUS	06/01/18	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN REV-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PLBG	11/08/18	14	14	MANLIUS PLAN SUBMISSION	05/15/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3709D
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
UTILITIES PLAN

L-300



2 / L-400 **ENTRANCE MONUMENT SIGN**

SIGN SCHEDULE

KEY	SIGN PLATE	SIGN SIZE / MOUNTING HT.	NY.S.D.O.T. MUTCD NO. / COMMENTS
A	STOP	24" X 24" / 7'-0" MT.	SIGN NO. R1-1G COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX MAP# 104.-01-99.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 8738). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SAGUIN LAND SURVEYING, PLLC, AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KPA.
  HTTPS://GISDEPONY.GOV/LG/PUBLICATIONS/SUBDIVISION/REVIEW/NYSTYPDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 20 LOT	CLUSTER 21 LOT
MIN FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 150'-0" MIN. 150'-0"
LOT AREA: MINIMUM 40,000 SF

(C) FRONTAGE: 100'-0" MIN. 100'-0" AVG= 110' - 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.86	168,167.97
(B) SOUTH "FOREVER WILD" AREA	3.5	149,417.43
(C) WEST "FOREVER WILD" AREA	3.6	156,711.97
(D) NORTH "FOREVER WILD" AREA	3.5	152,886.9
(E) HOA "FOREVER WILD" AREA	4.73	206,057.09

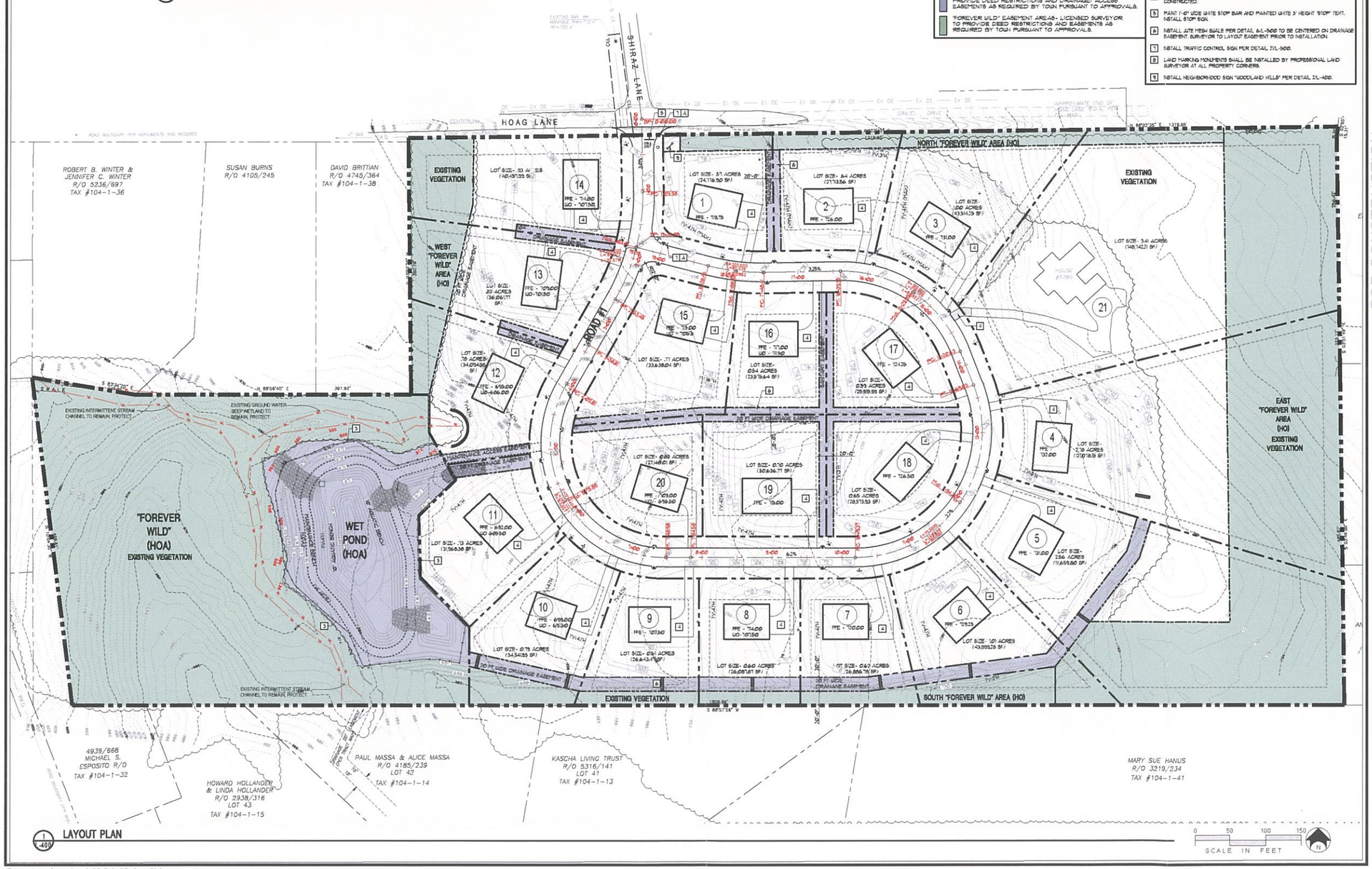
NOTES:
1. 30% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/19/2020.

LEGEND NOTES

- DRAINAGE EASEMENT AREAS - LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND DRAINAGE/ ACCESS EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.
- "FOREVER WILD" EASEMENT AREAS- LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.

LAYOUT NOTES

1. DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE PROPERTY LINE.
2. NOTE REMOVED.
3. INSTALL NYS POOL COMPLIANT FENCE PER DETAIL 6/L-901 IN PHASE I (L-102.)
4. HOMEOWNER TO INSTALL ASPHALT DRIVEWAY PAVEMENT AFTER HOME IS CONSTRUCTED.
5. PAINT 1'-0" WIDE WHITE STOP BAR AND PAINTED WHITE 3' HEIGHT "STOP" TEXT. INSTALL STOP SIGN.
6. INSTALL SILT MESH SWALE PER DETAIL 6/L-300 TO BE CENTERED ON DRAINAGE EASEMENT. SURVEYOR TO LAYOUT EASEMENT PRIOR TO INSTALLATION.
7. INSTALL TRAFFIC CONTROL SIGN PER DETAIL 21/L-900.
8. LAND MARKING MONUMENTS SHALL BE INSTALLED BY PROFESSIONAL LAND SURVEYOR AT ALL PROPERTY CORNERS.
9. INSTALL NEIGHBORHOOD SIGN "WOODLAND HILLS" PER DETAIL 2/L-400.



1 / L-400 **LAYOUT PLAN**

SCALE IN FEET 0 50 100 150

Tuesday, June 16, 2020 1:05:26 PM

Plotted By:
Date Plotted:
Drawing File:

KPA KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 103 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 446-1990 FAX: (315) 446-1991

RZ Engineering PLLC
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5339 FLY ROAD SUITE 204
EAST SYRACUSE, NY 13057
PH: 315.432.1809 FAX: 315.445.7501

STATE OF NEW YORK — JOHN L. ZAGA — 075923 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/30/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	02/28/18
4	4	PUBLIC HEARING- MANLIUS	04/25/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV- 21 LOT-MANLIUS	10/29/18
7	7	MANLIUS-21 HOME LOTS PLSET	11/09/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	12/18/19
12	12	MANLIUS- PLAN SUBMISSION	12/19/19
13	13	MANLIUS- PLAN SUBMISSION	02/11/20
14	14	MANLIUS- PLAN SUBMISSION	06/02/20

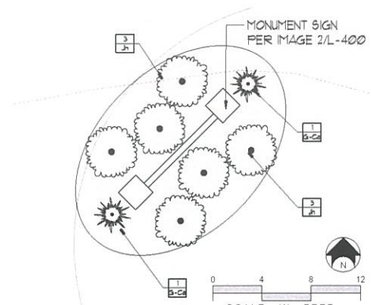
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STATE OF NEW YORK — 001373 — LICENSED LANDSCAPE ARCHITECT

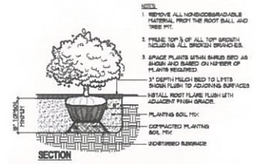
Drawn By: VER
Checked By: SF
KPA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title
LAYOUT PLAN

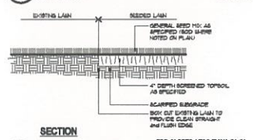
L-400



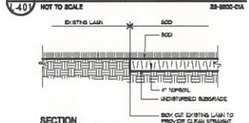
8 L-401 ENTRANCE PLANTING PARTIAL PLAN



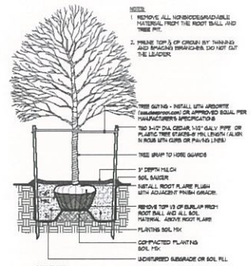
4 L-401 SECTION SHRUB PLANTING NOT TO SCALE S2-8300-02



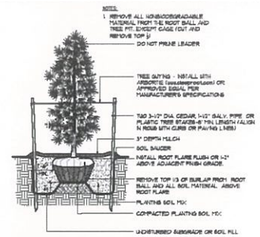
5 L-401 SECTION SEEDED LAWN NOT TO SCALE FOR SLOPES LESS THAN 10:1H AS INDICATED ON PLANS S2-8600-01A



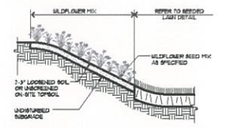
8 L-401 SECTION SODDED LAWN NOT TO SCALE S2-8600-01B



3 L-401 SECTION TREE PLANTING NOT TO SCALE S2-8300-01



2 L-401 SECTION EVERGREEN PLANTING NOT TO SCALE S2-8600-02



1 L-401 SECTION WILDFLOWER MIX/SEEDED LAWN NOT TO SCALE S2-8600-02

PLANT LIST

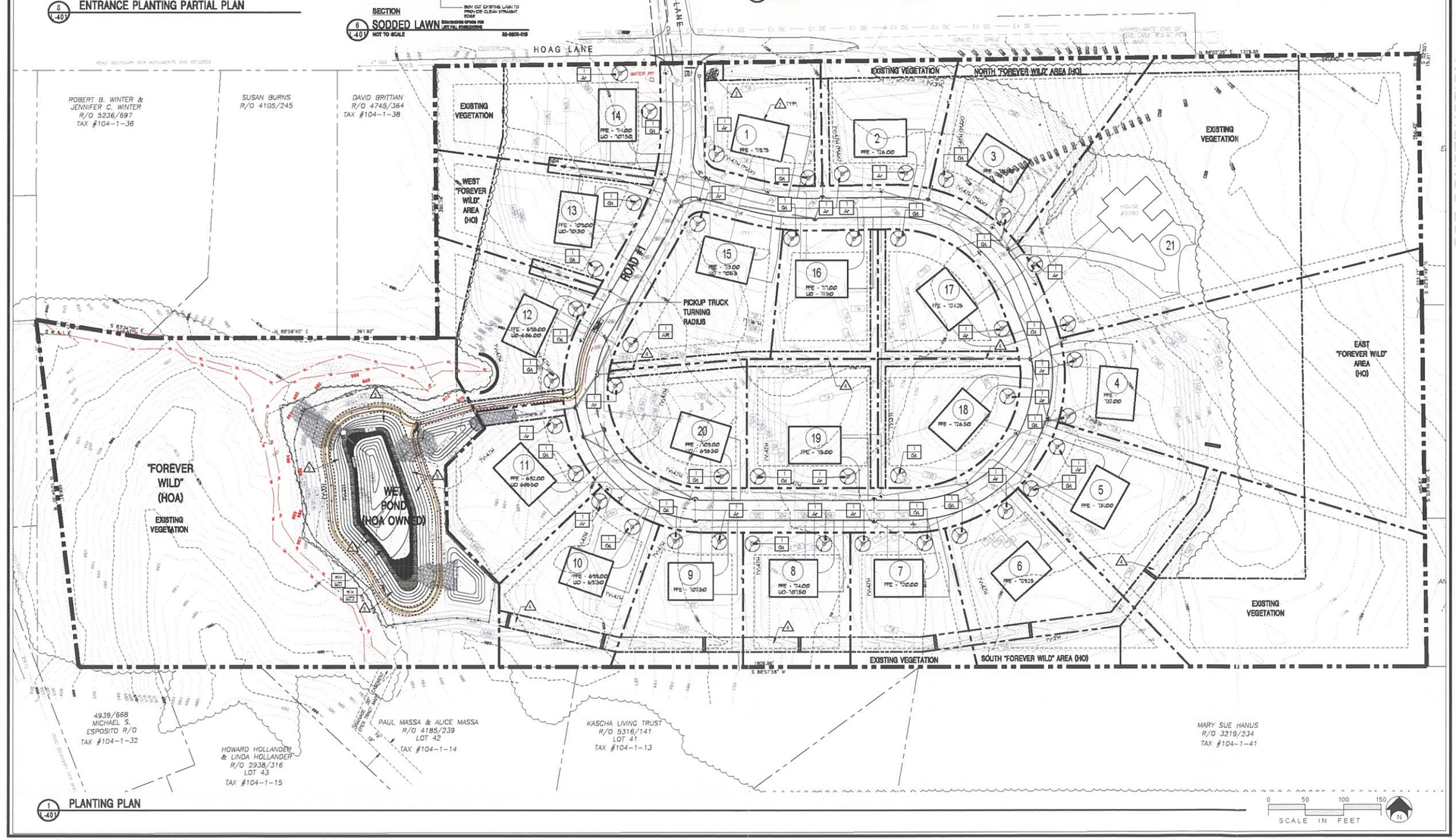
KEY:	COMMON NAME:	BOTANICAL NAME:	CALIPER:	HEIGHT:	CONDITION:
TREES					
Ar	BOUHALL MAPLE	ACER RUBRUM 'BOUHALL'	2"-3" CAL.	6'-8'	B&B
Bn	RIVER BIRCH	BETULA NIGRA	2"-3" CAL.	8' MIN.	B&B (CLUMP)
Gt	STREET KEEPER HONEYLOCUST	GLEDITSIA TRIACANTHOS 'DRAVES'	2"-3" CAL.	6'-8'	-
Ac	SINGLE STEM SERVICEBERRY	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	2"-3" CAL.	6'	B&B (CLUMP)
EVERGREENS					
Jh	ANDORRA JUNIPER	JUNIPERUS HORIZONTALIS 'YOUNGSTOWN'	-	1'-2'	5 GAL
Pg	NORWAY SPRUCE	PICEA ABIES	-	6'-8'	5 GAL
Pa	EASTERN WHITE PINE	PINUS STROBUS	-	6'-8'	-
Tp	EMERALD GREEN ARBORVITAE	THUJA OCCIDENTALIS 'SMARAGD'	-	48"	3 GAL
SHRUBS & GRASSES					
Cs	'KELSEY' REDTWIG DOGWOOD	CORNUS SERICEA 'KELSEY'	-	-	3 GAL
G-Cd	'KARL FOERSTER' FEATHER REED GRASS	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	-	-	1 GAL

PLANTING KEY NOTES

1. INSTALL WDI AND WD2 PER PLANT SCHEDULE/WET POND ONLY)
2. TOWN TO APPROVE LANDSCAPE DESIGN FOR LOTS PRIOR TO CONSTRUCTION.
3. PLANTINGS AT ENTRANCE PER PARTIAL PLAN 8/L-401.
4. INSTALL JUTE MESH PER DETAIL 6/L-3400.
5. INSTALL WILDFLOWER/ PERENNIAL RYE MIX PER SPECIFICATION SECTION 32 9300 WITHIN HOA OWNED WET POND AREA.

PLANTING SCHEDULE (WET POND ONLY)

KEY:	COMMON NAME:	BOTANICAL NAME:		CALIPER:	HEIGHT:	CONDITION:
(WZ1) WETLAND ZONE 1 PLANTS - @ 6" STANDING WATER						
WCl	LURID SEDGE	CAREX LURIDA	PLUGS	EQUALLY MIXED, 3' O.C.		
WCs	TUSSOCK SEDGE	CAREX STRICTA	PLUGS	EQUALLY MIXED, 3' O.C.		
WCv	FOX SEDGE	CAREX VULPINOIDEA	PLUGS	EQUALLY MIXED, 3' O.C.		
Wiv	BLUEFLAG IRIS	IRIS VERSICOLOR	PLUGS	EQUALLY MIXED, 3' O.C.		
WSc	WOOLGRASS	SCIRPUS CYPERINUS	PLUGS	EQUALLY MIXED, 3' O.C.		
(WZ2) WETLAND ZONE 2 PLANTS - 6-12" STANDING WATER						
WAp	WATER PLANTAIN	ALISMA PLANTAGO-AQUATICA	PLUGS	EQUALLY MIXED, 3' O.C.		
WPv	ARROWLEAF	PELTANDRA VIRGINICA	PLUGS	EQUALLY MIXED, 3' O.C.		
WPc	PICKEREL-WEED	PONTEDERIA CORDATA	PLUGS	EQUALLY MIXED, 3' O.C.		
WSI	COMMON ARROWHEAD	SAGITTARIA LATIFOLIA	PLUGS	EQUALLY MIXED, 3' O.C.		
WLt	LIZARD'S-TAIL	SAURURUS CERNUUS	PLUGS	EQUALLY MIXED, 3' O.C.		
WSt	SOFT-STEM BULRUSH	SCIRPUS TABERNAEMONTANI	PLUGS	EQUALLY MIXED, 3' O.C.		
WSa	AMERICAN BURREED	SPARGANIUM AMERICANUM	PLUGS	EQUALLY MIXED, 3' O.C.		



1 L-401 PLANTING PLAN

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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RZ Engineering PLLC
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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING-MANLIUS	05/28/18
4	4	PUBLIC HEARING-MANLIUS	06/04/18
5	5	TOWN REV-21 LOT-MANLIUS	06/27/18
6	6	TOWN REV-21 LOT-MANLIUS	10/22/18
7	7	MANLIUS-21 HOME LOTS-PL SD	11/29/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	10/02/19
12	12	MANLIUS- PLAN SUBMISSION	12/02/19
13	13	MANLIUS- PLAN SUBMISSION	12/19/19
14	14	MANLIUS- PLAN SUBMISSION	06/25/20

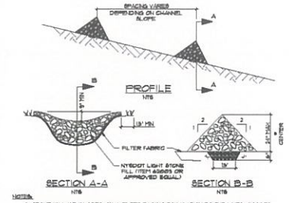
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Drawn By:	V.E.R.
Checked By:	R.F.
KFA Proj. No.:	37052
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
PLANTING PLAN

L-401

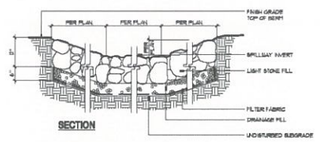
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NOTES:
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN AT 1 1/2 TON/LF.
2. ANY SPACING OR CHANGE DUE TO ANSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 18 FEET BEYOND THE DITCH LINING TO PREVENT CUTTING AROUND THE DAM.
4. KEY THE STONE INTO THE DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND PIPEWORK WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.
7. REFER TO NYS STANDARDS + SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.

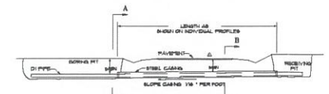
SECTION

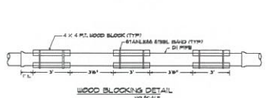
11 L-500 ROCK CHECK DAM
NOT TO SCALE — 31-1001-06

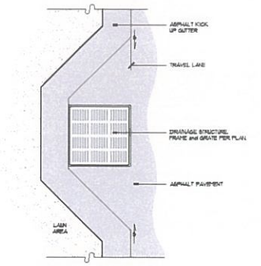


NOTES:
1. #57 MIX STONE SHALL BE ANGULAR LIMESTONE and MEET THE FOLLOWING NYSDOT SPECIFICATIONS
AASHTO LIGHT STONE FILL
AASHTO HEAVY STONE FILL
AASHTO HEAVY STONE FILL

12 L-500 EMERGENCY SPILLWAY
NOT TO SCALE — 33-4000-05B

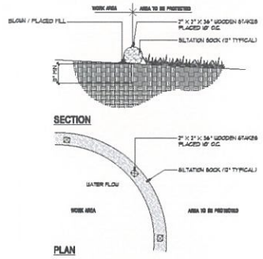






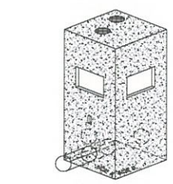
10 L-500 ASPHALT APRON @ INLET
NOT TO SCALE — 33-1216-15

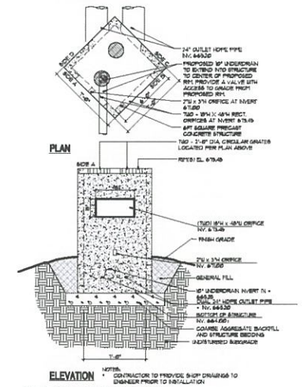
9 L-500 DETAIL OMITTED
NOT TO SCALE



NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

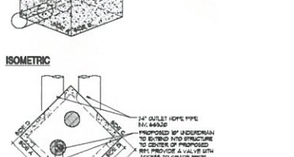
8 L-500 SILTATION SOCK SEDIMENT CONTROL
NOT TO SCALE — 31-5003-01





NOTES:
1. CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER PRIOR TO INSTALLATION.

16 L-500 OUTLET STRUCTURE
NOT TO SCALE — 33-4000-06



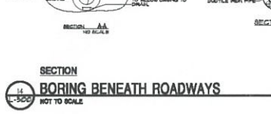
NOTES:
1. FABRICATE SIGN PANELS OF .080 ALUMINUM.
2. ALL SIGNS SHALL BE FURNISHED TO BE MOUNTED ON POST WITH GALVANIZED BOLTS, NUTS AND WASHERS.
3. FOR SIGN LEGEND INFORMATION, REFER TO THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
4. COORDINATE SIGN LOCATION TO AVOID UTILITIES.

21 L-500 TRAFFIC CONTROL SIGN
NOT TO SCALE — 33-4000-01

SIGN SCHEDULE

KEY	SIGN PLATE	SIGN SIZE MOUNTING HT.	NYSDOT, MUTCD, NO. / COMMENTS
A	STOP	24" X 24" 7'-0" HT.	SIGN NO. R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT NY.S.D.O.T. MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

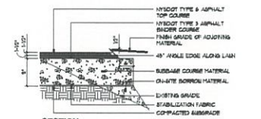


SECTION

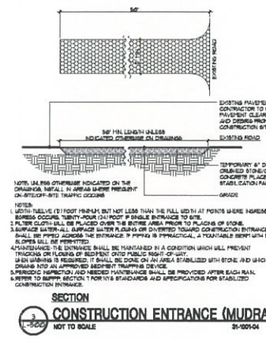
14 L-500 BORING BENEATH ROADWAYS
NOT TO SCALE — 33-5015-05

	PIPE DATA			
	CARRIER PIPE		CASING PIPE	
NOMINAL SIZE OF PIPE	8"	12"	18"	24" Δ
OUTSIDE DIAMETER (INCHES)	8.63"	12.75"	18.75"	24.75"
INSIDE DIAMETER	8.25"	12.09"	18"	24"
WALL THICKNESS	0.25"	0.33"	0.375"	0.375"
WEIGHT PER FOOT	28 lbs. ±	49 lbs. ±	80 lbs. ±	994 lbs. ±
MATERIAL	DUCTILE IRON		STEEL	
PROCESS OF MANUFACTURE	CENTRIFUGAL CAST		RPW	
SPECIFICATION	ANSI A21.51 AWWA C151		ASTM A139 GRADE B (ELECTROFUSION)	
GRADE OF CLASS	CLASS 50		SCHEDULE 40	
TYPE OF JOINT	MECHANICAL JOINT		WELDED	
TYPE OF COATING	1/2" CEMENT LINED (STD. - STANDARD)		NONE	
CATHODIC PROTECTION	NONE		ANODE BAG	
SEAL AT END OF CASING	N/A		BRICK AND MORTAR	
METHOD OF INSTALLATION	N/A		BORE + JACK	

6 L-500 DETAIL OMITTED
NOT TO SCALE

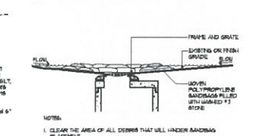


7 L-500 ASPHALT PAVEMENT - DRIVEWAY
NOT TO SCALE BY HOMEOWNERS — 33-1216-01

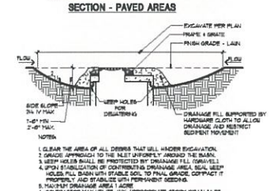


NOTES:
1. WIDTH TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS, TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
2. FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
3. SURFACE WATER ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE IF PIPING IS IMPRACTICAL, A TEMPORARY SWITCH WITH FLUMES WILL BE PERMITTED.
4. MAINTENANCE THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN. 6. REFER TO SUPPLEMENTARY SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE.

2 L-500 CONSTRUCTION ENTRANCE (MUDRACK)
NOT TO SCALE — 31-1001-04

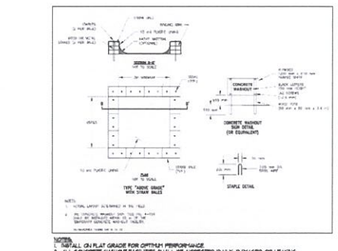


NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER BAGGING AND PLACEMENT.
2. BAGS SHALL BE PLACED ON EXISTING GRADE AND STACKED IF NECESSARY TO ELIMINATE DIVERSION FROM EXISTING STRUCTURE.
3. CONTRACTOR SHALL USE A WOVEN POLYPROPYLENE BAGS FILLED WITH WASHED #3 STONE OR AN APPROVED EQUAL.
4. CONTRACTOR SHALL MAINTAIN, REPAIR and REPLACE DAMAGED OR WORN BAGS.



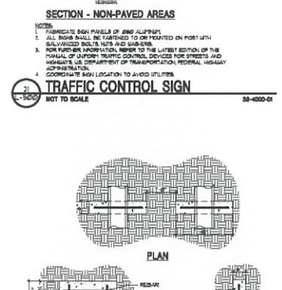
NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE AREA AS SHOWN ON THE PLANS TO PROVIDE UNIFORM GRADE FOR BASIN.
3. EXCAVATE BASIN TO PROPER GRADE AND SHAPE AS SHOWN.
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY, AND STABILIZE WITH PERMANENT MEDIA.
5. MAXIMUM DRAINAGE AREA 1 ACRE.
6. CONTRACTOR SHALL UTILIZE ANY APPROPRIATE STORM DRAIN INLET MEASURE UNDER COMPLIES WITH NYS STANDARDS + SPECIFICATIONS FOR EROSION + SEDIMENT CONTROL REFER TO SUPPLEMENTARY SECTION FOR NYS STANDARDS + SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION.
7. SEDIMENT SHALL BE REMOVED FROM BASIN WHEN IT REACHES A DEPTH OF 600 MM AROUND STRUCTURE.

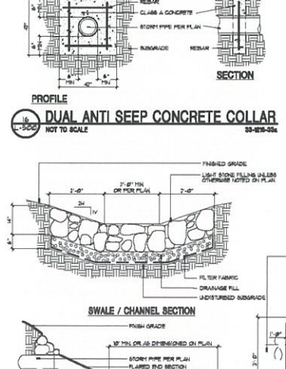
5 L-500 DRAINAGE STRUCTURE PROTECTION
NOT TO SCALE — 31-1001-02


PAVING
3" MIN. CONCRETE
CONCRETE WASHOUT SIGN
TYPE "CURB" INLET WITH STONE SACS
DAM WITH STONE SACS
SIDE SEAL
NOTES:
1. INSTALL CONCRETE WASHOUT FACILITIES PRIOR TO CONCRETE PLACEMENT.
2. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED AND REPAIRED OR REPLACED IMMEDIATELY. EVIDENCE MANAGEMENT THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHALL BE PUMPED TO A DESIGNATED AREA, SUCH AS GARBAGE FILTER STRIP.
3. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF STORAGE CAPACITY HAS BEEN REACHED. ALL WASTE MATERIAL FROM THE WASHER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF SITE.
4. DISPOSE OF HARDENED MATERIAL OFF-SITE IN A CONSTRUCTION/DEMOLITION FILL LANDFILL. ON-SITE DISPOSAL MAY BE ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE SUBMITTAL. IN THIS CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF 2 FEET OF CLEAN COMPACTED EARTHFILL THAT IS PERMANENTLY STABILIZED TO PREVENT EROSION.
5. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF WASHOUT FACILITY.
6. INSPECT THE PRODUCT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

19 L-500 CONCRETE WASHOUT
NOT TO SCALE — 31-5004-10

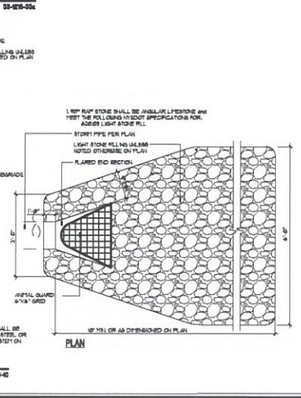
18 L-500 DUAL ANTI SEEP CONCRETE COLLAR
NOT TO SCALE — 33-5015-03A



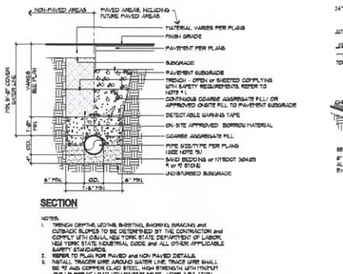


NOTE: FLARED END SECTION SHALL BE CONSTRUCTED OF GALVANIZED STEEL, OR ALUMINUM WITH SAFETY BAR SYSTEM ON OPENING 9" OR LARGER.

9 L-500 FLARED END SECTION
NOT TO SCALE — 33-4000-02

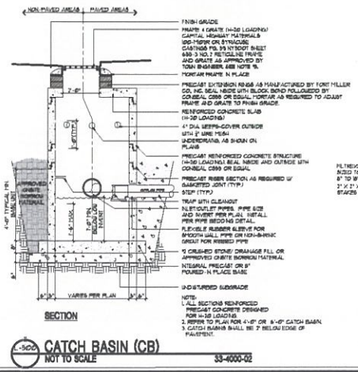

NON-PAVED AREAS
PAVED AREAS
FINISH GRADE
TRAPPE & GRATE - CAPITAL IRON BABY MATERIALS 600-110SW OR SYRACUSE CASTINGS No. 55 W/ BODY SHEET 660-3 NO. 1 RETICULINE TRAPPE AND GRATE AS APPROVED BY TOWN ENGINEER
MORTAR TRAPPE IN PLACE
PRECAST EXTENSION RINGS AS MANUFACTURED BY FORT MILLER CO., INC. SEAL INSIDE WITH BLOCK BOND FOLLOWED BY CONSEAL CS55 OR EQUAL MORTAR AS REQUIRED TO ADJUST TRAPPE AND GRATE TO FINISH GRADE.
REINFORCED CONCRETE SLAB (H-20 LOADING)
#1 DIA. WELDED-COVER OUTSIDE WITH 2" WIRE MESH UNDERGROUND, AS SHOWN ON PLANS
PRECAST REINFORCED CONCRETE STRUCTURE (H-20 LOADING) SEAL INSIDE AND OUTSIDE WITH CONSEAL CS55 OR EQUAL
PRECAST RISER SECTION AS REQUIRED W/ GASKETED JOINT (TYP.)
STEP (TYP.)
TRAP WITH CLEANOUT
INLET/OUTLET PIPES, PIPE SIZE AND INVERT PER PLAN. INSTALL PER PIPE BEDDING DETAIL.
FLEXIBLE RUBBER SLEEVE FOR SMOOTH WALL PIPE OR NON-SHRINK GROUT FOR RIBBED PIPE
5' CRUSHED STONE DRAINAGE FILL OR APPROVED GRAVITY BEARING MATERIAL
INTEGRAL PRECAST OR POURED-IN-PLACE BASE
UNDISTURBED SUBGRADE
NOTES:
1. ALL SECTIONS REINFORCED PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
2. ADD PRECAST CONCRETE RISER(S) AS REQUIRED.
3. PROVIDE SOLID COVER WHERE INDICATED ON PLANS.
SECTION

17 L-500 STORM INLET (SI)
NOT TO SCALE — 33-4000-01A

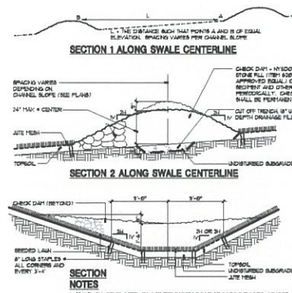


NOTES:
1. TRENCH DEPTHS, WIDTHS, SHEETING, BRACING, and DEWATERING SHALL COMPLY TO BE DESIGNED BY THE CONTRACTOR and COMPLY WITH OSHA, NEW YORK STATE DEPARTMENT OF LABOR, NEW YORK STATE INDUSTRIAL CODES and ALL OTHER APPLICABLE SAFETY STANDARDS.
2. REFER TO PLAN FOR PAVED and NON PAVED DETAILS.
3. INSTALL TRACER WIRE AROUND EATER LINE. TRACE WIRE SHALL BE 10 AWG COPPER CLAD STEEL, WITH STRENGTH 17H PSI and 4500 LBS BREAK LOAD WITH MINIMUM 30 MIL HDPE INSULATION THICKNESS.

7 L-500 PIPE BEDDING
NOT TO SCALE — FOR STORM SANITARY, and WATER PIPE — 33-4000-20A

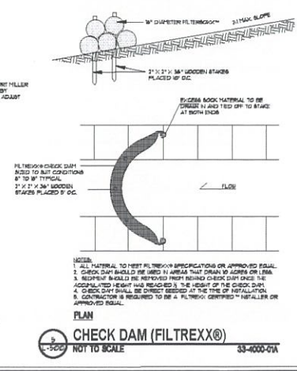

NON-PAVED AREAS
PAVED AREAS
FINISH GRADE
TRAPPE & GRATE (H-20 LOADING) CAPITAL HIGHWAY MATERIALS 600-110SW OR EQUIVALENT CASTINGS No. 55 W/ BODY SHEET 660-3 NO. 1 RETICULINE TRAPPE AND GRATE AS APPROVED BY TOWN ENGINEER, SEE NOTE 1).
MORTAR TRAPPE IN PLACE
PRECAST EXTENSION RINGS AS MANUFACTURED BY FORT MILLER CO, INC. SEAL INSIDE WITH BLOCK BOND FOLLOWED BY CONSEAL CS55 OR EQUAL MORTAR AS REQUIRED TO ADJUST TRAPPE AND GRATE TO FINISH GRADE.
REINFORCED CONCRETE SLAB (H-20 LOADING)
#1 DIA. WELDED-COVER OUTSIDE WITH 2" WIRE MESH UNDERGROUND, AS SHOWN ON PLANS
PRECAST REINFORCED CONCRETE STRUCTURE (H-20 LOADING) SEAL INSIDE AND OUTSIDE WITH CONSEAL CS55 OR EQUAL
PRECAST RISER SECTION AS REQUIRED W/ GASKETED JOINT (TYP.)
STEP (TYP.)
TRAP WITH CLEANOUT
INLET/OUTLET PIPES, PIPE SIZE AND INVERT PER PLAN. INSTALL PER PIPE BEDDING DETAIL.
FLEXIBLE RUBBER SLEEVE FOR SMOOTH WALL PIPE OR NON-SHRINK GROUT FOR RIBBED PIPE
5' CRUSHED STONE DRAINAGE FILL OR APPROVED GRAVITY BEARING MATERIAL
INTEGRAL PRECAST OR POURED-IN-PLACE BASE
UNDISTURBED SUBGRADE
NOTES:
1. ALL SECTIONS REINFORCED PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
2. REFER TO PLAN FOR 4'-0" OR 5'-0" CATCH BASIN.
3. CATCH BASINS SHALL BE 3' BELOW EDGE OF PAVEMENT.
SECTION

4 L-500 CATCH BASIN (CB)
NOT TO SCALE — 33-4000-02



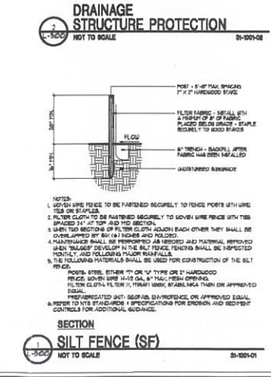
NOTES
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. KEY SPACING OF CHECK DAMS TO ANSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 18 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.

6 L-500 JUTE MESH SWALE W/ CHECK DAM
NOT TO SCALE — 31-1001-03B



NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS OR APPROVED EQUAL.
2. CHECK DAM SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. RECIPIENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM SHALL BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX® CERTIFIED INSTALLER OR APPROVED EQUAL.

3 L-500 CHECK DAM (FILTREXX®)
NOT TO SCALE — 33-4000-01A



NOTES:
1. USE SILT FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. USE SILT FENCE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX (6) INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS REQUIRED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, FENCING SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL.
5. THE FOLLOWING MATERIALS SHALL BE USED FOR CONSTRUCTION OF THE SILT FENCE:
POSTS: STEEL EITHER T OR U TYPE OR 2" HARDWOOD
FENCE: WOVEN WIRE (14-15 GA. 6" MAX. MESH OPENING
FILTER CLOTH: FILTREXX, TYPAR, GEOFAB, MIRAFI 100X OR APPROVED EQUAL
REINFORCEMENT UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL
6. REFER TO NYS STANDARDS + SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.

1 L-500 SILT FENCE (SF)
NOT TO SCALE — 31-1001-01

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6326 FAY ROAD, SUITE 100 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 446-1300 FAX: (315) 446-1301

RZ Engineering PLLC
5326 FAY ROAD SUITE 201
EAST SYRACUSE, NY 13057
PH. 315.422.3911 FAX 315.445.7741

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/31/18	8	8	21 LOT SITE PLAN REVISIONS	01/08/19
2	2	CHECK SET-TOWN OF MANLIUS	02/26/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING MANLIUS	03/29/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING MANLIUS	04/26/18	11	11	MANLIUS PLAN SUBMISSION	08/23/19
5	5	PUBLIC HEARING MANLIUS	05/31/18	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN REV-21 LOT-MANLIUS	10/29/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS PL	11/09/18	14	14	MANLIUS PLAN SUBMISSION	02/13/20

Δ Symbol Indicates Revision Issued

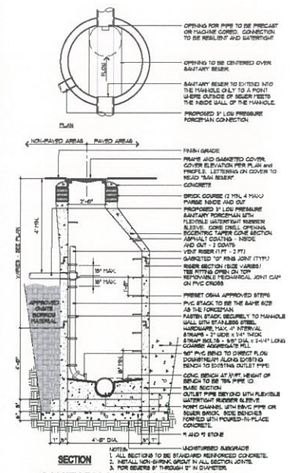
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Date: DECEMBER 1, 2017
Scale: AS NOTED
Title:

DETAILS

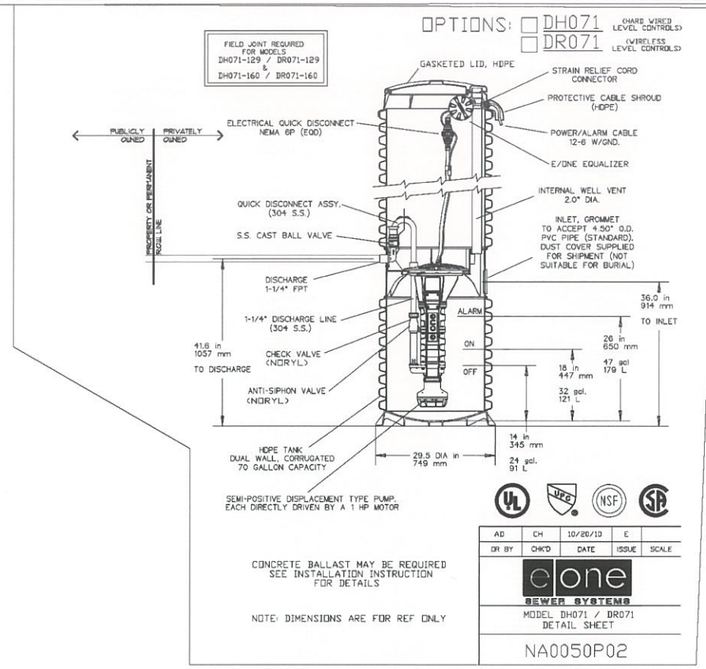
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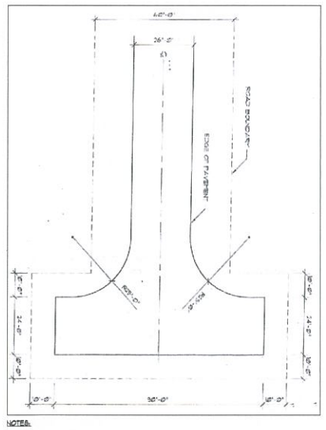


NOTES:
1. ALL SECTIONS TO BE STANDARD REINFORCED CONCRETE.
2. INSTALL NON-SHRINK GROUT IN ALL SECTION JOINTS.
3. FOR SEWERS 8" THROUGH 9" IN DIAMETER.



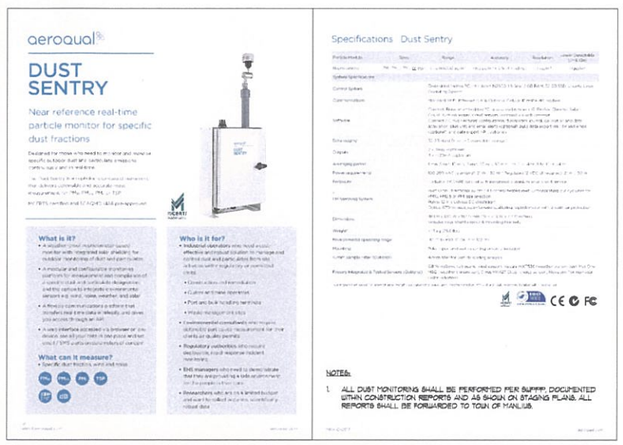
NOTES:
1. DETAIL SHOWS TYPICAL UNIT ONLY. DESIGN AND SPECIFICATIONS BY EONE OR APPROVED EQUAL.
2. CONTRACTOR TO SUBMIT SHOP DRAWINGS/DESIGN FOR PUMPS AND LOW PRESSURE SEWER SYSTEM FROM MANUFACTURER FOR RCE / TOWN ENGINEER REVIEW PRIOR TO CONSTRUCTION.
3. BATTERY BACKUP BY HOMEOWNER (OPTIONAL)

7 L-501 **SANITARY PUMP STATION**
NOT TO SCALE



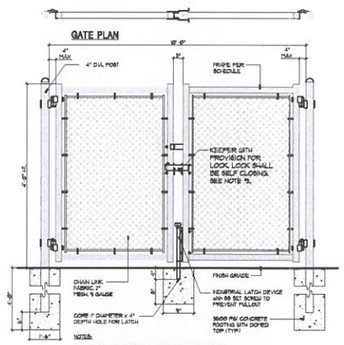
NOTES:
1. REFER TO STAGING PLANS 1-4 (L-152 THRU L-155) FOR TURN AROUND LOCATIONS.

8 L-501 **TOWN OF MANLIUS - TEMPORARY TURNAROUND AND EASEMENT**
NOT TO SCALE



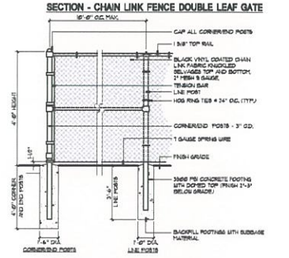
NOTES:
1. ALL DUST MONITORING SHALL BE PERFORMED PER SWPPP, DOCUMENTED WITH CONSTRUCTION REPORTS AND AS SHOWN ON STAGING PLANS. ALL REPORTS SHALL BE FORWARDED TO TOWN OF MANLIUS.

8 L-501 **DUST MONITORING DEVICE (OR APPROVED EQUAL)**
NOT TO SCALE



NOTES:
1. CHAIN LINK FENCE SHALL BE BLACK VINYL COATED.
2. TOP OF FOOTING SHALL BE 2" BELOW FINISH GRADE IN LAWN AREAS.
3. FENCE LOCK KEY SHALL BE PROVIDED TO TOWN BY HOA WHICH IS TO BE INSTALLED GATE SHALL BE LOCATED AT ALL TYPES OTHER THAN CLOSING END OF CUL-DE-SACS.
4. ALL FENCE AND GATE COMPONENTS TO COMPLY WITH PARTS 138 AND 144 OF THE NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE, AS AMENDED INCLUDING BUT NOT LIMITED TO MESH, POSTS, LOCK, AND HINGES.

SECTION - CHAIN LINK FENCE DOUBLE LEAF GATE

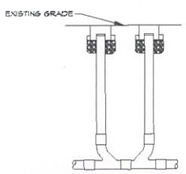


POST SIZE/SCALE		
FABRIC HEIGHT	LINE POST OD	END / CORNER POST OD
4'	2 1/2"	3 1/2"

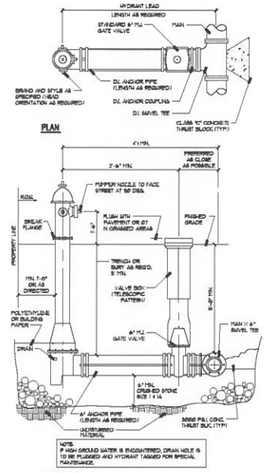
NOTES:
1. HOLD TOP OF FOOTING AT ASPHALT BINDER SUBGRADE WHEN CL FENCE FOOTINGS ARE LOCATED IN ASPHALT PAVEMENT.

SECTION - CHAIN LINK FENCE

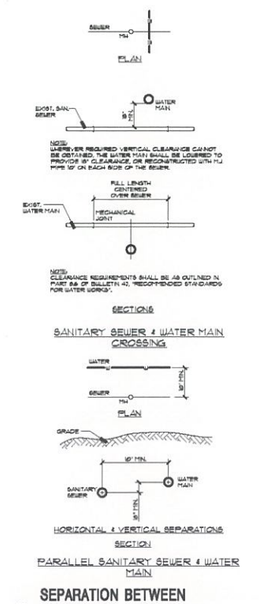
6 L-501 **CHAIN LINK FENCE - VINYL CLAD FENCE AND GATE**
NOT TO SCALE 33-01S-01B



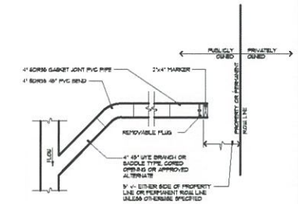
5 L-501 **BACK TO BACK WYE CLEANOUT**
NOT TO SCALE



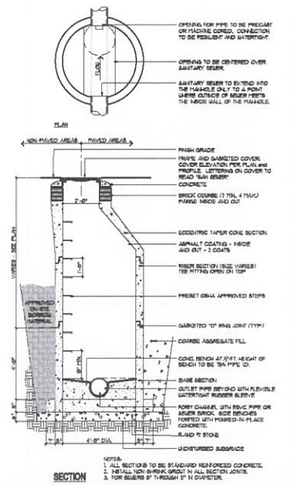
4 L-501 **HYDRANT INSTALLATION DETAILS**
N.T.S. D-HYDRANT



3 L-501 **SEPARATION BETWEEN SEWER AND WATER LINES**
N.T.S. D2000-07



MAIN CONNECTION-GRAVITY LATERAL
NOT TO SCALE SAN-STNDRD-LTRL



NOTES:
1. ALL SECTIONS TO BE STANDARD REINFORCED CONCRETE.
2. INSTALL NON-SHRINK GROUT IN ALL SECTION JOINTS.
3. FOR SEWERS 8" THROUGH 9" IN DIAMETER.

1 L-501 **SANITARY MANHOLE (#1, 2, 4, 5, 6, 7, 5B, 5C)**
NOT TO SCALE D2000-01B

SANITARY NOTES

1. SANITARY SEWER MAIN SHALL BE SIZED PER PLAN DIAMETER, PVC SEWER PIPE, ASTM D-3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH NO DEVIATION FROM TRUE LINE AND GRADE GREATER THAN 1/4-INCH.

2. CONNECTION OF NEW 8-INCH SEWER TO EXISTING MANHOLE SHALL NOT BE COMMENCED BEFORE NOTICE IS GIVEN TO THE TOWN OF MANLIUS. THE OPENING IN THE MANHOLE WALL FOR THE NEW SEWER SHALL BE "CORE DRILLED" AND BE OF ADEQUATE SIZE SUCH THAT THE PIPE SHALL BE MADE WATER TIGHT WITH "LINKSEAL".

3. SEWER LATERALS SHALL BE 6-INCH DIAMETER, PVC SEWER PIPE, ASTM D-3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. WYE BRANCHES SHALL BE USED FOR ALL LATERAL CONNECTIONS. ALL SEWER LATERALS SHALL BE EXTENDED TO THE SEWER RIGHT-OF-WAY. MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 2% (1/4 "FT.) PER ONONDAGA COUNTY PLUMBING CODE.

4. THE EXCAVATION SHALL BE A MINIMUM OF ONE (1) FOOT EACH SIDE OF THE PIPE AND SHALL BE A MINIMUM OF SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE. THE CONTRACTOR SHALL PROVIDE ALL DRAINS, DITCHES, PUMPS, WELLS, WELL POINTS, SUMPS, CUTOFF TRENCHES, SHEETING OR OTHER EQUIPMENT AND STRUCTURES NECESSARY TO CONTROL THE FLOW OF SURFACE WATER OR GROUNDWATER INTO THE EXCAVATION SUCH THAT NO STANDING WATER EXISTS IN THE EXCAVATION AT SIX (6) INCHES BELOW THE BOTTOM OF THE PIPE.

5. PIPE BEDDING SHALL BE #1 WASHED STONE AND SHALL EXTEND FROM 6-INCHES BELOW THE BOTTOM OF THE PIPE TO 1-FOOT ABOVE THE TOP OF THE PIPE. PIPE BEDDING SHALL BE SHAPED AND COMPACTED TO CONFORM THE BARREL OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE COMMON FILL, FREE OF ROCKS LARGER THAN 6-INCHES IN DIAMETER, FROZEN MATERIAL, ROOTS, STUMPS OR OTHER ORGANIC MATERIAL. COMPACTION OF 95% OF THE STANDARD PROCTOR FOR ALL BACKFILL MATERIALS IS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT, R.O.C. IS REQUIRED UNDER ROADS.

6. MANHOLES SHALL BE MADE OF PRECAST CONCRETE SECTIONS CONFORMING TO ASTM C-478. THE MANHOLE SECTIONS SHALL BE JOINED WITH AN "O" RING GASKET MEETING ASTM C-443 AND SHALL BE PARGED INSIDE AND OUT WITH NON-SHRINK GROUT. THE TOP SECTION SHALL BE AN "ECCENTRIC TAPER TOP."

7. ALL SANITARY SEWER CONNECTIONS TO MANHOLES SHALL BE MADE WITH FLEXIBLE RUBBER SLEEVES WITH STAINLESS STEEL HARDWARE.

8. THE FLOW CHANNEL IN EACH MANHOLE SHALL BE CAREFULLY SHAPED TO MATCH THE INVERTS AND PIPE SIZES WHICH CONNECT TO THE MANHOLE TO CREATE A SMOOTH AND GRADUAL FLOW AND CURVATURE SUCH THAT FLOW THROUGH THE MANHOLE IS LAMINAR AND UNINTERRUPTED.

9. MANHOLE FRAMES AND COVERS SHALL BE CAST IRON CONFORMING TO ASTM A-48 CLASS 30 AND HAVE A 24-INCH OPENING. MANHOLE FRAME AND COVER SHALL BE SYRACUSE CASTING MODEL NO. 1040B OR EQUAL. MANHOLES SHALL BE PROVIDED WITH STEPS MADE OF STEEL REINFORCED COPOLYMER IN COMPLIANCE WITH ASTM C-478, PARA 11.

10. THE COMPLETED SEWER SHALL BE LAMPED TO VERIFY STRAIGHTNESS. MANHOLES TO BE INCLUDED IN TEST CHECKED FOR DEFLECTION WITH A 150-NO-GO MANDREL AND TESTED FOR LEAKAGE BY LOW PRESSURE AIR. THE 150-NO-GO TEST SHALL DEMONSTRATE THAT NO DEFLECTION GREATER THAN 5% HAS OCCURRED. THE LOW PRESSURE AIR TEST SHALL BE IN ACCORDANCE WITH UNI-B-6. THE MAXIMUM ALLOWABLE PRESSURE DROP SHALL BE 1.0 PSIG AT A TEST PRESSURE OF 3.0 PSIG OBSERVED FOR 10 MINUTES.

11. CONTRACTOR SHALL CONTACT UPPO 48 HOURS BEFORE THE START OF ANY EXCAVATION AND SHALL NOTIFY THE TOWN ENGINEER 72 HOURS BEFORE COMMENCEMENT OF CONSTRUCTION.

12. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2" X 4" S EXTENDING 4' ABOVE FINISHED GRADE AND THE TOP 12 INCHES OF THE 2" X 4" SHALL BE PAINTED OR SPRAYED RED.

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	8/17/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	8/25/18	9	9	MANLIUS PLAN SUBMISSION	05/14/19
3	3	PUBLIC HEARING MANLIUS	9/26/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING MANLIUS	10/3/18	11	11	MANLIUS PLAN SUBMISSION	07/29/19
5	5	PUBLIC HEARING MANLIUS	10/23/18	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN REV - 21 LOTS MANLIUS	10/23/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PL REV	11/09/18	14	14	MANLIUS PLAN SUBMISSION	05/15/20

△ Symbol Indicates Revision Issued

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Date: DECEMBER 1, 2017
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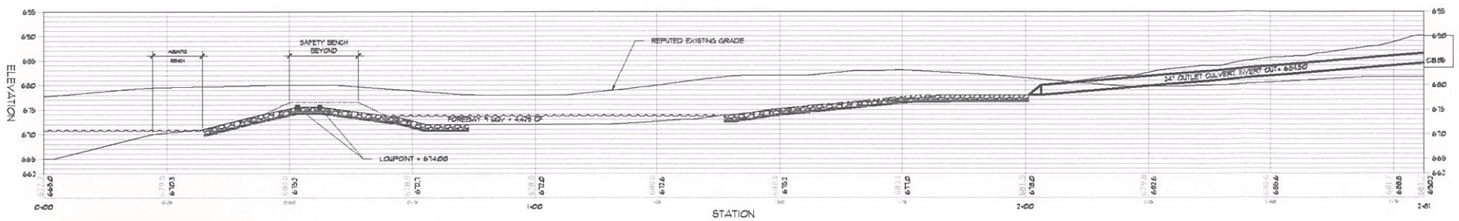
DETAILS

L-501

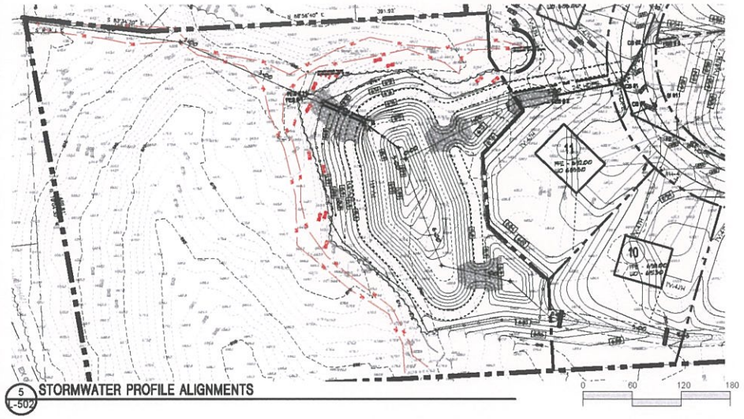
KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 103 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 446-1580 FAX: (315) 446-1581
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5109 RT 31 WEST SUITE 201 EAST SYRACUSE, NY 13057
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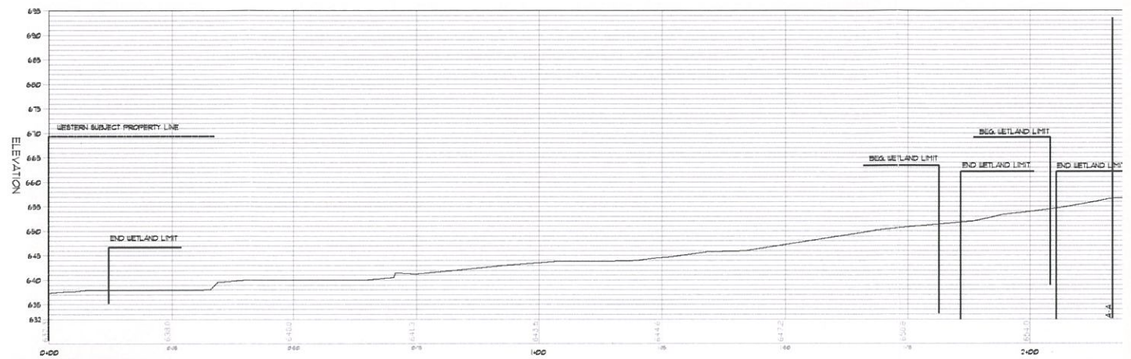
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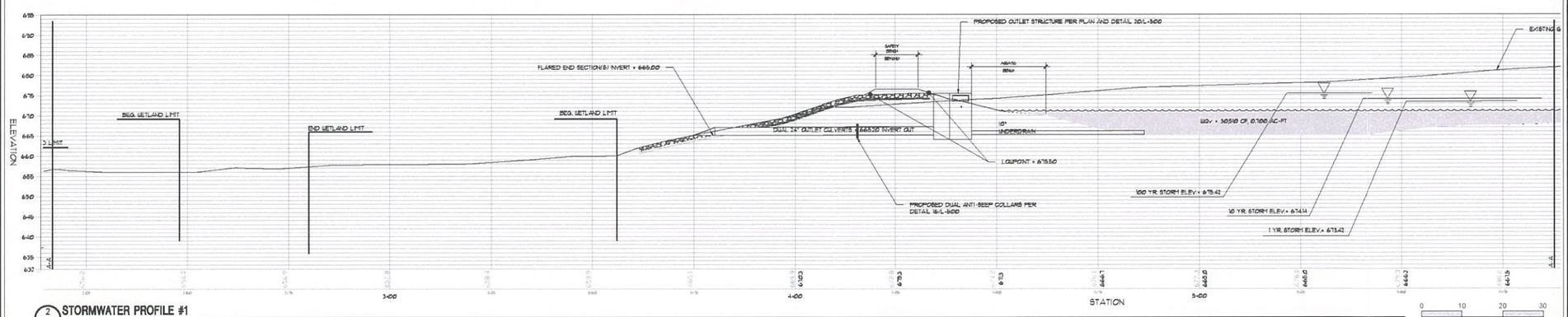
4 L-502 **STORMWATER PROFILE #2**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10



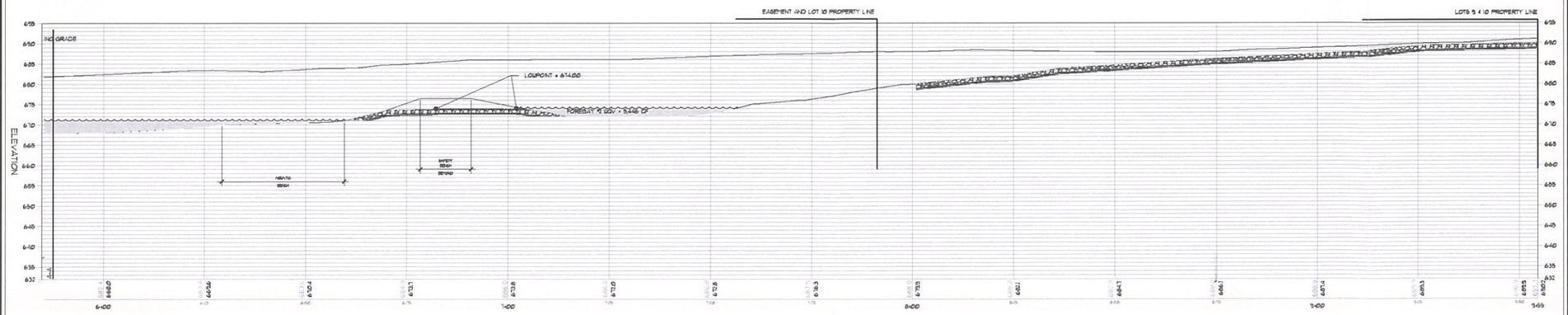
5 L-502 **STORMWATER PROFILE ALIGNMENTS**



3 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10



2 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10



1 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

KZA ENGINEERING, SURVEYING, LANDSCAPE ARCHITECTURE, AND PLANNING
KZ Engineering, PLLC

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No	Rev.	Description	Date	No	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/30/18	8	8	11 LOT SUBDIVISION	04/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/30/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING-MANLIUS	05/29/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING-MANLIUS	06/04/18	11	11	MANLIUS PLAN SUBMISSION	08/29/19
5	5	PUBLIC HEARING-MANLIUS	06/07/18	12	12	MANLIUS PLAN SUBMISSION	12/19/19
6	6	TOWN OF MANLIUS	08/07/18	13	13	MANLIUS PLAN SUBMISSION	03/06/20
7	7	MANLIUS-21 HOME LOTS-PLRB	11/09/18	14	14	MANLIUS PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

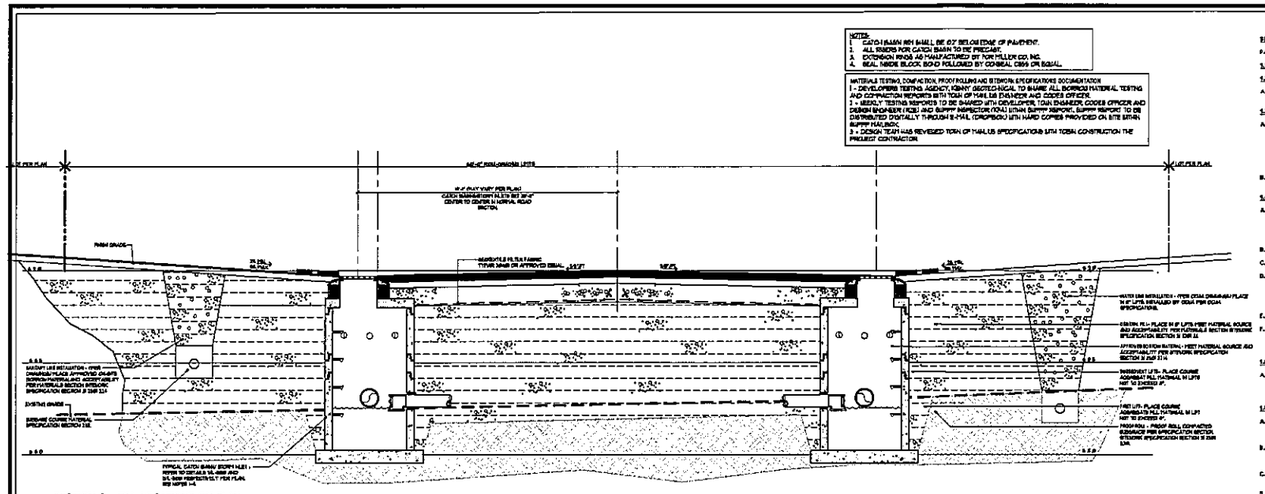
Drawn By:	VER
Checked By:	SF
KZA Proj. No.:	31050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
STORMWATER PROFILES

L-502

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Date Plotted:
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SECTION 31 2201 - SITEWORK EXCAVATION, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 TOWN OF MANLIUS, NY HIGHWAY SPECIFICATIONS - INCLUDED

1.2 EXAMINATION OF EXISTING GRADES

A. EXAMINE GRADES AND NOTIFY ARCHITECT OF DISCREPANCIES, IF ANY, BEFORE PROCEEDING. START OF WORK IMPLIES ACCEPTANCE OF EXISTING GRADES

1.3 SUBMITTALS

A. MATERIAL CERTIFICATES (INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS (LS) BEARING NAME AND LOCATION OF QUARRY SAMPLE (S) OF MATERIAL REQUIRED (2#) POSIMARK VOLUME 1775 IN A WATER PROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS:
1. SUBBASE MATERIAL (NYSDOT #4) (INCLUDING MOISTURE DENSITY CURVES AND GS)
2. COARSE AGGREGATE FILL (NYSDOT #2) AND (GS)
3. DRAINAGE FILL (NYSDOT #6) AND (GS)
4. APPROVED ON SITE BORROW MATERIAL
B. MANUFACTURER'S DATA SHEETS AND PRODUCT SAMPLE (S) REQUIRED FOR THE FOLLOWING MATERIALS:
1. STABILIZATION FABRIC (NYSDOT #2) AND (S)

1.4 DEFINITIONS

A. RESIDENT ENGINEER, REFERS TO THE PROFESSIONAL ENGINEER EMPLOYED BY THE DEVELOPER TO SUPERVISE THE WORK OF THE DEVELOPER AND THEREAFTER TO CERTIFY TO THE TOWN THAT THE ITEMS OF WORK CONSTRUCTED BY THE DEVELOPER ARE BUILT IN ACCORDANCE WITH THE APPROVED PLANS. AT COMPLETION OF ALL WORK, A COMPLETE SET OF AS BUILT DRAWINGS SHALL BE SUBMITTED TO THE TOWN. THIS SET OF DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY THE DEVELOPER'S ENGINEER.
B. TOWN ENGINEER, IS THAT PERSON OR FIRM EMPLOYED OR RETAINED BY THE TOWN TO REPRESENT AND/OR ADVISE THE TOWN IN ALL MATTERS OF AN ENGINEERING NATURE.
C. HIGHWAY SUPERINTENDENT, REFERS TO THE SUPERINTENDENT OF HIGHWAYS EMPLOYED BY THE TOWN.
D. SUBCONTRACTOR, IS THAT PERSON, COMPANY OR CORPORATION THAT IS THE OWNER OF THE LANDS AS SHOWN ON THE FINAL APPROVED SUBDIVISION PLAN, THE DEVELOPER SHALL BE RESPONSIBLE FOR ANY AND ALL DAMAGES TO THESE PROPERTIES AND/OR ROADWAYS, AS WELL AS ANY EXISTING SURROUNDING TOPOGRAPHY OF THE LANDS, WHICH MAY BE DAMAGED BY THE DEVELOPER. THE DEVELOPER SHALL REQUIRE THE CONTRACTOR EMPLOYED BY HIM TO PERFORM THE CONSTRUCTION WORK TO COMPLY WITH THE ABOVE MENTIONED SPECIFICATIONS AND REGULATIONS.
E. ROADWAY IS THAT PORTION OF THE RIGHT-OF-WAY THAT IS DISTURBED FOR PURPOSES OF CONSTRUCTING AND ROAD SECTION INCLUDING PAVEMENT, GUTTER, CURBS AND BACK SLOPES
F. TESTING AGENCY REFERS TO TOWN OF MANLIUS APPROVED TESTING AGENCY TO PERFORM ALL SERVICES LISTED WITHIN SPECIFICATION FOR TESTING OF SUBGRADES, ROAD FILL PLACEMENT AND EMBANKMENT PLACEMENT. INCLUDES TESTING OF APPROVED ON-SITE BORROW MATERIAL.

1.5 PLANS

A. PLANS SHOWING ORIGINAL GROUND ELEVATIONS AND FINISHED GRADES, CENTERLINE PROFILES, TYPICAL CROSS-SECTION AND PROPOSED DRAINAGE FACILITIES SHALL BE SUBMITTED TO THE TOWN BOARD AND THE HIGHWAY SUPERINTENDENT BEFORE FINAL APPROVAL CAN BE GIVEN. NO CONSTRUCTION SHALL BE COMMENCED UNTIL SUCH APPROVAL HAS BEEN GIVEN.

1.6 STANDARDS (see Town Subdivision Regulations Chapter 137)

A. GRADE: THE ROAD SHALL NOT BE LESS THAN 1% NOR MORE THAN 7% FOR MINOR ROADS AND 3% FOR CUL-DE-SACS AND HAMMERHEAD TURN AROUNDS UNLESS OTHERWISE APPROVED BY THE HIGHWAY SUPERINTENDENT. THE ROAD GRADE AT INTERSECTIONS SHALL NOT EXCEED 3% FOR A DISTANCE OF 100 FEET IN ANY DIRECTION FROM THE POINT OF INTERSECTION.
B. WIDTH OF WAY: THE RIGHT-OF-WAY WIDTH SHALL NOT BE LESS THAN 50 FEET IN WIDTH AND WITH A 80 FOOT RADIUS AT THE CUL-DE-SAC TURN AROUNDS. THE BACK SLOPE FROM THE EDGE OF THE ROADWAY TO THE TOP OF RIGHT-OF-WAY SHALL NOT EXCEED 3:1 WHEREVER PRACTICAL AND SHALL BE GRADED TO CONFORM IN GENERAL WITH THE ROAD GRADE.
C. CURVES: THE HORIZONTAL CURVE SHALL NOT EXCEED A MINIMUM RADIUS OF 150 FEET ON MINOR STREETS AND CULDE-SACS. LONGER RADII ARE REQUIRED FOR MAJOR STREETS AS STATED IN THE SUBDIVISION REGULATIONS.
D. DRAINAGE: THE PATTERN OF DRAINAGE SHALL BE INCLUDED IN ALL ROAD PLANS. THIS PLAN TO CLEARLY INDICATE THE DIRECTION OF FLOW OF ALL SURFACE WATER, THE LOCATION, SIZE, AND TYPE OF DRAINAGE STRUCTURE, AND SPACATION AS TO FINAL POINT OF DISCHARGE OF WATER.
1. STORM SEWERS: STORM SEWERS SHALL BE PROVIDED WHERE THE LENGTH OF GUTTER FLOW EXCEEDS 1000 FEET. CATCH BASINS SHALL BE PROVIDED AT LOW POINTS AND SHALL BE INSTALLED WHEN DIRECTED BY THE HIGHWAY SUPERINTENDENT. CATCH BASINS SHALL BE INSTALLED ALONG THE CURB FOR INTERVALS OR LESS WHEN CONSIDERED NECESSARY BY THE HIGHWAY SUPERINTENDENT AND/OR THE TOWN ENGINEER.
2. GRADING PLAN: ALL CONTOURS MUST BE INDICATED ON THE FINAL PLAN. ROUGH GRADING OF INDIVIDUAL LOTS SHALL BE WITHIN 8" OF THE INDICATED FINISH ELEVATION. BUILDING PERMITS WILL NOT BE ISSUED UNTIL THIS HAS BEEN ACCOMPLISHED.
3. REQUIREMENTS AS MANDATED BY ALL REGULATORY AGENCIES IN ADDITION TO THOSE OF THE TOWN MUST BE COMPLIED WITH. ALL NECESSARY PERMITS MUST BE OBTAINED BY THE DEVELOPER.
E. UTILITIES: ALL UTILITIES SHALL BE LOCATED WITHIN THE ROAD RIGHT-OF-WAY OF THE TOWN OF MANLIUS WHEREVER POSSIBLE. EASEMENTS CONTAINING UTILITIES AND DITCHES OUTSIDE THE RIGHT-OF-WAY SHALL BE DESCRIBED AND WILL BE SUBJECT TO APPROVAL BY THE TOWN ATTORNEY AND THE TOWN BOARD. ALL UTILITIES, LATERALS, TO BE INSTALLED BEFORE CONSTRUCTION OF THE ROAD SURFACE.
F. HIGHWAY ACCESS MANHOLE: A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT AGREED UPON WITH THE HIGHWAY SUPERINTENDENT, AS TO THE VALUE OF THE WORK TO BE PERFORMED BY THE DEVELOPER, SHALL BE DEPOSITED WITH THE TOWN CLERK OF THE TOWN OF MANLIUS BEFORE ANY BUILDING PERMIT IS ISSUED, TO INSURE COMPLETION AS TO TIME AND SPECIFICATIONS. THIS DEPOSIT SHALL BE RETURNED AT THE DISCRETION AND SATISFACTORY COMPLETION OF THE WORK AS INDICATED BY THE HIGHWAY SUPERINTENDENT. A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT OF 5% FOR THE ROADWAY CONSTRUCTION COST WILL BE OFFERED AS A RETAINER FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE ROAD BY THE HIGHWAY SUPERINTENDENT AS A GUARANTEE AGAINST ANY REPAIRS IN THIS PERIOD.
G. SIGNAGE: ALL ROAD SIGNS, TRAFFIC CONTROL AND STREET IDENTIFICATION SIGNAGE SHALL BE SUBMITTED WITH FINAL ENGINEERING DRAWINGS FOR REVIEW AND APPROVAL BY THE HIGHWAY SUPERINTENDENT AND SHALL BE COMPLETED IN ACCORDANCE WITH THE NEW YORK STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.

1.7 TIMING

A. INSTALL DRAINAGE SYSTEM PRIOR TO OR CONCURRENT WITH ROAD EXCAVATION TO PREVENT DAMAGE FROM FLOODING AND EROSION OR DISORIENTATION. TO ALLOW TRENCH OR GENERAL FILL SETTLEMENT, AND TO ALLOW INSTALLATION OF SUBBASE MATERIALS FOR CONSTRUCTION.

1.8 GENERAL DEWATERING

A. THE CONTRACTOR SHALL DEWATER ALL EXCAVATIONS WHEN WATER HAS ENTERED THE EXCAVATION OR AS THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT NECESSARY TO COMPLETE THE WORK.

1.9 USAGE OF ELECTRONIC DOCUMENTS FOR MACHINE CONTROL EQUIP

A. THE CONTRACTOR MAY USE ANY TYPE OF GPS MACHINE CONTROL EQUIPMENT AND SYSTEMS THAT RESULTS IN ACHIEVING THE PROPOSED GRADING REQUIREMENTS. THE CONTRACTOR SHALL CONVERT THE ELECTRONIC DATA PROVIDED BY THE ARCHITECT INTO THE FORMAT REQUIRED BY THEIR SYSTEM.

PART 2 PRODUCTS

2.1 MATERIALS

A. GENERAL FILL: SCARIFIED SUBSOIL OR FILL APPROVED, FREE OF FROST, TRASH, STUMPS, TREES, ROOTS, SOD, MUCK, ETC. IF SUITABLE EXCAVATED MATERIAL IS INSUFFICIENT TO MEET FILL REQUIREMENTS, FURNISH ADDITIONAL MATERIAL AT CONTRACTOR'S EXPENSE, SUBJECT TO APPROVAL BY TESTING AGENCY. THOROUGHLY BREAK UP AND CONDITION SOILS FOR LAYERED PLACEMENT PRIOR TO COMPACTION IN FILL AREAS.
B. SUBBASE: NYSDOT #4 CRUSHED STONE (ASTM D448) CRUSHED GRAVEL NYSDOT #1, TABLE 703-4. CLEAN, DURABLE, UNIFORM MATERIAL THROUGHOUT
STANDARD ASTM SIEVE SIZES PASSING BY WEIGHT
2" (50 MM)	100
1½" (37.5 MM)	90-100
1" (25 MM)	20-55
¼" (6.3 MM)	0-15
C. STABILIZATION FABRIC: GEOTEXTILE FILTER FABRIC TYPAR 3401 OR APPROVED EQUAL.
D. SUBBASE COURSE MATERIAL: CRUSHED LIMESTONE CONFORMING TO NYSDOT SECTION 304.2 SO SUBBASE COURSE, TYPE 1 OR 2 GRADATION WITH 100% PASSING 2" SIEVE AND WELL GRADED FROM COARSE TO FINE TO PROVIDE A DENSE GRADED MATERIAL WHEN COMPACTED, AND FREE FROM SOIL, ORGANIC MATERIAL OR OTHER CONTAMINANTS
E. APPROVED ON-SITE BORROW MATERIAL: SUBJECT TO REVIEW BY RESIDENT ENGINEER AND TESTING AGENCY. TOWN OF MANLIUS SELECTED TESTING AGENCY REFER TO COMPACTION TESTING REQUIREMENTS

PART 3 EXECUTION

3.1 ROUGH GRADING OF ROADS

A. GENERAL: THE DEVELOPER SHALL REMOVE ALL ROCK, EARTH AND OTHER MATERIAL REQUIRED BY THE PLANS FOR THE FULL WIDTH OF THE ROADWAY. HE SHALL DISPOSE OF THE MATERIAL AS REQUIRED. EARTH EMBANKMENTS SHALL BE CONSTRUCTED TO ESTABLISHED LINES AND GRADES FOR THE FULL WIDTH OF THE ROADWAY AT THE LOCATION SHOWN ON THE PLANS. EMBANKMENT MATERIAL SHALL BE FREE OF ORGANIC MATERIAL, SOIL, FREE FROM EXCESSIVE MOISTURE, FROST, STUMPS, TREE ROOTS, SOD, MUCK, MARL, VEGETATION OR OTHER UNSUITABLE MATERIAL.
B. UNSUITABLE FAULT TO THE COMMENCEMENT OF EXCAVATION OF FILL, STRIP PADS SHALL BE CONDUCTED TO REMOVE ALL TOPSOIL, ROOTS, ORGANIC MATTER, RUBBISH OR OTHER DEBRIS FOR THE FULL WIDTH OF THE PAVEMENT AND ADJACENT DISTURBED LAND.
C. MATERIALS TO BE USED IF THERE IS NOT SUFFICIENT EXCAVATED MATERIAL OF A SUITABLE QUALITY AT THE SITE TO COMPLETE THE EMBANKMENTS, SUBGRADES AND BACKFILLING TO THE REQUIRED LINES AND GRADE, THE DEVELOPER SHALL BORROW THE NECESSARY ADDITIONAL MATERIALS. THE SOURCE AND ACCEPTABILITY OF THE BORROW MATERIAL SHALL BE SUBJECT TO APPROVAL OF THE TOWN ENGINEER OR THE HIGHWAY SUPERINTENDENT. THE DEVELOPER SHALL REQUEST APPROVAL OF THE PROPOSED BORROW AREAS AT LEAST ONE (1) DAYS BEFORE TAKING ANY MATERIAL FROM SUCH AREAS. ALL TEST PITS, EXPLORATIONS AND LABORATORY TESTS REQUIRED BY THE HIGHWAY SUPERINTENDENT OF TOWN ENGINEER SHALL BE DONE BY THE DEVELOPER AT HIS OWN EXPENSE.
D. PLACING: IN GENERAL, EMBANKMENT MATERIALS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES IN THICKNESS MEASURED PRIOR TO COMPACTION. STONES IF ANY, SHALL NOT EXCEED FOUR INCHES IN GREATEST DIMENSION AND SHALL BE WELL DISTRIBUTED THROUGH THE MASS. EACH LAYER OF EMBANKMENT MATERIAL SHALL BE ROUGHLY LEVELED OR ROLLED TO THE REQUIRED DEGREE OF COMPACTION AT OPTIMUM MOISTURE CONTENT BY SHEEPSFOOT OR PNEUMATIC ROLLER, MECHANICAL TAMPERS OR VIBRATORS. SUCCESSIVE LAYERS SHALL NOT BE PLACED UNTIL THE LAYER UNDER CONSTRUCTION HAS BEEN THOROUGHLY COMPACTED. TRUCKS OR TRACTORS SHALL NOT TRAVEL ON ANY LAYER UNTIL IT HAS BEEN COMPACTED. WHERE EMBANKMENTS ARE CONSTRUCTED ON SLOPES OF WATER OVER ABOUT 20 PERCENT, THE EXISTING SLOPE SHALL BE BENCHED AS EACH LAYER IS PLACED.
E. COMPACTION CONTROL: EMBANKMENT SHALL HAVE A MINIMUM DRY DENSITY OF 95 PERCENT OF THE MAXIMUM DRY DENSITY IN POUNDS PER CUBIC FOOT AS DETERMINED BY THE AASHO STANDARD DENSITY TEST OR THE PROCTOR COMPACTION TEST. COMPACTION TESTS SHALL BE PERFORMED ON AN AVERAGE BASIS OR AS MAY BE DEEMED NECESSARY BY THE HIGHWAY SUPERINTENDENT OF THE TOWN ENGINEER. SUCH TESTS SHALL BE PERFORMED BY QUALIFIED LABORATORY PERSONNEL AT THE DEVELOPER'S EXPENSE WHEN THE TEST RESULTS INDICATE THAT INSUFFICIENT COMPACTION HAS BEEN OBTAINED IN ANY LAYER, THE DEVELOPER SHALL TAKE SUCH ACTION AS THE HIGHWAY SUPERINTENDENT OR THE TOWN ENGINEER MAY DIRECT TO WOOF OR ALTER THE MOISTURE CONTENT OF THE SOIL, TO PROVIDE ADDITIONAL COMPACTION OR OTHERWISE TO INCREASE THE IN-PLACE SOIL DENSITY.

3.2 PREPARATION OF SUBGRADE

A. THE DEVELOPER SHALL PREPARE THE SUBGRADE TO RECEIVE THE PAVEMENT IN CONFORMITY WITH THE LINES AND GRADES AS SHOWN ON THE PLANS. BEFORE THE SUBBASE COURSE MATERIAL IS PLACED UPON THE SUBGRADE, IT SHALL BE SHAPED TO LINE AND GRADE AND COMPACTED WITH AN APPROVED SELF-PROPELLED ROLLER WEIGHING NOT LESS THAN 10 TONS. ALL SOFT AND YIELDING PORTIONS SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE GRANULAR MATERIAL. ALL DEPRESSIONS SHALL ALSO BE FILLED WITH ACCEPTABLE GRANULAR MATERIAL, USED TO FILL DEPRESSIONS SHALL CONSIST OF APPROVED HARD, DURABLE PARTICLES 100% OF WHICH SHALL PASS A 2-INCH SIEVE AND NOT MORE THAN 10% OF WHICH SHALL PASS A NO. 200 SIEVE. THE PROCESS OF SHAPING AND ROLLING AND FILLING SHALL BE REPEATED UNTIL NO DEPRESSIONS DEVELOP. THE SUBGRADE SHALL NOT BE MUDDY OR DISTURBED IN ANY MANNER WHEN THE SUBBASE MATERIAL IS PLACED UPON IT. IF SOFT SPOTS DEVELOP DURING THE ROLLING, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE GRANULAR MATERIAL ABOVE.

3.3 ROAD CONSTRUCTION

A. TOWN OF MANLIUS DETAILS OF ROAD CONSTRUCTION SHALL BE INSTALLED AS SHOWN WITHIN THE CONSTRUCTION DOCUMENTS
1. SD-1 TYPICAL ROAD CROSS SECTION (1-503)
2. SD-2 TYPICAL ROAD CROSS SECTION WITH CATCH BASIN LOCATION (1-503)
3. SD-3 STANDARD CATCH BASIN (1-502)
4. SD-4 TEMPORARY PAVED TURN AROUND AND EASEMENT (1-501)

3.4 SPECIAL CONDITIONS

A. ROUGH GRADING MUST BE COMPLETED BEFORE THE CONSTRUCTION OF UTILITIES IS COMMENCED.
B. THE SUBGRADE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE SUB BASE COURSE IS PLACED.
C. THE SUB BASE COURSE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE BINDER COURSE IS PLACED.
D. THE BINDER COURSE OF PAVEMENT SHALL NOT BE PLACED UNTIL PERMISSION IT OBTAINED FROM THE HIGHWAY SUPERINTENDENT.
E. NO CERTIFICATE OF OCCUPANCY OR HOUSES CONSTRUCTED ON NEW ROADS SHALL BE ISSUED UNTIL THE ROAD CONSTRUCTION IS COMPLETED AND NECESSARY APPROVALS OBTAINED. APPROVAL TO BE OBTAINED FROM THE HIGHWAY SUPERINTENDENT. A LETTER OF CERTIFICATION BY THE DEVELOPER'S ENGINEER WILL BE REQUIRED UNDER CIRCUMSTANCES WHERE THE HIGHWAY SUPERINTENDENT HAS NOT INSPECTED AND APPROVED THE CONSTRUCTION PROCEDURES OUTLINED ABOVE.

3.5 GENERAL

A. BANKS AND SIDES: ANGLE OF RECLINE OR SHEATHING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES.
1. UNCLASSIFIED EXCAVATION
A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. CUT TO EXACT ELEVATIONS AND GRADE OF FILL BECOMES SATURATED AND LOSE SITE STRUCTURE IN ANY AREA, OR SEE WORK IN THAT AREA, AFTER ESTABLISHING POSITIVE SURFACE DRAINAGE. UNTIL IMPROVEMENTS ARE MADE AND PROTECTED. CONTINUE EXCAVATION TRANSPORT TO FILL SECTIONS.
C. STOCKPILED SOILS, PILE IN MANNER AND LOCATION THAT WILL NOT IMPEDE THE WORK OF ANY OTHER CONTRACTOR, AS DIRECTED BY GRADING PLANS

3.6 UNCLASSIFIED EXCAVATION FOR STRUCTURES

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO DEPTH AS SHOWN ON DRAWINGS. TRANSPORT TO FILL ARE AS OR REMOVE FROM SITE.
C. EXCESS DEPTH: BACKFILL TO PROPER ELEVATIONS WITH APPROVED ON SITE BORROW MATERIAL.
D. CLEARANCE SUFFICIENT FOR FORM WORK TO BE PERFORMED. BANKS AND SIDES - ANGLE OF RECLINE OR SHEETING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES. REMOVE BEFORE BACKFILLING
E. REMOVE LOOSE MATERIAL AND OTHER DEBRIS FROM EXCAVATION SO ALL FOOTINGS REST ON SOLID, UNDISTURBED SOIL
F. REMOVE WATER DURING EXCAVATION FOR FOUNDATIONS BY DITCHING OR PUMPING SO THAT NO WATER STANDS.
G. USE OF EQUIPMENT OF EQUIPMENT IN THE EXCAVATION DOES NOT CAUSE WORKING AND PUMPING OF THE UNDERLYING SOIL WHICH IS NOT TO BE EXCAVATED. SHOULD THE EQUIPMENT USED CAUSE EXCESSIVE WORKING, USE OTHER METHODS OF EXCAVATION TO MAINTAIN THE DESIGN BEARING CAPACITY OF THE SOIL.

3.7 UNCLASSIFIED TRENCH EXCAVATION

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO EXACT DEPTH AND GRADE ALLOWING CLEARANCE FOR PIPE BEDDING AS RE-DUMPED.
C. TRANSPORT EXCESS TO FILL ARE AS OR STOCKPILE AREAS.
D. PUMP AS REQUIRED TO DEWATER EXCAVATION.

3.8 GENERAL FILLING REQUIREMENTS

A. THE SUBGRADE TO RECEIVE FILL SHALL BE FIRM AND STABLE AND SHOULD NOT EXHIBIT MUD, ORGANIC MATERIAL, TOPSOIL, STANDING WATER, DEBRIS OR FROZEN MATERIAL WHERE APPLICABLE. SUBGRADE SHOULD BE PROOFROLLED AND REMEDIATED AT NCE (SUAY). APPROVED SUBGRADE SHOULD BE SCARIFIED TO A MINIMUM DEPTH OF 6" PRIOR TO PLACEMENT OF FILL MATERIAL.
B. FILL MATERIAL: USE APPROVED MATERIALS FREE OF DELETERIOUS MATERIAL IN A MANNER TO MINIMIZE SEGREGATION. THE FILL SHOULD BE PLACED IN EVENLY HORIZONTAL 8" LIFTS COMMENCING AT THE LOWEST FILL AREA ELEVATION AND PROCEEDING TOWARD THE HIGHEST ELEVATION AND OUTWARD FROM THE LOWEST LIFT. THE MOISTURE CONTENT OF THE MATERIAL SHALL BE ADJUSTED PRIOR TO APPLICATION OF COMPACTION EFFORT SUCH THAT IT IS WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT. THE FIRST LIFT SHALL BE PLACED TO A LOOSE THICKNESS NOT TO EXCEED 8". THIS FIRST LIFT SHALL THEN BE COMPACTED TO THE FULL PLACE DENSITY NOT TO LESS THAN 95% OF THE MAXIMUM DRY DENSITY, UNLESS NOTED OTHERWISE IN THIS SPECIFICATION SECTION.
C. NO SUBSEQUENT LIFT SHALL BE PLACED UNTIL THE UNDERLYING LIFT HAS BEEN ADEQUATELY COMPACTED TO A STABLE AND UNIFORM MASS.

D. TRENCH BACKFILL

1. MATERIALS:
A. UNDER LAWNS AND UNDER PLANTING BEDS: APPROVED EXCAVATED SUBSOIL MATERIAL.
B. UNDER PAVEMENT SECTION: APPROVED ON-SITE BORROW MATERIAL. REFER TO DETAILS ON L-503
2. PLACE: DO NOT PLACE ON FROZEN GROUND. PLACE IN 6" LAYERS FROM CUSHION SAND OR FILTER MATERIAL TO SUBGRADE. NO BOULDERS OR STONES OVER 4" THAT EACH 6" LAYER WITH MECHANICAL TAMPER, ADJUST TO SMOOTH SUBGRADE
3. COMPACTION: UNIFORMLY SPREAD EACH LAYER, MOISTEN OR DRY AS REQUIRED, AND THEN COMPACT SO UNIT DRY WEIGHT OF THE COMPACTED MATERIAL MEETS OR EXCEEDS 95% OF THE MAXIMUM MODIFIED PROCTOR DENSITY BASED ON ASTM D-1557 PROCEDURE S

E. FILL AT STRUCTURES

1. MATERIALS:
A. FILL UNDER PAVEMENT SUBGRADE - APPROVED ON-SITE BORROW MATERIAL
B. SITE STRUCTURES BACKFILL TO SUBGRADE WHERE PAVEMENT OCCURS AND NO FOOTING DRAINS OCCUR - APPROVED ON-SITE BORROW MATERIAL
2. PLACE: DO NOT PLACE ON FROZEN GROUND. PLACE IN 6" LAYERS. COMPACT BY APPROVED MECHANICAL EQUIPMENT. REJECT CONSTRUCTION DEBRIS FROM BACKFILL
3. COMPACTION: UNIFORMLY SPREAD EACH LAYER, MOISTEN OR DRY AS REQUIRED, AND THEN COMPACT SO UNIT DRY WEIGHT OF THE COMPACTED MATERIAL MEETS OR EXCEEDS 95% OF THE MAXIMUM MODIFIED PROCTOR DENSITY BASED ON ASTM D-1557 PROCEDURES

3.9 STABILIZING UNSUITABLE SOILS WITH FABRIC

A. PLACE STABILIZATION FABRIC IN LENGTHS AND WIDTHS AS LARGE AS POSSIBLE. LAP SEAMS PER MANUFACTURER'S INSTRUCTIONS OR 8" MINIMUM.
B. REPAIR OR REPLACE TORN FABRIC THAT WILL HINDER OR DISPLACE STABILIZATION FABRIC
C. TIME OPERATIONS TO AVOID TRENCHING BY ANY CONTRACTOR IN AREAS WHERE STABILIZATION FABRIC HAS BEEN PLACED

3.10 FIELD QUALITY CONTROL - KENNEY GEOTECHNICAL SHALL PROVIDE MATERIALS, COMPACTION AND PROOF ROLLING TESTING SERVICES.

A. PROOFROLLING - MADE DATELY PRIOR TO PLACING MATERIAL FOR PAVEMENTS OR SLABS ON GRADE, PROOFROLL SUBGRADE WITH 10 CON MINIMUM LOADED SMOOTH DRUM SELF-PROPELLED VIBRATORY ROLLER. UNDERCUT ALL AREAS WHICH SHOW PUMPING OR WEAVING AND REPLACE WITH COMPACTED FILL. COMPACT SUBGRADE TO A DENSITY EQUAL TO OR GREATER THAN 95% OF MAXIMUM DRY DENSITY FOR PAVED AREAS AND 90% FOR LANDSCAPED AREAS PER PROCTOR DENSITY FOR LAWN AREAS BASED ON ASTM D 1557 PROCEDURES
B. QUALITY CONTROL TESTING DURING CONSTRUCTION
1. KENNEY GEOTECHNICAL SHALL PROVIDE SERVICES OF INDEPENDENT TESTING SERVICE TO INSPECT AND TEST FINAL CUT AND FILL SUBGRADES, UTILITY TRENCHING AND SUBBASE COURSE COMPACTION PRIOR TO PAVING. ADDITIONAL TESTS WILL BE TAKEN AS REQUIRED FOR FULL COVERAGE OF PAVED AREAS.
2. PROVIDE TIMELY NOTICE TO TOWN ENGINEER/HIGHWAY SUPERINTENDENT TO INSPECT AND APPROVE SUBGRADES AND FILL LAYERS BEFORE FURTHER CONSTRUCTION WORK IS PERFORMED.
3. BASIC RIGHT OF WAY TESTING
A. EACH PROPOSED MANHOLE: COMPACTION RESULTS FOR EMBANKMENT, SUBGRADE, SUBBASE AND BASE IN 6" LIFTS.
B. EACH CATCH BASIN: COMPACTION RESULTS FOR EMBANKMENT, SUBGRADE, SUBBASE AND BASE IN 6" LIFTS.
C. EACH SANITARY SEWER: COMPACTION RESULTS FOR EMBANKMENT, SUBGRADE, SUBBASE AND BASE IN 6" LIFTS EVERY 300 LF
D. EACH STORM SEWER: COMPACTION RESULTS FOR EMBANKMENT, SUBGRADE, SUBBASE AND BASE IN 6" LIFTS EVERY 500 LF
E. ALL ROADWAYS TO BE INDICATED TO THE TOWN, COMPACTION RESULTS FOR EMBANKMENT, SUBGRADE, SUBBASE, AND BASE IN 6" LIFTS EVERY 500 LF.

3.11 DEWATERING

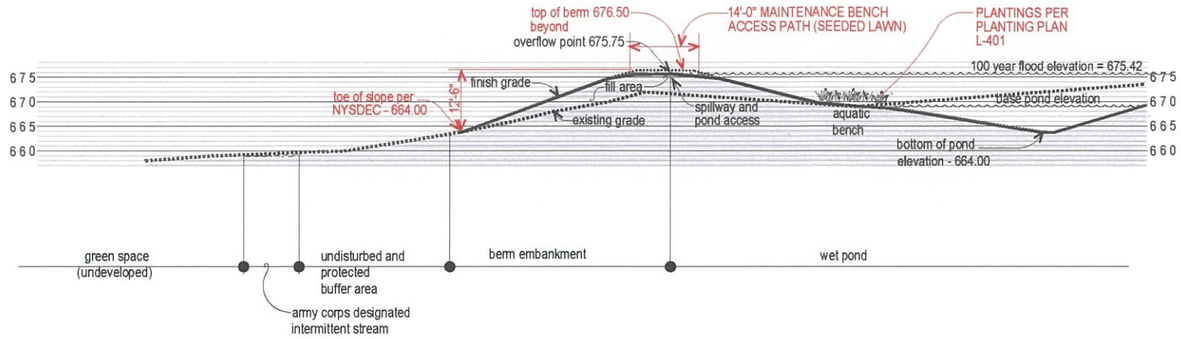
A. DETAILS OF THE DEWATERING ARE LEFT TO THE CONTRACTOR'S DISCRETION. THE CONTRACTOR SHALL SUBMIT ADEQUATE PROOF PLAN OF HIS PROPOSED DEWATERING SYSTEM TO THE ENGINEER FOR REVIEW. NO EXCAVATION IN THE WET SHALL PROCEED UNTIL THE CONTRACTOR RECEIVES NOTICE THAT THE REVIEW OF THE DEWATERING SYSTEM HAS BEEN COMPLETED BY THE ENGINEER.
B. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT NECESSARY FOR SATISFACTORY PROTECTION AND SATISFACTORY HANDLING AND DISPOSAL FOR THE REMOVAL OF ALL WATER ENTERING THE EXCAVATIONS, AND SHALL REMOVE ALL WATER AS FAST AS MAY COLLECT, IN SUCH MANNER AS SHALL NOT INTERFERE WITH THE PROSECUTION OF THE WORK OR THE PROPER PLACING OF SOIL, OR ANGULAR MATERIAL, SEWERS, CONCRETE, MASONRY OR OTHER WORK.
C. REMOVAL OF WATER INCLUDES THE CONSTRUCTION AND REMOVAL OF COFFERDAMS, SHEETING AND BRACING, THE EXCAVATION AND MAINTENANCE OF DITCHES AND SLEUCE WAYS, FURNISHING AND OPERATION OF PUMPS, WELL POINTS, AND FURNISHING ALL LABOR, MATERIAL AND EQUIPMENT NEEDED TO DO SO THROUGH COMPLETION OF THE WORK IN A SATISFACTORY MANNER
D. WATER SHALL NOT BE ALLOWED TO RISE OVER OR COME IN CONTACT WITH ANY MASONRY, CONCRETE OR MORTAR AND NO WATER SHALL BE ALLOWED TO FLOW OVER SUCH WORK UNTIL SUCH TIME AS THE ENGINEER MAY PERMIT.
E. WATER PUMPED OR DRAINED FROM EXCAVATIONS, OR ANY SEWERS, DRAINS, OR WATER COURSES ENCOUNTERED IN THE WORK, SHALL BE DISPOSED OF IN A SUITABLE MANNER WITHOUT INJURY TO ADJACENT PROPERTY, THE PROSECUTION OF THE WORK, OR TO PAVEMENTS, ROADS AND DRIVES AND MUST COMPLY WITH THE REQUIREMENTS OF THE STORMWATER POLLUTION PREVENTION PLAN. NO WATER, INCLUDING SEWAGE OR WATER CONTAMINATED WITH SEWAGE, SHALL BE DISCHARGED TO SANITARY SEWER RS, ADJOINING PROPERTIES, WATER COURSES OR WETLANDS. ANY DAMAGE CAUSED BY IMPROPER HANDLING OF WATER SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE

END OF SECTION 31 2201

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proctrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	82
Stage 3	1	1	3	78
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and grantor fill.
** Based on approximate volume of cut and fill for roads, utilities,



SECTION A - WET POND @ OVERFLOW

HOAG LANE SUBDIVISION

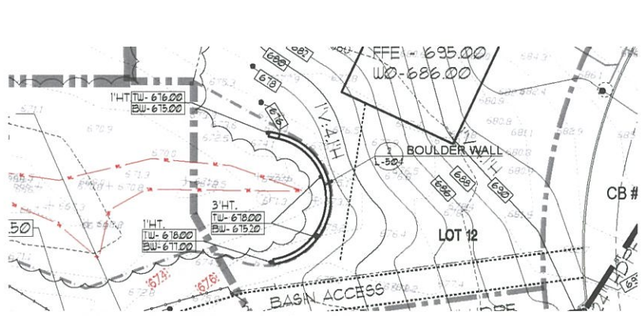
RZ ENGINEERING/KEPLINGER FREEMAN ASSOCIATES

MARCH 26, 2020

0 10 20 30

SCALE IN FEET

4 / L-504 WET POND PROFILE
SCALE: 1" = 20'


FFE - 695.00
WO - 686.00
1'HT
TU - 676.00
BW - 675.00
3'HT.
TU - 678.00
BW - 675.00
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STORM STRUCTURE SCHEDULE

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [3]	N/A	-	24"- 649.00
DA-1 (LID)	10' DIA. OUTLET STRUCTURE [1]	673.49	REFER TO DETAIL FOR ORIFICE INFORMATION	649.30
FES # 2	FLARED END SECTION [3]	N/A	-	(E) 24"- 636.00
CB # 1	CATCH BASIN - 6'-0" [3]	662.12	(NE) 24"- 634.50 (E) 24"- 666.00 LID- 669.50	(S) 24"- 634.50
CB # 2	CATCH BASIN - 4'-0" [3]	662.15	(NE) 24"- 638.15 (E) 24"- 638.50 LID- 672.00	(W) 24"- 687.50
CB # 3	CATCH BASIN - 4'-0" [3]	661.12	(S) 24"- 650.50 (NE) 18"- 654.00 LID- 636.29	(W) 24"- 650.50
SI # 1	STORM INLET [4]	707.15	(NE) 12"- 702.10 (NE) 18"- 702.30	(S) 18"- 700.00
SI # 2	STORM INLET [4]	705.76	(N) 12"- 706.76 (E) 18"- 707.25	(W) 18"- 706.00
SI # 3	STORM INLET [4]	713.58	(N) 18"- 713.80 LID- 724.50	(W) 18"- 713.25
SI # 4	STORM INLET [4]	716.05	(N) 12"- 713.50 (E) 12"- 713.50 LID- 724.50	(S) 18"- 712.00
SI # 5	STORM INLET [4]	721.50	(N) 12"- 716.00 (NE) 12"- 716.30 LID- 728.00	(W) 12"- 717.00
SI # 6	STORM INLET [4]	726.78	(NE) 12"- 722.30 LID- 732.78	(NW) 12"- 722.00
FES # 7	FLARED END SECTION [3]	N/A	-	12"- 729.00
FES # 8	FLARED END SECTION [3]	N/A	12" - 691.30	-
FES # 9	FLARED END SECTION [3]	N/A	12" - 704.00	-

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
SI # 7	STORM INLET [4]	709.78	LID- 701.00 12"- 703.20	(SE) 12"- 703.10
SI # 8	STORM INLET [4]	710.56	(N) 10"- 708.06 LID- 720.15	(S) 12"- 707.50
FES # 4	FLARED END SECTION [3]	N/A	10"- 733.00	-
FES # 5	FLARED END SECTION [3]	N/A	12"- 711.00	-
FES # 6	FLARED END SECTION [3]	N/A	12"- 721.00	-
FES # 10	FLARED END SECTION [3]	N/A	-	15"- 695.00
FES # 11	FLARED END SECTION [3]	N/A	-	15"- 718.00
SI # 9	STORM INLET [4]	726.30	(NE) 12"- 720.00 (E) 12"- 720.00 LID- 732.30	(SE) 15"- 719.30
SI # 10	STORM INLET [4]	724.69	(SE) 12"- 719.69 LID- 736.65	(S) 12"- 719.30
FES # 8	FLARED END SECTION [3]	N/A	12" - 722.00	-
FES # 12	FLARED END SECTION [3]	N/A	12"- 722.00	-
CB # 8	CATCH BASIN - 4'-0" [3]	675.42	(E) 12"- 668.30 (SE) 15"- 668.30 LID- 687.50	(N) 24"- 668.25
CB # 4	CATCH BASIN - 4'-0" [3]	686.72	(E) 10"- 683.75 (E) 12"- 683.79 LID- 694.50	(S) 18"- 683.25
SI # 12	STORM INLET [4]	711.79	(E) 12"- 706.25 LID- 718.29	(S) 12"- 706.00
SI # 13	STORM INLET [4]	711.79	LID- 709.40	(N) 12"- 708.90
SI # 11	STORM INLET [4]	695.42	LID- 697.80	(S) 15"- 696.00
SI # 14	STORM INLET [4]	696.72	LID- 698.90	(N) 12"- 693.50
SI # 15	STORM INLET [4]	691.72	(S) - 683.05 LID- 696.00	(E) 12"- 683.00
FES # 9	FLARED END SECTION [3]	N/A	24"- 680.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 7/DL-500.
2. INSTALL FLARED END SECTION PER DETAIL SL1-500.
3. INSTALL STORM INLET PER DETAIL SL1-500.
4. INSTALL CATCH BASIN PER DETAIL SL1-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL DL-500 + SL1-500 IN FILL AREAS

SANITARY MANHOLE SCHEDULE

NOTES REFER TO SHEET L-601

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
EX MH	EXISTING	721.40	8" = 702.90 (E)	702.40 (EX)
MH 1	MANHOLE[1]	718.20	8" = 703.30 (E) 8" = 703.20 (N)	8" = 703.20 (S)
MH 2	MANHOLE[1]	712.00	8" = 703.71 (E)	8" = 703.61 (N)
MH LIFT # 3	PRV, 10' FORCED MAIN	708.00	8" = 704.25 (E) 3" = 709.5 (S)	8" = 704.15 (N)
MH 4	MANHOLE[1]	714.00	8" = 705.10 (E)	8" = 705.00 (S)
MH 5	MANHOLE[1]	720.00	8" = 709.95 (E) 8" = 709.35 (S)	8" = 709.85 (N)
MH 6	MANHOLE[1]	724.00	8" = 714.70 (SE)	8" = 714.60 (NE)
MH 7	MANHOLE[1]	726.00		8" = 720.00 (NE)
MH LIFT # 8A	PRV, 10' FORCED MAIN	712.00	3" = 708.80 (S) 8" = 707.50 (E)	8" = 707.50 (W)
MH 8B	MANHOLE[1]	720.00	8" = 718.20 (E)	8" = 718.10 (S)
MH 8C	MANHOLE[1]	723.50		8" = 713.90 (SE)
C/O MH 8D	CLEAN OUT MH	693.00		3" = 684.50 (E)
C/O MH 8A	CLEAN OUT MH	694.90		3" = 685.90 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-501.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.

NOTES:
1. PROFILE SHOWN DISPLAYS ADDITIONAL UTILITIES IN BACKGROUND AND/OR FOREGROUND OF THE ROAD PROFILE. REFER TO PLAN FOR FINAL LAYOUT AND ALIGNMENT OF UTILITIES.

3 PROPOSED GRAVITY PIPE CROSSING WITH OCWA WATERLINE. OCWA TO ENCASE IN CONCRETE OR ADJUST FOR MINIMUM 18" VERTICAL SEPARATION, 10FT HORIZONTAL SEPARATION.

1 / L-600 ROAD ALIGNMENT WITH SANITARY PROFILE
HORIZONTAL SCALE 1: 60
VERTICAL SCALE 1: 6

0 60 120 180

Monday, June 15, 2020 3:40:59 PM

KZ Engineering, PLLC

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No	Rev	Description	Date	No	Rev	Description	Date
1	1	PRELIMINARY SUBMISSION	8/31/18	8	8	FLOOD SITE PLAN REVISIONS	7/26/19
2	2	PRELIMINARY SUBMISSION	10/26/18	9	9	MANLIUS PLAN SUBMISSION	9/13/19
3	3	PUBLIC HEARING MANLIUS	12/27/18	10	10	MANLIUS PLAN SUBMISSION	07/7/19
4	4	PUBLIC HEARING MANLIUS	05/08/19	11	11	MANLIUS PLAN SUBMISSION	08/21/19
5	5	PUBLIC HEARING MANLIUS	06/04/19	12	12	MANLIUS PLAN SUBMISSION	12/18/19
6	6	TOWN REVIEW COMMENTS	10/23/19	13	13	MANLIUS PLAN SUBMISSION	1/27/20
7	7	MANLIUS PLANNING BOARD MEETING	5/11/20	14	14	MANLIUS PLAN SUBMISSION	5/4/20

△ Symbol Indicates Revision Issued

Drawn By: V.E.R.
Checked By: S.K.
KZE Project No.: 3170.50
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
ROAD PROFILES

L-600

DEEP HOLE TEST RESULTS

DH -1 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 0"-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 0"-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 0"-6" TOPSOIL 6"-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

(USING TEST DATA)

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	39 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING

LEGEND

EXISTING	PROPOSED	DESCRIPTION
350		CONTOUR
+377.7	+377.7	SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-3	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
		WATER LINE
		FIRE HYDRANT
		STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION
		UNDERDRAIN
		SANITARY PIPE-GRAVITY
	3" LPS	SANITARY PIPE-LOW PRESSURE
		OVERHEAD ELECTRIC
		UNDERGROUND ELECTRIC
		TELEPHONE
	ST 754	STORM STRUCTURE
	DI CB 754 CO	INLET CATCH BASIN/MANHOLE CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		#64 GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 10'	OUTLET PROTECTION FOR 8"- 12" PIPE
		OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
		SILT FENCE
		EROSION CONTROL BLANKET

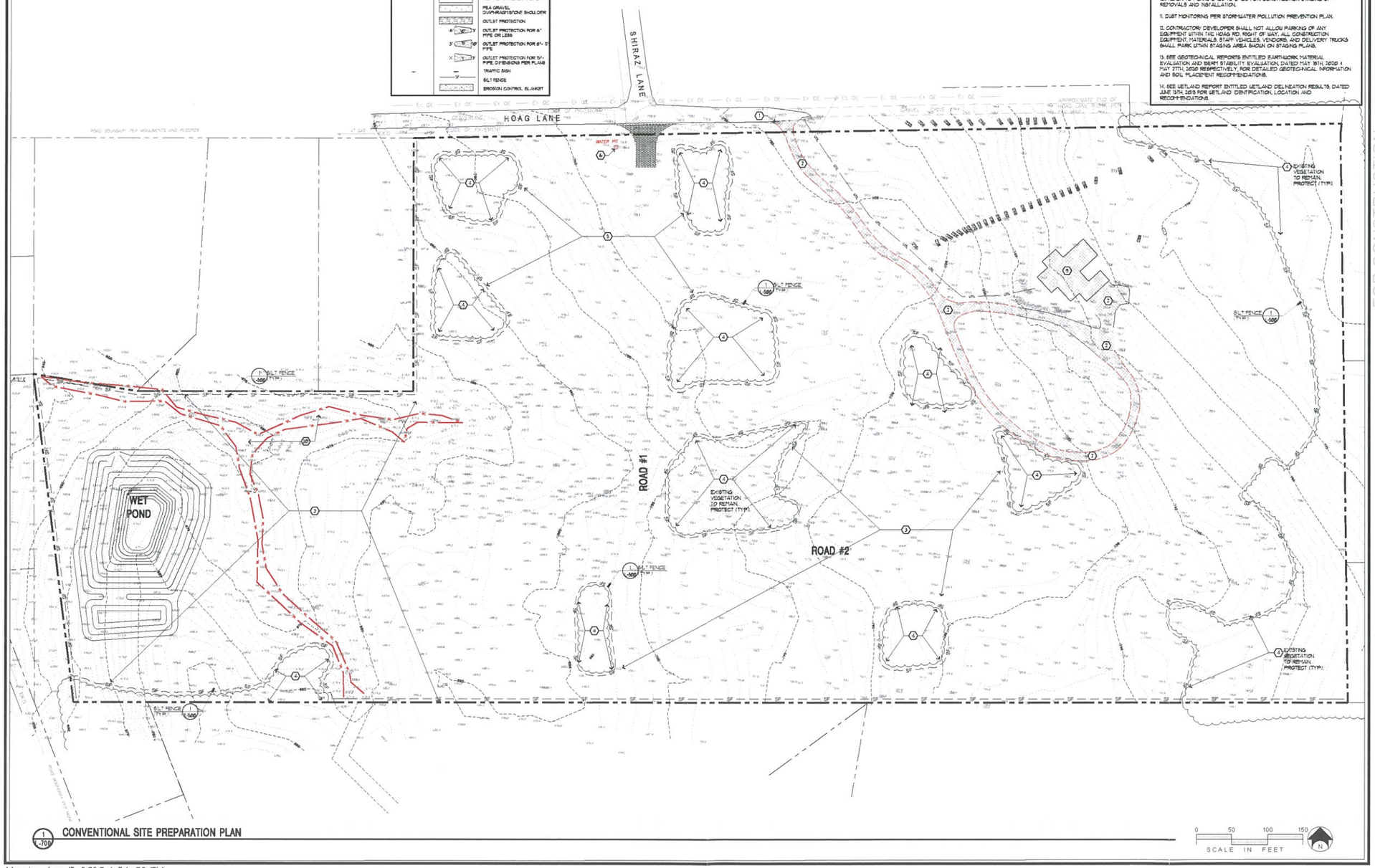
EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF OFF-SITE.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. TO BE SUBMITTED AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO DEMOLITION.
6. DECOMMISSION EXISTING WATER PIT.
7. DEVELOPER TO PROVIDE REMOVE UNDERBRUSH AND PERSPECTIVE TREES TO REMAIN, DETAILED NEIGHBORHOOD PLANS TO BE DESIGNED AT A LATER DATE.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. REMOVE EXISTING STRUCTURE.
10. REMOVE EXISTING WATERBODY. APPLY FOR ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC. AS PREPARED BY BISUN LAND SURVEYING, PLLC, CUTTINGHAM, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION DEBRIS, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.
13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.
14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



CONVENTIONAL SITE PREPARATION PLAN

Monday, June 15, 2020 6:56:08 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
520 FIRST AVENUE, SUITE 100 · SOUTH SYRACUSE, NEW YORK · 13207
PHONE: (315) 476-7600 FAX: (315) 476-7601

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CIVIL & ENVIRONMENTAL ENGINEERING
5226 RTE 9W/32 SUITE 209
SAINT LEONARD'S, NY 12180
PH: 518.432.3859 FAX: 720.645.7701

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/17/18
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18
3	3	PUBLIC HEARING-MANLIUS	04/16/18
4	4	PUBLIC HEARING-MANLIUS	05/04/18
5	5	PUBLIC HEARING-MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/29/18
7	7	MANLIUS-21 HOME LOTS-PL SET	11/28/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/31/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

Symbol indicates Revision Issued

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.	37080
Date	DECEMBER 1, 2017
Scale	AS NOTED

Title:
CONVENTIONAL SITE PREPARATION PLAN-21 LOT

L-700

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX MAP 104.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NTB SUBDIVISION REVIEW (ARTICLE SEVEN). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY BAGLIN LAND SURVEYING, P.L.L.C. AND A TRUE ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://MANLIUSNY.GOV/LG/PUBLICATIONS/SUBDIVISION&REVIEW%20LAW%20PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-0" MIN. 150'-0"
LOT AREA: MINIMUM 40,000 SF

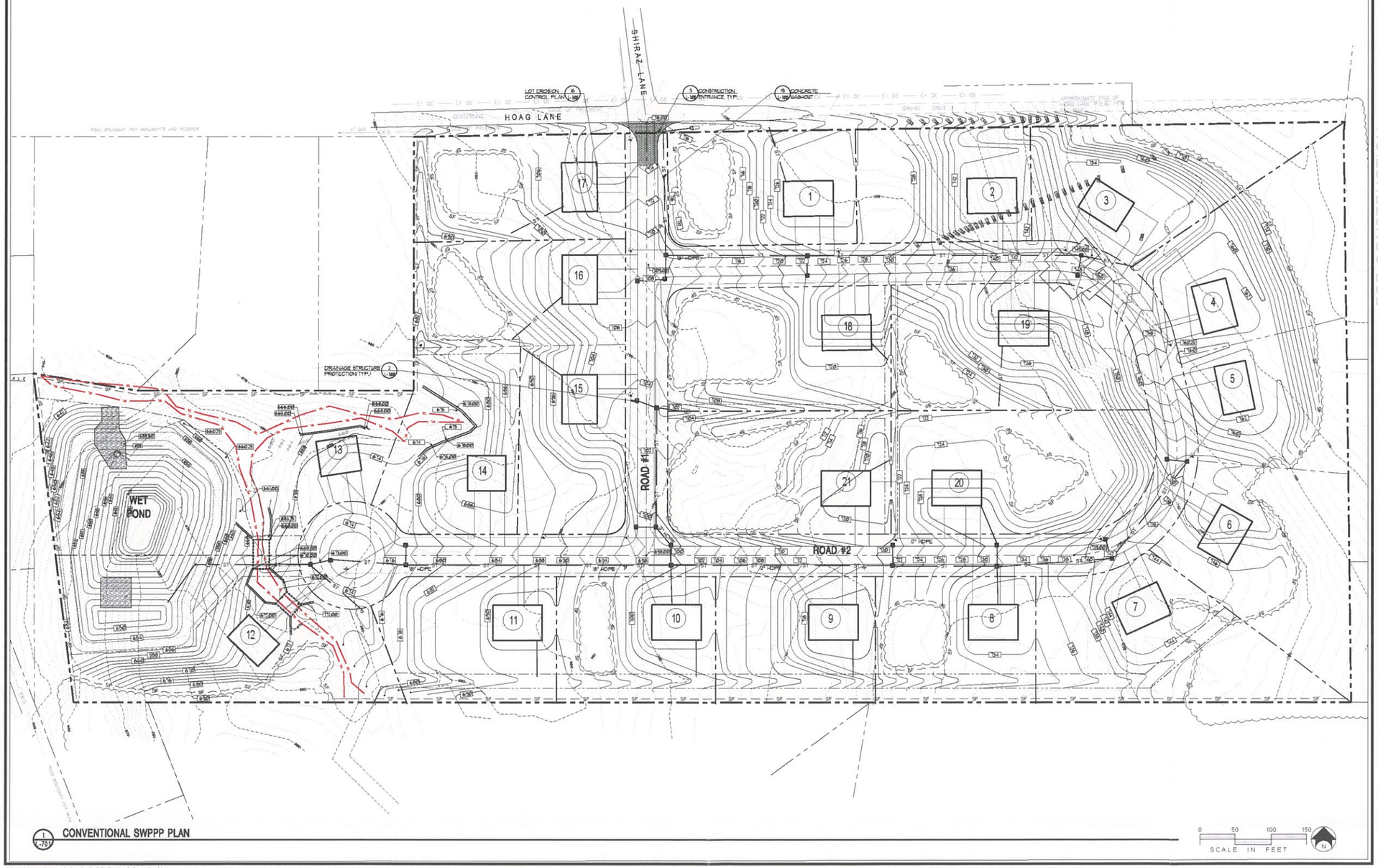
(R3) FRONTAGE: 100'-0" MIN. 100'-0" AVG. 110'-0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.35	408,503.11
(A) EAST "FOREVER WILD" AREA	3.66	159,761.97
(B) SOUTH "FOREVER WILD" AREA	3.9	24,047.43
(C) WEST "FOREVER WILD" AREA	3.6	243,71.97
(D) NORTH "FOREVER WILD" AREA	.39	17,018.69
(E) HOA "FOREVER WILD" AREA	4.78	180,697.09

NOTES:
1. 30% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/15/2020.



L-701 CONVENTIONAL SWPPP PLAN

KEPLINGER KREISMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
PZ Engineering PLLC
UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No	Rev	Description	Date	No	Rev
1	1	CHECK SET-TOWN OF MANLIUS	01/21/19	8	8
2	2	CHECK SET-TOWN OF MANLIUS	01/29/19	9	9
3	3	PUBLIC HEARING-MANLIUS	02/26/19	10	10
4	4	PUBLIC HEARING-MANLIUS	05/04/19	11	11
5	5	PUBLIC HEARING-MANLIUS	06/11/19	12	12
6	6	TOWN REV.-21 LOTS-MANLIUS	10/29/19	13	13
7	7	MANLIUS-21 HOME LOTS-PLEX	11/26/19	14	14

Symbol Indicates Revision Issued

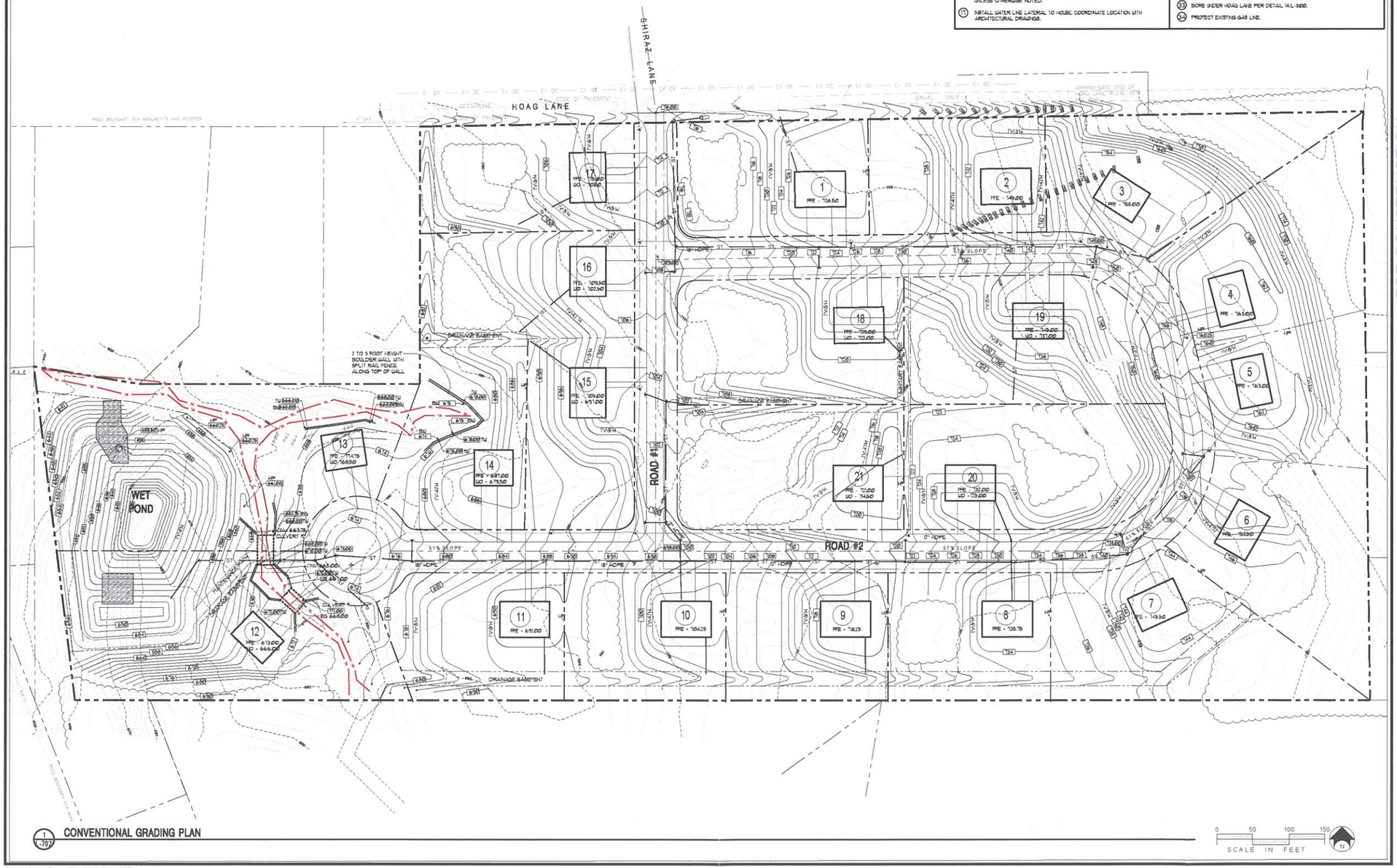
Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.	37090
Date	DECEMBER 1, 2017
Scale	AS NOTED

Title:
CONVENTIONAL SWPPP PLAN -21 LOT

L-701

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (2" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-H SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS 4 PIPING OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 3/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-H MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4:1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY/95% IN SUBGRADE AREAS
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE I PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT, RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A 5.2HP PUMP CROCK AND A 5.2HP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTLOW STRUCTURE AND PIPE PER DETAIL 2/L-502.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. TYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN, REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-101 THRU L-105 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" IDE # 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM (VSH SLOPE (15%).
31. OUTLET STRUCTURE AND POND DRAIN OUTLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 9/L-502.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 668.29, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-502.
34. PROTECT EXISTING GAS LINE.



1 L-702 CONVENTIONAL GRADING PLAN

SCALE IN FEET 0 50 100 150

Monday, June 15, 2020 6:57:48 PM

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STATE OF NEW YORK — JOHN L. SAGE — 075937 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18
3	3	PUBLIC HEARING-MANLIUS	05/29/18
4	4	TOWN REV. 21 LOTS-MANLIUS	06/01/18
5	5	PUBLIC HEARING-MANLIUS	06/01/18
6	6	TOWN REV. 21 LOTS-MANLIUS	10/29/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/20/18
8	8	21 LOT SITE PLAN REVISIONS	11/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/23/19
11	11	MANLIUS- PLAN SUBMISSION	12/19/19
12	12	MANLIUS- PLAN SUBMISSION	12/19/19
13	13	MANLIUS- PLAN SUBMISSION	12/19/19
14	14	MANLIUS- PLAN SUBMISSION	06/05/20

△ Symbol Indicates Revision Issued



Drawn By: VER
Checked By: SF
KFA Proj. No: 37080
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title
CONVENTIONAL GRADING AND DRAINAGE PLAN -21 LOT

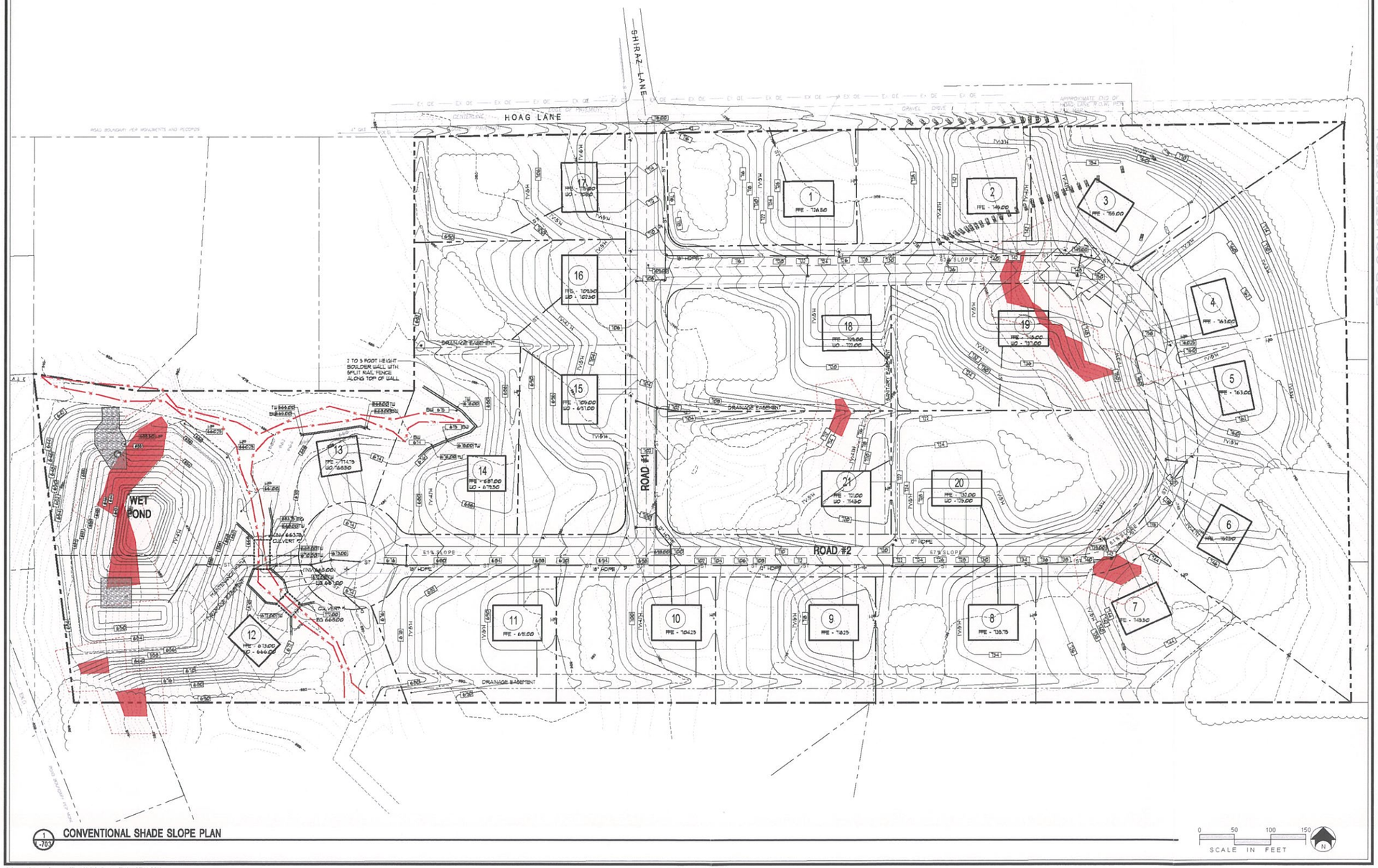
L-702

SHADE RELIEF LEGEND -
TOWN OF MANLIUS

§ 127-19 C FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 25 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES



1 / L-703 CONVENTIONAL SHADE SLOPE PLAN

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/29/18
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18
3	3	PUBLIC HEARING MANLIUS	04/04/18
4	4	PUBLIC HEARING MANLIUS	05/04/18
5	5	PUBLIC HEARING MANLIUS	06/01/18
6	6	TOWN REV. 21 LOTS MANLIUS	10/29/18
7	7	MANLIUS-21 HOME LOTS-FINAL	11/09/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS PLAN SUBMISSION	06/14/19
10	10	MANLIUS PLAN SUBMISSION	07/25/19
11	11	MANLIUS PLAN SUBMISSION	09/25/19
12	12	MANLIUS PLAN SUBMISSION	12/18/19
13	13	MANLIUS PLAN SUBMISSION	12/18/19
14	14	MANLIUS PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: BF
KEA Proj. No.: 37090
Date: DECEMBER 1, 2017
Scale: AS NOTED

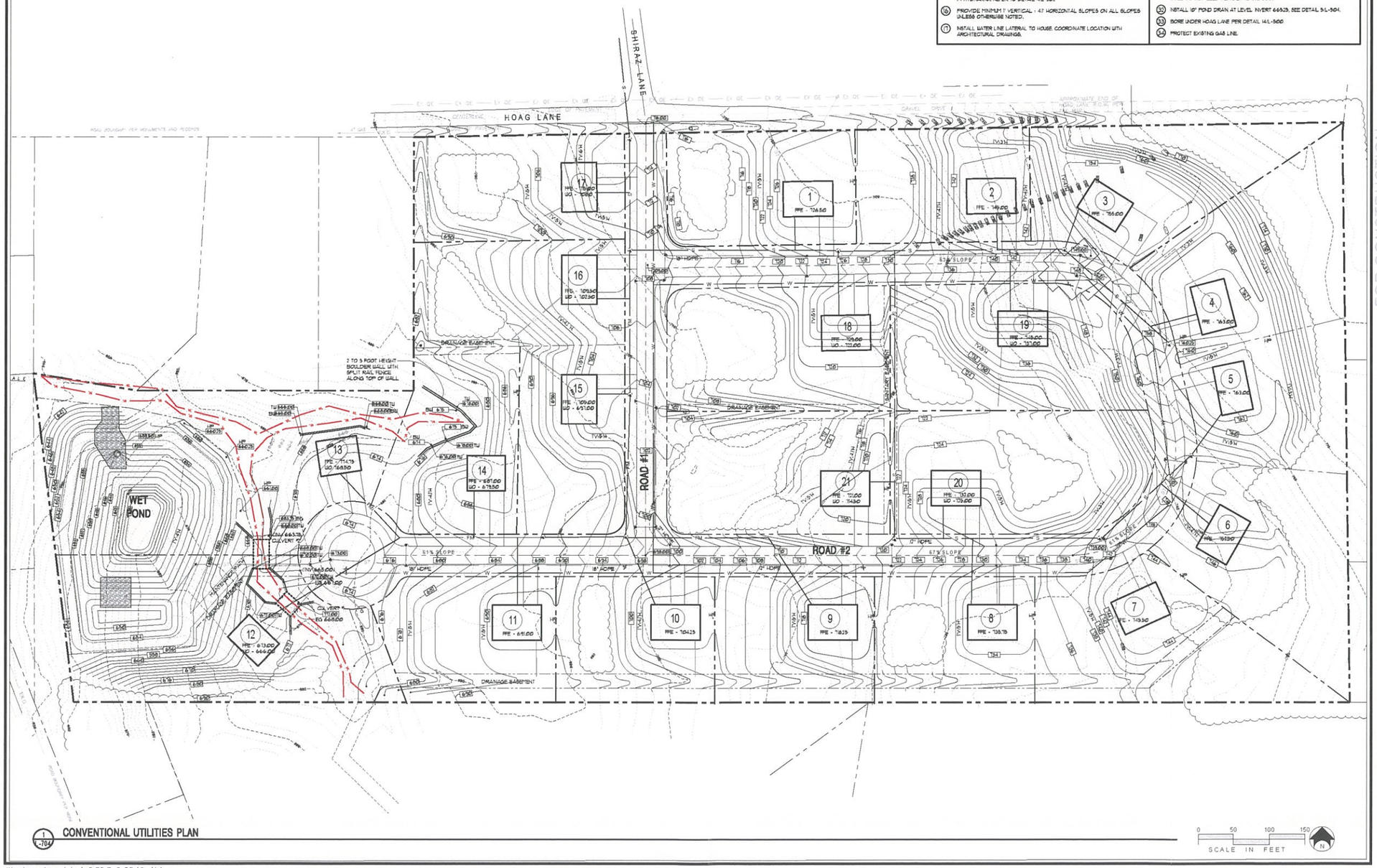
Title:
CONVENTIONAL SHADE SLOPE -21 LOT

L-703

HOAG LANE DEVELOPMENT SEWER SYSTEM TYPE (CONVENTIONAL) - HOAG SEWER	
SEWER SYSTEM TYPE	LOT NUMBERS
FORCE MAIN SYSTEM SEWER	9, 10, 11, 12, 13, 14, 15, 16
GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS 4 PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 3/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY (95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP SHE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 2/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. NYSEG CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-500.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 3/L-503.
27. REFER TO L-102 THRU L-103 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS: NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" IDE & 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 7V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 1/L-500.
32. INSTALL 18" POND DRAIN AT LEVEL INVERT 663.23. SEE DETAIL 3/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 / L-704 CONVENTIONAL UTILITIES PLAN

SCALE IN FEET 0 50 100 150

Wednesday, July 1, 2020 8:32:18 AM

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — ROBERT L. ZIMMER — 072553 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/31/18	8	8	21 LOT SITE PLAN REVISIONS	01/08/19
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18	9	9	MANLIUS PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING-MANLIUS	02/28/18	10	10	MANLIUS PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING-MANLIUS	04/25/18	11	11	MANLIUS PLAN SUBMISSION	08/16/19
5	5	PUBLIC HEARING-MANLIUS	06/01/18	12	12	MANLIUS PLAN SUBMISSION	12/18/19
6	6	TOWN REV-21 LOTS-MANLIUS	10/29/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PLBCK	11/29/18	14	14	MANLIUS PLAN SUBMISSION	06/25/20

△ Symbol Indicates Revision Issued

ROBERT L. ZIMMER — 072553 — LICENSED PROFESSIONAL ENGINEER — STATE OF NEW YORK

Drawn By: VER
Checked By: RF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title
CONVENTIONAL UTILITIES PLAN -21 LOT

L-704

Issued By:
Date Issued:
Drawing File:

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

1. ZONING

- TAX MAP NO.(-07-3.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (R/A) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN R/A DISTRICTS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - *** ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 17-B). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (R/A) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY BARTON LAND SURVEYING, P.L.L.C. AND A (R/A) ZONING DENSITY SITE PLAN PROVIDED BY KFA. HTTPS://GIS.DOS.NY.GOV/GISPUBLICATIONS/SUBDIVISIONREVIEWACT.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	15'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 20 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL: 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R) FRONTAGE: 150'-0" MIN. 340'-0"
LOT AREA: MINIMUM 40,000 SF

(R3) FRONTAGE: 100'-0" MIN. 100'-0" AVG. 110'- 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

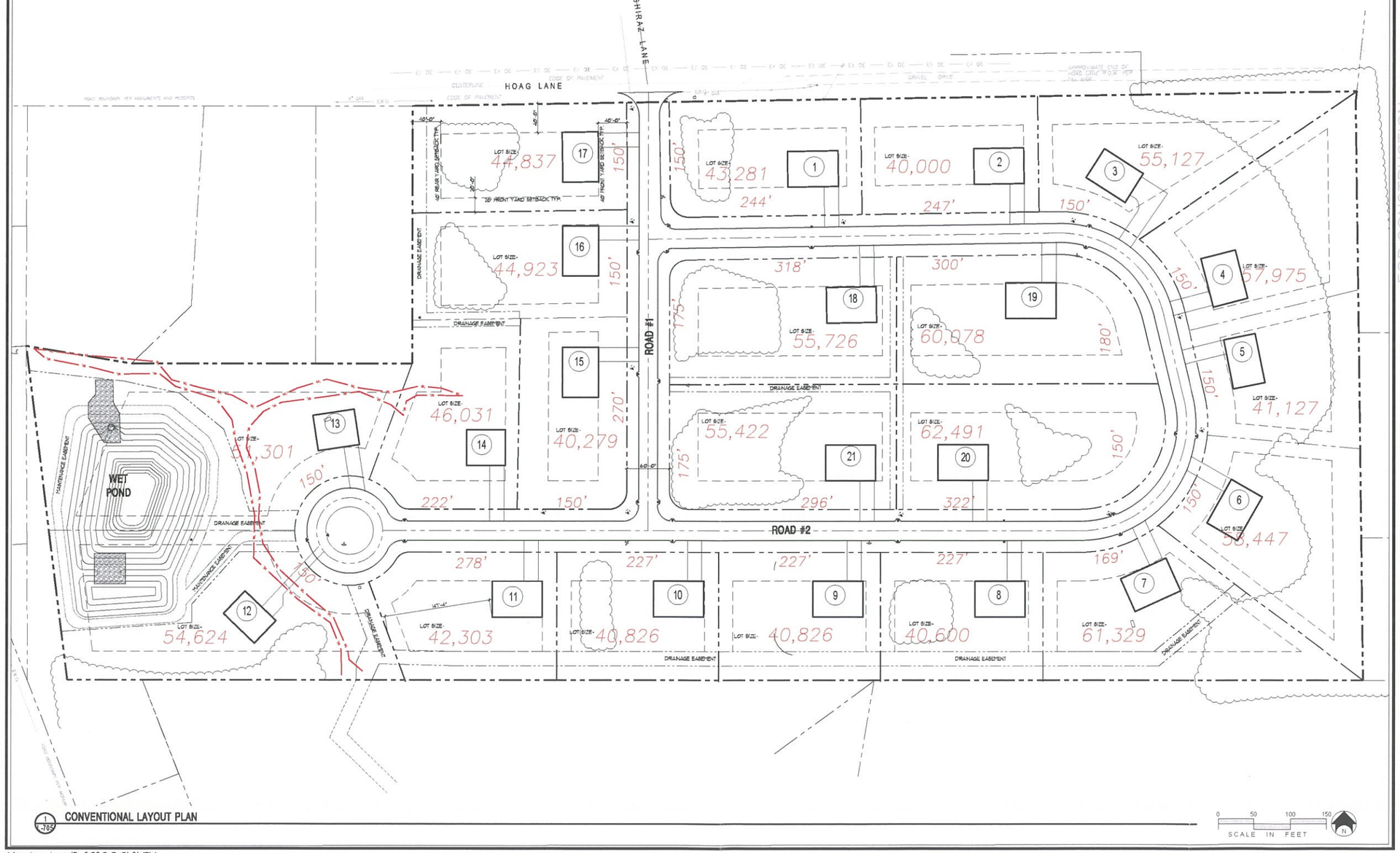
- "FOREVER WILD" AREAS: EXISTING VEGETATION TO REMAIN, NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	34.04	1,304,234.00
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.66	159,161.81
(B) SOUTH "FOREVER WILD" AREA	1.61	70,047.43
(C) WEST "FOREVER WILD" AREA	1.66	72,571.87
(D) NORTH "FOREVER WILD" AREA	1.91	83,168.68
(E) HOA "FOREVER WILD" AREA	0.51	22,353.31

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/15/2020

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS



1 / L-705 CONVENTIONAL LAYOUT PLAN

0 50 100 150 SCALE IN FEET

Monday, June 15, 2020 7:01:21 PM

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
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1	1	CHECK SET-TOWN OF MANLIUS	01/29/18	8
2	2	CHECK SET-TOWN OF MANLIUS	02/06/18	9
3	3	PUBLIC HEARING- MANLIUS	02/28/18	10
4	4	PUBLIC HEARING- MANLIUS	04/04/18	11
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12
6	6	TOWN REV.-21 LOTS-MANLIUS	10/29/18	13
7	7	MANLIUS-21 HOME LOTS-PL REV	11/06/18	14

No	Rev	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/08/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	08/16/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/19/19
14	14	MANLIUS- PLAN SUBMISSION	06/05/20

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Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL LAYOUT PLAN -21 LOTS

L-705

SECTION 31 1000 – SITE DEMOLITION

PART 3 – EXECUTION

3.1 PERMITS

A. Contractor shall secure all necessary demolition permits including fees and licenses at his own expense.
B. Notify local agencies, such as fire, police, etc., that have jurisdiction.

3.2 DUST CONTROL

A. Prevent dust and dirt from demolition operations from blowing onto adjacent properties.
B. Contractor shall apply dust surfactant/suppression agent such as Syntech 2002 to control dust as required.
C. Dust monitoring shall occur as noted in SWPPP (Storm-water Pollution Prevention Plan).

3.3 DISCONNECT UTILITY SERVICES

A. Disconnect and remove all existing utilities to structures to be demolished unless otherwise noted. Obtain approval of respective utility owners/vendors before capping, removing or abandoning of gas, water, sanitary, storm sewerage, electrical, telecommunications or other services.
B. Schedule work in accordance with applicable utility owners/vendors regulations and directives.

3.4 DEMOLITION

A. Pavements and Other Structures: Define neat regular lines for cutting, saw-cut only, protect edges of installations to remain, extend limits of cutting and remove to sound joints or other limits required to remove all adjoining base, broken, or deteriorated paving; provide a sound stable edge for adjoining installation of new paving.
B. Tree Enemy: Remove existing active storm drain system components only after temporary or permanent replacement facilities are in place and operative to collect and channel storm water from existing inlets.
C. Salvage and Stockpile: Carefully remove and protect any existing improvements and to be reinstalled as part of the work, including any improvements which may be reinstalled at Contractor's discretion. Contract and coordinate with Owner in advance on salvaging and stockpiling, if any, indicated on drawings, of other existing improvements to be salvaged for future Owner use, stockpile in approved location on property as determined by Owner.
D. Tree and Vegetation Removal: Cear, grub and remove all existing tree, shrub and other woody vegetation identified on the drawings or otherwise required to complete the work and prepare the site within the perimeter lines and limits of site excavation and regrading work. Protect all trees identified for removal. Completely pull, grub and otherwise remove tree stumps/woody root systems. All vegetation and woody material stumps shall be legally disposed of off-site.
E. Rubble: Concrete, asphalt rubble and other hard-like type debris from removal work shall be removed and legally disposed of off-site.
F. General Debris: Plastics, metals, garbage and other general debris shall be removed from the site and properly disposed of.
G. The use of explosives is not permitted for any demolition or removal work.

3.5 REMOVAL

A. Remove from site all debris and all materials not indicated to be salvaged. All removed materials become property of Contractor who shall legally dispose of materials.

END OF SECTION 31 1000

SECTION 31 1001 – SITE PREPARATION

PART 3 – EXECUTION

3.1 GENERAL JOB CONDITIONS

A. Schedule and conduct work in accordance with ST AGING PLANS. Do not impede access by emergency vehicles and forces. Approximate limits of work are as shown or implied on drawings; do not trespass onto other adjacent property. Protect existing site improvements, fences, staging, drainage and other incidental aspects of work.
B. Verify all existing lines, limits, distances, elevations, and other conditions affecting work required. Comply with special instructions on drawings. Notify Architect immediately of any conditions encountered which appear to be inconsistent with work requirements, to that such matters may be resolved. Verify any existing underground utility locations and conditions with utility companies prior to excavation. Call Utility Notification Center (811) 48 hours prior to excavate carefully in all locations close to known or likely underground utility lines.
C. In addition to all requirements of the General Conditions and all other public safety regulations and requirements applicable to the work, exercise caution in all observed access and operations in anticipation that public pedestrian and vehicular traffic and activity will occur in proximity to the work and to access routes to and from the work at all times.
D. Contractor is held to have visited site and to have identified, investigated and measured surface and subsurface conditions and quantities involved in and affecting the scope, complexity and cost of the work prior to submission of a bid. Contractor may, for his information, make test excavations during bidding period. Contact Architect for written approval prior to any such excavation and repair test holes as directed. Contractor shall use his own judgment in interpreting all surface and subsurface conditions, no responsibility is assumed by Owner or Architect for survey information, lack of survey information, or actual conditions encountered. Any geotechnical investigation reports will be listed by title and date, descriptions and related data and recommendations on existing subsurface and construction conditions included in the contract documents are made available for the convenience of the Contractor. If included, such reports are not intended as a representation or warranty of the accuracy or completeness of the information or interpretations contained in such reports and tests. It is expressly understood that the Owner and Architect shall not be responsible for interpretations or conclusions drawn from the reports by the Contractor. Claims for extra compensation or inability to perform work in accordance with Contract Documents, or for an extension of time will not be considered for any alleged or actual differences between site surface or subsurface conditions and such information and data, except as may be provided elsewhere in the Contract Documents. Owner may elect alternative methods of accomplishing work in event that variations in drawn conditions or unforeseen conditions are encountered.
E. Avoid spills and littering of earth, rubble or other debris on Owner or other public streets or other roadways; clean up any spill promptly and regularly.
F. Notify developer in writing of any existing damage to "items to remain" prior to commencing work.

3.2 LAYOUT, LINES, LEVELS, AND FIELD CHECKS

A. Employ licensed Engineer or Surveyor to stake out all work.
B. Set, rules, offset lines, and grade stakes where spot elevations shown, at breaks in grade, and as otherwise required.
C. Run lines from existing buildings, monuments, and features shown on drawings. Establish base lines. Mark weld and protect during construction. Run levels from benchmarks. Verify benchmark elevations. Advise Architect of inaccurate conditions encountered.
D. Accurately locate all new buildings, roads, paved areas, walks, features, etc. Advise Architect of any discrepancies, prior to commencing work.

3.3 PROTECTION

A. Plants at walks, pavements, and curbs to be crossed by equipment.
B. Protect Persons and Property: provide barricades, fencing, barricades, signs, signals, and other measures and devices for protection of persons, property, existing improvements to remain and traffic and other activities in and adjoining the site of the work, in accordance with all applicable laws and regulations, at all times during work. When work areas are to be unattended, close that open excavations or other unsafe areas or conditions are adequately barricaded and that signals are operative. Perform work to prevent erosion, flooding, undermining, lateral movement, settlement, or other instability or damage of adjoining areas of the site and adjoining improvements. Make certain that cut or fill embankments slopes are stable during overnight or other periods of work interruption.
C. Protect Utilities: Protect and preserve in operating condition all active surface and subsurface utilities and appurtenances, whether or not shown on drawings, that are encountered at or adjacent to the work. Excavate carefully near any known or suspected utility lines. Cooperate with other contractors performing removals or replacement of utilities. If adequately note the instructions on the drawings to verify location and/or depth of certain utility lines. Secure UPD services to locate utilities. Damage to any utility lines or structures resulting from work shall be repaired to at the expense of the contractor, to the satisfaction of the Owner, Architect, utility company or other authority having jurisdiction. If active utilities are cut, broken, or damaged during work, immediately take all steps necessary to avoid endangering persons or property. Notify Owner, Architect and affected utility company or other jurisdiction to obtain a decision and/or assistance in repair of damaged facilities. Remove, plug or cap as required any active and abandoned utilities encountered during construction operations or shown on drawings. If Contractor is required to remove/abandon any portions of existing active utility lines, determine connection points and otherwise plan work in advance so that service is interrupted as briefly as possible. Where existing lines are to be abandoned, remove any portions which may interfere with or may be unstable or prone to settle under or along new structures or pavement areas. Where existing lines are to be abandoned in place: In event that water, storm sewer, sanitary sewer, or other utility lines are broken, or that springs, ground water, or other subsurface water is encountered during excavation or other operations, take steps to prevent erosion, undermining or other damage to existing improvements and to adjacent properties. Permanent replacement, reconstruction or other corrective measures are Contractor's responsibility. Methods subject to approval of architect and other having jurisdiction.
D. Protect Trees: protect all trees and shrubs in and adjoining work areas which are not identified to be removed. Do not store or stockpile earth or other materials or equipment and do not operate heavy equipment more than necessary within the branching limits of trees.

3.4 CLEARING AND GRUBBING

A. Unless otherwise noted on the drawings, remove promptly from site and legally dispose of all trees, logs, stumps, roots, brush, vegetation, rubbish, stones, boulders and other objectionable or perishable materials within grading limits 3 – 6" below finish grade or to original grade whichever is the greater depth.
B. No burning of any cleared and grubbed material shall be permit ted.

END OF SECTION 31 1001

SECTION 31 1413 – TOPSOIL

PART 1 – GENERAL

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 TOPSOIL STRIPPING

A. Remove all trees and stumps prior to stripping topsoil. Investigate depth of organic soils in each designated area as the work progresses and strip topsoil accordingly. Depth may vary over the site of the work. Strip full depth of topsoil and remove limits shown on plans.
B. Stockpile in locations shown on plan where material will not interfere with other work and guard against erosion and sedimentation onto adjoining work areas or offsite areas.
C. Do not lift and mix subsoil material with topsoil. Remove debris and other foreign material and large stones encountered as work progresses. Ordinary grass balls and small roots, twigs and other woody material need not be removed but shall be thoroughly broken up and intermixed with soil during handling operations.
D. All topsoil shall be screened prior to reuse/repurposing.

END OF SECTION 31 1413

SECTION 31 2213 – ROUGH GRADING

PART 3 – EXECUTION

3.1 ROUGH GRADING

A. Subgrade: Depth below finished grade as required for topsoil or pavement.
B. Adjacent: Set grade stakes where spot elevation shown, at breaks in grade, along drainage "swales" and as otherwise required to correctly grade the area according to elevations shown on plans.
C. Completion of rough grading: Obtain Architect's approval before spreading topsoil or preparing pavement subgrade.
D. Subgrade Utility Areas: In areas inaccessible to roller, use mechanical tamps. Refer to Section 32 2301, Sitework Excavation, Backfilling and Compacting for compaction requirements.
E. Avoid excessive working of subgrade or use of equipment that causes pumping or weaving.

END OF SECTION 31 2213

SECTION 31 2216 – FINE GRADING

PART 3 – EXECUTION

3.1 SPREAD TOPSOIL

A. Entire unpaved area within contract limits, unless otherwise noted.
B. Spread stockpiled and manufactured topsoil to a minimum depth as detailed after compaction to smooth draining grades true to elevations shown or indicated on drawings. Generally, all areas shall receive 4" topsoil thickness, plant beds shall receive 12" minimum topsoil thickness. Refer to drawings for verification and any special requirements for use of stripped topsoil.
C. Excess topsoil: Excess topsoil is the property of the owner. Excess topsoil shall remain in the approved topsoil stockpile area.

3.2 FINE GRADE OUTSIDE BUILDING LINES

A. Disk or harrow 4" depth where topsoil has been spread and 4" depth in disturbed areas where no grade change occurs.
B. Remove all stones 1" diameter and larger, roots, rubbish and all other foreign in ether.
C. Grade to exact wall draining grades indicated. Maximum allowed tolerances:
1. Unpaved areas – grade surface needs to hover over or planting bed: ± 0.10' (plus or minus 0.10'. Swales and ditches to a tolerance of plus or minus 0.05'
2. Paved areas – finish subgrade for pavement to a tolerance of plus or minus 0.05'
3. Exterior steps and ramps –finished subgrade to a tolerance of plus or minus 0.05'

END OF SECTION 31 2216

SECTION 31 2301 – SITEWORK EXCAVATION, BACKFILLING, AND COMPACTING

REFER TO DRAWING L-503 EXCAVATION, BACKFILLING, AND FILLING DETAILS FOR SECTION 31 2301

SECTION 31 2600 – EROSION CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. The extent of the erosion, sediment and pollution control is shown on the drawings.
B. Erosion, sediment and pollution control includes, but is not limited to the following:
1. Erosion, sediment and pollution control measures including silt fence, stone check dams and silt fence dikes.
2. Stand and water protection.
3. Construction entrances.
4. Permanent and temporary seeding.
5. Permanent Turf Reinforcement Mats.
C. SPEDES General Permit for Storm-water Discharge is required for sites with disturbance areas which are greater than 1 acre. A SPEDES permit requires the following items to be on site:
1. Completed Notice of Intent posted on site. Owner to submit by
2. SWPPP (Storm- water Pollution Prevention Plan) Maintenance and inspection log book prepared by Owners' consultant.
3. Contractor shall maintain modifications which include the implementation of Storm-water Management devices prepared by owners' consultant.
4. A 5 acre disturbance letter with development conditions will be obtained from the NYSDEC after the SPEDES permit has been authorized.
D. Related sections:
1. Section 31 1413 - Topsoil
2. Section 31 2213 - Rough Grading
3. Section 31 2216 - Fine Grading
4. Section 31 2301 - Sitework Excavation, Backfilling and Compacting
5. Section 33 4000 - Storm Drainage
6. Section 32 9000 - Lawns and Sod
7. Section 32 9300 - Plantings

1.2 QUALITY ASSURANCE

A. Conform to requirements of all regulatory authorities having jurisdiction.

1.3 REFERENCES

A. Guidelines for Erosion Control in Urban Areas of New York State.
B. New York State Storm-water Management Design Manual.
C. New York State Department of Environmental Conservation's "SPEDES General Permit for Storm-water Discharges for Construction Activity Permit".

1.4 INSPECTIONS and MAINTENANCE CRITERIA

A. SITE ASSESSMENT INSPECTION (PRECONSTRUCTION INSPECTION)
1. The OWNER shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described on the plans (Erosion and Sediment Control Plan) and the DEC's technical standards for erosion and sediment control as detailed in the "New York Standards and Specifications for Erosion and Sediment Control" have been adequately installed or implemented to ensure compliance with the requirements of the permit.
2. The inspection report must identify all disturbance, all inspectors, and the date of the inspection and be signed by the OWNER in accordance with the signature requirements of Part V.C.11 of the permit. The inspection report must contain the following statement: "I certify that the erosion and sediment control measures identified in this report are adequate to meet the requirements of the permit and that I am authorized to perform these activities." The inspection report must be submitted to the NYSDEC Regional Water Engineer in charge at the address listed in Appendix C of the permit.
3. The OWNER must certify that construction will be performed according to the SWPPP requirements and that all contractors and subcontractors identified in the SWPPP will sign the following statement before conducting any site preparation: "I certify under penalty of law that I understand and agree to comply with the terms and conditions of the Storm-water Pollution Prevention Plan (SWPPP) and agree to implement any corrective actions identified by the qualified professional during a site inspection. I also understand that the owner must comply with the terms and conditions of the New York State Pollutant Discharge Elimination System (SPDES) permit, including the requirement to obtain coverage under the SPDES General Permit for Storm-water Discharges for Construction Activities Permit (GP-0-10-001), prior to the commencement of construction activities. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards."
4. The OWNER must retain a copy of the SWPPP required by this permit at a location at the site which is available for inspection during normal business hours, and make it available upon request to the Department or to the operator of a municipal separate storm sewer system receiving discharges from the site. The Department may require the OWNER to submit the SWPPP to the Department or the municipal separate storm sewer system operator.
5. The OWNER shall post a sign or other notice conspicuously at the site in a location where it may be readily seen by persons supplying labor to the project. This sign or notice must include the NYSDEC identification number for the project, a brief description of the project, the location of the SWPPP if the site is inactive or has been completed, and a statement that the SWPPP may be viewed at the NYSDEC Regional Office overseeing the project, or at another location if approved by the Department in accordance with General Condition C.
6. The OWNER shall ensure that the project is inspected by a qualified professional:
a. Prior to anticipated commencement;
b. Prior to any pre-construction meeting;
c. Every seven calendar days during active construction;
d. Within 24 hours of the end of a storm event of 0.5 inches of rain or greater; and
e. Every seven calendar days during periods where construction activity is suspended due to adverse conditions or inactivity.
7. The OWNER shall ensure that all inspections are recorded in accordance with Part III.B.5 of the permit, and that these records are retained as part of the SWPPP required by this permit.
8. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. All erosion and sediment control practices must be maintained to ensure they continue to function as intended to the maximum extent practicable. If site inspections required by Part III.B.5 of the permit identify practices that are not operating effectively, maintenance shall be performed before the next anticipated storm event or as soon as practicable.
b. All sediment and other pollutants must be prevented from accumulating on impervious areas, in conveyance systems, in water bodies, and on the ground.
c. Accumulated sediment must be removed at a sediment basin, sediment trap, or sediment chamber whenever its capacity has been reduced by 50%.
d. Silt fencing must be repaired, replaced or supplemented when it becomes nonfunctional or the sediment reaches 1/3 the height of the fence. These repairs must be made within one business day of discovery, or as soon as field conditions allow access.
e. Any sediment or other pollutants tracked onto paved surfaces must be removed and the areas swept at least daily. Sediment may not be washed into storm sewers, ditches, or water bodies.
f. Construction entrances must be maintained in a condition which will prevent tracking or flowing of sediment onto paved surfaces. This may require periodic top dressing with additional stone as conditions demand, and the washing and/or removal of any sediment that has been tracked onto paved surfaces.
g. Litter, construction debris, and chemicals exposed to storm water must be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, daily pick up).
9. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Built-up sediment must be removed from silt fence when it has reached one-third the height of the silt fence.
b. Any diversion device used to protect the quality of uncontaminated storm water (e.g., swales) must be kept clean; accumulated sediment must be removed.
c. Litter, construction debris, and chemicals exposed to storm water must be prevented from becoming a pollutant source for storm water discharges (e.g., screening outfalls, daily pick up).
10. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Before new fill is placed over existing soils, the existing soils must be scarified.
b. All fill shall be placed in lifts not to exceed 12 inches in loose depth before compaction.
c. Fill shall not be placed during unfavorable conditions such as when it is raining or when the fill is frozen or saturated.
d. Fill shall be compacted as necessary to eliminate as much as practicable post-construction settlement that could cause failure of structures or restrictions.
e. Fill shall not be placed on steep slopes (generally greater than 20%) or unsuitable soils unless adequate measures have been designed by a professional engineer.
f. The OWNER shall ensure that all disturbed areas are returned to pre-construction conditions within seven days after final grading or the establishment of a stabilizing vegetative cover.
11. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Uncovered areas in the area subject to construction activities shall be protected and minimized to limit the opportunity for accelerated erosion and sediment deposition.
b. The duration of exposure of uncovered areas and stockpiles resulting from soil disturbance shall be kept to the shortest practicable period of time.
c. Where construction activity will temporarily or permanently cease on any portion of the site for a period of 14 or more calendar days, but will resume after that period, the following measures must be implemented within seven days from the last construction activity in that portion of the site: temporary or permanent stabilization measures must be initiated on all soils exposed during construction activities in that portion of the site.
d. Where construction activity will permanently cease on any portion of the site, or will temporarily cease for a period exceeding one year, but not resume within that period, the following measures must be implemented within seven days from the last construction activity in that portion of the site: permanent stabilization measures must be initiated on all soils disturbed during construction activities that were ceased.
e. In arid areas (areas with an annual average rainfall of 0 to 20 inches), semi-arid areas (areas with an annual average rainfall of 21 to 30 inches), and areas experiencing drought conditions, where seeding during the normal growing season will not be sufficient to ensure adequate vegetative cover, permanent stabilization must be implemented no later than fourteen days after the construction activity in that portion of the site has ceased.
f. In all other areas of New York State, permanent stabilization must be implemented no later than seven days after the construction activity in that portion of the site has ceased.
g. Stabilization practices may include but are not limited to: temporary seeding, permanent seeding, mulching, turf reinforcement, sodding, preservation of existing vegetation, and other measures that are not specifically prohibited by the permit.
h. In certain circumstances, snow may be used for mulching.
i. Except as provided in paragraph 11.j. below, stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than seven days after the construction activity in that portion of the site has temporarily or permanently ceased.
j. Where the initiation of stabilization measures by the seventh day after construction activity temporarily or permanently ceases is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.
12. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. All temporary erosion and sediment control measures must be removed within 30 days after final site stabilization is achieved or after temporary measures are no longer needed, unless otherwise specified by the Department.
b. Trapped sediment must be removed or stabilized on site. Disturbed soils resulting from removal of temporary measures must be permanently stabilized.
13. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. For any areas of the site that will be dewatered, before pumping begins, the owner must install a sediment basin, dewatering tank, or other sediment removal BMP, which shall be adequately sized for the flow rate and sediment removal requirements.
b. All pumps must discharge to an appropriate BMP.
c. Water pumped from the site shall be discharged in such a manner as not to cause erosion, flooding, or pollution of wetlands, water bodies, or storm drainage systems.
14. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Wherever feasible, natural vegetation should be preserved and protected in undisturbed areas.
b. The limits of land disturbance activities, grading, and vegetation removal must be clearly marked to prevent encroachment and damage to adjacent areas of natural vegetation.
c. Construction vehicle access should be limited, wherever possible, to one route.
d. Wherever feasible, natural features should be retained and protected.
15. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
16. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
17. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
18. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
19. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
20. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
21. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
22. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
23. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
24. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
25. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
26. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
27. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
28. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
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b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
29. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
30. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
31. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
32. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
33. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
34. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs.
35. The OWNER shall ensure that all erosion and sediment control practices and other protective measures identified in the SWPPP are maintained properly. Maintenance shall be performed as follows:
a. Minimize the need for vehicle and equipment maintenance and repair on the construction site.
b. Prevent the discharge to storm water runoff or natural drainage systems of wastewater from washout or cleaning of vehicles and equipment containing any amount of concrete, and any wash water from washout or cleaning of stucco, paint, concrete curing compounds, or other construction materials.
c. Minimize the exposure to storm water of fertilizers, pesticides, detergents, petroleum products and other construction materials stored on site.
d. Prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.
e. Prevent the discharge of fluids from dewatering trenches unless they are treated by appropriate BMPs

SECTION 33 3100 - SANITARY

1. SANITARY SEWER MAIN SHALL BE 8" DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH NO DEVIATION FROM TRUE LINE AND GRADE GREATER THAN 1/4".
2. CONNECTION OF NEW 8" SEWER TO EXISTING MANHOLE SHALL NOT BE COMMENCED BEFORE NOTICE IS GIVEN TO THE TOWN OF ONONDAGA. THE OPENING IN THE MANHOLE WALL FOR THE NEW SEWER SHALL BE "CORE DRILLED" AND BE OF ADEQUATE SIZE SUCH THAT THE PIPE SHALL BE MADE WATER TIGHT WITH "LOKSEAL".
3. SEWER LATERALS SHALL BE 8 INCH DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. WYE BRANCHES SHALL BE USED FOR ALL LATERAL CONNECTIONS. ALL SEWER LATERALS SHALL BE EXTENDED TO THE SEWER POINT OF AWAY. MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 2% (8").
4. THE EXCAVATION SHALL BE A MINIMUM OF 1' EACH SIDE OF THE PIPE AND SHALL BE A MINIMUM OF 8" BELOW THE BOTTOM OF THE PIPE. THE CONTRACTOR SHALL PROVIDE ALL DRAINS, DITCHES, PUMPS, WELLS, WELL POINTS, SUMPS, CUTOFF TRENCHES, SHEETING OR OTHER EQUIPMENT AND STRUCTURES NECESSARY TO CONTROL THE FLOW OF SURFACE WATER OR GROUNDWATER INTO THE EXCAVATION SUCH THAT NO STANDING WATER EXISTS IN THE EXCAVATION AT OR BELOW THE BOTTOM OF THE PIPE.
5. PIPE BEDDING SHALL BE NO. 1 HARDENED STONE AND SHALL EXTEND FROM 8" BELOW THE BOTTOM OF THE PIPE TO 1' ABOVE THE TOP OF THE PIPE. PIPE BEDDING SHALL BE SHAPED AND COMPACTED TO CONFORM THE BARREL OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE COMMON FILL FREE OF ROCKS LARGER THAN 8" IN DIAMETER, FROZEN MATERIAL, ROOTS, STUMPS OR ORGANIC MATERIAL. COMPACTION OF 95% OF THE STANDARD PROCTOR DENSITY OF BACKFILL MATERIALS IS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT.
6. MANHOLES SHALL BE MADE OF PRECAST CONCRETE SECTIONS CONFORMING TO ASTM C-478. THE MANHOLE SECTIONS SHALL BE JOINED WITH AN "O" RING GASKET MEETING ASTM C 443 AND SHALL BE PARGED INSIDE AND OUT WITH NON-SHRINK GROUT. THE TOP SECTION SHALL BE AN "ECCENTRIC TAPER TOP"
7. ALL SANITARY SEWER CONNECTIONS TO MANHOLES SHALL BE MADE WITH FLEXIBLE RUBBER SLEEVES WITH STAINLESS STEEL HARDWARE.
8. THE FLOW CHANNEL IN EACH MANHOLE SHALL BE CAREFULLY SHAPED TO MATCH THE INVERTS AND PIPE SIZES WHICH CONNECT TO THE MANHOLE TO CREATE A SMOOTH AND REGULAR SLOPE AND CURVATURE SUCH THAT FLOW THROUGH THE MANHOLE IS LAMINAR AND UNINTERRUPTED.
9. MANHOLE FRAMES AND COVERS SHALL BE CAST IRON OPENING TO ASTM A-48 CLASS 30 AND HAVE A 24" OPENING. MANHOLE FRAME AND COVER SHALL BE SYRACUSE CASTINGS MODEL NO. 1022 OR EQUAL. MANHOLES SHALL BE PROVIDED WITH STEPS MADE OF STEEL REINFORCED COPOLYMER IN COMPLIANCE WITH ASTM C 478, PARA 11.
10. THE COMPLETED SEWER SHALL BE LAMPED TO VERIFY STRAIGHTNESS; CHECKED FOR DEFLECTION WITH A "GO-NO-GO" MANDREL; AND TESTED FOR LEAKAGE BY LOW PRESSURE AIR. THE "GO-NO-GO" TEST SHALL DEMONSTRATE THAT NO DEFLECTION GREATER THAN 5% HAS OCCURRED. THE LOW PRESSURE AIR TEST SHALL BE IN ACCORDANCE WITH UNI-B-5. THE MAXIMUM ALLOWABLE PRESSURE DROP SHALL BE 1.0 PSI GAUGE AT TEST PRESSURE OF 3.5 PSIG OBSERVED FOR 10 MINUTES.
11. CONTRACTOR SHALL CONTACT UPON 48 HOURS BEFORE THE START OF ANY EXCAVATION AND SHALL NOTIFY THE TOWN ENGINEER 72 HOURS BEFORE COMMENCEMENT OF CONSTRUCTION.
12. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2" X 4" S.P.F. EXTENDING 4' ABOVE FINISHED GRADE AND THE TOP 12" OF THE 2" X 4" SHALL BE PAINTED OR SPRAYED RED.

END SECTION 33 3100

SECTION 02722 - SANITARY SEWERS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. ALL WORK SHALL BE IN COMPLIANCE WITH LOCAL REGULATIONS.

1.2 SUBMITTALS

A. PRODUCT DATA
   1. PIPING
   2. MANHOLE STRUCTURE
   3. MANHOLE FRAME AND COVER

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING

A. SANITARY SEWER PIPING MAY BE ONE OF THE FOLLOWING AT THE CONTRACTORS OPTION UNLESS NOTED OTHERWISE ON THE DRAWINGS:
   4. PVC PIPE AND FITTINGS
      a. CONFORMING TO ASTM D3034 "TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS FOR SDR 26 (STANDARD DIMENSION RATIO).

B. UNDERGROUND WARNING TAPES (ELECTRICAL AND SEWAGE)
   1. PROVIDE POLYETHYLENE PLASTIC TAPE, 4" WIDE BY 4 MILS THICK SOLID GREEN IN COLOR WITH CONTINUOUSLY PRINTED CAUTION IN BLACK LETTERS STATING WARNING SEWER LINE BURIED BELOW... OR YELLOW WITH WARNING ELECTRICAL LINE BURIED BELOW.

2.2 MANHOLE STRUCTURES

A. GENERAL
   1. THE CONTRACTOR MUST CONSTRUCT MANHOLES OF PRECAST CONCRETE
B. PROVIDE MATERIALS CONFORMING WITH THE FOLLOWING
   1. PRECAST SECTIONS: ASTM C 478-79, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS" (SEE PART 1B).
   2. RUBBER GASKETS: ASTM C 443-78, "JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE, USING RUBBER GASKETS"
   3. NONSHRINK GROUT: HIGH STRENGTH, NON-METALLIC, EXPANDING PORTLAND CEMENT GROUT.
   4. CONCRETE: 5 - 6% AIR ENTRAINED, 3,000 P.S.I., PORTLAND CEMENT CONCRETE
   5. FRAMES AND COVERS: (BASED ON SYRACUSE CASTINGS #1040 OR APPROVED EQUAL)
      a. FRAMES - ROUND, CAST IRON WITH A CLEAR OPENING MINIMUM 24" IN DIAMETER, HEIGHT MINIMUM 9" AND FLANGE WIDTH MINIMUM 4"
      b. COVERS - ROUND, CAST IRON AND 1-3/8" THICK
   6. LADDER RUNGS: CAST IRON AND ASPHALT COATED FOR USE IN CONICAL SHAPED CATCH BASINS AND MANHOLES. MINIMUM TENSILE STRENGTH OF 25,000 POUNDS PSI, OR APPROVED EQUAL.
   10. MANHOLES SHALL BE WATERTIGHT AND AN ASPHALTIC SEAL SHALL BE APPLIED TO ALL SURFACES.

PART 3 - EXECUTION

3.1 GENERAL

A. ESTABLISH AND MAINTAIN ALL LINES AND GRADES REQUIRED FOR THE PERFORMANCE OF THE WORK DESCRIBED IN THIS SECTION AND RELATE ALL ELEVATIONS TO DATUM ELEVATION INDICATED ON DRAWINGS.
B. INSTALL ALL PIPING IN ACCORDANCE WITH REFERENCED STANDARDS AND MANUFACTURER'S PRINTED INSTRUCTIONS.
C. LAY PIPE BEGINNING AT LOW POINT OF SYSTEM, TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNIFORM CONTINUITY OF INVERT.
D. INSTALL ALL PVC PIPE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D 2321, "UNDERGROUND INSTALLATION OF FLEXIBLE THERMOPLASTIC SEWER PIPE"

3.2 PRECAST CONCRETE MANHOLES

A. USE OF DRY BONDING COMPOUND BETWEEN PRECAST SECTIONS AND WHERE MANHOLE STEPS ARE MORTARED INTO MANHOLE WALLS.

3.3 CLEANING OF SYSTEM

A. CLEAN SYSTEM OF ALL DEBRIS DURING AND AFTER CONSTRUCTION. KEEP SYSTEM CLEAN THROUGHOUT ALL PHASES OF CONSTRUCTION.

3.4 INSPECTION OF SYSTEM

A. INSPECT PIPING TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED.
B. ALL PIPE SHALL BE TESTED FOR PIPE SEURT AND LEAKAGE IN ACCORDANCE WITH ALL LOCAL, REGIONAL AND STATE STANDARDS. PRESSURE AND LEAKAGE TESTING SHALL BE WITNESSED BY THE ENGINEER AND CERTIFIED TO THE APPROPRIATE MUNICIPALITIES. THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HRS IN ADVANCE OF ANY TESTING TO BE WITNESSED.
C. MAKE INSPECTIONS AFTER LINES BETWEEN MANHOLES HAVE BEEN INSTALLED AND APPROXIMATELY TWO FEET MINIMUM OF BACKFILL IS IN PLACE, AND AGAIN AT COMPLETION OF PROJECT.
D. IF INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
E. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE AT LEAST ONE SET OF AS-BUILTS TO THE OWNER.

3.5 INSTALLATION OF WARNING TAPE

A. INSTALL CONTINUOUS PLASTIC UNDERGROUND WARNING TAPE DURING BACKFILLING OF TRENCHES FOR UNDERGROUND SEPTIC SYSTEM PIPING, STRUCTURES AND ELECTRICAL LINES. LOCATE 8 - 9" BELOW FINISH GRADE, DIRECTLY OVER PIPING AND ELECTRICAL LINES AND OVER EDGES OF UNDERGROUND STRUCTURES.

END OF SECTION 02722 - SANITARY SEWERS

SECTION 33 4000 – STORM DRAINAGE

PART 1 – GENERAL

1.1 SUBMITTALS

A. SUBMIT SHOP DRAWINGS (SD) AND MANUFACTURER'S DATA (MD) FOR THE ITEMS LISTED BELOW AND ANY SPECIAL CONSTRUCTION DETAILS RELATING TO THE STORM DRAINAGE SYSTEM.
   1. DRAINAGE STRUCTURES: ONE (SD) PER CASTING TYPE
   2. DRAINAGE STRUCTURES AND FRENCH DRAIN: ONE (SD) PER STRUCTURE. INCLUDE RIM AND BOTTOM ELEVATIONS, PIPE INVERTS AND PIPE LOCATIONS.
   3. CASTINGS: ONE (SD) PER TYPE
   4. STORM LINES AND UNDERDRAINS: ONE (PD) PER PIPE MATERIAL TYPE
   5. FILTER FABRIC (PD)
   6. DETECTABLE WARNING TAPE, (PD)
   7. NON-SHRINK GROUT: (PD)
B. MATERIAL CERTIFICATES (MC) INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS EACH BEARING NAME AND LOCATION OF QUARRY. SAMPLE (S) OF MATERIAL REQUIRED (MP) NO MORE THAN 1 CUBIC FOOT) IN A WATERPROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS.
   1. DRAINAGE FILL: (MC), (LA) AND (S)
   2. COARSE AGGREGATE FILL: (SEE SECTION 312201, SUBMITTALS)

PART 2 – PRODUCTS

2.1 MATERIALS

A. CONCRETE: AS SPECIFIED SECTION 321313 - SITE CONCRETE. MINIMUM COMPRESSIVE STRENGTH 3,000 PSI AT 28 DAYS.
B. REINFORCING: AS SPECIFIED SECTION 321313 - SITE CONCRETE
C. MASONRY UNITS: COMMON BRICK, ASTM C-62, LATEST EDITION, GRADE SW.
   1. MORTAR: CEMENT, LIME, SAND, 1:1:6 MIX.
D. DRAINAGE STRUCTURES, FRAME, GRATES AND COVERS
   1. DRY WELLS, CATCH BASINS, MANHOLES, INLETS: SIZES, SHAPES, SPECIFIC UNIT, OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL. PRECAST REINFORCED CONCRETE UNITS COMPLYING WITH ASTM C 478. PROVIDE OPENINGS OF SHAPE, SIZE AND LOCATION REQUIRED. PROVIDE GASKETS FOR INTERLOCKING UNITS AS IN CASE PROVIDE EXCEPT WHERE OTHERWISE INDICATED. USE ONLY TRAFFIC DESIGN COVERS IN PAVING AREAS OR WHERE OTHERWISE INDICATED.
E. FRAMES, GRATES, COVERS:
   1. SIZES, SPECIFIC UNIT, OR ATES OR COVER DESIGN OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL. ALL UNITS TO BE HEAVY-DUTY SUITABLE FOR H-20 LOADING. SYRACUSE CASTINGS CO. OR NEENAH CO. PRODUCTS SHALL BE QUALITY STANDARD. PROVIDE CASTINGS OF UNIFORM QUALITY FREE FROM BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DEFECTS, CRACKS, OR OTHER INJURIOUS DEFECTS, GRAY IRON MATERIAL, ASTM A-48 CLASS 30, ALL NON-ROCKING OR SKEW WITH MACHINED BEARING SURFACES. PROVIDE TRAP OR PIPE ELBOW DROPS AT SHOWN ON DRAWINGS.
   2. PIPE TO MH CB CONNECTORS: NON-HEAT, FLEXIBLE EPDM RUBBER CONNECTOR BY ANPC INC. OR APPROVED EQUAL.
   3. GRADE ADJUSTMENT: PRECAST CONCRETE RINGS, NYSDOT SECTION 715.13 PRE-FABRICATED CAST IRON OR STEEL ADJUSTMENT RINGS. NO BRICK ALLOWED.
   4. PROVIDE TRAPS OR PIPE ELBOWS WITHIN STRUCTURE IF SHOWN ON DRAWINGS.
F. STORM LINES
   1. CAST IRON PIPE (CI): SIX ASTM SERVICE WEIGHT, HUB AND SPIGOT JOINTS CISPI HIGH COMPRESSION TYPE WITH ASTM C-564 NEOPRENE GASKETS.
   2. CORRUGATED ROUND STEEL PIPE (CSP): COMPLY WITH NYSDOT SECTION 707.02, STEEL, THICKNESS 16 GAUGE MINIMUM, GALVANIZED NOT OTHERWISE CONTINUOUSLY COATED INSIDE AND OUT, PAVED INVERT OR SMOOTH LINER IF INDICATED ON DRAWINGS. ALL STEEL SHAPES, FITTINGS, BRANCHES, REDUCERS AND BAND COUPLERS TO MATCH, SAME MANUFACTURER. USE MAXIMUM AVAILABLE WIDTH COUPLERS FOR PIPE SIZE. PROVIDE PERFORATED PIPE WHERE SHOWN ON DRAWINGS.
   3. CORRUGATED HIGH DENSITY POLYETHYLENE PIPE (HDPE): CORRUGATED PERFORATED OR NON-PERFORATED HIGH DENSITY POLYETHYLENE SHALL HAVE SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. PIPE SIZES 4 - 60" (100 - 1500 MM) SHALL MEET AASHTO M-294, TYPE S. PIPE SHALL BE MANUFACTURED FROM VIRGIN POLYETHYLENE COMPOUNDS WITH ADDITIVES OF AASHTO 252 OR ASTM D-3350. THE JOINT SHALL BE WATERTIGHT ACCORDING TO THE LABORATORY REQUIREMENTS OF ASTM D-3212. 3/8" (150 MM) THROUGH 42" (1050 MM) PIPE JOINTS SHALL BE WATERTIGHT ACCORDING TO ASTM D-3212 WITH THE EXCEPTION THAT THE JOINT BE TESTED USING 8.0 PSI OR 5.5 PSI AS JOINTS SHALL REMAIN WATERTIGHT WHEN SUBJECTED TO A 15 DEGREE AXIAL MISALIGNMENT. GASKETS SHALL BE MADE OF POLYISOPRENE AND MEET THE LABORATORY REQUIREMENTS OF ASTM F-477. GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. A JOINT LUBRICANT SUPPLIED BY THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY.
   4. UNDERDRAIN (UD): ASTM F-405 PERFORATED CORRUGATED POLYETHYLENE TUBING. PIPING AND FITTINGS BY ADVANCED DRAINAGE SYSTEMS, HANCOR, BRUCKMAN TILE CO., OR EQUAL, USE MAXIMUM LENGTH COILS IN EACH RUN, USE INTERNAL COUPLERS TO JOIN COILS. PROVIDE HEAVY-DUTY GRADE AASHTO M-294 CULVERT PIPE WHERE INDICATED. USE NON-PERFORATED TUBING WHERE INDICATED.
G. SAND BEDDING (STORM DRAINS): CLEAN COARSE NATURAL SAND FREE OF ORGANIC MATTER.
H. DRAINAGE FILL (UNDERDRAINS): SCREENED GRAVEL, CRUSHED GRAVEL OR CRUSHED STONE CONFORMING TO (N.Y.S.D.O.T.) SECTION 703.02 TYPE 1 GRADATION.
I. FILTER FABRIC: NONWOVEN POLYPROPYLENE DRAINAGE FABRIC, MIRAFI 140N, TERRAFIX 270 OR EQUAL.
J. CLEANOUTS: HEAVY-DUTY COATED CAST IRON BODY, FITTED TOP WITH VANDAL RESISTANT FASTENERS, CLEANOUT PLUG - J.R. SMITH, ZURN OR EQUAL. USE DUCTILE IRON PIPE RISER. COMPLY WITH DRAWINGS.
K. NON-SHRINK GROUT: GROUT, FACTORY PREMIXED GROUT. PRODUCTS WHICH MAYBE INCORPORATED IN THE WORK INCLUDE THE FOLLOWING NON-METALLIC GROUTS OR AN APPROVED EQUAL. "SET GROUT" BY MASTER BUILDERS, "SONOGROUT" BY SONNEBORN, RENGROUT OR "EUCLID-NS" BY EUCLID CHEMICAL CO.
L. DISSIMILAR MATERIAL ADAPTOR: DISSIMILAR MATERIAL ADAPTER BY ADVANCED DRAINAGE SYSTEMS OR APPROVED EQUAL.
M. COARSE SAND: WELL GRADED COARSE SAND GENERALLY COMPLYING WITH NYSDOT SECTION 703.07 CONCRETE SAND SPECIFICATION AND GRADATION.

	Sieve Size	Percent Passing
	3/8"	100
NO. 4		95-100
NO. 8		75-100
NO. 16		50-85
NO. 30		25-60
NO. 50		10-30
NO. 100		1-10
NO. 200 (WET)		0-3

PART 3 – EXECUTION

3.1 STRUCTURES

A. PRECAST UNITS: (ED) IN GRAVEL, SET LEVEL AND PLUMB. ALIGN STEPS IN ALL SECTIONS EXACTLY ON A PLUMB AXIS ON SLOPING SURFACES. ARRANGE FOR OPENING TO BE ON THE DOWNSLOPE SIDE OF THE STRUCTURE SO THAT 12" MINIMUM COVER IS MAINTAINED OVER RISER SECTION WITHOUT SLIDING THE FLANK OF THE SLOPE. FINISHED STRUCTURE, INCLUDING ALL JOINTS AND PENETRATIONS, SHALL BE WATERTIGHT.
B. MASON WALL EXTENSIONS: CONSTRUCT HEDGE WALLS PARGE INSIDE AND OUT.
C. CASTINGS: SECURELY SET IN MORTAR.

3.2 INSTALLATION OF DRAIN LINES

A. ALL PIPE SHALL BE EXAMINED BEFORE LAYING AND NO PIECE SHALL BE INSTALLED WHICH IS FOUND TO BE DEFECTIVE.
B. DRAIN PLACEMENT SHALL COMMENCE AT THE OUTLET AND PROCEED SECTION BY SECTION. UPHILL UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PLACE SPIGOT ENDS IN DIRECTION OF FLOW.
C. IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER IT HAS BEEN INSTALLED, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE IN A SATISFACTORY MANNER AT NO ADDITIONAL COST TO THE OWNER. ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE INSTALLATION, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE WORK AND WHEN LAID, SHALL CONFORM TO THE LINES AND GRADES REQUIRED. ALL PIPING, FLARED END SECTIONS AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE MANUFACTURER, OR AS OTHERWISE PROVIDED HEREIN OR ON THE DRAWINGS.
D. AS SOON AS THE EXCAVATION IS COMPLETE TO NORMAL GRADE OF THE BOTTOM OF THE TRENCH, SAND BEDDING SHALL BE PLACED, COMPACTED AND GRADED TO PROVIDE FIRM, UNIFORM AND CONTINUOUS SUPPORT FOR THE PIPE. THE PIPE SHALL BE LAID ACCURATELY TO THE LINES AND GRADES INDICATED ON THE DRAWINGS. BLOCKING UNDER THE PIPE WILL NOT BE PERMITTED. BEDDING SHALL BE PLACED EVENLY ON EACH SIDE OF THE PIPE TO MID-DIAMETER AND HAND TOOLS SHALL BE USED TO FORCE THE BEDDING WHERE NEEDED TO GIVE FIRM CONTINUOUS SUPPORT FOR THE PIPE, DEPENDING ON FINAL SURFACE MATERIAL, SAND BEDDING OR COARSE AGGREGATE FILL SHALL BE PLACED TO 12" ABOVE THE TOP OF THE PIPE (REFER TO "DRAINS" DETAIL). THE INITIAL 3' OF BACKFILL ABOVE THE BEDDING SHALL BE PLACED IN 12" LAYERS AND CAREFULLY COMPACTED. GENERALLY THE COMPACTION SHALL BE DONE EVENLY ON EACH SIDE OF THE PIPE AND COMPACTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED TO ENSURE THAT SUCH COMPACTION EQUIPMENT WILL NOT HAVE A DAMAGING EFFECT ON THE PIPE. EQUIPMENT USED IN COMPACTING THE INITIAL 3' OF BACKFILL SHALL BE APPROVED BY THE PIPE MANUFACTURER'S REPRESENTATIVE PRIOR TO USE. REFER TO SECTION 31 2301, SITEWORK EXCAVATION, BACKFILLING AND COMPACTING FOR ADDITIONAL BACKFILLING REQUIREMENTS.
E. ALL PIPE SHALL BE SOUND AND CLEAN BEFORE INSTALLATION. WHEN INSTALLATION IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUG OR OTHER APPROVED MEANS. GOOD ALIGNMENT SHALL BE PRESERVED DURING INSTALLATION. THE DEFLECTION AT JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY MANUFACTURER.
F. BEFORE ANY JOINT IS MADE, THE PIPE SHALL BE CHECKED TO ASSURE THAT A CLOSE JOINT WITH THE NEXT ADJOINING PIPE HAS BEEN MAINTAINED AND THAT THE INVERTS ARE MATCHED AND CONFORM TO THE REQUIRED GRADE. THE PIPE SHALL NOT BE DRIVEN DOWN TO GRADE BY STRIKING IT.
G. PRECAUTIONS SHALL BE TAKEN TO PREVENT FLOTATION OF THE PIPE IN THE TRENCH.
H. WHEN MOVEABLE TRENCH BRACING SUCH AS TRENCHBOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE USED TO SUPPORT THE SIDES OF THE TRENCH, CARE SHALL BE TAKEN IN PLACING AND MOVING THE BOXES OR SUPPORTING BRACING TO PREVENT MOVEMENT OF THE PIPE OR DISTURBANCE OF THE PIPE BEDDING AND THE BACKFILL. TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES SHALL NOT BE ALLOWED TO EXTEND BELOW TOP OF THE PIPE. IF TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES HAVE BEEN INSTALLED BELOW THE TOP OF THE PIPE, THEY SHALL BE MOVED SLOWLY, TAKING CARE NOT TO DISTURB PIPE, BEDDING OR BACKFILL. AS TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE MOVED, PIPE BEDDING SHALL BE PLACED TO FILL ANY VOIDS CREATED AND THE BACKFILL SHALL BE RECOMPACTED TO PROVIDE UNIFORM SIDE SUPPORT FOR THE PIPE.
I. THOROUGHLY CLEAN COMPLETED STORM DRAINAGE SYSTEM OF ALL DEBRIS AND SEDIMENT PRIOR TO FINAL ACCEPTANCE.

3.3 COORDINATION

A. COORDINATE LOCATION OF WYES AND VERIFY INVERTS OF LINES AND STRUCTURES WITH PLUMBING CONTRACTOR WHERE APPLICABLE.

3.4 UNDERDRAINS (FRENCH DRAIN, LOW FLOW UNDERDRAIN

A. DRAINAGE FILL: PLACE AS DETAILED.
B. PERFORATED LINES: PLACE HOLES DOWN, TRUE TO LINE AND GRADE. PLACE REMAINING DRAINAGE FILL.
C. CONNECT TO NEAREST SUITABLE STORM MANHOLE WHETHER DRAINAGE SHOWN ROUTING OR NOT.
D. BACKFILL: PER SECTION 31 2301 SITEWORK EXCAVATION, BACKFILLING AND COMPACTING AND AS DETAILED ON THE DRAWINGS.

3.5 WATERPROOF PIPE CONNECTOR

A. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

END SECTION 33 4000

Issued By

Date Plotted

Drawing File

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
333 W. Fayette St., Suite 410, Syracuse, NY 13202 (315)
Auburn (315) 252-7160 Fax (315) 252-7165
PZ Engineering, PLLC
4744 U.S. Rte. 11, Suite 201, Cicero, NY 13039
Ph: 315-701-6910 Fax: 315-701-6911

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

No	Rev	Description	Date
1	1	CHECK SET - TOWN OF MANLIUS	07/31/19
2	2	PUBLIC HEARING MANLIUS	09/04/19
3	3	PUBLIC HEARING MANLIUS	10/29/19
4	4	PUBLIC HEARING MANLIUS	12/04/19
5	5	PUBLIC HEARING MANLIUS	12/26/19
6	6	TOWN REVIEW - TOWN OF MANLIUS	02/28/19
7	7	MANLIUS PLANNING BOARD SUBMISSION	03/06/20

Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET - TOWN OF MANLIUS	07/31/19
2	2	PUBLIC HEARING MANLIUS	09/04/19
3	3	PUBLIC HEARING MANLIUS	10/29/19
4	4	PUBLIC HEARING MANLIUS	12/04/19
5	5	PUBLIC HEARING MANLIUS	12/26/19
6	6	TOWN REVIEW - TOWN OF MANLIUS	02/28/19
7	7	MANLIUS PLANNING BOARD SUBMISSION	03/06/20
8	8	MANLIUS PLANNING BOARD SUBMISSION	04/17/20
9	9	MANLIUS PLANNING BOARD SUBMISSION	05/15/20
10	10	MANLIUS PLANNING BOARD SUBMISSION	06/15/20
11	11	MANLIUS PLANNING BOARD SUBMISSION	09/25/19
12	12	MANLIUS PLANNING BOARD SUBMISSION	12/18/19
13	13	MANLIUS PLANNING BOARD SUBMISSION	12/18/19
14	14	MANLIUS PLANNING BOARD SUBMISSION	04/17/20

REGISTERED LANDSCAPE ARCHITECT — JOHN M. FREEMAN — 001114 — STATE OF NEW YORK

Drawn By: VER
Checked By: JF
KFA Proj. No.: 17060
Date: DECEMBER 1, 2017
Scale: AS NOTED

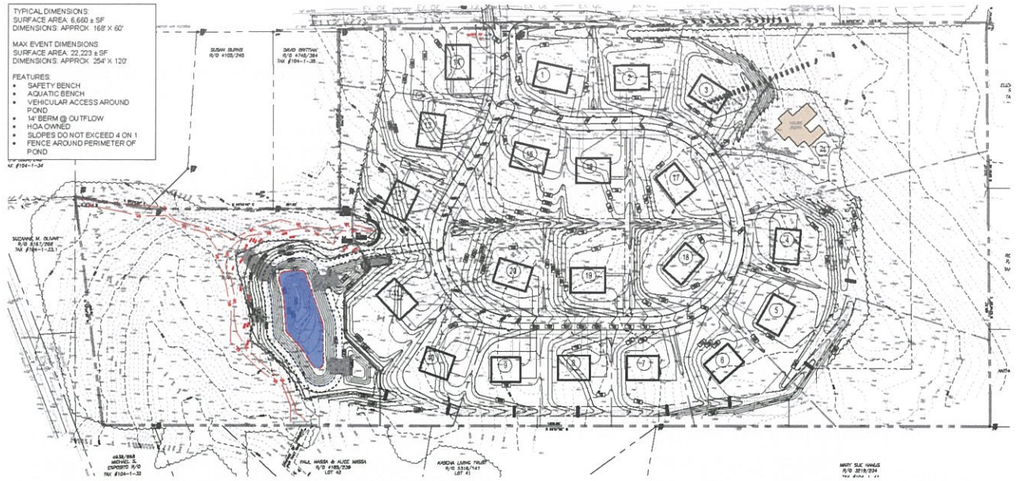
Title:
SPECIFICATIONS

L-801

TYPICAL DIMENSIONS:
SURFACE AREA: 6,660 ± SF
DIMENSIONS: APPROX. 168' X 60'

MAX. EVENT DIMENSIONS:
SURFACE AREA: 22,223 ± SF
DIMENSIONS: APPROX. 254' X 120'

FEATURES:
- SAFETY BENCH
- AQUATIC BENCH
- VEHICULAR ACCESS AROUND POND
- 14' BERM @ OUTFLOW
- HOA OWNED
- SLOPES DO NOT EXCEED 4 ON 1
- FENCE AROUND PERIMETER OF POND



7 L-900 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

0 100 200 300
SCALE IN FEET
(ALL PLANS)


5


3

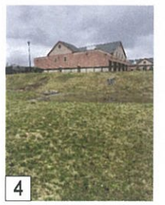

1


2


6


4


6


4

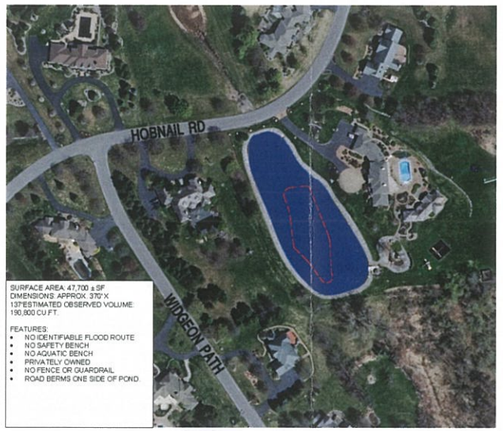
8 L-900 **REPRESENTATIVE PHOTO SAMPLES OF PONDS (0 FENCED)**



SURFACE AREA: 57,300 ± SF
DIMENSIONS: APPROX. 360' X 215'
ESTIMATED OBSERVED VOLUME:
559,400 CU FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO FENCE OR GUARDRAIL
- 8-12' BERM AROUND POND

1 L-900 **MALLARDS LANDING SUBDIVISION - GADWALL**



SURFACE AREA: 47,700 ± SF
DIMENSIONS: APPROX. 370' X 137'ESTIMATED OBSERVED VOLUME:
190,900 CU FT.

FEATURES:
- NO IDENTIFIABLE FLOOD ROUTE
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PRIVATELY OWNED
- NO FENCE OR GUARDRAIL
- ROAD BERMS ONE SIDE OF POND

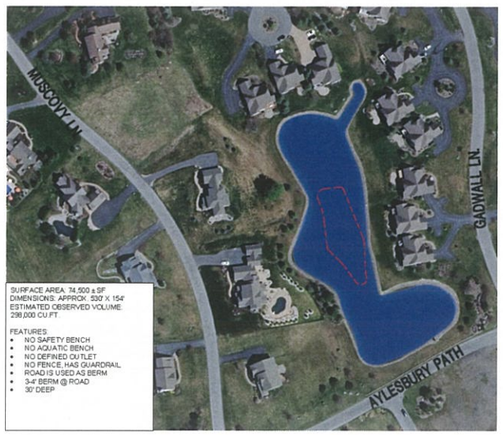
3 L-900 **MALLARDS LANDING - HOBNAIL**



SURFACE AREA: 9000 ± SF COMBINED
DIMENSIONS: APPROX. 171' X 34' @ LARGEST POND
ESTIMATED OBSERVED VOLUME:
109,000 CU FT.

FEATURES
- NO SAFETY BENCH
- AQUATIC BENCH
- NO FENCE
- 12' BERM @ OUTFLOW
- NO DEFINED DISCHARGE POINT
- HOMES DIRECTLY BELOW OUTFLOW

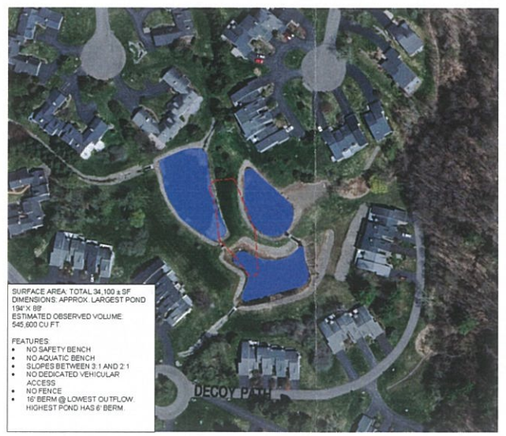
5 L-900 **MANLIUS FIRE DEPT.**



SURFACE AREA: 74,500 ± SF
DIMENSIONS: APPROX. 530' X 154'
ESTIMATED OBSERVED VOLUME:
298,000 CU FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO DEFINED OUTLET
- NO FENCE, HAS GUARDRAIL
- ROAD IS USED AS BERM
- 3-4' BERM @ ROAD
- 30' DEEP

2 L-900 **MALLARDS LANDING SUBDIVISION - AYLESBURY**



SURFACE AREA: TOTAL 34,100 ± SF
DIMENSIONS: APPROX. LARGEST POND
194' X 88'
ESTIMATED OBSERVED VOLUME:
545,600 CU FT.

FEATURES
- NO SAFETY BENCH
- NO AQUATIC BENCH
- SLOPES BETWEEN 3:1 AND 2:1
- NO DEDICATED VEHICULAR ACCESS
- NO FENCE
- 16' BERM @ LOWEST OUTFLOW. HIGHEST POND HAS 6' BERM.

4 L-900 **MALLARDS LANDING - DECOY RUN**



SURFACE AREA: 52,800 ± SF
DIMENSIONS: APPROX. 344' X 191'
ESTIMATED OBSERVED VOLUME:
316,800 CU FT.

FEATURES
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PEDESTRIAN ROW AROUND POND PUT NO FENCING. FENCING AROUND UPPER POND FOR VEHICULAR PROTECTION
- 6-8' BERM @ OUTFLOW
- EROSION OCCURRING AT OUTFLOW

8 L-900 **SWAN POND**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
5225 FAY ROAD, SUITE 1B LAKE ONONDAGA, NEW YORK 13057
PHONE: (315) 446-7865 FAX: (315) 446-7866

RZ Engineering PLLC
1226 RT 9W&O SUITE 201
WEST STAUNTON, NY 12061
PH: 518.402.2201 FAX: 720.645.7931

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION														
No	Rev	Description	Date	No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/23/18	8	8	21 LOT SITE PLAN REVISIONS	01/06/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS PLAN SUBMISSION	05/14/19
3	3	PUBLIC HEARING MANLIUS	03/26/18	10	10	MANLIUS PLAN SUBMISSION	06/13/19
4	4	PUBLIC HEARING MANLIUS	05/04/18	11	11	MANLIUS PLAN SUBMISSION	09/25/19
5	5	PUBLIC HEARING MANLIUS	06/01/18	12	12	MANLIUS PLAN SUBMISSION	12/18/19
6	6	TOWN REV - 21 LOTS-MANLIUS	10/29/18	13	13	MANLIUS PLAN SUBMISSION	12/19/19
7	7	MANLIUS-21 HOME LOTS-PLBH	11/30/18	14	14	MANLIUS PLAN SUBMISSION	03/13/20

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SF
KFA Proj. No. 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
WET POND COMPARISONS

L-900

Tuesday, June 16, 2020 8:37:31 AM











HOMES PICTURED HERE WERE BUILT BY THOMAS ALLEN HOMES THROUGHOUT THE LOCAL COMMUNITY. NEIGHBORHOODS INCLUDE WATERFORD WOODS, HARTSFIELD PLACE, MALLARDS LANDING & BRIAR BROOK

BERLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
PJ Engineering, PLLC

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/17/18
2	2	SUBDIVISION PLAN SUBMISSION	02/09/18
3	3	PUBLIC HEARING-MANLIUS	03/09/18
4	4	PUBLIC HEARING-MANLIUS	05/04/18
5	5	PUBLIC HEARING-MANLIUS	06/01/18
6	6	TOWN REV. 21 LOT-MANLIUS	10/29/18
7	7	MANLIUS-21 LOAE-CEC-LA-SEA	11/16/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS - PLAN SUBMISSION	05/13/19
10	10	MANLIUS - PLAN SUBMISSION	07/12/19
11	11	MANLIUS - PLAN SUBMISSION	09/23/19
12	12	MANLIUS - PLAN SUBMISSION	12/19/19
13	13	MANLIUS - PLAN SUBMISSION	12/19/19
14	14	MANLIUS - PLAN SUBMISSION	12/27/20

Drawn By: VER
Checked By: BF
bfA Proj. No: 37090
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SAMPLE ARCHITECTURE

L-901

Date Plotted:
Drawing File:

Tuesday, June 16, 2020 9:06:09 AM

15th June 2020

Joseph Lupia
Town of Manlius Planning Board Chairperson
301 Brooklea Drive
Fayetteville, NY 13066
Phone: 315-637-3414
Fax: 315-637-0713

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Woodland Hills Email Correspondence

Dear Mr. Lupia,

Attached are copies of all email correspondence we have had with consultants and agencies over the past few months regarding the Woodland Hills Subdivision. We believe this correspondence puts to rest some of the major concerns the Town and Engineer had regarding proposed actions on the site. We understand the town may interpret these thoughts differently but we stand behind the policies & rules as indicated by these agencies. They are as follows:

1. Onondaga County Department of Water Environment Protection, Chris Deitman

   Subject: Low Pressure Sanitary System Applicability in Onondaga County

   Dated: June 2nd , 2020

2. NYS Department of Environmental Conservation, Matthew J. Kazmierski

   Subject: Compost requirements for subdivision development in Town of Manlius

   Dated: March 11th , 2020

3. NYS Department of Environmental Conservation, Jennifer E. Ross

   Subject: Dam permitting requirements Woodland Hills Subdivision

   Dated: March 25th , 2020

Vincent Ryan

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, June 12, 2020 1:52 PM
To: Vincent Ryan
Subject: FW: 200505 Hoag Lane subdivision

Follow Up Flag: Follow up
Flag Status: Completed

Here's Dietman's response.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Christopher Deitman <ChrisDeitman@ongov.net>
Sent: Tuesday, June 2, 2020 9:07 AM
To: Rudy Zona <rzona@rzengineering.com>; Jeffrey Till <JeffreyTill@ongov.net>
Subject: RE: 200505 Hoag Lane subdivision

Hi Rudy,

The only reference documents for number of lots for a public pump station refer to running a cost analysis for capital and operation and maintenance costs.

I can however offer the following.

Yes low pressure systems exist in many Towns with in the County's sanitary sewer district and are acceptable by the NYSDEC. Besides the Town's you mentioned Dewitt , Lysander and Manlius which has four or six houses on a low pressure system.

WEP does not provide any service for the Grinder pumps themselves but will flush out the low pressure force main if a flushing port was installed.

A public pump station for seven houses would have to be built to 10-State Standards. After the cost to build, the average yearly Operation and Maintenance costs are roughly $15,000.00-$17,000.00 for a duplex station.

For seven homes you are in the$2,140.00 to $2,430.00 per home per year to maintain the station, not including the capital cost to build it and rehab it in the future.

Thanks

Chris Deitman
Sewer Maintenance Superintendent

Vincent Ryan

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan
Cc: Gasper, David J (DEC); Scott Freeman; 'Rudy Zona (rzona@rzengineering.com)'
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating we apply full restoration per “deep Ripping and De-compaction, DEC 2008” and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
vr@keplingerfreeman.com
(p) 315 -445-7980 x 110

Vincent Ryan

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Wednesday, March 25, 2020 1:55 PM
To: Rudy Zona; dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen'; Scott Freeman; Vincent Ryan; 'Tom Douglas'
Cc: 'Joe Lupia'
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Good afternoon all:

I spoke with Rudy on the phone this afternoon and wanted to summarize our discussion for everyone's records.

I took a look at the drawings and noted that the invert of the outlet pipe is located at an elevation of 664 feet and the top of dam elevation was given as 676.5 feet. So based on my interpretation of the drawings, I had determined a dam height of 12.5 feet. Rudy added that there is some stone rip-rap below this pipe down to an elevation of 662 ft, so conservatively that would put the dam at a height of 14.5 feet. Since the maximum impoundment and dam height are under 3 million gallons and 15 feet the dam would be exempt from needing a DEC Dam Safety Permit. I have given the exemption below.

NYRCC Part 608.3 Dams
(b) Exceptions.
The requirement of a permit pursuant to subdivision (a) of this section does not apply to the following:
(1) the construction, reconstruction, repair, breach or removal of a dam that has a height less than 15 feet, and a maximum impoundment capacity less than three million gallons;

We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event.

Although the dam is below DEC permit thresholds, we always do advise that any dam be designed by a Professional Engineer and that our Guidelines for Design of Dams 1989 be followed as best practice. I would also offer to review any other material that may be developed with regard to the design and specifications for the impoundment if that is desired by any party.

Please feel free to contact me if further clarification is needed.

Best,

Jennifer

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Wednesday, March 25, 2020 12:26 PM
To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

June 11, 2020

TO: Doug Miller, PE
MS-4 Representative
Town of Manlius
AND
Val Murakami
NYSDEC Region 7
Syracuse, NY 13204

RE: RZE #17061
5-acre Disturbance Permit
Hoag Lane Subdivision
Hoag Lane
Town of Manlius
Onondaga County, NY 13066

NARRATIVE

Hoag Road Properties, LLC proposes to subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout. Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing residential driveway for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance (managed in 7 smaller stages), above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer. A wetland delineation provided by Environmental Resources. LLC in --- has provided limits of the existing wetland, see enclosed report by Environmental Resources. LLC The proposed construction does not propose any disturbance to the existing wetland limits or associated buffer. The purpose of this narrative is to describe the proposed site plan and the proposed staged construction sequence.

Construction of the proposed site will consist of one phase broken down into seven stages to limit the potential for erosion and sedimentation issues during the construction process. The seven stages have been outlined on the contract drawings L-102 through L-108. We anticipate that several stages will include disturbance exceeding 5 acres, however this time of open soils exceeding 5 acres will be limited and short.

(1.) As provided in drawings L-102 through L-108 of the site plan set, we anticipate the site to include approximately 7 stages. Each stage is a guide for erosion control and may require adjustments and alterations based on project schedule and field conditions.
   a. Stage 1 will generally consist of installing the proposed entrance drive, wet pond, the proposed bypass swale and general grading of lots 11 through 14. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this all stages. The anticipated disturbance of this stage will be approximately 6.4± acres with an anticipated duration of 6 weeks.
   b. Stage 2 will generally consist of maintaining the proposed temporary sediment basin, continuance of the proposed road and general grading of lots 4 through 10 and 18-19. The installed road will

be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 7.8± acres with an anticipated duration of 6 weeks.

c. Stage 3 will generally consist of maintaining the proposed sediment basin, continuance of the proposed road and general grading of lots 15 through 17 and 1 through 3. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 4.1± acres with an anticipated duration of 6 weeks.
d. Stage 4 will generally consist of finishing all rough earthwork in non stabilized areas and filling in the temporary sediment basin. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 1.12± acres with an anticipated duration of 7 weeks.
e. Stage 5 will generally consist of installing all row utilizes including storm, sanitary and water. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.2± acres with an anticipated duration of 2 weeks.
f. Stage 6 will generally consist of installation of final road grade and base except top course which must be installed within 1 year of project completion. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.1± acres with an anticipated duration of 2 weeks.
g. Stage 7 will generally consist of individual lot construction on an as needed basis. Each lot will include individual erosion control measures during construction as outlined on drawing 2/L-108. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of each lot will differ based on the lot size and has an anticipated duration of 3 weeks.

(2.) Individual erosion and sediment control practices for each stage has been provided on drawings L-102 through L-108 of the site plan set.

Please feel free to contact my office with all questions and/or comments.

Very Truly Yours,

Rudy L. Zona, P.E.

6320 Fly Road Suite 109
East Syracuse, NY 13057
Ph: 315.432.1089
rzona@rzengineering.com

15th June 2020

Joesph Lupia
Town of Manlius Planning Board Chairperson
(315) 477-0100 / Fax (315) 477-5071
301 Brooklea Drive
Fayetteville, NY 13066
Tel. 315-637-3414

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: **Woodland Hills Earthwork Summary**

Dear Chairman Lupia and Planning Board Members,

Please refer to the attached earthwork calculations performed by Tobin Construction utilizing Earthworks Elements. Tobin construction has reviewed this project very closely with our design team, has performed several earthwork calculations for the site and is confident that the site will be able to balance.

A. **TOTAL SITE SUMMARY** - Site Excavation Report for the entire site, attachments A and B, show a cut of 39,308 cubic yards and a fill of 53,929 cubic yards with an import of 14,620 cubic yards which is ideal for a sitework contractor. Soil testing will be required for the use and placement of the 2,480 cubic yards required to construct the fill sections of the proposed right of way. According to Tobin Construction the on site soil materials will balance and import of fill material will not be required for general filling. The import quantity of 14,620 cubic yards will accounted for as follows by the items listed below:

   1 - Road pavement and driveway subbase materials, basement excavation – 3240 cubic yards

   2 – Driveway and subbase material – 740 cubic yards

   3 – Road Underdrain - 320 cubic yards

   4 – Basements– 9,300 cubic yards

   5 – Pipe voids and pipe bedding – 900 cubic yards

   14,500+/- cubic yards total

B. **STAGE 1 SITE SUMMARY** – Site Excavation Report for Stage 1 construction (drawing L-102) , attachments B and C, show a cut of 18603 cubic yards and a fill of 17,413 cubic yards. A surplus of 1189 cubic yards will be utilized to as fill during Stage 2 construction.

C. **STAGE 2 SITE SUMMARY** - Site Excavation Report for Stage 2 construction (drawing L-103), attachments E and F, show a cut of 16,779.8 cubic yards and a fill of 15,298.9 cubic yards. A surplus of 1480.9 cubic yards will be utilized to as fill during Stage 3 construction.

On-site material will be utilized within the right of way fill areas, utilities backfilling and fill below basement slabs based in accordance with project testing specifications and field testing which will be coordinated with the Town of Manlius selected testing agency. According to the earthwork material evaluation and berm stability evaluations performed by Kenney Geotechnical Engineering Services the on-site borrow material which meets the testing criteria can be utilized for fill within the right of way and constructing the embankment.

The earthwork operations will occur within the areas shown on the staged site plans (drawings L-102, L-103, L-104, L-105, L-106, L-107, and L-108. The stockpile areas shown within the staged drawings for stockpiled materials is sufficient based on or experience with similar project.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Attachment 'A' - Total Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 09:01 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

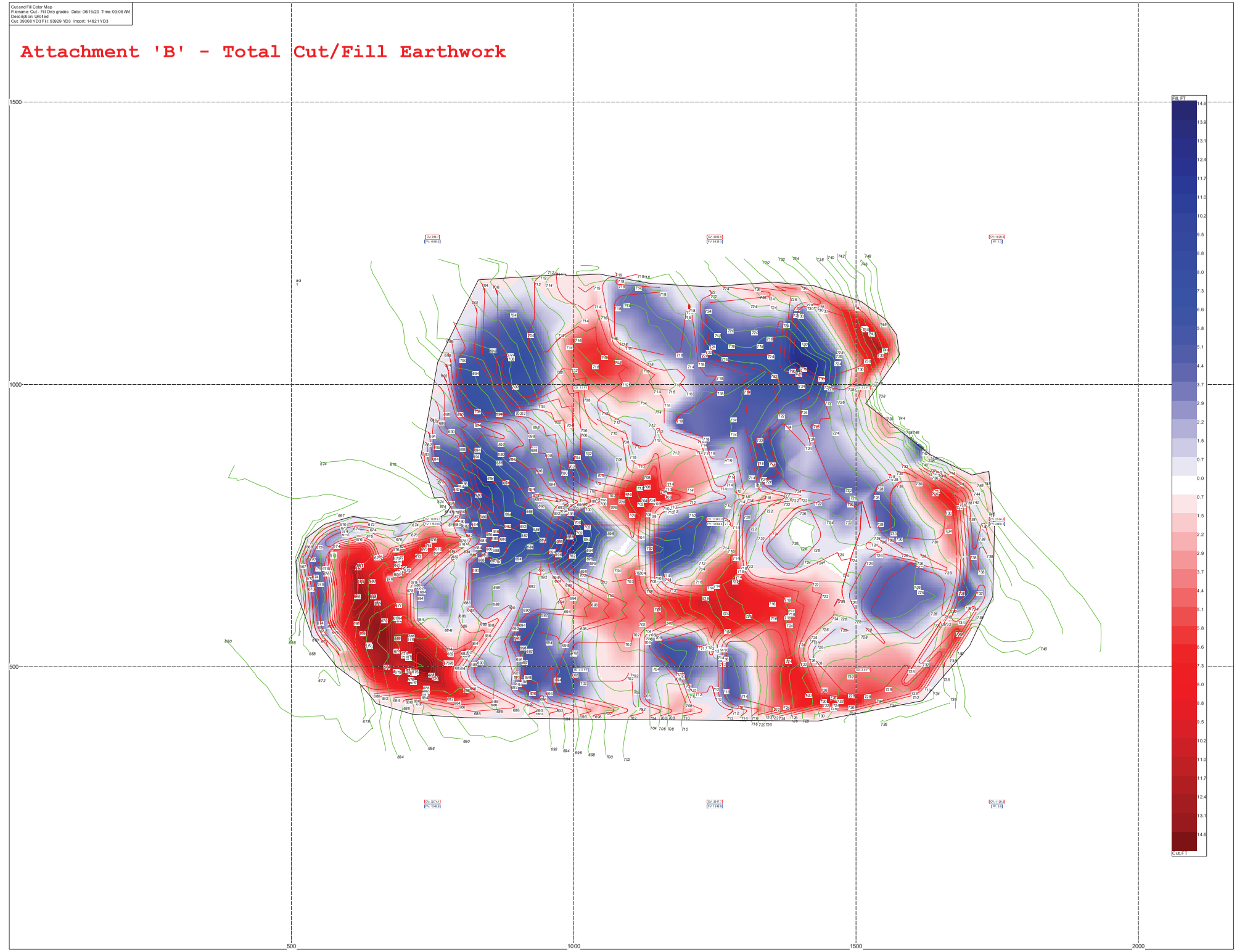
Soil Expansion: 0%
Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 306228.0 FT2
Fill Area: 439531.0 FT2
Work Area: 751864.0 FT2

Bank Cut:	39308.2 YD3
Expanded Cut:	39308.2 YD3
Bank Fill:	53929.1 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Import:	14620.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 09:06 AM
Description: Untitled
Cut: 38308 YD3 Fill: 53929 YD3 Import: 14621 YD3

Attachment 'B' - Total Cut/Fill Earthwork



Attachment 'C' - Stage 1 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 08:18 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

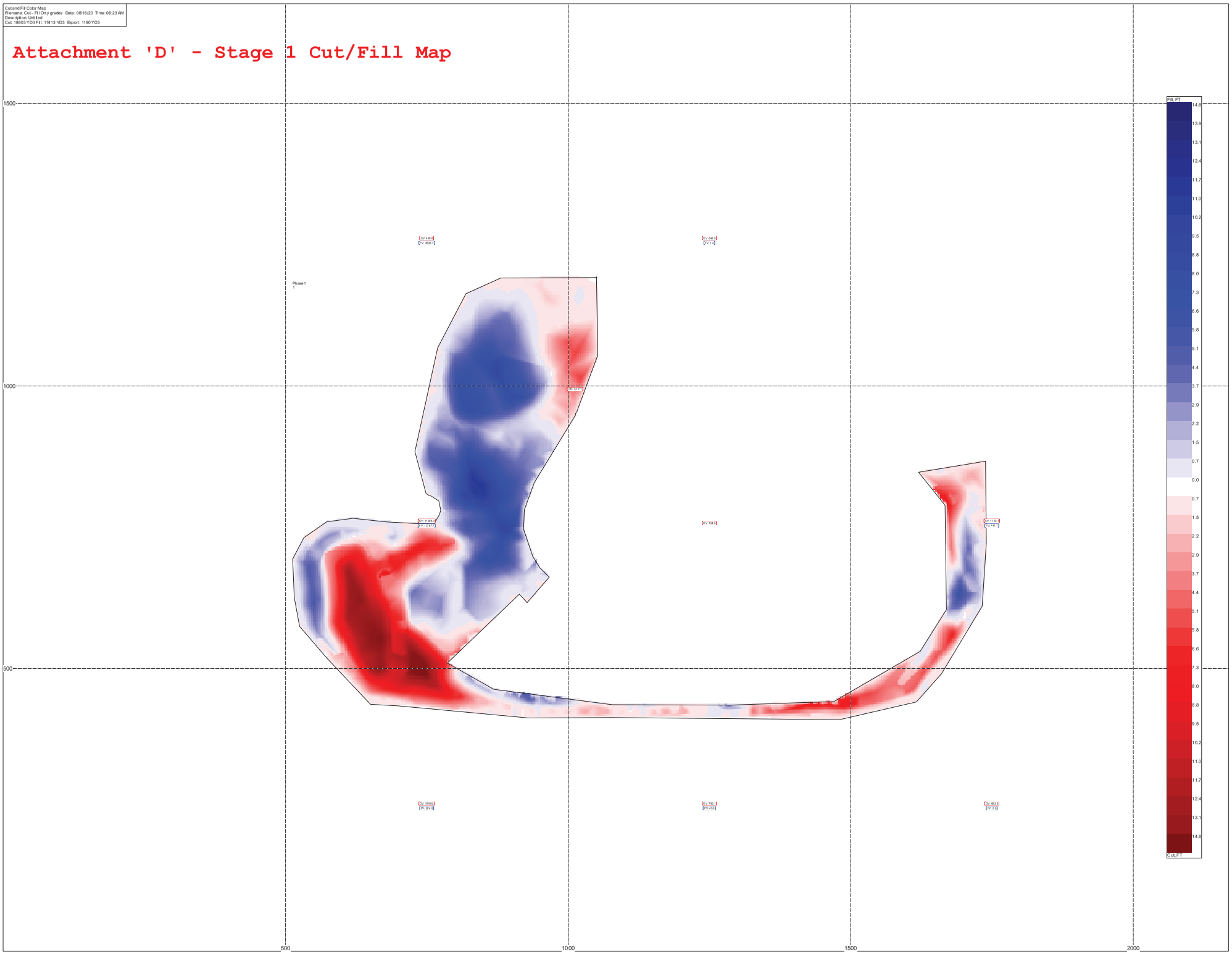
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Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 127234.0 FT2
Fill Area: 139320.0 FT2
Work Area: 267171.0 FT2

Bank Cut:	18603.2 YD3
Expanded Cut:	18603.2 YD3
Bank Fill:	17413.3 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1189.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 08:23 AM
Description: Untitled
Cut: 18603 YD3 Fill: 17413 YD3 Export: 1190 YD3

Attachment 'D' - Stage 1 Cut/Fill Map



Attachment 'E' - Stage 2 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 10:22 AM

Job Filename: EW1
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

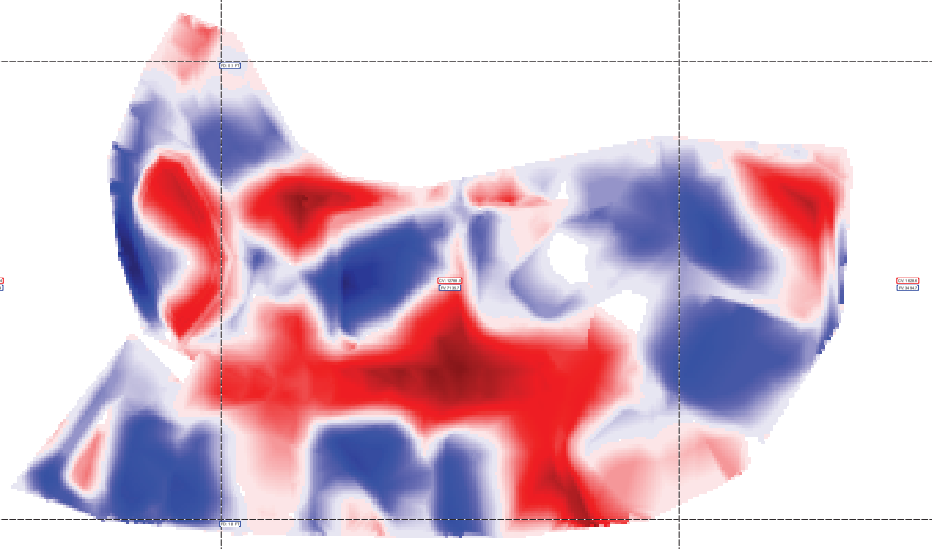
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Soil Compression: 0%
Import Soil Compression: 0%

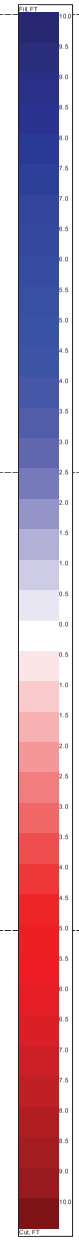
Cut Area: 156400.0 FT2
Fill Area: 174060.0 FT2
Work Area: 334776.0 FT2

Bank Cut:	16779.8 YD3
Expanded Cut:	16779.8 YD3
Bank Fill:	15298.9 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1480.9 YD3

Cut and Fill Color Map
Filename: EW1 Date: 06/16/20 Time: 10:21 AM
Description: Untitled
Cut: 16780 YD3 Fill: 15299 YD3 Export: 1481 YD3

Attachment 'F' - Stage 2 Cut/Fill Map





Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 27, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Berm Stability Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed a geotechnical evaluation of the proposed berms to be constructed for stormwater management features at the referenced site. The purpose of our analysis was to evaluate the stability of the berms under anticipated loading conditions. This report presents the results of our evaluation and provides output from stability analyses.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Analysis Scenarios

The proposed berms are illustrated on drawings prepared by Keplinger Freeman Associates Landscape Architecture (see attached). It was assumed for the purposes of our analysis that the berms would be constructed to the lines and grades indicated on the design drawings using on-site material with the engineering characteristics described in our previously submitted Hoag Lane Earthwork Report.

The engineering characteristics of the on-site materials, when recompacted in accordance with our recommendations, are well suited for berm construction. The recompacted glacial till exhibited good undrained shear strength (greater than 2500 pounds per square foot) and low permeability (less than 1 x 10-6 cm/sec). It should be noted that the in-situ glacial till exhibited even higher strength and also had low permeability. Topsoil and organic matter, up to approximately 24 inches in thickness at the berm area, will be removed from beneath the berm footprint during construction.

The recompacted till will be in direct contact with the in-situ till. The interface between the two materials will be scarified to promote bonding and prevent the creation of a seepage interface. Seepage rates through the berm are anticipated to be very low based on the engineering characteristics of the in-situ glacial till and recompacted on-site materials. Therefore it is our opinion that a keyway at the base of the berm is not necessary.

The maximum slopes illustrated on the drawings are a 33% exterior berm grade, 20% interior berm grade, and a maximum berm height of 12 feet. We assumed water levels in the berm at flood stage were 1 foot below the crest. Water depth at typical service conditions is 6 feet.

Our analysis utilized the geotechnical evaluation guidelines presented in the NYSDEC Dam Design publication as requested by the Town of Manlius. Common geotechnical practice was also employed. The following evaluations were performed:

- Bearing Pressure and Settlement
- Sliding
- Soil Piping
- Slope Stability:
    - Water at Flood Level
    - Rapid Drawdown
    - Seismic Event

The analyses modeled the highest berm to be constructed (west slope of westernmost stormwater management feature). Soil used in berm construction was assumed to be the on site glacial till, a low plasticity sandy clay with gravel. The assumed geotechnical strength parameters are summarized in the following table.

Material	Condition	Unit Weight (pcf)	Cohesion (psf)	Internal Friction (degrees)
Recompacted Till (Engineered Fill)	Short Term	140	1000	0
	Long Term	140	100	32
Undisturbed Glacial Till	Short Term	145	2500	0
	Long Term	145	350	34

For seismic analysis, a ground acceleration factor of 0.05 was utilized.

Results

The geotechnical evaluations performed indicate the berm will remain stable under the modeled service scenarios. The following table summarizes evaluation results. Full output is attached for reference.

Scenario	Condition	Calculated Minimum Factor of Safety	Result
Service Condition with Full Pool	Short Term	9.4	Acceptable
Service Condition with Full Pool	Long Term	2.9	Acceptable
Flood Stage	Short Term	9.4	Acceptable
Flood Stage	Long Term	2.7	Acceptable
Rapid Drawdown after Flood Stage	Short Term	8.7	Acceptable
Rapid Drawdown after Flood Stage	Long Term	2.7	Acceptable
Earthquake	Short Term	2.3	Acceptable

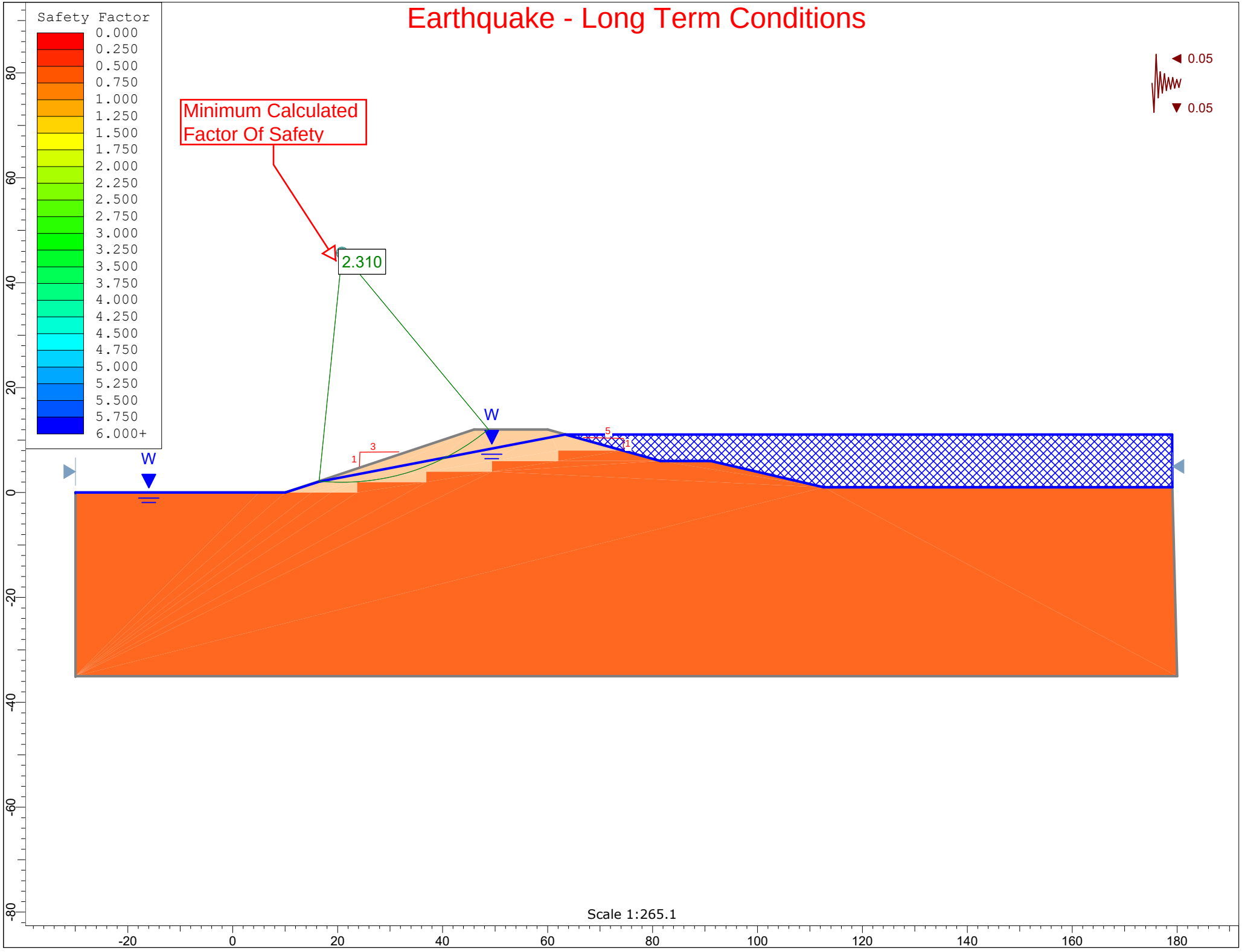
Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES PLLC

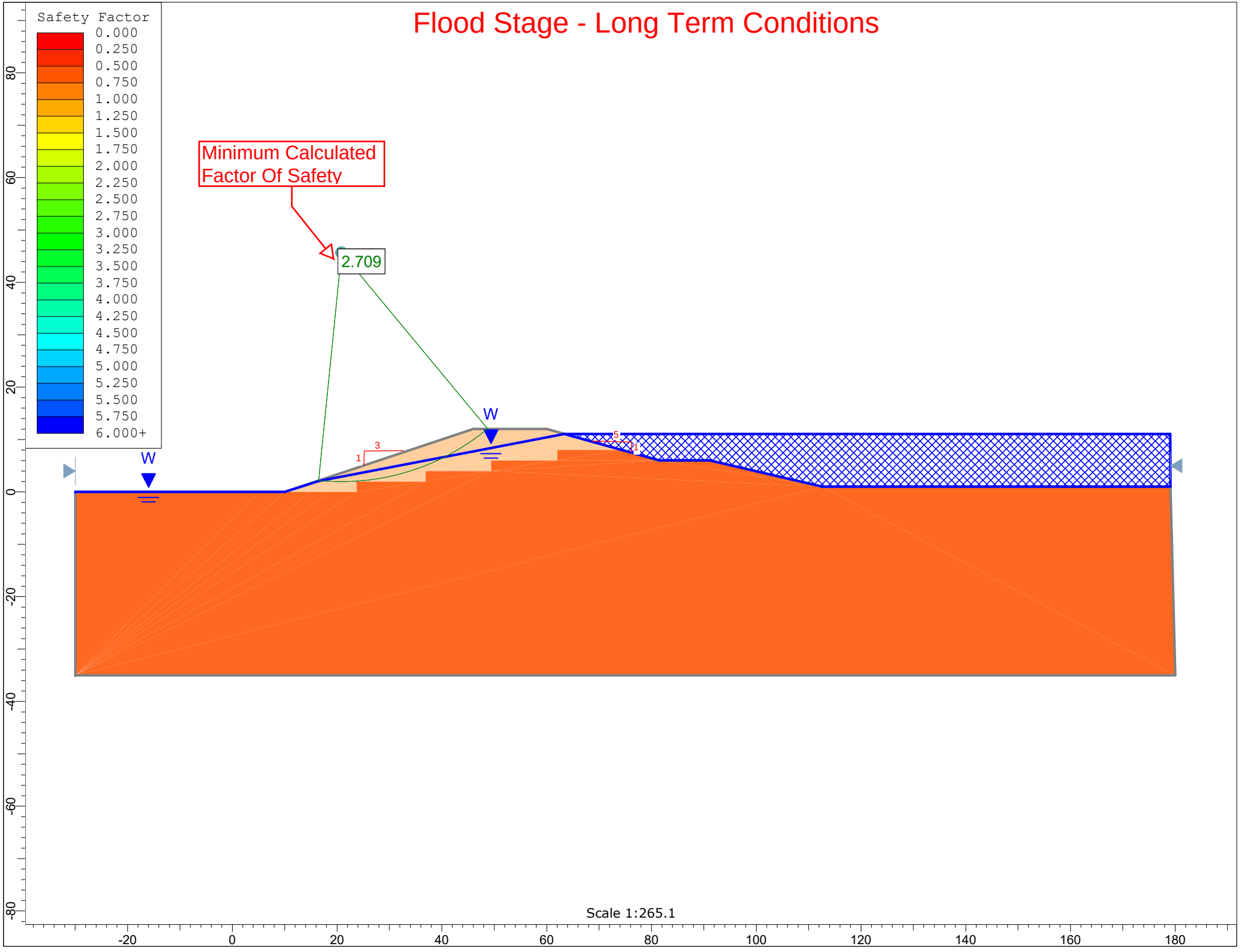
Christopher Kenney

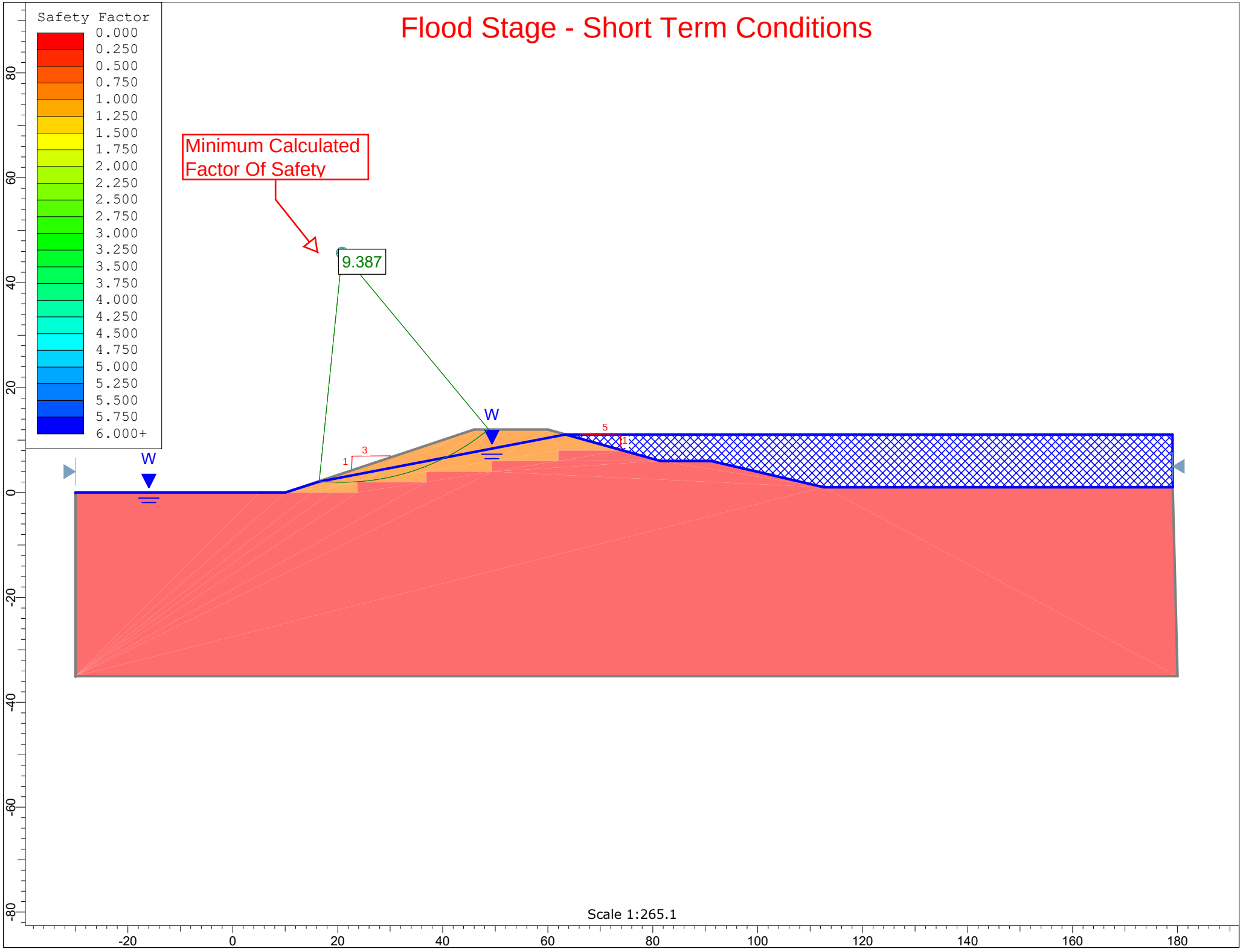
Christopher M. Kenney, P.E.
President

Earthquake - Long Term Conditions

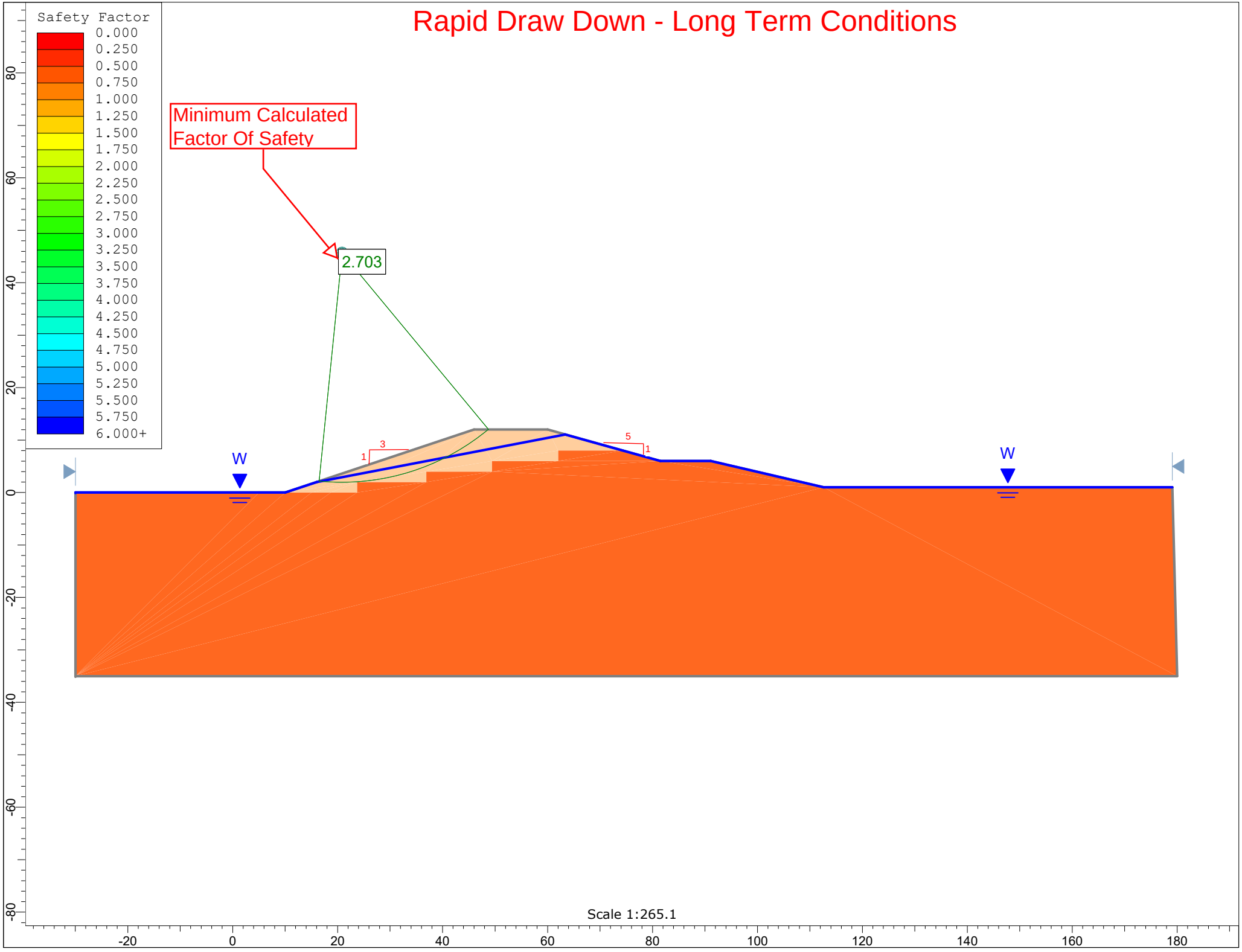


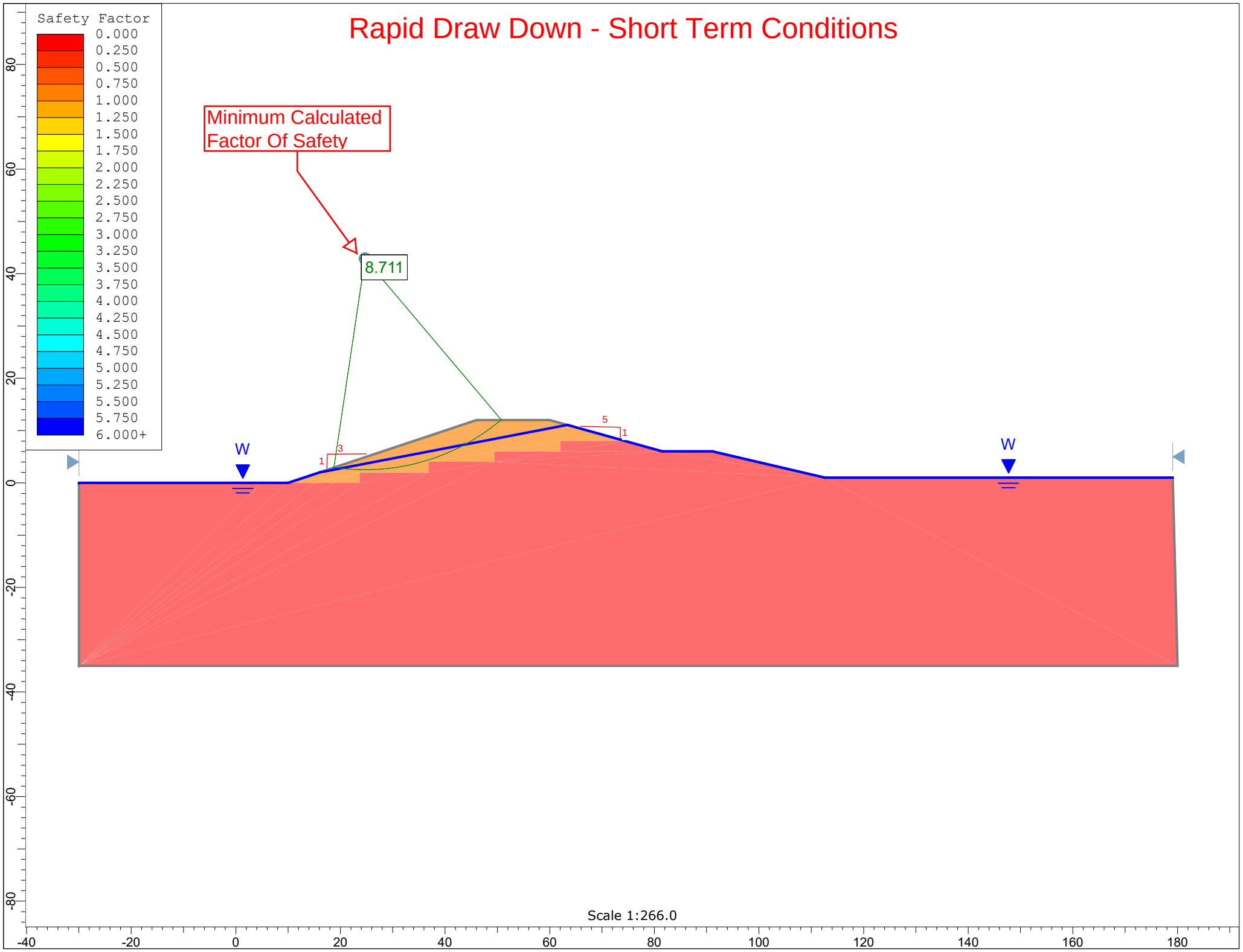
Flood Stage - Long Term Conditions



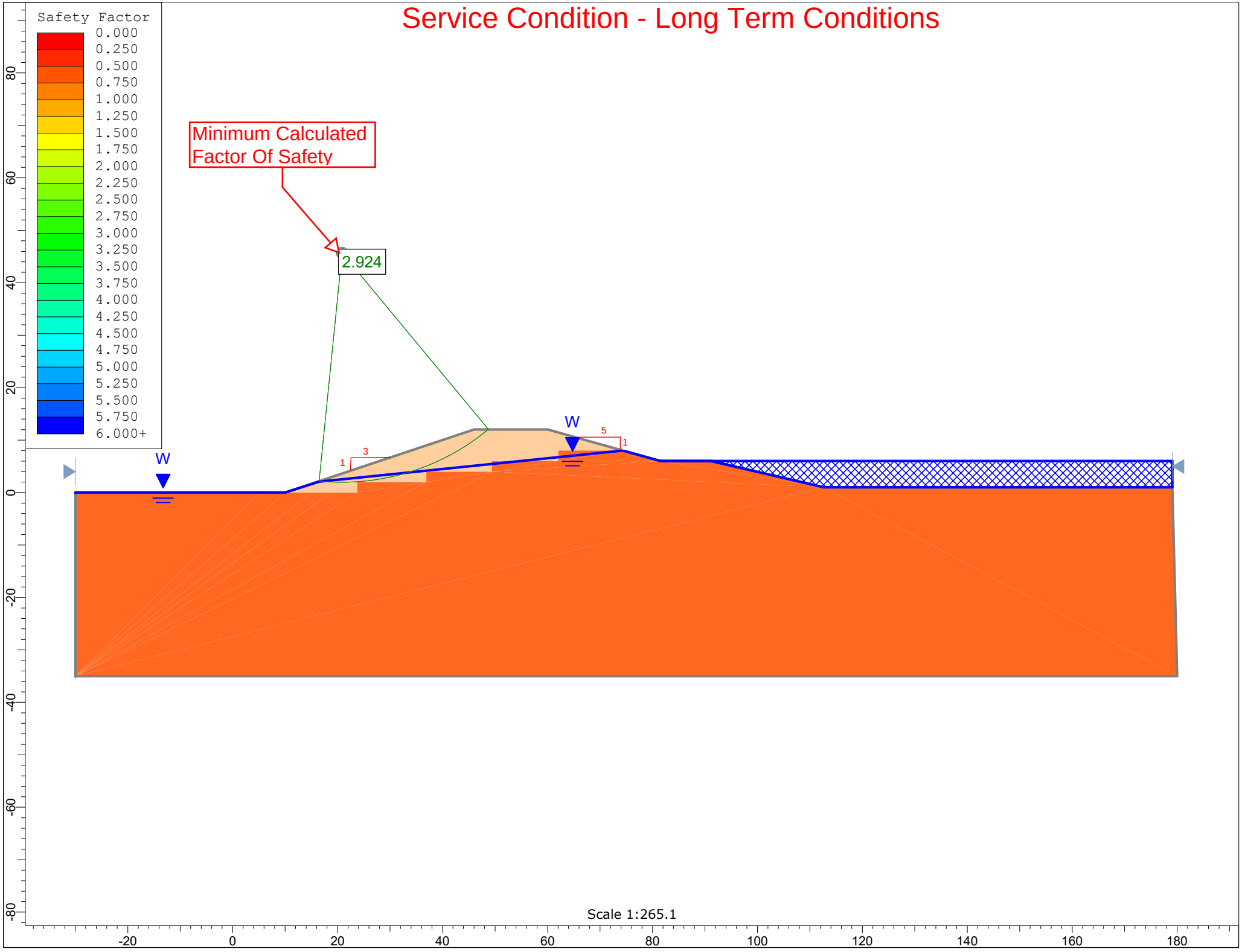

Flood Stage - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
9.387
W
W
1
3
5
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180

Rapid Draw Down - Long Term Conditions




Rapid Draw Down - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
8.711
W
W
5
1
3
1
Scale 1:266.0
80
60
40
20
0
-20
-40
-60
-80
-40
-20
0
20
40
60
80
100
120
140
160
180

Service Condition - Long Term Conditions



RZE/KFA SITE TESTING

DAM GUIDELINES SECTION & FINISH GRADE EVALUATION

PIT #		FINISH GRADE	FILL EVALUATION	
TP-1	EX. GRADE	674.00	664.00 - 669.00	(5-10 DP)
TP-2		672.00	662.00 - 667.00	
TP-3		677.00	667.00 - 672.00	
TP-4		680.00	662 - 680.00	
TP-5		715.00	709 707 - 715.00	
TP-6		705.00	700 668.00 - 705.00	
TP-7		724.00	716 715.00 - 725.00	

ADD INFILTRATION TEST @ 664.00

HOAG - DOUG MILLER TESTING RQST.

PERCOLATION TEST RESULTS

PT-# — X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	Ø MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2018 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

TPS-# — X-TEST PIT DATA

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PIT-1	674.00	664.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-2	672.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-3	671.00	661.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-4	680.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PIT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PIT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-# — X-BORING DATA

B -1	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SILTY CLAY	NO BEDROCK WITNESSED
24"-96" SILTY CLAY	
96"-120" SANDY SILTY CLAY	
B -2	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-48" SANDY SILTY CLAY	NO BEDROCK WITNESSED
48"-72" SILTY CLAY	
72"-120" SANDY SILTY CLAY	
B -3	NO GROUNDWATER WITNESSED
0"-12" TOPSOIL	NO MOTTLING WITNESSED
12"-72" SANDY SILTY CLAY	NO BEDROCK WITNESSED
72"-120" SANDY SILTY CLAY	
B -4	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
24"-96" SANDY SILTY CLAY	NO BEDROCK WITNESSED
96"-114" SANDY SILTY CLAY	
114"-168" GLACIAL TILL	
B -5	NO GROUNDWATER WITNESSED
0"-24" TOPSOIL	NO MOTTLING WITNESSED
24"-96" SANDY SILTY CLAY	NO BEDROCK WITNESSED
96"-120" SANDY SILTY CLAY	
B -6	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-48" SANDY SILTY CLAY	WEATHERED ROCK WITNESSED
48"-120" SANDY SILT	
B -7	NO GROUNDWATER WITNESSED
0"-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SANDY SILTY CLAY	NO BEDROCK WITNESSED
24"-120" SANDY SILTY CLAY	
B -8	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SANDY SILTY CLAY	NO BEDROCK WITNESSED
24"-72" SANDY SILTY CLAY	
72"-120" SANDY SILTY CLAY	

NOTES:
1. CONDUCTED MAY 16TH, 2018 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2018 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
		WATER LINE
EX ST	ST	STORM PIPE
	QUANTITY / PLANT TYPE	TREE
		SHRUB
		PLANT KEY
		VEGETATION

EXISTING	PROPOSED	DESCRIPTION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	6T MH	STORM STRUCTURE
	DI / CB / MH	INLET / CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD

EXISTING	PROPOSED	DESCRIPTION
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 3' 3"	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 12"	OUTLET PROTECTION FOR 8"- 12" PIPE
	X 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
--		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOUN OF MANLIUS AT A LATER DATE.
5. OUNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOUN AS OF MARCH 2018. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

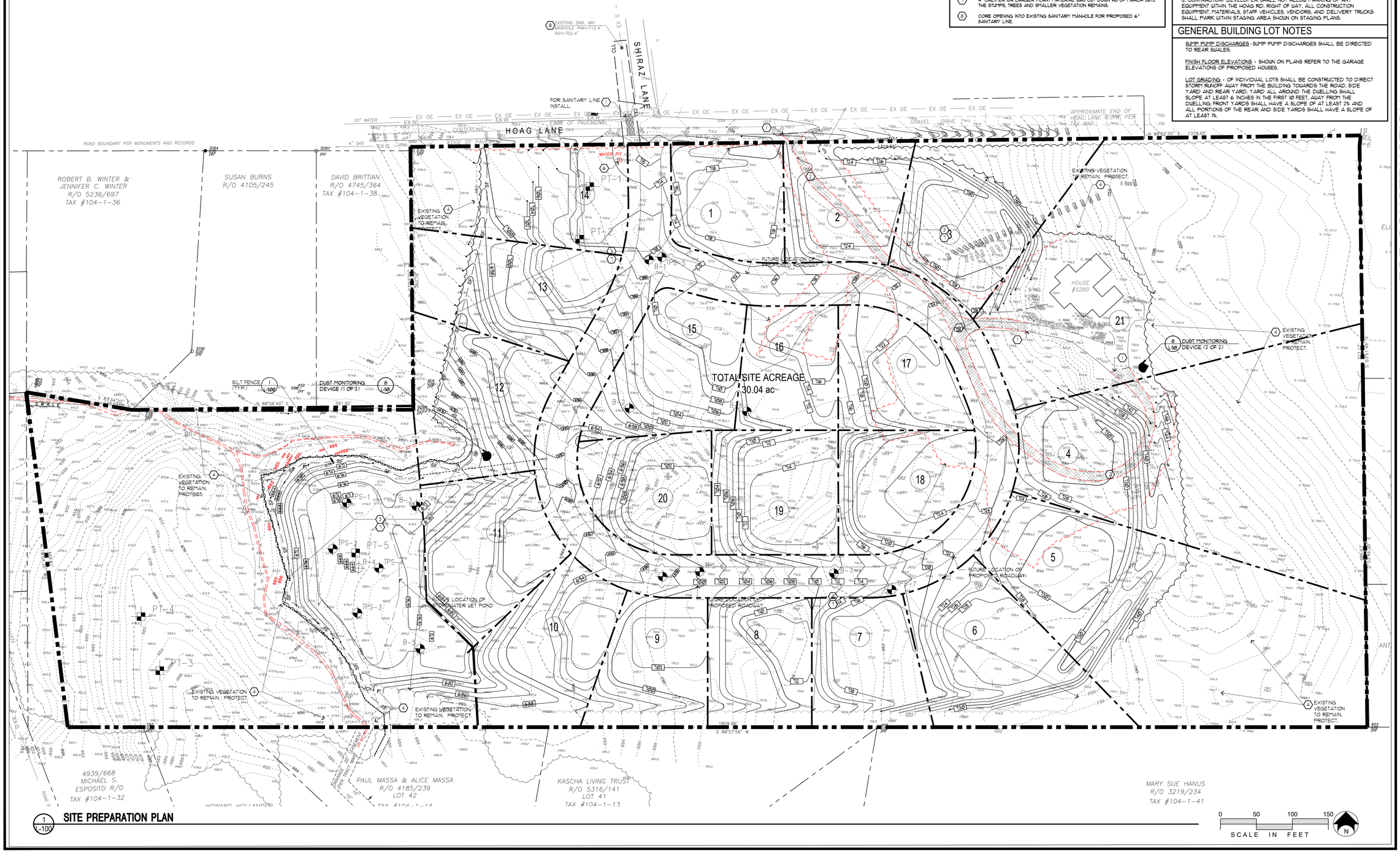
1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OUNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAUN AND FOR REPAIR OF DISTURBED EXISTING LAUNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OUNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOUN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOUN OF MANLIUS SPECIFICATIONS.
9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOU PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOUN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOUN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DUELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DUELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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RZ Engineering, PLLC
6320 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
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STATE OF NEW YORK — SCOTT L. ZOLN — 079935 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Δ - Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	00/22/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/20/19
4	4	PUBLIC HEARING- MANLIUS	05/04/19
5	5	PUBLIC HEARING- MANLIUS	06/03/19
6	6	TOWN REV.-21 LOTS-MANLIUS	00/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	12/26/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

Bearing Capacity Calculations

$q = N_c \cdot C$

$q = \frac{5.14 \cdot 2500}{3}$

$q = 4,283 \text{ psf}$

$N_c = 5.14$

$C = 2500 \text{ psf}$

$F.S. = 3$

Load applied by fill $= \gamma_{fill} \cdot H$

$H = 12'$ (maximum)

$\gamma_{fill} = 140 \text{ pcf}$

Load applied by fill $= 140 \cdot 12$

$= 1,680 \text{ psf}$

$1,680 \text{ psf} < 4,283 \text{ psf}$ ✓

Settlement Calculations

- Elastic Settlement

$$P_c = \frac{\Delta\sigma (1-\nu^2)\sqrt{A}}{E B_2}$$

$= \frac{1680 (1-0.35^2)\sqrt{14}}{160,000 (1.41)}$

$= 0.29 \text{ in.}$ ✓

$\Delta\sigma = 1680 \text{ psf}$

$\nu = 0.35$

$A = 14 \text{ ft}^2$

$E = 160,000 \text{ psf}$

$B_2 = 1.41$

Soil Piping

Laboratory testing resulted in low plasticity cohesive soils that are non-dispersive and not prone to soil piping.

Kenney Geotechnical Engineering Services, PLLC
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Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 18, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Earthwork Material Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide evaluate the engineering characteristics of on site materials to determine if they are suitable for use during earthwork. The scope of the additional investigation included eight test pits (designated as TP-1 through TP-8) and laboratory testing. This report presents the results of the test pit investigation and laboratory testing and provides quality assurance/quality control recommendations for earthwork.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigation was performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture (see attached). Test pits were excavated by J. K. Tobin Construction.

Subsurface Conditions Encountered- Test Pits

In general the test pits encountered glacial till consisting of stiff to hard reddish brown sandy clay with gravel, cobbles and boulders beneath a thin layer of topsoil. Topsoil ranged from 12 inches to 23 inches in thickness at the test pit locations.

Differing subsurface conditions were encountered at location TP-6. At this location, silty gravel with sand was encountered beneath approximately one foot of topsoil and extended to a depth of three feet, where highly weathered grey shale was encountered. The shale was brittle and could be excavated to a depth of five feet.

Test pit logs are attached to this report.

Laboratory Testing

Bulk samples were obtained from the test pits and tested in our Syracuse laboratory. Testing performed included:

- Moisture- Density Relationship Testing (Modified Effort) (ASTM D-1557)
- Natural Moisture Content (ASTM D 2216)
- Particle Size Analysis with Hydrometer (ASTM D-422)
- Atterberg Limits (ASTM D4318)

Test results are attached. Results are summarized in the following table:

Sample ID	Description	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Fines (%)
TPS-1	Red-brown Till	9	21	15	6	-	-	57
TPS-2	Red-brown Till	10	22	15	7	-	-	53
TPS-3	Red-brown Till	11	21	14	7	-	-	56
TPS-4	Red-brown Till	10	23	19	4	-	-	54
TPS-5	Red-brown Till	10	-	-	-	136.2	7.2	57
TPS-6 TOP	Silty Gravel	35	-	-	-	104.4	17.5	38
TPS-6 BOTTOM	Weathered Shale	23	-	-	-	110.6	16.2	14
TPS-7	Red-brown Till	10	-	-	-	137.3	7.2	59
TPS-8	Sandy Silt w/ Gravel	20	-	-	0	122.3	11.9	55

Analysis and Recommendations

The on site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smoothdrum roller at the end of each work day.

Earthwork must be performed using methods that will result in a stable excavations and fills. Typical temporary earthwork measures such as temporary drainage swales, stabilized haul roads, and the use of protective layers of crushed stone can be employed at this site. It is recommended that earthwork is observed by geotechnical personnel to ensure that all organic material is removed from the structural and pavement areas. Additional recommendations are as follows:

- Strip existing topsoil, roots and organics from all areas that will receive new construction to establish subgrade.
- Proof-roll exposed subgrade with a fully loaded dump truck, or accepted alternative equipment, under the observation of geotechnical personnel. Areas that rut, weave, or deflect should be over-excavated and replaced with compacted structural fill (see below for structural fill characteristic requirements).
- Utilize engineered fill to raise site grades to the desired elevation. On site soil can be used as engineered fill provided that particles larger than 2 inches are removed and the material is placed, compacted, and maintained as described herein.
- Field moisture contents for engineered fill should be maintained within 2 percentage points of the optimum moisture content established by laboratory testing to provide adequate compaction. All fill should be placed in level lifts having a loose thickness no greater than 12 inches and should be compacted to at least the following minimum percentages of the Modified Proctor (ASTM D-1557) maximum dry density:

    - Below footings: 95%
    - Beneath slab-on-grade or pavements: 95%
    - Utility trench backfill: 95%
    - Beneath landscape areas: 90%
    - Beneath sidewalks and exterior slabs: 95%
    - Structural berms: 95%

    In-place density testing should be performed at a frequency of one test per 500 square feet per lift in open areas and one test per 25 feet per lift in trenches.
- If the structure is to be constructed during the winter months, or if the building interiors will be subjected to freezing temperatures after footer construction, adequate frost cover and protection must be provided. Earthwork cannot be performed with frozen material.
- Permanent slopes should be graded no steeper than 3 horizontal: 1 vertical unless reinforced with geosynthetic materials.

In utility trenches, or other confined areas, small compaction equipment may be necessary such as a vibratory plate, jumping jack or walk-behind vibratory roller. In-place density testing should be performed at a frequency of one test per 25 feet per lift in trenches. Utility trench fill should be placed in level lifts no greater than 8 inches in thickness and should be compacted to at least 95%the Modified Proctor (ASTM D-1557) maximum dry density. Adequate frost cover and protection must be provided during winter weather construction. Earthwork cannot be performed with frozen material.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher Kenney

Christopher M. Kenney, P.E.
President

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 676 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					674.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED AT 5-10 FEET
5.0					
7.5	GB 1	MC = 9% LL = 21 PL = 15 Fines = 57%			
10.0					10.0 666.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 674 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					672.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 22 PL = 15 Fines = 53%			
10.0					10.0 664.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 680 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					679.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 11% LL = 21 PL = 14 Fines = 56%			
10.0					10.0 670.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 681 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					680.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 23 PL = 19 Fines = 54%			
10.0					671.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 716 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					715.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 57%			709.0
					Bottom of test pit at 7.0 feet.



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TEST PIT NUMBER TPS-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 704 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0						
			ML		(ML) TOPSOIL	
					1.0	703.0
			GM		(GM) BROWN SILTY GRAVEL WITH SAND, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED. BULK SAMPLE RETRIEVED	
		MC = 35% Fines = 38%				
2.5						
					3.0	701.0
					GREY/OLIVE HIGHLY WEATHERED SHALE, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED	
		MC = 23% Fines = 14%				
5.0					5.0	699.0

Bottom of test pit at 5.0 feet.



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TEST PIT NUMBER TPS-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 722 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					721.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE WAS OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 59%			715.0
					Bottom of test pit at 7.0 feet.



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TEST PIT NUMBER TPS-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 683 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			ML		(ML) TOPSOIL	
					1.0	682.0
			ML		(ML) BROWN SANDY SILT WITH CLAY AND GRAVEL, MOIST	
					NO GROUNDWATER SEEPAGE WAS OBSERVED	
2.5					BULK SAMPLE RETRIEVED	
		MC = 20% Fines = 55%			3.0	680.0
					Bottom of test pit at 3.0 feet.	



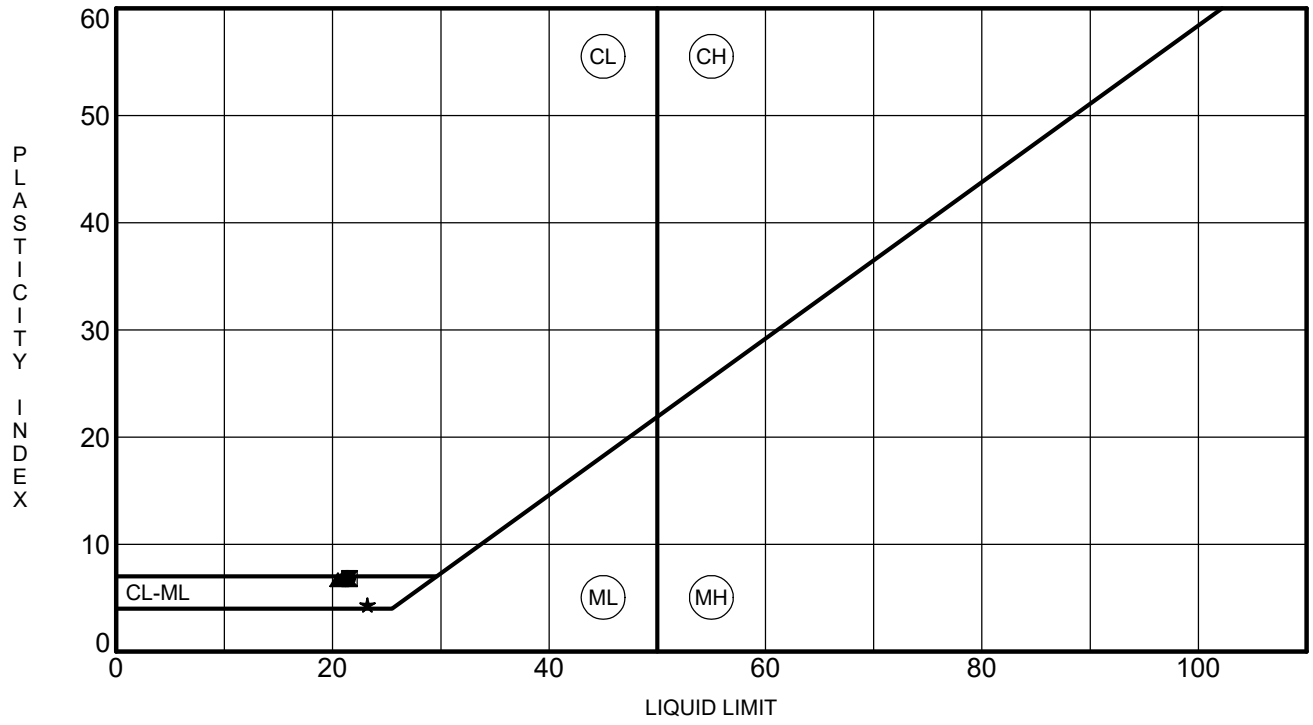
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ATTERBERG LIMITS' RESULTS

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**TPS-1**	**7.5**	**21**	**15**	**6**	**57**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
⊠	**TPS-2**	**7.5**	**22**	**15**	**7**	**53**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
▲	**TPS-3**	**7.5**	**21**	**14**	**7**	**56**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
★	**TPS-4**	**7.5**	**23**	**19**	**4**	**54**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 5/11/20 13:11 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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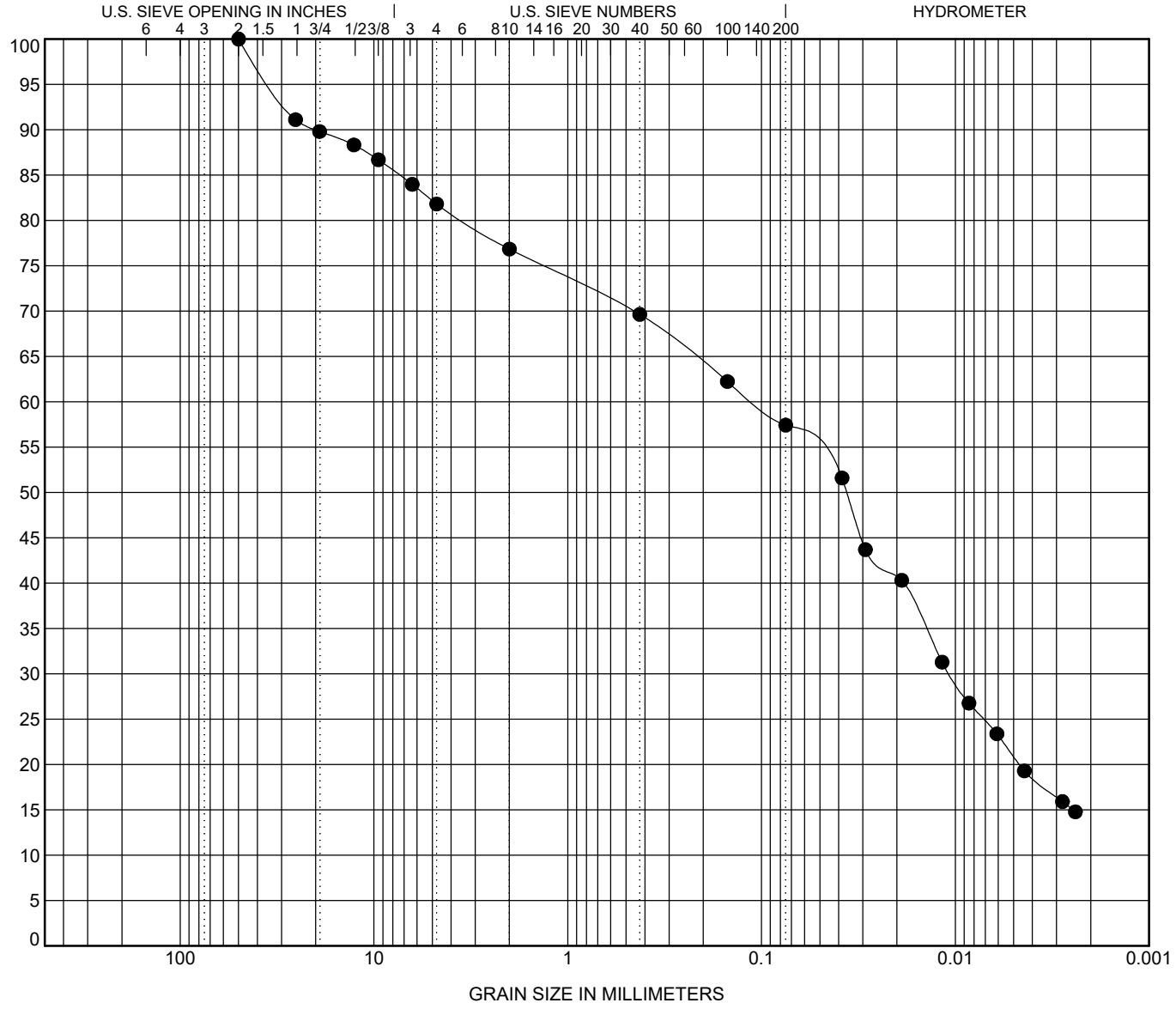
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-1	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**15**	**6**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-1	7.5	**50**	**0.109**	**0.011**		**18.2**	**24.4**	**36.5**	**20.9**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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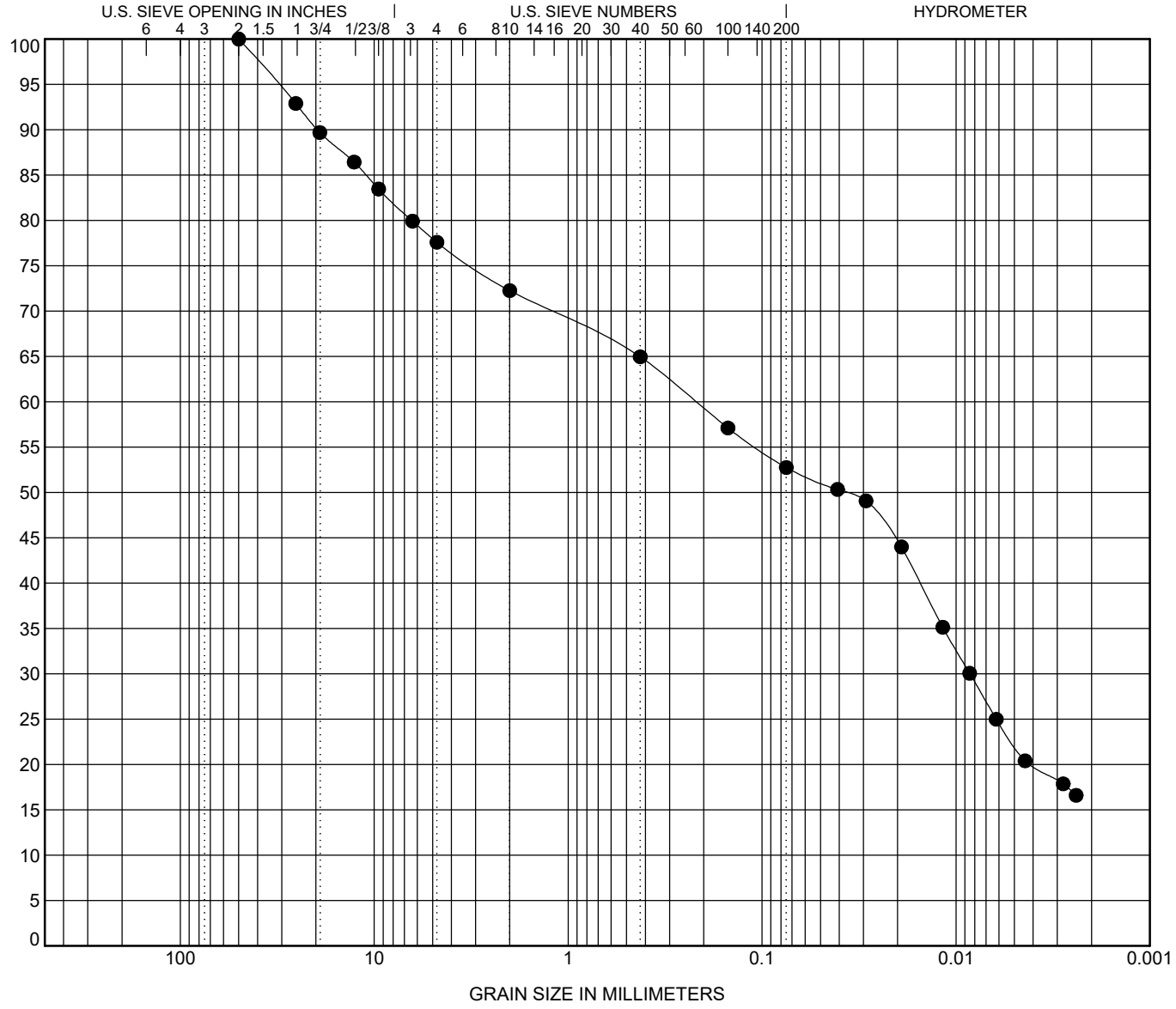
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-2	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**22**	**15**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-2	7.5	**50**	**0.22**	**0.008**		**22.4**	**24.8**	**30.6**	**22.1**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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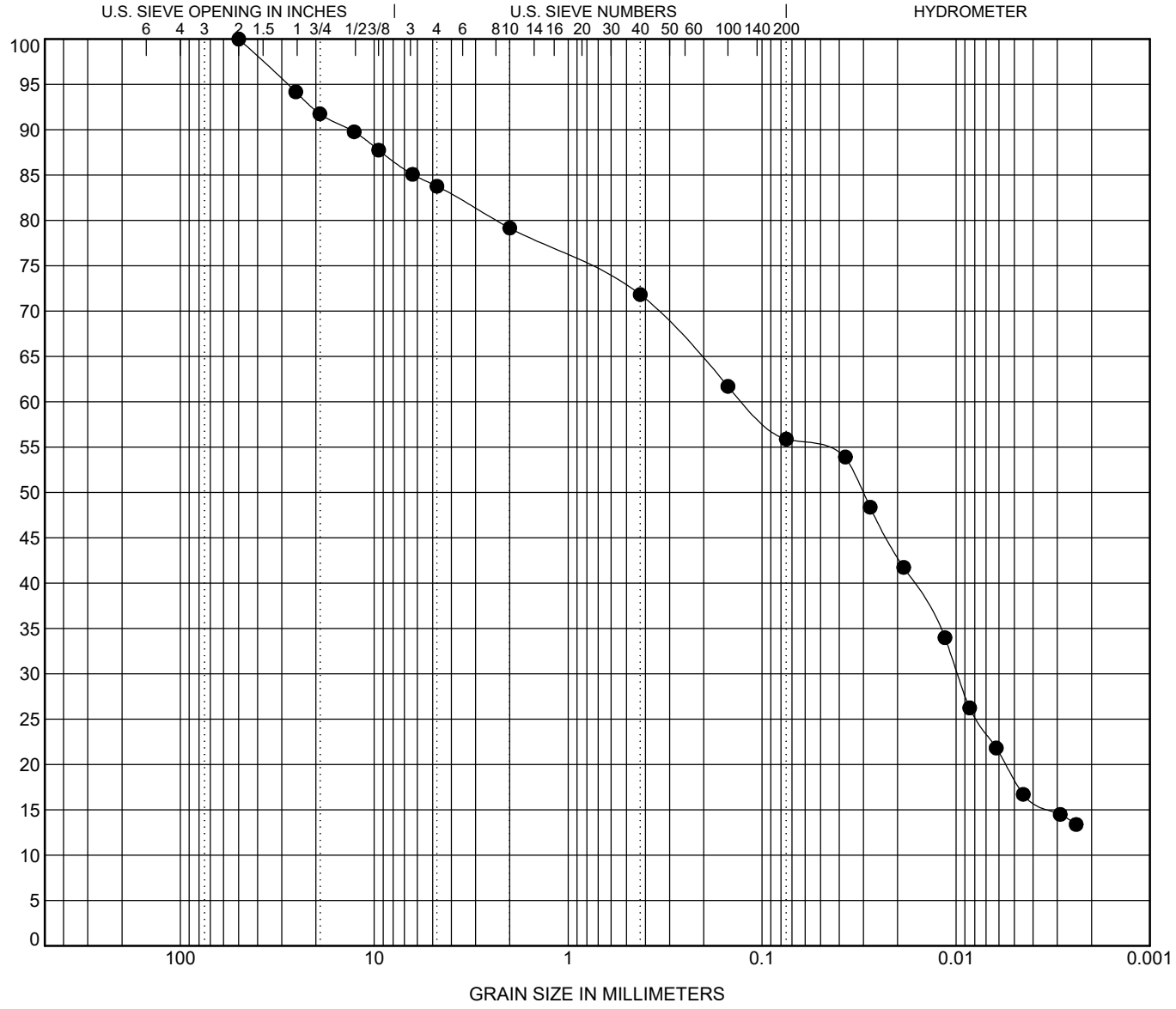
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-3	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**14**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-3	7.5	**50**	**0.123**	**0.01**		**16.2**	**27.9**	**37.5**	**18.4**
⊠									
▲									
★									
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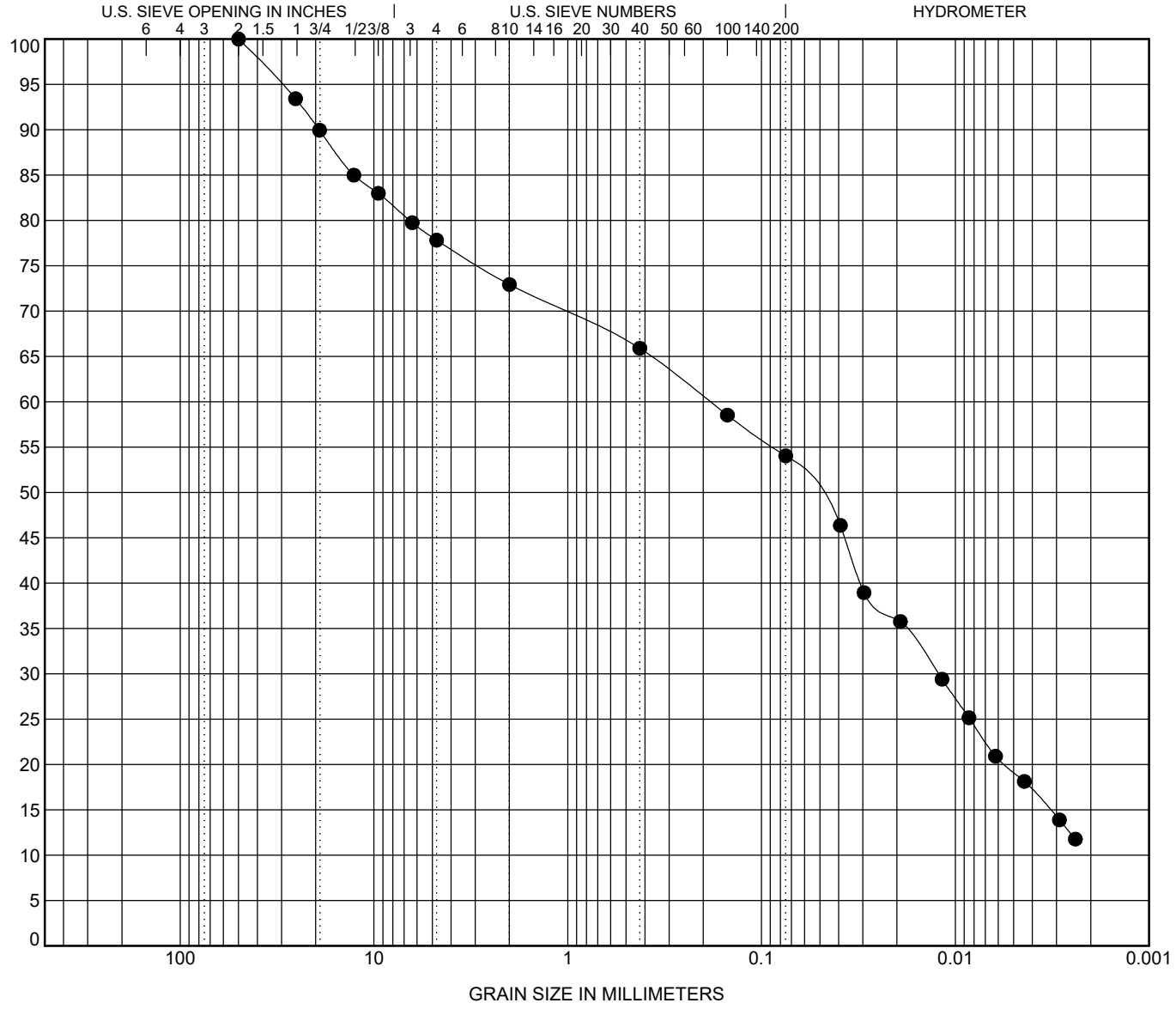
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-4	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**23**	**19**	**4**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-4	7.5	**50**	**0.185**	**0.012**		**22.2**	**23.8**	**34.9**	**19.2**
⊠									
▲									
★									
⊙									

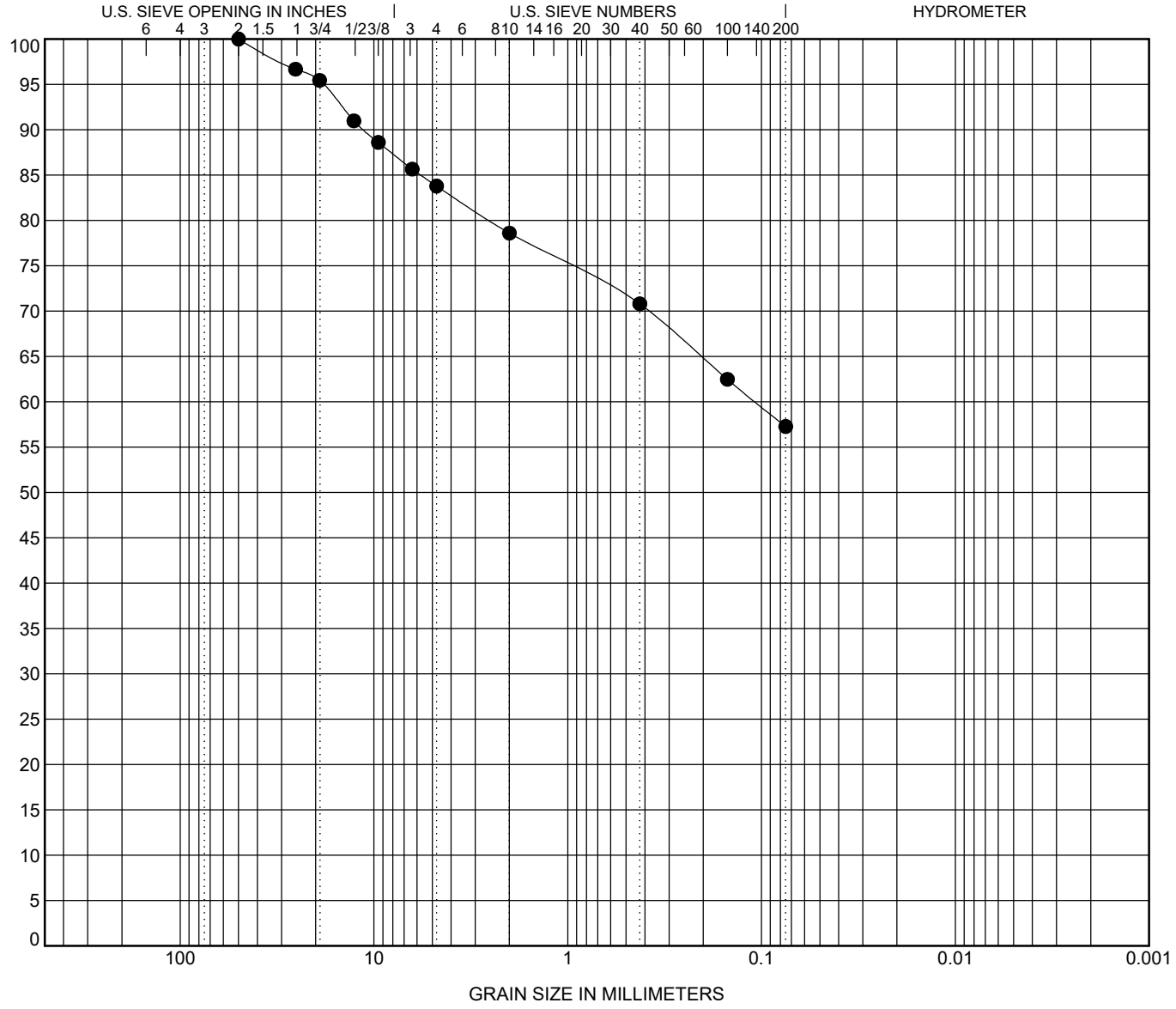
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-5	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-5**	**7.0**	**50**	**0.108**			**16.2**	**26.5**	**57.3**	
⊠									
▲									
★									
⊙									

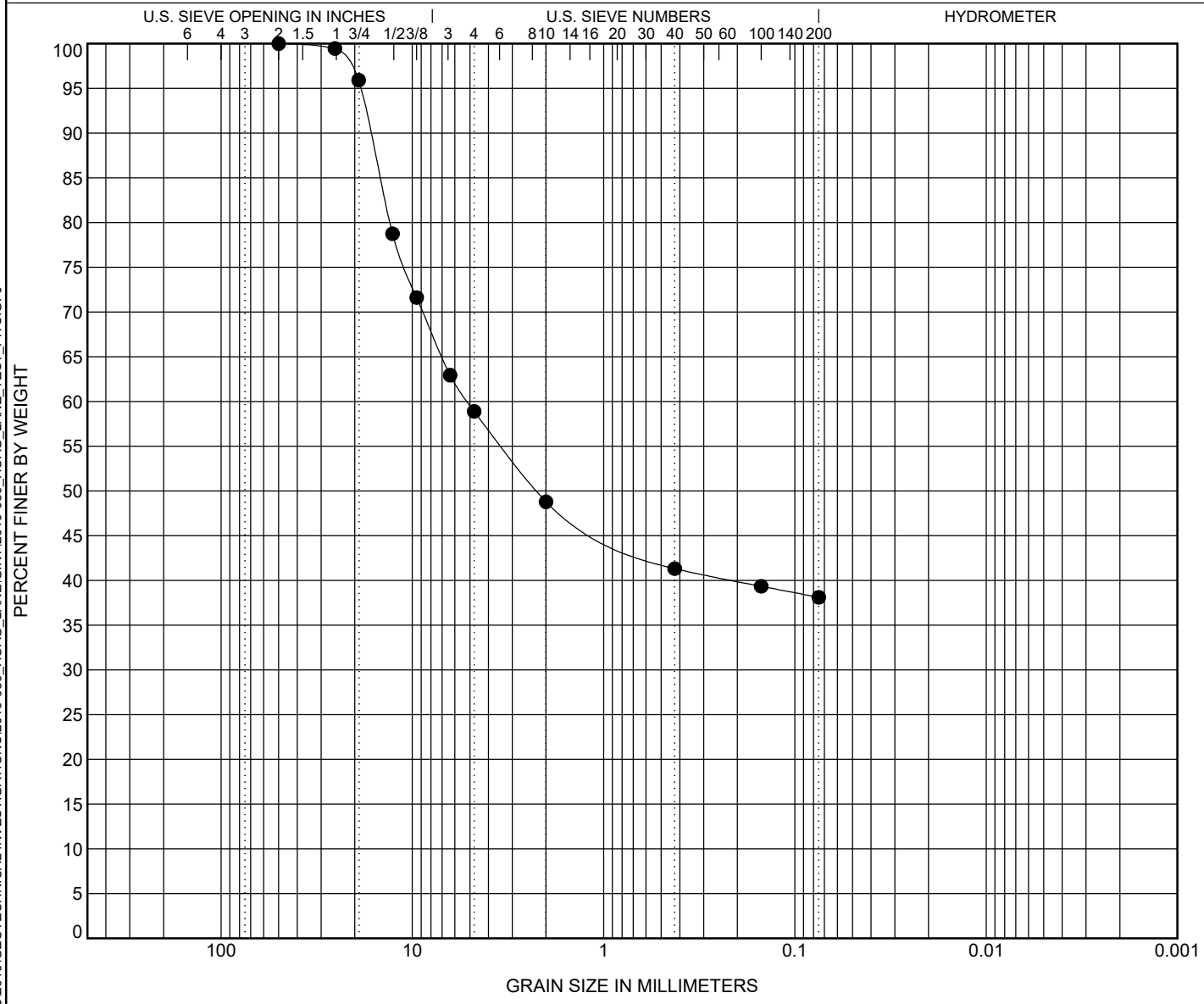
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	2.0	**BROWN SILTY GRAVEL WITH SAND**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	2.0	**50**	**5.144**			**41.1**	**20.8**	**38.1**	
⊠									
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⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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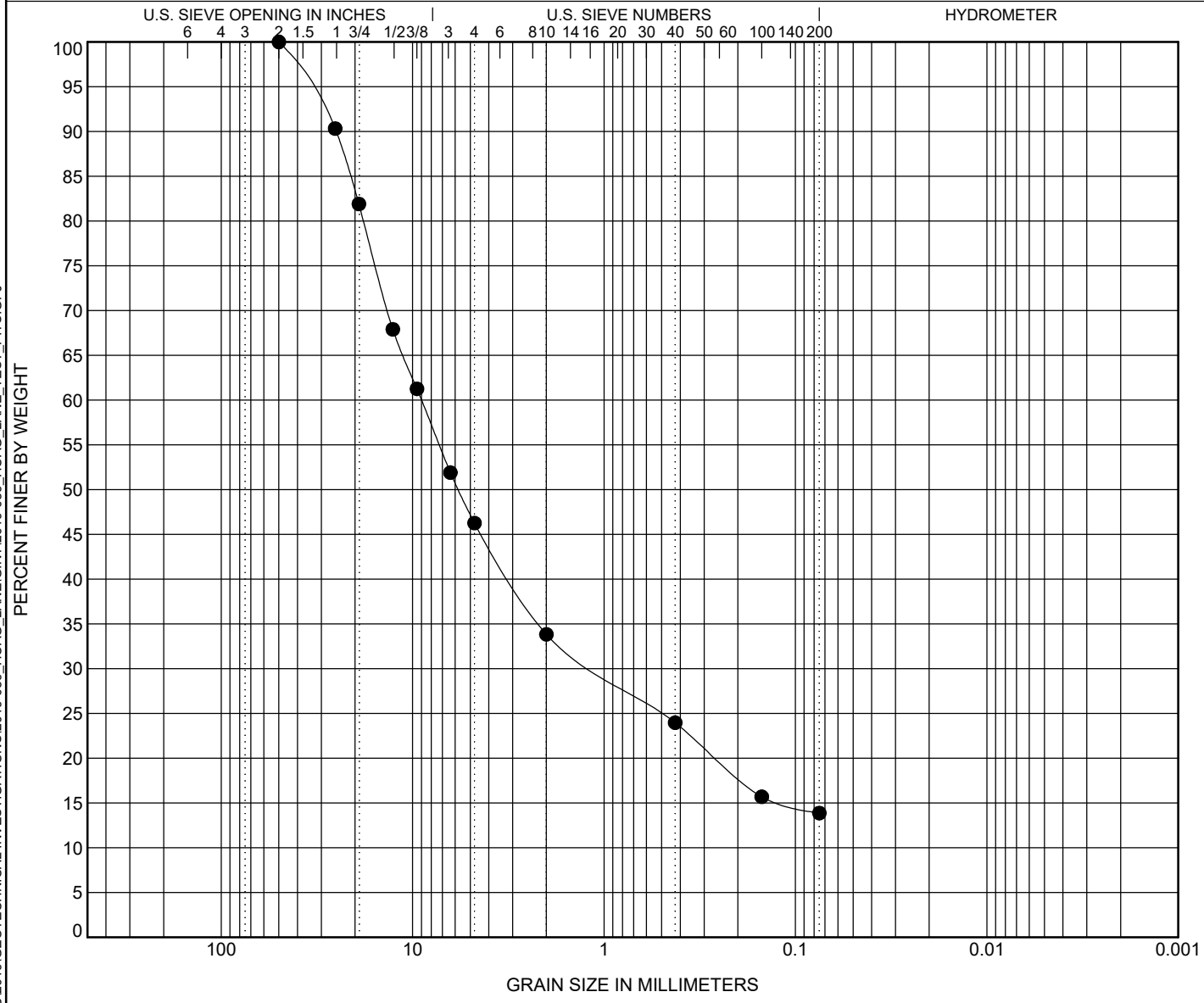
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	4.0	**GREY/OLIVE HIGHLY WEATHERED SHALE**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-6**	**4.0**	**50**	**9.001**	**1.096**		**53.7**	**32.4**	**13.9**	
⊠									
▲									
★									
⊙									

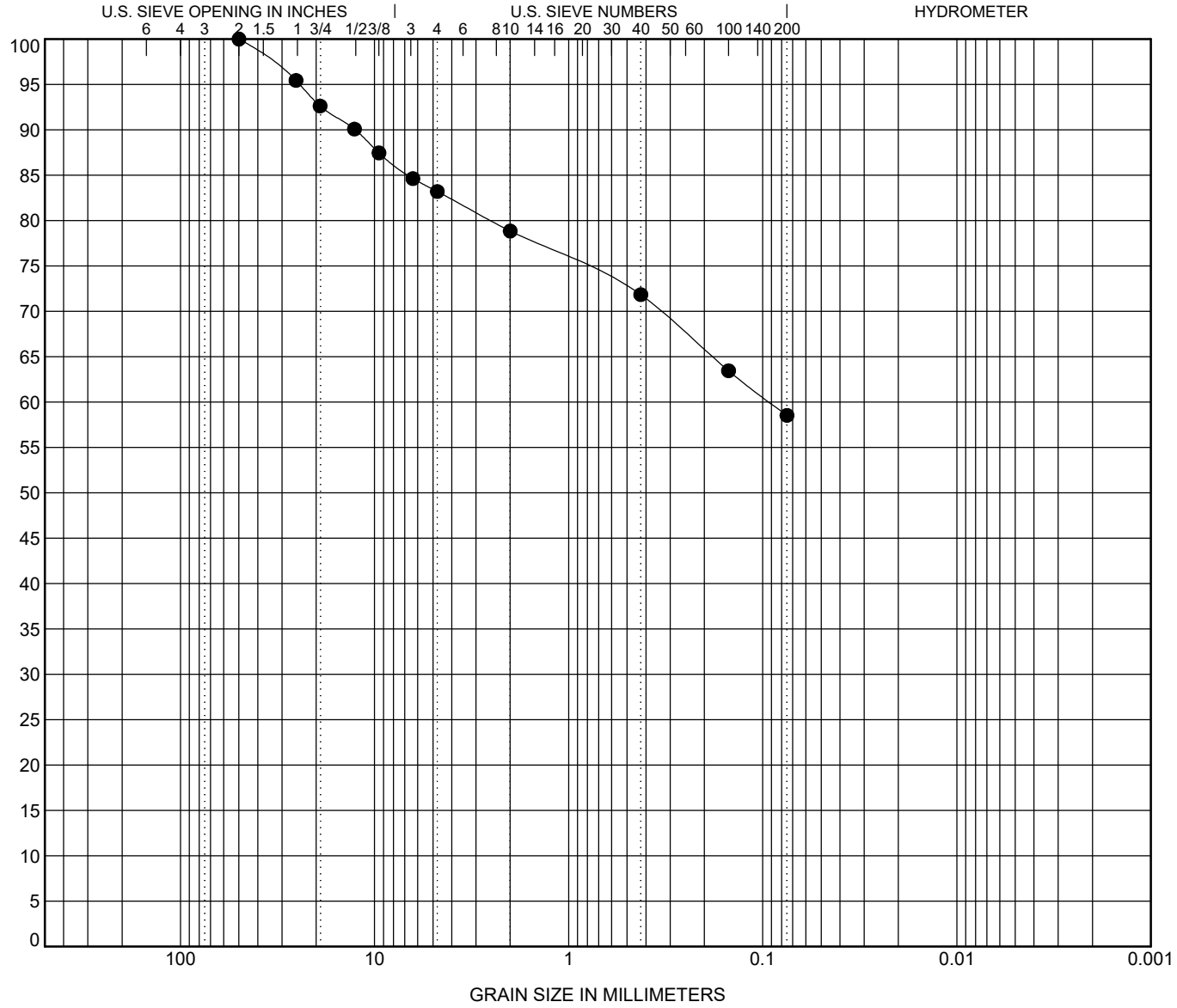
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-7	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠								
▲								
★								
⊙								

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-7	7.0	**50**	**0.092**			**16.8**	**24.7**	**58.5**	
⊠										
▲										
★										
⊙										

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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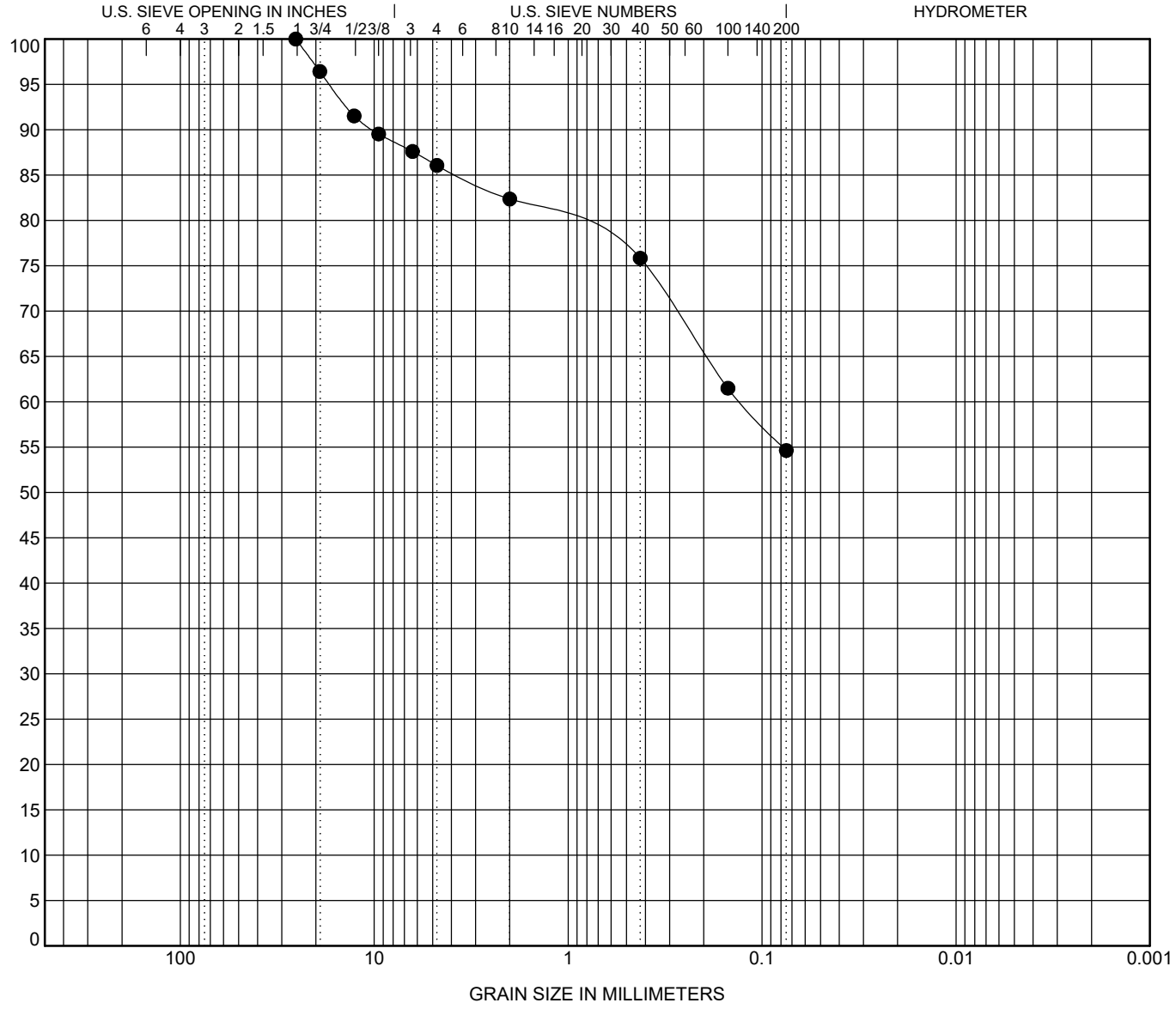
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-8	3.0	**BROWN SANDY SILT WITH CLAY AND GRAVEL**					
⊠								
▲								
★								
⊙								

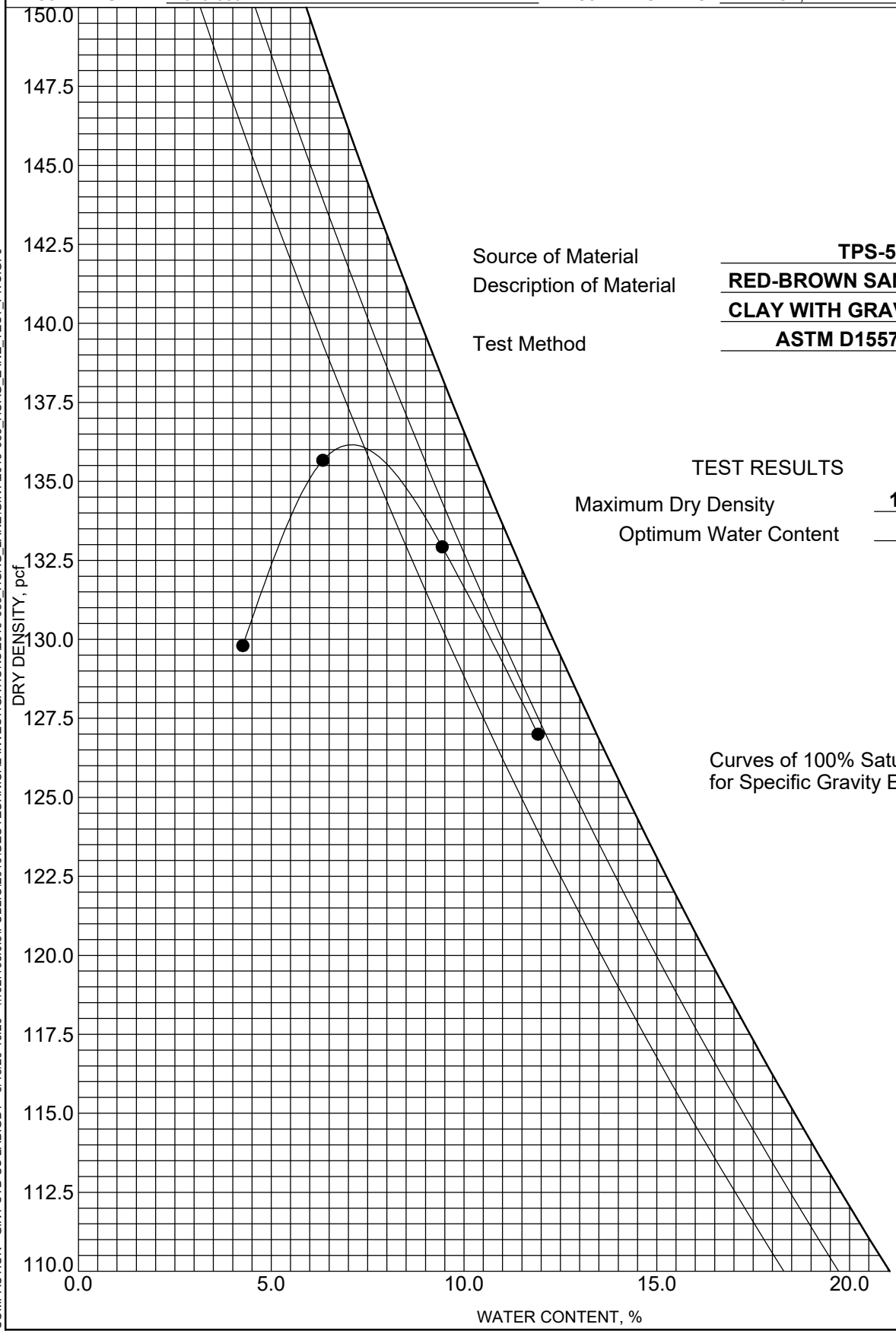
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-8	3.0	**25.4**	**0.129**			**13.9**	**31.4**	**54.6**	
⊠										
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GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-5 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **136.2** **PCF**
Optimum Water Content: **7.2** **%**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

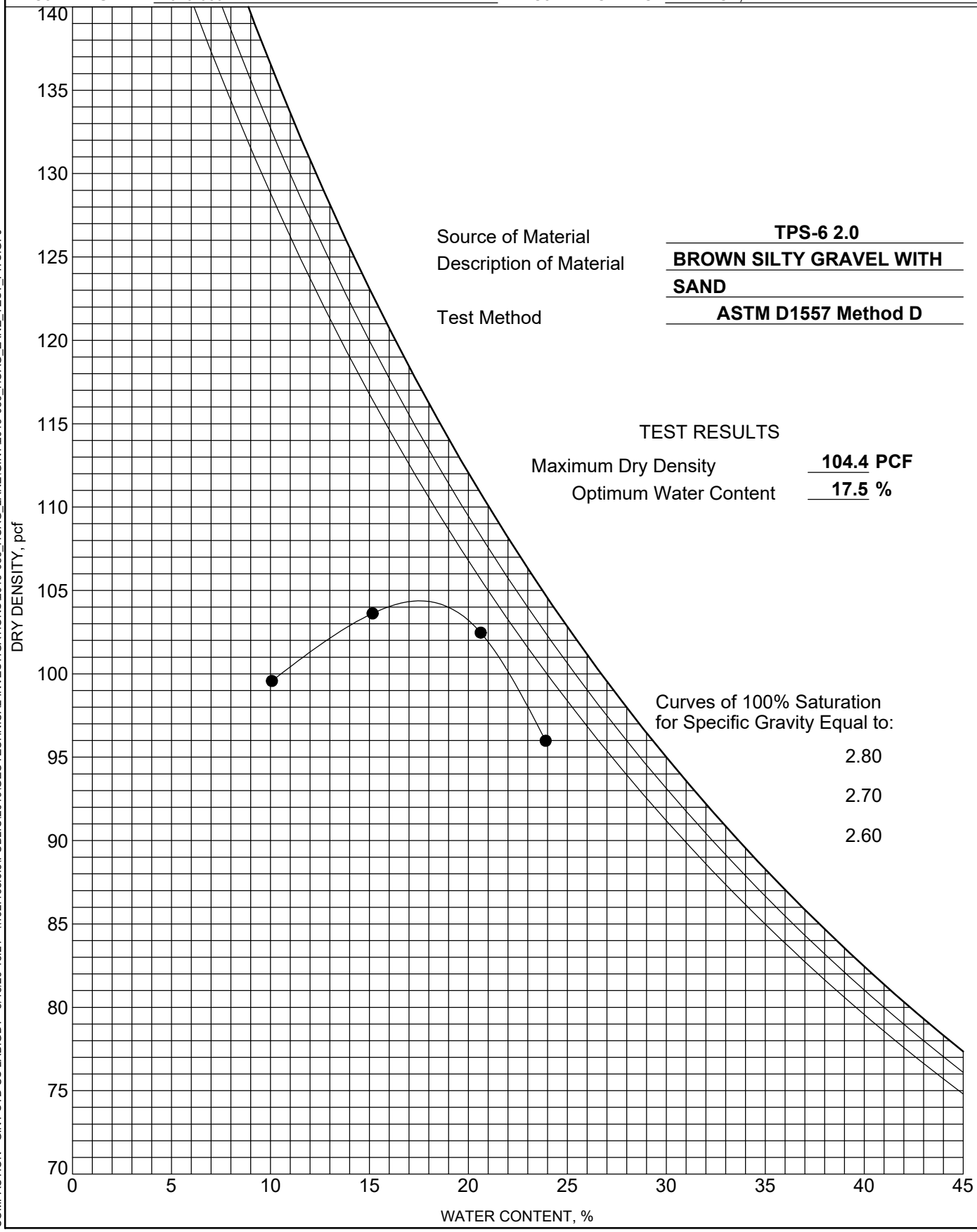
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:20 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 2.0**
Description of Material: **BROWN SILTY GRAVEL WITH SAND**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **104.4** PCF
Optimum Water Content: **17.5** %

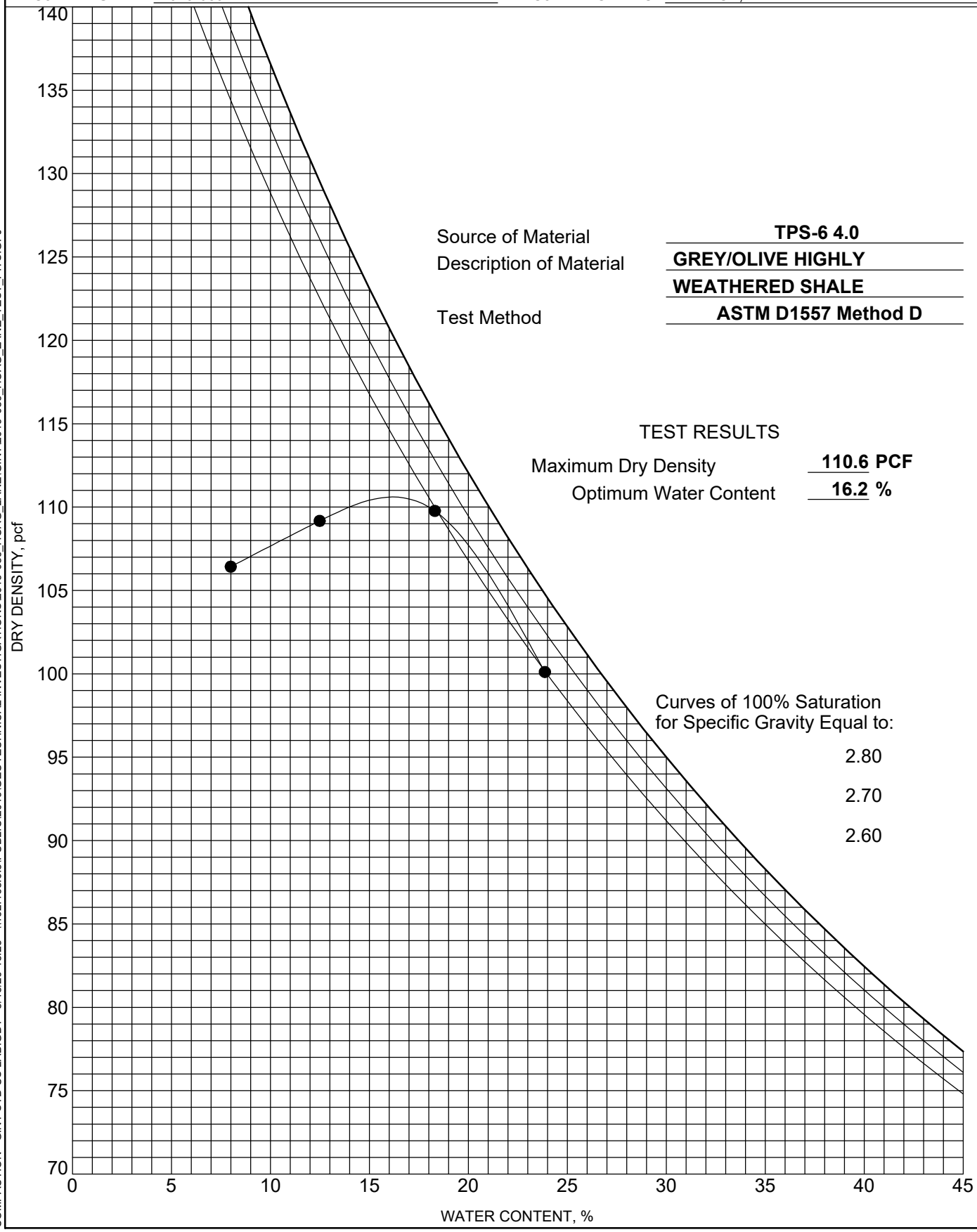
Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:21 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 4.0**
Description of Material: **GREY/OLIVE HIGHLY WEATHERED SHALE**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **110.6** PCF
Optimum Water Content: **16.2** %

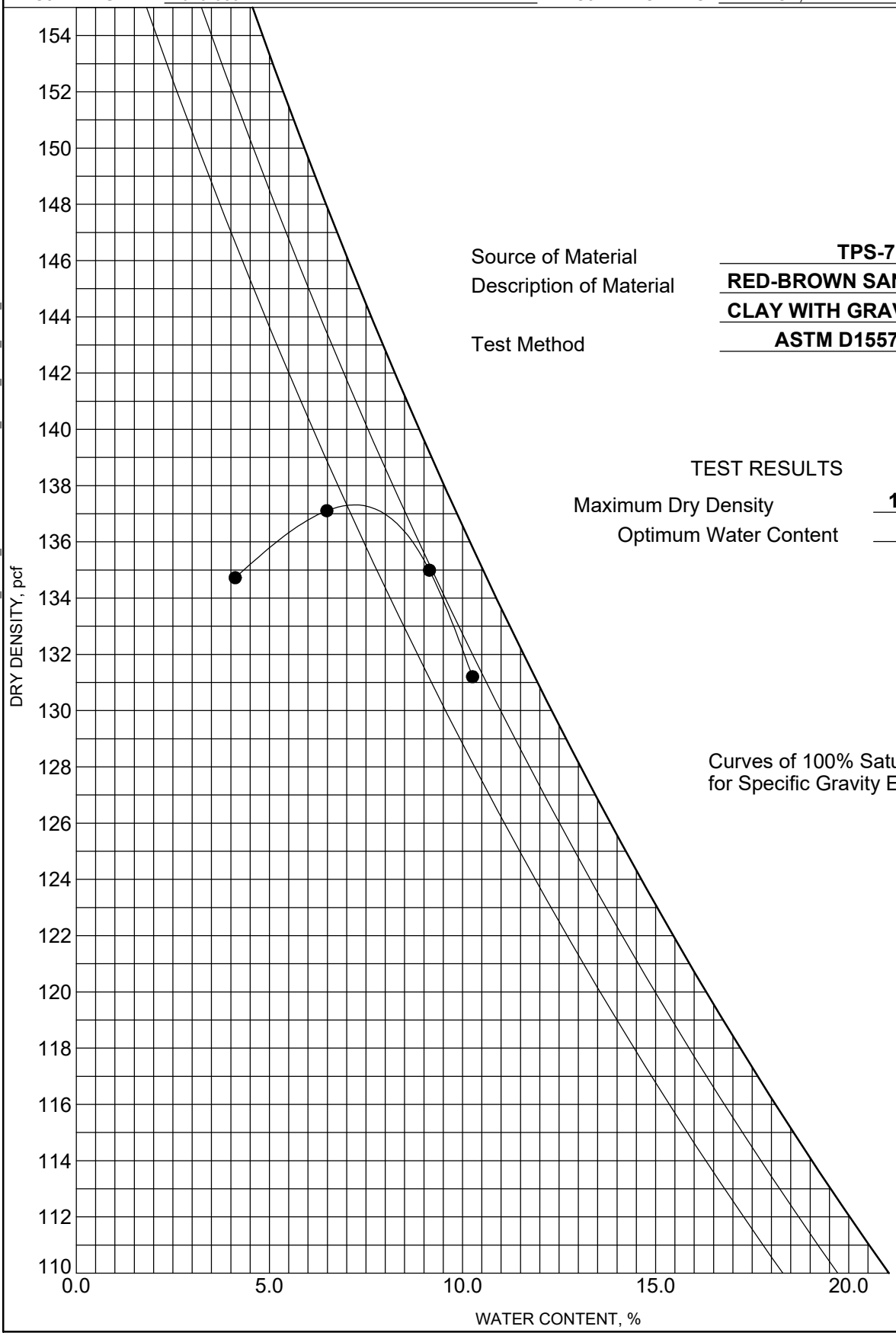
Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-7 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **137.3** PCF
Optimum Water Content: **7.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

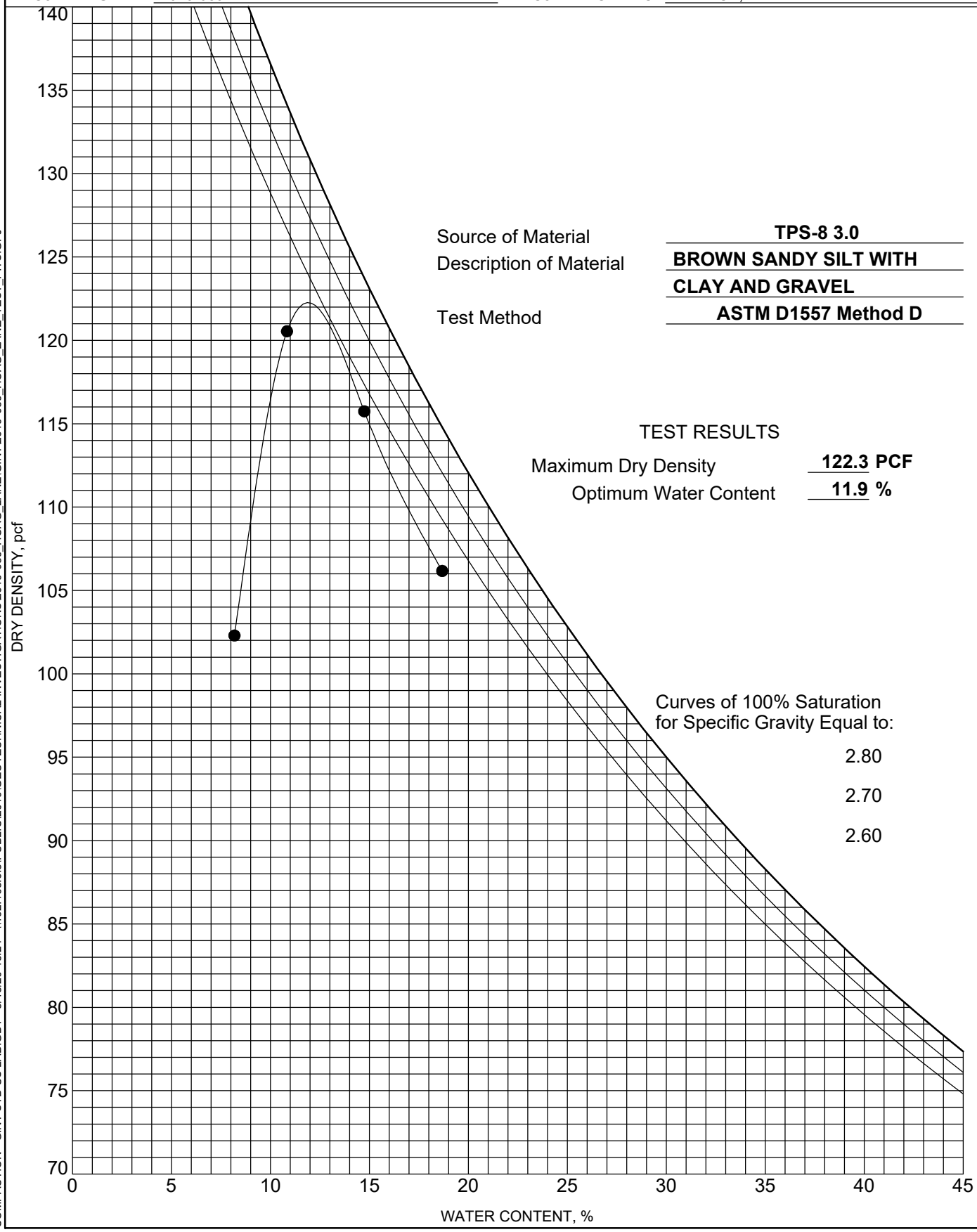
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-8 3.0**
Description of Material: **BROWN SANDY SILT WITH CLAY AND GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **122.3** PCF
Optimum Water Content: **11.9** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:24 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

PERCOLATION TEST RESULTS

PT-# — X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14' - SANDY SILTY CLAY	Ø MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2018 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

TPS-# — X-TEST PIT DATA

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PIT-1	674.00	664.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-2	672.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-3	671.00	661.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-4	680.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PIT-5	715.00	709.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PIT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PIT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOBIN.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-# — X-BORING DATA

B -1	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SILTY CLAY	NO BEDROCK WITNESSED
24"-96" SILTY CLAY	
96"-120" SANDY SILTY CLAY	
B -2	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-48" SANDY SILTY CLAY	NO BEDROCK WITNESSED
48"-72" SILTY CLAY	
72"-120" SANDY SILTY CLAY	
B -3	NO GROUNDWATER WITNESSED
0"-12" TOPSOIL	NO MOTTLING WITNESSED
12"-72" SANDY SILTY CLAY	NO BEDROCK WITNESSED
72"-120" SANDY SILTY CLAY	
B -4	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
24"-96" SANDY SILTY CLAY	NO BEDROCK WITNESSED
96"-114" SANDY SILTY CLAY	
114"-168" GLACIAL TILL	
B -5	NO GROUNDWATER WITNESSED
0"-24" TOPSOIL	NO MOTTLING WITNESSED
24"-96" SANDY SILTY CLAY	NO BEDROCK WITNESSED
96"-120" SANDY SILTY CLAY	
B -6	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-48" SANDY SILTY CLAY	WEATHERED ROCK WITNESSED
48"-120" SANDY SILT	
B -7	NO GROUNDWATER WITNESSED
0"-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SANDY SILTY CLAY	NO BEDROCK WITNESSED
24"-120" SANDY SILTY CLAY	
B -8	NO GROUNDWATER WITNESSED
0'-6" TOPSOIL	NO MOTTLING WITNESSED
6"-24" SANDY SILTY CLAY	NO BEDROCK WITNESSED
24"-72" SANDY SILTY CLAY	
72"-120" SANDY SILTY CLAY	

NOTES:
1. CONDUCTED MAY 16TH, 2018 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2018 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
		WATER LINE
EX ST	ST	STORM PIPE
	QUANTITY / PLANT TYPE	TREE
		SHRUB
		PLANT KEY
		VEGETATION

EXISTING	PROPOSED	DESCRIPTION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	6T MH	STORM STRUCTURE
	DI / CB / MH	INLET / CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD

EXISTING	PROPOSED	DESCRIPTION
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 3' 3"	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 12"	OUTLET PROTECTION FOR 8"- 12" PIPE
	X 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
--		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOUN OF MANLIUS AT A LATER DATE.
5. OUNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOUN AS OF MARCH 2018. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

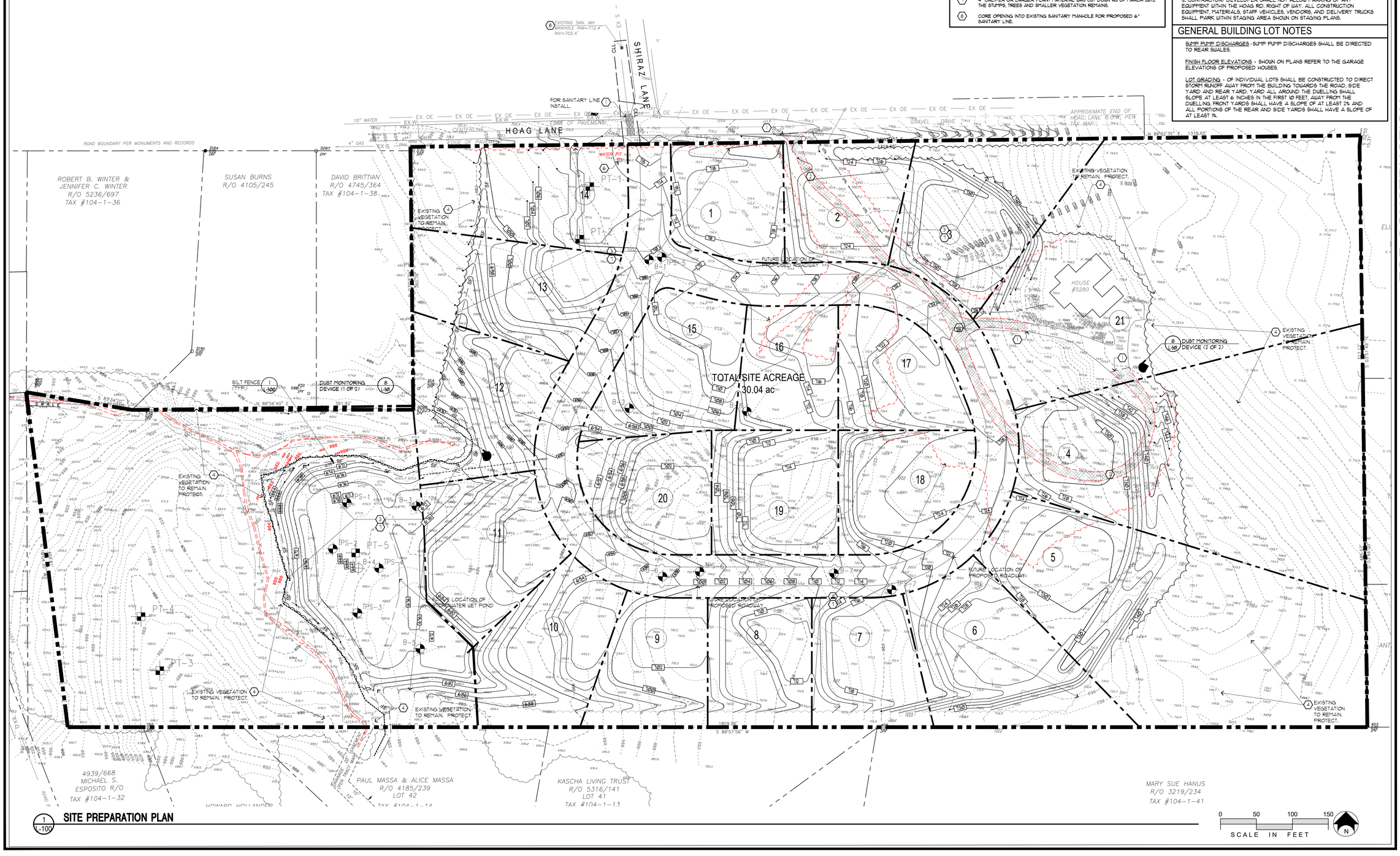
1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OUNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAUN AND FOR REPAIR OF DISTURBED EXISTING LAUNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OUNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOUN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOUN OF MANLIUS SPECIFICATIONS.
9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOU PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOUN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOUN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DUELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DUELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — SCOTT L. ZOLN — 079935 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Δ - Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	00/22/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/20/19
4	4	PUBLIC HEARING- MANLIUS	05/04/19
5	5	PUBLIC HEARING- MANLIUS	06/03/19
6	6	TOWN REV.-21 LOTS-MANLIUS	00/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	12/26/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Plotted By:
Date Plotted:
Drawing File:

ENVIRONMENTAL RESOURCES, LLC
CONSULTING SERVICES

June 13, 2019

Mr. Tom Douglas
7241 Kendall Drive, East
East Syracuse, New York 13057

Subject: Wetland Delineation Results, 5280 Hoag Lane Project Site, Town of Manlius, Onondaga County, New York.

Dear Mr. Douglas:

At your request, Environmental Resources, LLC (ERS) conducted a field wetlands delineation and data collection at the above referenced 30± acre project site on May 31, 2019 to determine the on-site limits of state and/or federal jurisdictional wetlands and streams. The sites jurisdictional water resources were identified by the presence of hydrophytic vegetation, hydric soils, and physical indicators of wetland hydrology in accordance with the methodology described in the *1987 Corps of Engineers Wetland Delineation Manual*, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions,* and the New York State Department of Environmental Conservation *Wetland Delineation Manual.*

RESULTS

As shown on the attached survey map, the results of our investigation and data collection has determined that the study area supports a 745± linear foot (0.24± acres) intermittent stream channel in the west portion of the project site that enters the sites south property line, conveying surface waters northwest before existing the sites west boundary line. This intermittent stream channel has a low profile, and varies in width from 18" to 30" wide.

A second water resource was identified as a 0.10± acre ground water seep wetland that occurs at the west end of the site's north boundary line. This wetland discharges ground water to the surface, which then flows east before converging into the sites intermittent stream channel.

Remaining areas of the site are confirmed to be undulating site uplands that are dominated by upland vegetation, and exhibit no hydric soil characteristics or evidence of wetland hydrology.

REGULATORY GUIDANCE

The result of our investigation has determined that the site does not support New York State Department of Environmental Conservation regulated wetlands or streams.

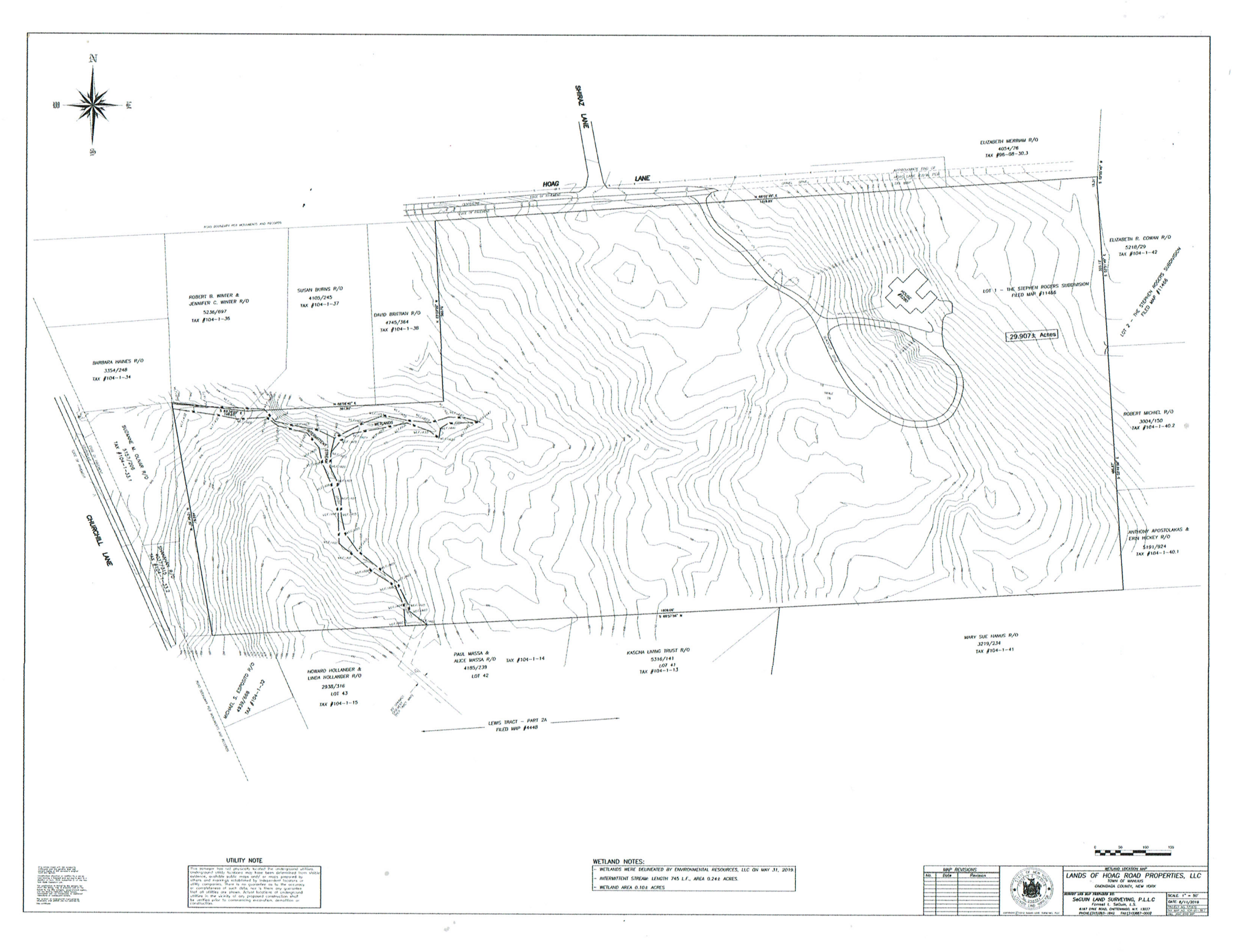
The sites delineated intermittent stream channel and ground water seep wetland are federal jurisdictional water resources regulated by Section 404 of the *Clean Water Act* under the jurisdiction of the U.S. Army Corps of Engineers (Buffalo District). The discharge of fill material into jurisdictional wetland areas and/or disturbance to stream channels will require a pre-construction notification and permit issuance from USACE.

This determination letter represents the conclusions of Environmental Resources, LLC based on existing site conditions. Feel free to contact me should you have any questions.

Sincerely,
Environmental Resources, LLC

Gene Pellett
Professional Wetlands Scientist

Attachment.



UTILITY NOTE

This surveyor has not physically located the underground utilities. Underground utility facilities may have been determined from visible evidence, available public maps and/or maps prepared by others and markings established by independent locators or utility companies. There is no guarantee as to the accuracy or completeness of such data, nor is there any guarantee that all utilities are shown. Actual locations of underground utilities in the vicinity of any proposed construction shall be verified prior to commencing excavation, demolition or construction.

WETLAND NOTES:

- WETLANDS WERE DELINEATED BY ENVIRONMENTAL RESOURCES, LLC ON MAY 31, 2019.
- INTERMITTENT STREAM: LENGTH 745 L.F., AREA 0.24± ACRES.
- WETLAND AREA 0.10± ACRES

MAP REVISIONS		
No.	Date	Revision

WETLAND LOCATION MAP

LANDS OF HOAG ROAD PROPERTIES, LLC

TOWN OF MARCELLUS
ONONDAGA COUNTY, NEW YORK

SURVEY AND MAP PREPARED BY:
SeGUIN LAND SURVEYING, P.L.L.C
Forrest E. SeGuin, L.S.
4187 DYKE ROAD, CHITTENANGO, N.Y. 13037
PHONE (315)383-1842 FAX (315)987-0002

SCALE: 1" = 50'
DATE: 6/11/2019
PROJECT NO. 17-2-10
FILE MAP NO. 17-2-10
FILE SURVEY NO. 17-2-10

June 15th, 2020 – REVISED

Doug Miller, P.E.
P.O. Box 422
Manlius, NY 13104
Miller Engineers
315-682-0028 | dougmiller@millerengineers.com
www.Millerengineers.com

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PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: Hoag Lane Cluster Development

Response letter to Town of Manlius Engineer Letter

Dear Mr. Miller,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **December 18th, 2019** and received on **January 6th, 2020.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

Reviewed Documents: Miller Engineers received updated drawing set dated 12/18/19 and an updated project SWPPP dated 12/18/19.

1) Additional Comments

Miller Engineers has completed a review of submission received by the Town of Manlius dated December **18th**, 2019. Areas of immediate concern include the following follow:

- 1 - Confirm in Writing with a formal submission of the plan, determination from NYSDEC of any requirements for a dam permit at this location

  RESPONSE: On page 8 of the SWPPP text as part of our 9/19/19, 12/17/19 submissions we previously included the NYSDEC criteria for exemptions for dam permitting. We clearly meet two of the three exemption criteria. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. As part of our Upon request, the Project Team then provided an email from NYSDEC regarding our projects exemption from dam permitting in our most recent submission on 12/18/19. This email was provided to Planning Board Clerk for inclusion in the Town's 12 copies of this binder. The previous submission and NYSDEC email dated 10/18/19 was an actual review of our current Grading and Drainage plan included in our project drawings. Additionally, as of 3/25/20, the DEC (Jennifer Ross) has provided email final resolution that this project is NOT considered a Dam and that no permitting will be required. It is agreed that within the NYS Stormwater Design Manual it states that ALL SWMF designed and constructed in NYS must adhere to the NYS Dam Guidelines. Email references have been provided in Appendix V of the SWPPP provided with this submission.

- 2 - Wet Pond 1 appears to have boring refusal/rock at a depth of 14 feet. Bottom of pond is depicted as 18 feet below grade. As designed pond does not appear to meet design requirements
  RESPONSE: According to plans submitted in December of 2019, our grading plan proposed bottom of Pond to be 665. The highest existing grade causing the most significant cut would lie at elevation 680. This would indicate a maximum cut of at 15'. However, this condition only existed for a small 1000sf area at the easternmost bottom of the proposed SWMF. Grades have further been adjusted as part of this submission to reduce cuts to ± 13 feet or less. A review of the most recent soil investigation by Kenney Geotechnical for borings in the pond area does not include any refusal and contains borings to depths of approximately 15 feet.

- 3 - New sedimentation pond (volume 66,000 CF) is shown as 13 feet deep +/-. No details on safety, depth to rock or influence of ground water
  RESPONSE: The temporary basin has been regraded to create a shallower area of less than 4 feet. Grades are 3:1 or mowable and surrounding borings and Kenney Geotechnical reports do not raise concern for groundwater, stability or depth to bedrock.

- 4 - Excavation from new sedimentation pond not clearly shown staged on staging plans

  RESPONSE: Excavated cut/fill material will not be stockpiled. Material will be tested and placed in lifts and compacted to construct the sedimentation basin and balance earthwork within stage. Refer to Construction Staging Plan – Stage 1 L-102.

- 5 - Staging plans do not address storage (with clear delineation of volumes to be staged) or use of following materials
  a. Compost
  b. Planting Soil
  c. CU Structural Soil
  d. Sedimentation Pond Excavation

  RESPONSE:
  <u>Compost -</u> Stockpiling will not be required per DEC guidance. Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.
  <u>Planting Soil</u> – This section was removed (It is a City of Syracuse specification section utilized for right of way planters). Topsoil and Planting specifications sections were added to meet the needs of the project for the street tree plantings and monument sign planting.
  <u>CU Structural Soils</u> - This section is not required for the project and was removed (It is a City of Syracuse specification section utilized for right of way planters).
  <u>Sedimentation Pond Excavation</u> – See Additional Comment 1) bullet point 4, page 2, for response.

- 6 - Project is no longer one phase as described for several years by applicant
  RESPONSE: Project continues to be one phase as discussed by the owner. The single phase has been broken into 7 stages to limit disturbance and manage construction and erosion. The Town engineer has directed us to create construction documents for staged construction to

reduce the areas of open construction. All plans are identified as stages of the singular phase of the project. The seven stages of project construction are shown on drawings L-102 thru L-108.

- 7 - Time of Concentration assumptions by the applicant do not assist with local run-off issues. A more conservative approach is recommended by our review to increase mitigation of the proposed activity
  RESPONSE: This comment appears to refer to open soil conditions during construction as discussed in our clarification phone conversation on March 19, 2020. Page 15 of the SWPPP submitted in December of 2019 outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission and the SWPPP provided with this submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present.

- 8 - No definite QA/QC plan for structural fills has been submitted

  RESPONSE: A testing schedule has been added to the staged construction plans on drawing L-102 which is based off of Kenney Geotechincal's recommendations.

- 9 - Through use of cluster development and as discussed at public meetings applicant to provide architectural renderings of homes and landscape plans of parcels. Planning Board should also review merits of grinder pumps verses a traditional municipal duplex pump station at this location.

  <u>RESPONSE- ARCHITECTURAL</u>: Developer has presented architectural renderings at several meetings and has included these images within drawing L-901. Thomas Allen Homes will be constructing all of the homes within the subdivision. Landscape plans will be developed by each individual homeowner based on the custom homes constructed and individual family preferences for each of the lots. Street trees, a monument entry sign with plantings and wetland plantings will be installed as part of the project along with the establishment of lawn in all disturbed non paved areas. Refer to drawing L-401 entitled Planting Plan.

  <u>RESPONSE – GRINDER PUMPS</u>: Several lots cannot obtain gravity sewer service. Just like all over Central New York, not all sites reside in a location capable of gravity service for sewers. Individual grinder pumps will be owned and maintained by the private homeowner with no maintenance or responsibility by the town. This is* not *an atypical condition in that many septic systems utilize pumps to transmit effluent from septic tanks to leachfields and from basements to septic tanks. Homes in this subdivision are no different than other systems in Onondaga County and around Central New York that use pumps to discharge sewage into

their septic systems or low pressure sewers. In addition, a review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 (provided with this submission) and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. Based on an email from Christ Dietman at WEP, dated 6/2/20, a traditional duplex municipal pumping station is not an economically viable solution for this development.

Details of the review of each drawing and the proposed SWPPP follow:

2) General

1. No sewer offset plan included in submission

RESPONSE: Sanitary Sewer offsets and correspondence from Chris Deitman at WEP have been provided to the town previously. On 4/2/18 OCWEP provided a letter (previously submitted to the board and readily available to the public under the FOIA) stating the current system and receiving WWTP contain sufficient capacity to support the proposed development. It should be noted that at the time the developer had proposed 25 lots and the letter is reflective of 25 lots which would indicate the existing facilities contain more than enough capacity for the current 21 lot proposal. Once WEP and the town coordinate the requirements of such plan the developer will make any arrangements to comply.

2. No district formation information for proposed special use districts

RESPONSE: We had requested clarification from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. We have received no other guidance to date.

3. Correspondence from Kenney Geotechnical dated September 17, 2019 appears to indicate incomplete work tasks

RESPONSE: A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review.

4. No updates received for geotechnical report for current proposed work

RESPONSE: Geotechnical report has been provided in last submission for proposed work. During our June 2018 submission the Town Planning Board requested we provide 12 copies of a 3 ring binder to contain all pertinent correspondence and important documentation. Updated report has been provided within binder. See Additional comment #1, bullet point 1 for distribution. Additionally, A supplemental report on earthwork evaluation (5/18/20) and another supplemental report on the SWMF berm and soils (5/27/20) which have been provided with this submission for your review **as well as Appendix A of the *SWPPP provided with this submission.***

5. On site bore hole completed by Kenney Geotechnical indicates refusal/rock at an elevation 14 feet below surface inside limits of the proposed wet pond on 12/13/19. Pond is proposed to be at least 18 feet at this location

RESPONSE: See Additional comment #1, bullet point 2 for response.

6. Site has significant cuts and fills in areas of infrastructure to be dedicated to Town, no approvable QA/QC plan submitted for this scope of work

   RESPONSE: Refer to drawing L-202 entitled Right of Way Basement Slab, and Footer summary. The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A limited 125' long section (Station 4+25 to 5+50) will require fill in the 8' to 10' range and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202. No road areas require more than ± 9 feet, only right of way areas require up to 10 feet. The suggestion that significant cuts and fills for more than just a minor area is misleading and does not reflect the vast majority of the project. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill. Weekly testing will be coordinated with the developers engineer and town engineer.

7. Map plan and report missing for district formations

   RESPONSE: it is our understanding that these documents are prepared after engineering review and SEQR during final approval. The developer will provide these documents at the appropriate time if the project is approved. Design Team requested feedback on this issue from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue.

8. No updates on revised plans from OCWA, OCDOH nor OCDWEP

   RESPONSE: Our team is of the opinion that updates are not required from above agencies due to the consistent usage of the 21 home subdivision in all correspondence with agencies. Once site plan is approved, final drawings will be shared with these agencies to allow them to complete their designs and obtain necessary approvals.

9. No survey provided with submission

   RESPONSE: Site survey is provided as part of this submission.

10. As a function of relief upon use of cluster development. The Planning Board should place strong consideration and review upon the use of private grinder pumps at this location. The proposed use of grinder pumps is an anomaly in the Town of Manlius. This proposal will nearly double the applications of grinder pumps in the community. If used pumps shall be private with generator back up & required holding tanks on private property with double access valves. USEPA fact sheet on grinder pumps is attached herewith. Installation of grinder pumps is not consistent with current Town O&M maintenance.

    RESPONSE: The statement that the use of grinder pumps is an anomaly in the Town of Manlius or Onondaga County for that matter appears misleading. A large portion of the Town of Manlius and Onondaga County do not have access to Public Sewers. Grinder and Effluent pumps are utilized frequently for septic system distribution throughout the area in places where gravity is not feasible. Other local areas utilize low pressure sewers with

grinder pumps such as in the Town of Pompey (Abutus Park) and other towns like Dewitt, Lysander and Manlius according to WEP. Any septic system that does not operate by gravity in the county would also include a similar pump. As an experienced designer of these systems, most residences served by septic systems do not contain generator backups and do not require holding tanks. In addition, review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station. In addition, email correspondence from Christopher Deitman, dated 6/2/20 verifies that a municipal pumping station is not economically beneficial to this project or other residents of this sewer district. Therefore, the proposed low pressure sewer is the preferred alternative. See Additional Comment #1, Bullet point 9 for additional information.

11. Architectural review compliance discussed at public meetings not addressed or depicted. Typical architectural rendering for proposed houses should be submitted for review

RESPONSE: Project Team has provided sample architectural within this submission. Client has built several homes in the Manlius community and submitted photos of work previously to the board at several presentations. Refer to architectural response #9 on page 2.

12. Landscape review parameters discussed at public meetings not addressed or depicted. Typical landscape rendering for proposed houses should be submitted for review

RESPONSE: Landscaping design parameters including recommended native plant materials, hardscape materials and green/permeable pavement items to be included in HOA document. Each house will have a custom footprint and will have a unique and custom landscape based on the needs of families moving into the houses. Each homeowner will address the landscape design and installation. Since each home is to be constructed with a unique footprint we feel that a typical landscape plan is not warranted.

13. Land marking monuments not depicted on drawings as requested

RESPONSE: Individual lot corners to be located with iron pipes during stage 7 (L-108, Construction Staging note E) of construction in coordination with the project surveyor Forrest Seguin.

14. No blasting nor rock removal allowed on project site, no rock removal required as discussed at public meetings by applicant

RESPONSE: Agreed. Project team has performed a thorough investigation of the site and is ready to construct the site without blasting or rock removal. No rock was encountered during any of the multiple soil investigations on the site. Notes outlining this request have been added to the staging plans.

15. Security to be provided for capital improvements for utility and road installation by applicant for all infrastructure to be dedicated to the Town.

RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss required security requirements.

16. Engineering observation during construction will be required. A developers deposit will be required for this activity.

    RESPONSE: Agreed. Project Attorney, Tom Blair, and project developer, Tom Douglas, are ready to meet with the town to discuss the level of services required and the compensation amount required.

17. Testing for structural fills and NYSDOH certification of sewers will be required through a developer's deposit for all work to be dedicated to the Town. Requested that the applicant submit actual QA/QC plan to help better define scope of testing services costs

    RESPONSE: Kenny Geotechnical has provided a scope of testing services for the project. Refer to staged drawings (L-102) for construction duration and specification section 31 2301 shown on L-503 for testing requirements. Specification Section 33 02722 also outlines inspection and testing of sewers.

18. Drawings L-201, L-700, L-701, L-702, L-703, L-704, L-705 not submitted with this submission and require additional coordination as a total review

    RESPONSE: These drawings were previously submitted and have not been updated. The design team forwarded a list of drawings to be submitted for the last submission. List did not include these drawings and a response to our list of drawings was not provided. Design team will include these drawings within the next submission set. It is our understanding that the 21 lot count shown (20 new/1 existing) is an agreed upon count. All drawings for the project have been provided within this submission.

19. Drawings show only revisions 5-11. Where are revisions 1-4

    RESPONSE: KFA to show complete list of revisions.

20. Wet pond appears to be a dam over 10' tall and impoundment area of over 3.07-acre feet (16.5': 676.5 crest, 660.0 toe of slope pond bottom 664.0 & 3.3-acre feet impoundment) Pond profile requires location of borings, location of rock, location of water table, 25' buffer from perimeter of high water impoundment area to wetland boundaries, documentation of no undue influence of discharges to ACOE wetland area, landscaping plan, removable trash rack, access turnaround for maintenance, fence gate sizing for proposed equipment if fencing is proposed and location of safety bench

    RESPONSE: See Additional Comment #1, Bullet point #1 for comments on dam and impoundment. We have previously provided a pond "section" as requested. A pond profile has been provided, see drawing L-502 and Appendix P of the SWPPP provided with this submission. See Additional Comment #1, Bullet point #2 for discussion on borings, depths etc. A buffer larger than 25'-0" has been provided from perimeter of high water impoundment area to wetland boundaries mapped by wetland professionals and located by the Licensed Land Surveyor. The pond itself allows the maintenance road to loop the facility and no turn arounds are required. Pond grades are 4:1 which allow for elimination of any safety bench per page 6-12 of the stormwater design manual, in response to your offices previous comments.

21. Foundation drain around footing not a part of this approval and shall be removed

RESPONSE: Foundation drain detail has been removed. Note added to L-200 and L-503 noting that all foundation drain and basement information is for coordination purposes only.

22. All drawings marked not for construction, unacceptable for approval submission

RESPONSE: Drawings to be marked "for construction".

23. SWPPP submission dated 12/17/19 accepted by applicant on 1/10/18 and certified by engineer on 12/26/17

RESPONSE: Appendix H of the SWPPP has been updated with current signatures and dates along with page 26 of the SWPPP narrative.

24. Project specifications provided by developer require the following which have not been incorporated into drawings or plans
    a. Compost (220,000 CF required for reclamation of site (3" thick))
    b. CU Structural soil
    c. Planting Soils
    d. Basement spoils (35,000 CF)
    e. Additional staging for new additional sediment pond (66,000 CF)

RESPONSE: See Additional comment #1, bullet point 5 for response.

25. No drawings in 12/17/19 SWPPP match current submission subdivision drawings of 12/17/19

RESPONSE: RZE Drawings in 12/17 SWPPP shall be updated to match submission package.

26. The proposed conditions plans in the SWPPP do not match the grading plan in the plan set.

RESPONSE: RZE Proposed conditions plans have been updated to match grading plans.

27. Are the calculations in the SWPPP based on the old drawings in the SWPPP or the new drawing set? This needs clarification.

RESPONSE: Calculations and SWPPP have been updated.

28. We believe more water quality volume will be required as there is more than 4 acres of impervious on site.

RESPONSE: WQv calcs have been updated to reflect off site impervious per discussion with town engineer, see Appendix G of the SWPPP provided with this submission.

29. A response letter is required on the items addressed herewith as it is very difficult to follow what has been changed with so many revisions.

RESPONSE: Agreed.

3) Sheet L-100

1. Boring information does not include logs nor elevations for borings

   RESPONSE: Boring information is located within Kenney Geotechnical Report which is located within the 3 ring binder, Appendix A of the SWPPP provided in the most recent submission. In addition, elevations locations and data appear on drawing L-100. See bullet point #2, additional comment #1.

2. Notes indicate removing all vegetation and hauling off site contrary to public discussions

   RESPONSE: Notes have been revised and note that all vegetation removed will be chipped and placed on site as mulch or blended with topsoil. Note #3 within the chart entitled EXISTING CONDITIONS AND REMOVAL/DEMOLITION NOTES located on drawing L-100 has been updated to address this comment.

3. What is the purpose of site preparation plan?

   RESPONSE: Site preparation plan shows the boring locations, existing survey information and includes a project legend and survey notes.

4. A site-specific survey is required for the proposed project

   RESPONSE: Site survey has been provided several times including the initial binder submission. Project team has included a survey within this submission.

5. Finished floor elevations depicted in notes but not shown on drawings

   RESPONSE: Finish floor elevations are shown on drawings L-200, L-300, L-400 and L-401.

6. General note referencing U.F.P.O., the agency no longer exists

   RESPONSE: Official agency name is now Dig Safely and has been updated.

7. Open cut of Hoag Lane for sewer connection unacceptable, provide detail for road boring at this location

   RESPONSE: KFA/ RZ has provided a boring detail 14, drawing L-500 for sewer connection at Hoag lane. However, contractor /developer would like to discuss open cut approach to ensure accurate elevation control and avoidance of existing utilities.

8. Decommissioning of Water Pit, provide insight or detail

   RESPONSE: Water Pit will be decommissioned in accordance with all OCWA requirements during OCWA's construction of the project.

9. Dust monitoring provide detailed QA/QC Dust Monitoring Plan

RESPONSE: A Dust monitoring plan was provided within the SWPPP under section 12.1 within the 12/17/19 submission. Pages 26-29 and Appendix R are dedicated to outlining the plan, frequency, monitoring practices and corrective action. The project staging plans provide information on the locations of monitoring devices.

10. Stage 6 not as directed by owner, plan needs to be on drawing

RESPONSE: Updated staging plans have been provided as shown with drawings L-102 thru L-108.

4) Sheet L-101

1. Wet pond borings appear to have been taken to a depth of 14 feet (168") where refusal was met. The proposed pond appears to be over 18 feet deep from existing land contours Confirm depth of rock consistent for final design

   RESPONSE: See Additional Comments #1, Bullet points 1 & 2 and item 20 for responses.

2. All wetland areas shall be delineated and protected during construction activities. Suggest orange construction fence to protect wetlands and all areas to remain forever wild to be shown on drawings

   RESPONSE: Agreed. Orange construction fence has been added around all wetland and protected wild areas.

3. L-101 does not match reference L-1 in SWPPP. Perc tests not taken in area of proposed pond nor at proposed elevations of construction of pond

   RESPONSE L-101: RZ/KFA have updated the SWPPP and Plans. All testing data and locations are provided on drawing L-100 and within Appendix A of the SWPPP. RESPONSE PERC TESTS: Provided within updated Kenney Geotechnical reports dated 5/18/20 and 5/27/20. See additional comment #1, bullet point #2.

4. Lot 12 appears to have an 8 foot +/- retaining wall, provide detail and ownership of same\staging plan wording is depicted on sheet L-101. Should be on sheet L-102 and in SWPPP

   RESPONSE: The proposed grading plan has been revised to reflect a 3-4 foot high boulder wall. Boulder wall detail and profile has been added to drawing L-502. Wall construction shall occur in Stage 1 of construction as noted on plans. Notes regarding wall will be included in construction staging plans.

5. Stormwater note indicates 20 homes not 21 per drawings

   RESPONSE: Notes to be updated to reference the 20 proposed lots and one existing residential lot.

6. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: KFA/RZ have updated notes based on public discussion. However, staging plans were developed after public discussion comments were made relative to stockpiling of materials. Sitework contractor, Tobin Construction, is in agreement with the locations.

7. Describe top soiling compost operation and acceptance criteria of same, specification for compost. Show staging area for composting operation

   RESPONSE: Site contractor will dress and final grade the site per NYSDEC email correspondence shown on drawing L-101 and within Appendix I of the SWPPP provided with this submission.

5) Sheet L-102

1. Transitions to forebay & Wet pond ground contours are needed in detail to confirm plans and profiles coordination with existing site contours

   RESPONSE: Proposed grades of forebays and spillways have been provided on drawing L-102 and L-200. An updated profile of the basin has been provided as details, 1-4 on drawing L-502.

2. Stockpile notes on drawings contradicts public discussions and drawings

   RESPONSE: Refer to response on 4) Sheet L-101, bullet point 6.

3. No longer a one phase project as discussed with public

   RESPONSE: Duplicate comment, Refer to response 1) Additional comment, bullet point #6.

4. Project appears to be at least 5-6 years in duration

   RESPONSE: Project is to be constructed in one phase. The stages shown are within one phase and laid out on drawing L-102 within the Stage Chart.

5. Staging plan does not consider winter shutdowns and securing site environmentally

   RESPONSE: Project continues to be one phase as indicated by all plans.

6. Confirm soil from pond being moved to staging area, stability factors of the large staged area nor haul roads

   RESPONSE: All soil removed from construction of pond will be retained on site in designated staging areas or moved directly to it's new location in accordance with grading provided on L-200 or L-102. All filling activity will be In accordance with drawing L-102 and the Kenney Geotechnical report provided on 5/27/20.

7. Work outlined in phasing plan appears to require a waiver from NYSDEC

   RESPONSE: Agreed. A 5 acre letter (Appendix W of the SWPPP) is provided within the SWPPP and will be submitted to NYSDEC/ MS-4 at the appropriate time.

8. Final wear course topping for roads is required to be placed within one year of base & binder installation per Town of Manlius

   RESPONSE: Additional note added to detail 1/L-503 (Typical Road Section).

9. All required erosion control for each phase of work to be included and detailed in drawings and SWPPP

   RESPONSE: Project is to be constructed within one phase with multiple stages. Additional staging drawings have been added to the set as requested. Each stage has detail references showing the erosion control measures required on Drawings L-102 thru L-108. Language has also been added to the 5 acre disturbance letter provided in the SWPPP, Appendix W).

10. Staging Plan requires discussion for schedule of dedicated facilities. Developer proposes 2-year warranty of all dedicated roads and infrastructure, timeline of each phase needed for acceptance.

    RESPONSE: According to the Town of Manlius specifications provided and shown on drawing L-503 (Section 31 23 01 (1.6F) – Sitework Excavation, Backfilling and Compaction) the pavement guarantee is for a one year period. The Asphalt Pavement specification section 32 1216, 3.2 includes a pavement guarantee which is contrary to the Town of Manlius specifications has been removed from drawing L-800.

11. Phasing plan appears to require a NYSDEC waiver

    RESPONSE: Agreed. See comment response for sheet L-102 bullet point 7 above.

12. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

    RESPONSE: SWPPP mailbox has been relocated to project entrance where it will be located throughout construction.

13. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

    RESPONSE: Sitework contractor has provided an earthwork analysis for the entire project which balances as well as stages 1 and 2. Stockpiled materials areas will be shown on the plans. However specific quantities for the stockpiles materials cannot be shown in specific quantities according to Tobin.

14. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

RESPONSE:
<u>GPS Coordinates</u> – Layout of project work to be performed by a licensed surveyor throughout construction. Tobin's construction equipment includes GPS mounted units with the project grading information to ensure proper grade control. During our 3/19/20 phone conversation with the town engineer and attorney it was determined that GPS coordinates for staging limits and fencing were not required.

<u>Fencing</u> – KFA to show detailed fencing for all staged areas. Silt fence and orange construction fencing will be shown within each stage as presented on Drawings L-102 thru L-108. The SWPPP document includes language which allows the SWPPP inspector to require movement of or additional erosion control measures based upon field and weather conditions. These modifications will be noted within the weekly SWPPP inspection reports which will be shared with the Town, developer, designers and contractors.

15. Provide a preliminary schedule for the work

    RESPONSE: Refer to staging plans for duration of each stage. Exact calendar dates cannot be provided until site plan approval has been granted and a construction start date can be established.

16. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

    RESPONSE: KFA has shown extents of silt fence and orange construction fence around soil disturbance areas as shown on the staging plans drawings L-102 through drawing L-108. Silt fence is not necessary for placement uphill of disturbance areas.

17. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

    RESPONSE: Unacceptable note removed. KFA has added testing requirements the schedule on L-102. The specifications are based upon the Town of Manlius specifications provided by the Town of Manlius department of Public Works. In addition, the applicant has obtained a licensed Geotechnical engineer to provide a procedure and testing plan for areas to be dedicated to the town. It should be noted that the majority of areas within the right of way to be dedicated to the town requires cut or fill within 4'-6" of existing grade.

18. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

    RESPONSE: Staging area provided is adequate for a sitework developer according to Tobin Construction. According to sitework contractors there is adequate space within staging areas to store equipment and construction materials. Contractor is aware of project requirement to keep all stockpiled materials, construction materials, equipment and employee cars on site. Duration of storage is not an item the design team has the ability to

provide. The staging area will be monitored weekly (and for some time bi-weekly) by the Qualified Professional responsible for SWPPP inspections. All inspections and mitigation measures will be in conformance with the SWPPP.

19. Provide hammerhead turn around at end of road construction

    RESPONSE: KFA has shown Town of Manlius turnaround at end of road at each phase per detail 9/L-501, where needed.

20. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Staging plans include transitional grades between stages and temporary measures which require removal moving into the next stage of construction.

6) Sheet L-103

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: see response to duplicate item L-102 bullet point #12.

   Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: Duplicate comment see response to L-102, item 13 above.

2. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:
   <u>GPS Coordinates</u> – See response L-102 note #14.
   <u>Staging Fencing</u> - See response L-102 note #14.

3. Provide a preliminary schedule for the work

   RESPONSE: See response L-102 note #15.

4. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: Detailed limits of silt and orange construction fencing are shown on the staging plans L-1-2 through L-108.

5. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

   RESPONSE: See response L-102 note #17.

6. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: See response L-102 note #18.

7. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate comment see response to L-102, item 19 above.

8. Provide details, sections and basis of design for 66.712 CF sedimentation basin

   RESPONSE: Site Plan documents include basin grading plans, erosion control plans, layout plans and sections including staged construction. Calculations for sizing and design of temporary basin including routing of outlet structure have been provided in Appendix T of the 12/17/19 and current SWPPP submitted.

9. Show location of excavation of 66,712 CF of spoil for the work

   RESPONSE: According to earthwork estimated by Tobin Construction the excavated material from the sedimentation basin will be utilized to construct the west side of the basin and fill areas within Stage 2.

10. Show depth to rock and depth to water table. Include safety precautions and any need for security fencing during the work

    RESPONSE: As previously noted within 1) Additional Comments, bullet point #2, an updated Geotechnical Investigation was provided within the submission on 12/17/19. All testing data, locations and information is included on drawing L-102. Additionally, supplemental geotechnical reports (earthwork 5/18/20 and pond analysis 5/27/20) have been provided. Safety Precautions - Contractor to excavate and trench in accordance with OSHA safety requirements. All deep trenches and excavated areas will be fenced in accordance with OSHA standards. Contractor to provide security fencing as needed.

11. Discuss where wood chips have been incorporated into the work formerly shown on drawing L-102

    RESPONSE: Wood chips to be utilized on site for erosion control measures and mulch.

12. Storm pipe el 695.5 to el 687.5 has no sedimentation basin attached

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. The pipe currently is proposed to discharge to a temporary sedimentation basin from a temporary swale on lot 10 within stage 2.

13. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: See response L-102 note #20.

7) Sheet L-104

1. SWPPP mailbox unacceptable location deep in property behind existing private residence. Needs to be at entrance site accessible to public

   RESPONSE: See response to duplicate item L-102 bullet point #12.

2. Provide detailed cut and fill data for all of stage 1 work including but not limited to imported compost, planting soil, CU Soil & other misc. materials

   RESPONSE: See response L-102 note #13.

3. Provide GPS coordinates for staging limits. Show fencing for staged areas depicted

   RESPONSE:

   GPS Coordinates – See response L-102 note #14.

   Staging Fencing - See response L-102 note #14.

4. Provide a preliminary schedule for the work

   RESPONSE: Duplicate note. See response L-102 note #15.

5. Show detailed limits of siltation control (i.e. silt fence) around soil disturbance area.

   RESPONSE: KFA to show extents of silt fence around soil disturbance areas.

6. NOTE: Install road pavement subgrade …. In lifts per Town of Manlius…" Unacceptable Note

   RESPONSE: Duplicate note. See response L-102 note #17.

7. Provide detail to staging areas i.e. materials, equipment and/or structures and duration of storage

   RESPONSE: Duplicate note. See response L-102 note #18.

8. Provide hammerhead turn around at end of road construction

   RESPONSE: Duplicate note. See response L-102 note #19.

9. NOTE: Fill temporary basin – No basin depicted

   RESPONSE: Basin not depicted within Stage 4 because it would be removed and filled at the end of stage 3. Refer to previous stages 2 and 3 for temporary basin location and Appendix T for sizing and design.

10. Staging Plan grades do not appear to meet final grading plans

    RESPONSE: Duplicate note. See response L-102 note #20.

8) Sheet L-105

1. Staging Plan 4,5, &6 does not provide any detail on staging requirements. Drawings looks quite similar to sheets L-101; L-200; L-300

   RESPONSE: KFA has provided additional drawings for stages 4, 5, 6 and 7 as drawing numbers L-105 to L-108.

9) Sheet L-200

1. Stormwater piping: No line or grade shown on plan, no delineation of pipe sizes lacking in several locations on plan, several unacceptable 90-degree or greater bends with problematic head loss, no stationing shown on plan

RESPONSE: Plan revised to comply with comment.

2. South side swale indicates apparent check dams. Das require detail and stationing location

RESPONSE: Check Dams are not required based on design calculations (Appendix F) but are provided as an additional protection in larger storm events. Locations have been chosen by the engineer who is a Certified Professional in Erosion and Sediment Control, a Certified Professional in Water Quality and a Certified Erosion, Sediment and Stormwater Inspector by professional councils in each discipline. No additional detail or stationing is required.

3. Geotech to include centerline of road ways for road and utility installation & all ponds

RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. KFA has added right of way and road centerline to drawings .

10) Sheet L-300

1. Air release valve locations

RESPONSE: Force Main sewer runs are short and do not include any locations for air release valves. None are required since no line crests exist.

2. MH #3 and MH#6 are unacceptable with greater than 90-degree bends depicted on drawings as shown are problematic for gravity flow.

RESPONSE: Pipe configuration has been amended to prevent greater than 90 degree bends.

3. Provide details for sump pump connections directly to storm sewers with backflow connections to compensate for overland discharges described in SWPP

RESPONSE: Information on sump pumps and discharge points is presented as Note 20 on Drawing L-200. No sump pumps are proposed to discharge to storm sewer; sump pumps to drain to daylight.

4. Show location of 10 – 15" caliper trees on lot 4

RESPONSE: Any of the larger caliper trees located within the buffer/forever wild area will be preserved. Those located beyond the buffer will be removed to construct the required drainage swales and construct housing lots. Most of the trees beyond the forever wild area as shown on the Site Preparation and Boring Location plan have been removed. We do not feel that location of the existing trees is necessary.

5. Lot 4 diagonal 125 sewer lateral across road is unacceptable

RESPONSE: Manhole has been relocated and lateral has been modified.

6. Show locations for proposed grinder pumps tanks and emergency generators disconnect valves off Town ROW

RESPONSE: Grinder pump chambers are within the residence as outlined in the E-One system design guidance. No emergency generators are provided unless desired by the individual property owners. A connection valve is provided at each property line per detail 7/L-501.

7. No open cut allowed across Hoag Lane

   RESPONSE: Duplicate note. See response L-100 note #7.
8. Provide detail for odor control for septage transport from grinder pumps and mechanism for grinder pump owners to pay in map plan and report for sewer district

   RESPONSE: All pumps are privately owned and not part of the municipal system. The E-One sewage system is a closed system and no odor control is required. Grinder pumps are not part of the municipal system and will not be identified in the map plan and report. Only payments for the municipal main will be required.
9. Laterals specified as 6" some shown as 4" confirm all are 6" and correct drawings

   RESPONSE: Plans have been updated to show all gravity laterals as 6" diameter.

10. Note 5 indicates incomplete submission with no easements in place for work

    RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Easements are typically granted after construction.
11. Note 23: provide detail on agridrain in-line water structure

    RESPONSE: A specification on agri-drain has been provided as detail 5 on drawing L-504. The spec has also been added to Appendix P of the SWPPP provided with this submission.

11) Sheet L-400

1. Cleary show limits and stationing of jute mesh requirements in southerly swale

   RESPONSE: The jute mesh detail shows a width of 6 feet. Hatching on drawings has been altered to reflect this width. Layout Note 6 on drawing states that the surveyor will layout the drainage easement prior to installation.

2. List all proposed traffic signs

   RESPONSE: KFA has provided a proposed signage schedule and two stop signs on the Layout Plan, drawing L-400.
3. Show locations of stone dust walkways and ownership of the same

   RESPONSE: There are not any stone dust walkways included within the current site plans. During early design review meetings with the town the design team was directed to remove the walkways.

4. Confirm NYS Pool requirements vs Town BOCA requirements for pools

RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

5. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

   RESPONSE: Detention basin fencing detail has been modified to a 4 foot height chain link fence which meets NYS Pool and Town requirements.

6. Provide detail on subdivision sign

   RESPONSE: Subdivision sign detail has been added to the Planting Plan, drawing L-401.

7. Show required monument locations

   RESPONSE: Monuments to be provided within stage 7 (drawing L-108, construction note 7) of construction and to be coordinated with the surveyor, town and contractor.

12) Sheet L-401

1. L-401 Rain Gardens: Show specific locations as discussed at public meetings

   RESPONSE: Rain Gardens have not been a part of project for several submissions. All rain garden references have been removed from plans.

2. L-401 wet pond plantings show detail, fencing, access to pond, maintenance around pond and equipment turn around areas

   RESPONSE: Wet pond planting locations, specifications and detail has been added to drawing L-401. Fenc

3. L-401 details 5&6 seeded and sodded lawns show locations for detail application

   RESPONSE: Project staged construction drawings and planting plan show seeded lawn locations. There will not be any sodded areas unless as deemed necessary for stabilization by the qualified inspector or desired by the individual homeowner within Stage 7.

4. Show locations of proposed rain gardens

   RESPONSE: No rain gardens are proposed for this project. See L-401 item #1 above

5. Show pond landscaping

   RESPONSE: Pond landscaping has been updated, see L-401, item #2 above.

6. Describe landscaping plans and a schematic for each house as discussed at public meetings

   RESPONSE: All of the 20 proposed homes for the project will be custom homes and have a customized footprint. Each landscape design will also be customized to meet the home footprint and the needs of the individual homeowner. Project plans include (2) street trees for each home. Images of the homes which were previously presented to the Town will be included within the next submission set.

7. Note 3 stating planting scheme for entrance at later date is unacceptable

RESPONSE: Note has been removed. A planting plan for the monument sign area has been provided, detail 2/L-401.

13) Sheet L-500

1. Sheet L-500 indicates traffic sign detail. Plan requires location of all signs

RESPONSE: KFA has added two stop signs (L-400) to the plan along with detail references and locations.

2. Detail 14 L-500 does not match detail 7 L-501. Compaction effort required. Lift height of fill/cut operations required. Proctor or modified proctor testing. Number and frequency of testing

RESPONSE: KFA has revised detail 1/503 to match criteria outlined in the Kenney Geotechnical report dated 5/18/20. Detail 14/L-500 has been removed along with detail 7/L501. Detail 1/L-503 now includes all pavement section information.

3. Detail A L-500 siltation sock use not referenced in SWPPP

RESPONSE: SWPPP has been updated to include siltation sock, see section 12.0.

4. Construction entrance 3 L-500 not detailed in staging/phasing plans

RESPONSE: KFA to show construction entrance location detail on all phasing plans L-102 thru L-108. During weekly/bi-weekly SWPPP inspections the condition of the entrance and cleanliness of Hoag Road at the entrance will be reviewed.

5. Detail 8 L-500 asphalt kick up detail does not match detail 14 L-500 nor detail 7 L-501

RESPONSE: Duplicate comment. See response to 13) Sheet L-500, item #2

6. Wet pond detail not to scale unacceptable requires scaled drawing with details

RESPONSE: See SWPPP comment 20 above for response to profile.

7. Confirm need for 2'-0" manhole sumps

RESPONSE: KFA has decreased sump depth to 1'-0". 2'-0" depth is not needed.

8. Concrete washout detail does not match plan sheet L-104 or L-105 nor NYSDEC suggested requirements

   RESPONSE: Detail has been updated to comply with the NYSDEC blue book, per detail 19, drawing L-500.

9. Lot Erosion Control Lacks detail i.e. curb, gutter and site silt fence

RESPONSE: KFA has updated NYSDEC Lot erosion control detail (detail 2, drawing L-108) to match the NYSDEC blue book plan for residential lots.

10. Catch basins depicted on undisturbed earth, confirm this requirement and discuss subbase compaction where required

RESPONSE: Detail 1 on drawing L-503 now addresses how to install catch basins in places where they are on fill.

14) Sheet L-501

1. Sheet L-501 dust monitoring device cut sheets to be included in SWPPP with dust plan. Dust plan data to be submitted daily to Town of Manlius Code department during work activities

RESPONSE: Dust monitoring cut sheets included in SWPPP within appendix R but they are also presented as Detail 8 drawing L-501. Site contractor to submit dust monitoring data daily to Town of Manlius. Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

2. Applicant has indicated no blasting or rock removal required for the project. This statement shall be placed on all drawings

RESPONSE: Note added to Earthwork Field Testing Notice on all phasing plans l-102 thru L-108. See 2) General Comments, item #14.

3. Detail 7 L-501 indicates road to be placed on undisturbed subbase. This does not match drawings. Road construction requires a detailed QA/QC plan

RESPONSE: Detail 7/L-501 is for a sanitary pump station. Detail 1/L-503 refers to construction in cut and fill conditions.

4. Pond requires easement access

RESPONSE: The wet pond is located within a HOA Forever Wild easement area controlled by the HOA in addition to, an HOA access easement which includes a 15 foot wide easement for the HOA to access the SWMF for maintenance. According to the surveyor all easements will be shown on a final survey at a later date.

5. Confirm basis for 14' maintenance berm. The maintenance bench does appear to be continuous. No safety bench indicated on drawings. Maintenance bench is bisected by overflow spillways. Maintenance bench requires a turnaround required by NYSDEC

RESPONSE: See SWPPP comment 20 above for response.

6. Provide detail on coarse aggregate fill around manhole detail

RESPONSE: Manhole details 1 & 10 on L-501 updated to show placement around manhole in conformance which Town of Manlius specifications.

7. Pond seep collar

RESPONSE: A pond seep collar detail has been added to the plans, see detail 16/L-500.

8. Fence detail references NYSHD pool code. Confirm fence meets BOCA requirements adopted state wide for pools

RESPONSE: Duplicate comment. See 11)Sheet L-400 bullets 4 and 5 for response.

9. Sanitary notes contradict project specifications on sheets L-800 and L-801

RESPONSE: Sanitary notes on L-501 and L-801 amended to not conflict with specifications.

10. Show location and requirement for Hydrant installation detail

RESPONSE: Preliminary hydrant locations are shown on drawing L-200 as discussed and detailed (drawing L-501, detail 4) per OCWA and fire department requests.

11. Detail 2-L501 sanitary lateral does not match plan details on utility drawings

RESPONSE: Laterals have edited to match plan details.

12. What is detail 5 L-501 depicting? Where is plan detail for this applied

RESPONSE: Detail 5/L-501 is for the sanitary lateral (House Trap-Gravity Lateral) and has been included per recent updates with Onondaga County Department of Health Guidance.

13. Detail 6 L-501 all fence posts to be noted as 4'-0" as shown

RESPONSE: KFA has shown all fence posts @ 4'-0" Height. Detail has been modified to a 4'-0" height chain link fence and gate which meets state and Town of Manlius code requirements.

14. Town will not accept ownership nor operation and maintenance of grinder pumps. Remove Detail 7 L-501

RESPONSE: Detail 7/L-501 has been updated to clarify the work.

15) Sheet L-502

1. Detail 2 L-502
    a. Show existing grades.
    b. Boring locations – depth & profile locations
    c. Distance barrier of proposed construction to wetlands
    d. Provide detail on "limits of cut"
    e. Provide vertical and horizontal stationing on drawings
    f. Coordinate outlet structure detail w/ 20-L-500 and details in project SWPPP
    g. Depth to rock, confirm need for any lining materials and maintenance thereof
    h. Pond profile requires reference to a plan section for clarification and constructability

RESPONSE:
See Additional Comment item #1, bullet points 1 & 2 and swppp item 20 above for response.

2. Detail 1 L-502
    a. Illegible provide drawing to scale at a legible size
    b. Drawing contours do not appear to match others in grading plans nor staging plans

RESPONSE: KFA/ JK TOBIN to provide a revised earthwork plan at a larger scale.

16) Sheet L-503

1. Delete basement details and footer details they are dictated by building permit applications

   RESPONSE: KFA to removed basement/footer details. Notes have been added to drawing L-503 stating that basement slab and footings are shown for coordination purposes and illustrative purposes only.

2. Confirm where is section "Fill Location" taken

   RESPONSE: Plans revised to show fill location on grading plan with section reference to drawing L-202.

3. Section 31 2301 is unacceptable when project moves forward Town will contract a testing agency using developer deposit for cost reimbursement and testing agency will use specifications and QA/QC plan developed by applicant initial indications are for an initial testing deposit of $50,000

   RESPONSE: Design Team requested clarification on this item from both the town engineer and attorney during our phone call on 3/19/20. We received a response from the town attorney on 4/28/20 which did not address or clarify this issue. Town Attorney and developer to discuss with town.

4. Typical road sections are confusing coordinate with other similar details 14 L-500 and 8 L-500

   RESPONSE: KFA has consolidated road detailing information within drawing set. Much of the information has been added to the road section details shown on drawing L-503.

5. Please provide professional design credentials for JK Tobin Construction referenced in the plans

   RESPONSE: JK Tobin credentials to be provided at a later date. Our office has worked on many successfully constructed projects with Tobin Construction over the years including the Hamlet Housing neighborhood – Clay NY, Harbor Height Housing Neighborhood and DeWitt Community Library.

6. Provide QA/QC plan for all structural fills in Town proposed Rights of Way. Plan shall include but not be limited to the following, all lifts to be 6" as depicted by applicant in project specifications:
   a. Each proposed Manhole: Compaction results for embankment, subgrade, subbase and base in 6" lifts
   b. Each Catch Basin Compaction results for embankment, subgrade, subbase and base in 6" lifts
   c. Each Sanitary Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

d. Each Storm Sewer: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF
e. All Roadways to be dedicated to Town: Compaction results for embankment, subgrade, subbase and base in 6" lifts every 500 LF

RESPONSE: A construction duration column has been added to the Construction Staging chart shown on the Staging plans (drawing L-102). A testing summary chart, provided by Kenny Geotechnical, has also been added to each stage to summarize the testing required for each phase (drawings L-102 thru L-108). Testing criteria items a through e have been added to the specifications section 31 2301 SITEWORK EXCAVATION BACKFILL AND COMPACTING , 3.8 Field Quality Control, item 3 on Specification drawing L-503.

17) Sheet L-600

1. Stationing on profiles do not correlate to any plan views

   RESPONSE: Stationing now appears on drawings within the plan set and correlates to the profile on drawing L-600.

2. Storm lines have unacceptable cover of less than 1 foot at the following locations
   a. STA 0+50
   b. STA 1+50
   c. STA 6+00
   d. STA 7+25

   RESPONSE: Inverts have been adjusted to provide cover greater than 1'-0".

18) Sheet L-800

1. Road Specification 32 1100 Calls for 6" lifts for all road embankment. Please coordinate on all drawings

   RESPONSE: All drawings include reference to installation of materials in 6" lifts. See drawing L-503 for compaction in road areas.

2. Road Specification 32 1216 calls for 2-year warranty on all roads. Please coordinate on all drawings

   RESPONSE: Specification section 32 1216, 3.2, Pavement Guarantee, has been removed since it is in conflict with Town of Manlius specification section 312301, 1.6, F Highway Agreement Guarantee.
3. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

   RESPONSE: All construction specification sections shown within the revised construction set of drawings have been coordinated with drawings and Town of Manlius provided specifications. Town of Manlius specifications have been incorporated into section 31 2301 Sitework

Excavation, Compaction and Backfilling. Design Team discussed this item with both the town engineer and attorney during our phone call on 3/19/20. It was determined that Division 1 specifications were not required for this project.

19) Sheet L-801

1. Planting Soils: Show locations & account for impacts on cut and fill calculations

   RESPONSE: <u>Planting Soils</u> specification section is from a different project, is not required for this project and has been removed. <u>Plantings</u> specification section has been added to address the required installation of two street trees at each home and the plant bed for the monument sign. The amount of soil removed to install trees and the monument planter is minimal and will not have a significant impact on the earthwork calculations.

2. Structural Soil (CU): Show locations & account for impacts on cut and fill calculations

   RESPONSE: Structural soil section is from a different project, is not required for this project and has been removed. Structural soils are utilized within the city right of ways where trees are planted within small tree pits surrounded by sidewalk. Trees planted within the Hoag neighborhood will be surrounded by lawn and not require structural soils.
3. Pressure & Leakage Tests: Confirm locations of this specification requirement

   RESPONSE: As is customary with all sewer installations, all lines will be pressure and leakage tested per specification section 02722 and sanitary note 10 on drawing L-501.
4. Disinfection: Confirm locations of this specification requirement

   RESPONSE: As is customary with all water installations, all lines will be pressure and leakage tested in accordance with OCWA requirements and DOH regulations and per specification section 02722 and sanitary note 10 on drawing L-501 .
5. Provide detailed QA/QC plan for NYSDOH acceptance of sanitary sewer acceptance

   RESPONSE: see previous comments L-801, items 3 and 4.

6. Section 33 31000 – Sanitary- Does not match drawing requirements nor Section 02722 – Sanitary Sewer

   RESPONSE: Specification sections have been revised to focus on this project specifically.
7. Section 02722 Sanitary Sewers – Does not match drawings nor Section 33 31000 – Sanitary –

   RESPONSE: Specification sections will be revised to conform to each other and this project.
8. Section 33 4000 – Storm Drainage – Drawings do not comply nor match the specification

   RESPONSE: Specification sections have been updated to comply with project work shown within drawings.
9. Many specification references are missing including Division 1 referenced on sheet L-800. Strongly suggest a specification book complete with table of contents and material and performance criteria. Many specifications included herewith appear as duplications.

RESPONSE: Duplicate comment. See 18) Sheet L-800, item 3 for response.

20) SWPPP

Appendix A

1. Soils investigation depicts soil investigation in area now to be forever wild and not in areas of stormwater capture area

RESPONSE: The data in Appendix A is reflective of all testing done at the site, including initial testing. The data is important and reflective of the general soil profile in the area showing limited to no encounters with bedrock or other impedances. We plan to leave this information within the report. The most recent Kenney Geotechnical report(s) have also been included in Appendix A of the SWPPP provided in this submission. Appendix A also now includes drawing L-100 depicting all soil testing data and locations.

2. Soil investigative activity currently on three separate non project maps. All to be coordinated on one map and one table boring locations and elevations to be tied to USGS elevations and coordinates by surveyor

RESPONSE: see response to SWPPP comment #1 above, however, drawing L-100, Site Preparation and Boring Plan has been included in the drawing set and Appendix A of the SWPPP provided in this submission to clarify all testing locations.

3. Boring info of 12/13/19 indicates refusal/rock at elevation 14 feet below existing grade. No certification of elevation nor longitude/latitude location

RESPONSE: See drawing L-100 and 1) Additional Comments, bullet point #2 above for response.

4. Site specific dust plan to supersede all other regulations shall be noted on site drawings as reference to all site activity

RESPONSE: A note has been added to L-102 thru L-108 and L-501 which states 'Site specific dust plan to supercede all other regulations to all site activity'.

5. SWPPP dated 12/17/19 appears pre-certified by engineer and owner 1/11/18

RESPONSE: the signature page and NOI signatures have been updated.

6. Dust plan wording to be changed from proposed recommended etc. to required and to be submitted daily to Town of Manlius and posted on site as part of SWPPP reporting. Action limits and action plans to be included

RESPONSE: the SWPPP language has been updated to reflect "Required". Action plan and measures are included on page 23 of the SWPPP text.

7. Dust monitoring devices to be included in SWPPP documentation and describe depiction of locations of dust monitoring at each perimeter of the site

RESPONSE: Dust Monitoring device locations are shown on phasing plans (drawings L-102 thru L-108). Specific dust monitoring device is presented as detail 8, drawing L-501 and this cut sheet has also been included in the SWPPP appendix R.

8. No borings or documentation of 66,000 CF sedimentation pond. Information required for basis of design, pond appears to be 13 feet deep +/-.

RESPONSE: duplicate comment, see Additional Comment #1, bullet point 3 for response.

Appendix H

1. Confirm existing impervious as 1.2 acres and future impervious as 4.1 acres with new drawings of 12/17/19 as NOI has a preparers signature of 12/26/17

RESPONSE: Updated SWPPP has verified total impervious coverage and the NOI, hydrocadd and page 4 of the swppp have been updated as necessary.

2. Start and end dates for the project depicted as 2019 – 2020. Proposed schedule from drawings indicates a proposed schedule of development of 2020 through at least 2026. Start date of 11/1/19 has passed and is incorrect. NOI dated and signed by RZ Engineering 12/26/17 incorrectly with above information superseding the document.

RESPONSE: The planning process for this project has been extended and therefore, we will update forms however, based on future planning timetable this may require further updates. We will update accordingly as the process moves forward.

3. Long Term O&M WILL NOT be Town of Manlius as shown on page 12 of 14 on NOI

RESPONSE: Correct, the HOA will perform long term O&M, SWPPP pages have been updated along with the NOI.

4. Owner signature on NOI is 1/10/18

RESPONSE: Form signature has been updated

5. Preparer certified the SWPPP on 1/8/18 but SWPPP was not prepared until 12/17/19 nearly two years later. Please confirm and revise

RESPONSE: see response to Appendix H comment 2 above

Appendix I

1. Details in Appendix I do not match details shown on submitted subdivision drawings.

RESPONSE: As is typical in a swppp, our office provides the NYSDEC hand drawn details from the DEC's Blue Book and the NYSDEC Stormwater Design manual in our SWPPP manuals for the project. Our project plans include details prepared by our office, manufacturers and other sources which are based off of the NYSDEC manual. Our office requested clarification (specifically what if any, discrepancies were found between the NYSDEC details and our details so that we can update the drawings) on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix J

1. Why is this included. This is a copy of NYSDEC regulations SPDES General Permit

RESPONSE: It is included in every SWPPP we prepare so there is no confusion about what the permit requirements are. This was specifically suggested by NYSDEC personnel to our office. Is there any objection to the DEC's request? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix K

1. Confirm O&M procedures, resubmit using proposed agreement and develop site specific reporting criteria. Current data appears to be NYSDEC suggested tally of forms

RESPONSE: The information provided is the DEC's documented data. Is there a reason the DEC's information is not sufficient for this project or any specific requirement the town requires over and above the NYSDEC's requirements? Our office requested clarification on this item during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

2. Maintenance does not address site specific maintenance criteria nor site specific costs nor site ownership and easement responsibilities. Costs and set aside deposits shall also be addressed. Inclusion of maintenance agreement is also required

RESPONSE:. see Appendix K item #1 for response

3. Post maintenance construction plan missing from SWPPP see attached for possible reference material and sample plan

RESPONSE: see Appendix K item #1 for response

Appendix L

1. Worksheets do not match NOI in Appendix H

RESPONSE: it's unclear the relevancy of this comment. Our office requested clarification on this item (specifically how the calculation does not meet the DEC requirement) during our 3/19/20 phone call. A subsequent letter was provided from the town attorney on 4/28/20 but does not mention or address this issue.

Appendix M

1. Soil stockpiling shall not be at direction of contractor. Stockpiling shall be as per SWPPP and drawings

   RESPONSE: Soil Stockpiling locations are shown within the staging plans (drawings L-102 through L-108).

2. No changes in staging areas as directed by contractor. Staging areas to be completed in accordance with SWPPP and drawings approved

   RESPONSE: see Appendix M item 1 for response.

3. Topsoil required across entire site aerated to a depth of 6" as required by NYSDEC also as required on drawings. Provide a separate sheet depicting areas to be topsoiled with QA/QC requirement including placement of compost as specified

   RESPONSE: Soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 03/11/2020, see revised SWPPP provided with this submission, Appendix I and drawing L-101.

4. Show topsoil storage area of 18,000 +/- cubic yards to be stored and placed on site in drawings and SWPPP

   RESPONSE: see Appendix M item 3 for response

Appendix N

1. Confirm all cut/fill and topsoil calculations

RESPONSE: Tobin Construction and KFA have spent a considerable amount of time developing the staging of the single phased construction project. The construction staging and completed project site balances. Earthwork analysis has also been provided for stages and 2 which also balances.

2. Confirm slope stability and erosion stability of storage piles of soils

RESPONSE: A 1'v:3' h max slope note has been added to the staging plans. Stockpiles will be seeded and strawed. The stockpiled areas will also be monitored and reviewed during SWPPP inspections.

Appendix P

1. Pond profile not to scale

RESPONSE: Pond profile has been redrawn to scale. See comment L-102 item #1 for response

21) Traffic Study

1. Traffic study: No figure 6. Statement that the study information is valid for 3 years from data collection of October 11, 2017 (expires October 11, 2020)

RESPONSE: Agreed.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

15th June 2020

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Re: Woodland Hills Summary of Outstanding Engineering Issues

Dear Mrs. Sutphen,

Our office has reviewed your Engineering comments related to the Hoag Lane dated on **April 28th, 2020** and received on **April 28th, 2020.** Below is our response to each comment received**.** Your comments are listed below followed by the design team response in bold italics.

HOAG LANE CLUSTER DEVELOPMENT

1) Constructability

1. Applicant is asking for a "5 acre disturbance waiver" from the NYSDEC stormwater regulations.

   Response: Agreed. The typical process is covered by the SWPPP for the project. KFA/ RZ have provided a draft Notice of Intent and letter within the SWPPP regarding a 5 acre disturbance waiver to Town of Manlius with this submission.

2. Soil movement and embankment compaction is extensive on this site and will change the grades of the entire developed area. The substantial amount of earthwork is not typical for a residential subdivision. Road profiles typically follow existing contours to limit both the cost and exposure for earth moving operations and minimize utility excavations.

   Response: Other Manlius projects such as Mallards Landing, Spruce Ridge had at least similar but likely, more extensive site work. The "Earthwork Material Evaluation" (referenced as EME) report, dated on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for road fill within the right of way. The road profiles and proposed grades generally follow existing grades within guidelines set forth by the Town of Manlius code. Earthwork is limited and the grading plan generally keeps earthwork within 4 feet of the current grades. One small area on site soil material was identified by Kenney Geotechnical as unsuitable and will not be utilized as fill within the proposed right of way, basin embankment or fill below basement slabs.

3. Some of the houses will be constructed on deep fills which causes concerns about stability of the foundations.

   Response: The term deep fill is confusing and could lead to public confusion regarding this project. 18 of the 20 proposed building foundations walls (footers) will be constructed at

an approximate 4 foot depth and will reside either below or on existing grade. Lots 12 and 13 will require deeper footings for a portion of the foundation wall. Lot #12 will require a four foot extension to the footer in the west corner of the home and Lot # 13 will also require a four foot extension to the footer in the southwest corner of the proposed home to meet existing grade. Refer to the text block Footer Depth Review on drawing L-202 entitled Right of way, Basement Slab and Footer Summary. A Cut/Fill Basement Slab Review text block along with basement slab elevations for each lot are provided on drawing L-202. There is a limited amount of basement slab area requiring more than 6 feet of cut or fill. The suggestion that major filling is required for more than just a house or two is misleading and does not reflect the vast majority of the lots. In addition, the report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use under residential structures as backfill. 12 of the 18 basement slabs will be constructed on existing soils. The remaining 8 basement slabs will be constructed utilizing the on site material which meets the project specifications.

4. Some road fills exceed 10 feet, and we have concerns about differential settlement related to utilities and road surfaces.

   Response: The average cut or fill for the entire 1,924 linear foot road and right of way (with the exception of stations 4+25 through 5+50 and Station 15+30 through Station 16-30) averages approximately 4'-6" depth. A 75' long section (Station 4+25 to 5+50) will require an approximate 8' to 10' fill depth and a 100' section (Station 15+30 to 16+30) will require a 6' to 8' fill depth as shown on drawing L-202 (175' linear feet total for road fill 6 ' or greater. No road areas require more than 10 feet, only right of way areas require up to 10 feet. The EME report provided on May 18, 2020 by Kenney Geotechnical indicates that on site fill materials are acceptable for use within rights of way as backfill which meets the on-site testing process during construction. In addition, Tobin Construction representatives stated that the on site materials encountered during field testing are very suitable for placement in fill areas and the project can be constructed with standard construction practices.

5. The Impoundment/Dam proposed is significant in size and scope and is intended to hold back one million gallons of water, which is an unusual feature of this development.

   Response: The proposed stormwater management facility should be referred to as such. The facility is not a Dam and referring to it as one could be misleading to the board and the public. Drawing L-900 compares the proposed SWMF to other SWMF, impoundments and actual dams within the Town of Manlius. The suggestion that detaining this volume of water is unusual is misleading and incorrect. Several other facilities in the Town of Manlius contain more water at greater depths and with less safety features than the facility proposed.

6. This is a "Cluster Development" which requests/requires waivers from certain aspects of usual zoning. A goal of clustering is to preserve land and also to keep much in a natural state, which this development does not appear to accomplish.

Response: The 30.04 acre cluster development project includes 9.35 acres of HOA and homeowner owned designated 'Forever Wild Area'. The cluster project Forever Wild Area preserves 31% of the project site area including the preservation of an existing groundwater seep wetland, preservation of an existing intermittent stream channel and perimeter existing vegetative areas which are depicted on drawing L-400 entitled Layout Plan. The proposed cluster plan preserves the natural and scenic qualities of open lands through the creation of a significantly sized forever wild area, perimeter buffer and lot count reduction from the original conventional grading plan.

A. Critical to this site, is the manner and method of compacting of earth under what will eventually become the town's infrastructure (roads, pipes, etc).

   Response: The Kenney Geotechnical report dated May 18, 2020 provides a methodology for placement, compaction and testing of fill materials. The recommendations have been incorporated into drawing L-503 and include project specifications, a field testing summary table, typical local road sections for cut/fill conditions and a typical home foundation wall section. A significant portion of the right of way is to be graded within 4 to 5 feet of existing grades. According to the contractor this site can be constructed with standard construction practices, is almost ideal for a development of this size and does not foresee any significant concerns regarding construction of the town dedicated infrastructure.

   a. The waiver adds an element not present in many projects, and with the extent of soil movement/cuts and fills, drainage and grading will be very complex. (As a regulated MS4, the Town of Manlius has oversight of this NYSDEC regulation and must verify the work meets the NYSDEC SPDES Phase 2 permit requirements).

      Response: The draft waiver and NYSDEC Notice of Intent has been provided as noted on to Page 1, 1 Constructability, items 1 and 2.

   b. Certification of all fills are recommended to be coordinated with all anticipated utilities including but not limited to OCWA & National Grid. Geotechnical reports will be required of houses built in fill areas along with the proposed impoundment area.

      Response: As previously noted under other items within this letter, only 2 houses will be subject to this condition and deeper foundations will be extended to reside on natural grade will be provided. The owner has no authority over construction of utilities built by OCWA or National Grid.

B. Also, with the impoundment/dam holding back significant water that will seriously affect downstream property owners in the event of failure, its design and construction must be done properly. In light of these issues, the Town will require a person of Town's choosing, at developer's expense, to be on-site at all times to ensure the soil movement and compacting is done properly. This is especially critical due to the houses that will be built on the fill ensuring a safe foundation.

Response: Please refer to DEC email dated3/25/20 from DEC representative Jennifer Ross regarding the Dam ruling located in SWPPP appendix V. Several other facilities in the Town of Manlius contain more water at greater depths and steeper slopes with fewer safety features than the facility proposed as shown on drawing L-900 entitled Wet Pond Comparisons. In addition, the Kenney Geotechnical reports provided on 5/18/20 and 5/27/20 do not indicate any issues with on site soils, soil conditions or use of on-site materials to construct the proposed facility. The project sitework contractor has also performed several earthwork studies of the project site, reviewed the geotechnical studies for the project, performed many additional on site test pits, has reviewed the current set of construction drawings and has stated that the project is ready for construction. KFA and RZE have worked with Tobin development on the successful completion of the 37 unit Town of Clay Hamlet cluster housing project and the 163 unit Town of Van Buren planned unit housing development, Harbor Heights project which was constructed in many phases. Our design and construction team worked very closely with the municipal engineers and testing agencies and is prepared to do so on this 20 unit construction project.

C. Project cost/securities will need to be further discussed.

Response: Agreed.

2) Technical Issues

1. The stripping and grading plan has to be more detailed, including the phasing of same. There have not been sufficient details presented so far. The extent of the land stripping as thus far presented is of concern as the whole theory behind cluster development is to preserve the land in its natural state. The stripping of the entire parcel and the extensive cuts and fills seems to be contrary to the theory behind cluster development.

Response: The proposed project is to be constructed as one project, in one phase, within 7 distinct construction stages to minimize the site disturbance throughout construction. The staged approach to construction will limit the site disturbance areas as shown within the construction staging drawings and schedule shown on drawings L-102 through L-108. The entire site will not be stripped as noted in Page 2, 1 Constructability, item 6.

A. Phased work areas must have 80% coverage/density to be considered stabilized before proceeding the next work phase.

- **Response: Agreed. This is a NYSDEC requirement which our office field SWPPP inspectors are very familiar with. Drawings L-102 through L-108 depict a staged construction approach with each phase being stabilized before moving onto the next. Page 20 of the SWPPP states that all stages will be completely stabilized before advancing to the next stage.**

B. Indicate on the plans storage volumes equaling required storage for each sediment/erosion control feature in cubic feet for the tributary area.

Response: This data appears on drawing L-103 and L-104 and within the SWPPP under Appendix T of the December submission. These drawings and the SWPPP have been updated to reflect the current submission.

C. SWPPP inspections are required twice a week.

Response: Agreed during stages where disturbance is in excess of 5 acres, in accordance with the NYSDEC stormwater general permit provided in Appendix J. We anticipate the twice weekly inspections to occur during approximately 5 months of construction. A 5-acre disturbance letter has also been provided in Appendix W of the SWPPP included with this submission.

D. Site soils are type "C" soils. Per Table 4.6, soil restoration requirements must meet the NYSDEC deep ripping and decompaction manual dated April 2008.

Response: All soil restoration will comply with NYSDEC guidance provided specifically for this project via email dated 3/11/2020. See revised SWPPP provided with this submission, Appendix I and drawing L-101.

E. Both the wet pond and for the temporary sediment basin have deep cuts (Approx. 15 feet). Due to the limited number and depth of borings, we anticipate rock may be encountered and additional soil testing should be undertaken.

Response: The previous grading plan of the main basin only proposed cuts in the 15 foot range for a small 1000 sf area. The grading plan has been revised to limit all cuts to less than ± 13 feet. In addition, additional testing reflected in the Kenney Geotechnical report dated 5/27/20 supports all other testing on site (L-100) that no rock is encountered in any of the testing locations and a generous soil profile existing all over the site in excess of 15 feet. It has also been hypothesized, opined and theorized that Karst Topography may be a condition in the area. However, evidence such as available mapping, field testing and professional geotechnical analysis does not suggest such geologic conditions on the subject site. In addition, available mapping shows no evidence of rock outcroppings, land features or restrictive soil layers. Actually, it depicts a minimum soil profile of 18 inches for lands downstream of the subject site, with most downstream areas containing more than a 3-4 foot soil profile. Soil mapping does identify rock outcroppings and restrictive layers that could be considered Karst topography upstream of the site over ½ mile away to the south. It is a small area and is not on the subject site or within it's discharge flow path. Areas on site and surrounding the subject site are proven to contain a generous soil profile of over 15 feet (on site based on actual testing and geotechnical investigation) and soil mapping indicates a minimum of more than 6 feet in areas adjacent to the site. Therefore, we have not encountered any evidence of Karst Topography on the site, adjacent to the site or downstream of the site.

2. The existing SWPPP, which is part of the plans, presented is from last summer. It needs to be updated.

Response: Agree

3. Water quality volume calculations and RRv have to be re-done. On Page 12 of the of the permit it is stated WQv is only for site. NYSDEC requires all impervious upstream areas tributary to the wet pond be included within WQv. This is outlined on page 4-5 of the Stormwater Design Manual. The new permit should be refenced as GP-0-20-001. On Page 12 of the NOI question 38 should read "Homeowner's Association". It appears the runoff rate issues have generally been resolved and the calculations appear to be reasonable with the exception of revisiting time of concentration for the project site itself.

   Response: Agree. Both the pond and the water quality volume treatment capacity within it are both oversized and will accommodate all of the required Water Quality Volume. Also, the NOI and permit numbers have been updated.

4. SWPPP time to concentration calculations have to be updated and/or corrected for the project site to separate the disturbed area from the undisturbed area. We would anticipate a higher peak runoff rate from the disturbed area due to a reduced time of concentration and this could impact the calculated stage/storage/discharge rates from the wet pond.

   Response: Page 15 of the December 2019 SWPPP submission outlines the proposed sediment ponds and their design. As noted in the SWPPP on pages 15 thru 17, this design which will be employed for approximately 3 +/- months will accommodate for the interim open soil conditions, higher runoff coefficients and adjusted time of concentration associated with open soils. Included in Appendix T of the December 2019 submission are calculations and routing of the sediment ponds for stages 2 and 3 which verify that the sediment pond and SWMF adequately decrease runoff to downstream areas during open soil conditions during those stages of construction. Language has been added to sections on pages 15-17 on stage 2 and 3 sediment basins to outline the short duration we anticipate these conditions to be present and Appendix T has been updated for new shallower sediment pond contours.

5. In the area of Lots 11, 12 & 20 there is a stormwater pipe that is 13 ft. beneath the road with additional catch basins over 10 feet in depth. This is not a typical nor acceptable depth. A normal depth is 3-7 ft. and a deeper pipe could cause unnecessary expense to the Town in the future in the event repair is required.

   Response: Storm Pipe depths have been modified to depths less than 7'-0".

6. Individual grinder pumps for 7 lots remain a concern as, even though they are private systems, the Town is always called upon and spends time and resources on assisting residents in solving issues. Possibly combining the 7 grinder pumps into one pump station for all 7 would be a reasonable solution.

Response: A review of the Onondaga County Department of Environmental Health's position on Low Pressure Sewers dated 4/21/1994 and confirmed to still be their position today, states that low density subdivisions with less than 10-12 lots connected to a low pressure sewer is justified and that it is not economically justified to utilize a municipal pump station in such a case. In addition, email correspondence from Christopher Deitman, dated 6/2/20 and provided with this submission, also indicates the lack of economic feasibility of using a municipally owned pumping station. These documents and correspondence support our proposal and contention that the low pressure sewer would be beneficial for the town, other members of the sewer district, the developer and the residents, providing the best solution for all parties with regards to construction, operation and maintenance.

7. Impoundment/Dam

   A. While it may not technically qualify as a "NYSDEC regulated dam", Guidelines for the Design of Dams (NYSDEC) need to be followed according to not only the Town, but also per NYSDEC recommendations.

      Response: We agree the SWMF does not qualify as a NYSDEC regulated dam and does not require permitting with NYSDEC. We also agree that the Guidelines for Design of Dams is to be followed since ALL stormwater management facilities designed in NYS are to follow those guidelines as outlined in the NYS Stormwater Design manual.

   B. Technical information provided by the applicant appears to indicate that the Impoundment/dam will need to be lined with impervious materials to prevent seepage and leaking.

      Response: Information submitted by the applicant both in the previous submission and as part of this submission within the Kenney Geotechnical Report dated 5/27/20 and soil testing results presented on drawing L-100 both indicate no infiltration capacity to the soils being proposed for the basin embankment or side walls and that no liner is recommended or required as a result of all of the completed field testing and geotechnical reports.

   C. An appropriately sized key-way for embankment construction purposes is necessary.

      Response: The Kenney Geotech report dated May 27, 2020, pages 1 and 2 of the report state that a keyway is not required.

   D. A toe drain may be required to address seepage.

      Response: Anti seep collar details have been added to the plans (detail 16/L-500). No other measures are required since the soils do not display any infiltrative properties and therefore no seepage is anticipated. See page 7, number 7, item C.

E. More test borings should be taken along the embankment to confirm basis of design. Please provide a detailed geotechnical report supporting the basis of the design for the impoundment area proposed.

Response: As mentioned within this response letter, Kenney Geotechincal has provided updated reports dated 5/18/20 and 5/27/20 verifying compliance with all DEC requirements. Reports are located in Appendix A within the SWPPP and all testing information is presented on Drawing L-100.

F. More cross sections should be done on the impoundment/dam and should include the existing and proposed ground elevations.

Response: Additional profiles and cross sections have been provided on Drawings L-202, L-502 and L-504.

G. The embankment top width should be shown.

Response: A dimension of 12 foot minimum embankment top is shown on Drawing L-400, verifying compliance with the Stormwater Design Manual. It is important to note that most areas exceed the 12 foot minimum.

H. If the developer follows the dam regulations, yearly inspections and testing will be required.

Response: Agreed, all SWMF designed in NYS require compliance with the NYS Dam Guidelines and all SWMF must be inspected per the NYS Stormwater design manual, General Permit and the SWPPP for the project.

I. Boring B-9 Dated 12/13/19 does not have proper elevation nor specific tie or longitude latitude information associated. The boring log also indicates the existence of glacial till at an approximate depth of 9.5 feet below the existing ground surface with apparent missing information from a depth of 9.5 feet below existing grade to 14 feet below existing grade. This provides a potential problem for the proposed design of the impoundment. Please provide further detail for drilling information through depths 9.5 – 14 for boring B-9 below surface along with actual elevations and location of the work.

Response: Kenney Geotechnical has provided two additional reports on soil investigation dated 5/18/20 and 5/27/20. All soil testing information to date, locations and elevations are provided on drawing L-100.

J. There does not appear to be any energy dissipation basin at the outlet of the pond which could lead to severe erosion and embankment failure.

Response: Rip rap aprons, appropriately sized have always been part of our design and submissions. Details and locations are provided on drawing L-200, and design sizing of rip rap outlet aprons are provided in appendix F of the SWPPP. Appendix F also provides calculations showing drainage facilities with non erosive velocities.

K. The impoundment spillway is used during the 100 year storm. We would typically see designs using pipes/weirs for the full range of storm discharges, but the dam regulations would allow it. However the spillway should be cut out of native soil, not embankment with limited velocities to prevent erosion. The SWPPP says the 100 year elevation of the pond is 676.06 and the plans (sheet 4) says is 676.22. This needs to be clarified. The pond should have a minimum of 1 foot of freeboard above the 100 year storm. It currently does not.

Response: The outlet structure has been modified to all passage of the 100 year event without use of the emergency spillway. The emergency spillway has been fitted with rip rap to manage and mitigate any flow thru it to non erosive velocities. Peak water elevation in the 100 year event is 675.42 per appendix E of the swppp and the plans (drawings L-200, L-202, L-502 and L-504 also reflect this elevation). Calculations proving non erosive velocity and rip rap sizing have been provided in appendix F.

8. Dust monitoring reporting requires verification for reporting and oversite procedures to the Town of Manlius.

Response: Section 12.1 of the previous (December 2019) SWPPP submission on page 22 outlines reporting techniques and requirements. Daily reports are required to be recorded within the SWPPP and kept in the SWPPP binder within the mailbox on site. We have added that reports should be transmitted to the Town of Manlius weekly to the SWPPP page 23 and drawings L-101 & L-501.

9. Relative to lot grading, grading is not shown correctly on lot 3 adjacent to the existing house. A retaining wall may be necessary. Road grade at driveways for lots 11, 12, 15, 16, 17 and 18 are higher that the house finished floor. There may be issues with garage/house flooding.

Response: Lot 3 has been regraded without the construction of a retaining wall. The slope will be planted with plant material to stabilize the slope as note 29 states on drawing L-200.

10. The calculated amount of increased runoff volume from the site: 2-yr is 25,000 c.f, and 100-yr is 67,000 c.f. This may impact the long- term viability of the infiltration basin on Muirfield. Mitigation of increased total volume run off should be addressed.

Response: It is important to note that in any development runoff is increased in volume and in flow when impervious surfaces are created. Typically, volume is not the driving factor since runoff volume is mostly affected by the infiltrative capacity of the onsite soils and not necessarily indicative of how downstream areas will be affected by runoff. The flow rate is typically considered higher in importance due to its effects on downstream conveyance and

drainageways. Volume is not always a contributor to flooding if the rate at which it is conveyed is well managed. The DEC's Jennifer Ross in her email has specifically stated "that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event". We concur with the DEC that, a more broad analysis by the town with respect to downstream impacts and the long term viability of the infiltration basin on Muirfield, would be necessary to evaluate its operation. We fail to see the validity of how the subject site would impact this facility. The location of this facility is not hydraulically connected to the subject site discharge flows. Several local low points exist between the subject site discharge point and this facility including points on Churchill Road and Hoag Lane. The intersection of Hoag Lane and Muirfield is lower than other points on Muirfield by several feet between the intersection and the Muirfield infiltration facility. It is unlikely that runoff from the subject site would be able to travel uphill to reach the Muirfield facility from points along the discharge route. We have provided figures capturing available topography profiles of these areas as evidence of these conditions. These figures are readily available off of google earth and are presented in Appendix O.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Full Environmental Assessment Form
Part 1 - Project and Setting
Fourth Supplemental SEQRA
12-16-19 with supplemental documentation

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either "Yes" or "No". If the answer to the initial question is "Yes", complete the sub-questions that follow. If the answer to the initial question is "No", proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project: Woodland Hills - Hoag Lane Subdivision		
Project Location (describe, and attach a general location map): 5280 Hoag Lane, Fayetteville NY 13066		
Brief Description of Proposed Action (include purpose or need): The Woodland Hills Subdivision is a 30.04 acre site which will be developed into a Cluster subdivision of 20 lots, and will also accommodate the inclusion of a pre-existing home. An internal roadway will be constructed to Town of Manlius specifications and offered for dedication to the Town. Necessary drainage improvements, including a stormwater basin will be developed to improve drainage conditions on site, and off. The subdivision will utilize Town of Manlius sewer and water transmission lines and will have natural gas lines extended to each lot.		
Name of Applicant/Sponsor: Hoag Road Development, LLC	Telephone: 315-263-6662 E-Mail: thomasallenhomes@yahoo.com	
Address: 201 Solar St.		
City/PO: Syracuse	State: New York	Zip Code: 13204
Project Contact (if not same as sponsor; give name and title/role): Scott Freeman - Keplinger, Freeman Associates	Telephone: 315-445-7980 E-Mail: sf@kelpingerfreeman.com	
Address: 6320 Fly Road, Suite 109		
City/PO: East Syracuse	State: New York	Zip Code: 13057
Property Owner (if not same as sponsor): Same as sponsor	Telephone: E-Mail:	
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. ("Funding" includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Council, Town Board, or Village Board of Trustees ☐Yes ☐No		
b. City, Town or Village Planning Board or Commission ☑Yes ☐No	Town of Manlius Planning Board	01/06/20
c. City Council, Town or Village Zoning Board of Appeals ☐Yes ☐No		
d. Other local agencies ☐Yes ☐No		
e. County agencies ☑Yes ☐No	OCWA, OCWEP Onondaga County Health Department	Spring 2020 Spring 2020
f. Regional agencies ☐Yes ☐No		
g. State agencies ☑Yes ☐No	NYSDEC SWPPP	Spring 2020
h. Federal agencies ☐Yes ☐No		

i. Coastal Resources.

i. Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? ☐Yes ☑No

ii. Is the project site located in a community with an approved Local Waterfront Revitalization Program? ☐Yes ☑No

iii. Is the project site within a Coastal Erosion Hazard Area? ☐Yes ☑No

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? ☐Yes ☑No

- **If Yes,** complete sections C, F and G.
- **If No,** proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? ☐Yes ☑No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? ☐Yes ☐No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? ☐Yes ☑No

If Yes, identify the plan(s):

_____

_____

_____

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. ☑ Yes ☐ No
If Yes, what is the zoning classification(s) including any applicable overlay district?
Restricted Agriculture

b. Is the use permitted or allowed by a special or conditional use permit? ☑ Yes ☐ No

c. Is a zoning change requested as part of the proposed action? ☐ Yes ☑ No
If Yes,
i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? Fayetteville-Manlius

b. What police or other public protection forces serve the project site?
Manlius Police Dept.

c. Which fire protection and emergency medical services serve the project site?
Fayetteville Fire Dept. , Manlius Fire Dept.

d. What parks serve the project site?
Green Lakes State Park, Beard Park, Perry Springs Park

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)? Residential Subdivision

b. a. Total acreage of the site of the proposed action? 30.04 acres
b. Total acreage to be physically disturbed? 17.26 acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? 30.04 acres

c. Is the proposed action an expansion of an existing project or use? ☐ Yes ☑ No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? ☑ Yes ☐ No
If Yes,
i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)
Residential
ii. Is a cluster/conservation layout proposed? ☑ Yes ☐ No
iii. Number of lots proposed? 21
iv. Minimum and maximum proposed lot sizes? Minimum 23,575.6 sf Maximum 148,742.2 sf

e. Will proposed action be constructed in multiple phases? ☐ Yes ☑ No
i. If No, anticipated period of construction: 12 months
ii. If Yes:
- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____year
- Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? ☑ Yes ☐ No

If Yes, show numbers of units proposed.

	One Family	Two Family	Three Family	Multiple Family (four or more)
Initial Phase	21			
At completion of all phases	21			

g. Does the proposed action include new non-residential construction (including expansions)? ☐ Yes ☑ No

If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____height; _____width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? ☑ Yes ☐ No

If Yes,

i. Purpose of the impoundment: Stormwater Best Management Practices

ii. If a water impoundment, the principal source of the water: ☐ Ground water ☐ Surface water streams ☑ Other specify: Stormwater

iii. If other than water, identify the type of impounded/contained liquids and their source. None

iv. Approximate size of the proposed impoundment. Volume: 1.085 million gallons; surface area: 1.36 acres

v. Dimensions of the proposed dam or impounding structure: 12' height; 286' length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): Earthen Fill

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite) ☐ Yes ☑ No

If Yes:

i .What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them.

_____

_____

i*v.* Will there be onsite dewatering or processing of excavated materials? ☐ Yes ☐ No

If yes, describe. _____

_____

v. What is the total area to be dredged or excavated? _____acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? ☐ Yes ☐ No

ix. Summarize site reclamation goals and plan: _____

_____

_____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? ☐ Yes ☑ No

If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

_____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

_____

_____

_____

_____

iii. Will proposed action cause or result in disturbance to bottom sediments? ☐ Yes ☐ No

If Yes, describe: _____

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? ☐ Yes ☐ No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____

_____

- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

_____

c. Will the proposed action use, or create a new demand for water? ☑ Yes ☐ No

If Yes:

i. Total anticipated water usage/demand per day: 10,395 (@110 gpd/bedroom) gallons/day

ii. Will the proposed action obtain water from an existing public water supply? ☑ Yes ☐ No

If Yes:

- Name of district or service area: MANLIUS CONSOLIDATED, OCWA (District Extension per Town Engineer)
- Does the existing public water supply have capacity to serve the proposal? ☑ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☑ No
- Is expansion of the district needed? ☑ Yes ☐ No
- Do existing lines serve the project site? ☐ Yes ☑ No

iii. Will line extension within an existing district be necessary to supply the project? ☑ Yes ☐ No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____

Subject to be determined by OCWA. Expansion of district to be requested.

- Source(s) of supply for the district: Ontario/Skyridge Wells

iv. Is a new water supply district or service area proposed to be formed to serve the project site? ☐ Yes ☑ No

If, Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: OCWA

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

_____

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? ☑ Yes ☐ No

If Yes:

i. Total anticipated liquid waste generation per day: 10,395 (110 gdp/bed gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

RESIDENTIAL SANITARY WASTEWATER

_____

iii. Will the proposed action use any existing public wastewater treatment facilities? ☑ Yes ☐ No

If Yes:

- Name of wastewater treatment plant to be used: Meadowbrook-Limestone, Onondaga County
- Name of district: OCWEP, District extension per Town Engineer
- Does the existing wastewater treatment plant have capacity to serve the project? ☑ Yes ☐ No
- Is the project site in the existing district? ☐ Yes ☑ No
- Is expansion of the district needed? ☑ Yes ☐ No

- Do existing sewer lines serve the project site? ☐Yes ☑No
- Will line extension within an existing district be necessary to serve the project? ☑Yes ☐No

  If Yes:
  - Describe extensions or capacity expansions proposed to serve this project: _____

Subject to be determined by OCWEP.

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? ☐Yes ☑No

If Yes:
- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? ☑Yes ☐No

If Yes:

i. How much impervious surface will the project create in relation to total size of project parcel?

_____ Square feet or 3.89 acres (impervious surface)

_____ Square feet or 30.04 acres (parcel size)

ii. Describe types of new point sources. 24" outlet pipe and spillway

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

STORMWATER RETENTION POND CLAIMING ONSITE AND OFFSITE WATER

- If to surface waters, identify receiving water bodies or wetlands: _____
- Will stormwater runoff flow to adjacent properties? ☑Yes ☐No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? ☑Yes ☐No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? ☐Yes ☑No

If Yes, identify:

i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? ☐Yes ☑No

If Yes:

i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) ☐Yes ☐No

ii. In addition to emissions as calculated in the application, the project will generate:
- _____Tons/year (short tons) of Carbon Dioxide (CO_2)
- _____Tons/year (short tons) of Nitrous Oxide (N_2O)
- _____Tons/year (short tons) of Perfluorocarbons (PFCs)
- _____Tons/year (short tons) of Sulfur Hexafluoride (SF_6)
- _____Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflourocarbons (HFCs)
- _____Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? ☐Yes ☑No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

_____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? ☐Yes ☑No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

_____

_____

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? ☐Yes ☑No

If Yes:

i. When is the peak traffic expected (Check all that apply): ☐ Morning ☐ Evening ☐Weekend

☐ Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? ☐Yes ☐No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

_____

_____

_____

vi. Are public/private transportation service(s) or facilities available within ½ mile of the proposed site? ☐Yes ☐No

vii Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? ☐Yes ☐No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? ☐Yes ☐No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? ☐Yes ☐No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

_____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

_____

iii. Will the proposed action require a new, or an upgrade to, an existing substation? ☐Yes ☐No

l. Hours of operation. Answer all items which apply.

i. During Construction:

- Monday - Friday: 7 AM - 5 PM
- Saturday: 7 AM - 5 PM
- Sunday: 7 AM - 5 PM
- Holidays: 7 AM - 5 PM if needed

ii. During Operations:

- Monday - Friday: N/A
- Saturday: _____
- Sunday: _____
- Holidays: _____

m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? ☑ Yes ☐ No

If yes:

i. Provide details including sources, time of day and duration:

During Construction there will be temporary intervals of noise exceeding existing ambient noise levels relating to typical construction noises/activity.

ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? ☑ Yes ☐ No

Describe: Some land clearing and grading may result in increased potential neighborhood view-sheds and a reduction of a small amount of natural vegetative barriers, however select plantings and the maintenance of buffer areas will be undertaken to screen nearby structures.

n.. Will the proposed action have outdoor lighting? ☑ Yes ☐ No

If yes:

i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:

Low level garage and exterior yard lighting will be installed. This residential lighting will be typical of neighborhoods in the specific area.

ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? ☑ Yes ☐ No

Describe: Some land clearing and grading may result in increased potential neighborhood view-sheds and a reduction of a small amount of natural vegetative barriers, however select plantings and the maintenance of buffer areas will be undertaken in order to screen nearby structures.

o. Does the proposed action have the potential to produce odors for more than one hour per day? ☐ Yes ☑ No

If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____

p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? ☐ Yes ☑ No

If Yes:

i. Product(s) to be stored _____

ii. Volume(s) _____ per unit time _____ (e.g., month, year)

iii. Generally describe proposed storage facilities: _____

q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? ☐ Yes ☑ No

If Yes:

i. Describe proposed treatment(s):

_____

ii. Will the proposed action use Integrated Pest Management Practices? ☐ Yes ☐ No

r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? ☐ Yes ☐ No

If Yes:

i. Describe any solid waste(s) to be generated during construction or operation of the facility:

- Construction: _____ tons per _____ (unit of time)
- Operation : _____ tons per _____ (unit of time)

ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:

- Construction: _____
- Operation: _____

iii. Proposed disposal methods/facilities for solid waste generated on-site:

- Construction: _____
- Operation: _____

s. Does the proposed action include construction or modification of a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____

ii. Anticipated rate of disposal/processing:

- _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
- _____ Tons/hour, if combustion or thermal treatment

iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

iii. Specify amount to be handled or generated _____ tons/month

iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? ☐ Yes ☐ No

If Yes: provide name and location of facility: _____

If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.

i. Check all uses that occur on, adjoining and near the project site.

☐ Urban ☐ Industrial ☐ Commercial ☑ Residential (suburban) ☑ Rural (non-farm)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____

ii. If mix of uses, generally describe:

Suburban developments with pockets of undeveloped land.

b. Land uses and covertypes on the project site.

Land use or Covertype	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces	0.88	3.89	+3.01
• Forested	19.12	12.78	-6.34
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)	5.60	0	-5.60
• Agricultural (includes active orchards, field, greenhouse etc.)	0		
• Surface water features (lakes, ponds, streams, rivers, etc.)	0	1.36	+1.36
• Wetlands (freshwater or tidal)	0		
• Non-vegetated (bare rock, earth or fill)	0		
• Other Describe: Lawn, Porous Surfaces	4.44	12.00	+7.56

c. Is the project site presently used by members of the community for public recreation? ☐ Yes ☑ No

i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? ☐ Yes ☑ No

If Yes,

i. Identify Facilities:

_____

_____

e. Does the project site contain an existing dam? ☐ Yes ☑ No

If Yes:

i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____

iii. Provide date and summarize results of last inspection:

_____

_____

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? ☐ Yes ☑ No

If Yes:

i. Has the facility been formally closed? ☐ Yes ☐ No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

_____

_____

iii. Describe any development constraints due to the prior solid waste activities: _____

_____

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? ☐ Yes ☑ No

If Yes:

i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

_____

_____

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? ☐ Yes ☑ No

If Yes:

i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: ☐ Yes ☐ No

☐ Yes – Spills Incidents database Provide DEC ID number(s): _____

☐ Yes – Environmental Site Remediation database Provide DEC ID number(s): _____

☐ Neither database

ii. If site has been subject of RCRA corrective activities, describe control measures:_____

_____

_____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? ☐ Yes ☑ No

If yes, provide DEC ID number(s): _____

iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

_____

_____

v. Is the project site subject to an institutional control limiting property uses? ☐ Yes ☑ No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? ☐ Yes ☐ No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? >6.5 feet

b. Are there bedrock outcroppings on the project site? ☐ Yes ☑ No
If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site:

CfB - Cazenovia silt loam	51.7 %
CgD - Cazenovia Soils	24.9 %
CfC - Cazenovia Silt	9.4 %

d. What is the average depth to the water table on the project site? Average: >6.5 feet

e. Drainage status of project site soils:
☑ Well Drained: 14 % of site
☑ Moderately Well Drained: 86 % of site
☐ Poorly Drained _____% of site

f. Approximate proportion of proposed action site with slopes:
☑ 0-10%: 59.1 % of site
☑ 10-15%: 16.4 % of site
☑ 15% or greater: 24.9 % of site

g. Are there any unique geologic features on the project site? ☐ Yes ☑ No
If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? ☑ Yes ☐ No

ii. Do any wetlands or other waterbodies adjoin the project site? ☑ Yes ☐ No

If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? ☑ Yes ☐ No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name Unmapped Delineated Drainageway Classification ACOE
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name FEDERAL WETLANDS (off-site Bishop Brook) Approximate Size <1 ac.
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? ☐ Yes ☑ No

If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? ☐ Yes ☑ No

j. Is the project site in the 100-year Floodplain? ☐ Yes ☑ No

k. Is the project site in the 500-year Floodplain? ☐ Yes ☑ No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? ☐ Yes ☑ No
If Yes:

i. Name of aquifer: _____

m. Identify the predominant wildlife species that occupy or use the project site:

Deer | Birds (i.e. Sparrows, robins, crows) | various Insects
small mammals, (i.e squirrel, chipmunk) | Raccoons | Opossums

n. Does the project site contain a designated significant natural community? ☐ Yes ☑ No

If Yes:

i. Describe the habitat/community (composition, function, and basis for designation): _____

ii. Source(s) of description or evaluation: _____

iii. Extent of community/habitat:

- Currently: _____ acres
- Following completion of project as proposed: _____ acres
- Gain or loss (indicate + or -): _____ acres

o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? ☑ Yes ☐ No

Northern Long Eared Bat hibernaculum is within 3.5 miles of project site based on NYSDEC letter of Notice. No clear cutting of DEC identified potential nesting or roosting trees will occur outside of the October to April time frame.

p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? ☐ Yes ☑ No

q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? ☐ Yes ☑ No

If yes, give a brief description of how the proposed action may affect that use: _____

E.3. Designated Public Resources On or Near Project Site

a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐ Yes ☑ No

If Yes, provide county plus district name/number: _____

b. Are agricultural lands consisting of highly productive soils present? ☐ Yes ☑ No

i. If Yes: acreage(s) on project site? _____

ii. Source(s) of soil rating(s): _____

c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? ☐ Yes ☑ No

If Yes:

i. Nature of the natural landmark: ☐ Biological Community ☐ Geological Feature

ii. Provide brief description of landmark, including values behind designation and approximate size/extent: _____

d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? ☐ Yes ☑ No

If Yes:

i. CEA name: _____

ii. Basis for designation: _____

iii. Designating agency and date: _____

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places? ☐ Yes ☑ No

If Yes:

i. Nature of historic/archaeological resource: ☐ Archaeological Site ☐ Historic Building or District

ii. Name: _____

iii. Brief description of attributes on which listing is based:

_____

f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory? ☐ Yes ☑ No

g. Have additional archaeological or historic site(s) or resources been identified on the project site? ☐ Yes ☑ No

If Yes:

i. Describe possible resource(s): _____

ii. Basis for identification: _____

h. Is the project site within fives miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource? ☑ Yes ☐ No

If Yes:

i. Identify resource: Green Lakes State Park

ii. Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): State Park

iii. Distance between project and resource: 2.0 miles.

i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666? ☐ Yes ☑ No

If Yes:

i. Identify the name of the river and its designation: _____

ii. Is the activity consistent with development restrictions contained in 6NYCRR Part 666? ☐ Yes ☐ No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

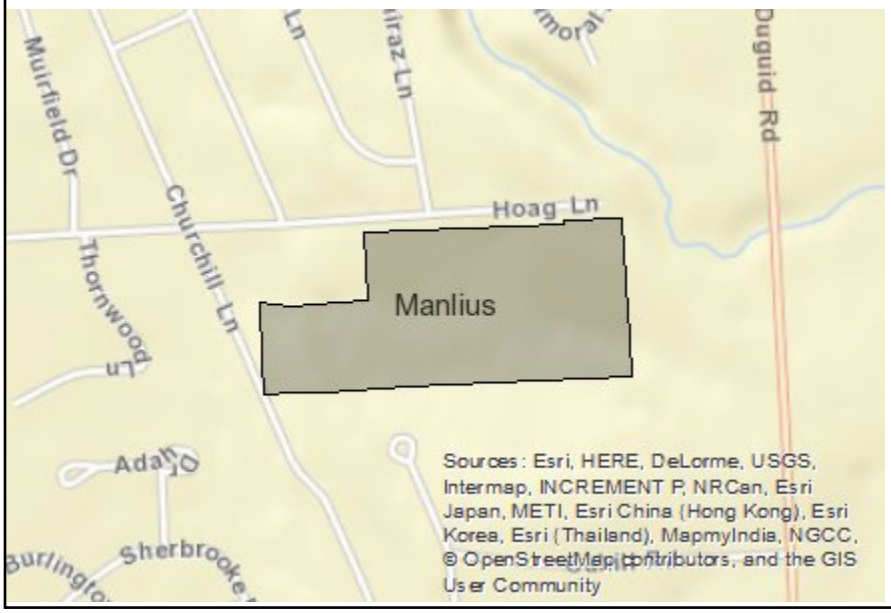
Applicant/Sponsor Name Tom Douglas Date 01/02/2020

Signature _____ Title Owner / Applicant

PRINT FORM

EAF Mapper Summary Report

Tuesday, September 26, 2017 10:10 AM



Disclaimer: The EAF Mapper is a screening tool intended to assist project sponsors and reviewing agencies in preparing an environmental assessment form (EAF). Not all questions asked in the EAF are answered by the EAF Mapper. Additional information on any EAF question can be obtained by consulting the EAF Workbooks. Although the EAF Mapper provides the most up-to-date digital data available to DEC, you may also need to contact local or other data sources in order to obtain data not provided by the Mapper. Digital data is not a substitute for agency determinations.



B.i.i [Coastal or Waterfront Area]	No
B.i.ii [Local Waterfront Revitalization Area]	No
C.2.b. [Special Planning District]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h [DEC Spills or Remediation Site - Potential Contamination History]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Listed]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.i [DEC Spills or Remediation Site - Environmental Site Remediation Database]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.1.h.iii [Within 2,000' of DEC Remediation Site]	No
E.2.g [Unique Geologic Features]	No
E.2.h.i [Surface Water Features]	No
E.2.h.ii [Surface Water Features]	Yes
E.2.h.iii [Surface Water Features]	Yes - Digital mapping information on local and federal wetlands and waterbodies is known to be incomplete. Refer to EAF Workbook.
E.2.h.v [Impaired Water Bodies]	No
E.2.i. [Floodway]	No
E.2.j. [100 Year Floodplain]	No
E.2.k. [500 Year Floodplain]	No
E.2.l. [Aquifers]	No
E.2.n. [Natural Communities]	No
E.2.o. [Endangered or Threatened Species]	Yes
E.2.p. [Rare Plants or Animals]	No

E.3.a. [Agricultural District]	No
E.3.c. [National Natural Landmark]	No
E.3.d [Critical Environmental Area]	No
E.3.e. [National Register of Historic Places]	Digital mapping data are not available or are incomplete. Refer to EAF Workbook.
E.3.f. [Archeological Sites]	No
E.3.i. [Designated River Corridor]	No

NEW YORK STATE OF OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYSDEC Spill Incident Database for Town of Manlius

	Spill Number	Date Spill Reported	Spill Name	County	City/Town	Address
1	1701501	5/16/2017	ROADWAY AND SHOULDER	Onondaga	MANLIUS	4674 WHETSTONE ROAD
2	1702139	6/3/2017	CUSTOMER@ 325 FAYETTE STREET	Onondaga	MANLIUS	325 FAYETTE STREET
3	1704039	7/25/2017	POLE TOP	Onondaga	MANLIUS	4457 WHET STONE RD
4	1704371	8/2/2017	RESIDENTIAL	Onondaga	MANLIUS	8900 PECK HILL RD
5	1704516	8/6/2017	POLE #22-2	Onondaga	MANLIUS	5118 DUGUID RD
6	1704883	8/16/2017	BUSINESS YMCA	Onondaga	MANLIUS	4795 SWEET RD
7	1708628	12/14/2017	STORM DRAIN	Onondaga	MANLIUS	FAYETTE AND PLEASANT ST
8	1711272	3/12/2018	PAVEMENT SOIL	Onondaga	MANLIUS	6026 MANLIUS CENTER RD
9	1800800	4/23/2018	UNKNOWN NAMED SMALL CREEK	Onondaga	MANLIUS	8241 EAST SENECA TURNPIKE

NYSDEC Environmental Site Remediation

	Site Code	Site Name	Program	Site Class	County	City/town	Address
1	C734122	Hollowick, Inc. Manufacturing Facility (Idle)	BCP	N	Onondaga	Manlius	314-316 Fayette Street
2	734024	Tuscarora Chemical Works	HW	N	Onondaga	Manlius	Route 5

NYSDEC_Wetland Mapper



April 30, 2018

1:4,514

0 0.0375 0.075 0.15 mi

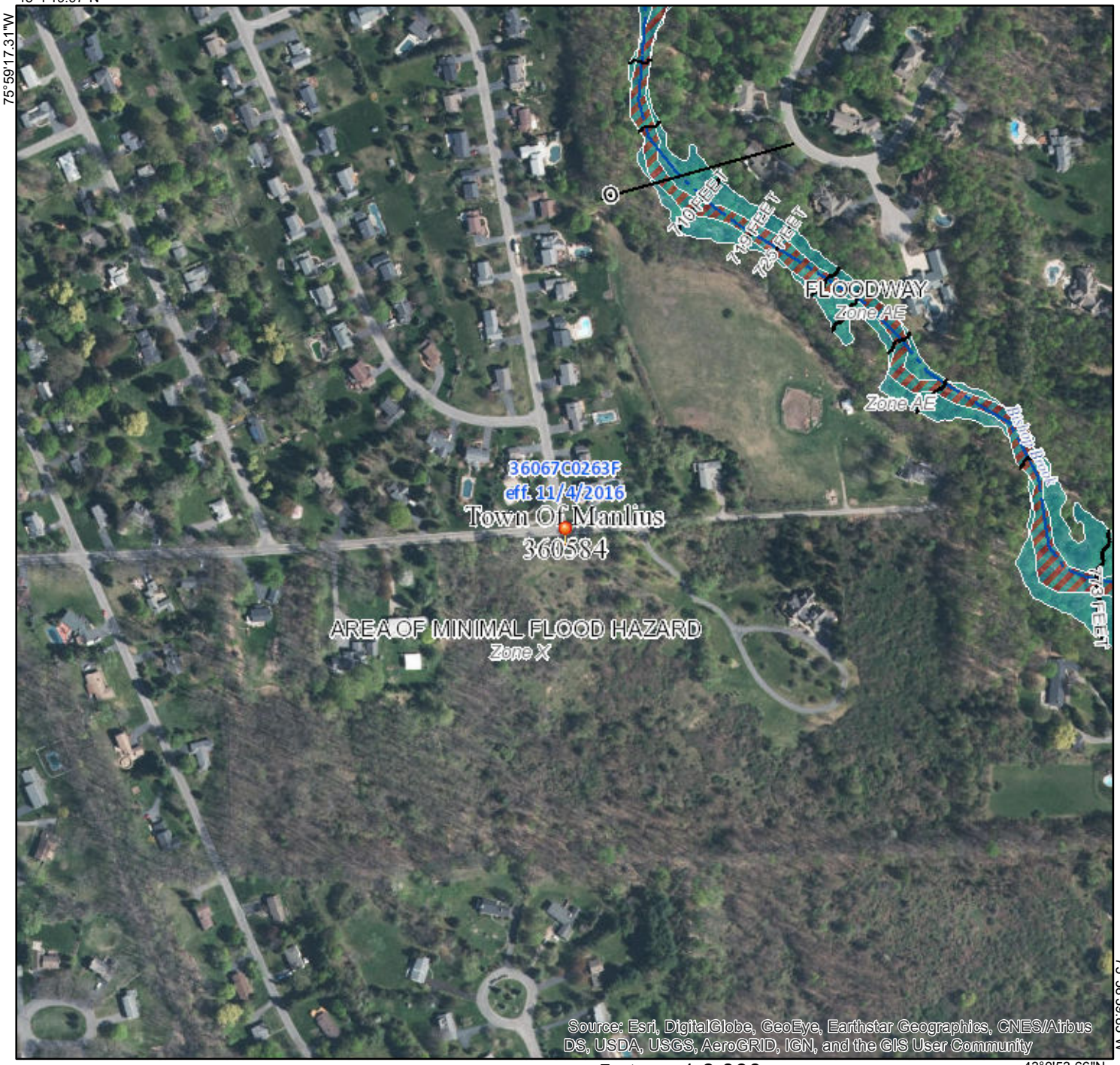
0 0.05 0.1 0.2 km

Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Author: Keplinger Freeman Associates
Not a legal document

National Flood Hazard Layer FIRMette

FEMA



Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth
- Regulatory Floodway *Zone AE, AO, AH, VE, AR*

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The base map shown complies with FEMA's base map accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/30/2018 at 12:13:28 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: base map imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
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Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

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Parks, Recreation, and Historic Preservation

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March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
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Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
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Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To:
Consultation Code: 05E1NY00-2018-SLI-1465
Event Code: 05E1NY00-2018-E-04441
Project Name: Hoag Lane Subdivision

March 16, 2018

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list.

Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/

eagle_guidance.html). Additionally, wind energy projects should follow the Services wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

Project Summary

Consultation Code: 05E1NY00-2018-SLI-1465

Event Code: 05E1NY00-2018-E-04441

Project Name: Hoag Lane Subdivision

Project Type: DEVELOPMENT

Project Description: 23 new home construction on 30 acres of currently wooded land. Parts of property will be left free of disturbance approximately 7 acres.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.01732490964984N75.98284210518362W



Counties: Onondaga, NY

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) *Sistrurus catenatus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2202	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

NYSDEC Spill Incident Database for Town of Manlius

	Spill Number	Date Spill Reported	Spill Name	County	City/Town	Address
1	1701501	5/16/2017	ROADWAY AND SHOULDER	Onondaga	MANLIUS	4674 WHETSTONE ROAD
2	1702139	6/3/2017	CUSTOMER@ 325 FAYETTE STREET	Onondaga	MANLIUS	325 FAYETTE STREET
3	1704039	7/25/2017	POLE TOP	Onondaga	MANLIUS	4457 WHET STONE RD
4	1704371	8/2/2017	RESIDENTIAL	Onondaga	MANLIUS	8900 PECK HILL RD
5	1704516	8/6/2017	POLE #22-2	Onondaga	MANLIUS	5118 DUGUID RD
6	1704883	8/16/2017	BUSINESS YMCA	Onondaga	MANLIUS	4795 SWEET RD
7	1708628	12/14/2017	STORM DRAIN	Onondaga	MANLIUS	FAYETTE AND PLEASANT ST
8	1711272	3/12/2018	PAVEMENT SOIL	Onondaga	MANLIUS	6026 MANLIUS CENTER RD
9	1800800	4/23/2018	UNKNOWN NAMED SMALL CREEK	Onondaga	MANLIUS	8241 EAST SENECA TURNPIKE

NYSDEC Environmental Site Remediation

	Site Code	Site Name	Program	Site Class	County	City/town	Address
1	C734122	Hollowick, Inc. Manufacturing Facility (Idle)	BCP	N	Onondaga	Manlius	314-316 Fayette Street
2	734024	Tuscarora Chemical Works	HW	N	Onondaga	Manlius	Route 5

OCWEP Capacity Letter

Joanne M. Mahoney, County Executive
Tom Rhoads, P.E., Commissioner
Flow Control Division
7120 Henry Clay Boulevard
Liverpool, NY 13088-5344
(315) 435-5402
FAX (315) 435-5458
http://www.ongov.net/wep/

April 2, 2018

Helen Caster
Project Manager
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Via E-mail

Re: Request for Capacity Assurance – 5290 Hoag Lane (T) Manlius

Dear Ms. Caster:

In response to your e-mail and attachment dated March 19, 2018, this is to confirm that The Onondaga County sewerage system this project is tributary to, currently has adequate capacity to accept the projected average daily flow from this 24 lot subdivision of 14,400 gpd. This project is subject to 1:1 wet weather offset for the service area it is tributary to, Meadow Brook Limestone WWTP. In accordance with Local Law # 1 of 2011This project is subject to 1:1 wet weather offset for the service area it is tributary to the developer coordinates with the Town of Manlius to offset the projected 14,400 gpd of sanitary flow within the Meadow Brook Limestone WWTP service area. The proposed offset plan shall be submitted with the sanitary sewer plan review submission.

Changes as a result of modifications or changes in laws, regulations or permit(s) that are beyond this Department's control that impact this project, will be the responsibility of the applicant.

This acceptance is based on County infrastructure capacity and maintainability of proposed new Town owned infrastructure only. Capacity of existing Town owned infrastructure is the responsibility of the Town. The engineering of this project is the responsibility of the design engineer.

This capacity assurance is only for the above indicated AND that there is no acceptance, or suggestion of future acceptance - expressed or implied, for any future phases or development. While we intend to honor capacity assurances, we can make no commitments to the likelihood of future approvals, due to growth of capacity utilization and the considerable regulatory changes we have heard circulating regarding treatment facility regulations. This letter shall be valid for 24 months from April 2, 2018. If construction has not commenced by that time frame, please contact this department to apply for an extension.

If you need anything else, please do not hesitate to contact me at 435-5402 x202.

Sincerely,

Chris Deitman
Sewer Maintenance Superintendent

ONONDAGA COUNTY DEPARTMENT OF
WATER ENVIRONMENT PROTECTION

CD/

c: File (T) Manlius

OCWA Capacity Letter

Central New York's Water Authority

200 Northern Concourse
Syracuse, NY 13212
(315) 455-7061 x3173

July 6, 2017

Re: Hydrant Flow test #680

On July 6, 2017 hydrant flow test was conducted at Hoag Lane in the town of Manlius, NY. All testing was performed in accordance with NFPA 291 standards.

Hydrant #4117 was flowed at a rate of 798 gallons per minute (gpm). The static pressure at Hydrant 4115 was measured at 62 pounds per square inch (psi) at the start of the test and a residual pressure of 51psi during the test. Based on this test, the calculated system capacity at the hydrant is approximately 1,644 gpm at 20psi residual pressure, under similar conditions. Please review all mapping and documentation included in this report. OCWA's records indicate the water main in this area is 10" diameter pipe.

Should you need any additional information or have questions, please reply via email or call me at 315-455-7061 ext 3173. Thank you for the inquiry and have a great day.

Best Regards,

Mike Oemcke
OCWA Water Systems Engineering

Enc.: Flow Test Worksheets
Water Dist. Mapping

Flow TEST #680

HYD. FIRE FLOWS

Blade Coef =1.0

Client: OCWA | Test #: 1 | Date: 07/06/17

Indicate Number of FLOW Hydrants: 1 | Engr: MJO

(3 Hydrants Max)

Pres Hyd Loc: 4117

Static (psi) 62 | Residual (psi): 51

FLOW HYDRANT

Flow Hyd #1: 4115

	Noz. Dia (Inches)	Blade Reading (Psi)	Quantity (GPM)
Flow Hyd #1:	2.310	31.0	798
Conn. to Steamer	2.310		
hose monster	2.000		

See chart for GPM

Calculated

	GPM
Total Flow	798
Flow @ 20 psi	1,644
Flow @ 10 psi	1,845

Location: Hoag Ln.

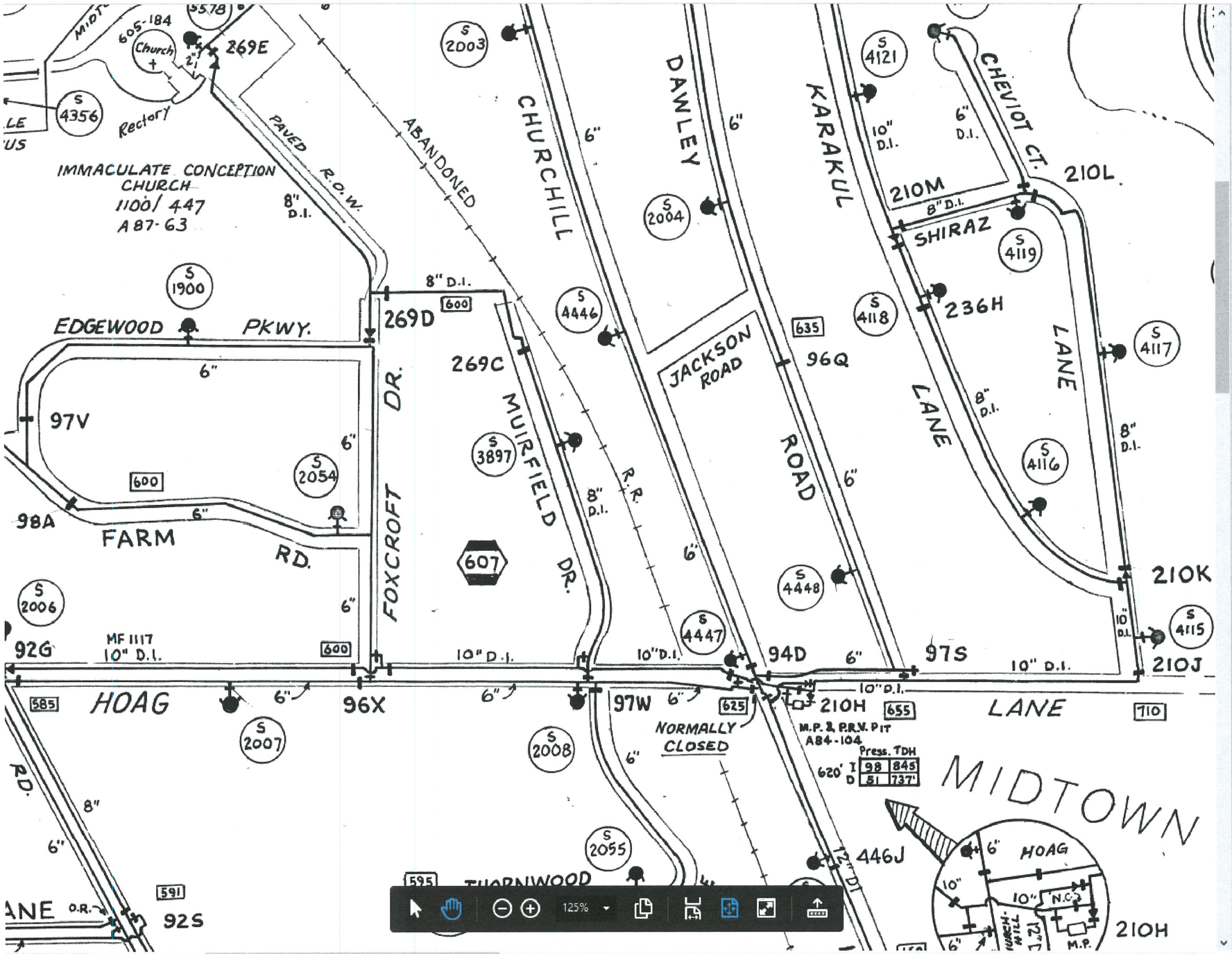
Town/Village: Fayetteville

Requested By:

Notes:

Note: The 20psi Calculated Flow value represents the water available in the system near this hydrant, not always the maximum flow of this hydrant.

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Hoag Lane Subdivision

5290-5320 Hoag Lane

Town of Manlius, Onondaga County, NY

RZE# 17061

SWPPP

1/26/2018
Rev. 03/29/2018
Rev. 06/01/2018
Rev. 06/14/2019
Rev. 07/11/2019
Rev. 09/19/2019
Rev. 12/17/2019
Rev. 06/15/2020



Prepared for:
Hoag Road Properties LLC
201 Solar Street
Syracuse, NY 13204

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

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1.0 – SUMMARY

The proposed development will subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout**.** Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing access drive for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance, above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer.

2.0 – OBJECTIVE

The purpose of this Report is to describe the additional stormwater management and erosion control measures for the site and the rationale for their use. This Report has been prepared in accordance with the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS) "NYS Standards and Specifications for Erosion and Sediment Control," the New York State Department of Environmental Conservation (NYSDEC) "NYS Stormwater Management Design Manual," and the NYSDEC "SPDES General Permit for Stormwater Discharges from Construction Activities."

This report will provide a narrative description of the proposed site improvements including stormwater management structures and erosion control methods to be temporarily or permanently employed at the site.

A copy of this SWPPP shall be maintained on site by the owner/contractor for the duration of the construction process.

3.0 – EXISTING SITE CONDITIONS

Existing Site Use

Proposed is the development of a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. The location of the site in relation to major roads and other points of reference are presented in Figures 1-3 along with an aerial photo of the site, general environmental mapping, and general vicinity.

Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout**.** According to Web Soil Survey, the site consists of primarily HSG C moderate-draining soils that would yield a high curve number in the range of 55-75. Deep hole tests, performed on 10/10/17, revealed the soil to be primarily comprised of silt loam with a 1'-2' gravel loam layer just above. No water, mottling, or restrictive layers were observed. Perc testing, conducted on 10/11/17 by a

representative from RZ Engineering, was consistent with the deep hole observations. Silty loam was witnessed in each of the perc test holes at depths of 24” below existing grade. Both 24” holes passed, one at 3 min/in and the other at 21 min/in. Results can be found in Appendix A.

Additional soil testing has been performed by Kenny Geotechnical and also provided in Appendix A. The 01/12/2018 report provided testing of soil infiltration at varying depths of 18ft, 25.3ft, and 24ft to find accurate representations of the profile at the proposed stormwater BMP depth. Although RZE testing revealed satisfactory percolation rates for infiltration at 24” depth, testing performed by Kenney Geotechnical in the 01/12/2018 report at greater depths at the proposed pond bottom elevation revealed unsatisfactory infiltration rates. Kenney Geotechnical also performed additional subsurface investigation with eight soil borings in the 06/13/2019 report provided in Appendix A. This report also provided a brief analysis into the presence of karst topography and concludes that “no distinct karst topographic features (i.e. sinkholes, circular depressions, steel elevations changes, etc.) are apparent in the immediate project vicinity.” Due to proposed changes in the site, the proposed stormwater measure was also relocated from the original location shown in the 01/12/2018 geotech report. Therefore, additional soil testing in the current proposed stormwater measure location at the proposed depth has been provided, see report in Appendix A.

For the purposes of analysis, one watershed was delineated under existing conditions, with the watershed being subdivided into 4 sub watersheds. This watershed has been subdivided into EXDA-1a,b, c, and d. This will allow design for the stormwater management facility to be representative of the runoff contributing to the proposed stormwater measures and analyze final outflow from site for areas not routed through the proposed stormwater measure.

Stormwater runoff enters the project site and existing drainage swale from several points. The watershed EXDA-1a consists of the runoff east of drainage swale and consists of a majority of the site limits and areas of uphill contributing areas. EXDA-1b consists of a small portion of onsite parcel areas as well as additional offsite stormwater entering into the site through the 20’ drainage easement located to the southwest of the site. EXDA-1c consists of the onsite runoff west of the swale within the site parcel. EXDA-1d contains of offsite stormwater from the housing and pavement located south of the site parcel draining to the 20’ drainage easement that will not be modified as part of the proposed project.

According to soil information provided by the National Cooperative Soil Survey the site soils consist of Cazenovia silt loam – Type C and Ontario loam – Type B.

The existing land-surface cover descriptions and totals for this site within the total watershed are described as follows:

- 1 acre lots, 20% Imp, HSG C, CN 79 – 16.28± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 8.61± ac

- Woods, Good, HSG B, CN 70 – 16.43± ac
- Existing Pavement, CN 98 – 1.79± ac
- Woods, Good, HSG C, CN 70 – 17.64± ac
- Grass Cover, Good, HSG C, CN 74 – 3.64± ac
- Brush, Good, HSG C – 11.12± ac

4.0 – PROPOSED SITE USE AND IMPROVEMENTS

Proposed Site Use

The site improvements proposed for the onsite development will require stormwater quality and quantity controls for applicable drainage areas. The proposed stormwater measure will handle runoff from watersheds DA-a and DA-1b. For purposes of analysis, the site disturbed area watersheds were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities

Further discussion of the analysis is discussed in the next few report sections. The site will be connected to public water and sanitary sewer systems. Access to the site during construction will be made via a temporary construction entrance in the location of the proposed entrance to the site.

Due to site development, the Tc flow-path for DA-1a was updated, but the discharge point remains the same. It should be noted that the Tc flow-path for DA-1a starts offsite to provide accurate watershed analysis for Tc flow-path since time of concentration is defined as the hydraulically most distant point of the watershed, see Section 5.0.

Site Improvements

The proposed grading and drainage plan for the site is designed to generally maintain the natural drainage direction of the site while attempting to improve existing storm runoff conditions. Stormwater runoff from site improvements as well as some offsite runoff will be directed via stormwater structures and swales to the proposed P-2 Wet Pond, discussed in Section 6.0.

Runoff from DA-1a will be directed to the proposed wet pond via drainage structures and swales. DA-1b offsite runoff will be directed to the proposed wet pond via a proposed swale to run along the southern property line. DA-1c onsite runoff does not have any proposed onsite development within its limits and will enter the existing drainage swales onsite before final discharge offsite. DA-1d off-site runoff from parcels in the Churchill Ct Cul-de-sac region will drain as it currently does in existing conditions to an existing drainage swale and bypass the proposed wet pond.

Presently, there are no flood control measures for the total DA-1 74.67± acre watershed(s). The total acreage of offsite area contributing into the proposed onsite stormwater system is 31± acres. The total onsite acreage contributing is 27± acres, for a total of 58± acres controlled by the onsite stormwater system. The stormwater from

offsite area controlled by the onsite stormwater system consists of lightly wooded area south of the site. Stormwater runoff from housing on Cahill Road and Churchill Court enter storm sewer system and drain into the 20' drainage easement that bypass through the site. We anticipate this will greatly reduce the severity of flooding on the subject site and mitigate storm events for downstream properties by allowing parcels to bypass through the site. Figures and site photos justifying drainage areas for contributing area are provided in Appendix O.

The controlled discharge from the pond will outlet to the existing ditch between the Haines and Olivar properties, who have frontage on Churchill Ln, and flow to the public storm sewer on Churchill Lane. Runoff ultimately discharges to Limestone creek, located West of the project site.

The proposed land-surface cover descriptions and totals within the overall site watershed are described as follows:

- 1 acre lots, 20% Imp, HSG C, CN 79 – 16.36± ac
- 2 acre lots, 12% Imp, HSG B, CN 65 – 8.61± ac
- Woods, Good, HSG B, CN 70 – 16.41± ac
- Proposed Site Impervious, CN 98 – 3.87± ac
- Woods, Good, HSG C, CN 70 – 12.12± ac
- Grass Cover, Good, HSG C, CN 74 – 15.53± ac
- Existing Pavement, CN 98 – 1.17± ac
- Permanent Pool of Wet Pond, CN 98 – 0.30± ac

5.0 – STORMWATER RUNOFF COMPUTATIONS

This section of the Report outlines the results of a stormwater runoff analysis that was conducted for the proposed site. The analysis includes a comparison of pre-development hydrologic conditions with those of the post-development conditions. This analysis is based on the site watershed's total area under both Pre- and Post-Development Conditions.

HydroCAD Version 10.00 was utilized in this Report for estimating runoff and peak discharges from the site disturbed area watershed. This computerized model was developed by the USDA-SCS to determine runoff volumes and peak rates of discharge, and takes into account watershed area, rainfall frequency, runoff coefficients characterizing land surfaces, flow duration or time of concentration, and average watershed slopes. Pre- and post-development calculations were generated for a 1, 2, 5, 10, 25, 50 and 100-year frequency, 24-hour storm event. Exhibits outlining stormwater runoff information referenced from the New York Standards and Specifications for Erosion and Sediment Control are presented in Appendix I.

The SCS has developed curve numbers characterizing land surfaces for urban areas and agricultural lands, which were utilized in the computer modeling of this site.

The time of concentration (t_c) value is utilized in the modeling of stormwater runoff for a site. Time of concentration is the duration that it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest (outfall) within the watershed. It is also the sum of the travel time from the various consecutive flow segments along the flow path of the watershed to the outfall. The time of concentration is dependent on the velocity of the runoff, and is a function of the surface roughness, slope of the surface, and flow segment length.

Pre-Development Analysis

For purposes of analysis, the disturbed site watershed was analyzed to determine the existing site peak runoff rate to the downstream discharge point of the defined swale at the northwest property corner. This peak runoff rate at the downstream discharge point was used as the limiting factor when comparing the post-development rates from the site.

The computer modeling results of the pre-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year, 24-hour storm event indicates that the following peak runoff rates in cubic feet per second (cfs) are anticipated to discharge from the pre-site condition drainage area. Calculations are presented in Appendix C.

Pre-Development Site Watershed

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
EXDA-1a (subject site + offsite)	32.49	1.62	3.69	8.54	14.28	25.01	36.18	50.22
EXDA-1b (offsite)	26.95	0.85	1.95	4.6	7.8	13.99	20.55	28.76
DA-1c (subject site)	2.08	0.26	0.48	0.94	1.44	2.33	3.22	4.32
DA-1d (offsite)	12.84	9.08	12.67	18.95	25.00	34.98	44.46	55.57
Pre-Swale 3	74.36	9.53	14.14	23.49	33.84	53.11	43.11	97.89

Post-Development Analysis

For purposes of analysis, the proposed site construction limits were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities.

The computer modeling results of the post-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year 24-hour storm event indicates that the following peak runoff rates are anticipated to discharge from the post-site condition drainage area. Calculations are presented in Appendix D.

Post-Development Site Watershed

Drainage Area (I.D.)	Area (Acres)	1 Year Storm Peak Flow (cfs)	2 Year Storm Peak Flow (cfs)	5 Year Storm Peak Flow (cfs)	10 Year Storm Peak Flow (cfs)	25 Year Storm Peak Flow (cfs)	50 Year Storm Peak Flow (cfs)	100 Yr Storm Peak Flow (cfs)
PRDA-1a (subject site + offsite)	19.74	5.35	8.30	13.80	19.30	28.67	37.83	48.75
PRDA-1b (offsite + subject site)	38.30	1.20	2.78	6.53	11.08	19.89	29.20	40.88
DA-1c (subject site)	3.48	0.43	0.80	1.57	2.41	3.9	5.40	7.24
DA-1d (offsite)	12.84	9.08	12.67	18.95	25.00	34.98	44.46	55.57
Post-Swale 3	74.36	12.93	19.26	31.12	43.25	64.57	86.03	112.03

Comparison of Pre- and Post-Development Runoff

The peak flow conditions for the pre- and post-development watershed areas of the project site are summarized below:

Pre-Development Watershed vs. Post-Development Watershed (Pre Routing)

Drainage Area (I.D.)	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site	Pre Site	Post Site
DA-1a (subject site + offsite)	32.49	19.74	1.62	5.35	3.69	8.30	8.54	13.80	14.28	19.30	25.01	28.67	36.18	37.83	50.22	48.75
Swale 3 (DA-1)	74.36	74.36	9.53	12.93	14.14	19.26	23.49	31.12	33.84	43.25	53.11	64.57	43.11	86.03	97.89	112.03

The above table reflects increases in peak runoff conditions of DA-1 watershed for all storms. Runoff increase is due to changes in Time of Concentration for DA-1a and an increase in impervious area. The DA-1 watershed remained similar in size between pre- and post-development conditions. Due to site development, the limits of the proposed site will require quality and quantity controls to be discussed in the next section in accordance with Chapter 10 of the NYS Stormwater Design Manual.

6.0 – STORMWATER MITIGATION AND BMP'S

A P-2 Wet Pond will be utilized at this site for treatment of stormwater runoff from the watershed. A summary of the stormwater flows post routing for the overall watershed are found in the table below and the calculations are found in Appendix E.

DA-1a&b P-2 Wet Pond:

The P-2 Wet Pond for DA-1 contains 0.927± ac-ft (0.227± ac-ft from both forebays and 0.700± ac-ft in pond) of inactive/WQv storage and 2.97± ac-ft of active storage – 3.89± ac-ft of total storage. The total required WQv for the pond is 0.732 ac-ft or 31,875 cf, see Appendix G. This required volume is calculated by combining PRDA-1a and PRDA-1b, see Appendix G. The total WQv/inactive storage provided below the invert of the lowest orifice, and in the forebays is 40,385 cf, or 0.927 ac-ft. Therefore, the design is successful in meeting WQv requirements. The side slopes of the active storage of the pond are set at 4:1. A 10' aquatic bench has been provided between elevations 671.00 and 670.00. A 12' maintenance/safety bench has been provided to maintenance access to outlet controls. Two forebays have been proposed at a depth of 4± ft, providing a total of 9,875± cf volume or 31% pretreatment of the WQv (10% required). A proposed 6'x6' square concrete outlet structure will discharge active storage stormwater flows to the existing drainage ditch that will flow to the existing 48" CMP under Churchill Lane. One 2"x3" orifice with external protection is proposed at invert at 671.00 to mitigate the 1-yr storm discharge levels to meet channel protection volume requirements, CPv. The required CPv discharge rate of the watershed is 0.30 cfs. As can be seen in the table below, the 1-yr post-routed discharge rate is 0.30 cfs. Therefore, CPv requirements have been met. The 2"x3" orifice is proposed with external protection through the use of a trash rack or approved equal. Two additional orifices with dimensions of 18"H x 48" are proposed at invert 673.45 to handle the larger storms. The outlet structure has two proposed 24" diameter open grate rims at 675.45. Two proposed 24" HDPE outlet culverts are set at invert out 665.20 to discharge from the proposed outlet control structure. A 10" pond drain is also proposed and has been sized to drain the pond within 24 hours. A specification of the proposed pond drain has been provided in Appendix P. A detail of the outlet structure and stormwater profile have also been provided in Appendix P. An emergency spillway has been proposed at invert 675.50 to allow for extreme storm passage. The spillway has been provided with 1 foot of freeboard. Compaction requirements for the pond will be 90% Standard Proctor Maximum Density and 95% in the subgrade area.

Pre-Development Watershed vs. Post-Development Watershed (Post Routing)

			1 Year Storm		2 Year Storm		5 Year Storm		10 Year Storm		25 Year Storm		50 Year Storm		100 Year Storm	
Drainage Area	Drainage Area (ac)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)		Peak Flow (cfs)	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
Pond (DA1a & 1b)	32.49	19.74		0.30		1.59		7.10		15.53		31.33		47.60		64.29
Pre vs. Post Swale 3	74.36	74.36	9.53	9.20	14.14	13.03	23.49	19.89	33.84	26.58	53.11	37.69	43.11	57.57	97.89	78.22

As can be seen in the above table, the proposed wet pond is successful in reducing peak runoff storm levels for the 1-yr through 100-yr storms for onsite & offsite areas. It should be noted, values for outflow from the pond have been provided to show channel protection provisions and reference only. The final outflow of the site has been provided in the Swale 3 row combining all onsite and offsite runoff from non-routed flows and pond-routed flows.

Construction, Reconstruction or Repair of Dams and other Impounding Structures

Regulated Activities

A Protection Of Waters Permit is required for:

Constructing, reconstructing, repairing, or modifying dams and water impounding structures that permanently or temporarily impound water as a result of a structure placed across a watercourse or overland drainage way or which receive water from an external source such as drainage diversion or pumping of ground water.

Some examples of activities requiring this permit are:

- siting and constructing a new dam or water impounding structure (i.e., concrete, earthen, stone and wooden structures);
- reconstruction or modification (i.e., refacing, anchoring, breaching, or removal of an existing structure);
- repairs or maintenance which may affect the structural integrity or functional capability of a dam or impounding structure.

Exempt Activities

The most common impoundment related activities not needing a Protection of Waters
Permit for a Dam or Other Impoundment Structure are constructing or repairing a dam or structure used for impounding water that satisfies any one of the following criteria:

- maximum height is 6 feet or less (maximum height is measured as the height from the downstream (outside) toe of the dam at its lowest point to the highest point at the top of the dam);
- maximum impounding capacity is one million gallons or less (maximum impounding capacity is measured as the volume of water impounded when the water level is at the top of the dam);
- maximum height is between 6 feet and 15 feet and the maximum impounding capacity is less than 3 million gallons.

Note: The exempt activities listed only represent exemptions for this section of the Protection of Waters Program. Other DEC permits under other sections of the Protection of Waters Permit Program or under other Articles of the Environmental Conservation Law may be required.

The proposed pond contains a maximum impounding capacity of 1,195,252± gallons and a maximum dam height of 12.5 ft (measured from toe of slope to top of berm, or 664 to 676.50). Per the NYSDEC website snapshot above and confirmed in an email provided in Appendix V, the proposed pond is considered exempt from requiring a NYSDEC Dam Permit.

7.0 – PROPOSED STORMWATER DRAINAGE FACILITIES

All on site drainage facilities are designed to transmit flows from a 10-year storm event to downstream stormwater Best Management Practices. Per request of Town Engineer riprap for outlets and swales were sized. The location, size, and type of all existing and proposed pipes and riprap provided on the contract drawings have been provided in Appendix F.

8.0 – STORMWATER QUALITY VOLUME

The water quality volume (denoted as WQ_V) is designed to improve water quality, sized to capture and treat 90% of the average annual stormwater runoff volume. The WQ_V is directly related to the amount of impervious cover created at the site. The following equation is used to estimate water quality storage volume WQ_V in acre feet of storage:

$$WQ_V = \frac{(P)(R_V)(A)}{12}$$

Where:

WQ_V = water quality volume (in acre-feet)
P = 90% Rainfall Event Number (Figure 4.1 – Appendix G)
R_V = 0.05 + 0.009(I), where I is the percent of impervious cover
A = site area in acres

It is assumed that by meeting the WQ_V requirements thru the employment practices outlined in Table 5.1 of the "New York State Stormwater Management Design Manual", a project will, by default, meet water quality objectives. Water quality has been calculated by combining watersheds DA-1a and DA-1b. Calculations of water quality volume can be found in Appendix G.

9.0 – PHOSPHORUS REMOVAL

Chapter 10 of the NYS Stormwater Design Manual outlines the requirements for treatment of phosphorus in stormwater. Enhanced Phosphorus Removal requires calculation of the 1-year, 24-hour design storm in the post development watershed. The site is not located in a TMDL Phosphorous watershed and therefore, no additional phosphorus treatment volume for the 1-year storm event has been provided.

10.0 – RUNOFF REDUCTION VOLUME AND GREEN PRACTICES

The green practices encompassed on the site are tabulated in the matrix below:

Green Practices

PRACTICE	WATERSHEDS	TYPE OF REDUCTION
• Tree Planting	Post Development DA-1	Area Reduction
• Conservation of Natural Areas	Post Development DA-1	Area Reduction
• Rooftop Disconnection	Post Development DA-1	Area Reduction

Soil Restoration Requirements **

According to Section 5 of the NYS Stormwater Design Manual, soil restoration practices must be applied across the site in areas of soil disturbance. This is necessary to reclaim the origional properties and porosity of the soil before construction. The benefits of soil restoration include but are not limited to:

- Less stormwater runoff
- Increased porosity on redevelopment sites where impervious cover is converted to pervious
- Achieves performance standards on runoff reduction practices
- Healthier, asthetically pleasing landscapes

- Enhances direct groundwater recharge
- Promotes sucessful long term revegitation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout durring dry periods

Table 5.3 Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A &B	HSG C&D	Protect area from any ongoing construction activities.
	apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A &B	HSG C & D	
	Aerate and apply 6 inches of topsoil	Apply full Soil Restoration **	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

** taken from the NYS Stormwater Management Manual (version 2010)

Many of the Runoff Reduction practices will require soil restoration measures applied in and around the practice inorder to reach the desired runoff reduction performance. Table 5.13 on page 5-22 of the NYS Stormwater Design Manual has been included below that higlights these requirements and provides guidance on when to implement

soil restoration techniques. Also included is the NYS Stormwater Design Manual section on Practice implimentation, Maintenece and Inspection.

Soil Restoration Practice Implementation:

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractormounted disc, or tiller, mixing, and circulating air and compost into subsoils

3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site

4. Apply topsoil to a depth of 6 inches

5. Vegetate as required by approved plan.

Figures 5.16 and 5.17 above show two attachments used for soil decompaction. Tilling (step 2 above) should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Soil Restoration Inspection:

At the end of the project an inspector should be able to push a 3/8” metal bar 12 inches into the soil just with body weight.

Compost Specifications

Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

Soil Restoration Maintenance:

The maintenance agreement with the HOA should identify where Soil Restoration has been applied (in addition to already being shown on the contract documents), where newly restored areas are/cannot be cleared, who the responsible parties are to ensure that routine vegetation improvements are made (i.e., thinning, invasive plant removal, etc.). Soil compost amendments within a filter strip or grass channel should be located in public right of way, or within a dedicated stormwater or drainage easement.

First-year Maintenance Operations Includes:

• Initial inspections for the first six months (once after each storm greater than half- inch)
• Reseeding to repair bare or eroding areas to assure grass stabilization
• Water once every three days for first month, and then provide a half inch of water per week during first-year. Irrigation plan may be adjusted according to the rain event.
• Fertilization may be needed in the fall after the first growing season to increase plant vigor

Ongoing Maintenance:

Two points help ensure lasting results of decompaction:

1. Planting the appropriate ground cover with deep roots to maintain the soil structure
2. Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few-years)

11.0 – POSSIBLE CONTAMINANTS FROM CONSTRUCTION ACTIVITIES

During construction contaminants from materials and equipment could enter the stormwater drainage system unintentionally. The contractor should store construction materials and equipment in the designated staging area and all possible contaminants should be stored to prevent damage.

This particular project will require construction equipment such as a backhoe, drum roller, dump trucks, a grader, and bull dozer. These vehicles use oil and petroleum products which if not treated carefully could enter the storm drainage system. Accidental spills should be reported to the Department of Environmental Conservation 24-hour spill response hotline at 1-800-457-7362. On site fueling of construction equipment shall be limited to a bermed/ diked area located within the project staging area. The table below provides a guide for quantities that should be reported. Should a spill incident occur, the

employee or party responsible for the spill should contain the spill, start cleanup and report the spill to his/ her superiors. The spill should be reported to the appropriate governing agency should the spill exceed the reportable quantity or enter surface waters.

Examples of Reportable Quantities		
Material	*Media Released To*	*Reportable Quantity*
Engine oil, fuel, hydraulic and brake fluid	Land Water	25 gallons Visible Sheen
Antifreeze	Land	100 lbs. (13 gal.)
Battery Acid	Land, Water	100 lbs.
Refrigerant	Air	1 lb.
Gasoline	Air, Land, Water	100 lbs.
Engine Degreasers	Air, Land, Water	100 lbs.

All construction waste material such as housing materials and utility installation materials shall be disposed of as required by law.

Wastewater from concrete washout areas is prohibited from discharging directly to any site areas not managed by an appropriate stormwater control measure. Also prohibited are washouts from stucco, paint, form release oils, curing compounds, and other construction materials. Soaps, solvents, fuels, oils, or other pollutants used in vehicle operations or maintenance shall also be controlled by an appropriate stormwater control measure. Staging areas are designated on the plans for storage of equipment and vehicles. Locations subject to the above contaminants outside the staging area shall require additional measures and should be reviewed with the SWPPP inspector and MS4 representative prior to commencement of activities that may result in contamination.

12.0 – EROSION CONTROL MEASURES

Structural erosion and sediment control measures are classified as either temporary or permanent, according to how they are used. Temporary structural measures shall be used during construction of the site to prevent off-site sedimentation. Permanent structural measures shall be utilized following construction and shall be implemented to convey surface water safely to the existing drainage ways present in the pre-development condition. The permanent structural measures shall remain in-place and continue to function after the completion of construction. General construction notes and maintenance plan for implementing the temporary and permanent stormwater and erosion control structures during and after construction have been developed for the project.

The proposed project will be constructed in one phase consisting of 7 stages as

depicted on drawings L-102 through L-108. Erosion control measures shall be inspected twice weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. The owner shall file a Notice of Intent (NOI) with the NYS DEC prior to commencement of further construction activities. The NOI shall be sent to:

NYSDEC- Notice of Intent
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

Temporary Structural Measures

This subsection will describe the specific temporary control measures to be implemented to reduce and/or eliminate erosion and sedimentation during the construction phase of this project. Example details of the following erosion control measures are presented in Appendix I. As construction progresses more site areas may be opened after already constructed areas are permanently stabilized in accordance with the New York State Standards and Specifications for Erosion and Sediment Control.

Silt Fence

A temporary barrier of geotextile fabric (filter cloth) fence shall be used to intercept sediment-laden runoff along the borders of disturbed site areas during construction. A geotextile fabric fence shall also be placed around all permanent stormwater drainage structures, in the absence of straw bale dikes, (catch ponds and manholes) to intercept sediment and protect the structure during construction. The geotextile filter fabric fence requires periodic maintenance and should be checked for tears or clogging with silt or debris. Silt can be removed from the woven filter cloth with a stiff brush if clogging occurs.

Stabilized Construction Entrance

A stabilized pad of aggregate underlain with filter cloth shall be positioned at points where traffic will be entering or leaving the construction site area onto public roads. This measure will reduce the tracking of soils onto public roads or streets. Entrance and Hoag Lane shall be inspected weekly/biweekly by the contractor for cleanliness and new stone reapplied as necessary.

Drop Inlet Protection

A temporary, somewhat permeable barrier shall be installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and to prevent heavily

sediment laden water from entering a storm drain system through inlets. The barrier should be inspected after each rain event and repairs shall be made as necessary. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the area around the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Concrete Washout

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil. Minimum size shall be 8ft x 8ft at the bottom and 2ft deep with 2:1 side slopes if excavated. Facility should be located a minimum of 100ft from drainage swales, drain inlets, wetlands, streams and other surfaces waters. Facility shall provide a liner with 10 mils minimum thickness. Facility shall be inspected daily and accumulated material removed with 75% of storage capacity is reached.

Sediment Basin(s)

The proposed Hoag Lane subdivision project will be constructed in one phase broken down into 7 stages. We anticipate 3 months in total for stages 2 and 3, roughly 6 weeks per stage, see drawings L-103 and L-104. These stages have been outlined in the contract drawings, L-102 through L-108, with applicable erosion and sediment control practices within each stage. As outlined on the Staging Plans, the first stage will install the proposed wet pond for the site development as well as associated earthwork for 11, 12, 13, and 14. In stages 2 and 3, we have provided analyses and designs for a sediment control basin to be located upstream of the wet pond. This section of the SWPPP has been prepared to summarize the design of the sediment basin(s) with calculations provided in Appendix T. As can be seen in the HydroCAD routing diagrams in Appendix T, the calculations provided include the routing of an open soils condition of the applicable stage of construction, with an undeveloped condition of the remaining site watershed directed to the wet pond. The cover types and time of concentration has been modified to reflect an open soils condition where necessary, see summaries in Appendix T.

Typically, a sediment basin would be sized per guidelines provided in the 2016 NYS Standards and Specifications for Erosion and Sediment Control. Due to the large exposure of open soils for earthwork, the proposed sediment basin will also be sized such that the overall downstream discharge point’s outflow from the downstream proposed wet pond (installed under stage 1) during construction does not release more than existing site conditions. Calculations for sizing per NYS Guidelines as well as existing conditions outflows vs pond outflows during construction have been provided in Appendix T. Sizing information provided as well as outflow values are summarized in the tables below for stages 2 and 3.

Stage 2 Sediment Basin

As depicted on drawing L-103, Stage 2 will consist of associated earthwork for Lots 4, 5, 6, 7, 8, 9, 10, 18 and 19 as well as the installation of the proposed sediment basin. The estimated disturbed of stage 2 is 7.8± acres with a contributing drainage area of roughly 9.2± acres, see drawing L-103. It should be noted that we anticipate the duration of the open soil conditions of this stage to be short. Tables summarizing the basin sizing as well as existing vs during construction basin outflow information has been provided below. Per guidance from the NYS Guidelines, a proposed 15" diameter standpipe with trash rack and emergency spillway are proposed for stormwater discharge from basin. A 5.5" skimmer is also proposed to aid in dewatering as necessary, see contract drawings. The 15" diameter riser is proposed at invert 690.00 with the emergency spillway at 694.00. A 12" outlet culvert is proposed for discharge from standpipe, see contract drawings. To aid in preventing erosion at the channel inflow point of the basin, there are – proposed check dams to reduce inflow to non-erosive velocities (see Appendix T for calculations). The basin shall be cleaned of sediment when 50% of the sediment storage zone volume has been reached, or elevation 688.49. This elevation shall be clearly marked on the riser in the field. Sediment that has been removed shall be placed in such a manner that it will not erode from the site. It shall also not be deposited downstream from the basin or adjacent to a stream. The method and location of disposing of sediment from the basin has been provided in drawing L-103.

Stage 2 Drainage Area Sediment Basin Sizing		
	Required	Provided
Sediment Storage Zone Volume (CF)	7,820	18,058
Dewatering Zone Volume (CF)	33,062	57,082
Total Vol. (CF)	40,882	75,140
Length to Width Ratio	2 : 1 min.	2.2 : 1
Surface Area (acres)	0.21	0.39

Existing Conditions vs Pond Outflow during Stage 2 Construction

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-2 Sediment Basin Outflow		9.18		1.32		5.58		6.74		7.81		8.84		9.22		9.58
Wet Pond Outflow		58.0		0.73		1.17		8.10		18.31		32.77		45.91		60.04
DA-1 (Swale 3)	74.4	74.3	9.60	9.18	14.30	12.99	23.87	19.81	34.47	26.50	54.20	37.61	74.69	52.65	100.02	68.94

As can be seen in the table above, the sediment basin will limit discharge flows during

construction to the pond and also the overall downstream discharge point to levels at or below existing conditions. Discharge calculations can be found in Appendix T.

Stage 3 Sediment Basin

As depicted on drawing L-104, Stage 3 will consist of associated earthwork for Lots 1, 2, 3, 15, 16 and 17. The estimated disturbed of stage 3 is 4.1± acres with a contributing drainage area of roughly 9.2± acres, see drawing L-103. It should be noted that we anticipate the duration of the open soil conditions of this stage to be short. Tables summarizing the basin sizing as well as existing vs during construction basin outflow information has been provided below. Sizing of stages 2 and 3 sediment basins result in required similar size to meet NYS requirements described above. Therefore, the proposed sediment basin installed for stage 2 of construction will be utilized for stage 3 also. Per guidance from NYS Guidelines, any remaining basin material and trapped sediments after completion of stage 2 will be removed and safely disposed of per guidance on the contract drawings. Any basin material removed must be backfilled with a structural fill to maintain original volumes as provided in stage 2. It is recommended at the start of stage 3 that the contractor inspect all discharge structures/devices (riser, outlet pipe, skimmer, etc.) prior to construction. The basin shall be cleaned of sediment when 50% of the sediment storage zone volume has been reached, or elevation 688.26. This elevation shall be clearly marked on the riser in the field. Sediment that has been removed shall be placed in such a manner that it will not erode from the site. It shall also not be deposited downstream from the basin or adjacent to a stream. The method and location of disposing of sediment from the basin has been provided in drawing L-104.

Stage 3 Drainage Area Sediment Basin Sizing		
	Required	Provided
Sediment Storage Zone Volume (CF)	4,160	18,058
Dewatering Zone Volume (CF)	26,262	57,082
Total Vol. (CF)	30,422	75,140
Length to Width Ratio	2 : 1 min.	2.2 : 1
Surface Area (acres)	0.14	0.39

Existing Conditions vs Pond Outflow during Stage 3 Construction

Drainage Area	Drainage Area (ac)		1 Year Storm Peak Flow (cfs)		2 Year Storm Peak Flow (cfs)		5 Year Storm Peak Flow (cfs)		10 Year Storm Peak Flow (cfs)		25 Year Storm Peak Flow (cfs)		50 Year Storm Peak Flow (cfs)		100 Yr Storm Peak Flow (cfs)	
	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.	Ex.	Cons.
(I.D.)	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site	Site
DA-3 Sediment Basin Outflow		7.30		0.23		0.85		1.97		6.24		7.57		8.68		9.04
Wet Pond Outflow		58.0		0.29		1.74		5.24		14.26		32.82		47.05		61.29
DA-1 (Swale 3)	74.4	74.3	9.60	9.20	14.30	13.04	23.87	19.88	34.47	26.55	54.20	37.92	74.69	54.38	100.02	70.82

As can be seen in the table above, the sediment basin will limit discharge flows during construction to the basin and also the overall downstream discharge point to levels at or below existing conditions. Discharge calculations can be found in Appendix T.

Stage 4 Sediment Basin Decommission
Upon stabilization of stage 3, the temporary sediment basin may be removed.

Siltation Socks

A temporary sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration onsite. To be placed on contour with terminal ends 8ft upslope at 45 degree angle. Diameters designed for use shall be 12”-32” except that 8” diameter socks can be used for residential lots to mitigate less than 0.25 acres. Flat dimension of sock to be at least 1.5 times the nominal diameter. Maximum slope length above a filter sock shall not exceed following limits:

Dia. (in.)	Slope %						
	2	5	10	20	25	33	50
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							

Maintenance of Temporary and Permanent Control Structures

Temporary and Permanent Stormwater Facilities during Construction

Temporary stormwater and erosion control structures must be constructed in accordance with their design intent and maintained to prevent sediment-laden runoff from leaving the site during construction. In general, the temporary structures during construction should be inspected on a routine basis and maintained as follows:

- Temporary silt fences, straw bale dikes, and sediment interceptors shall be installed prior to earth disturbance to reduce runoff velocity and transportation of sediment. The stabilization structures shall be inspected weekly and after every rainfall; and the structures cleaned, repaired, or replaced as required. Temporary stabilization structures shall be removed when their contributory drainage area is stabilized.

- Temporary storm drain inlet protection shall be installed to prevent heavily sediment laden water from entering a storm drain through inlets. Inspections shall

be bi-weekly and after major storms to ensure that sediment is not being allowed into the storm system. The inlet protection shall be cleaned, repaired, and or replaced as required until the contributing drainage area is stabilized. When this occurs, the devices shall be removed and the area around the inlet shall be stabilized in the manner appropriate the site.

- All permanent drainage structures, installed as part of the site improvements, shall be inspected weekly and after every rainfall to ensure structural integrity, detect vandalism and damage, and for cleaning. Permanent drainage structures shall be repaired or replaced, as required.

- All disturbed soil areas, upon final grading of topsoil, shall be seeded, and mulched. All seeded areas shall be inspected monthly and after every rainfall and the areas repaired and re-seeded, as required.

- Stabilized construction entrance shall be installed to control erosion at location where traffic will be entering or leaving the construction area. The temporary construction entrance shall be inspected periodically and after each rainfall; and the entrance cleaned, repaired, or replaced, as required. The temporary construction entrance shall be removed when construction is completed and all disturbed areas are stabilized.

Permanent Stormwater Facilities after Construction

Permanent stormwater control structures must be constructed in accordance with their design intent and maintained on a routine basis to remain effective. This site has employed stormwater management facilities. Prior to submission of the Notice of Termination to NYSDEC the contractor shall provide as built drawings of all stormwater best management practices and facilities to allow verification of construction in compliance with this SWPPP and the contract drawings. **A stormwater maintenance agreement with the HOA will be implemented to maintain these facilities as required by the NYS Stormwater Design Manual. Maintenance requirements and design information is included in Appendix K of this report.**

In general, the structures after construction should be inspected periodically and maintained as follows:

- Permanent stormwater drainage structures shall be inspected semi-annually and after every 0.5 inches of rainfall to ensure structural integrity, detect vandalism and damage, and for cleaning. The structures shall be repaired or replaced, as required.

- Permanent lawns and grassed areas shall be inspected and maintained on a regular basis, consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire

controls, weed, and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

- **Stormwater Best Management Practices used on this site; their design intents and inspection and maintenance punch list forms have been included in Appendix K.**

Site Stabilization

The Owner/Contractor shall initiate stabilization measures as soon as practicable in a portion of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

a. Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as possible;
b. Where disturbed area is 5 acres or more, stabilization measures must be employed no more than 7 days after construction activities have temporarily or permanently ceased.

Site Assessment and Inspection

Initial Inspection

The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction. The qualified professional shall certify that the appropriate erosion and sediment controls described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Post Construction Inspection

The Owner shall have a qualified professional conduct an assessment of the site after construction is complete. The qualified professional shall be a Licensed Professional Engineer or possess the appropriate certifications for inspection. The qualified professional shall certify that the appropriate erosion and sediment controls and stormwater BMP’s described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. If the site is located in an area governed by a traditional MS4, the MS4 must also make a final inspection and sign the Notice of Termination.

In addition, the owner must ensure that a properly qualified inspector is performing inspections of post construction stormwater practices as outlined in the NYS Stormwater Design Manual. The owner shall ensure that a binding maintenance agreement is in place for inspection and maintenance of all stormwater practices and ensure that the inspection and maintenance is performed by a qualified professional. The owner must then identify the responsible party for these inspections and maintenance on the Notice of Termination.

As-Builts

Prior to Submission of the Notice of Termination by a Licensed Professional Engineer and upon completion of the site, a surveyor or appropriate inspector shall be required to produce an AutoCAD or paper as-built map to the design engineer for verification that stormwater items and BMP's were installed as per the approved plans.

Stormwater BMP Inspection and maintenance punch list forms are provided behind the appropriate design intent page in Appendix K.

Inspections and Records during Construction

Inspection Frequency

After commencement of construction, site inspections shall be conducted by the qualified professional once per week when disturbing more than 1 acre and at least twice per week when this site disturbs more than 5 acres. Two consecutive working days shall be given between site inspections per week. Prior to filing a Notice of Termination (NOT) or at the end of the permit term, the owner shall have the qualified professional perform a final site inspection.

Records during Inspection

A site map shall be maintained on site indicating the extent of all disturbed onsite areas and drainageways throughout the duration of construction. The site map shall contain all areas expected to undergo initial disturbance or significant site work within every 7-day period. The map shall indicate all areas of the site that have undergone temporary or permanent stabilization. All disturbed areas that have not undergone active site work during the previous 7-day inspection period shall be noted on the map. All sediment control measures shall be inspected and the degree of accumulation as a percentage of the sediment storage volume shall be recorded. Inspector must describe and inspect all points of discharge to natural surface water bodies located within, or immediately adjacent to property boundaries. Photographic record of inspections and any deficiencies shall be included in the inspection reports and photos of corrective action must be recorded upon compliance. Any maintenance required for installed erosion and sediment control structures shall be noted, and documentation of areas where adjustments are needed to those measures shall be provided. Any deficiencies identified with the implementation of the SWPPP shall be recorded. Erosion control measures shall be inspected weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of

erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. These inspection reports should be in compliance with the requirements set forth under part IV.C-4 of the general permit. A copy of the general permit is included in Appendix J.

Inspection Log Book

The Owner/ contractor shall maintain an inspection logbook which shall contain a record of all inspection reports. The site logbook shall be maintained on site and shall be made available to the permitting authority upon request. The Owner shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.

Certifications

At the final site inspection, the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods, and that all temporary erosion and sedimentation measures have been removed. Final certification requires completion of the Notice of Termination form. The Notice of Termination shall be signed by the qualified professional. The owner shall provide the qualified professional with as built drawings in AutoCAD format so that the qualified professional can verify that all stormwater practices have been installed in accordance with the approved plans, SWPPP and the General Permit. The owner shall certify that the requirements of the permit have been satisfied within 48 hours of actually meeting such requirements and sign the Notice of Termination.

12.1 Dust Control Plan

Overview

Per guidance from the NYSDOH Generic Community Air Monitoring Plan (see Appendix R), this site is required to implement periodic monitoring for particulates during construction. The required frequency of monitoring and reporting has been outlined below.

The proposed site construction project in general consists of the following:

- Clearing of vegetation;
- Soil Excavation;
- Utility installation(s);
- Proposed lot construction;
- Backfilling and compaction of fill to achieve design grade;

All dust monitoring reporting as outlined below shall be provided to Town of Manlius upon completion and to allow for oversight by the Town of Manlius as necessary.

Location of Monitoring Stations

Two monitoring stations are proposed on the site and have been shown located on the Erosion and Sedimention Control Plan, sheet L-101 of the contract drawing set. These

monitoring stations are proposed at the east and west ends of the site around the working areas.

Monitoring Techniques, Frequency, and Analytical Methods

The contractor is required to utilize a real-time dust monitoring device capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.. A binder for records must be maintained onsite, possibly within the SWPPP mailbox, with daily record keeping. The contractor must monitor dust levels every 2-3 hours, when airborne dust is minimal, and/or with significant changes to the wind is witnessed. Results shall be sent to the Town of Manlius engineer on a weekly basis.

It is also required to keep daily records of wind speed, direction, temperature, precipitation, etc. from such sites as wunderground.com or similar. This information should be recorded on the same records sheets as the dust monitoring records.

Action Levels (with stop work levels)

Per recommendation from the NYSDOH Community Air Monitoring Plan, the contractor must provide the following response levels and actions:

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 mcg/m3 above the upwind level and provided that no visible dust is migrating from the work area.
2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 mcg/m3 above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m3 of the upwind level and in preventing visible dust migration.

Measures and Supplements for corrective actions as needed

General

Some common applications for dust control based on the site condition have been provided in the table below:

Site Condition	Dust Control Practices							
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Temporary Gravel Construction Entrances/Equipment Wash Down	Synthetic Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X			X
Disturbed Areas Subject to Traffic			X	X	X	X		X
Material Stockpiles		X	X	X			X	X
Demolition			X			X	X	
Clearing/ Excavation			X	X				X
Truck Traffic on Unpaved Roads			X	X	X	X	X	
Tracking					X	X		

These practices as a minimum should be applied to the appropriate site conditions during the construction process.

Water Application

Water application should be used to mitigate dust udring the excavation, backfilling and grading activities. Water may be applied using a water truck to mitigate dust on stockpiles, haul roads for example. A direct spray through the use of a fire hose and hydrant may also be used onsite.

Stockpile Management Practices

The placement of stockpiles shall be located to be a minimum of 20ft away from existing slopes of 10% or more. Stockpiles should not be placed within 75 feet of occupied buildings.

Grading Practices

To attempt to minimize dust generation, the contractor shall attempt to maintain water spraying at the load buckets and excavation face, empty construction excavators slowly, and minimize drop height from loader bucket.

Vehicular Practices

To attempt to mimize dust generation, the contractor shall attempt to minimize vehicular traffic in non-designated travel areas. It is also recommended that the size of vehicle staging areas be minimized. Vehicles shall also maintain slower speeds in the vicinity of 10-15 mph, and should avoid sitting idle for more than 5 minutes to minimize exhaust fumes. Haul trucks should also be covered with tarps prior to relocating soil at the site.

RELIANCE

Engineer's Certification

The undersigned agrees that this SWPPP has been prepared in accordance with all applicable standards outlined in this report. The undersigned understands that the owner intends to use this SWPPP to support his application for a New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Prepared By: _____ Date: 6-15-20

Helen J. McMillen
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Reviewed By: _____ Date: 6/15/20

Rudy L. Zona, P.E.
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

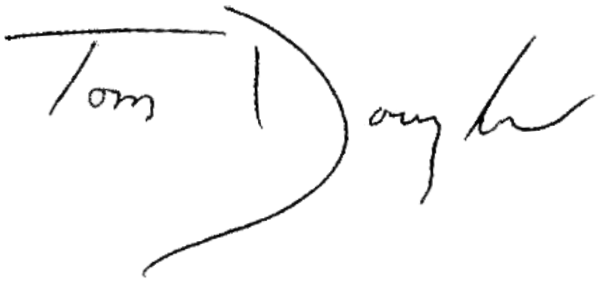
Owner's Certification

I certify that I have read and understand the requirements outlined in this SWPPP report. The undersigned agrees that I have employed the above professional to prepare this SWPPP and that the recommendations within this Report and accompanying documents support the requirements set forth by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. I certify that I intend to employ a contractor who will follow the recommendations of this SWPPP and any requirements set forth by the New York State SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Owner: Hoag Lane Development

Owner's Representative: Tom Douglas Date: 06/15/2020

Title: Developer/Owner



Contractor's / Sub-Contractor's Certification

Contractor's/Sub-Contractor's Certification "I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor: _____

Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Contractor is responsible for SWPPP components identified:

SWPPP Inspections _____

_____

_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____

Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

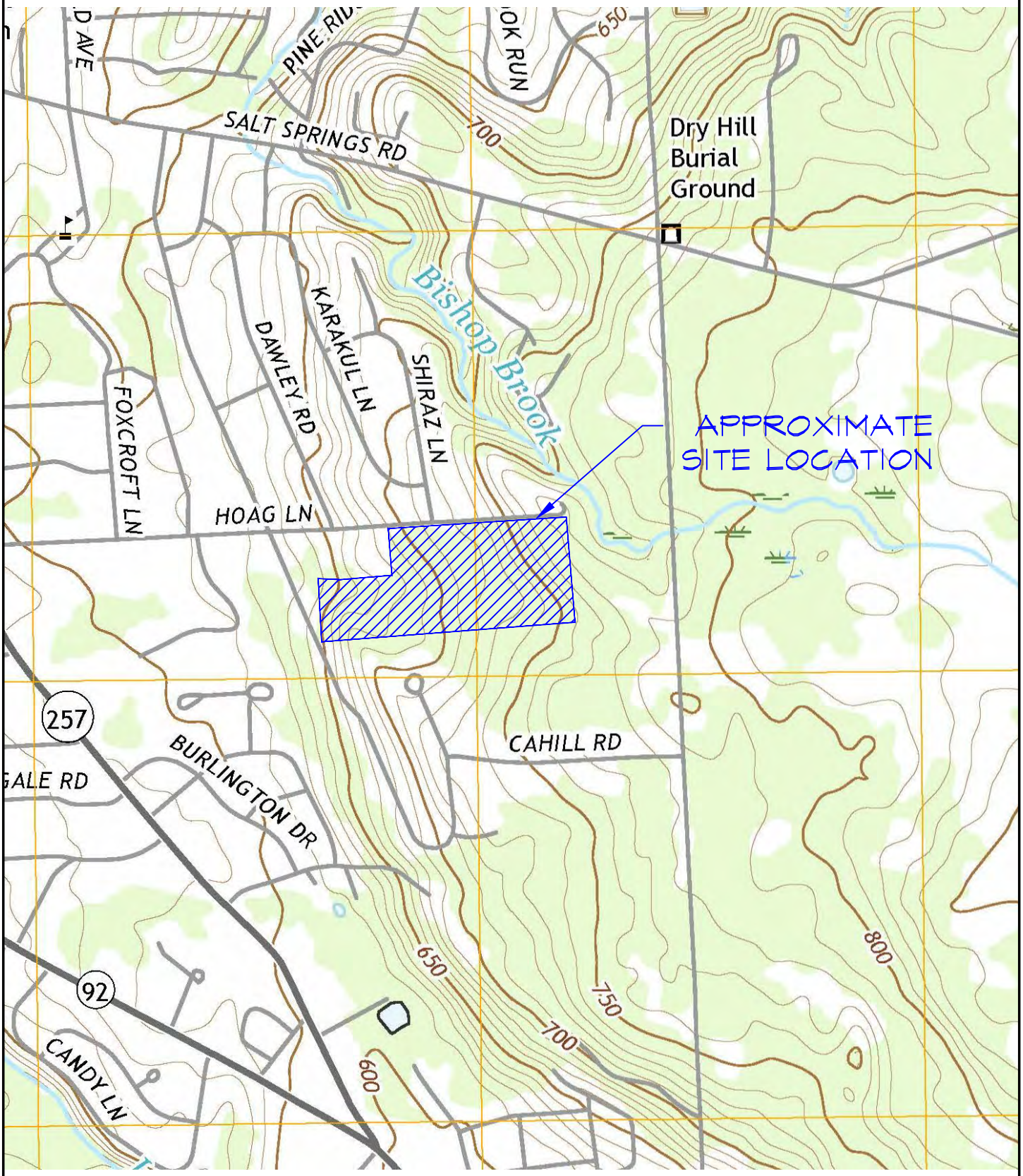
Signature: _____ Date:_____

Sub-Contractor's "trained contractor": _____Date: _____
(must have DEC 4 hr. training, responsible for the daily implementation of SWPPP)
Sub-Contractor is responsible for SWPPP components identified:
_____
_____
_____
Address: _____

_____

Phone: _____

Fax: _____

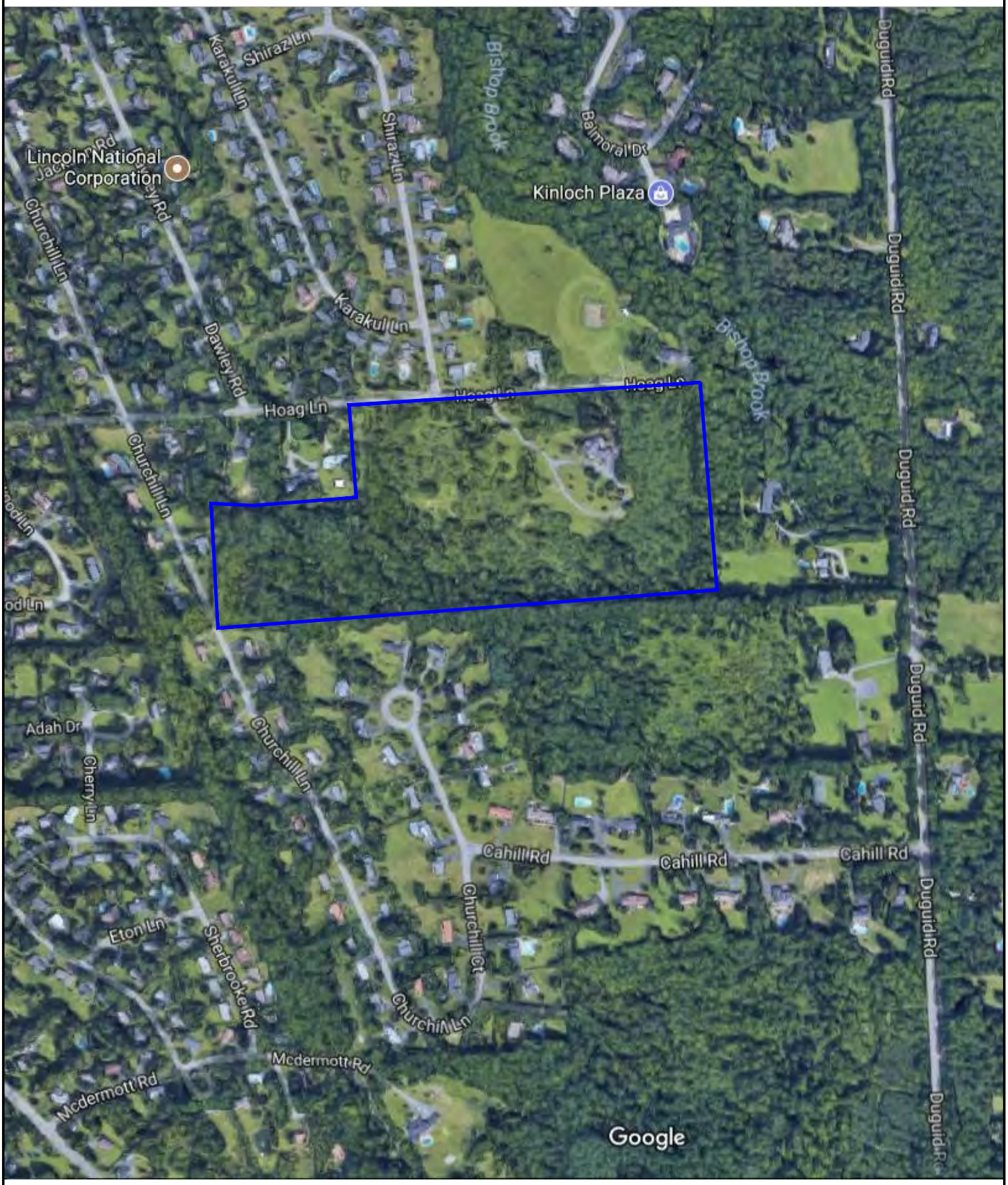


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FAX (315) 445-7981

N

Hoag Lane Subdivision
USGS MAP
SCALE 1:1000

FIGURE 1



RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

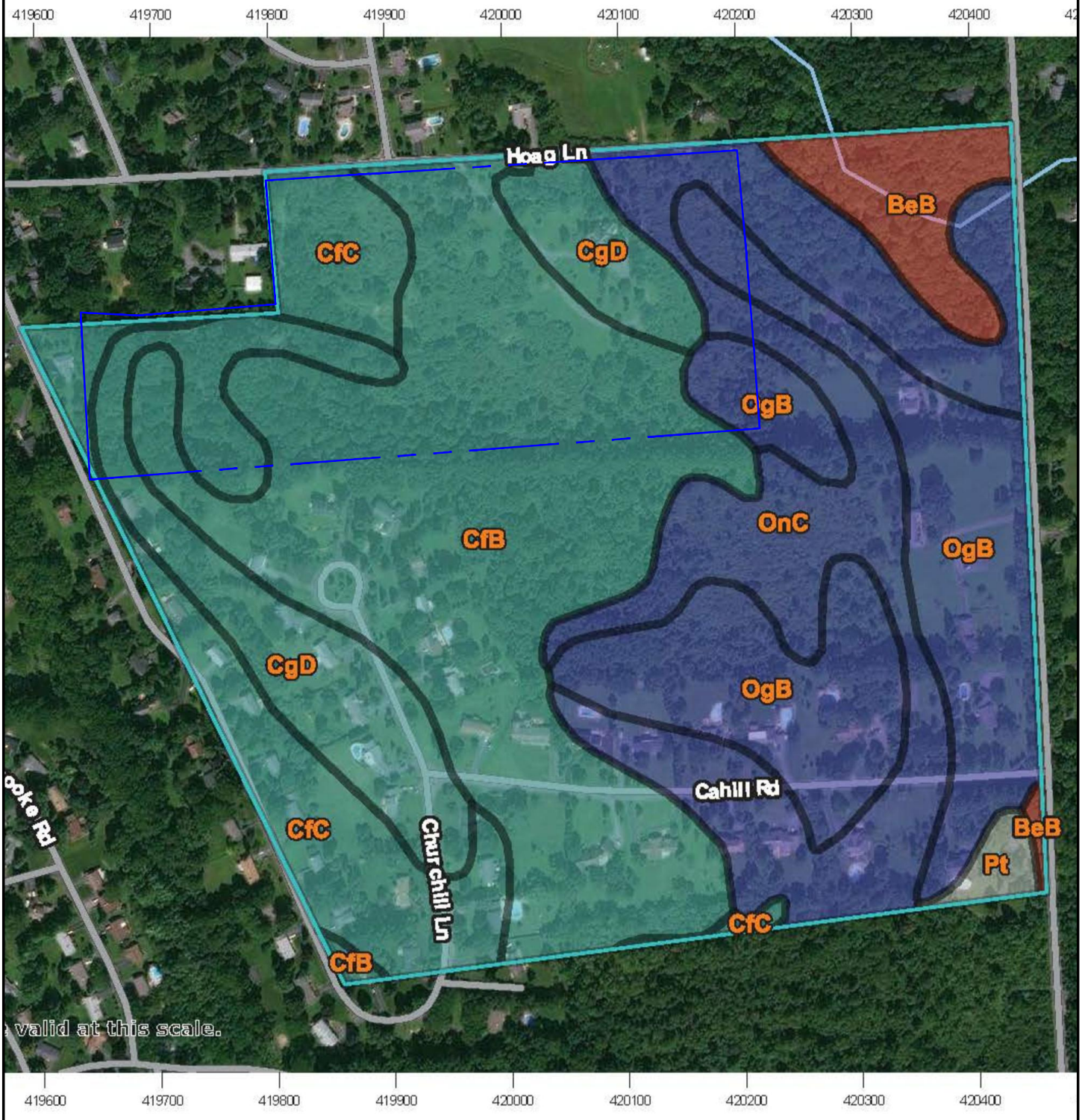
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N

Hoag Lane Subdivision
AERIAL MAP
SCALE 1:500

FIGURE 2

Hydrologic Soil Group—Onondaga County, New York



inted on A landscape (11" x 8.5") sheet.

RZ Engineering, PLLC

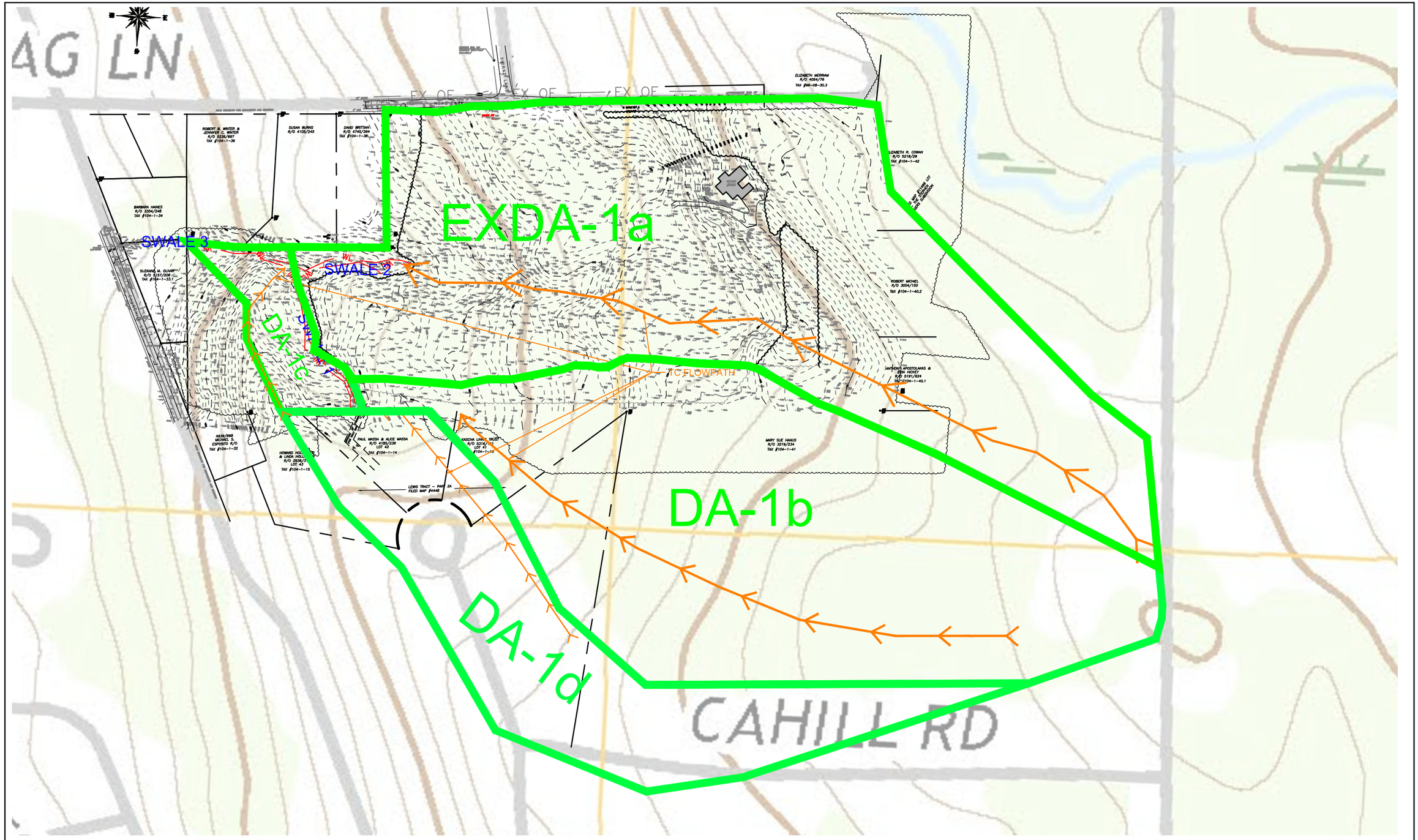
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Hoag Lane Subdivision
SOILS MAP
SCALE 1:400

UPDATED 4/28/20

FIGURE 3

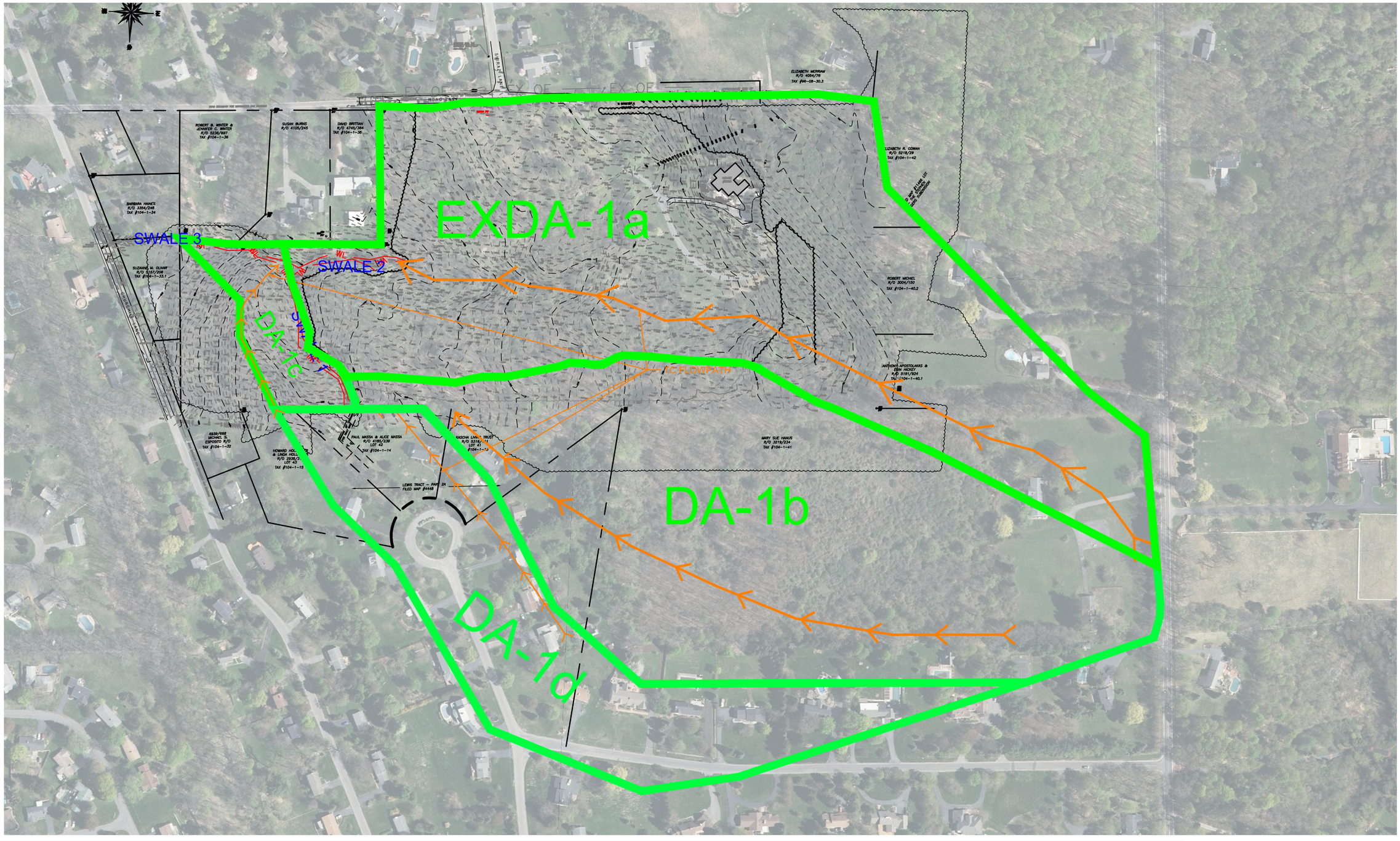


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4a: Existing Site Watershed with USGS

SCALE: 1:250
Updated: 09/19/19

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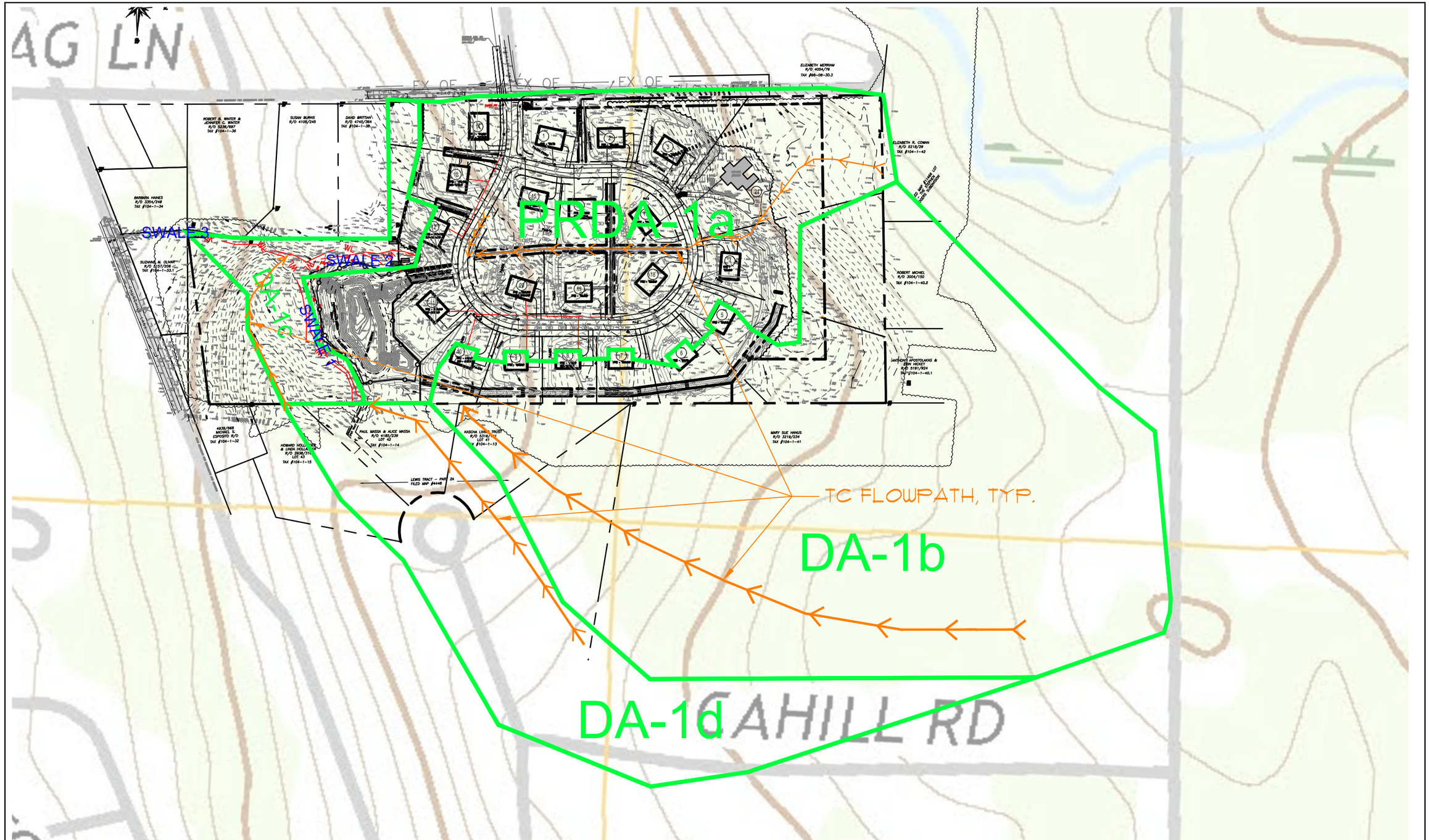


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4b: Existing Site Watershed with Aerial

SCALE: 1:250
Updated: 09/19/19

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Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 5: Proposed Watershed

SCALE: 1:250
Updated: 06/15/20

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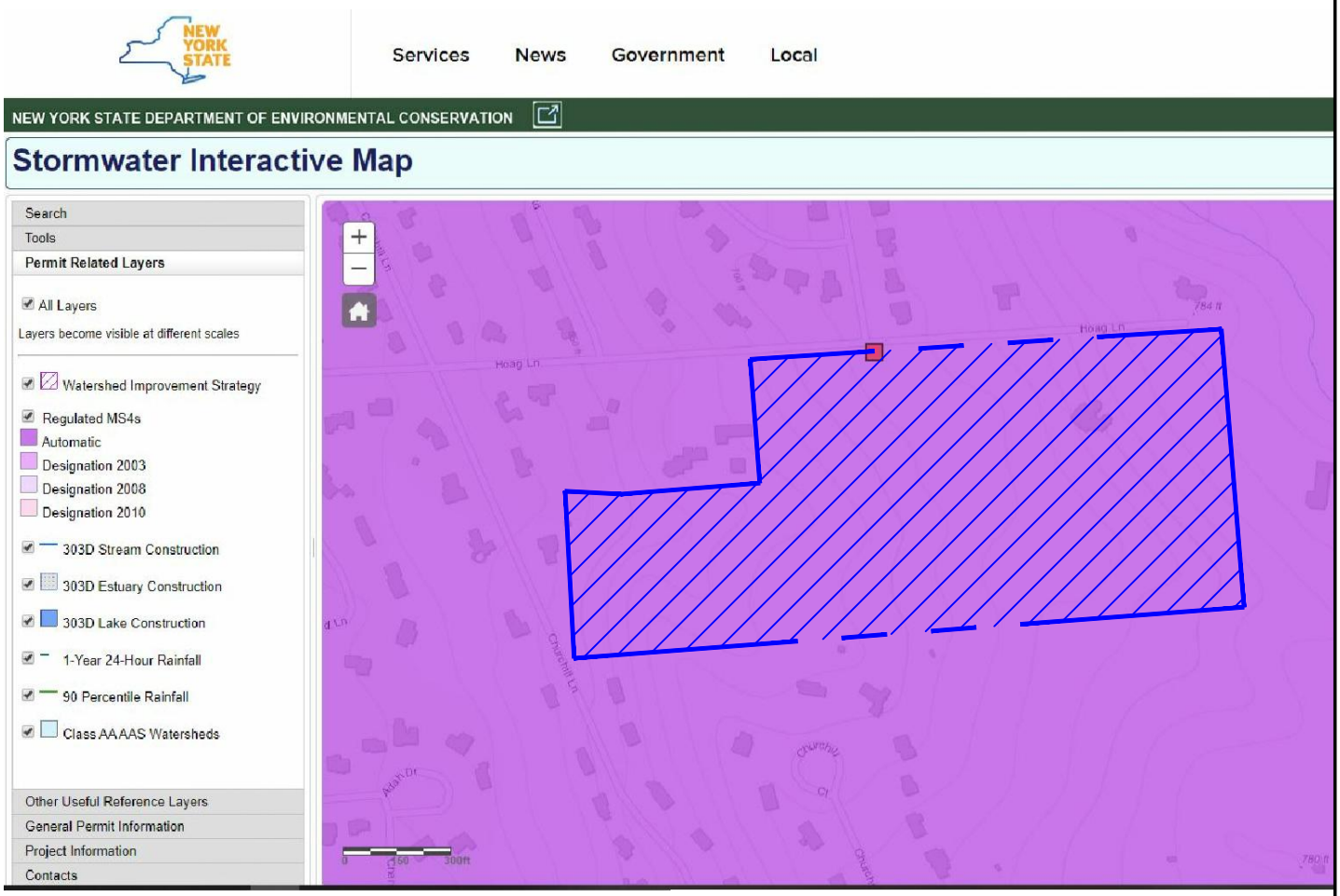


Figure 6 Narrative: Available mapping shown was taken from gisservices.dec.ny.gov on 04/28/2020. Due to available mapping taken at that time, it is apparent that the subject site lies within a regulated MS4.

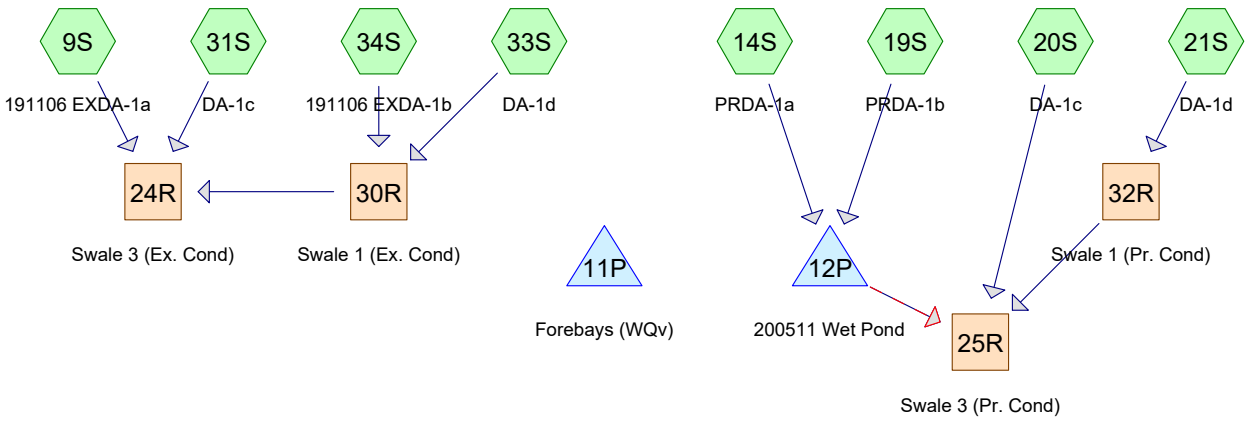
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Hoag Lane Subdivision
NYSDEC STORMWATER MAP
SCALE 1:500

UPDATED 4/28/20

N

FIGURE 6



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 6/12/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

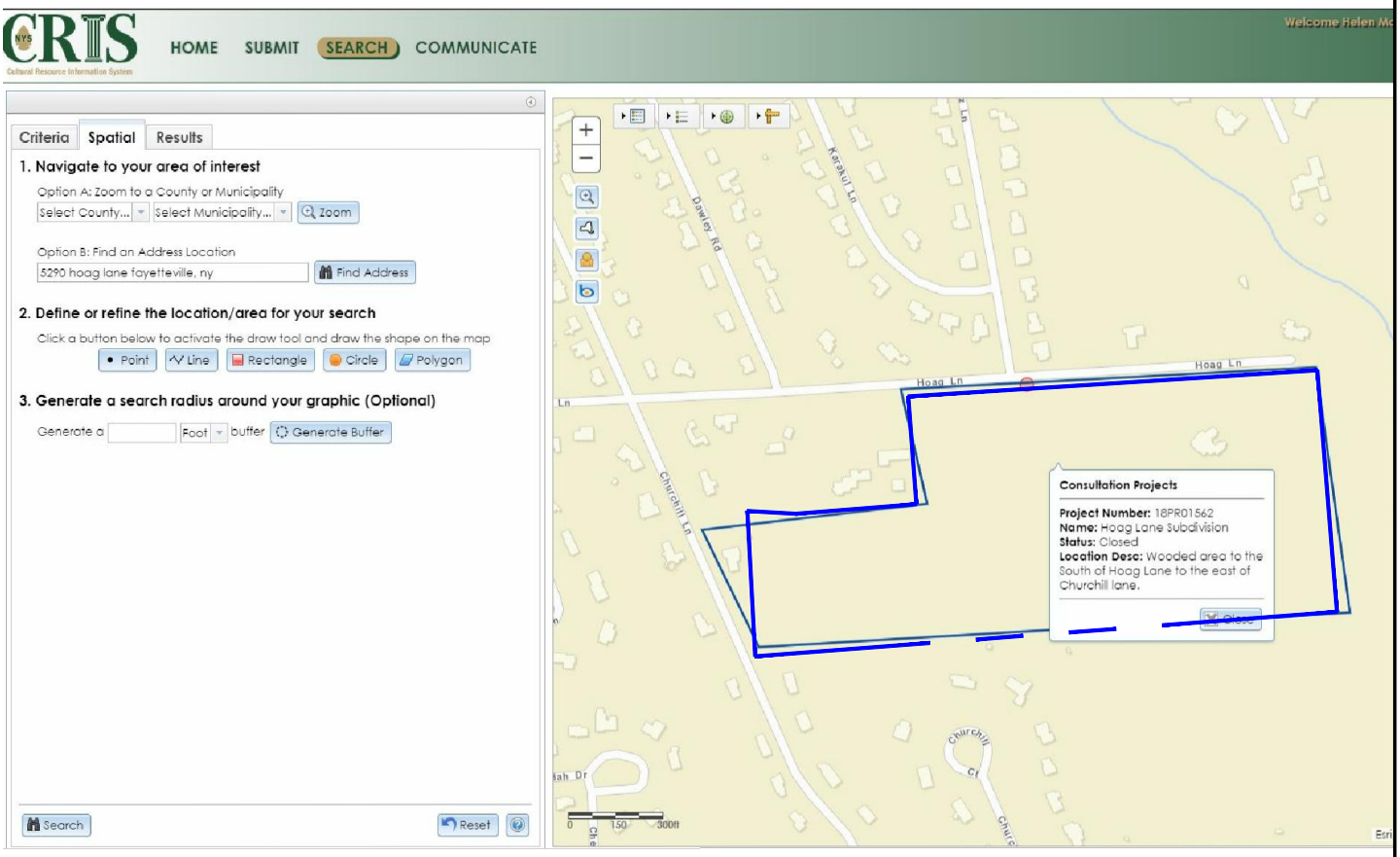


Figure 8 Narrative: Available mapping shown was taken from cris.parks.ny.gov on 04/28/2020. Due to available mapping, the subject does not lie within an archeologically sensitive area. Submission was made to the NYSHPO and response received 03/26/2018 concluded that per the NYSHPO opinion that the project will have no impact on archaeological and/or historic resources listed in or eligble for the NYS and National Registers of Historical Places, see Appendix Q.

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Hoag Lane Subdivision
SHPO MAP
SCALE 1:600

UPDATED 4/28/20

FIGURE 8

NYSDEC ENVIRONMENTAL RESOURCE MAPPER

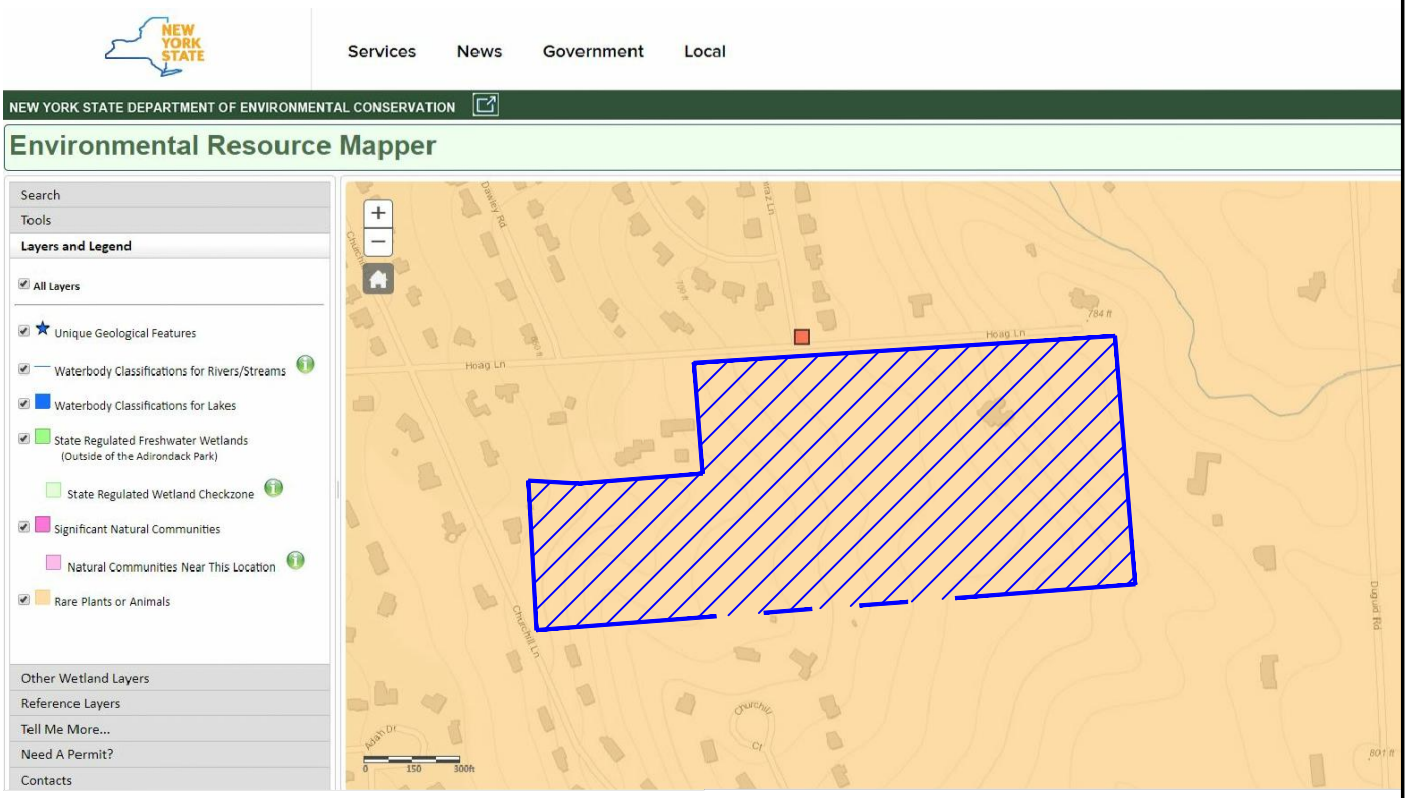


Figure 9 Narrative: Available mapping shown was taken from gisservices.dec.ny.gov on 04/28/2020. Due to available mapping, the subject lies in an area subject to potential of rare plants and animals. Submission has been made to Natural Heritage on 02/05/2018. Response was received on 04/06/2018 stating no records of rare or state-listed animals/plants/natural communities are located at the project site but theNorthern long-eared bat is located within 3.5 miles of the site, see Appendix U.

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Hoag Lane Subdivision UPDATED 4/28/20
NYSDEC WETLANDS AND
ENDANGERED SPECIES MAP
SCALE 1:600

N

FIGURE 9

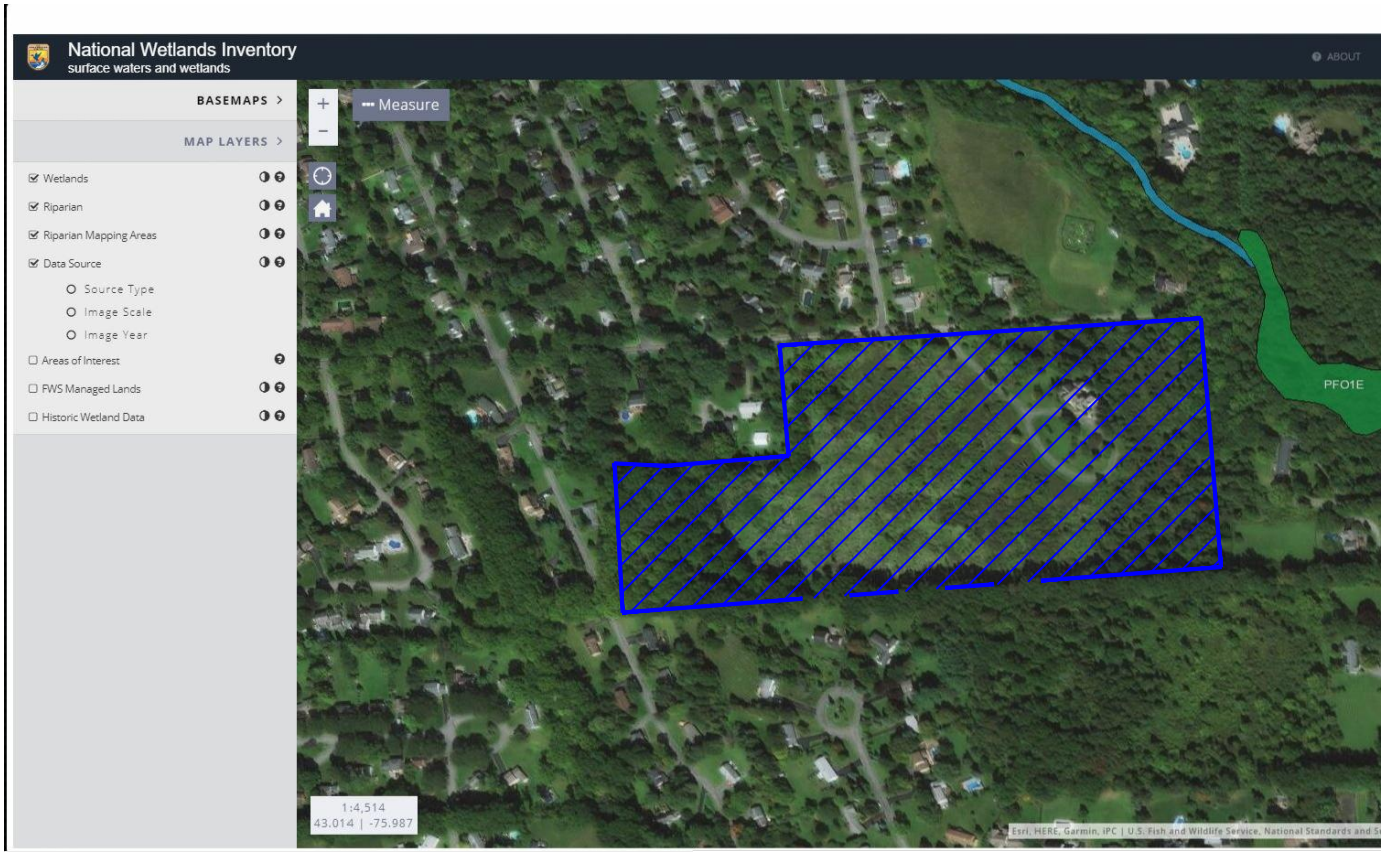


Figure 10 Narrative: Available mapping shown was taken from fws.gov on 04/28/2020. Due to available mapping, the subject does not lie within any federally mapped wetlands.

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Hoag Lane Subdivision
FEDERAL WETLANDS MAP
SCALE 1:600

UPDATED 4/28/20

FIGURE 10

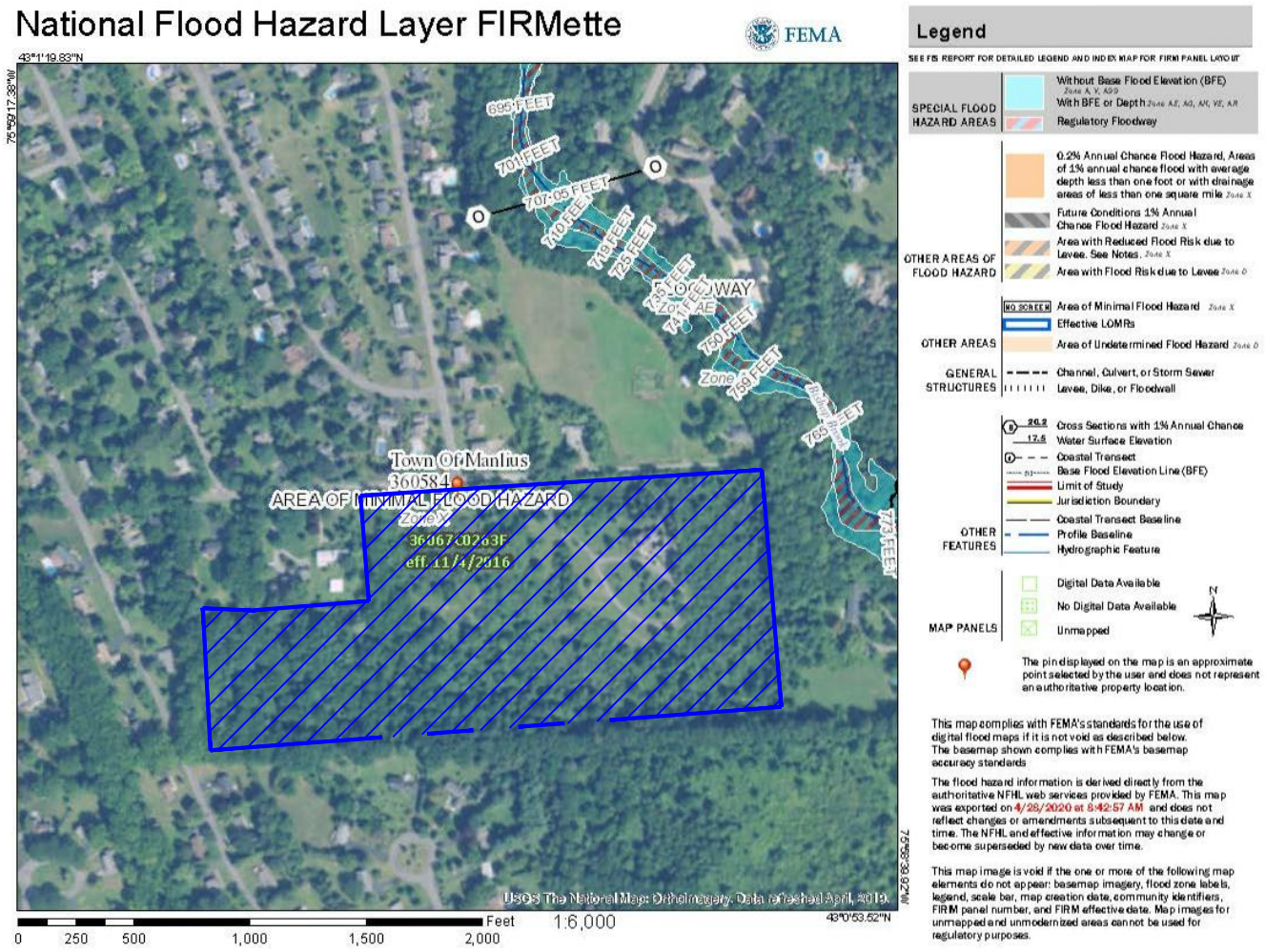


Figure 11 Narrative: Available mapping shown was taken from msc.fema.gov on 04/28/2020. Due to available mapping, the subject site does not lie in a special flood hazard area.

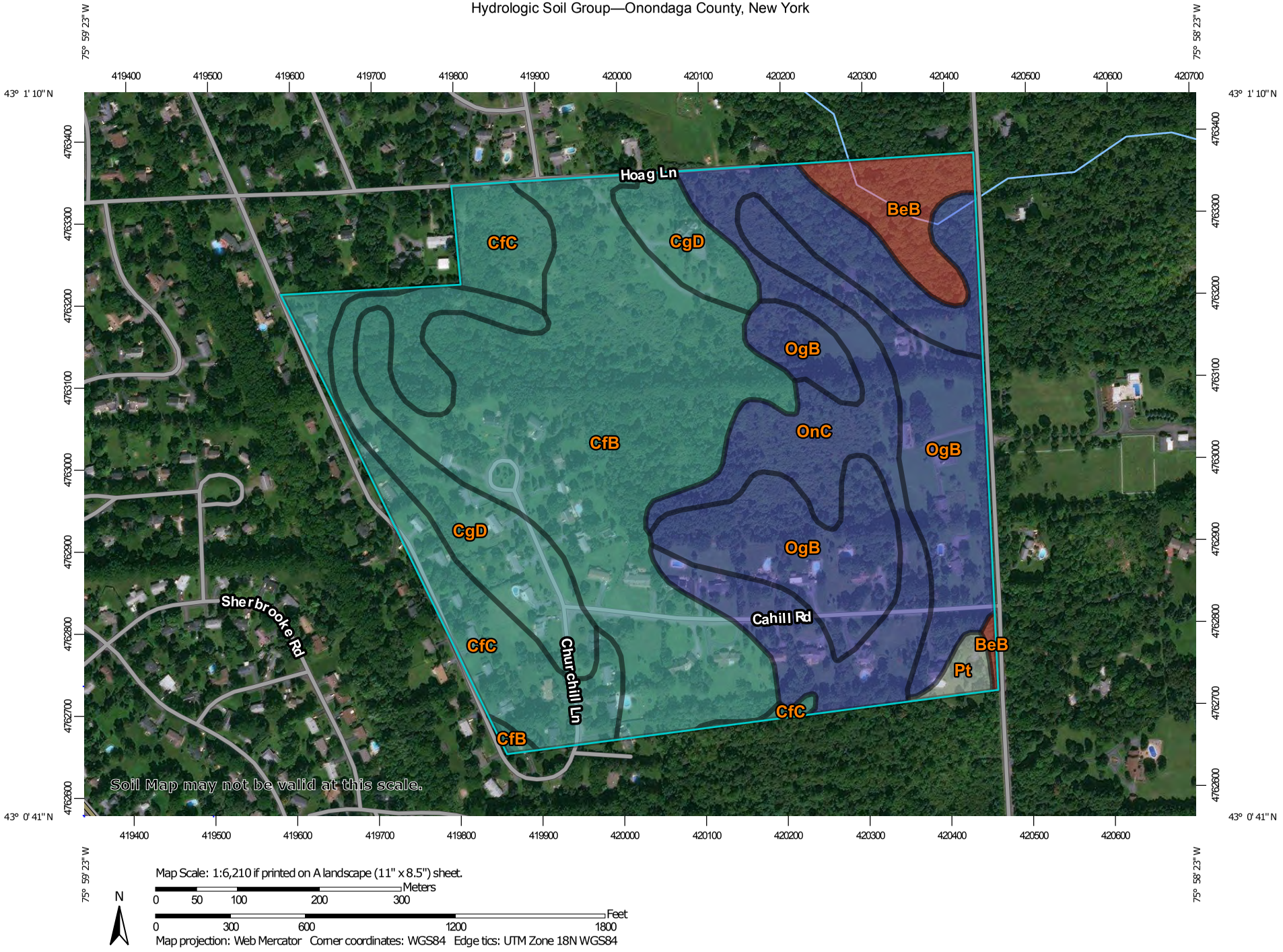
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FAX (315) 445-7981

Hoag Lane Subdivision UPDATED 4/28/20
NATIONAL FLOOD INSURANCE MAP
SCALE 1:600

N

FIGURE 11

APPENDIX A



Map Scale: 1:6,210 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 300 600 1200 1800

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Onondaga County, New York
Survey Area Data: Version 11, Oct 8, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BeB	Benson silt loam, undulating	D	4.9	4.1%
CfB	Cazenovia silt loam, 2 to 8 percent slopes	C	39.0	32.5%
CfC	Cazenovia silt loam, 8 to 15 percent slopes	C	13.4	11.2%
CgD	Cazenovia soils, 15 to 25 percent slopes	C	15.1	12.6%
OgB	Ontario loam, 3 to 8 percent slopes	B	23.1	19.3%
OnC	Ontario gravelly loam, 8 to 15 percent slopes	B	23.4	19.5%
Pt	Quarries		1.0	0.8%
Totals for Area of Interest			**120.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

RZ Engineering, PLLC

RZE# 17061

STORMWATER | SANITARY | WATER | ENVIRONMENTAL | TRANSPORTATION

OWNERS NAME: TOM DOUGLAS ADDRESS OF PROPERTY: 5280 HOAG LANE TOWN: MANLIUS

TEST PERFORMED BY: STEVEN RAHN REPRESENTING: RZ ENGINEERING Weather: CLOUDY 70±°F DATE: 10/10/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
PT #1	24"		Finish	1:28	2:07	2:43						
	Sandy Loam		Start	1:10	1:32	2:08						
			Time	18 MIN	35 MIN	35 MIN						35 MIN
PT #2	24"		Finish									
	Silt Loam		Start	2:30								
			Time	>120 MIN								FAIL
DH #1	0"-12" TOPSOIL		Finish									
	12"-36" GRAVEL LOAM		Start									
	36"-66" SANDY LOAM		Time									
DH #2	0"-12" TOPSOIL		Finish									
	12"-36" GRAVEL LOAM		Start									
	36"-80" SILT LOAM		Time									

Deep Hole Testing Results: DH #1

Contractor for Deep Hole : _____

Owner Hired ☒

Paid on site ☐

Ground Water Witnessed: ☒ No Water ☐ Yes at ____" Deep

Mottling Witnessed: ☒ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☒ No layer ☐ Yes _____ Layer at ____" Deep

DH #2
NO WATER
NO MOTTLING
NO LAYER

RZ Engineering, PLLC

RZE# 17061

STORMWATER | SANITARY | WATER | ENVIRONMENTAL | TRANSPORTATION

OWNERS NAME: TOM DOUGLAS ADDRESS OF PROPERTY: 5280 HOAG LANE TOWN: MANLIUS

TEST PERFORMED BY: STEVEN RAHN REPRESENTING: RZ ENGINEERING Weather: CLOUDY 70± °F DATE: 10/10/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
DH #3	0"-12" TOPSOIL		Finish									
	12"-48" GRAVEL LOAM		Start									
	48"-72" GRAVELY SILT LOAM		Time									
DH #4	0"-12" TOPSOIL		Finish									
	12"-36" SANDY SILT LOAM		Start									
	36"-72" SILTY CLAY LOAM		Time									
DH #5	0"-6" TOPSOIL		Finish									
	6"-36" SANDY LOAM		Start									
	36"-66" SANDY SILT LOAM W/ COBBLES		Time									
			Finish									
			Start									
			Time									

Deep Hole Testing Results: DH #3

Contractor for Deep Hole : _____ Owner Hired ☒

Ground Water Witnessed: ☒ No Water ☐ Yes at ____" Deep

Mottling Witnessed: ☒ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☒ No layer ☐ Yes _____ Layer at ____" Deep

DH #4: NO WATER, NO MOTTLING, NO LAYER

DH #5: NO WATER, NO MOTTLING, NO LAYER

Paid on site ☐

RZ Engineering, PLLC

RZE# 17061

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

OWNERS NAME: Tom Douglas ADDRESS OF PROPERTY: 5280 Hoag Lane TOWN: Manlius

TEST PERFORMED BY: Steven Rahn REPRESENTING: RZ ENGINEERING Weather: Cloudy 60± °F DATE: 10/11/17

Test hole	Soil Description and Depth	Results of Presoaking	Time	Percolation Test Results 1	2	3	4	5	6	7	8	FINAL RESULT
PT #3	24" Sandy Silt Loam		Finish	11:08	11:12	11:16						
			Start	11:06	11:09	11:13						
			Time	2 MIN	3 MIN	3 MIN						3 MIN
PT #4	24" Sandy Silt Loam		Finish	12:01	12:22	12:44						
			Start	11:45	12:02	12:23						
			Time	16 MIN	20 MIN	21 MIN						21 MIN
			Finish									
			Start									
			Time									
			Finish									
			Start									
			Time									

Deep Hole Testing Results:

Contractor for Deep Hole : _____ Owner Hired ☐

Paid on site ☐

Ground Water Witnessed: ☐ No Water ☐ Yes at ____" Deep

Mottling Witnessed: ☐ No Mottling ☐ Yes at ____" Deep

Restrictive Layer: ☐ No layer ☐ Yes _____ Layer at ____" Deep

SCALE - 1:100

Hoag Ln

ROAD BOUNDARY PER MONUMENTS AND RECORDS

HIRAZ LANE

APPROXIMATE END OF HOAG LANE R.O.W. PER TAX MAP

GRAVEL DRIVE

10" WATER

4" GAS

CENTERLINE HOAG LANE

EDGE OF PAVEMENT

EDGE OF PAVEMENT

N 86°02'35" E
1319.65'

ROBERT B. WINTER &
JENNIFER C. WINTER
R/O 5236/697
TAX #104-1-36

SUSAN BURNS
R/O 4105/245
TAX #104-1-37

DAVID BRITTIAN
R/O 4745/364
TAX #104-1-38

HAINES
4/248
-1-34

N 85°30'20" W
360.78'

N 86°56'40" E
391.92'

S 85°34'20" E
149.01'

DH#1

PT#1

PT#2

DH#2

DH#5

HOUSE
#5280

B1

B2

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

19

20

21

22

23

24

DH#4

DH#3

PT#4

PT#3

DITCH

ANNE M. OLIVAR
R/O 5157/206
#104-1-33.1

SHANAHAN
R/O 4057/375
TAX #104-1-32

6" WATER

1809.96'
S 86°57'56" W

PAUL MASSA & ALICE MASSA
R/O 4185/239
LOT 42

KASCHA LIVING TRUST
R/O 5316/141
LOT 41
TAX #104-1-13

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Rd., Syracuse, NY 13209
Mail: P.O. Box 117 Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

January 12, 2018

Thomas Allen Custom Homes Inc.
c/o Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057
<via email>

Attn: Tom Douglas

Re.: Geotechnical Investigation Services
Infiltration Testing
Hoag Lane Subdivision
Fayetteville, NY

Dear Tom,

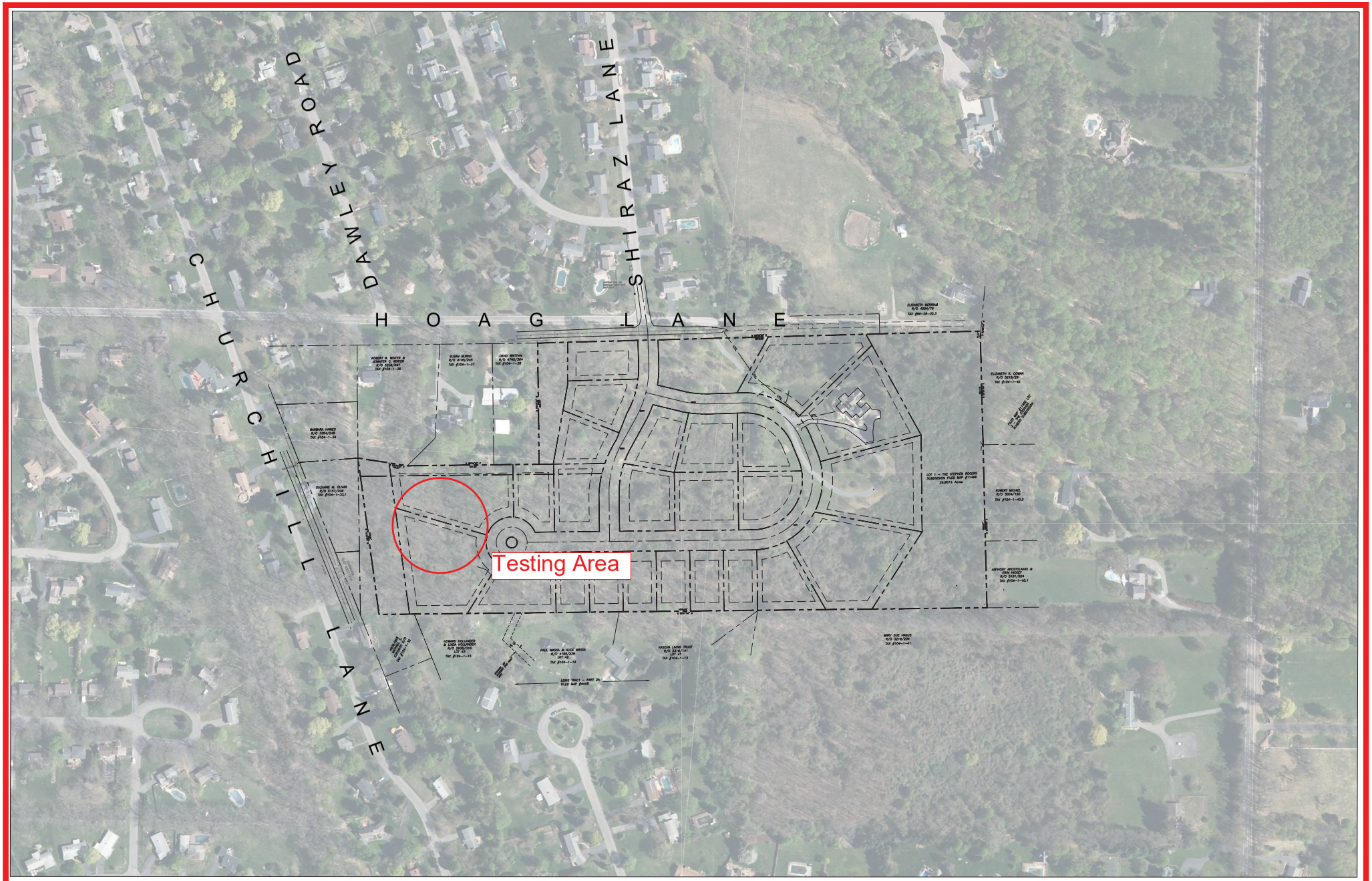
Kenney Geotechnical Engineering Services, PLLC is pleased to present the results of the infiltration testing performed at the referenced site (See Figure 1). Testing locations are illustrated on Figure 1. Testing locations were selected by Keplinger Freeman Associates and field-located by Kenney Geotechnical Services personnel. Infiltration testing was performed in accordance with NYSDEC guidelines.

The three infiltration tests were performed (designated HOLE #1, HOLE #2, and HOLE #3). Infiltration testing was performed using a four-inch diameter borehole at depths of 18 feet, 25.3 feet, and 24 feet respectively. The test locations were then pre-soaked for twenty-four hours. Testing was performed the day following presoaking.

Stabilized infiltration readings are summarized in the attached tables. Please contact us if you have any questions.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC

Christopher M. Kenney, P.E.
President



HOAG LANE SUBDIVISION
HOAG LANE, MANLIUS, NEW YORK
NEIGHBORHOOD PLAN

DECEMBER 1, 2017

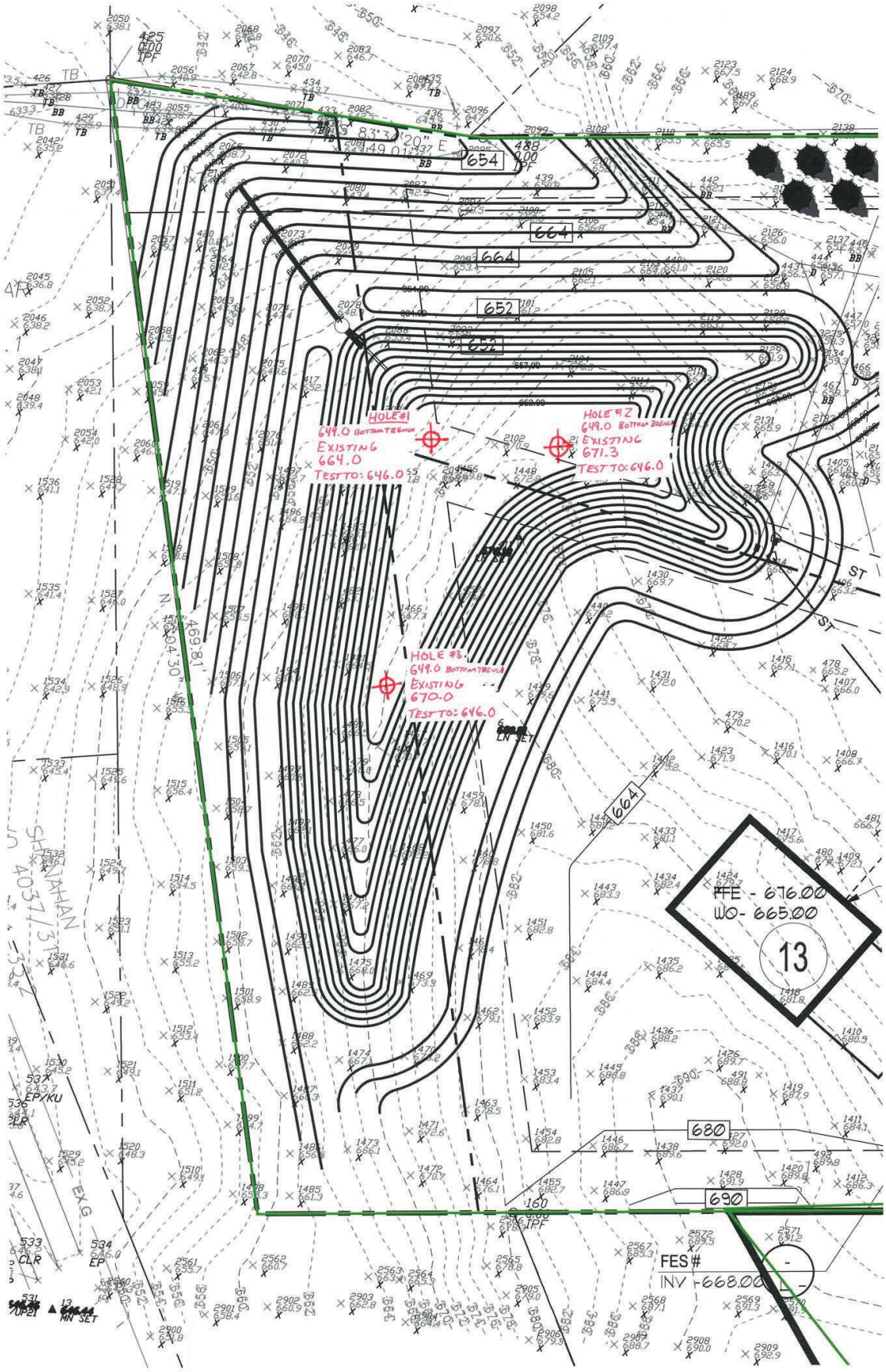
0 100 200 300
SCALE IN FEET

KEPLINGER FREEMAN ASSOCIATES

HOAG LANE SUBDIVISION

RZE #17061

SCALE - 1:40



N

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail :P.O. Box 156 Baldwinsville, N.Y. 13027
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #1**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 18 '					
SOIL CONDITIONS:	TILL: GREY/BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	-	-	-	-		
STABILIZED (INCH/HR)	-					
NOTES:	Water seepage noted above testing elevation.					

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #2**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 25.3'					
SOIL CONDITIONS:	TILL: BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	-	-	-	-		
STABILIZED (INCH/HR)	-					
NOTES:	Water seepage noted above testing elevation.					

INFILTRATION TESTING LOG						
PROJECT:	**HOAG LANE SUBDIVISION, FAYETTEVILE NY**					
PRESOAK:	1/10/2017		WEATHER:	OVERCAST		
TEST:	1/11/2017		WEATHER:	CLEAR		
PERSONNEL:	D.A.		LOCATION:	**HOLE #3**		
TEST TYPE:	4" BOREHOLE AT DEPTH OF 24'					
SOIL CONDITIONS:	TILL: BROWN SANDY CLAY WITH GRAVEL					
RUN #	1	2	3	4	5	6
RATE (INCH/HOUR)	0	0	0	0		
STABILIZED (INCH/HR)	**0**					
NOTES:						

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

June 13, 2019

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Subsurface Investigation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide data for road design and to provide a preliminary screening for karst features. The scope of the additional investigation included eight soil borings (designated as B-1 through B-8), a site reconnaissance, and a review of publically available mapping and geologic information.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigations were performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture. The site was heavily vegetated at the time of this investigation. The investigation was performed using a track-mounted Geoprobe 7822DT drill rig. Hollow stem augering techniques were utilized to advance the test borings to a maximum depth of 10 feet or auger refusal. Standard penetration testing (ASTM D1586) was performed with an automatic hammer to obtain soil samples. Boreholes were back-filled with cuttings and sealed with a two foot lift of bentonite hole plug.

Subsurface Conditions Encountered- Road Borings

Based on our review of the recovered samples, standard penetration testing, and drilling observations, the subsurface conditions encountered by the test borings generally consisted of:

- 0.5 to 2.0 feet of topsoil, overlying

- Soft to medium stiff silty clay with gravel to depths of approximately two to ten feet, overlying
- Hard glacial till.

Underlying the soft to medium silty clay in several borings (B-4 and B-6) was a layer of sandy silt with some gravel and possible weathered rock. "N" values in the sandy silt layer ranged from 9 bpf to greater than 100 bpf.

Glacial till was encountered in half of the borings (B-1, B-2, B-5, B-8) and consisted of sandy silty clay with gravel. "N" values in the till were typically greater than 30 bpf.

In general, it appears that after stripping topsoil the road subgrade will consist of silty clay ranging from stiff to hard in stiffness. The silty clay will be susceptible to strength loss due to saturation and excessive vibration if not properly managed during construction. The subgrade should be sealed with a pass of a smoothdrum roller at the end of each working day, and before rain events, to prevent unnecessary saturation during construction.

The silty clay will generally have a low permeability, so proper drainage of the subgrade will be an important influence on roadway longevity. The subgrade should be sloped to drain, and perimeter under drains may be necessary.

Given the conditions encountered, we would suggest a California Bearing Ratio of 5 is utilized for roadway design. However, the road subgrade should be thoroughly reviewed during construction for the presence of soft areas that may required undercutting and replacement with structural fill.

Karstic Conditions Reconnaissance

The Hoag Lane Subdivision lies within the Appalachian Plateau physiographic province. Major topographic and geologic features in this area were formed during the last glacial advance and retreat, which ended approximately 12,000 years ago. Regional surficial geologic mapping suggests that natural soils in the site vicinity generally consist of glacial till and kame moraine deposits. Bedrock mapping suggests that Manlius formation limestone underlies soil in the area.

The term 'karst' has traditionally been used to refer solely to regions of exposed soluble bedrock having an abundance of surface landforms, such as sinkholes, sinking streams, and springs, that reflect the presence of subsurface voids or caves. The Town of Manlius has apparently identified areas in the vicinity of the project site as Critical Environmental Areas with "Sinkholes, sinking streams, and seasonal streams, which are indicative of karst topography" (Town of Manlius, 2009).

We asked to see the mapping associated with this declaration, but the Town would not provide us with the mapping without a formal Freedom of Information Law (FOIL) request. We have submitted the FOIL request but have not received a response as of the date of this report.

Karstic conditions are often revealed through a review of topography. Steep elevations changes, circular depressions, and sinkholes would be typical indicators.

We performed a walking site reconnaissance of the site, and also utilized USGS topographic mapping and publically available aerial imagery to search for possible topographic indicators of karstic conditions. In general, the site slopes gently downward to the west, with elevations ranging between 670 and 770 feet above sea level (USGS National Map, Accessed 2019). No distinct karst topographic features (i.e. sinkholes, circular depressions, steep elevation changes, etc.) are apparent in the immediate project vicinity.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher M. Kenney

Christopher M. Kenney, P.E.
President

Attachments,
Figure 1: Boring Location Plan
Figure 2: Soil Boring Logs
Figure 3: USGS Topographic Mapping

References:

Weary, D.J., and Doctor, D.H., 2014, Karst in the United States: A digital map compilation and database: U.S. Geological Survey Open-File Report 2014–1156, 23 p., https://dx.doi.org/10.3133/ofr20141156.

USGS, National Geologic Map Database: Geolex – Unit Summary. Geologic Unit: Manlius, Accessed 6/11/2019.

https://ngmdb.usgs.gov/Geolex/UnitRefs/ManliusRefs_2619.html

Town of Manlius, Town Code, 2009. Part II, Chapter 66, Appendix A: Geographic Extent of Critical Environmental Areas. Accessed 6/11/2019.

"Surficial Geologic Map of New York – Finger Lakes Sheet", New York State Museum, 1970, Reprinted 1995.

USGS National Map, Accessed 6/11/2019, https://viewer.nationalmap.gov/advanced-viewer/

HOAG LANE BORING LOCATION PLAN



Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

KEY TO SYMBOLS

CLIENT _____ **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY

LITHOLOGIC SYMBOLS
(Unified Soil Classification System)

- CL-ML: USCS Low Plasticity Silty Clay
- MLS: USCS Sandy Silt
- SM: USCS Silty Sand
- TILL: Glacial Till
- TOPSOIL: Topsoil

SAMPLER SYMBOLS

- Standard Penetration Test

WELL CONSTRUCTION SYMBOLS

ABBREVIATIONS

LL - LIQUID LIMIT (%)
PI - PLASTIC INDEX (%)
W - MOISTURE CONTENT (%)
DD - DRY DENSITY (PCF)
NP - NON PLASTIC
-200 - PERCENT PASSING NO. 200 SIEVE
PP - POCKET PENETROMETER (TSF)

TV - TORVANE
PID - PHOTOIONIZATION DETECTOR
UC - UNCONFINED COMPRESSION
ppm - PARTS PER MILLION

- Water Level at Time Drilling, or as Shown
- Water Level at End of Drilling, or as Shown
- Water Level After 24 Hours, or as Shown

KEY TO SYMBOLS - GINT STD US LAB.GDT - 6/10/19 14:50 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Project: WOODLAND HILLS - HOAG LANE SUBDIVISION
Project Location: MANLIUS, NY
Project Number: 2019-089

Key to Soil Symbols and Terms

TERMS DESCRIBING CONSISTENCY OR CONDITION

COARSE-GRAINED SOILS (major portions retained on No. 200 sieve): includes (1) clean gravel and sands and (2) silty or clayey gravels and sands. Condition is rated according to relative density as determined by laboratory tests or standard penetration resistance tests.

Descriptive Terms	Relative Density	SPT Blow Count
Very loose	0 to 15 %	< 4
Loose	15 to 35 %	4 to 10
Medium dense	35 to 65 %	10 to 30
Dense	65 to 85 %	30 to 50
Very dense	85 to 100 %	> 50

FINE-GRAINED SOILS (major portions passing on No. 200 sieve): includes (1) inorganic and organic silts and clays, (2) gravelly, sandy, or silty clays, and (3) clayey silts. Consistency is rated according to shearing strength, as indicated by penetrometer readings, SPT blow count, or unconfined compression tests.

Descriptive Terms	Unconfined Compressive Strength kPa	SPT Blow Count
Very soft	< 25	< 2
Soft	25 to 50	2 to 4
Medium stiff	50 to 100	4 to 8
Stiff	100 to 200	8 to 15
Very stiff	200 to 400	15 to 30
Hard	> 400	> 30

GENERAL NOTES

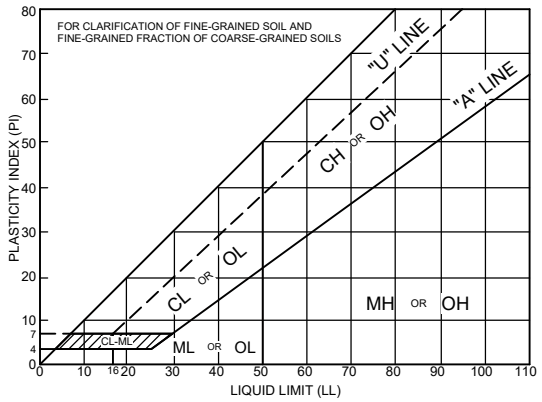
1. Classifications are based on the United Soil Classification System and include consistency, moisture, and color. Field descriptions have been modified to reflect results of laboratory tests where deemed appropriate.

2. Surface elevations are based on topographic maps and estimated locations.

3. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were made. They are not guaranteed to be representative of subsurface conditions at other locations or times.

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria
Coarse-Grained soils (More than half the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravel (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 4; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravel with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-silt mixtures	Atterberg limits above "A" line or P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_U = \frac{D_{60}}{D_{10}}$ greater than 6; $C_C = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly-graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4; Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line or P.I. greater than 7
Fine-Grained soils (More than half the material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 60)		ML	Inorganic silts and very fine sands, rock floor, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and Clays (Liquid limit greater than 60)		MH	Inorganic silts, micaceous or diato-maceous fine sandy or silty soils, organic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly Organic Soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain size curve, Depending on percentage of fines (fraction smaller than No. 200 sieve) coarse-grained soils are classified as follows:
Less than 5 percent..... GW, GP, SW, SP
More than 12 percent..... GM, GC, SM, SC
6 to 12 percent..... Borderline case4s requiring dual symbols**



Plasticity Chart

Particle Size	Sieve sizes	mm
Material		
Silt or clay	< #200	< 0.074
Sand		
Fine	#200 to #40	0.074 to 0.42
Medium	#40 to #10	0.42 to 2.00
Coarse	#10 to #4	2.00 to 4.76
Gravel		
Fine	#4 to 3/4 in.	4.76 to 19.1
Coarse	3/4 in. to 3 in.	19.1 to 76.2
Cobble	3 in. to 12 in.	76.2 to 304.8
Boulders	12 in. to 36 in.	304.8 to 914.4

* Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg Limits: suffix d used when L.L. is 23 or less and the P.I. is 6 or less; the suffix is used when L.L. is greater than 26.

** Borderline classifications used for soils possessing characteristics of two groups are designated by combinations of groups symbols. For example; GW-GC, well-graded gravel-sand mixture with clay binder.

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SILTY CLAY WITH SAND, GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	70	1-1-2-2 (3)	2.5	
2.5		(CL-ML) MEDIUM STIFF TO VERY STIFF BROWN SILTY CLAY WITH SAND AND GRAVEL, MOIST	SPT 2	75	3-7-7-7 (14)	4	
5.0			SPT 3	80	7-11-12-15 (23)	4.5	
7.5			SPT 4	55	11-15-14-15 (29)	3.5	
		(CL-ML) HARD RED-BROWN RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	30	20-22-20-17 (42)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:48 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN-RED SANDY SILTY CLAY WITH ROOT FRAGMENTS AND GRAVEL, MOIST	SPT 1	60	1-2-1-2 (3)	1	
2.5			SPT 2	55	3-3-5-6 (8)	.5	
		(CL-ML) STIFF BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 3	70	4-10-16-16 (26)	4.5	
5.0							
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	75	19-27-25-25 (52)	4.5	
7.5							
			SPT 5	65	23-25-25-24 (50)	4.5	
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:48 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

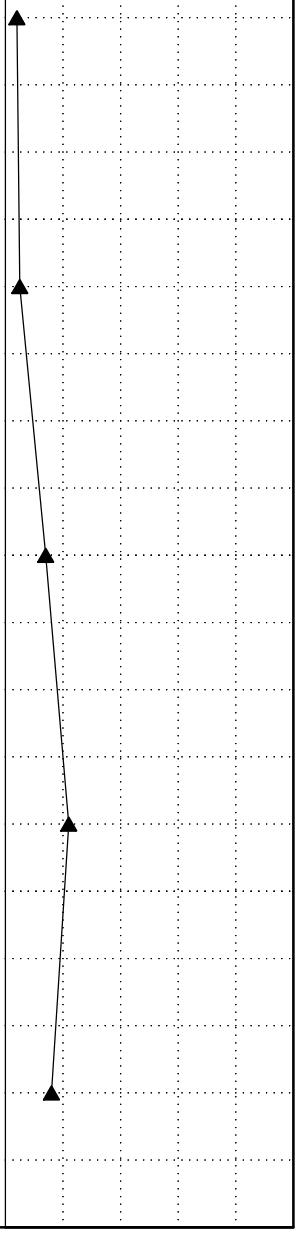
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Syracuse, NY 13209
315-638-2706

BORING NUMBER B-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT TO STIFF BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-2-2 (4)		
2.5			SPT 2	90	2-2-3-4 (5)	1	
5.0			SPT 3	45	3-5-9-12 (14)		
		(CL-ML) VERY STIFF BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	35	9-11-11-12 (22)		
7.5			SPT 5	65	10-8-8-10 (16)	1.75	
10.0		Bottom of borehole at 10.0 feet.					

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



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315-638-2706

BORING NUMBER B-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT RED-BROWN SANDY SILTY CLAY WITH GRAVEL AND ROOT FRAGMENTS, MOIST	SPT 1	65	1-1-2-2 (3)		
2.5		(ML) MEDIUM DENSE TO DENSE RED-BROWN SANDY SILT, MOIST	SPT 2	55	4-4-5-7 (9)	1.25	
5.0			SPT 3	75	9-7-8-9 (15)	2.25	
7.5			SPT 4	45	12-15-12-15 (27)	3	
10.0			SPT 5	10	10-12-14-14 (26)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:48 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

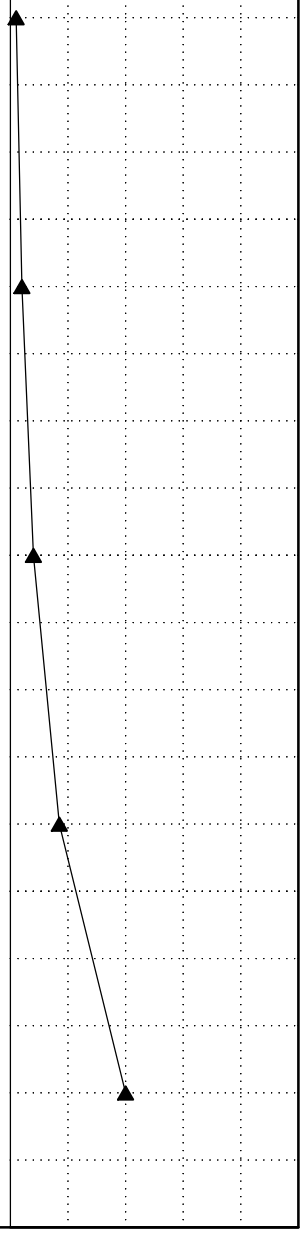
Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL	SPT 1	50	1-1-1-1 (2)		
2.5		(CL-ML) SOFT TO VERY STIFF RED-BROWN SANDY SILTY CLAY, MOIST	SPT 2	70	2-2-2-3 (4)	1	
5.0			SPT 3	60	2-2-6-5 (8)	1.5	
7.5			SPT 4	50	6-8-9-21 (17)	2.5	
		(CL-ML) HARD RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 5	20	16-19-21-20 (40)		
10.0							

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80



Bottom of borehole at 10.0 feet.

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
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315-638-2706

BORING NUMBER B-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	55	1-2-1-2 (3)	0.5	
2.5		(CL-ML) MEDIUM STIFF TAN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	75	2-3-4-8 (7)	1.25	
5.0		(ML) DENSE TO VERY DENSE TAN SANDY SILT WITH GRAVEL AND POSSIBLE WEATHERED ROCK, MOIST	SPT 3	65	11-16-30-38 (46)		
7.5			SPT 4	85	20-18-22-16 (40)		
			SPT 5	100	20-50/5"		

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Bottom of borehole at 9.9 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:49 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Kenney Geotechnical Engineering Services, PLLC
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Syracuse, NY 13209
315-638-2706

BORING NUMBER B-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES
AFTER DRILLING --- DRY

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) SOFT BROWN-RED SANDY SILTY CLAY, MOIST	SPT 1	55	2-2-2-4 (4)	2	
2.5		(CL-ML) STIFF TO HARD BROWN-RED SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	65	4-5-5-6 (10)	3.5	
5.0			SPT 3	70	5-6-8-8 (14)	2.5	
			SPT 4	85	8-8-50/4"	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

>>

Bottom of borehole at 7.3 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:49 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

BORING NUMBER B-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 5/16/19 **COMPLETED** 5/16/19
GROUND ELEVATION _____ **HOLE SIZE** 6"
DRILLING CONTRACTOR KENNEY GEOTECHNICAL SERVICES
GROUND WATER LEVELS:
DRILLING METHOD 3.25" HSA
AT TIME OF DRILLING --- DRY
LOGGED BY NM **CHECKED BY** CC
AT END OF DRILLING --- DRY
NOTES _____
AFTER DRILLING --- DRY

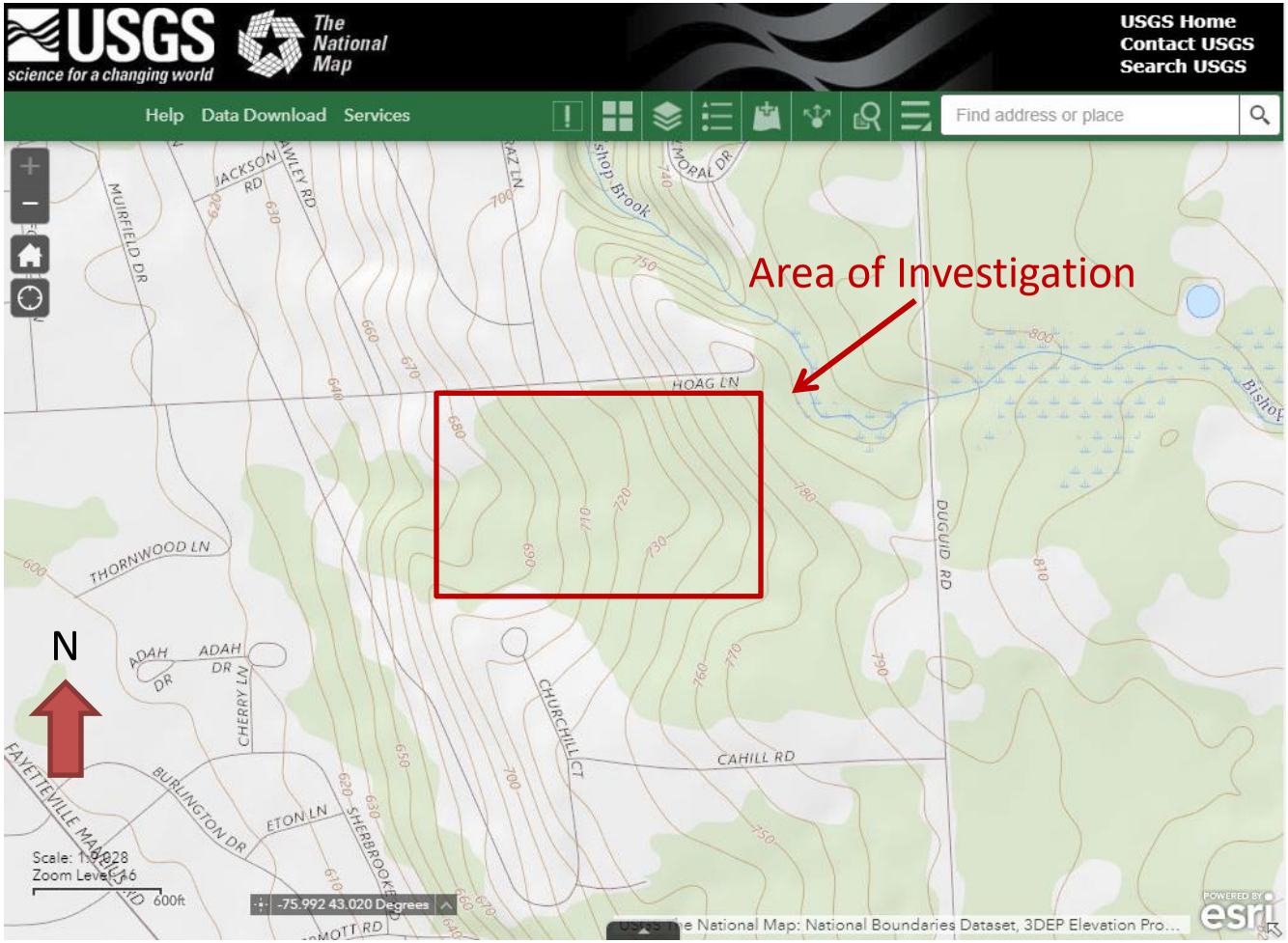
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	VOC (ppm)
0.0		TOPSOIL					
		(CL-ML) MEDIUM STIFF RED-BROWN SANDY SILTY CLAY WITH ROOT FRAGMENTS, MOIST	SPT 1	70	1-2-3-2 (5)		
2.5		(CL-ML) MEDIUM STIFF TO STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 2	85	2-3-3-6 (6)	2	
5.0			SPT 3	80	3-5-5-7 (10)	2.5	
7.5		(CL-ML) VERY STIFF RED-BROWN SANDY SILTY CLAY WITH GRAVEL, MOIST	SPT 4	95	9-14-15-15 (29)	3.5	
10.0			SPT 5	90	13-15-14-15 (29)	4.5	

▲ SPT N VALUE ▲
20 40 60 80
PL MC LL
20 40 60 80
☐ FINES CONTENT (%) ☐
20 40 60 80

Bottom of borehole at 10.0 feet.

GEOTECH BH PLOTS - GINT STD US LAB.GDT - 6/13/19 13:49 - C:\PROGRAM FILES (X86)\GINT\PROJECTS\2019-089_HOAG_LANE.GPJ

Figure 3: USGS Topographic Mapping



Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 18, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Earthwork Material Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed additional subsurface investigation at the Woodland Hills project site. The purpose of the additional subsurface investigation was to provide evaluate the engineering characteristics of on site materials to determine if they are suitable for use during earthwork. The scope of the additional investigation included eight test pits (designated as TP-1 through TP-8) and laboratory testing. This report presents the results of the test pit investigation and laboratory testing and provides quality assurance/quality control recommendations for earthwork.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Subsurface investigation was performed at the locations designated on mapping prepared by Keplinger Freeman Associates Landscape Architecture (see attached). Test pits were excavated by J. K. Tobin Construction.

Subsurface Conditions Encountered- Test Pits

In general the test pits encountered glacial till consisting of stiff to hard reddish brown sandy clay with gravel, cobbles and boulders beneath a thin layer of topsoil. Topsoil ranged from 12 inches to 23 inches in thickness at the test pit locations.

Differing subsurface conditions were encountered at location TP-6. At this location, silty gravel with sand was encountered beneath approximately one foot of topsoil and extended to a depth of three feet, where highly weathered grey shale was encountered. The shale was brittle and could be excavated to a depth of five feet.

Test pit logs are attached to this report.

Laboratory Testing

Bulk samples were obtained from the test pits and tested in our Syracuse laboratory. Testing performed included:

- Moisture- Density Relationship Testing (Modified Effort) (ASTM D-1557)
- Natural Moisture Content (ASTM D 2216)
- Particle Size Analysis with Hydrometer (ASTM D-422)
- Atterberg Limits (ASTM D4318)

Test results are attached. Results are summarized in the following table:

Sample ID	Description	Natural Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index	Max. Dry Density (pcf)	Optimum Moisture Content (%)	Fines (%)
TPS-1	Red-brown Till	9	21	15	6	-	-	57
TPS-2	Red-brown Till	10	22	15	7	-	-	53
TPS-3	Red-brown Till	11	21	14	7	-	-	56
TPS-4	Red-brown Till	10	23	19	4	-	-	54
TPS-5	Red-brown Till	10	-	-	-	136.2	7.2	57
TPS-6 TOP	Silty Gravel	35	-	-	-	104.4	17.5	38
TPS-6 BOTTOM	Weathered Shale	23	-	-	-	110.6	16.2	14
TPS-7	Red-brown Till	10	-	-	-	137.3	7.2	59
TPS-8	Sandy Silt w/ Gravel	20	-	-	0	122.3	11.9	55

Analysis and Recommendations

The on site soils are suitable for re-use during earthwork provided that they are properly managed during construction. The till has a significant silt content and will lose strength if disturbed by saturation or freezing. Completed lifts of earthwork should be sealed with a smoothdrum roller at the end of each work day.

Earthwork must be performed using methods that will result in a stable excavations and fills. Typical temporary earthwork measures such as temporary drainage swales, stabilized haul roads, and the use of protective layers of crushed stone can be employed at this site. It is recommended that earthwork is observed by geotechnical personnel to ensure that all organic material is removed from the structural and pavement areas. Additional recommendations are as follows:

- Strip existing topsoil, roots and organics from all areas that will receive new construction to establish subgrade.
- Proof-roll exposed subgrade with a fully loaded dump truck, or accepted alternative equipment, under the observation of geotechnical personnel. Areas that rut, weave, or deflect should be over-excavated and replaced with compacted structural fill (see below for structural fill characteristic requirements).
- Utilize engineered fill to raise site grades to the desired elevation. On site soil can be used as engineered fill provided that particles larger than 2 inches are removed and the material is placed, compacted, and maintained as described herein.
- Field moisture contents for engineered fill should be maintained within 2 percentage points of the optimum moisture content established by laboratory testing to provide adequate compaction. All fill should be placed in level lifts having a loose thickness no greater than 12 inches and should be compacted to at least the following minimum percentages of the Modified Proctor (ASTM D-1557) maximum dry density:

    - Below footings: 95%
    - Beneath slab-on-grade or pavements: 95%
    - Utility trench backfill: 95%
    - Beneath landscape areas: 90%
    - Beneath sidewalks and exterior slabs: 95%
    - Structural berms: 95%

    In-place density testing should be performed at a frequency of one test per 500 square feet per lift in open areas and one test per 25 feet per lift in trenches.
- If the structure is to be constructed during the winter months, or if the building interiors will be subjected to freezing temperatures after footer construction, adequate frost cover and protection must be provided. Earthwork cannot be performed with frozen material.
- Permanent slopes should be graded no steeper than 3 horizontal: 1 vertical unless reinforced with geosynthetic materials.

In utility trenches, or other confined areas, small compaction equipment may be necessary such as a vibratory plate, jumping jack or walk-behind vibratory roller. In-place density testing should be performed at a frequency of one test per 25 feet per lift in trenches. Utility trench fill should be placed in level lifts no greater than 8 inches in thickness and should be compacted to at least 95%the Modified Proctor (ASTM D-1557) maximum dry density. Adequate frost cover and protection must be provided during winter weather construction. Earthwork cannot be performed with frozen material.

Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
Kenney Geotechnical Engineering Services PLLC

Christopher Kenney

Christopher M. Kenney, P.E.
President

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-1

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 676 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					674.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED AT 5-10 FEET
5.0					
7.5	GB 1	MC = 9% LL = 21 PL = 15 Fines = 57%			
10.0					10.0 666.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-2

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 674 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.5					672.5
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
2.5					NO GROUNDWATER SEEPAGE WAS OBSERVED
					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 22 PL = 15 Fines = 53%			
10.0					10.0 664.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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315-638-2706

TEST PIT NUMBER TPS-3

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 680 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					679.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 11% LL = 21 PL = 14 Fines = 56%			
10.0					10.0 670.0



Bottom of test pit at 10.0 feet.

GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

TEST PIT NUMBER TPS-4

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 681 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					680.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 5-10 FEET
5.0					
7.5	GB 1	MC = 10% LL = 23 PL = 19 Fines = 54%			
10.0					671.0



Bottom of test pit at 10.0 feet.

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TEST PIT NUMBER TPS-5

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 716 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					715.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 57%			709.0
					Bottom of test pit at 7.0 feet.



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-6

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 704 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0						
			ML		(ML) TOPSOIL	
					1.0	703.0
			GM		(GM) BROWN SILTY GRAVEL WITH SAND, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED. BULK SAMPLE RETRIEVED	
		MC = 35% Fines = 38%				
2.5						
					3.0	701.0
					GREY/OLIVE HIGHLY WEATHERED SHALE, MOIST NO GROUNDWATER SEEPAGE WAS OBSERVED BULK SAMPLE RETRIEVED	
		MC = 23% Fines = 14%				
5.0					5.0	699.0

Bottom of test pit at 5.0 feet.



GENERAL BH / TP / WELL - GINT STD US LAB.GDT - 5/18/20 14:52 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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TEST PIT NUMBER TPS-7

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 722 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0.0			ML		(ML) TOPSOIL
1.0					721.0
			CL-ML		(CL-ML) GLACIAL TILL: RED-BROWN SANDY SILTY CLAY WITH GRAVEL, COBBLES, AND BOULDERS, MOIST
					NO GROUNDWATER SEEPAGE WAS OBSERVED
2.5					BULK SAMPLE RETRIEVED FROM 6-7 FEET (1 FOOT BELOW PROPOSED FINISHED GRADE)
5.0					
7.0		MC = 10% Fines = 59%			715.0
					Bottom of test pit at 7.0 feet.



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TEST PIT NUMBER TPS-8

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY
DATE STARTED 4/30/20 **COMPLETED** 4/30/20
GROUND ELEVATION 683 ft **TEST PIT SIZE** 5'-8'
EXCAVATION CONTRACTOR J.K. TOBIN
GROUND WATER LEVELS:
EXCAVATION METHOD CAT 220
AT TIME OF EXCAVATION ---
LOGGED BY CMK/NM **CHECKED BY**
AT END OF EXCAVATION ---
NOTES
AFTER EXCAVATION ---

DEPTH (ft)	SAMPLE TYPE NUMBER	TESTS	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	
0.0			ML		(ML) TOPSOIL	
					1.0	682.0
			ML		(ML) BROWN SANDY SILT WITH CLAY AND GRAVEL, MOIST	
					NO GROUNDWATER SEEPAGE WAS OBSERVED	
2.5					BULK SAMPLE RETRIEVED	
		MC = 20% Fines = 55%			3.0	680.0
					Bottom of test pit at 3.0 feet.	



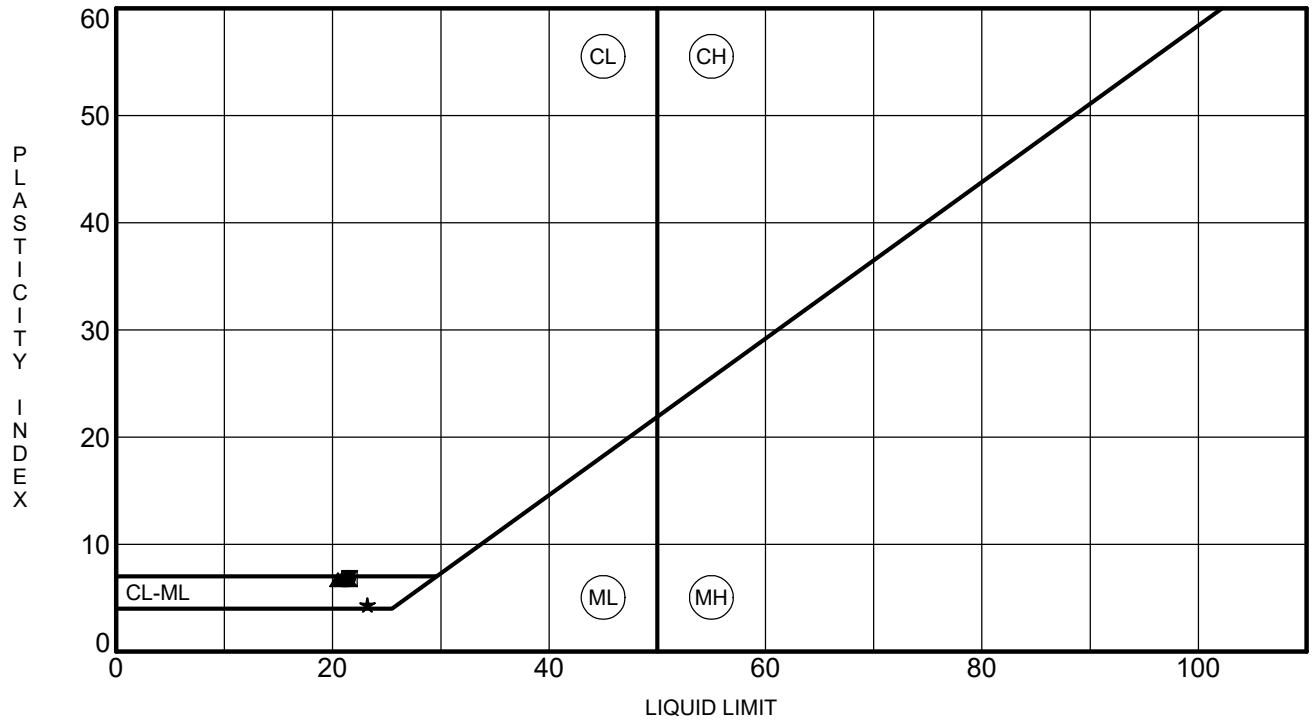
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ATTERBERG LIMITS' RESULTS

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



	Specimen Identification		LL	PL	PI	Fines	Classification
●	**TPS-1**	**7.5**	**21**	**15**	**6**	**57**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
⊠	**TPS-2**	**7.5**	**22**	**15**	**7**	**53**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
▲	**TPS-3**	**7.5**	**21**	**14**	**7**	**56**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**
★	**TPS-4**	**7.5**	**23**	**19**	**4**	**54**	**SANDY SILTY CLAY with GRAVEL(CL-ML)**

ATTERBERG LIMITS - GINT STD US LAB.GDT - 5/11/20 13:11 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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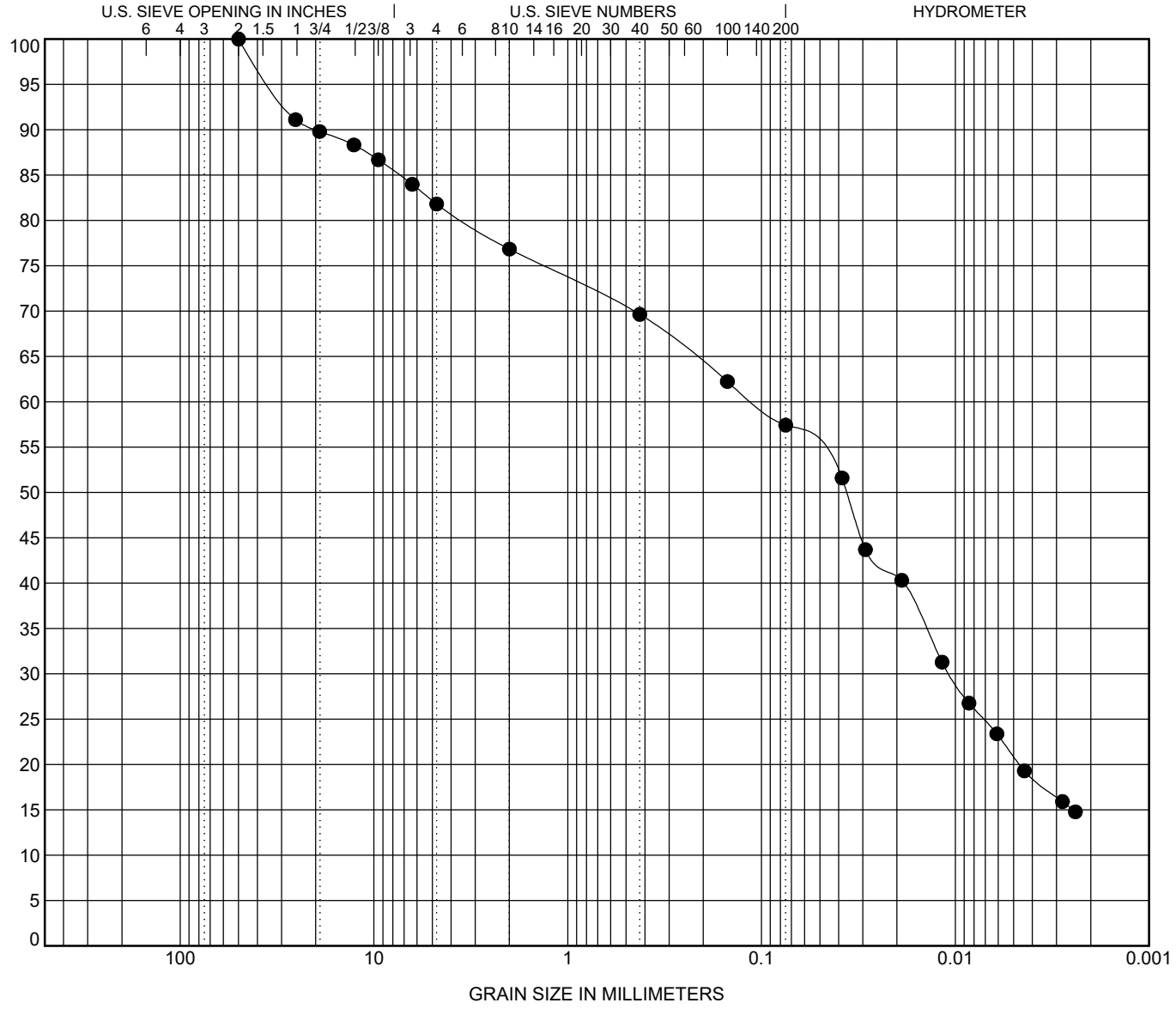
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-1	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**15**	**6**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-1	7.5	**50**	**0.109**	**0.011**		**18.2**	**24.4**	**36.5**	**20.9**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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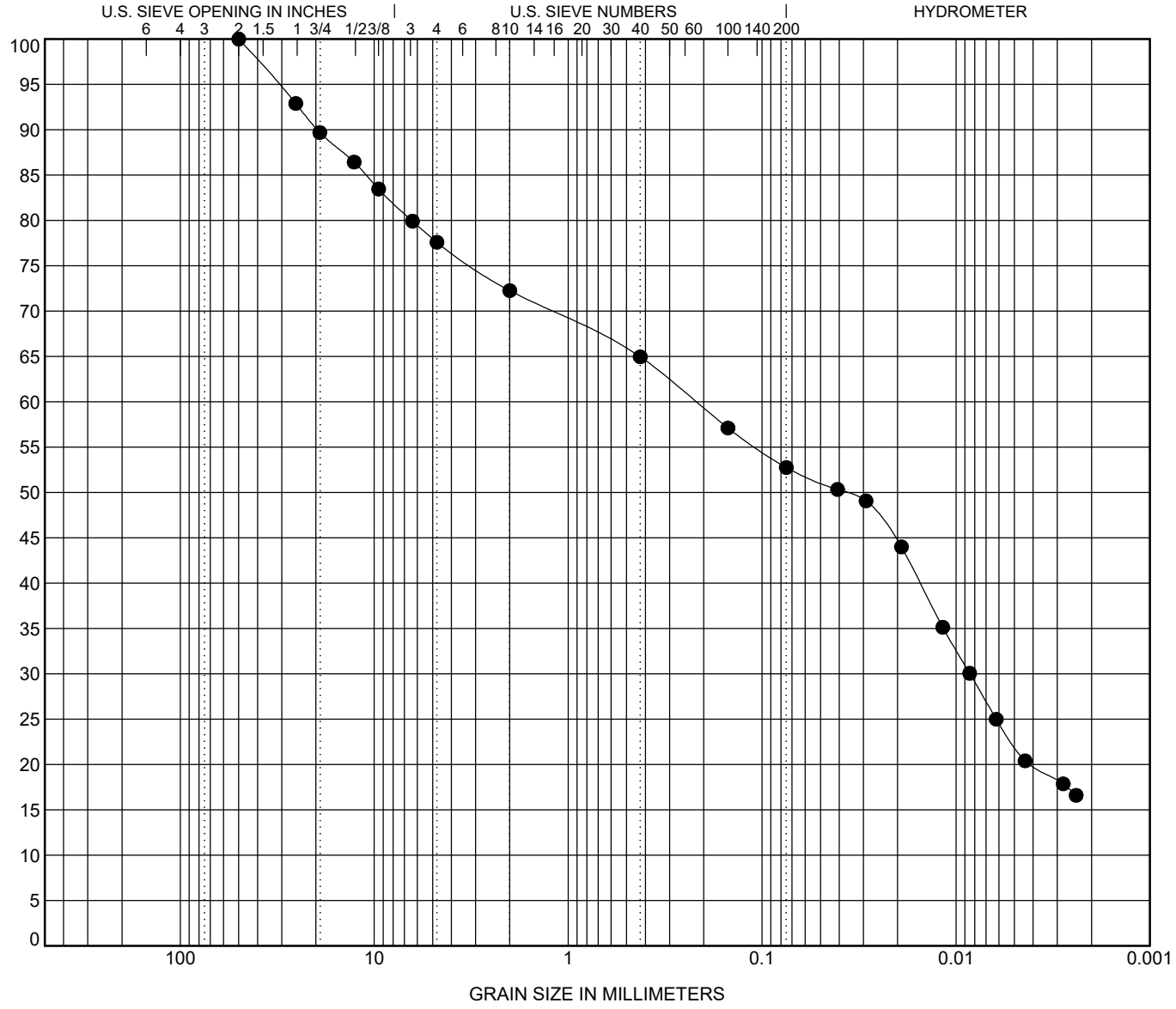
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-2	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**22**	**15**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-2	7.5	**50**	**0.22**	**0.008**		**22.4**	**24.8**	**30.6**	**22.1**
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/11/20 13:15 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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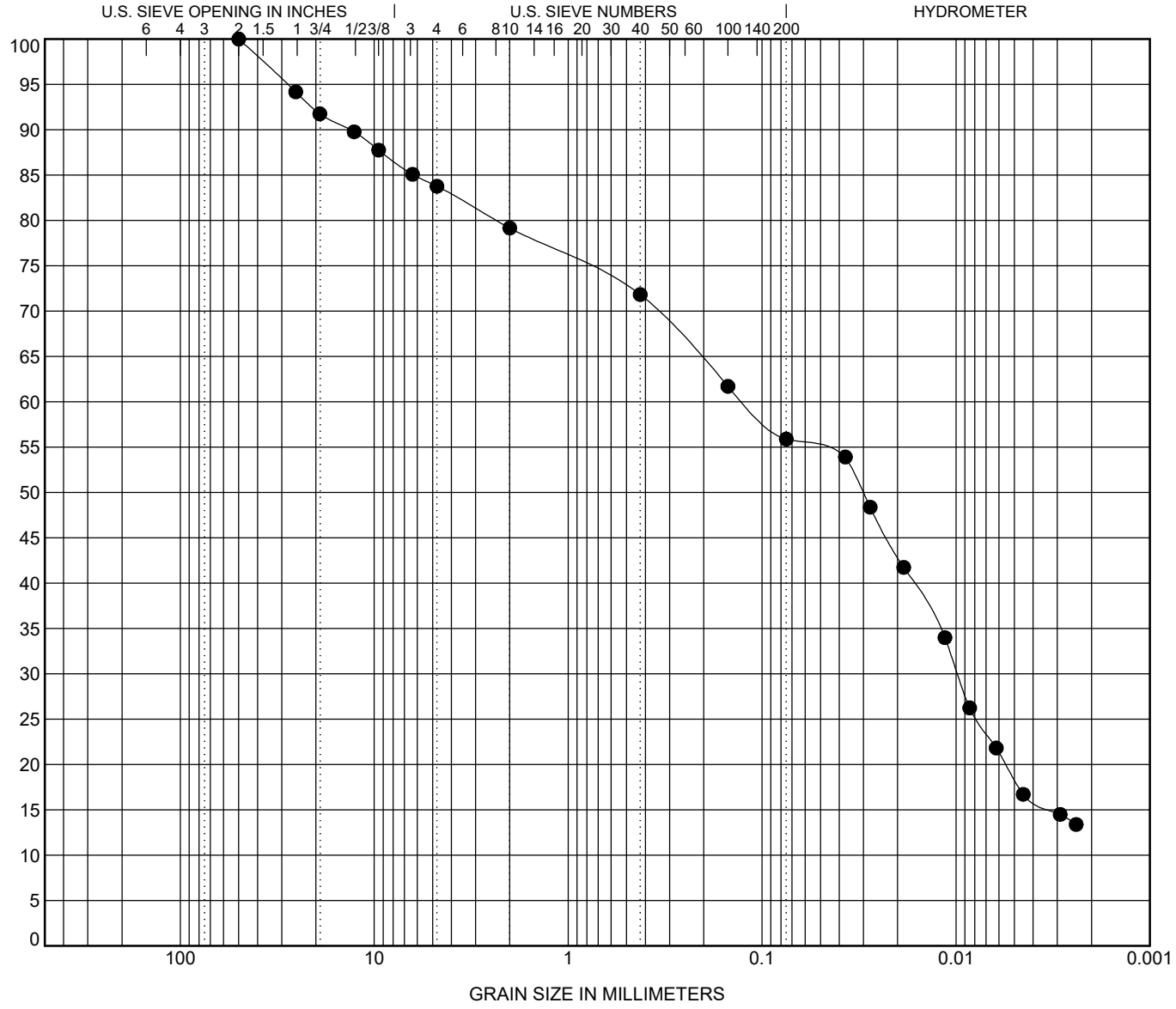
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-3	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**21**	**14**	**7**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-3	7.5	**50**	**0.123**	**0.01**		**16.2**	**27.9**	**37.5**	**18.4**
⊠									
▲									
★									
⊙									

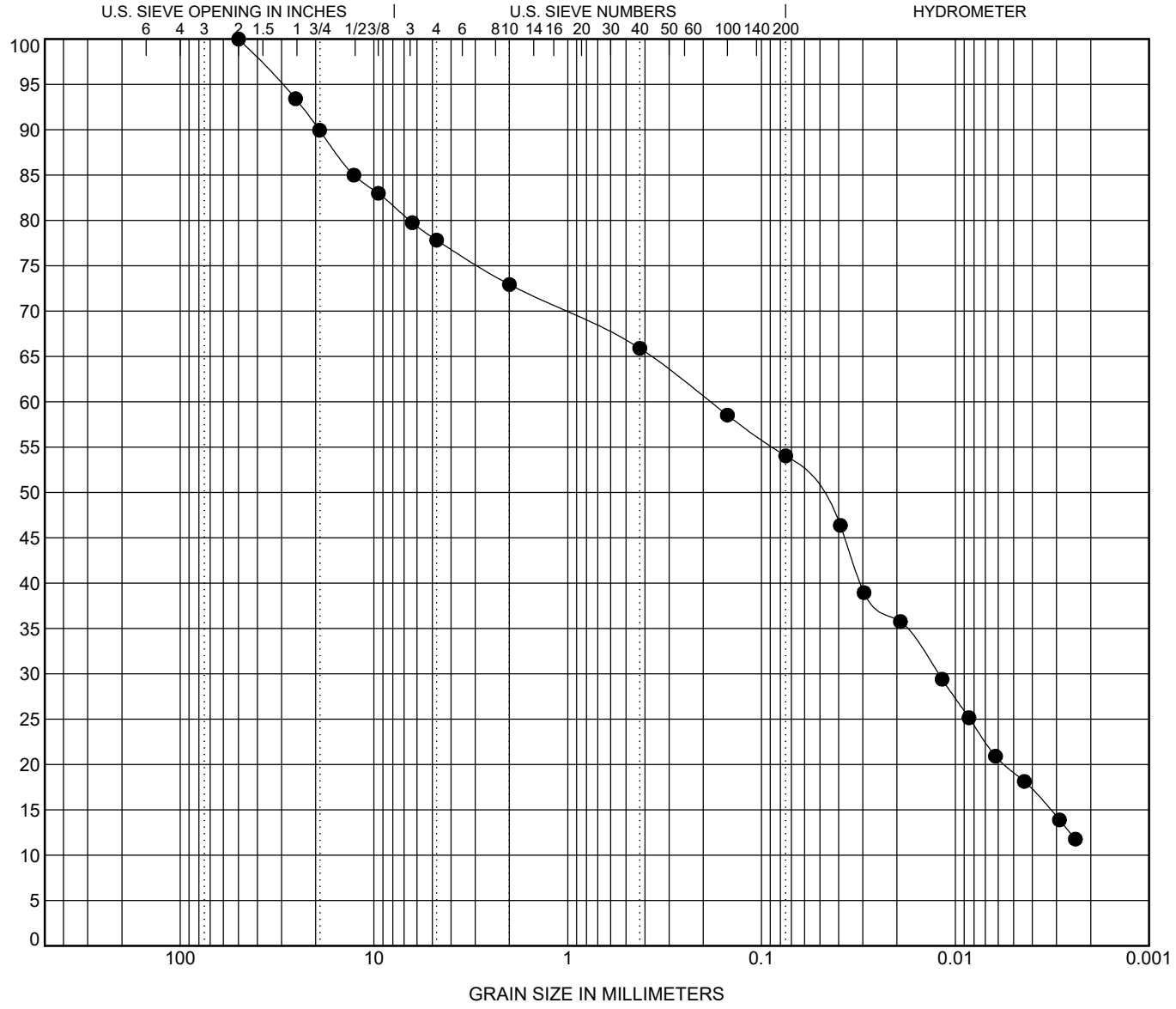
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-4	7.5	**SANDY SILTY CLAY with GRAVEL(CL-ML)**	**23**	**19**	**4**		
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-4	7.5	**50**	**0.185**	**0.012**		**22.2**	**23.8**	**34.9**	**19.2**
⊠									
▲									
★									
⊙									

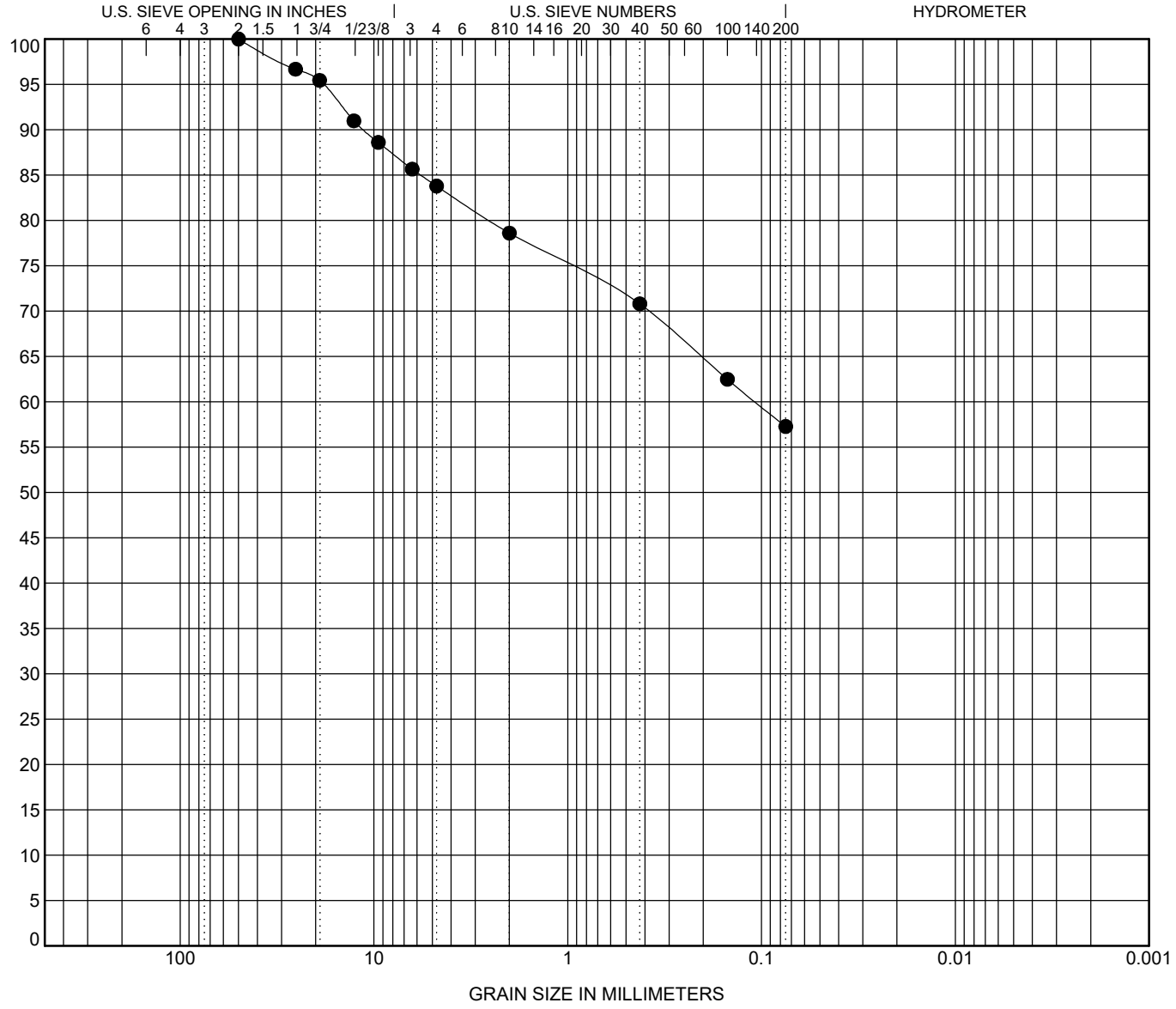
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-5	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-5**	**7.0**	**50**	**0.108**			**16.2**	**26.5**	**57.3**	
⊠									
▲									
★									
⊙									

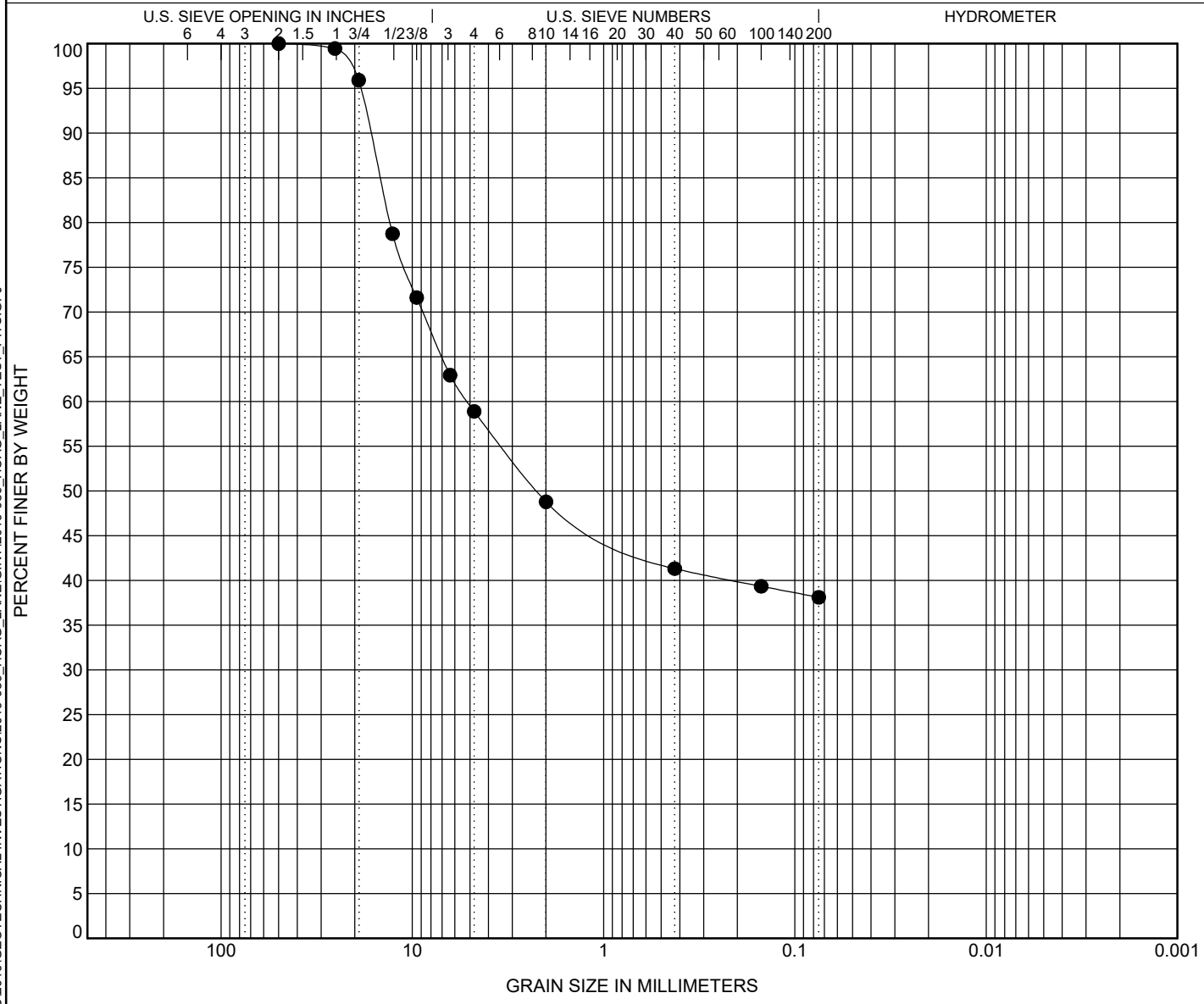
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	2.0	**BROWN SILTY GRAVEL WITH SAND**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● TPS-6	2.0	**50**	**5.144**			**41.1**	**20.8**	**38.1**	
⊠									
▲									
★									
⊙									

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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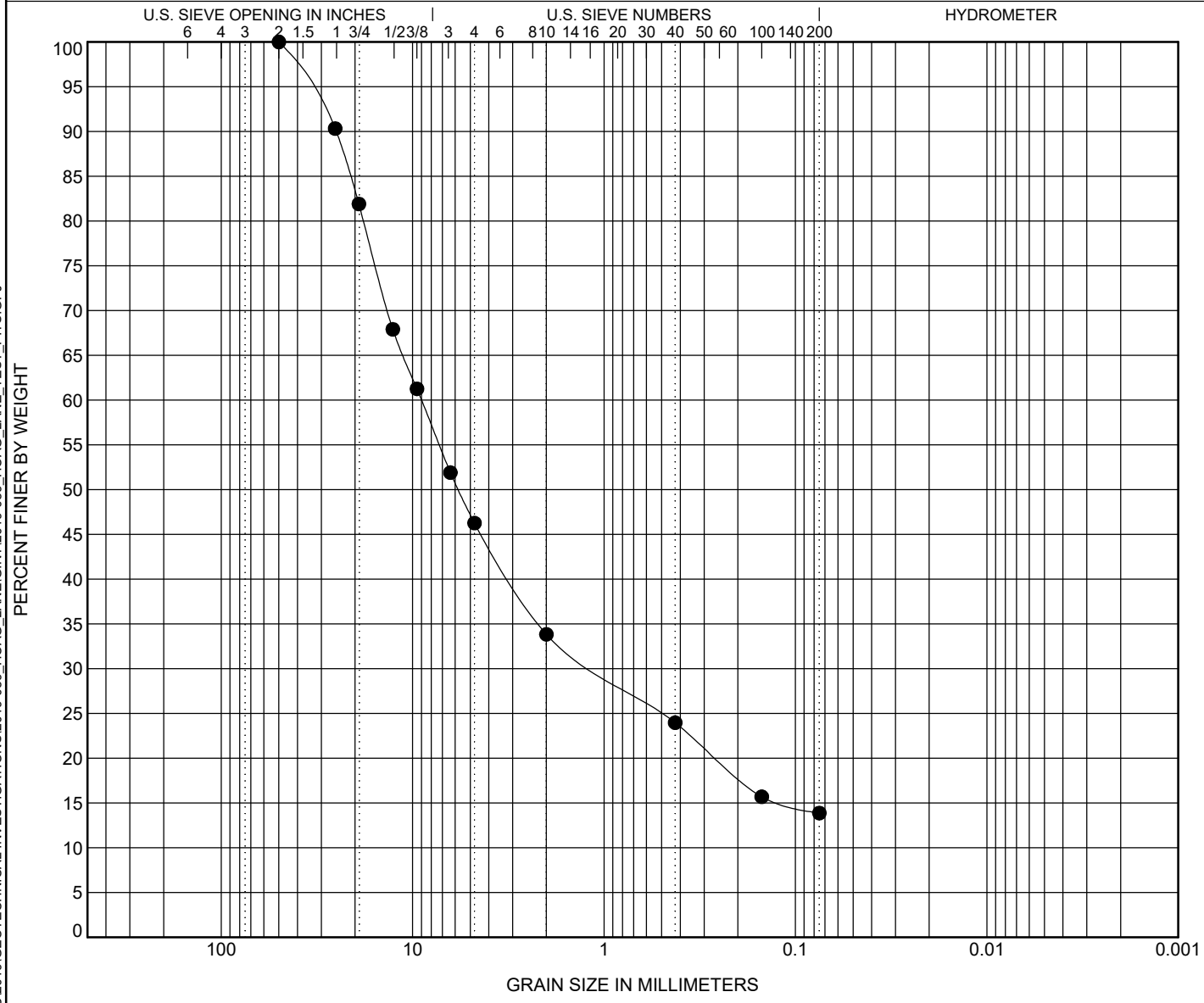
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	LL	PL	PI	Cc	Cu
● TPS-6	4.0	**GREY/OLIVE HIGHLY WEATHERED SHALE**					
⊠							
▲							
★							
⊙							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **TPS-6**	**4.0**	**50**	**9.001**	**1.096**		**53.7**	**32.4**	**13.9**	
⊠									
▲									
★									
⊙									

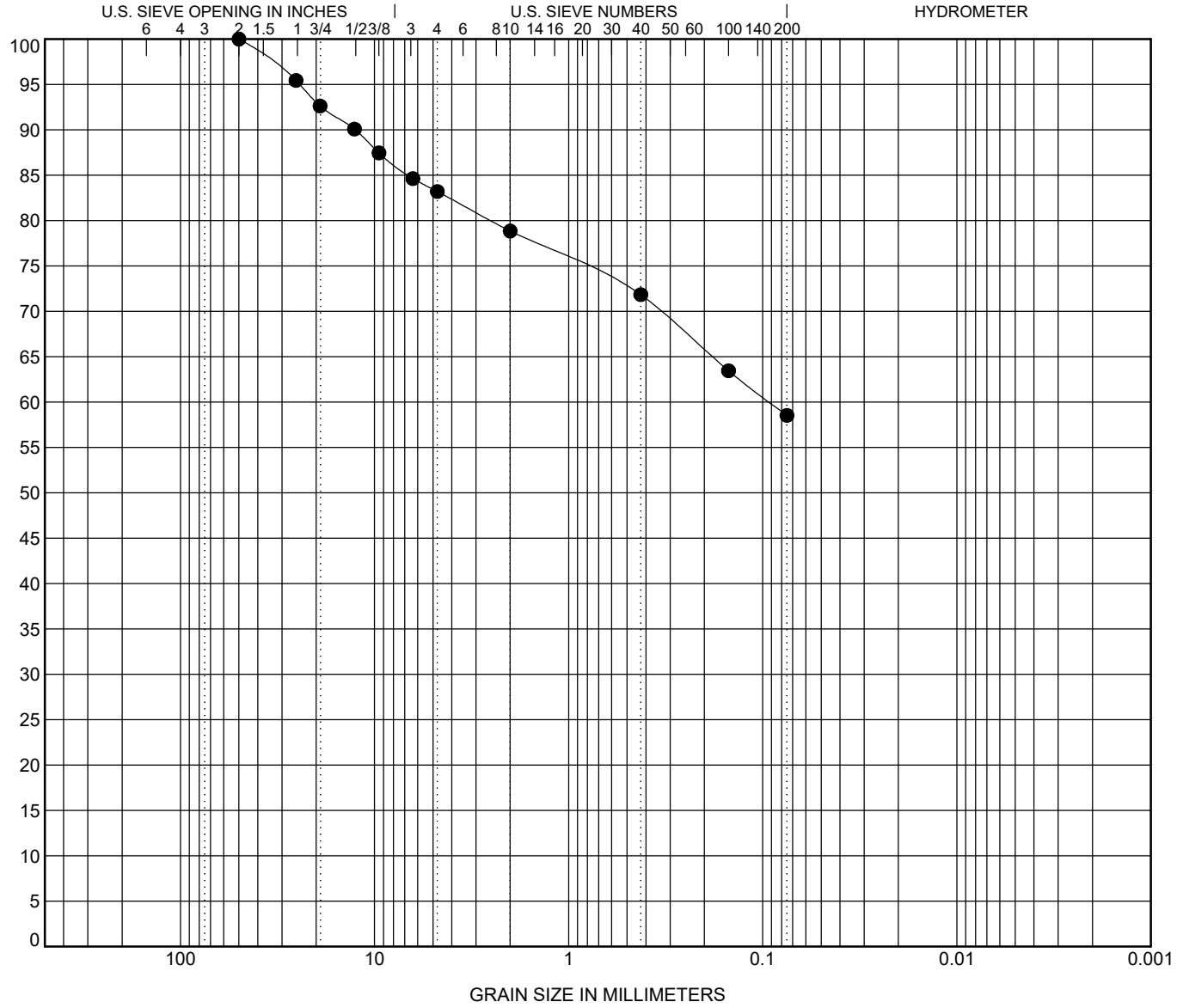
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GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES **PROJECT NAME** WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089 **PROJECT LOCATION** MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-7	7.0	**RED-BROWN SANDY SILTY CLAY WITH GRAVEL**					
⊠								
▲								
★								
⊙								

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-7	7.0	**50**	**0.092**			**16.8**	**24.7**	**58.5**	
⊠										
▲										
★										
⊙										

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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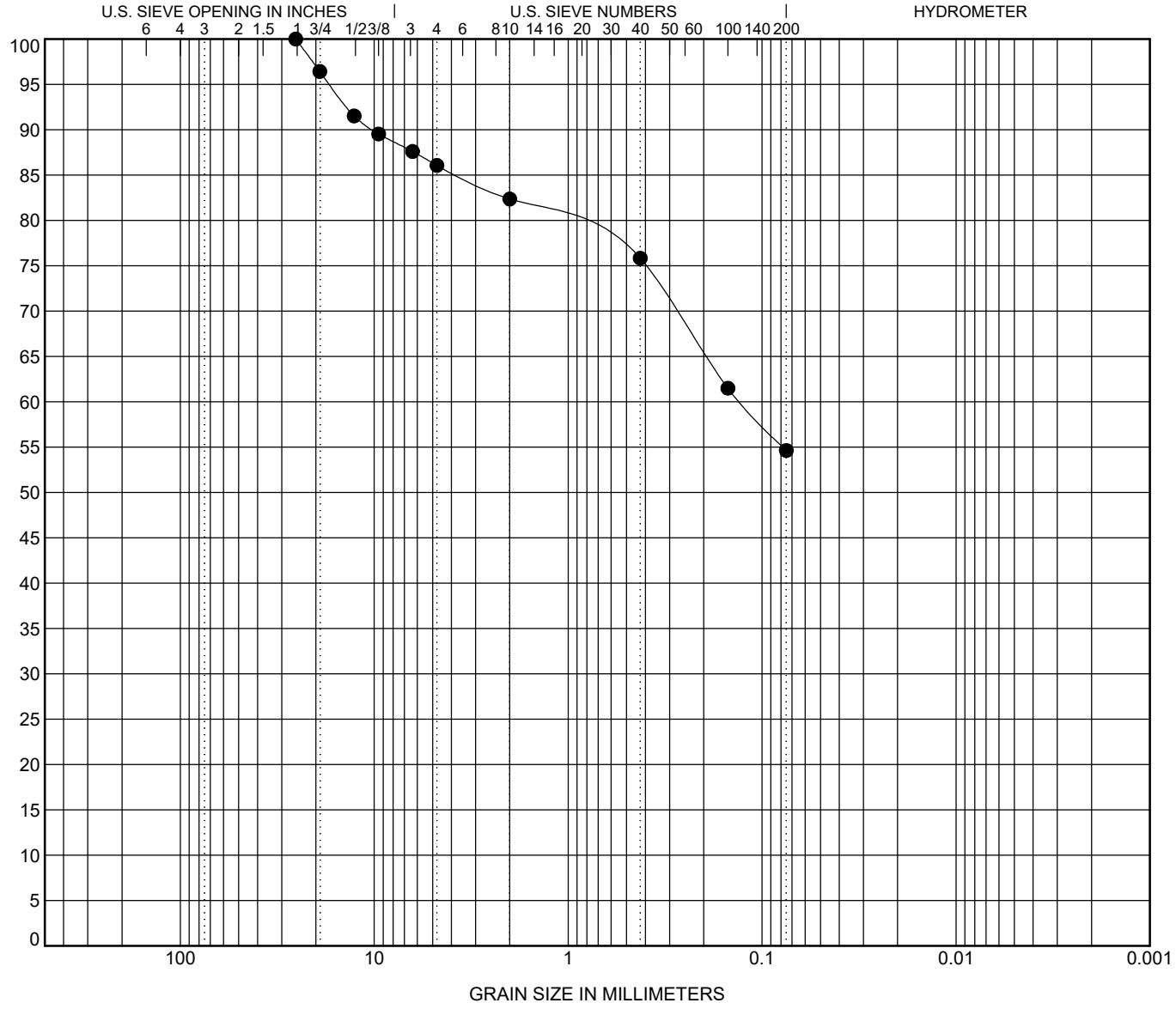
GRAIN SIZE DISTRIBUTION

CLIENT ALLEN HOMES

PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION

PROJECT NUMBER 2019-089

PROJECT LOCATION MANLIUS, NY



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	LL	PL	PI	Cc	Cu
●	TPS-8	3.0	**BROWN SANDY SILT WITH CLAY AND GRAVEL**					
⊠								
▲								
★								
⊙								

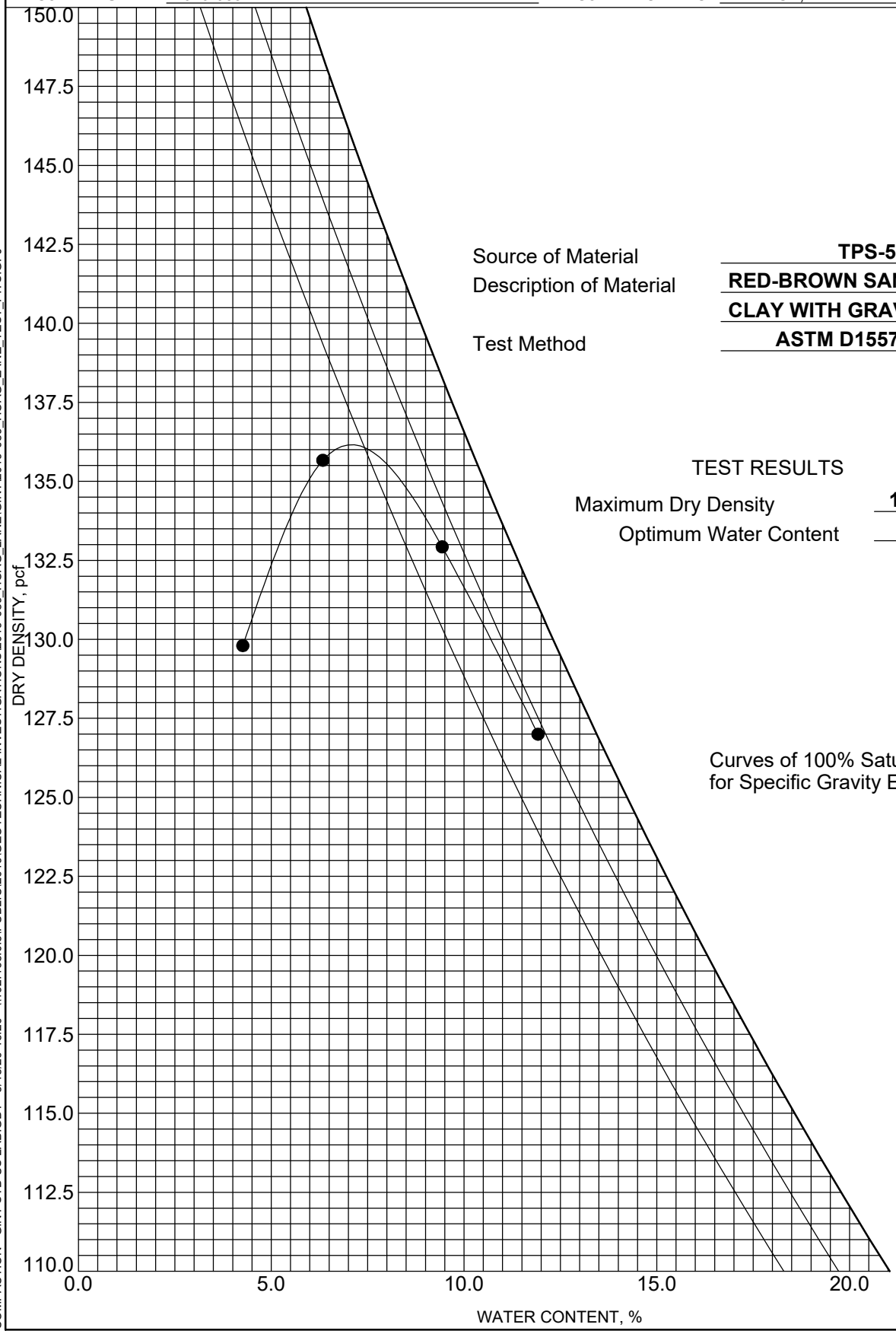
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TPS-8	3.0	**25.4**	**0.129**			**13.9**	**31.4**	**54.6**	
⊠										
▲										
★										
⊙										

GRAIN SIZE - GINT STD US LAB.GDT - 5/18/20 15:25 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-5 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **136.2** **PCF**
Optimum Water Content: **7.2** **%**

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

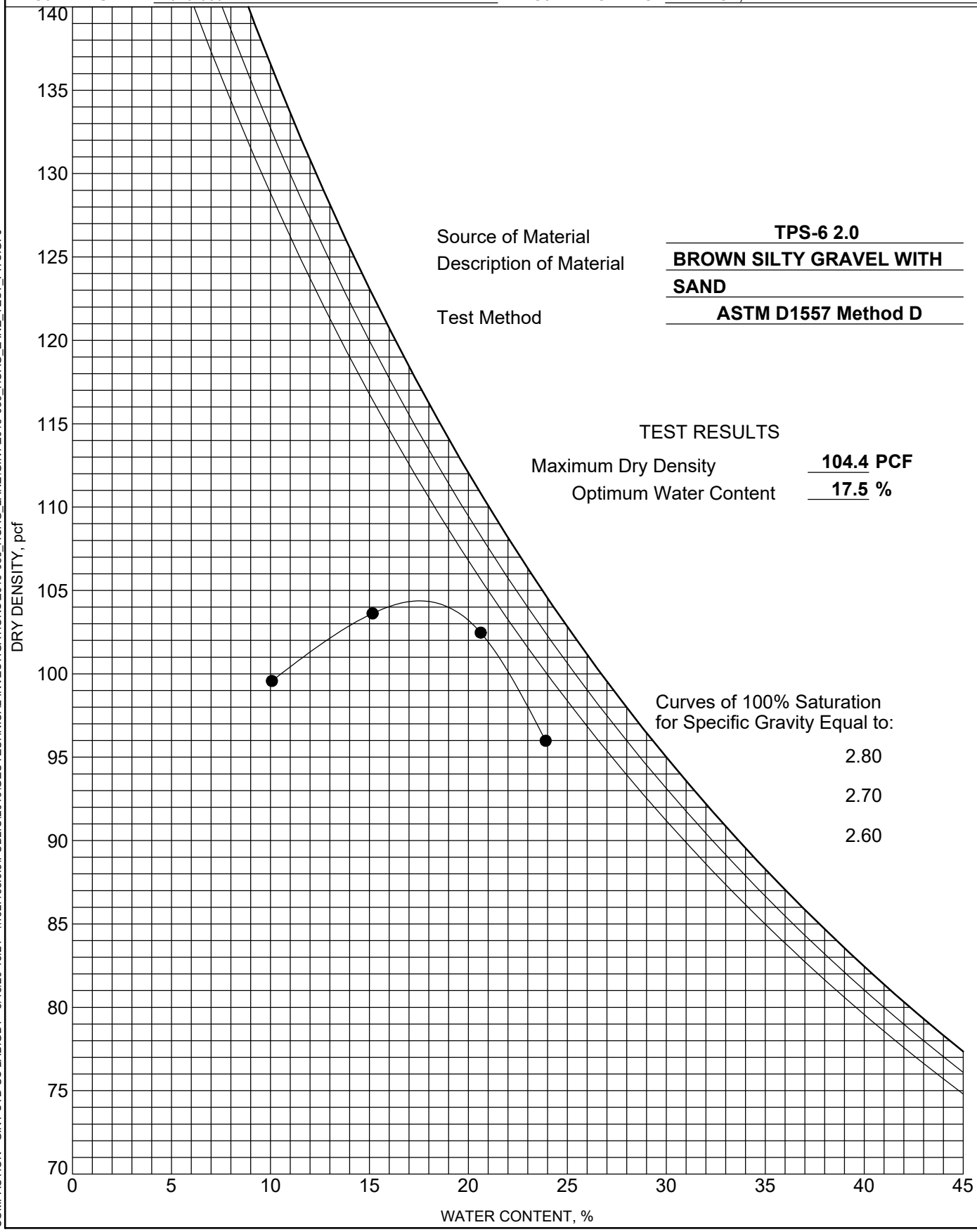
2.60

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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 2.0**
Description of Material: **BROWN SILTY GRAVEL WITH SAND**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **104.4** PCF
Optimum Water Content: **17.5** %

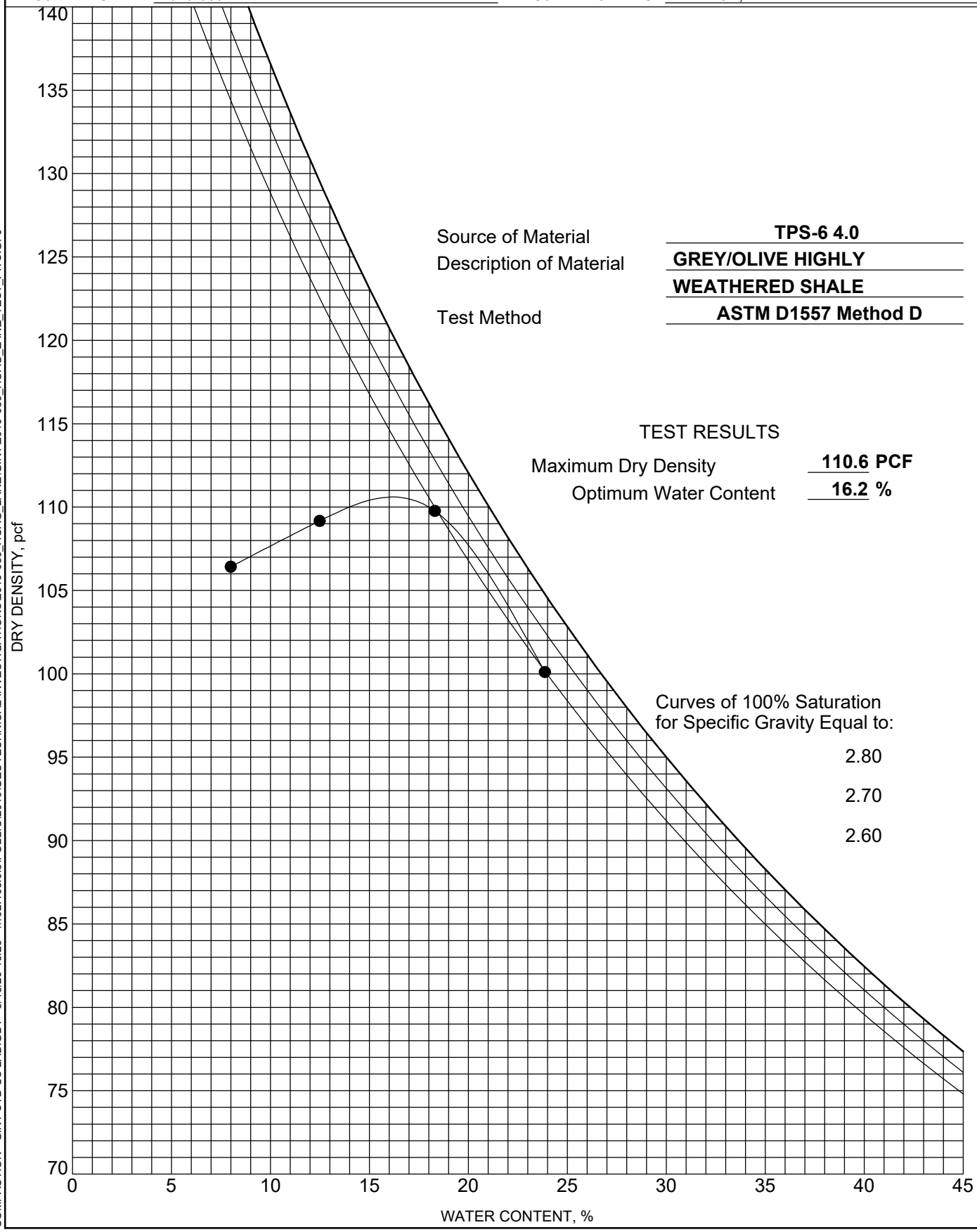
Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:21 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

Kenney Geotechnical Engineering Services, PLLC
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315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-6 4.0**
Description of Material: **GREY/OLIVE HIGHLY WEATHERED SHALE**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **110.6** PCF
Optimum Water Content: **16.2** %

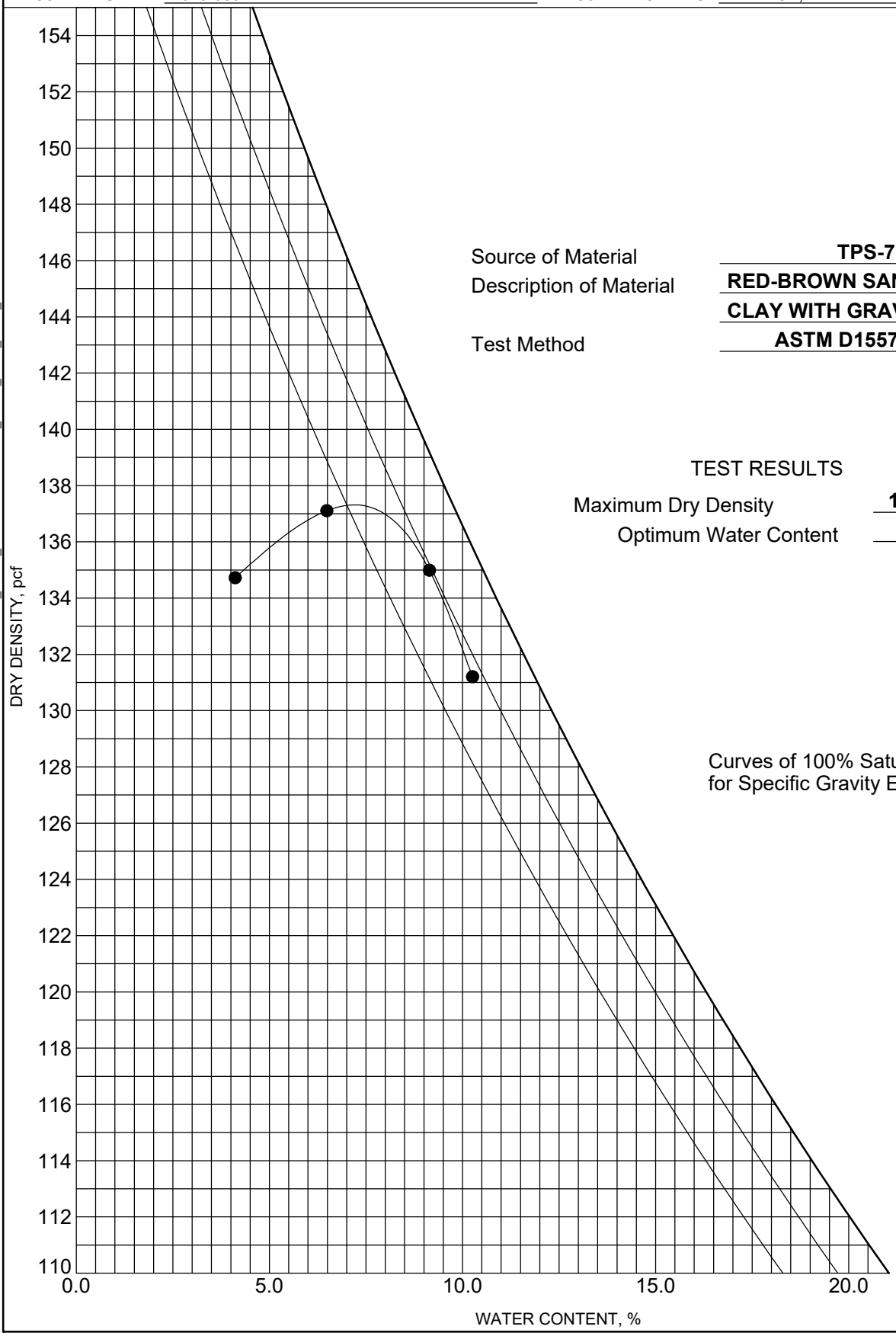
Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:23 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

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315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-7 7.0**
Description of Material: **RED-BROWN SANDY SILTY CLAY WITH GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **137.3** PCF
Optimum Water Content: **7.2** %

Curves of 100% Saturation for Specific Gravity Equal to:

2.80

2.70

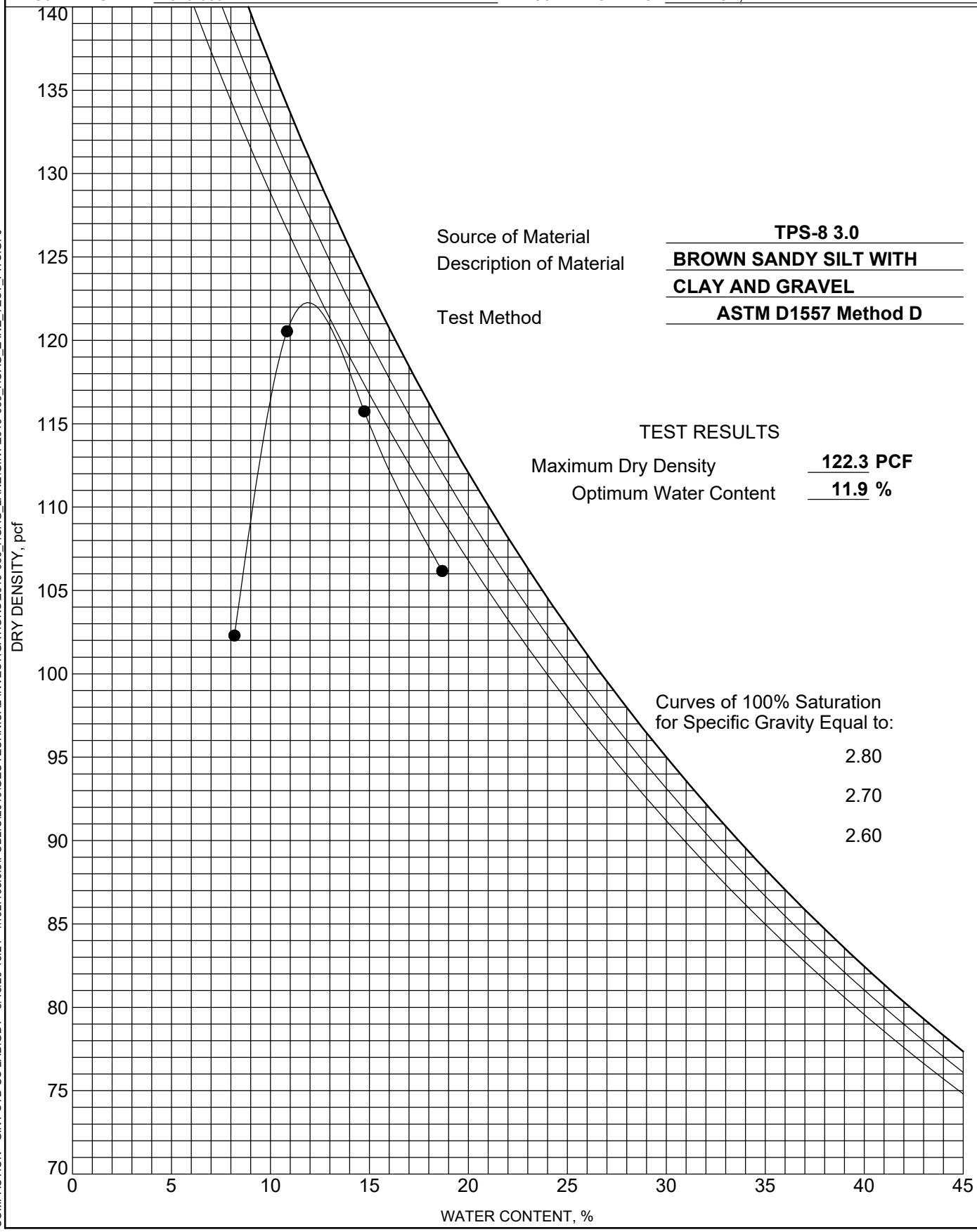
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Kenney Geotechnical Engineering Services, PLLC
6901 Herman Road
Syracuse, NY 13209
315-638-2706

MOISTURE-DENSITY RELATIONSHIP

CLIENT ALLEN HOMES
PROJECT NAME WOODLAND HILLS - HOAG LANE SUBDIVISION
PROJECT NUMBER 2019-089
PROJECT LOCATION MANLIUS, NY



Source of Material: **TPS-8 3.0**
Description of Material: **BROWN SANDY SILT WITH CLAY AND GRAVEL**
Test Method: **ASTM D1557 Method D**

TEST RESULTS

Maximum Dry Density: **122.3** PCF
Optimum Water Content: **11.9** %

Curves of 100% Saturation for Specific Gravity Equal to:
2.80
2.70
2.60

COMPACTION - GINT STD US LAB.GDT - 5/18/20 15:24 - \\192.168.0.5\PUBLIC\2019\GEOTECHNICAL INVESTIGATIONS\2019-089_HOAG_LANE\GINT\2019-089_HOAG_LANE_TEST_PITS.GPJ

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14" - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-3	671.00	661.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	705.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOSKA.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-1 0'-6" TOPSOIL 6'-24' SILTY CLAY 24'-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0'-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0'-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0'-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100	LD	CONTOUR
+377.7	HP/LP	SPOT ELEVATION HIGH / LOW POINT
	PT-3	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
W		WATER LINE
		FIRE HYDRANT
ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION

EXISTING	PROPOSED	DESCRIPTION
	LD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM	SANITARY PIPE-LOW PRESSURE
E/T	E/T	OVERHEAD ELECTRIC
E	E	UNDERGROUND ELECTRIC
T	T	TELEPHONE
	ST MH 3" LPS	STORM STRUCTURE
	DI CB MH CO	INLET CATCH BASIN/MANHOLE CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD

EXISTING	PROPOSED	DESCRIPTION
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
	3'	OUTLET PROTECTION
	6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	9" 6'	OUTLET PROTECTION FOR 8"- 12" PIPE
	18" 9'	OUTLET PROTECTION FOR 18"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
SF	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN ITS ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN ITS ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

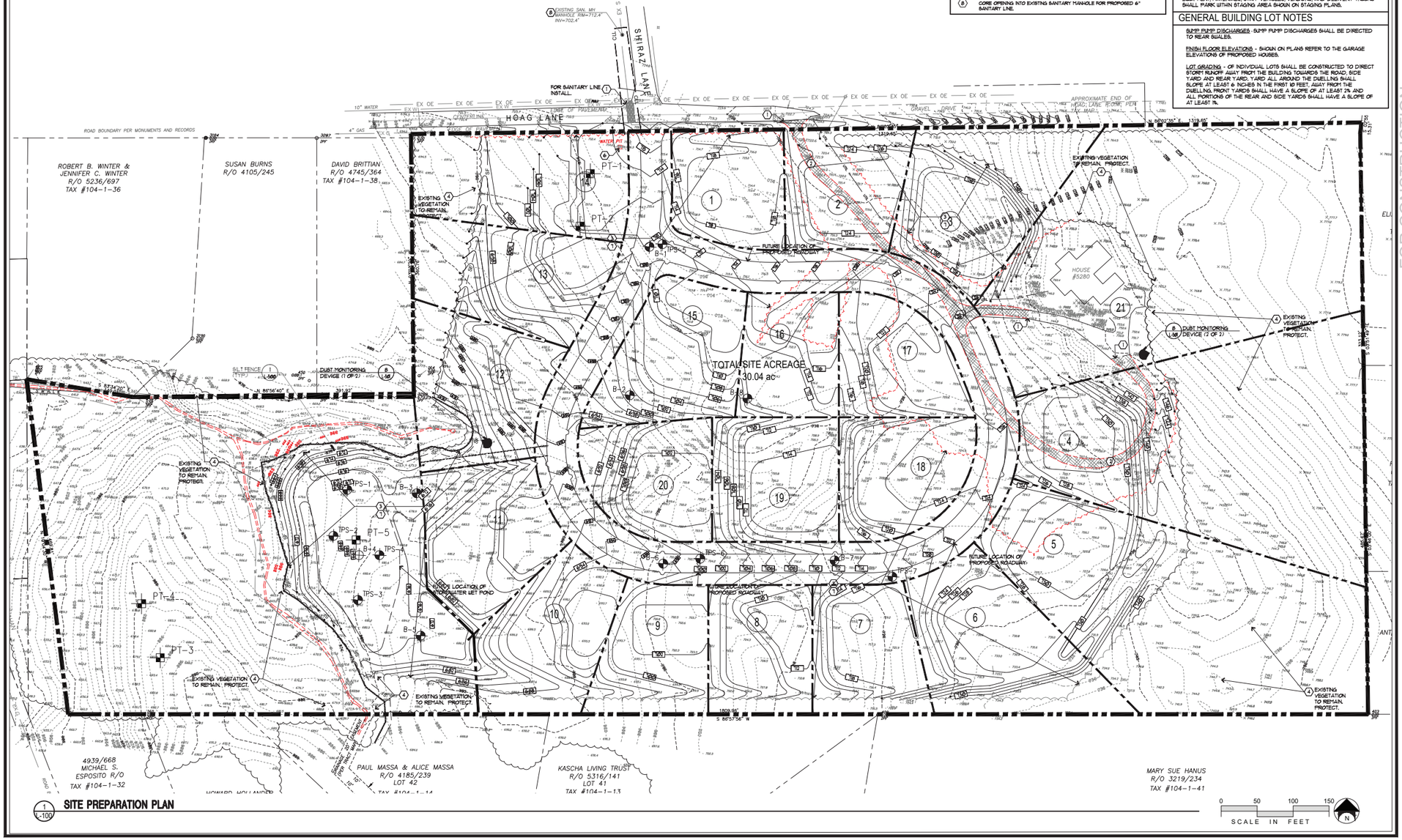
1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY BEGUN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 8TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL, TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6226 EAST ROAD, SUITE 101 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7880 FAX: (315) 445-7881

RZ Engineering, PLLC
6226 EAST ROAD, SUITE 200 EAST SYRACUSE, NEW YORK 13057
PH: 315.422.2385 FAX: 315.445.7961

STATE OF NEW YORK — STEVEN L. BEGUN — 075541 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
No.	Rev.	Description	Date	
1	1	LOT LAYOUT	12/15/17	
2	2	CHECK SET/TOWN OF MANLIUS	01/26/18	
3	3	PUBLIC HEARING-MANLIUS	03/08/18	
4	4	PUBLIC HEARING-MANLIUS	05/04/18	
5	5	PUBLIC HEARING-MANLIUS	06/05/18	
6	6	PUBLIC HEARING-MANLIUS	07/03/18	
7	7	MANLIUS-21 HOME LOTS-PL BD	12/26/18	
8	8	MANLIUS-21 HOME LOTS-PL BD	01/28/19	
9	9	MANLIUS-PLAN SUBMISSION	06/26/19	
10	10	MANLIUS-PLAN SUBMISSION	07/29/19	
11	11	MANLIUS-PLAN SUBMISSION	09/20/19	
12	12	MANLIUS-PLAN SUBMISSION	12/19/19	
13	13	MANLIUS-PLAN SUBMISSION	12/19/19	

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SFL
KFA Proj. No.: 3708.0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Drawing File:
Date Plotted:
Plotted By:

List Points Sat May 09 15:46:32 2020

File> Z:\SLS SURVEY FILES\HOAG ROAD SUBD\HOAG ROAD.crd
Projection: State Plane 83: NY Central
Lat/Lon Datum: NAD83
Geoid: NONE
Point# 3365
Northing 1099874.8709
Easting 980369.3843
Latitude (Dec Deg) N43.0171
Longitude (Dec Deg) W75.9844
Description BORE TPS 1

Point# 3366
Northing 1099809.7089
Easting 980353.4860
Latitude (Dec Deg) N43.0169
Longitude (Dec Deg) W75.9845
Description BORE TPS 2

Point# 3367
Northing 1099722.2497
Easting 980392.4004
Latitude (Dec Deg) N43.0167
Longitude (Dec Deg) W75.9844
Description BORE TPS 3

Point# 3368
Northing 1100240.0930
Easting 980789.7175
Latitude (Dec Deg) N43.0181
Longitude (Dec Deg) W75.9829
Description BORE TPS 5

Point# 3369
Northing 1099794.4420
Easting 981134.4084
Latitude (Dec Deg) N43.0169
Longitude (Dec Deg) W75.9816
Description BORE TPS 7

Point# 3370
Northing 1099786.3150
Easting 980419.0482
Latitude (Dec Deg) N43.0168
Longitude (Dec Deg) W75.9843
Description BORE TPS 4

Point# 3371
Northing 1099805.1532

Easting	980865.7272
Latitude (Dec Deg)	N43.0169
Longitude (Dec Deg)	W75.9826
Description	BORE TPS 6

Point#	3372
Northing	1099927.9367
Easting	980723.2566
Latitude (Dec Deg)	N43.0172
Longitude (Dec Deg)	W75.9831
Description	BORE TPS 8

Number of points listed> 8

Kenney Geotechnical Engineering Services, PLLC
Office: 6901 Herman Road, Syracuse, NY 13209
Mail: P.O. Box 117, Warners, N.Y. 13164
Phone: (315) 638-2706 Fax: (315) 638-1544

Kenney Geotechnical Services

May 27, 2020

Allen Homes
<via email>

Attn: Tom Douglas

Re.: Berm Stability Evaluation
Woodland Hills – Hoag Lane Subdivision
Town of Manlius, NY

Dear Tom,

Pursuant to your request and authorization, Kenney Geotechnical Engineering Services, PLLC has performed a geotechnical evaluation of the proposed berms to be constructed for stormwater management features at the referenced site. The purpose of our analysis was to evaluate the stability of the berms under anticipated loading conditions. This report presents the results of our evaluation and provides output from stability analyses.

No environmental services are included in this study. No conclusions have been drawn regarding environmental conditions of the site, potential contaminants, potential special treatment or disposal of site materials, or other environmental considerations.

Analysis Scenarios

The proposed berms are illustrated on drawings prepared by Keplinger Freeman Associates Landscape Architecture (see attached). It was assumed for the purposes of our analysis that the berms would be constructed to the lines and grades indicated on the design drawings using on-site material with the engineering characteristics described in our previously submitted Hoag Lane Earthwork Report.

The engineering characteristics of the on-site materials, when recompacted in accordance with our recommendations, are well suited for berm construction. The recompacted glacial till exhibited good undrained shear strength (greater than 2500 pounds per square foot) and low permeability (less than 1 x 10-6 cm/sec). It should be noted that the in-situ glacial till exhibited even higher strength and also had low permeability. Topsoil and organic matter, up to approximately 24 inches in thickness at the berm area, will be removed from beneath the berm footprint during construction.

The recompacted till will be in direct contact with the in-situ till. The interface between the two materials will be scarified to promote bonding and prevent the creation of a seepage interface. Seepage rates through the berm are anticipated to be very low based on the engineering characteristics of the in-situ glacial till and recompacted on-site materials. Therefore it is our opinion that a keyway at the base of the berm is not necessary.

The maximum slopes illustrated on the drawings are a 33% exterior berm grade, 20% interior berm grade, and a maximum berm height of 12 feet. We assumed water levels in the berm at flood stage were 1 foot below the crest. Water depth at typical service conditions is 6 feet.

Our analysis utilized the geotechnical evaluation guidelines presented in the NYSDEC Dam Design publication as requested by the Town of Manlius. Common geotechnical practice was also employed. The following evaluations were performed:

- Bearing Pressure and Settlement
- Sliding
- Soil Piping
- Slope Stability:
    - Water at Flood Level
    - Rapid Drawdown
    - Seismic Event

The analyses modeled the highest berm to be constructed (west slope of westernmost stormwater management feature). Soil used in berm construction was assumed to be the on site glacial till, a low plasticity sandy clay with gravel. The assumed geotechnical strength parameters are summarized in the following table.

Material	Condition	Unit Weight (pcf)	Cohesion (psf)	Internal Friction (degrees)
Recompacted Till (Engineered Fill)	Short Term	140	1000	0
	Long Term	140	100	32
Undisturbed Glacial Till	Short Term	145	2500	0
	Long Term	145	350	34

For seismic analysis, a ground acceleration factor of 0.05 was utilized.

Results

The geotechnical evaluations performed indicate the berm will remain stable under the modeled service scenarios. The following table summarizes evaluation results. Full output is attached for reference.

Scenario	Condition	Calculated Minimum Factor of Safety	Result
Service Condition with Full Pool	Short Term	9.4	Acceptable
Service Condition with Full Pool	Long Term	2.9	Acceptable
Flood Stage	Short Term	9.4	Acceptable
Flood Stage	Long Term	2.7	Acceptable
Rapid Drawdown after Flood Stage	Short Term	8.7	Acceptable
Rapid Drawdown after Flood Stage	Long Term	2.7	Acceptable
Earthquake	Short Term	2.3	Acceptable

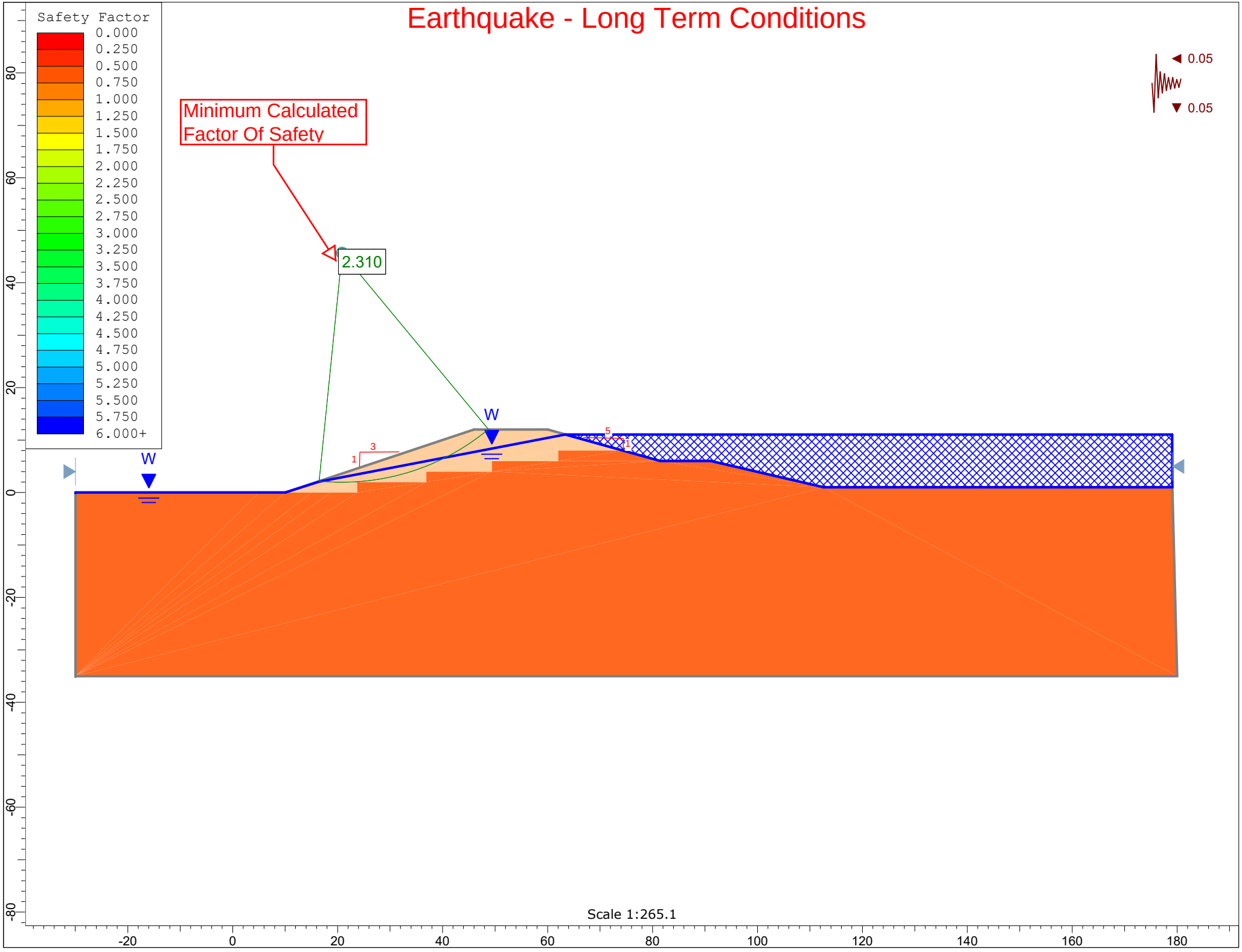
Thank you for the opportunity to be of service, and please contact me at your convenience with any questions you may have.

Respectfully submitted,
KENNEY GEOTECHNICAL ENGINEERING SERVICES PLLC

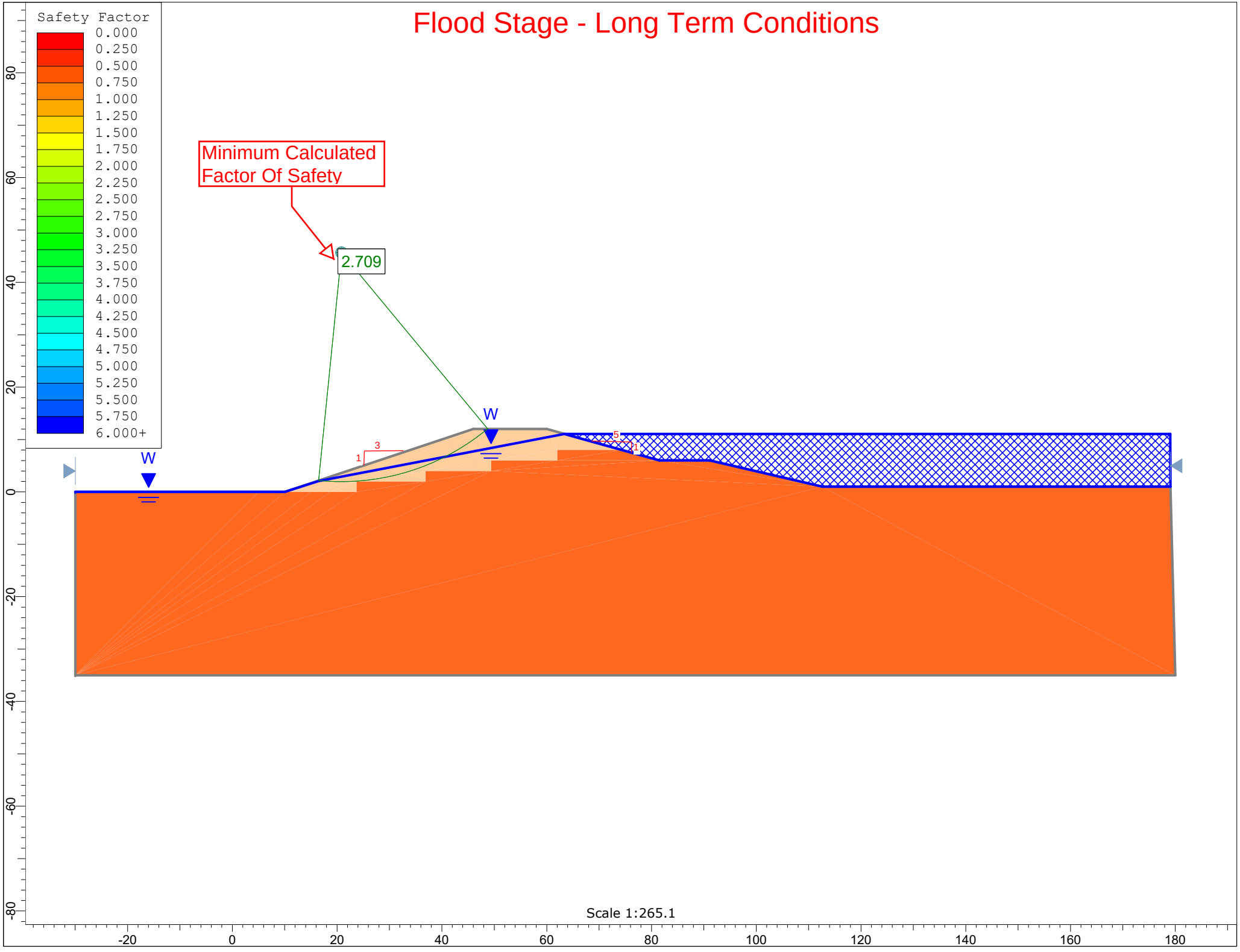
Christopher Kenney

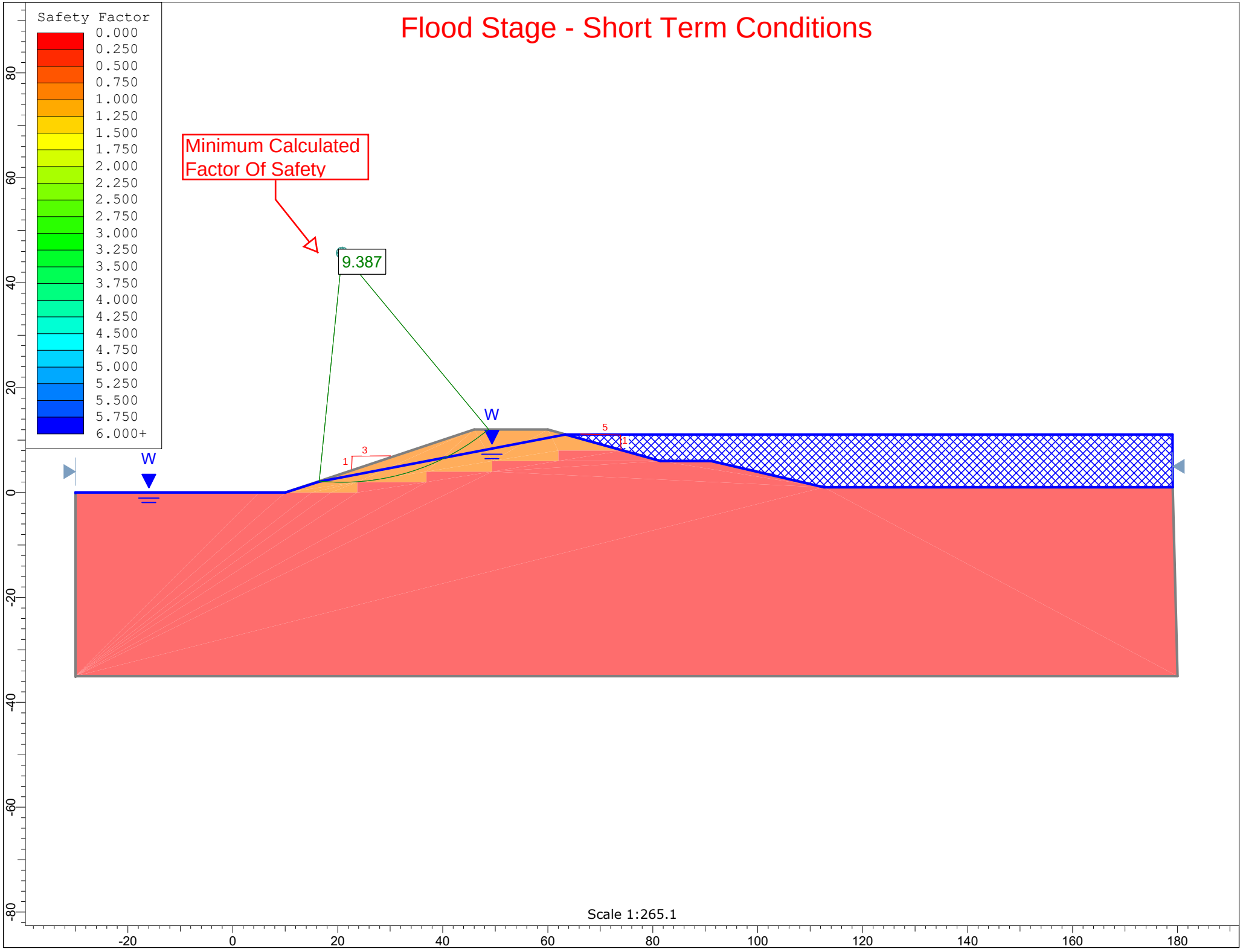
Christopher M. Kenney, P.E.
President

Earthquake - Long Term Conditions

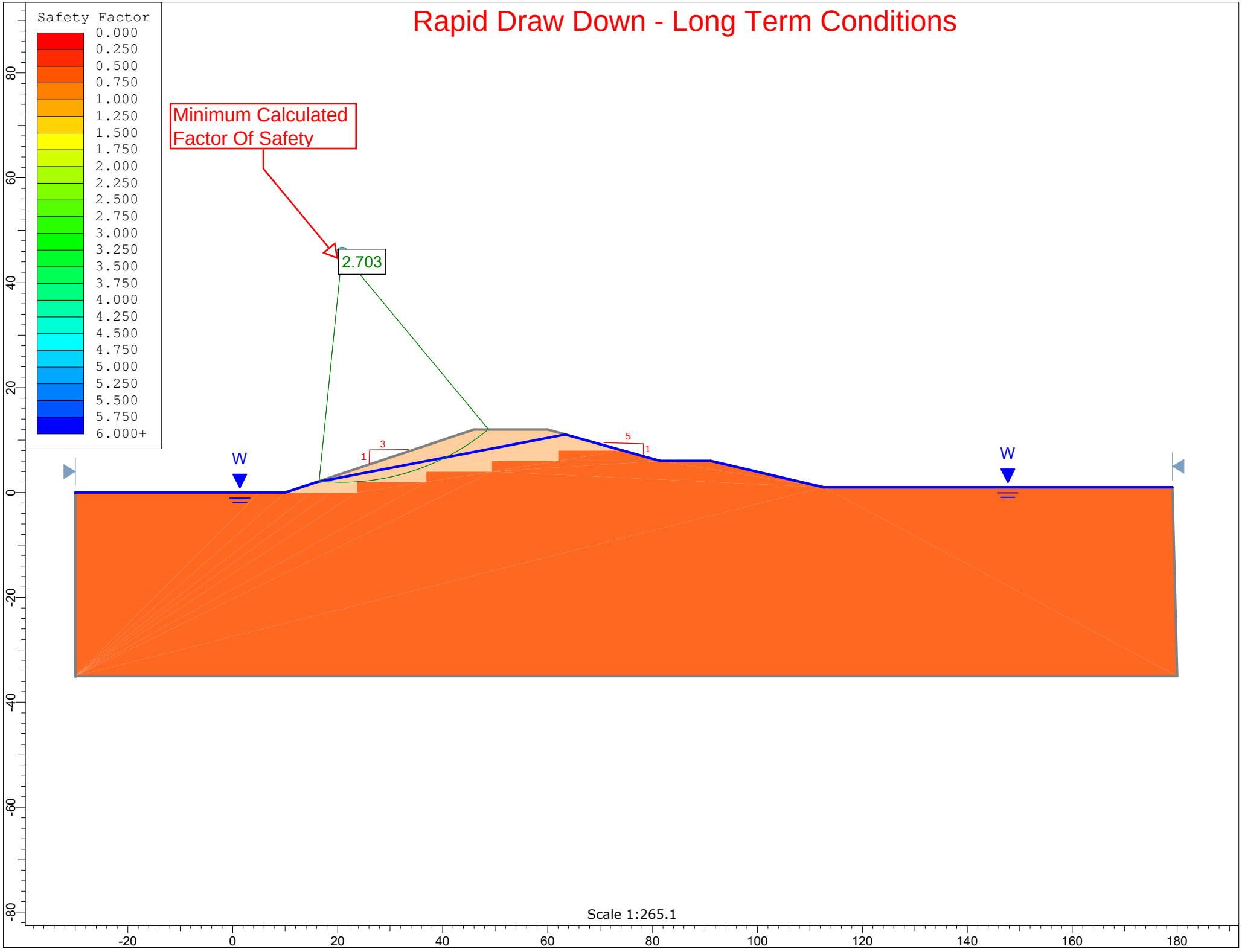


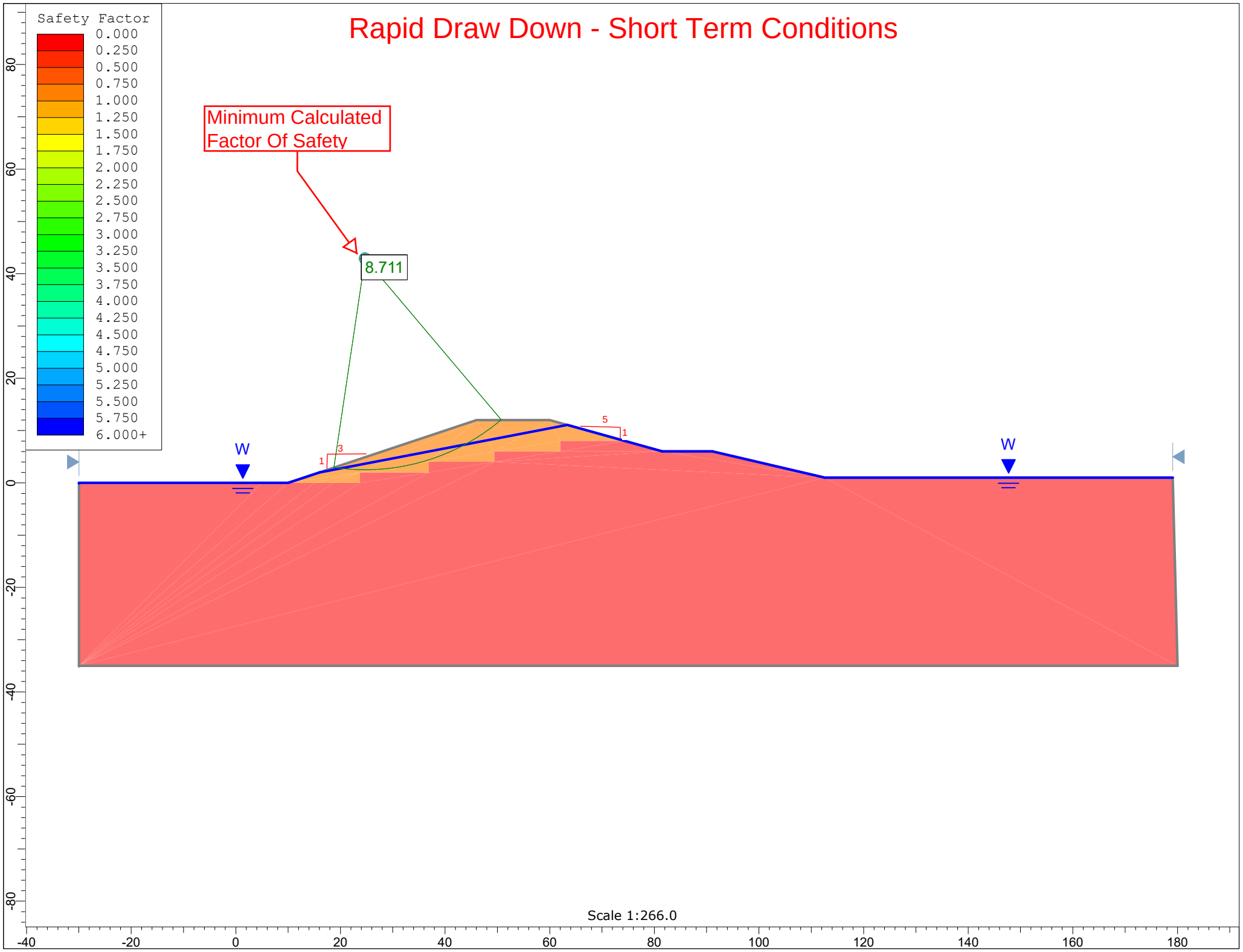
Flood Stage - Long Term Conditions



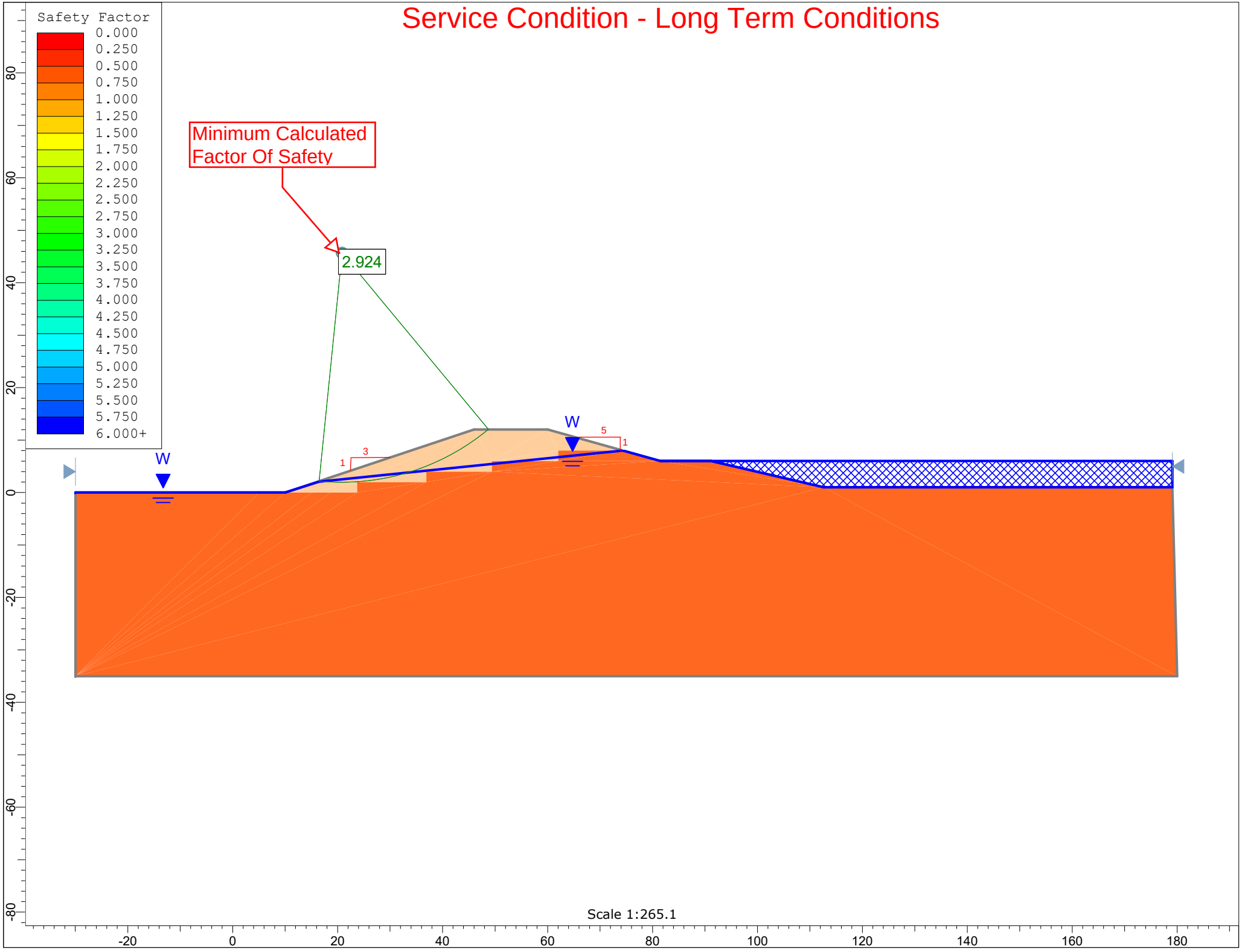

Flood Stage - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
9.387
W
W
1
3
5
1
Scale 1:265.1
80
60
40
20
0
-20
-40
-60
-80
-20
0
20
40
60
80
100
120
140
160
180

Rapid Draw Down - Long Term Conditions




Rapid Draw Down - Short Term Conditions
Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
Minimum Calculated Factor Of Safety
8.711
W
W
5
1
3
1
Scale 1:266.0
80
60
40
20
0
-20
-40
-60
-80
-40
-20
0
20
40
60
80
100
120
140
160
180

Service Condition - Long Term Conditions



RZE/KFA SITE TESTING

DAM GUIDELINES SECTION & FINISH GRADE EVALUATION

PIT #		FINISH GRADE	FILL EVALUATION	
TP-1	EX. GRADE	674.00	664.00 - 669.00	(5-10 DP)
TP-2		672.00	662.00 - 667.00	
TP-3		677.00	667.00 - 672.00	
TP-4		680.00	662 - 680.00	
TP-5		715.00	709 707 - 715.00	
TP-6		705.00	700 668.00 - 705.00	
TP-7		724.00	716 715.00 - 725.00	

ADD INFILTRATION TEST @ 664.00

HOAG - DOUG MILLER TESTING RQST.

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH
PT-5	14" - SANDY SILTY CLAY	0 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

PROPOSED ADDITIONAL TEST PITS

PIT #	EX. GRADE	FINAL GRADE	DEPTH	TESTING / EVALUATIONS
PT-1	674.00	664.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-2	672.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-3	671.00	661.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-4	680.00	662.00	5'-10" DEEP	DAM GUIDELINES SEC. 8
PT-5	715.00	705.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-6	705.00	700.00	PER FINAL GRADE	FILL/SOIL EVALUATION
PT-7	724.00	716.00	PER FINAL GRADE	FILL/SOIL EVALUATION

NOTES:
1. TESTS TO BE CONDUCTED BY A REPRESENTATIVE OF KENEEY GEOTECHNICAL AND JK TOSKA.
2. DATA CHARTS WILL BE UPDATED ONCE TESTING IS COMPLETE AND PROVIDED HERE.

BORING TEST RESULTS

B-1 0'-6" TOPSOIL 6'-24' SILTY CLAY 24'-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -2 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -3 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -4 0'-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -5 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -6 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B -7 0'-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B -8 0'-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-4 WAS RE-CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100	LD	CONTOUR
+377.7	HP/LP	SPOT ELEVATION HIGH / LOW POINT
	PT-3	PERCOLATION TEST PIT
	B-4	DEEP HOLE
		FENCE
		UTILITY POLE
W		WATER LINE
		FIRE HYDRANT
ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION

EXISTING	PROPOSED	DESCRIPTION
	LD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	FM	SANITARY PIPE-LOW PRESSURE
E/T	E/T	OVERHEAD ELECTRIC
E	E	UNDERGROUND ELECTRIC
T	T	TELEPHONE
	ST MH 3" LPS	STORM STRUCTURE
	DI CB MH CO	INLET CATCH BASIN/MANHOLE CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD

EXISTING	PROPOSED	DESCRIPTION
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
	3'	OUTLET PROTECTION
	6" 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	9" 6'	OUTLET PROTECTION FOR 8"- 12" PIPE
	18" 9'	OUTLET PROTECTION FOR 18"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
SF	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN ITS ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN ITS ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF ON SITE. MATERIAL TO BE CHIPPED AND PLACED ON SITE PER STAGING PLANS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. THE STUMPS, TREES AND SMALLER VEGETATION REMAINS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.

GENERAL NOTES

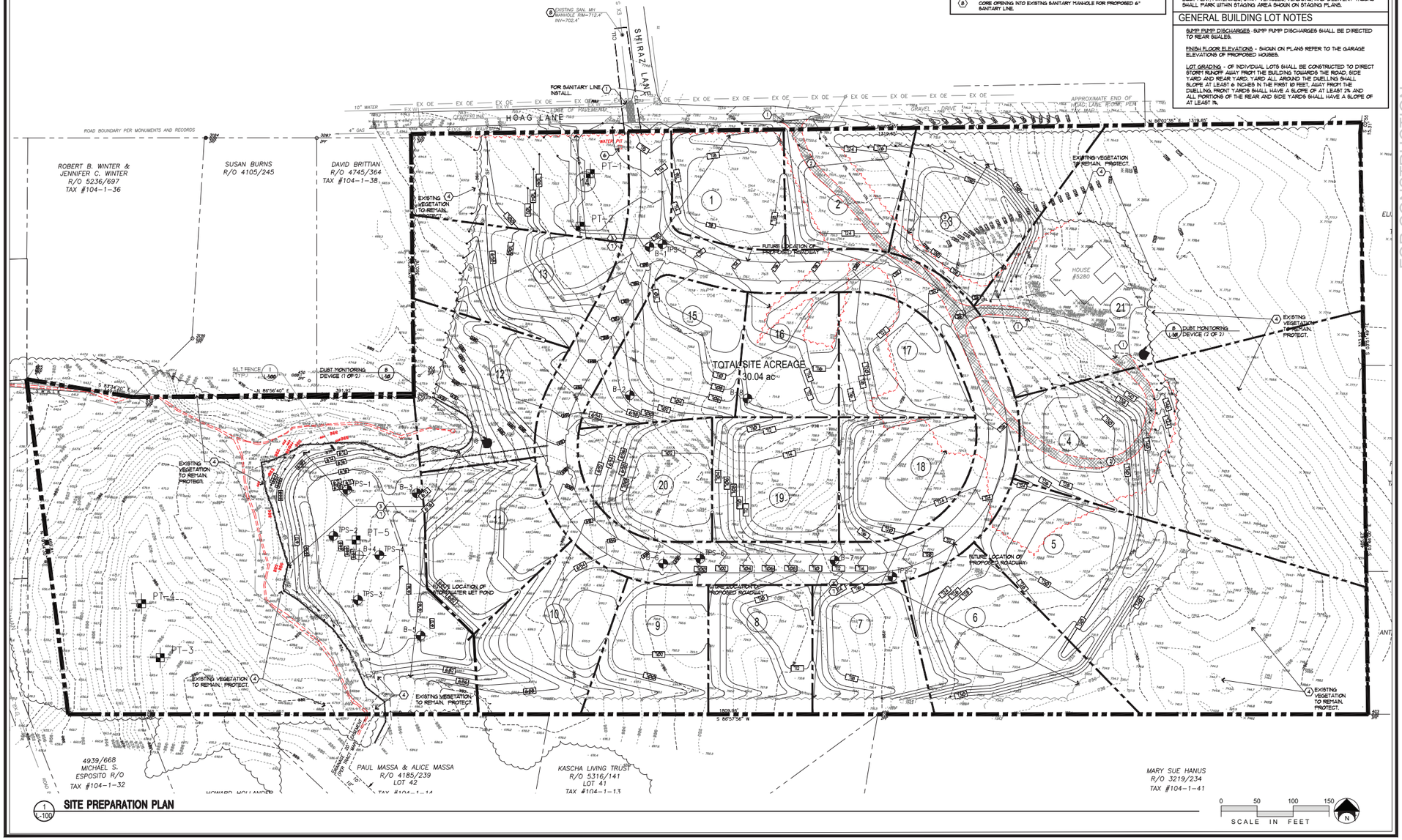
1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY BEGUN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 8TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL, TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. U.F.P.O. TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.

GENERAL BUILDING LOT NOTES

SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.



1 L-100 **SITE PREPARATION PLAN**

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6226 EAST ROAD, SUITE 101 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7880 FAX: (315) 445-7881

RZ Engineering, PLLC
6226 EAST ROAD, SUITE 200 EAST SYRACUSE, NEW YORK 13057
PH: 315.422.2385 FAX: 315.445.7961

STATE OF NEW YORK — STEVEN L. BEGUN — 075541 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
No.	Rev.	Description	Date	
1	1	LOT LAYOUT	12/15/17	
2	2	CHECK SET/TOWN OF MANLIUS	01/26/18	
3	3	PUBLIC HEARING-MANLIUS	03/08/18	
4	4	PUBLIC HEARING-MANLIUS	05/04/18	
5	5	PUBLIC HEARING-MANLIUS	06/05/18	
6	6	PUBLIC HEARING-MANLIUS	07/03/18	
7	7	MANLIUS-21 HOME LOTS-PL BD	12/26/18	
8	8	MANLIUS-21 HOME LOTS-PL BD	01/28/19	
9	9	MANLIUS-PLAN SUBMISSION	06/26/19	
10	10	MANLIUS-PLAN SUBMISSION	07/29/19	
11	11	MANLIUS-PLAN SUBMISSION	09/20/19	
12	12	MANLIUS-PLAN SUBMISSION	12/19/19	
13	13	MANLIUS-PLAN SUBMISSION	12/19/19	

△ Symbol Indicates Revision Issued

Drawn By: VER
Checked By: SFL
KFA Proj. No.: 3708.0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Drawing File:
Date Plotted:
Plotted By:

Bearing Capacity Calculations

$q = N_c \cdot C$

$q = \frac{5.14 \cdot 2500}{3}$

$q = 4,283 \text{ psf}$

$N_c = 5.14$

$C = 2500 \text{ psf}$

$F.S. = 3$

Load applied by fill $= \gamma_{fill} \cdot H$

$H = 12'$ (maximum)

$\gamma_{fill} = 140 \text{ pcf}$

Load applied by fill $= 140 \cdot 12$

$= 1,680 \text{ psf}$

$1,680 \text{ psf} < 4,283 \text{ psf}$ ✓

Settlement Calculations

- Elastic Settlement

$$P_c = \frac{\Delta\sigma (1-\nu^2)\sqrt{A}}{E B_2}$$

$= \frac{1680 (1-0.35^2)\sqrt{14}}{160,000 (1.41)}$

$= 0.29 \text{ in.}$ ✓

$\Delta\sigma = 1680 \text{ psf}$

$\nu = 0.35$

$A = 14 \text{ ft}^2$

$E = 160,000 \text{ psf}$

$B_2 = 1.41$

Soil Piping

Laboratory testing resulted in low plasticity cohesive soils that are non-dispersive and not prone to soil piping.

DEEP HOLE TEST RESULTS

DH-#

DH -1 LAT./LONG: N43.0580° / W75.5836 EX. EL.+692.6, PN. EL.+692.1 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"+66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 LAT./LONG: N43.0578° / W75.5835 EX. EL.+688.2, PN. EL.+ 688.6 0"-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 LAT./LONG: N43.0570° / W75.5849 EX. EL.+672.5, PN. EL.+666.5 0"-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 LAT./LONG: N43.0578° / W75.5825 EX. EL.+ 705.0, PN. EL.+ 697.0 0"-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 LAT./LONG: N43.0573° / W75.5804 0"-6" TOPSOIL 6"-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PT-#

PIT* / LAT./LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0583° / W75.5831	24" - SANDY LOAM EX. EL.+ 710.9, PN. EL.+ 708.9	35 MINUTES/INCH
PT-2 N43.0581° / W75.5832	24" - SILT LOAM EX. EL.+ 709.0, PN. EL.+ 707.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0565° / W75.5851	24" - SANDY SILT LOAM EX. EL.+ 685.0, PN. EL.+ 683.0	3 MINUTES/INCH
PT-4 N43.0568° / W75.5853	24" - SANDY SILT LOAM EX. EL.+ 681.4, PN. EL.+ 679.4	21 MINUTES/INCH
PT-5[2] N43.0569, W75.5844	14" - SANDY SILTY CLAY EX. EL.+ 678.4, PN. EL.+ 664.4	@ MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

IT-#

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0576° / W75.5855	18" - SANDY CLAY EX. EL.+ 646.40, PN. EL.+ 646.0	@ MINUTES/INCH
OPT-2 N43.0576° / W75.5853	29.3" - SILT LOAM EX. EL.+ 647.3, PN. EL.+ 646.0	@ MINUTES/INCH
OPT-3 N43.0568° / W75.5857	24" - SANDY SILT LOAM EX. EL.+ 676.90, PN. EL.+ 646.0	@ MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-#

B-1 LAT./LONG: N43.0580° / W75.5829 0"-6" TOPSOIL 6"-24" SILTY CLAY 24"-96" SILTY CLAY 96"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT./LONG: N43.0573° / W75.5830 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT./LONG: N43.0570° / W75.5835 0"-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4[2] LAT./LONG: N43.0569 / W75.5843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT./LONG: N43.0566° / W75.5840 0"-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT./LONG: N43.0569 / W75.5827 0"-6" TOPSOIL 6"-48" SANDY SILTY CLAY 48"-126" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT./LONG: N43.0571° / W75.5814 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT./LONG: N43.0573 / W75.5823 0"-6" TOPSOIL 6"-24" SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-126" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9[2] LAT./LONG: N43.0569 / W75.5843 0"-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2018 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-1-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISION TO B-4.

ADDITIONAL BORING TEST RESULTS

TPS-#

TPS -1 EX. EL.+ 676.0, PN. EL.+ 666.0 LAT./LONG: N43.0571 / W75.5844 0"-13" TOPSOIL 13"-180" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -2 EX. EL.+ 674.0, PN. EL.+664.0 LAT./LONG: N43.0569 / W75.5845 0"-13" TOPSOIL 13"-180" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -3 EX. EL.+ 680.0, PN. EL.+670.0 LAT./LONG: N43.0569 / W75.5844 0"-1" TOPSOIL 1"-180" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -4 EX. EL.+681.0, PN. EL.+671.0 LAT./LONG: N43.0569 / W75.5836 0"-1" TOPSOIL 1"-180" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -5 EX. EL.+ 716.0, PN. EL.+ 709.0 LAT./LONG: N43.0581 / W75.5829 0"-1" TOPSOIL 1"-7" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -6 EX. EL.+ 704.0, PN. EL.+ 693.0 LAT./LONG: N43.0569 / W75.5826 0"-1" TOPSOIL 1"-3' BROWN SILTY GRAVEL 3'-5' GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -7 EX. EL.+ 722.0, PN. EL.+ 715.0 LAT./LONG: N43.0569 / W75.5816 0"-1" TOPSOIL 1"-7' GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS -8 EX. EL.+ 683.0, PN. EL.+ 680.0 LAT./LONG: N43.0573 / W75.5831 0"-1" TOPSOIL 1"-3' BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC AND J.K. TORIN.
2. BERGLIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE 83 AND DATUM NAD83.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

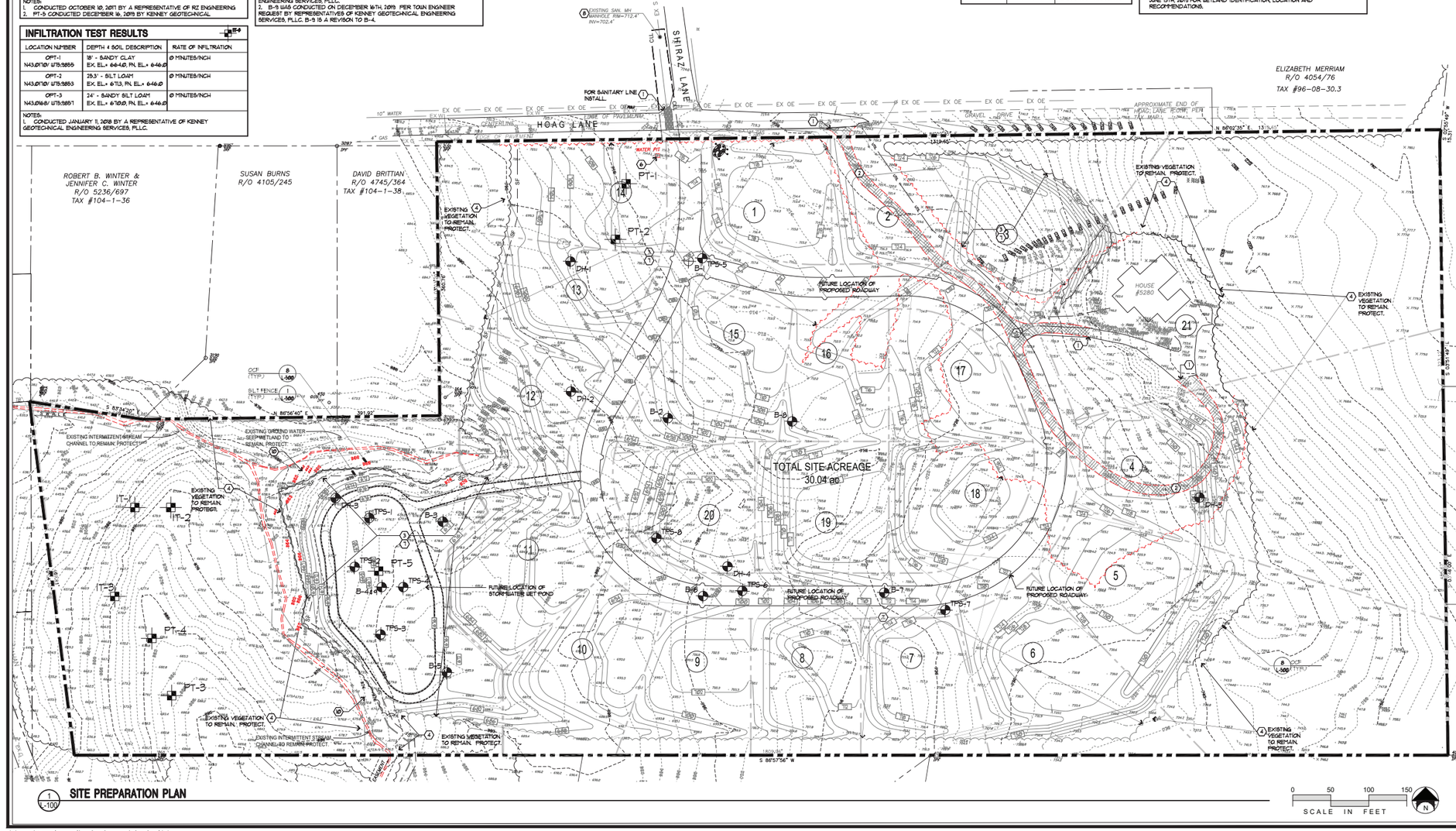
1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN ITS ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN ITS ENTIRETY INCLUDING ROOTS AND STUMPS. REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOWN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT PER OCHA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCHA UPON RECEIPT OF SITE PLAN APPROVAL FOR DECOMMISSIONING AND LATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2018, APPROVED BY TOWN ON MARCH 7TH, 2018. REMOVAL OCCURRED MARCH 13TH, 2018. THE STUMPS, DOMED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8/L-500 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 15TH, 2018 CONDUCTED BY ENVIRONMENTAL RESOURCES, LLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100	100	CONTOUR
+377.7	+377.7	SPOT ELEVATION
HP/LP	HP/LP	HIGH / LOW POINT
PT-#	PT-#	PERCOLATION TEST PIT
B-#	B-#	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
		SHRUB
	QUANTITY PLANT TYPE	PLANT KEY
		VEGETATION
EX SAN	UD	UNDERDRAIN
	S	SANITARY PIPE-GRAVITY
F/T	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E		OVERHEAD ELECTRIC
T		UNDERGROUND ELECTRIC
		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
CB	CB MH	CATCH BASIN/MANHOLE
CO	CO	CLEAN OUT
	S	SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" 3' 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	8" 10' 3'	OUTLET PROTECTION FOR 8"- 11" PIPE
	18" 33'	OUTLET PROTECTION FOR 18"- PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED "TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY BERGLIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOWN OF MANLIUS SPECIFICATIONS.
9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-100 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.
13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 27TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.
14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 15TH, 2018 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-100 **SITE PREPARATION PLAN**

0 50 100 150 SCALE IN FEET N

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6226 FLY ROAD, SUITE 103 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-1980 FAX: (315) 445-1981

RZ Engineering, PLLC
6226 FLY ROAD SUITE 103
EAST SYRACUSE, NY 13057
PH: 315.422.1288 FAX: 315.445.7980

STATE OF NEW YORK — DANIEL L. RITTER — 075541 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No	Rev	Description	Date	No	Rev	Description	Date
1	1	PLANNING BOARD SUBMISSION	02/07/18	8	8	FULL SET PLANNING BOARD SUBMISSION	04/04/19
2	2	CHECK SET (TOWN OF MANLIUS)	02/26/18	9	9	MANLIUS-PLAN SUBMISSION	06/04/19
3	3	PUBLIC HEARING-MANLIUS	03/29/18	10	10	MANLIUS-PLAN SUBMISSION	07/02/19
4	4	PUBLIC HEARING-MANLIUS	05/04/18	11	11	MANLIUS-PLAN SUBMISSION	09/25/19
5	5	PUBLIC HEARING-MANLIUS	06/01/18	12	12	MANLIUS-PLAN SUBMISSION	12/18/19
6	6	MANLIUS-2 HOME LOTS-PL BD	12/03/18	13	13	MANLIUS-PLAN SUBMISSION	03/18/20
7	7	MANLIUS-2 HOME LOTS-PL BD	1/30/2018	14	14	MANLIUS-PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001437 — STATE OF NEW YORK

Drawn By:	VER
Checked By:	SF
K.F.A. Proj. No:	3'1050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

Monday, June 15, 2020 8:51:32 AM

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	No
State	New York
Location	
Longitude	75.982 degrees West
Latitude	43.019 degrees North
Elevation	0 feet
Date/Time	Mon, 13 Nov 2017 11:35:17 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.52	0.70	0.86	0.99	**1yr**	0.75	0.96	1.10	1.39	1.68	2.05	2.30	**1yr**	1.82	2.21	2.64	3.18	3.70	**1yr**
2yr	0.33	0.50	0.62	0.84	1.04	1.18	**2yr**	0.89	1.16	1.30	1.63	1.97	2.39	2.69	**2yr**	2.12	2.59	3.04	3.65	4.22	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.47	**5yr**	1.12	1.43	1.62	2.00	2.43	2.94	3.32	**5yr**	2.60	3.19	3.72	4.39	5.01	**5yr**
10yr	0.45	0.69	0.86	1.20	1.55	1.72	**10yr**	1.34	1.69	1.92	2.34	2.85	3.44	3.89	**10yr**	3.04	3.74	4.35	5.05	5.71	**10yr**
25yr	0.55	0.84	1.04	1.49	1.96	2.15	**25yr**	1.69	2.10	2.39	2.87	3.53	4.23	4.81	**25yr**	3.75	4.62	5.35	6.08	6.80	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.53	**50yr**	2.02	2.48	2.82	3.37	4.14	4.96	5.65	**50yr**	4.39	5.43	6.25	7.00	7.75	**50yr**
100yr	0.75	1.12	1.41	2.03	2.79	3.00	**100yr**	2.41	2.93	3.34	3.94	4.87	5.80	6.63	**100yr**	5.13	6.38	7.31	8.07	8.85	**100yr**
200yr	0.87	1.31	1.65	2.39	3.34	3.55	**200yr**	2.88	3.47	3.95	4.61	5.72	6.79	7.80	**200yr**	6.01	7.50	8.56	9.29	10.09	**200yr**
500yr	1.07	1.59	2.05	2.97	4.23	4.44	**500yr**	3.65	4.34	4.95	5.68	7.09	8.38	9.66	**500yr**	7.41	9.29	10.54	11.21	12.02	**500yr**

Lower Confidence Limits

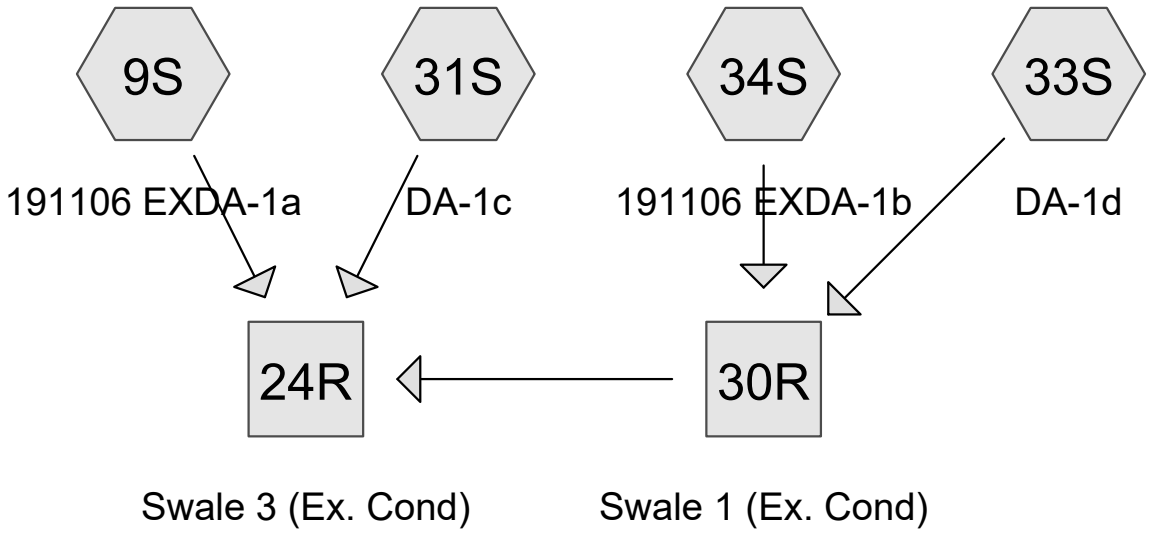
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.38	0.46	0.62	0.76	0.87	**1yr**	0.66	0.85	0.92	1.10	1.40	1.65	2.02	**1yr**	1.46	1.94	2.38	2.79	3.35	**1yr**
2yr	0.32	0.49	0.61	0.82	1.01	1.13	**2yr**	0.87	1.11	1.26	1.56	1.90	2.33	2.61	**2yr**	2.06	2.51	2.94	3.56	4.12	**2yr**
5yr	0.35	0.55	0.68	0.93	1.18	1.34	**5yr**	1.02	1.31	1.48	1.85	2.27	2.73	3.09	**5yr**	2.42	2.97	3.49	4.11	4.72	**5yr**
10yr	0.39	0.60	0.74	1.04	1.34	1.49	**10yr**	1.15	1.46	1.67	2.07	2.54	3.09	3.49	**10yr**	2.73	3.36	3.94	4.57	5.22	**10yr**
25yr	0.44	0.66	0.82	1.18	1.55	1.71	**25yr**	1.34	1.67	1.96	2.40	2.92	3.58	4.07	**25yr**	3.17	3.91	4.62	5.24	5.97	**25yr**
50yr	0.46	0.71	0.88	1.26	1.70	1.89	**50yr**	1.47	1.85	2.19	2.65	3.23	4.01	4.55	**50yr**	3.55	4.37	5.22	5.82	6.60	**50yr**
100yr	0.50	0.76	0.95	1.38	1.89	2.32	**100yr**	1.63	2.27	2.46	2.93	3.58	4.46	5.08	**100yr**	3.95	4.89	5.88	6.44	7.30	**100yr**
200yr	0.54	0.82	1.04	1.50	2.09	2.65	**200yr**	1.81	2.59	2.74	3.23	3.96	4.97	5.68	**200yr**	4.40	5.46	6.62	7.11	8.06	**200yr**
500yr	0.87	1.29	1.66	2.42	3.44	3.17	**500yr**	2.97	3.10	3.14	3.68	4.53	5.72	6.56	**500yr**	5.06	6.30	7.74	8.09	9.19	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.07	**1yr**	0.80	1.05	1.20	1.55	1.84	2.23	2.61	**1yr**	1.97	2.51	2.84	3.40	3.99	**1yr**
2yr	0.35	0.54	0.66	0.89	1.10	1.23	**2yr**	0.95	1.21	1.37	1.71	2.07	2.50	2.80	**2yr**	2.21	2.70	3.13	3.76	4.34	**2yr**
5yr	0.42	0.65	0.81	1.11	1.42	1.61	**5yr**	1.22	1.57	1.76	2.18	2.62	3.12	3.53	**5yr**	2.76	3.40	3.98	4.67	5.33	**5yr**
10yr	0.50	0.76	0.94	1.32	1.70	1.99	**10yr**	1.47	1.95	2.16	2.67	3.20	3.82	4.25	**10yr**	3.38	4.08	4.79	5.52	6.23	**10yr**
25yr	0.62	0.95	1.18	1.69	2.22	2.65	**25yr**	1.92	2.60	2.83	3.51	4.18	4.73	5.46	**25yr**	4.19	5.25	6.15	6.89	7.68	**25yr**
50yr	0.74	1.13	1.40	2.02	2.72	3.31	**50yr**	2.35	3.23	3.48	4.31	5.11	5.68	6.59	**50yr**	5.03	6.34	7.44	8.17	8.99	**50yr**
100yr	0.89	1.34	1.68	2.43	3.34	3.96	**100yr**	2.88	3.87	4.30	5.31	6.26	6.83	7.98	**100yr**	6.04	7.68	9.02	9.70	10.54	**100yr**
200yr	1.06	1.60	2.03	2.94	4.10	4.89	**200yr**	3.54	4.78	5.30	6.56	7.68	8.20	9.67	**200yr**	7.25	9.30	10.93	11.52	12.37	**200yr**
500yr	1.25	1.87	2.40	3.49	4.96	6.47	**500yr**	4.28	6.32	7.00	8.68	10.06	10.46	12.50	**500yr**	9.26	12.02	14.13	14.46	15.31	**500yr**

Po

APPENDIX C



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 11/6/2019
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 9S: 191106 EXDA-1a

Runoff = 50.22 cfs @ 12.39 hrs, Volume= 6.209 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
*	0.520	98	Existing Impervious
	6.935	55	Woods, Good, HSG B
	8.769	70	Woods, Good, HSG C
	7.328	65	Brush, Good, HSG C
	3.628	74	>75% Grass cover, Good, HSG C
	5.312	65	2 acre lots, 12% imp, HSG B
	32.492	66	Weighted Average
	31.335		96.44% Pervious Area
	1.157		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.1	20	0.0200	2.87		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.9	353	0.0453	1.49		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.0	1,705	0.0610	1.23		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
41.0	2,178	Total			

Summary for Subcatchment 31S: DA-1c

Runoff = 4.32 cfs @ 12.31 hrs, Volume= 0.458 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
2.078	70	Woods, Good, HSG C
2.078		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow, Offsite** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	135	0.0518	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	442	Total			

Summary for Subcatchment 33S: DA-1d

Runoff = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
11.672	79	1 acre lots, 20% imp, HSG C
1.167	98	Paved parking, HSG C
12.839	81	Weighted Average
9.338		72.73% Pervious Area
3.501		27.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0660	0.16		**Sheet Flow, Offsite** Grass: Dense n= 0.240 P2= 2.39"
7.9	753	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.1	853	Total			

Summary for Subcatchment 34S: 191106 EXDA-1b

Runoff = 28.76 cfs @ 12.74 hrs, Volume= 4.957 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
1.894	68	1 acre lots, 20% imp, HSG B
2.794	79	1 acre lots, 20% imp, HSG C
3.299	65	2 acre lots, 12% imp, HSG B
10.064	55	Woods, Good, HSG B
8.901	70	Woods, Good, HSG C
26.952	65	Weighted Average
25.619		95.05% Pervious Area
1.333		4.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Reach 24R: Swale 3 (Ex. Cond)

Inflow Area = 74.361 ac, 8.06% Impervious, Inflow Depth = 2.52" for 100-yr event
Inflow = 97.89 cfs @ 12.21 hrs, Volume= 15.585 af
Outflow = 97.84 cfs @ 12.23 hrs, Volume= 15.585 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.50 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 4.17 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,655 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.90'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Summary for Reach 30R: Swale 1 (Ex. Cond)

Inflow Area = 39.791 ac, 12.15% Impervious, Inflow Depth = 2.69" for 100-yr event
Inflow = 61.89 cfs @ 12.12 hrs, Volume= 8.918 af
Outflow = 61.72 cfs @ 12.14 hrs, Volume= 8.918 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 9
Max. Velocity= 8.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.13 fps, Avg. Travel Time= 2.4 min

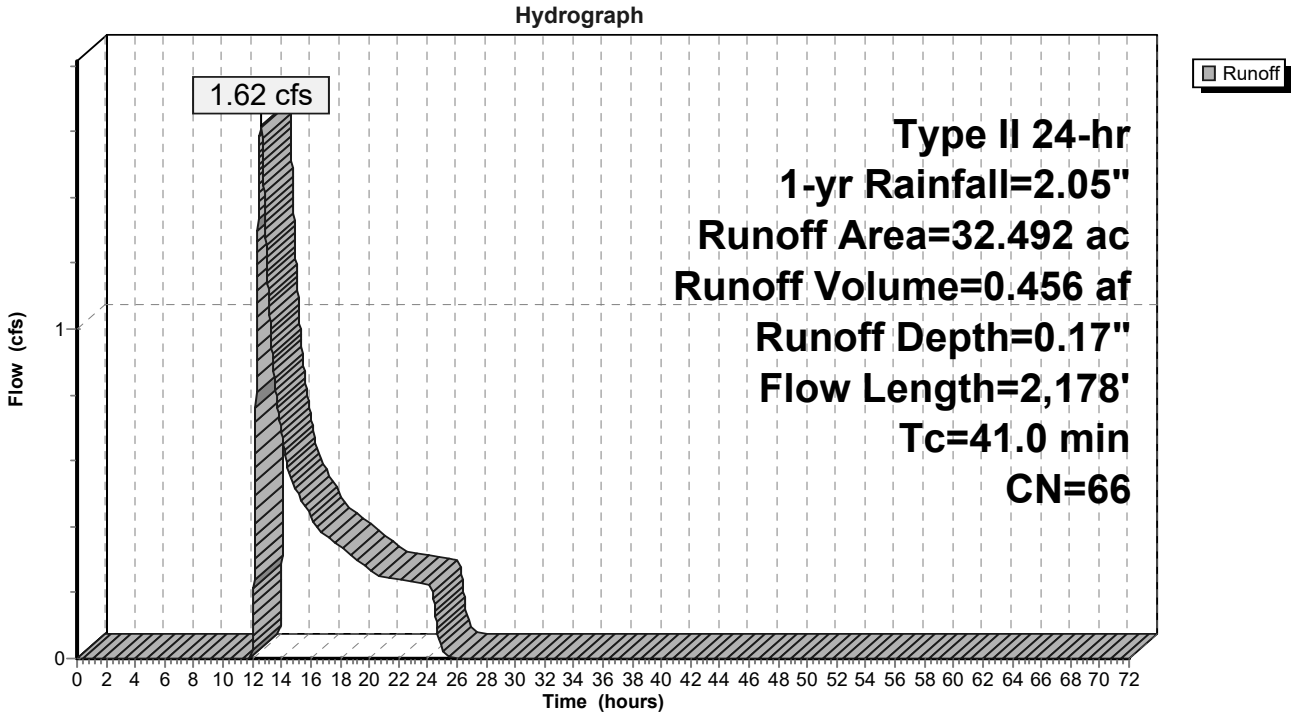
Peak Storage= 3,112 cf @ 12.13 hrs
Average Depth at Peak Storage= 0.77'
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 103.50 cfs

5.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 15.00'
Length= 453.0' Slope= 0.0530 '/'
Inlet Invert= 680.00', Outlet Invert= 656.00'

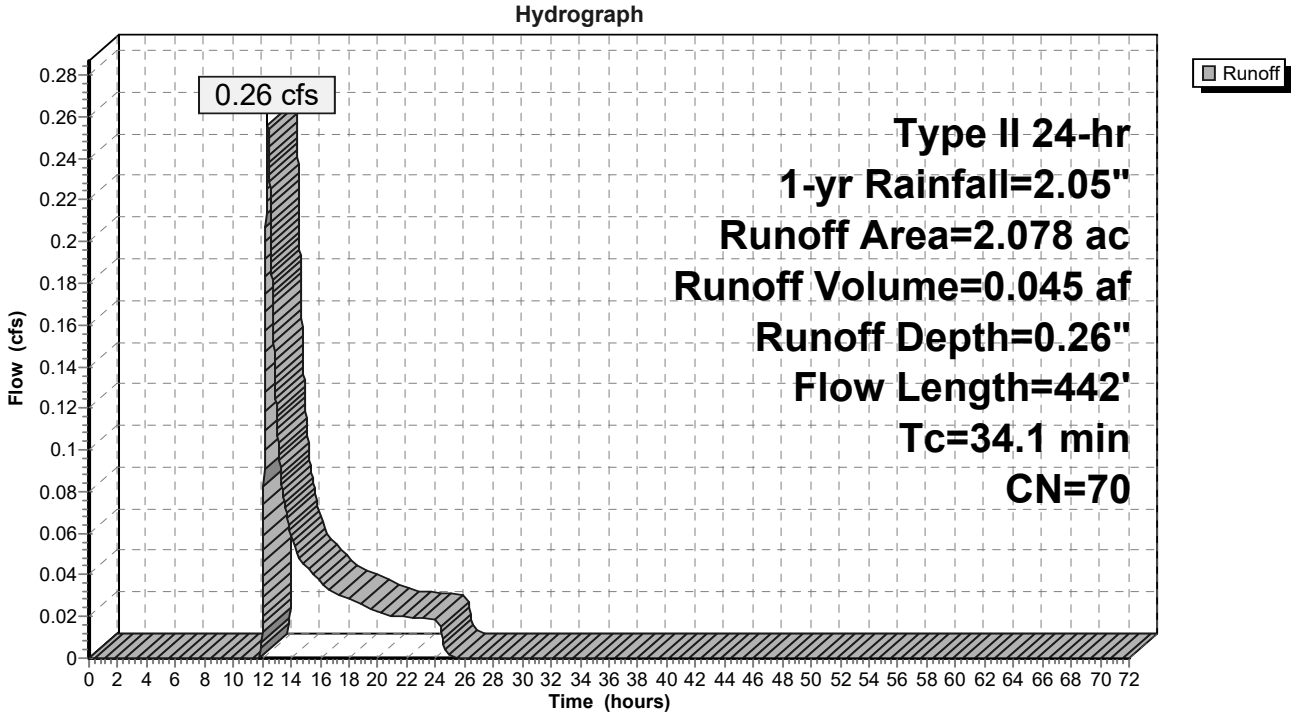


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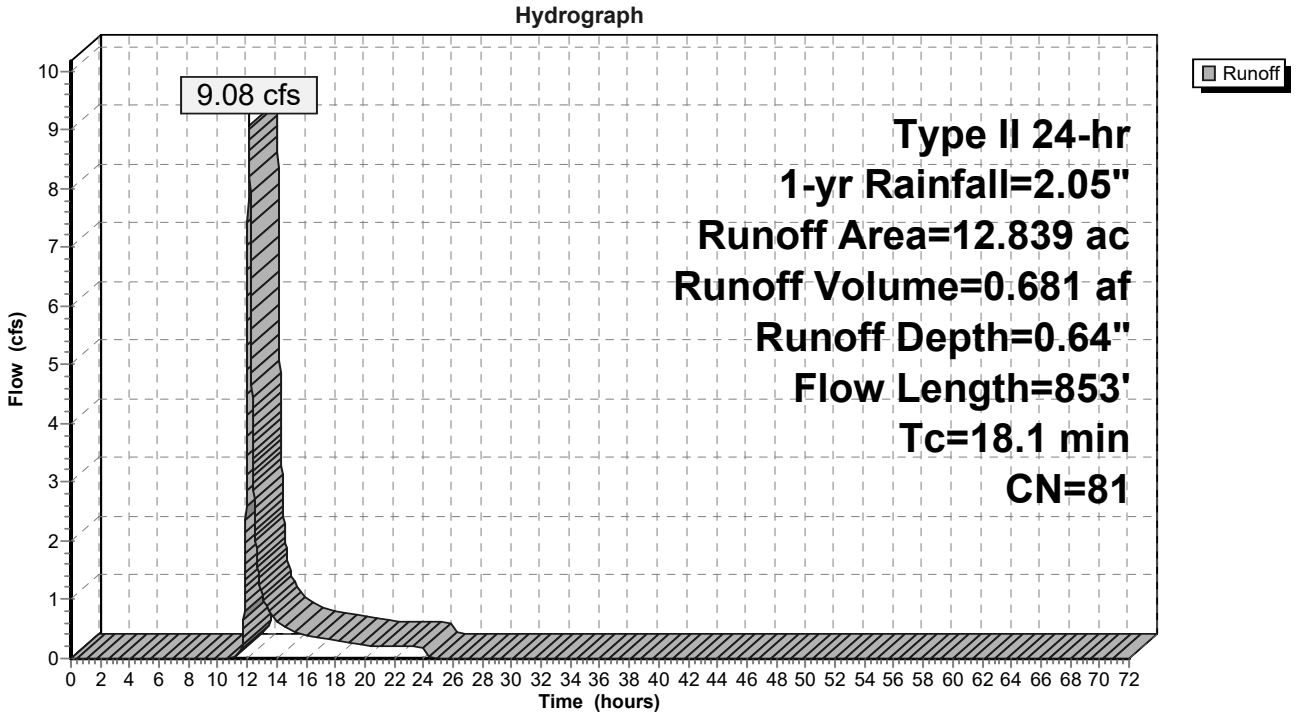
Subcatchment 9S: 191106 EXDA-1a



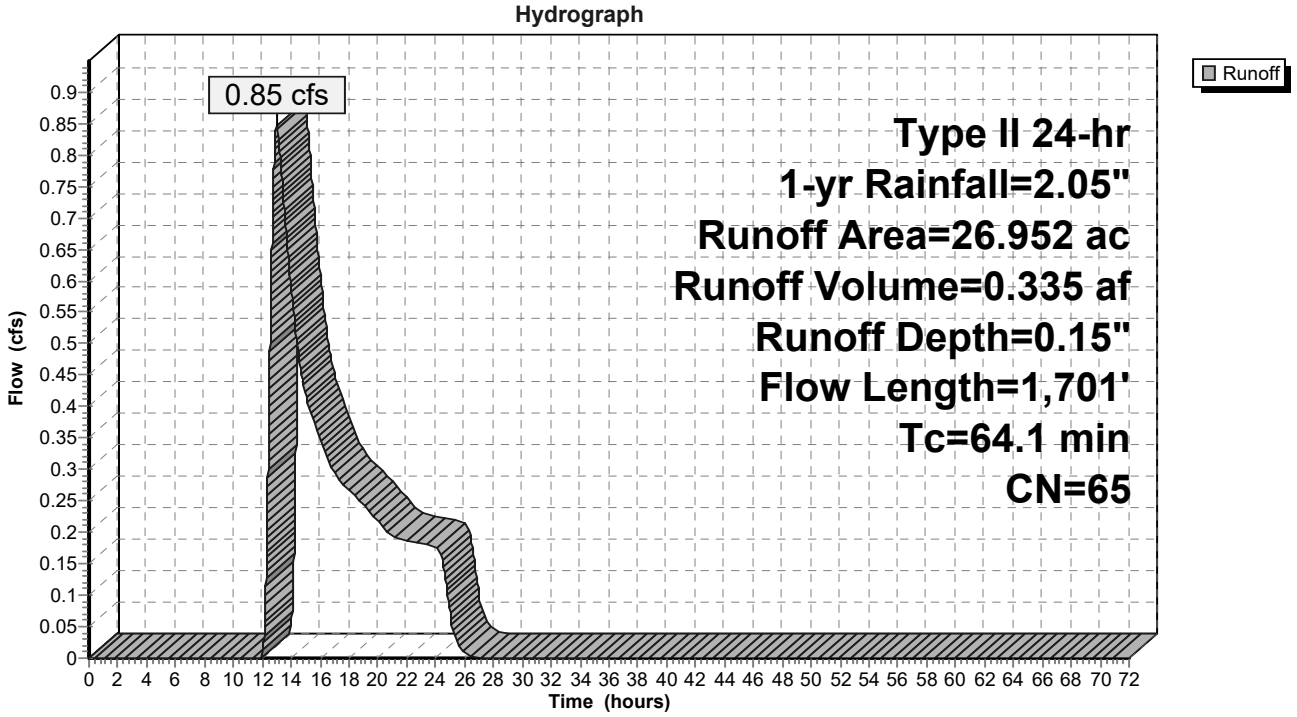
Subcatchment 31S: DA-1c



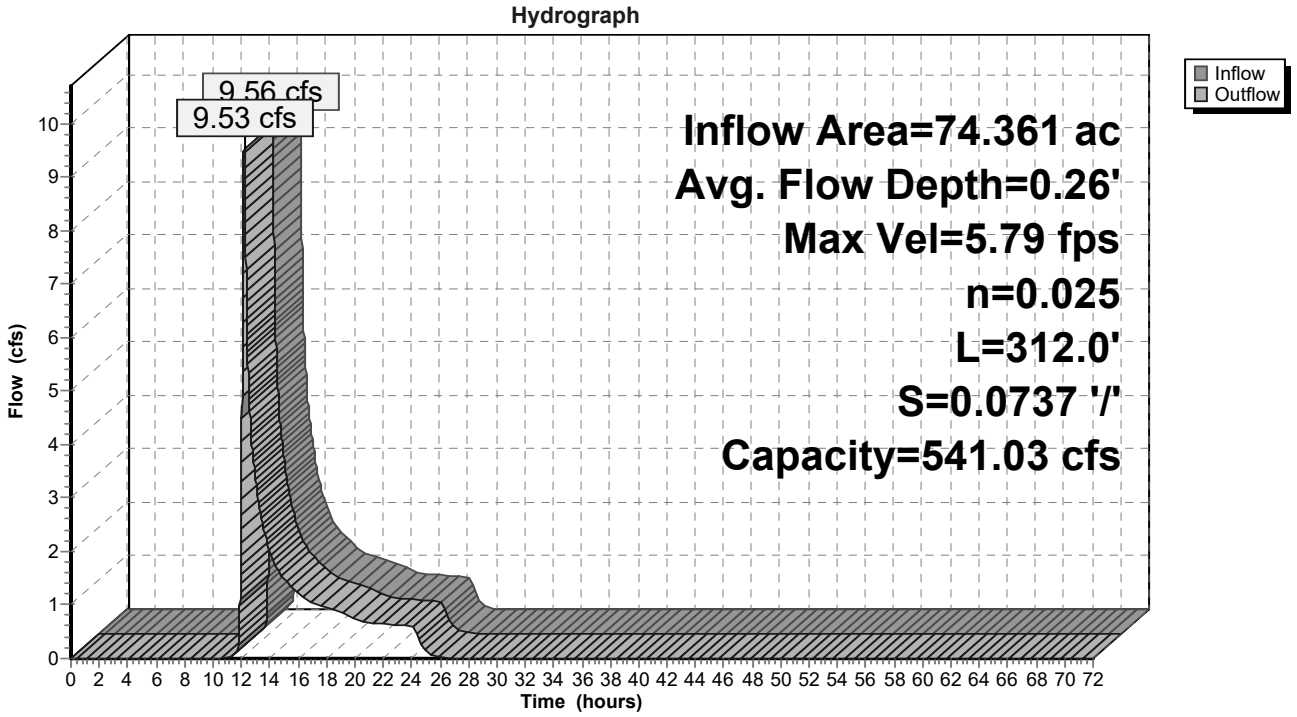
Subcatchment 33S: DA-1d



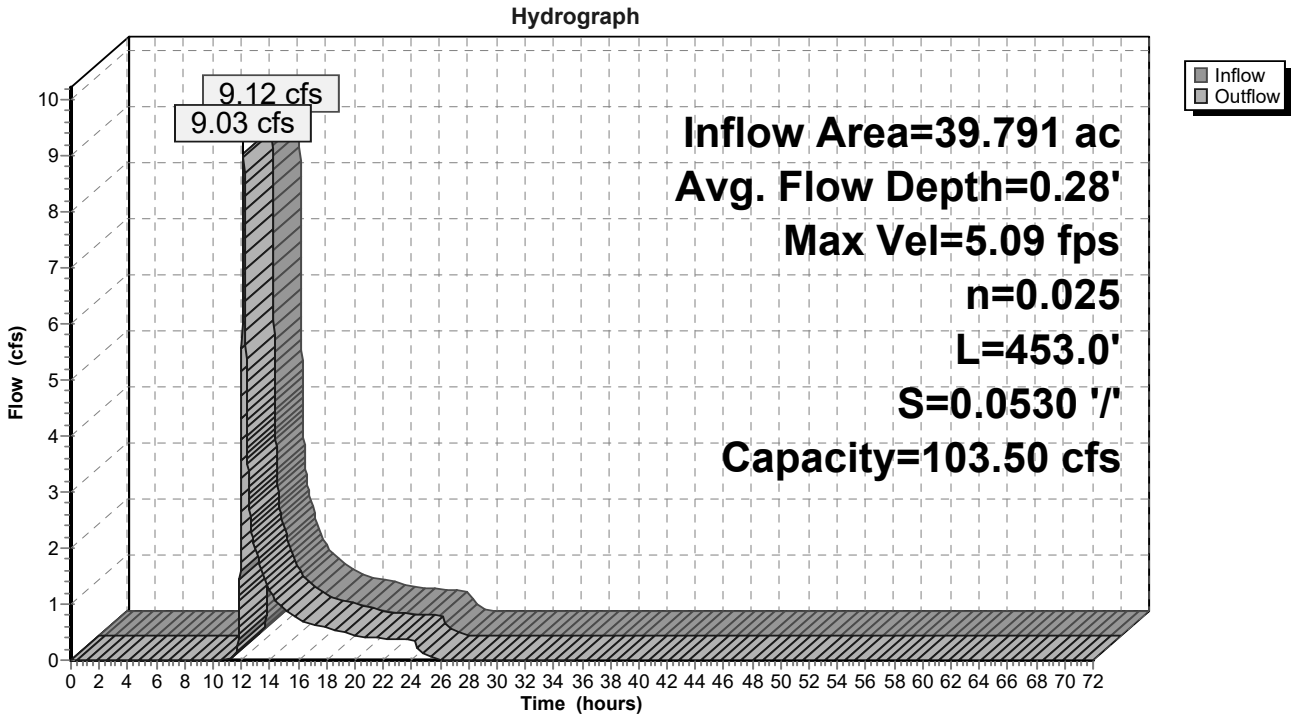
Subcatchment 34S: 191106 EXDA-1b



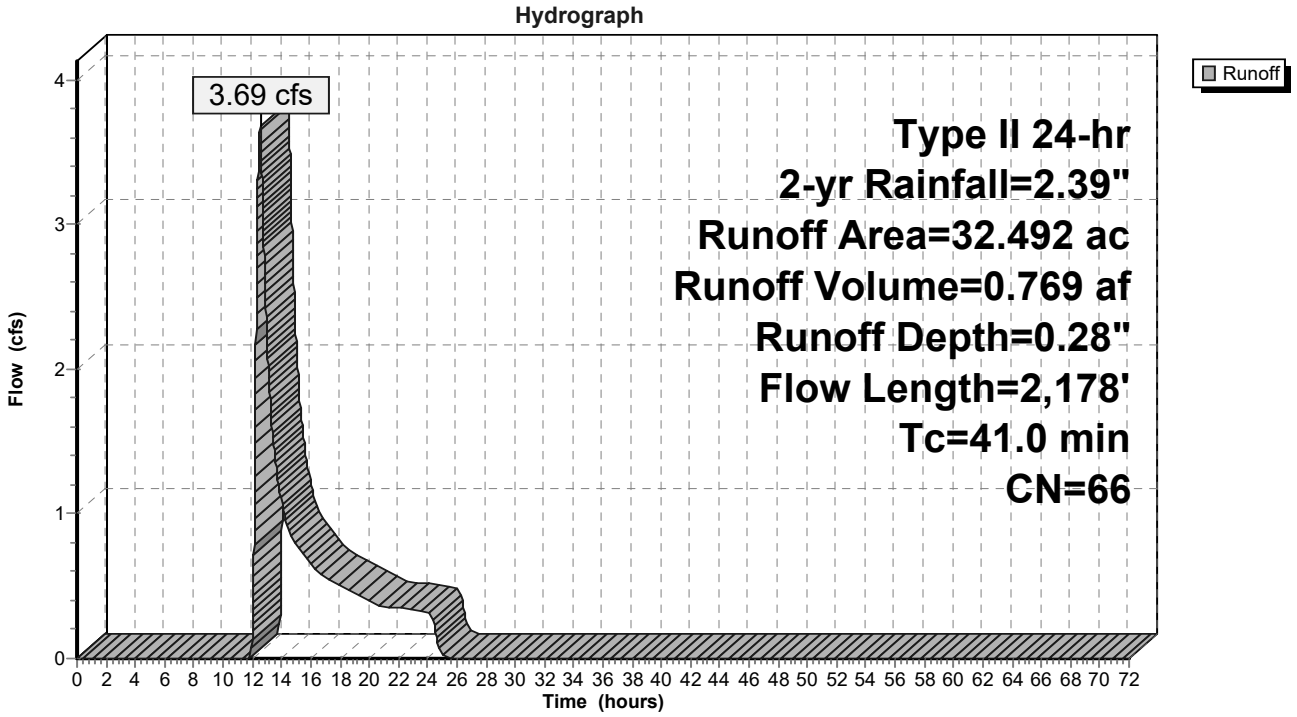
Reach 24R: Swale 3 (Ex. Cond)



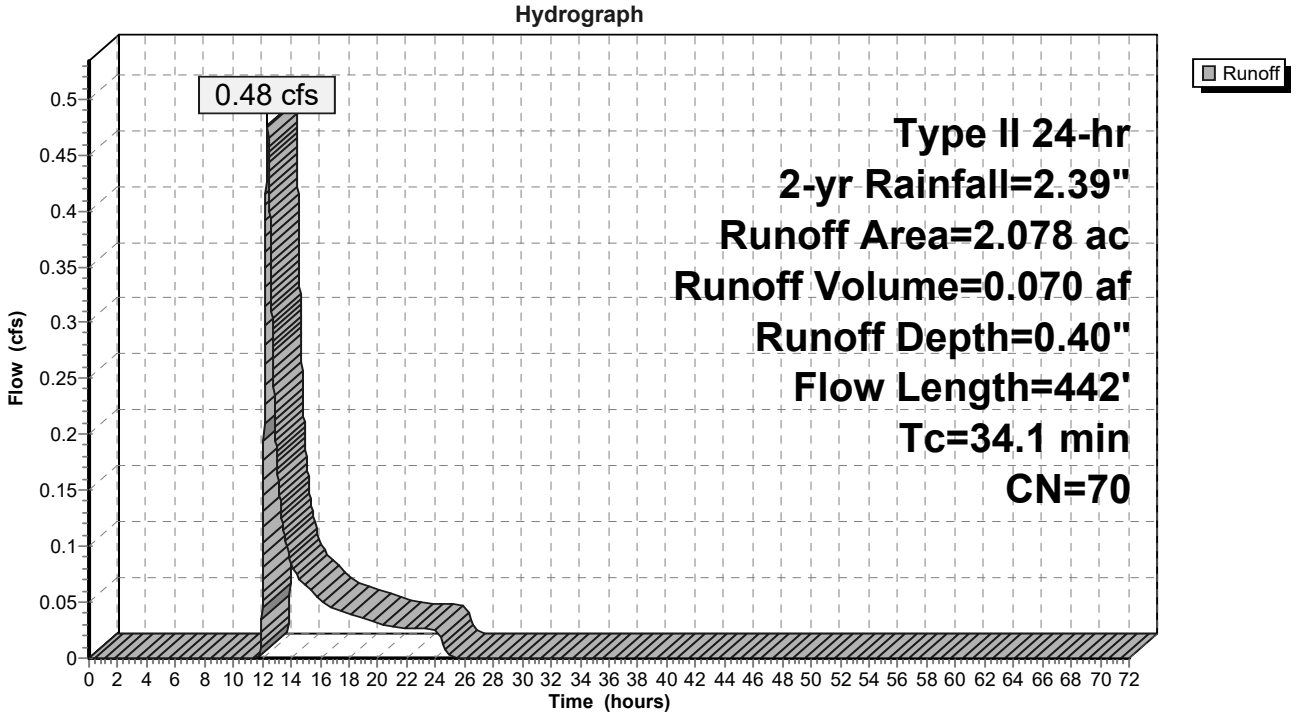
Reach 30R: Swale 1 (Ex. Cond)



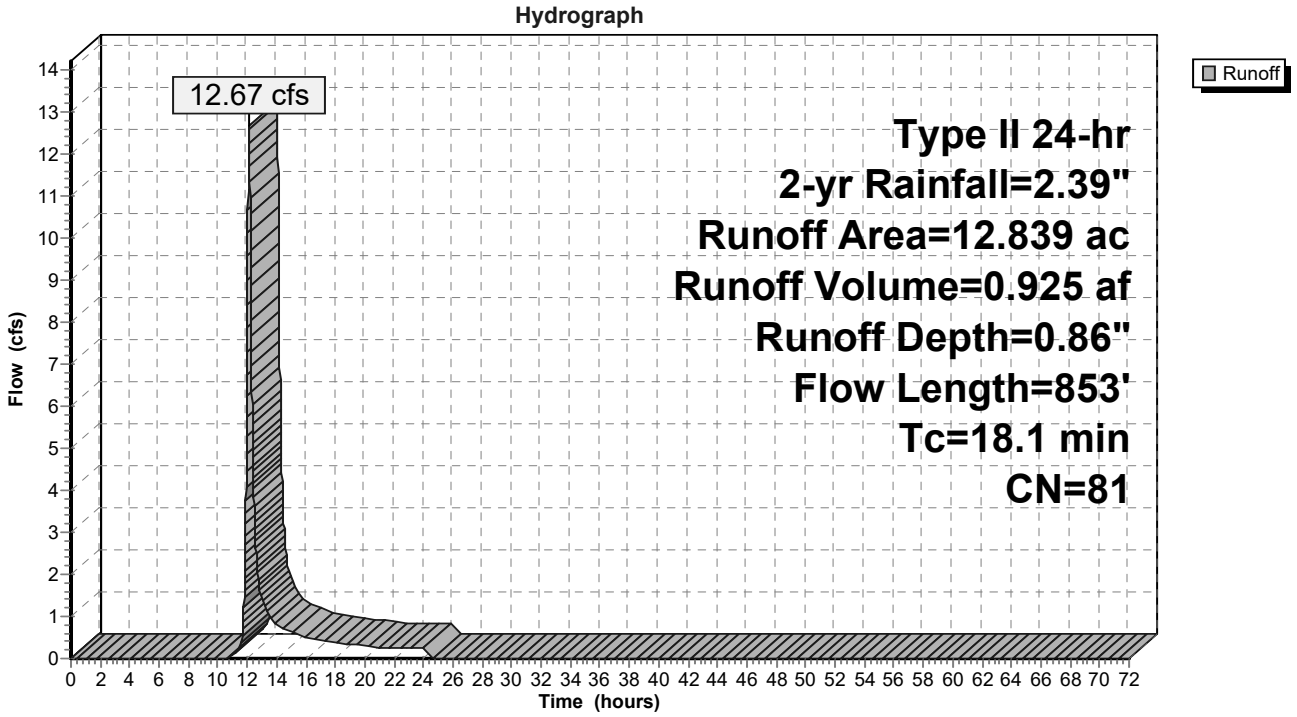
Subcatchment 9S: 191106 EXDA-1a



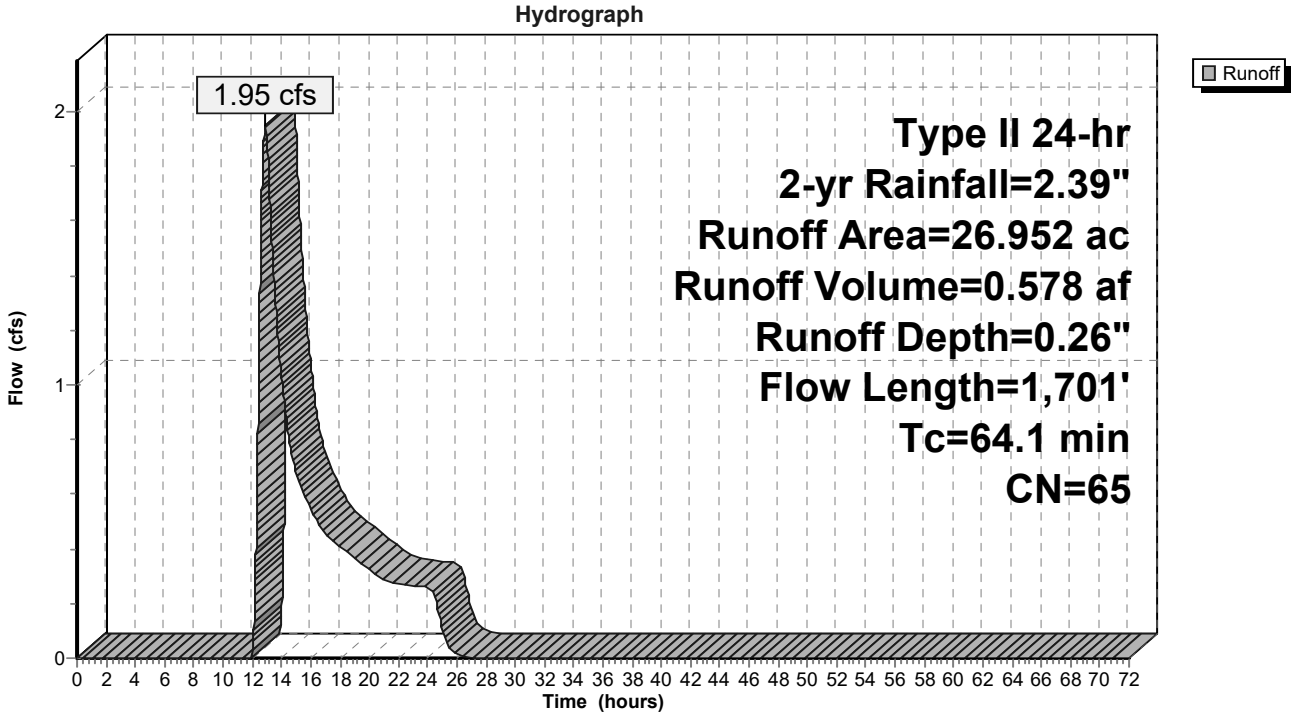
Subcatchment 31S: DA-1c



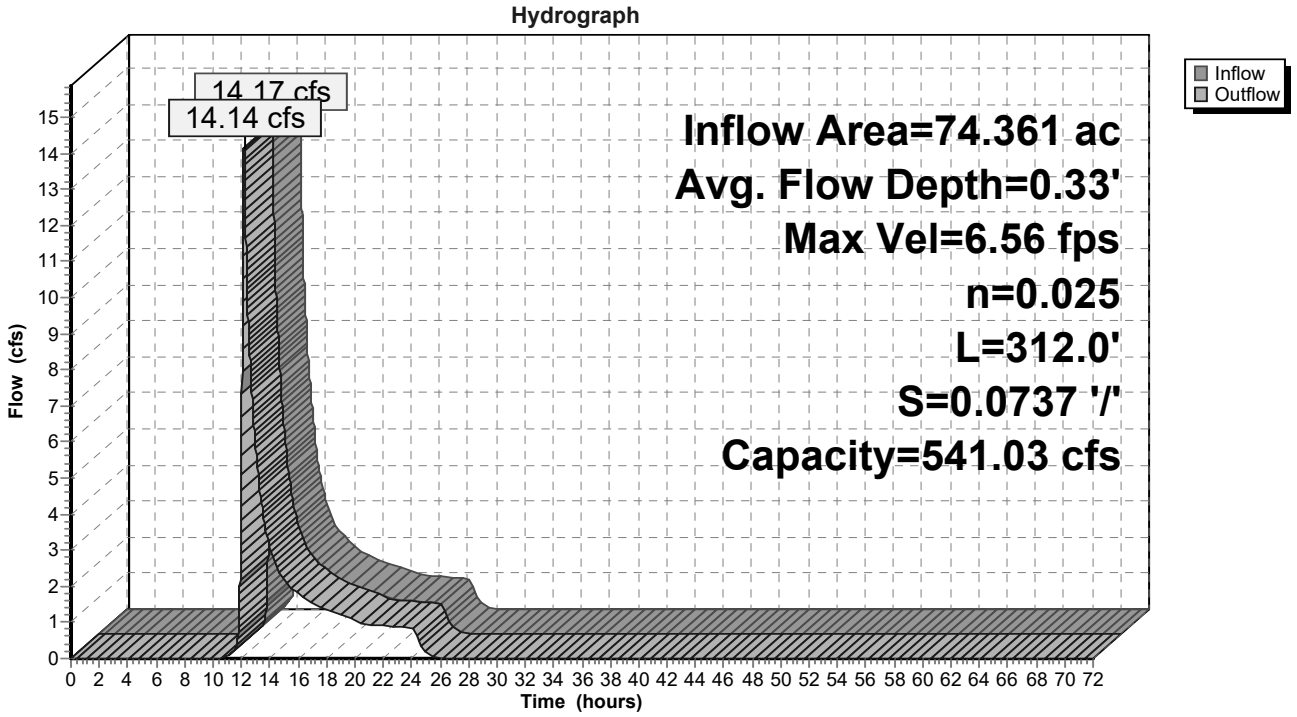
Subcatchment 33S: DA-1d



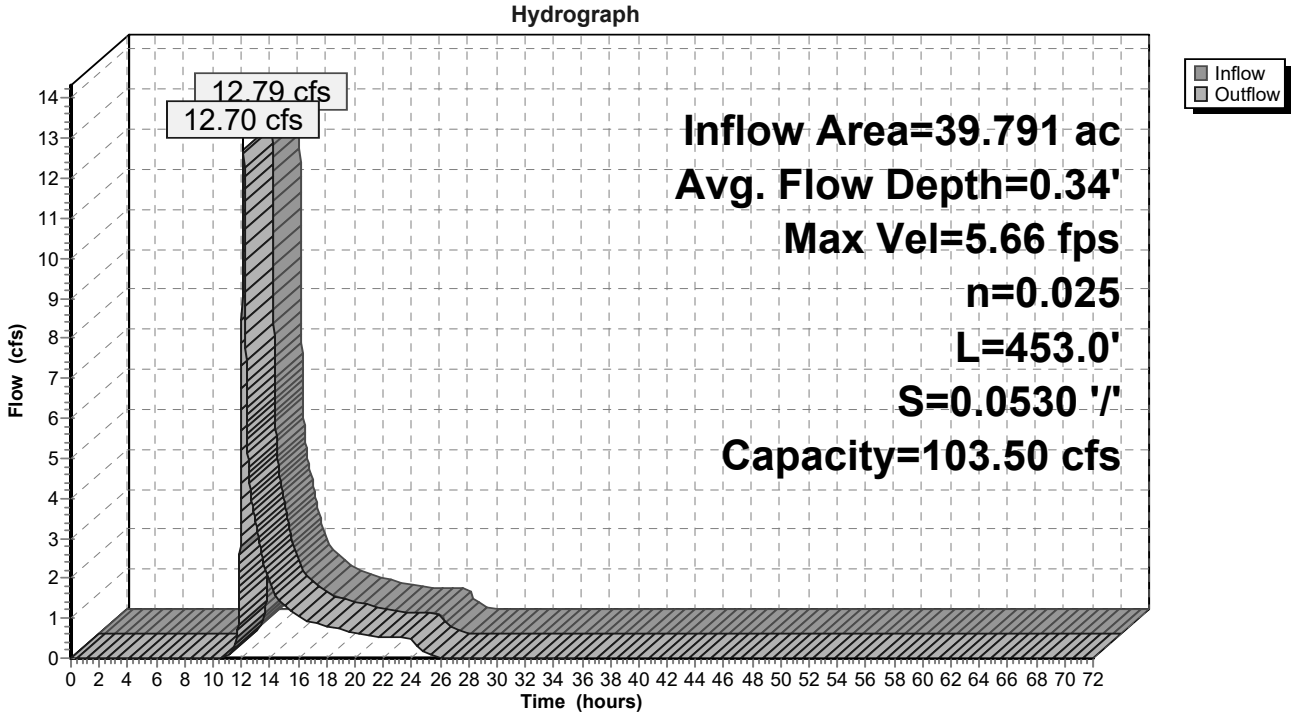
Subcatchment 34S: 191106 EXDA-1b



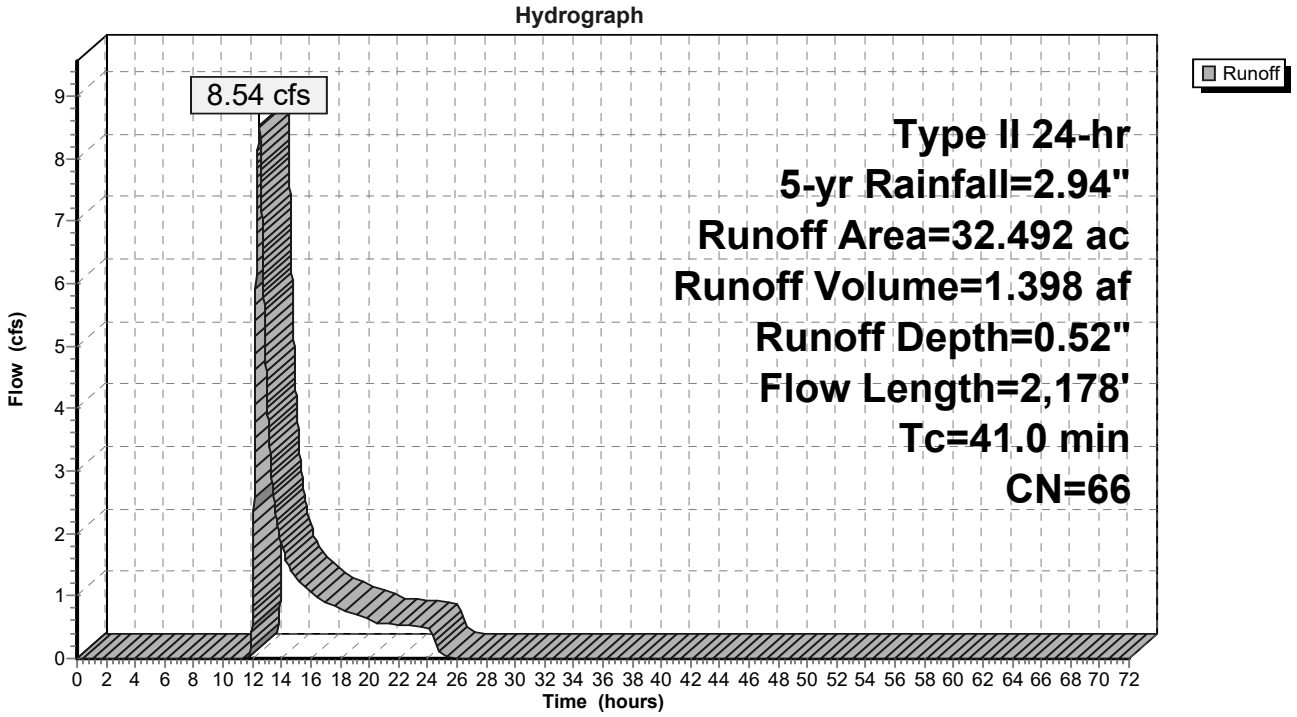
Reach 24R: Swale 3 (Ex. Cond)



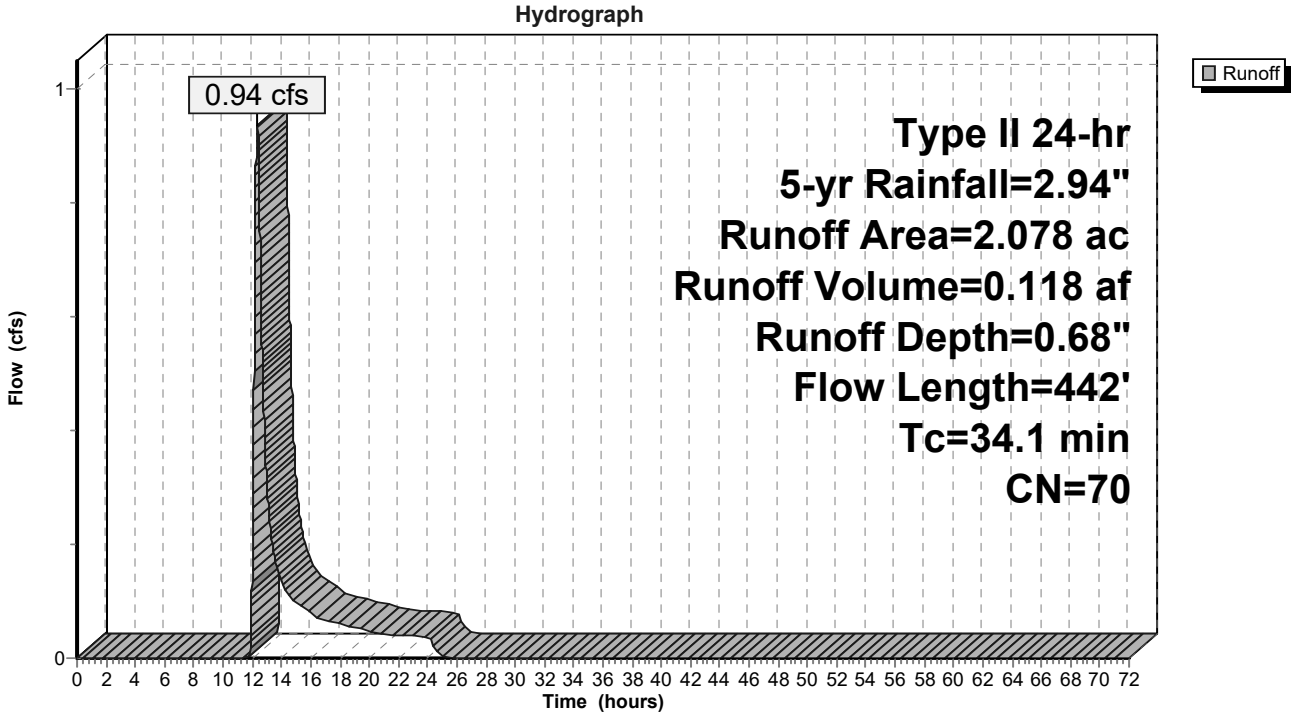
Reach 30R: Swale 1 (Ex. Cond)



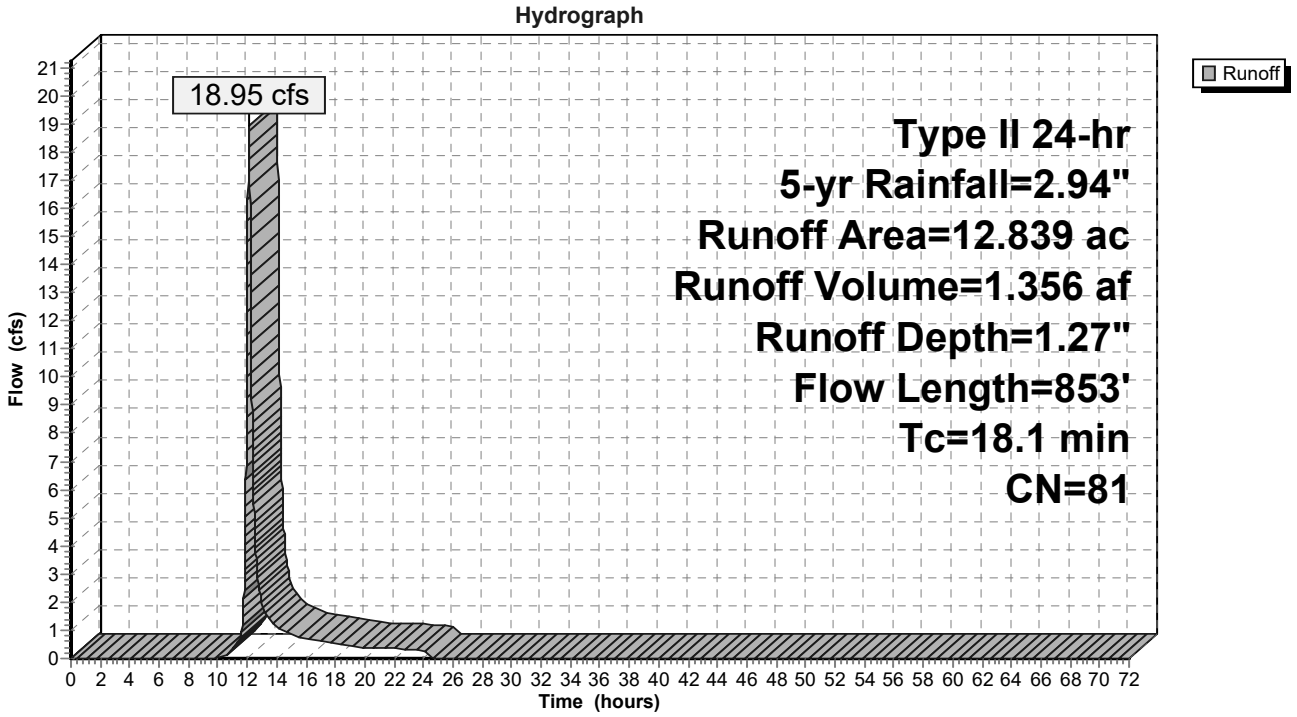
Subcatchment 9S: 191106 EXDA-1a



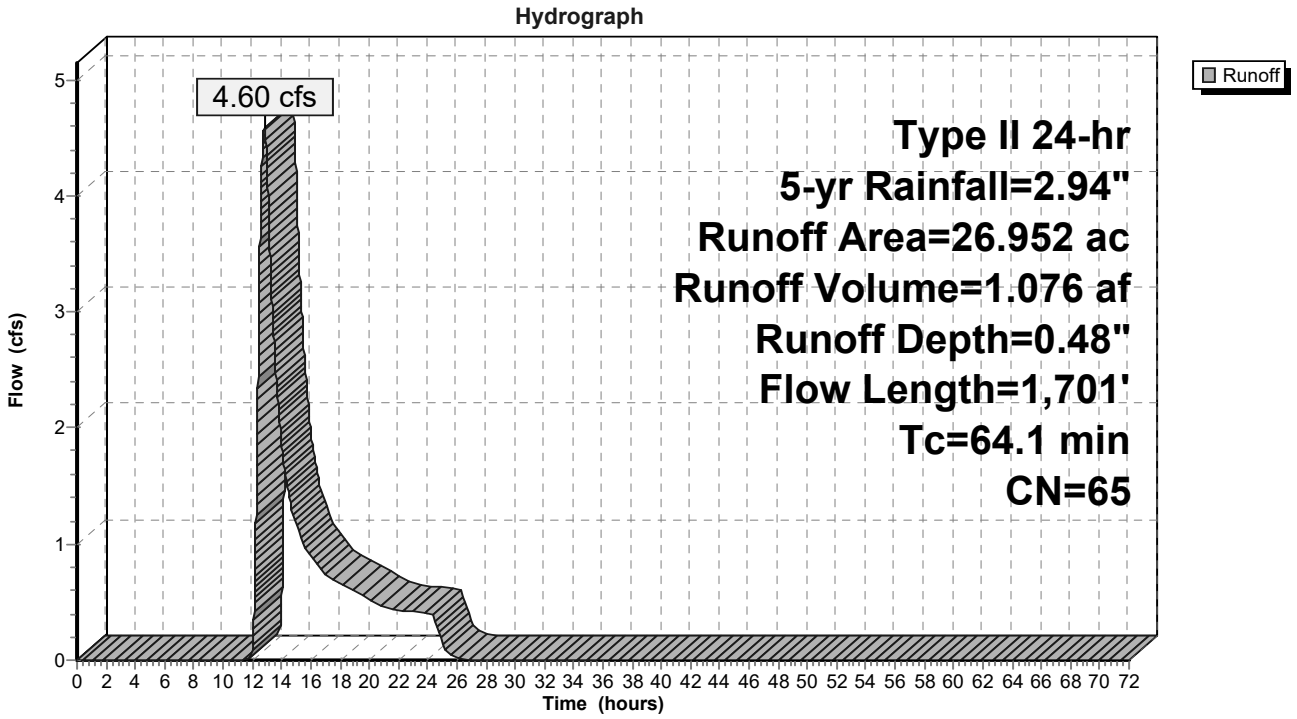
Subcatchment 31S: DA-1c



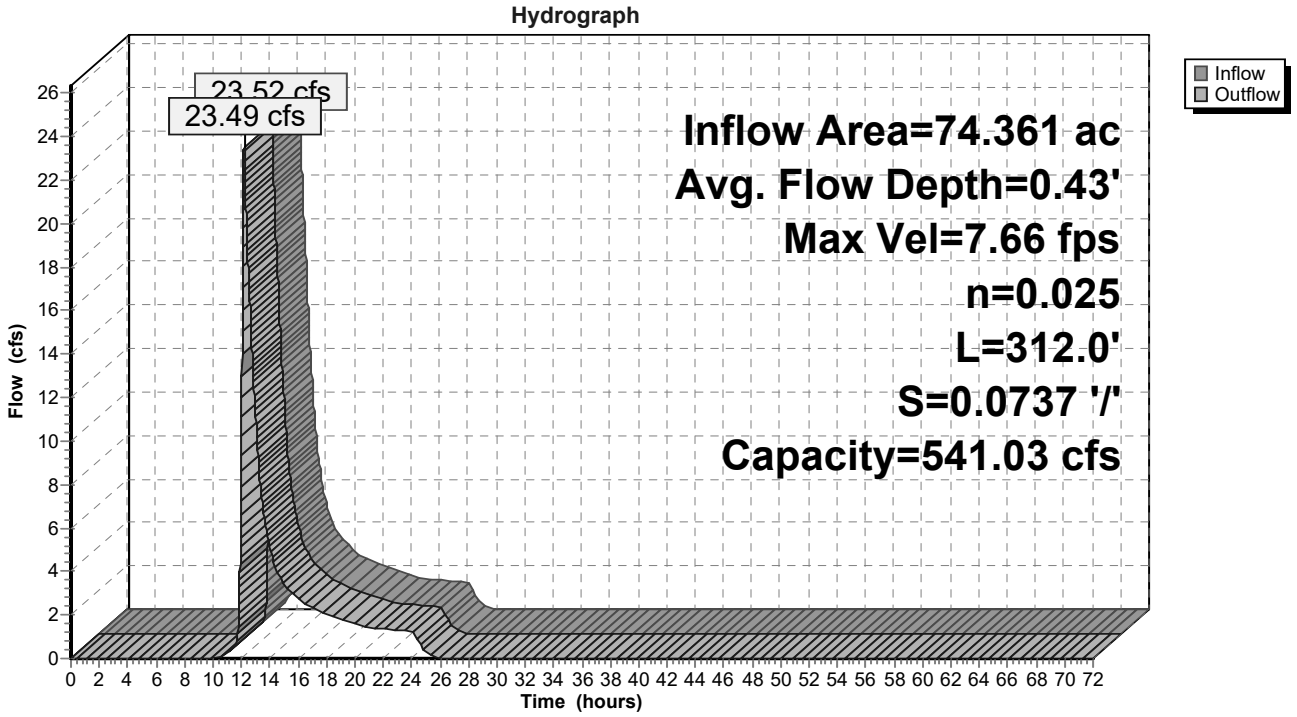
Subcatchment 33S: DA-1d



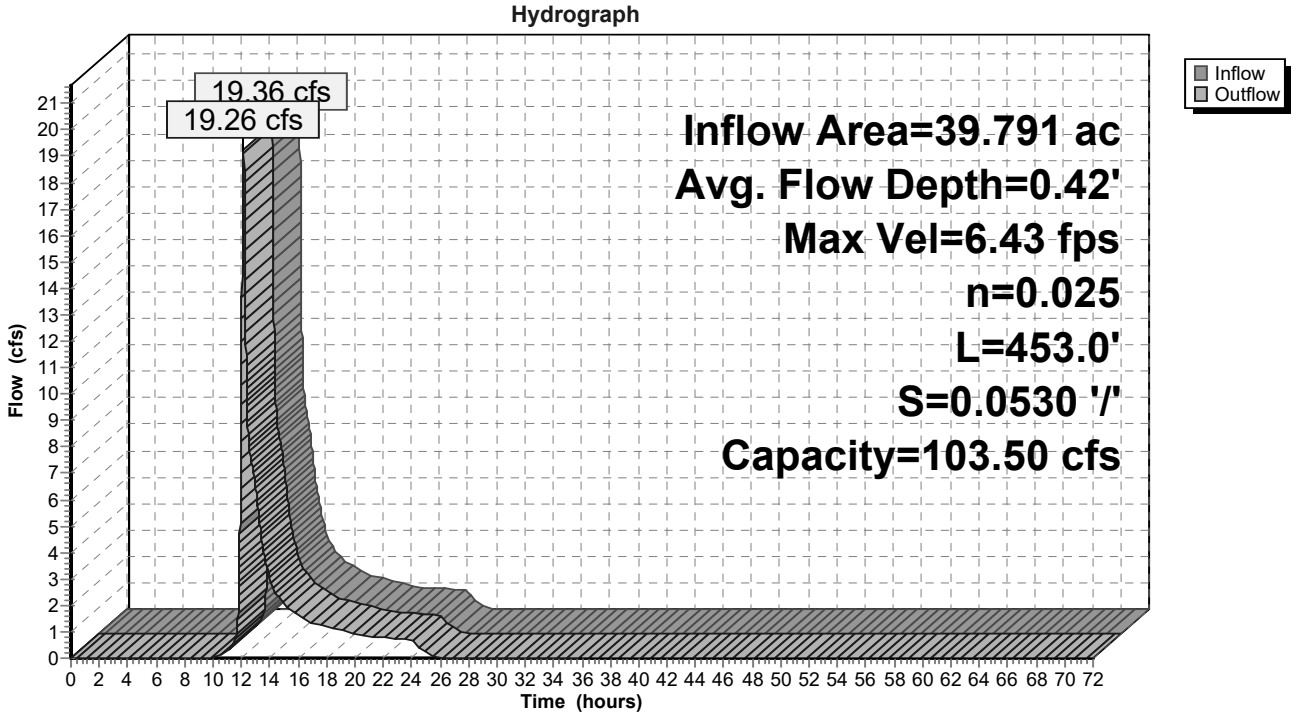
Subcatchment 34S: 191106 EXDA-1b



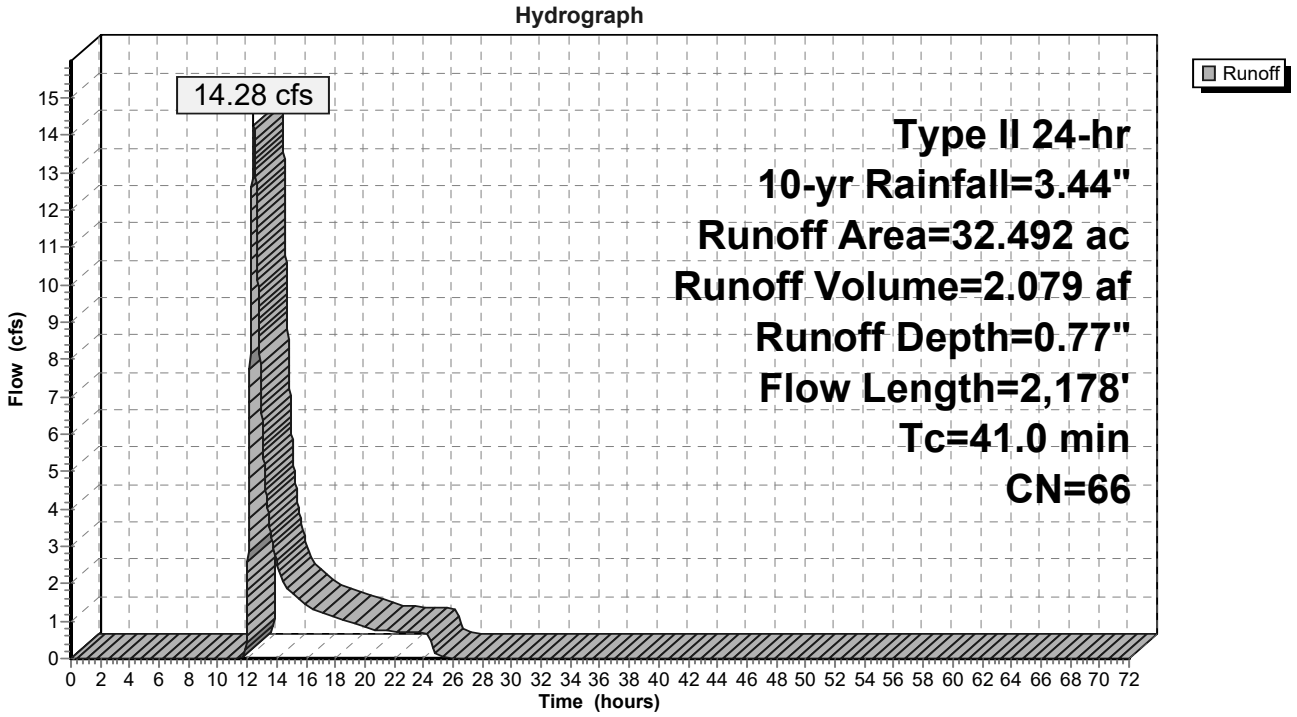
Reach 24R: Swale 3 (Ex. Cond)



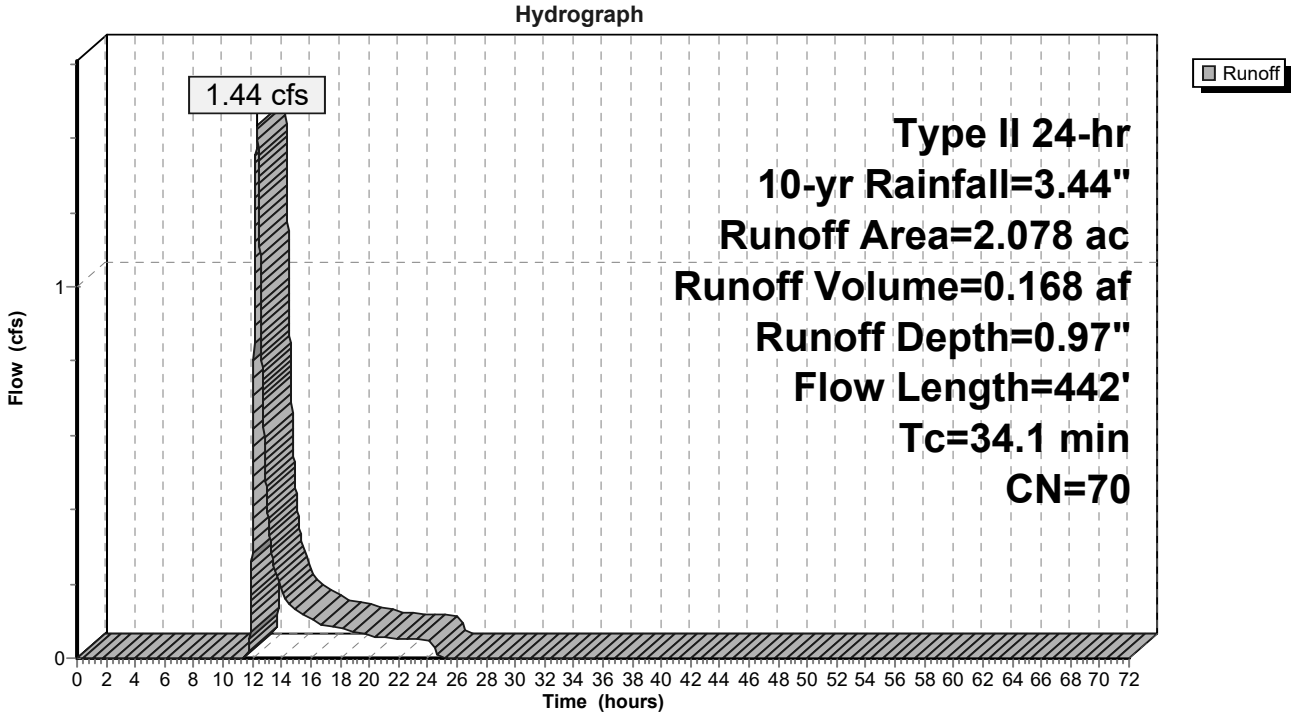
Reach 30R: Swale 1 (Ex. Cond)



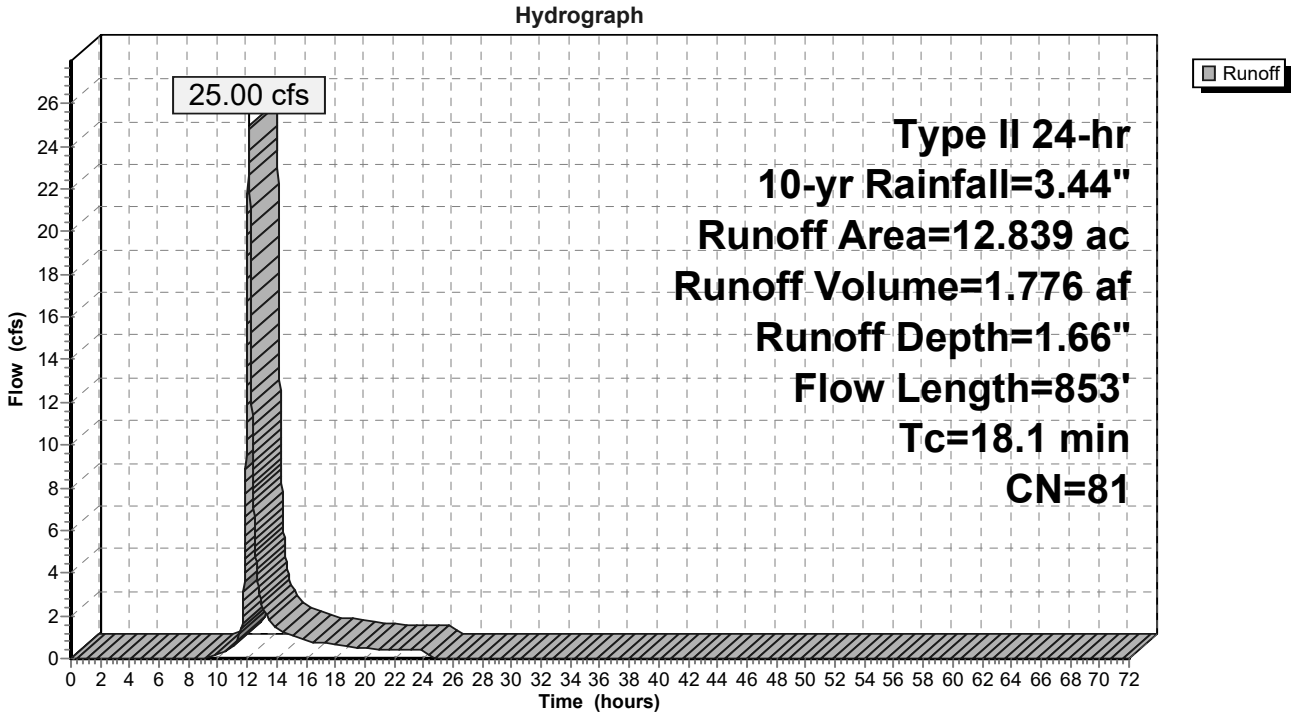
Subcatchment 9S: 191106 EXDA-1a



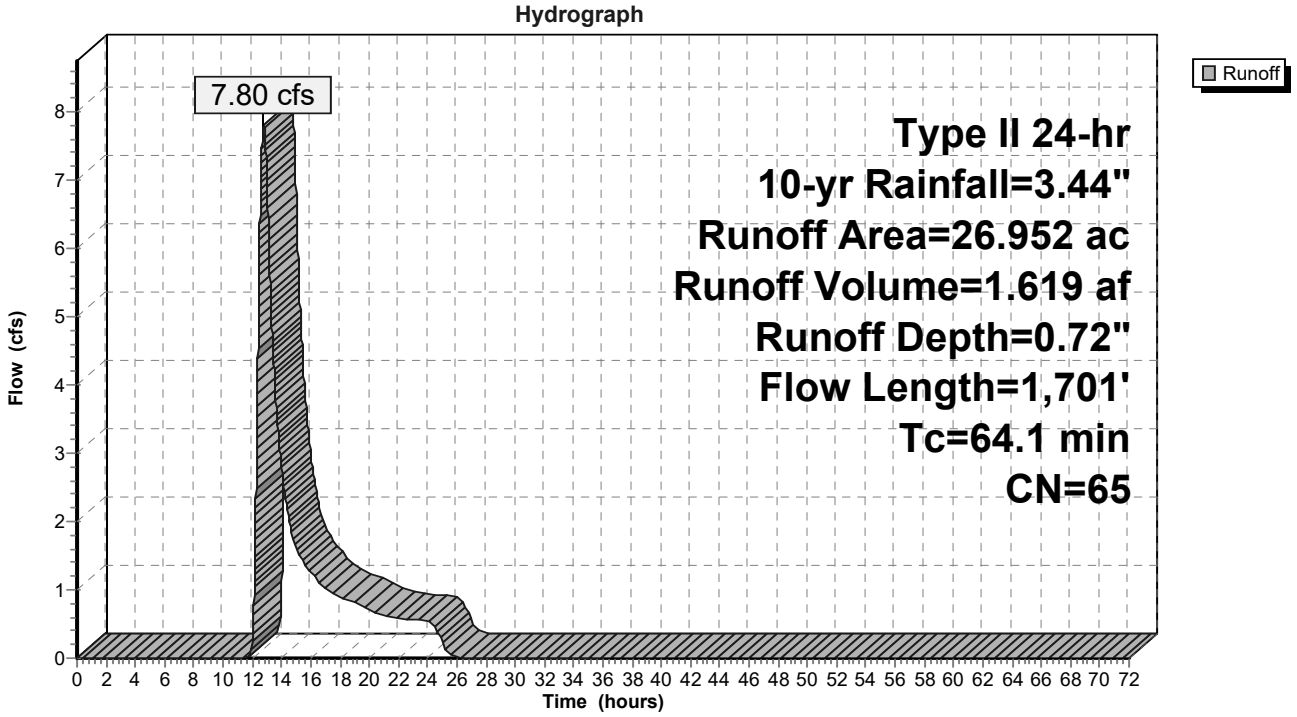
Subcatchment 31S: DA-1c



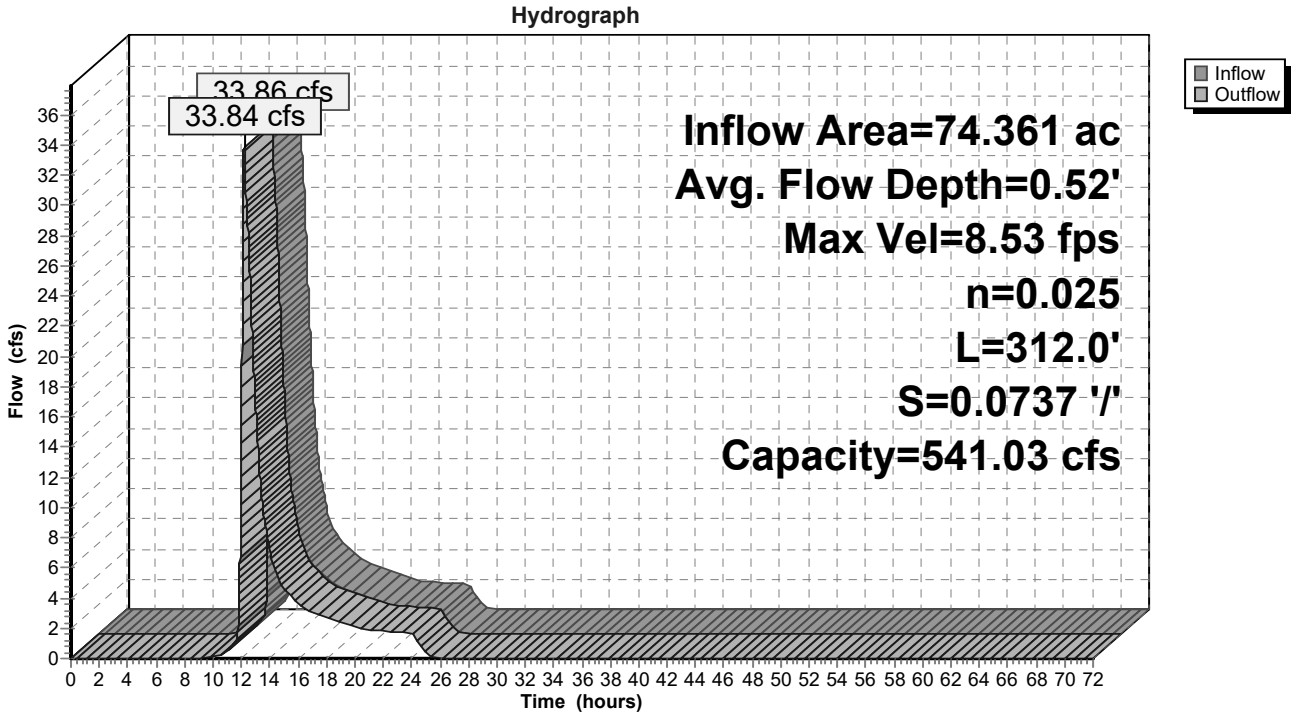
Subcatchment 33S: DA-1d



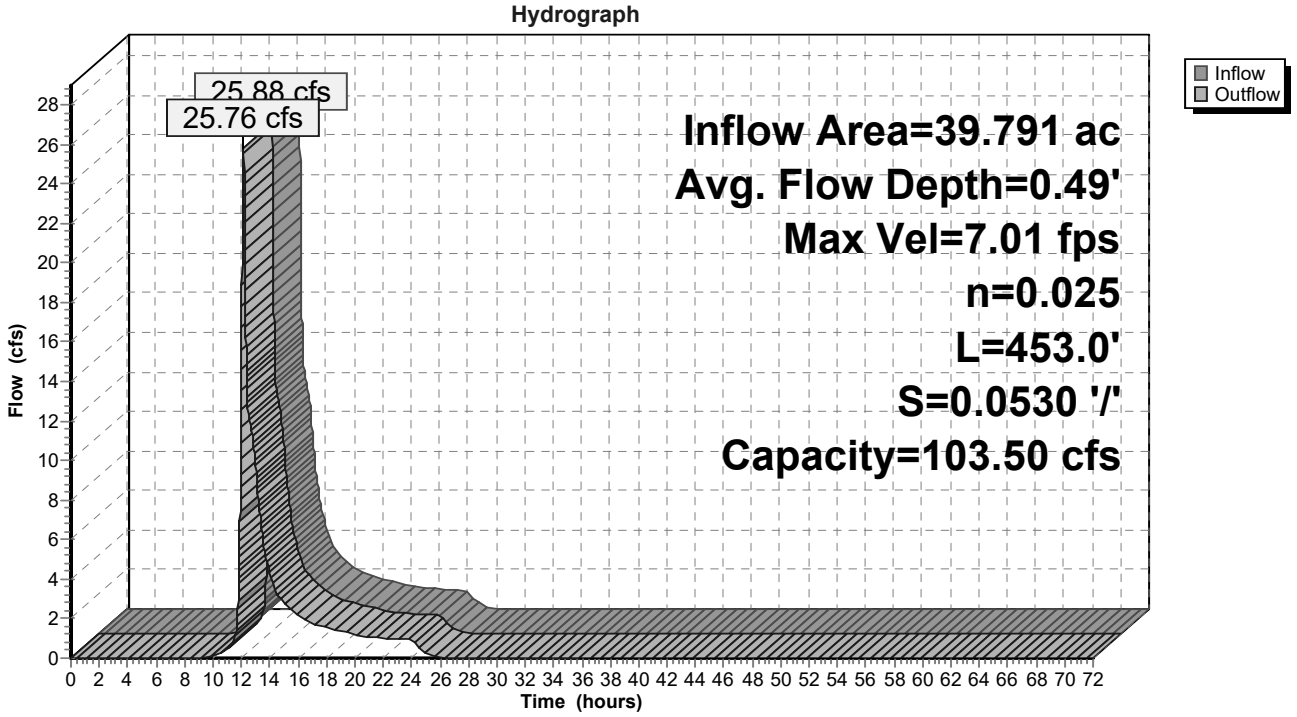
Subcatchment 34S: 191106 EXDA-1b



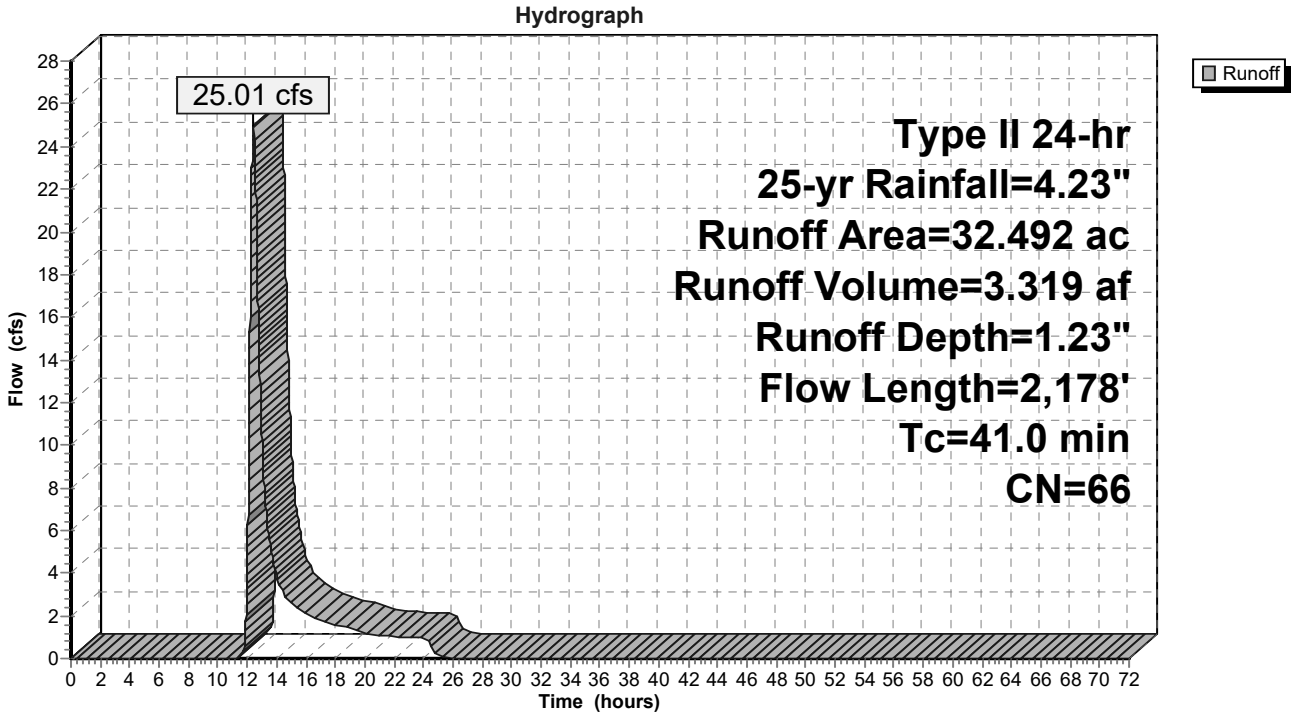
Reach 24R: Swale 3 (Ex. Cond)



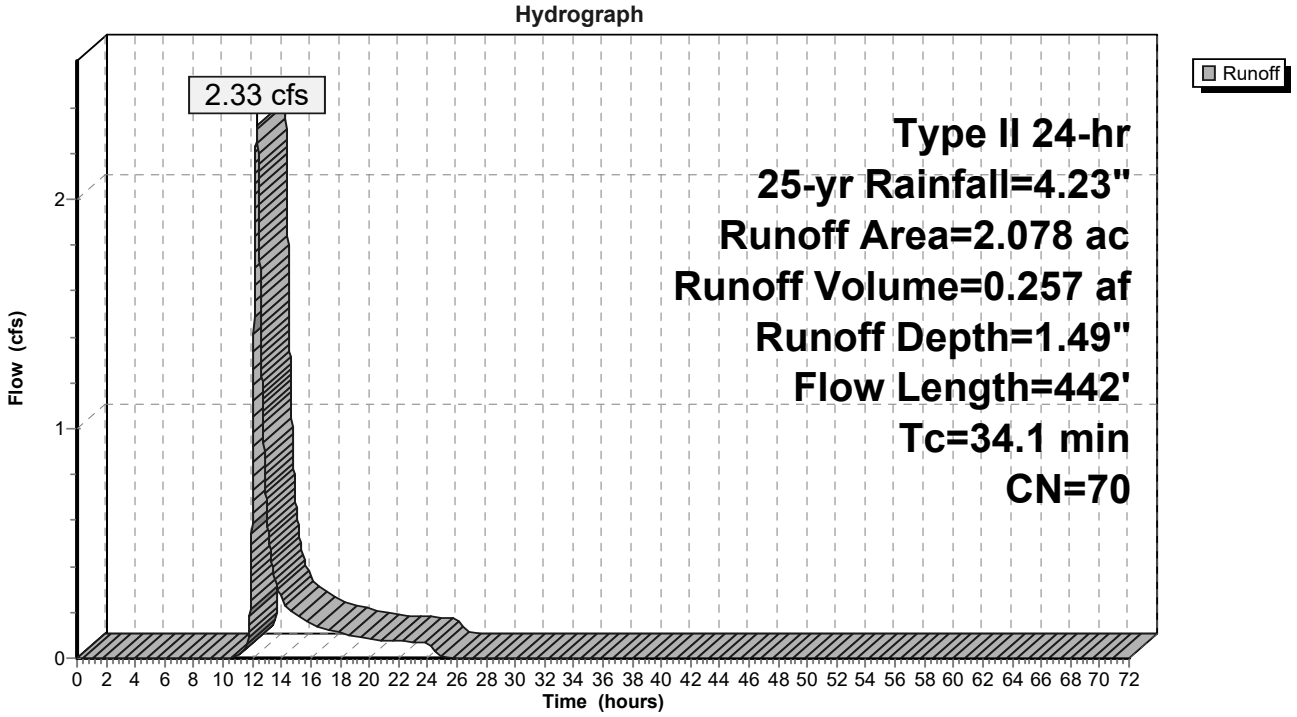
Reach 30R: Swale 1 (Ex. Cond)



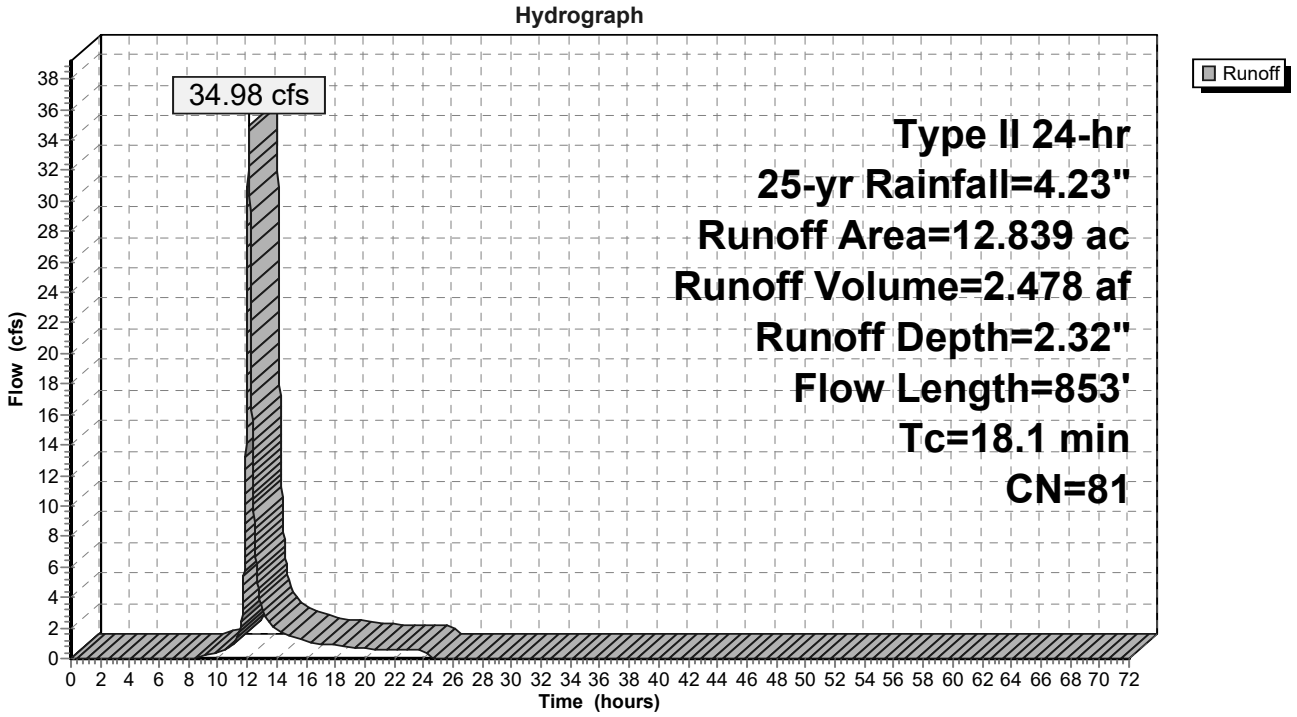
Subcatchment 9S: 191106 EXDA-1a



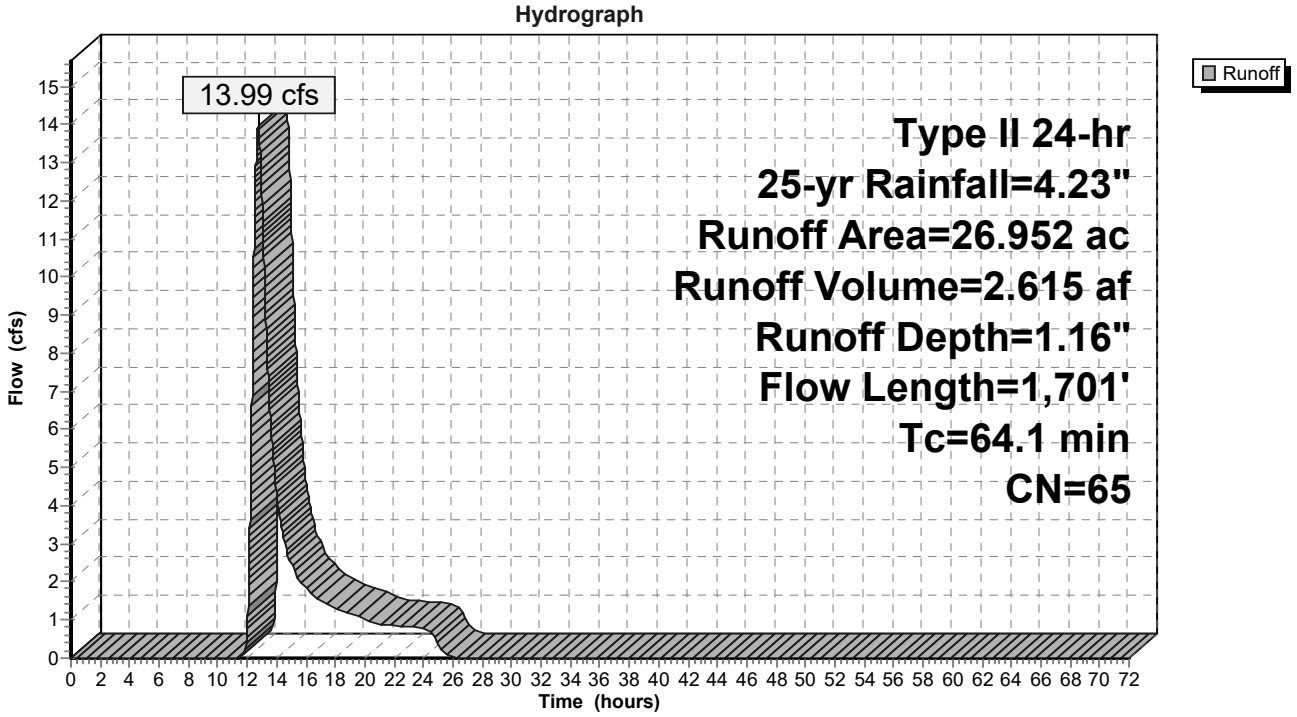
Subcatchment 31S: DA-1c



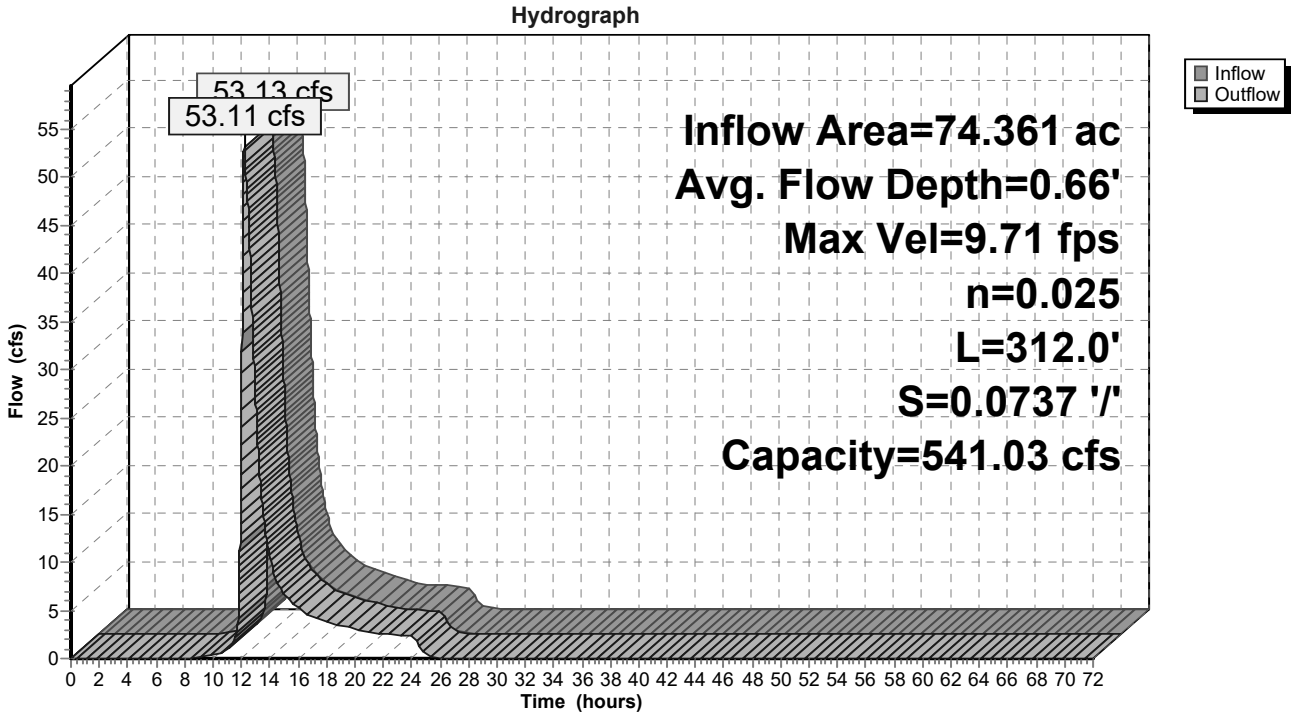
Subcatchment 33S: DA-1d



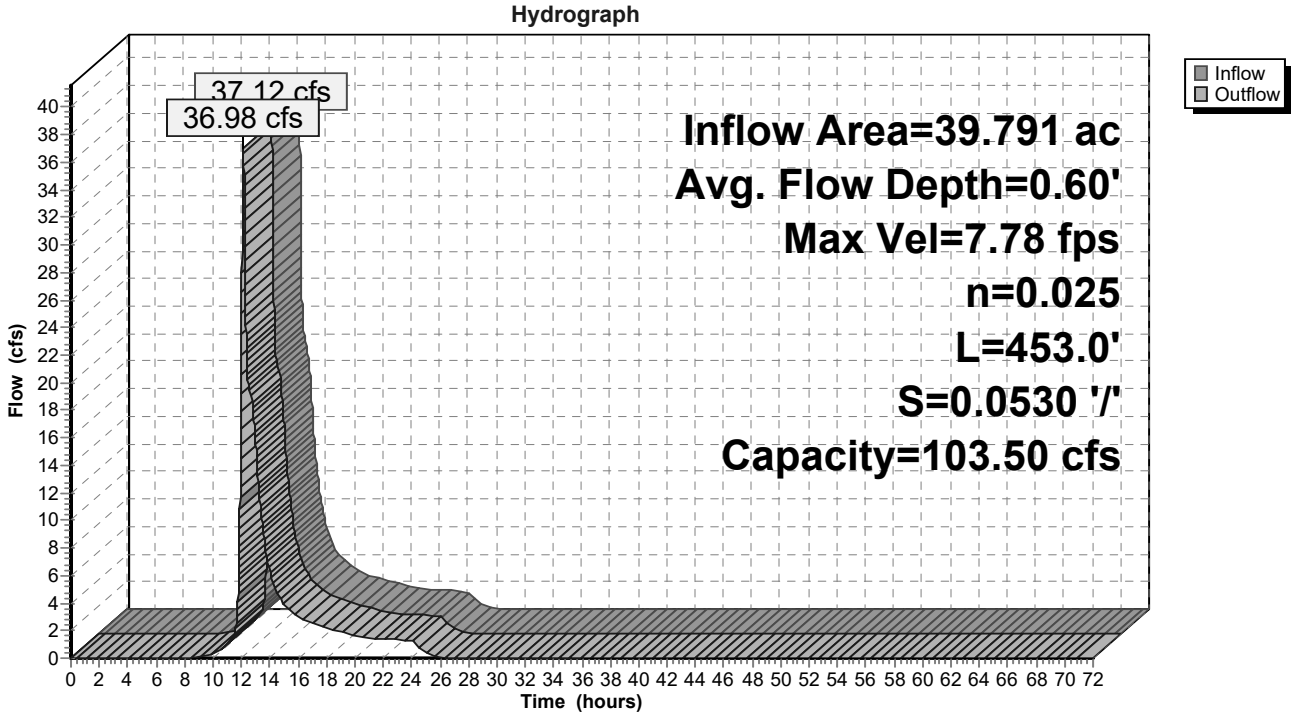
Subcatchment 34S: 191106 EXDA-1b



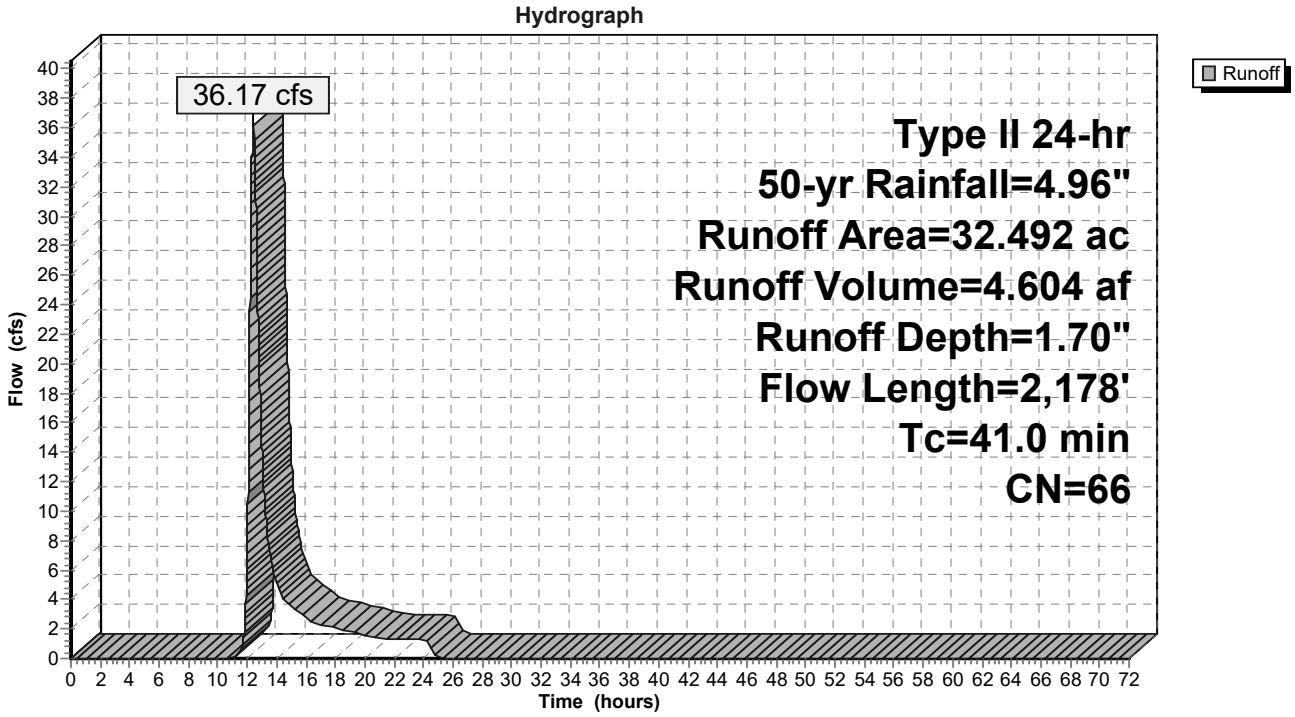
Reach 24R: Swale 3 (Ex. Cond)



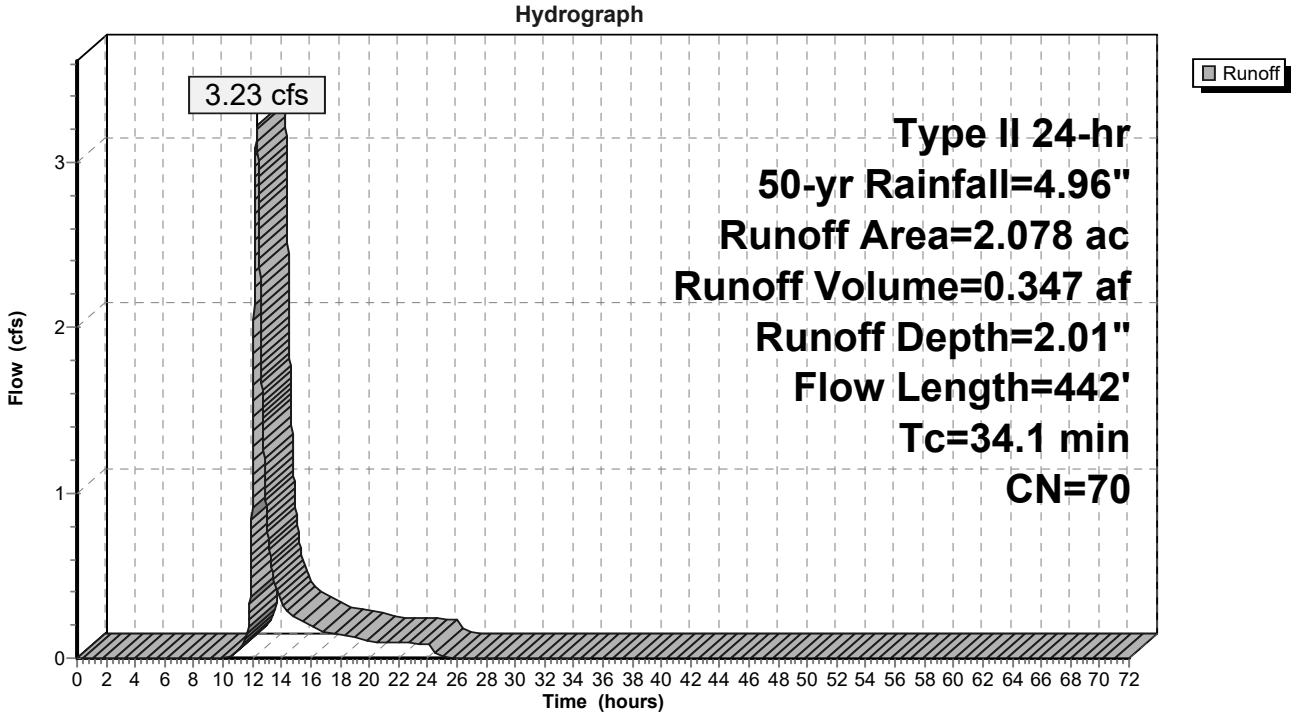
Reach 30R: Swale 1 (Ex. Cond)



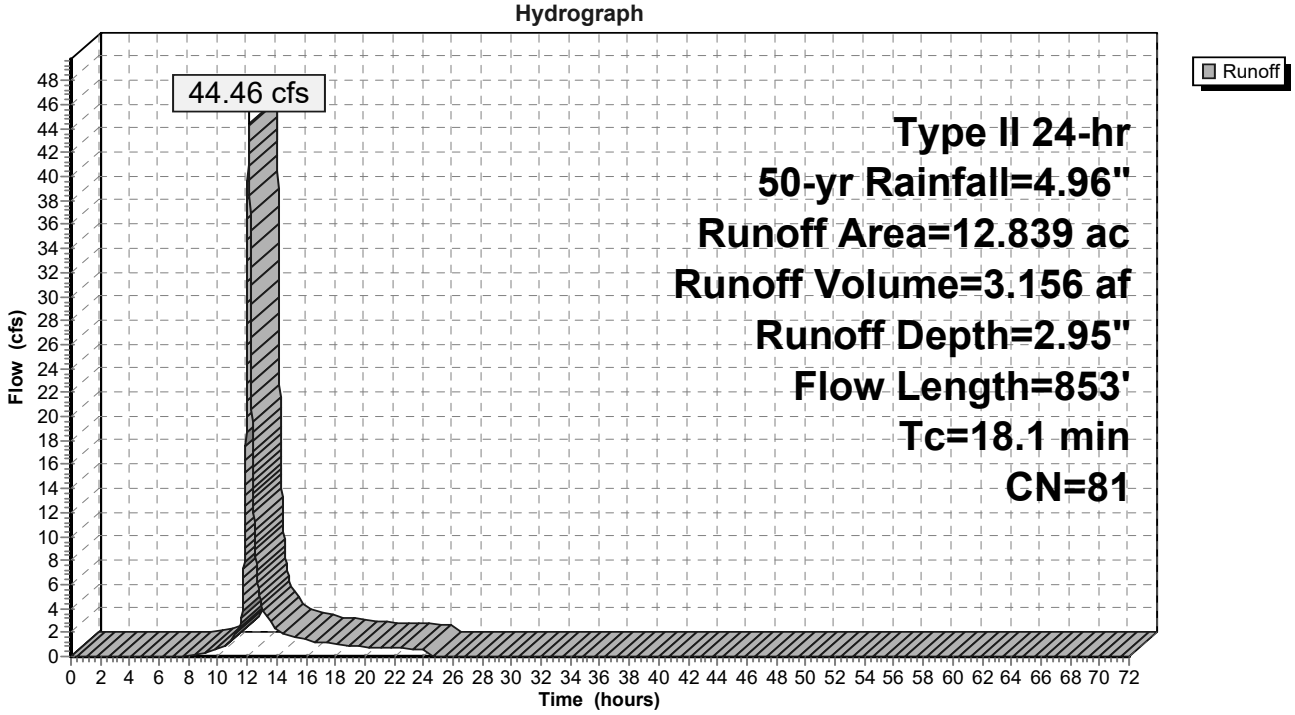
Subcatchment 9S: 191106 EXDA-1a



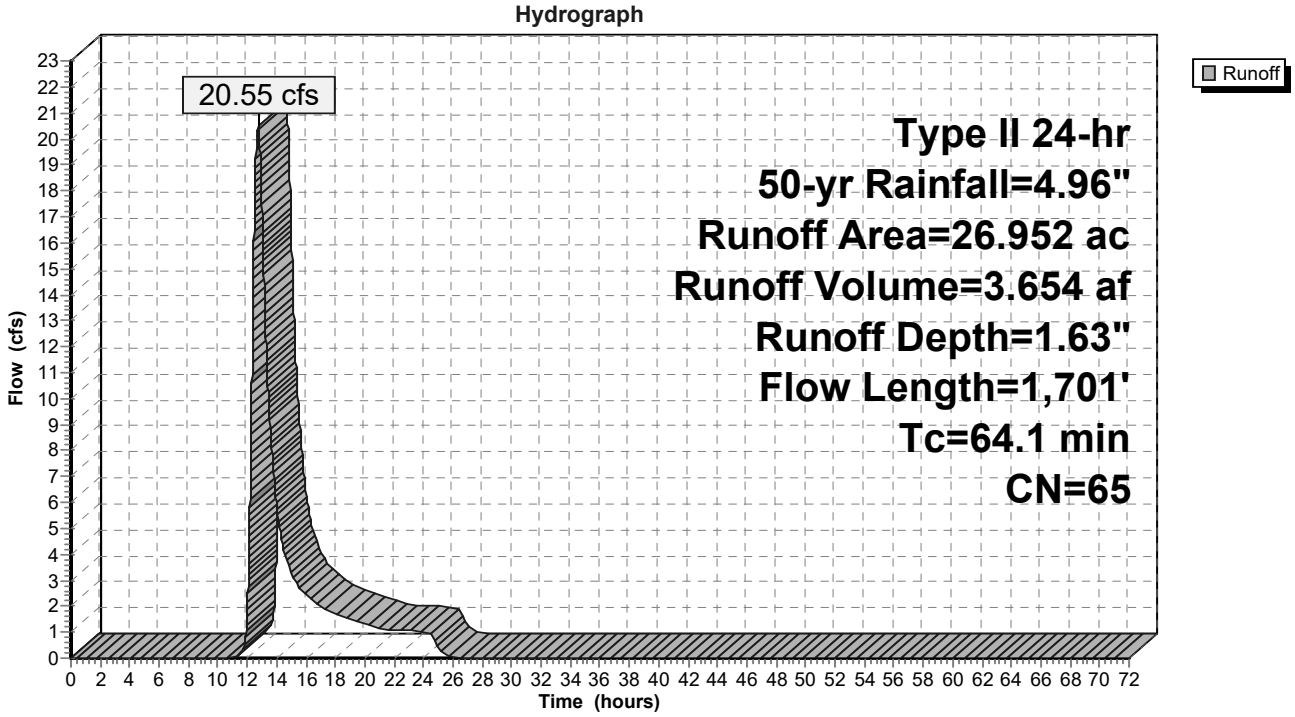
Subcatchment 31S: DA-1c



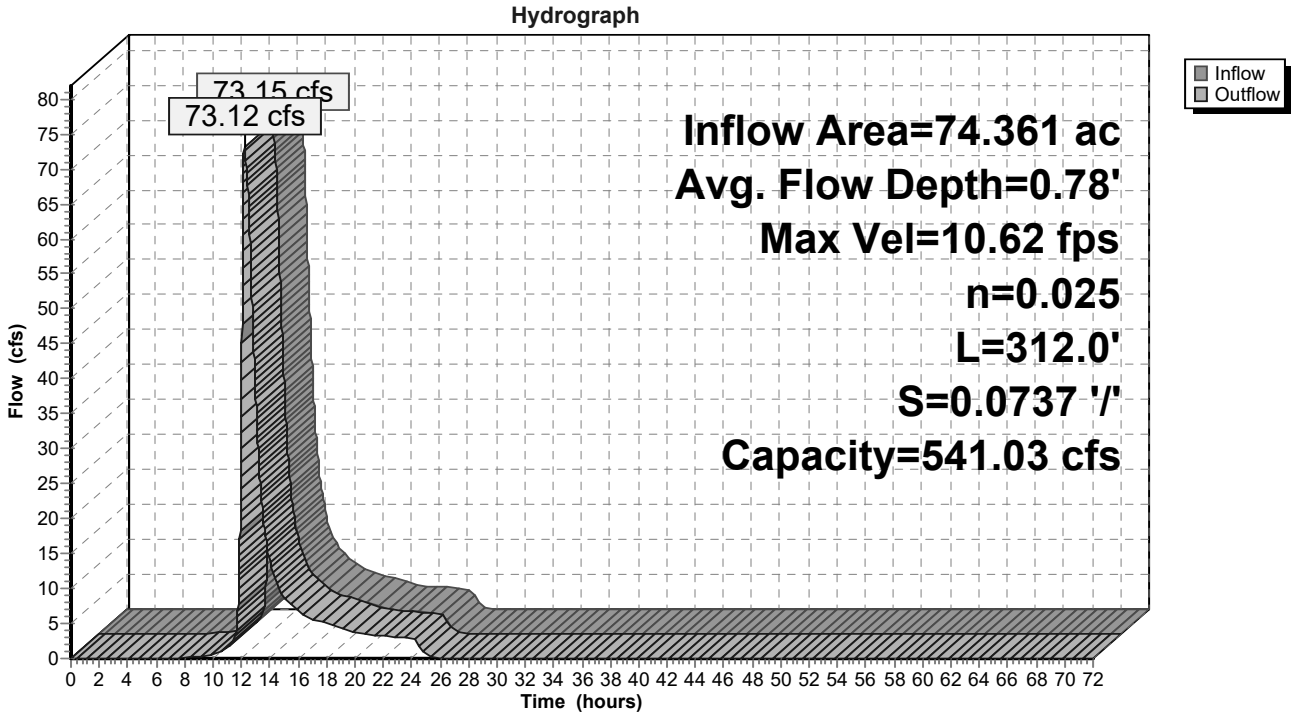
Subcatchment 33S: DA-1d



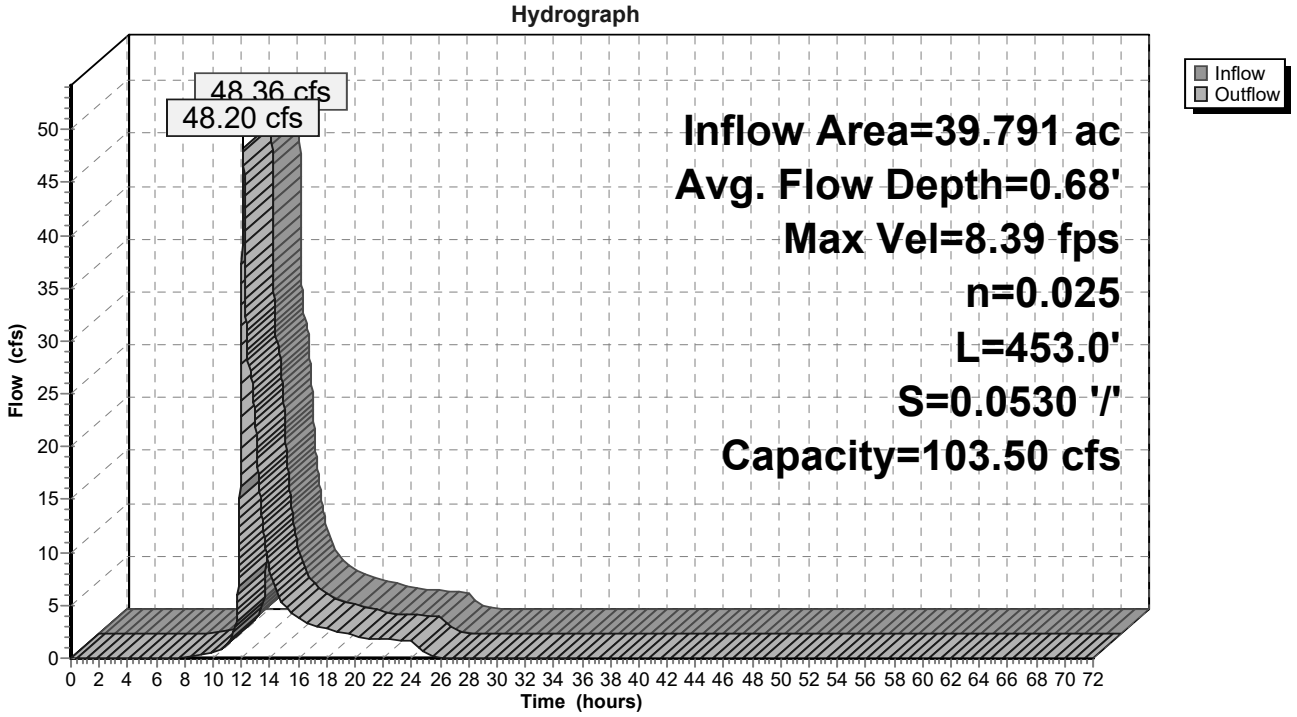
Subcatchment 34S: 191106 EXDA-1b



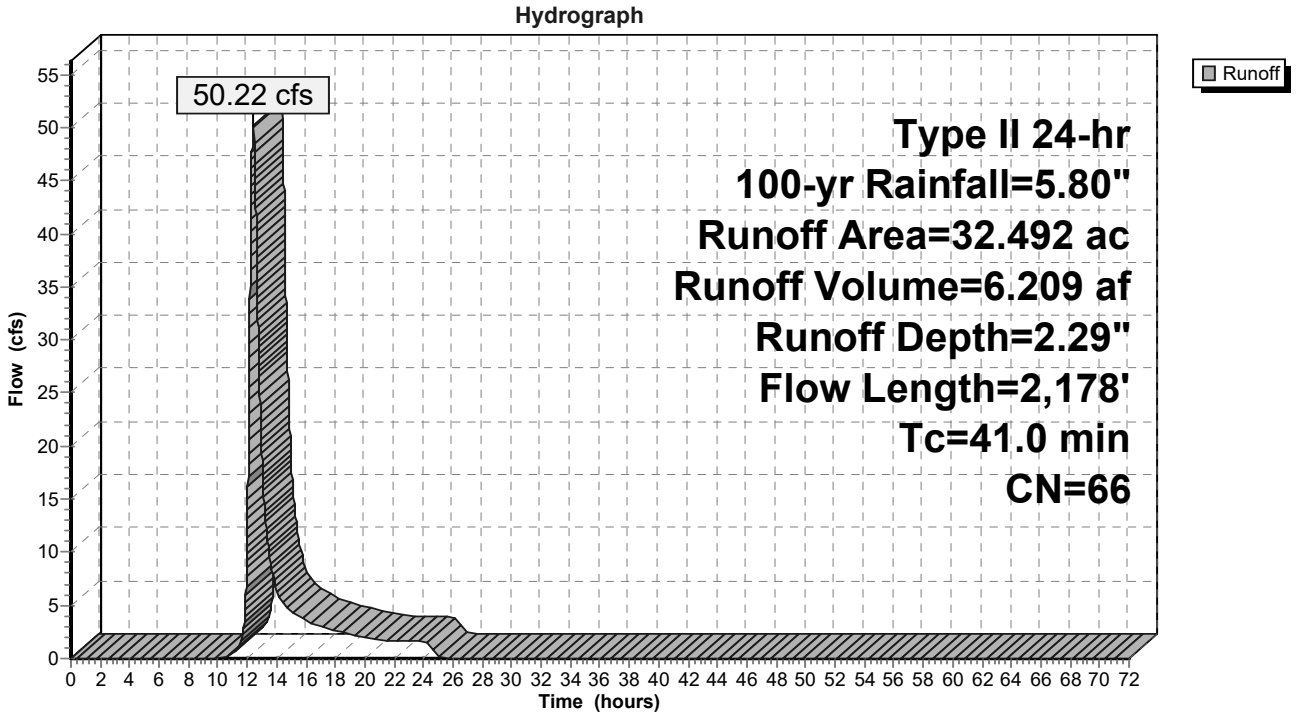
Reach 24R: Swale 3 (Ex. Cond)



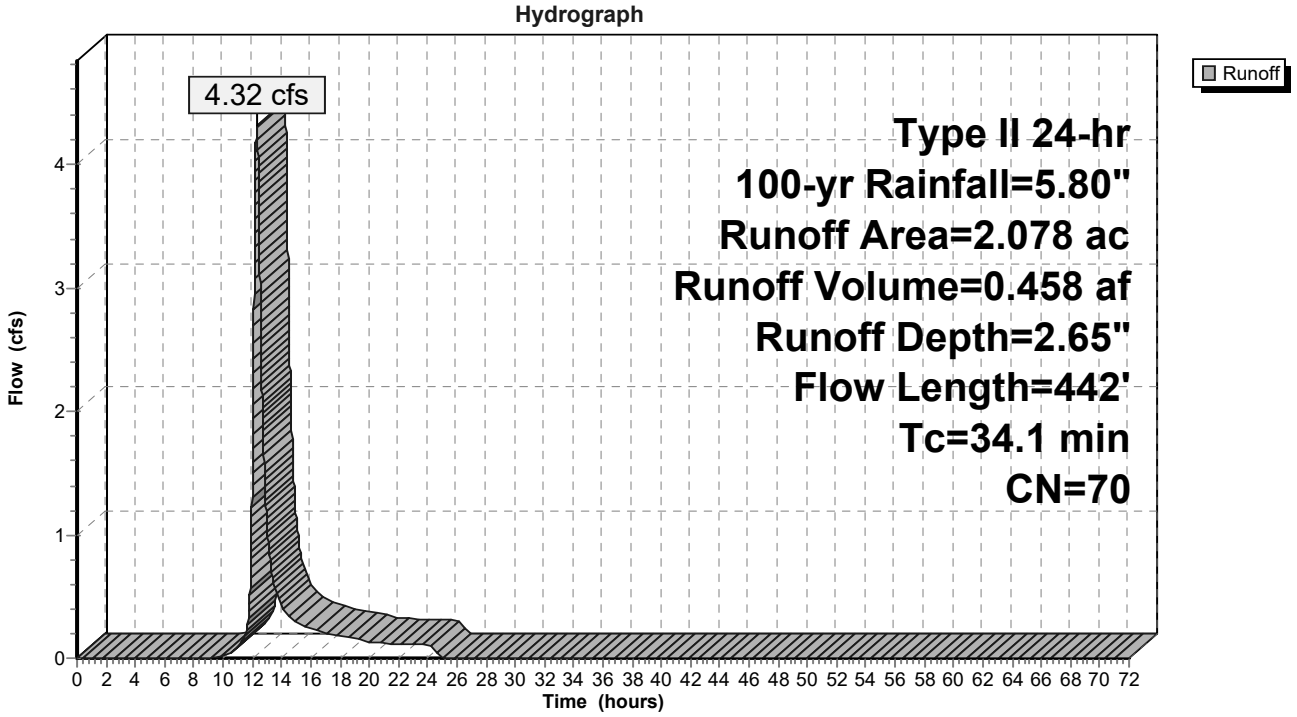
Reach 30R: Swale 1 (Ex. Cond)



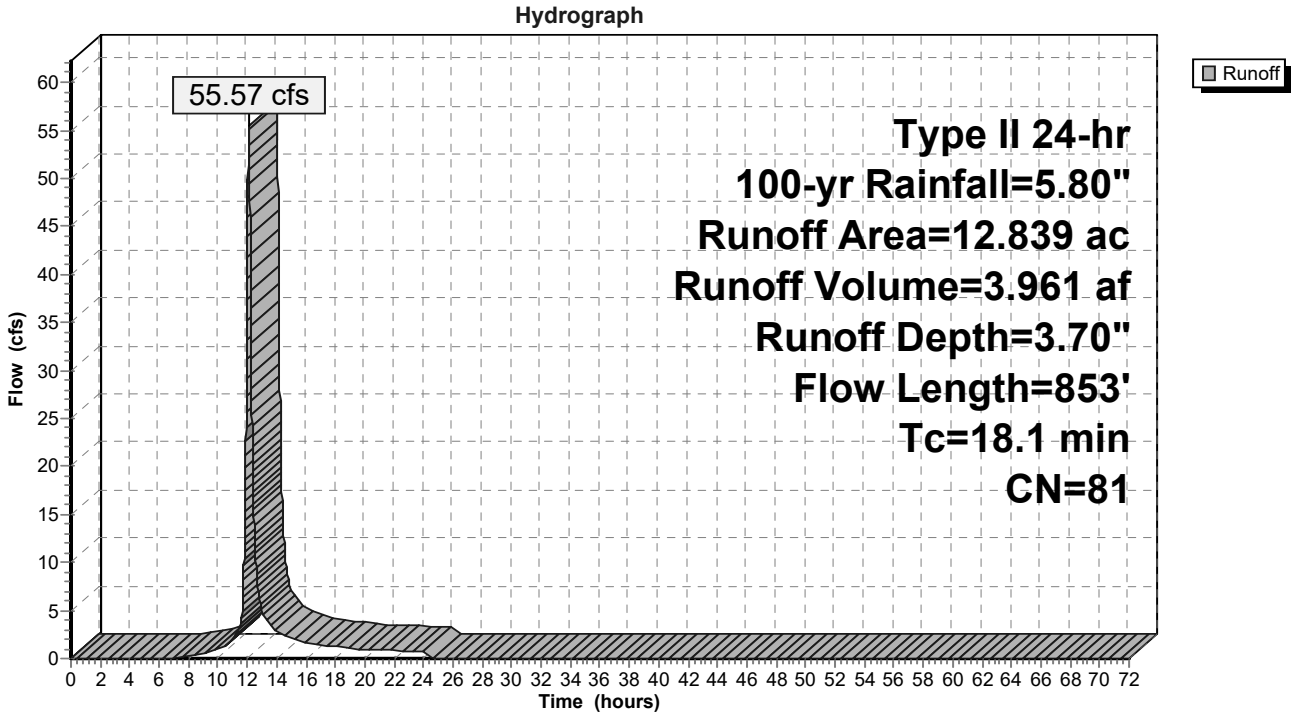
Subcatchment 9S: 191106 EXDA-1a



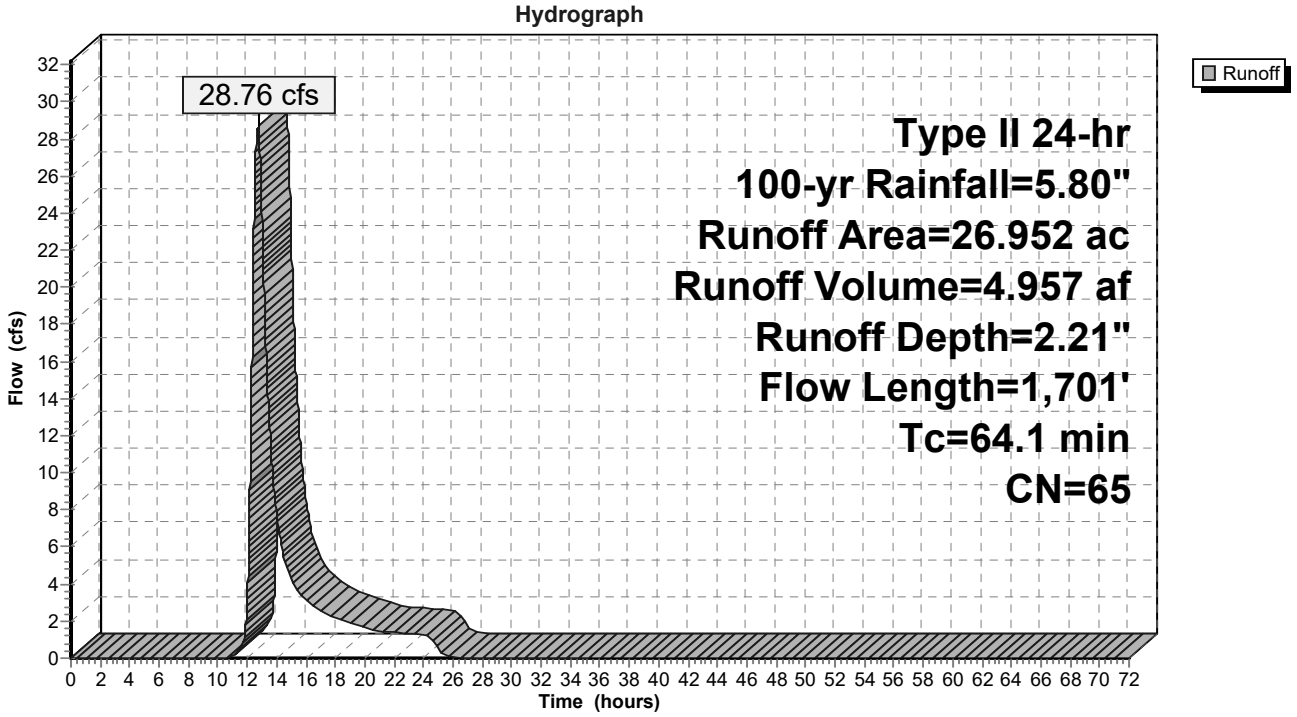
Subcatchment 31S: DA-1c



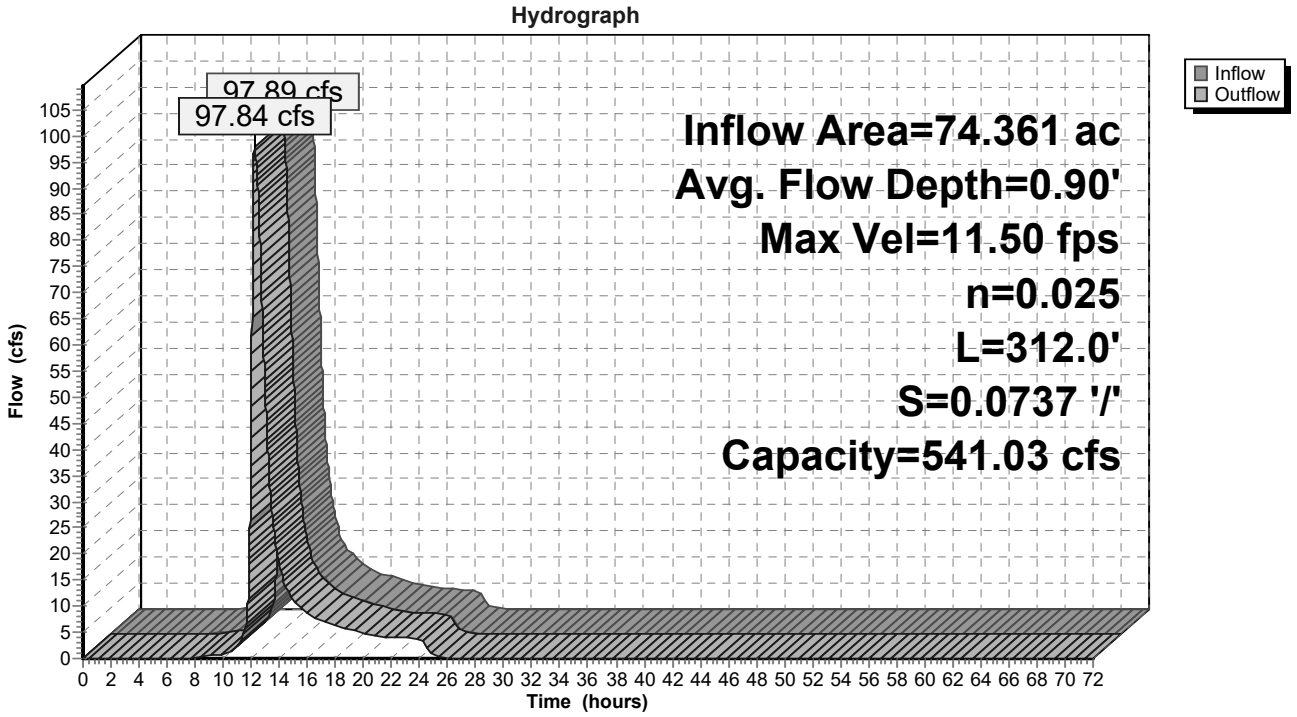
Subcatchment 33S: DA-1d



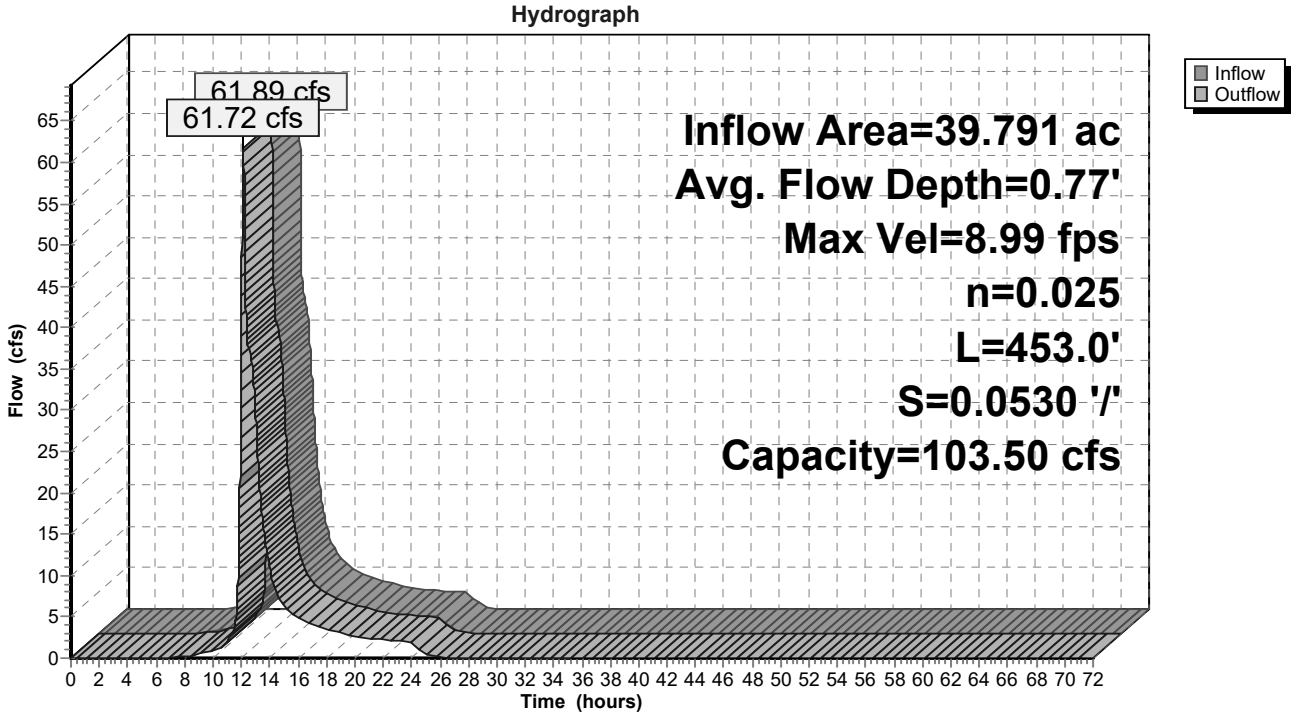
Subcatchment 34S: 191106 EXDA-1b



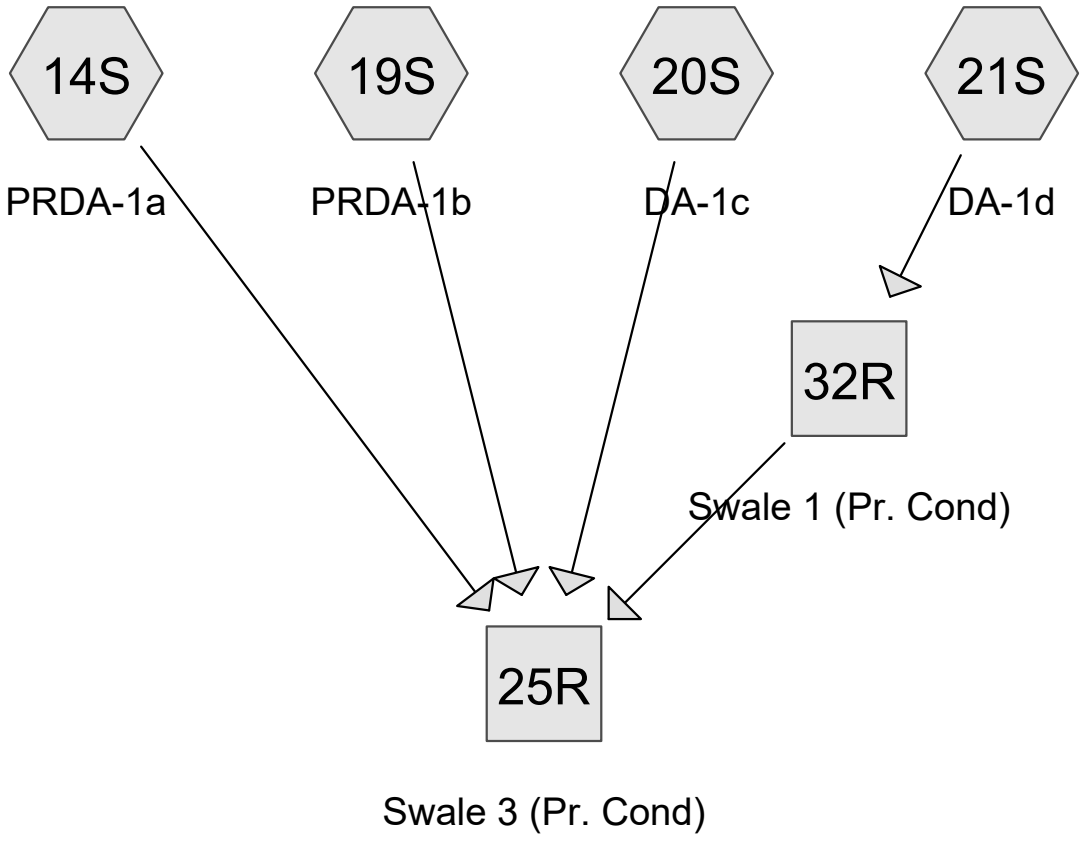
Reach 24R: Swale 3 (Ex. Cond)



Reach 30R: Swale 1 (Ex. Cond)



APPENDIX D



Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 6/10/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 14S: PRDA-1a

Runoff = 48.75 cfs @ 12.32 hrs, Volume= 5.277 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	0.314	70	Woods, Good, HSG C
	2.348	55	Woods, Good, HSG B
	13.435	74	>75% Grass cover, Good, HSG C
*	3.341	98	Proposed Subject Site Impervious
*	0.300	98	Permanent Pool of Wet Pond
	19.738	76	Weighted Average
	16.097		81.55% Pervious Area
	3.641		18.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
31.3	100	0.0450	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	227	0.1450	2.67		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	52	0.0400	8.03	4.38	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.4	567	0.0405	21.34	1,216.50	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 3.0 '/' Top.W=28.00' n= 0.022 Earth, clean & straight
35.9	1,180	Total			

Summary for Subcatchment 19S: PRDA-1b

Runoff = 40.88 cfs @ 12.74 hrs, Volume= 7.045 af, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	1.883	68	1 acre lots, 20% imp, HSG B
	2.802	79	1 acre lots, 20% imp, HSG C
	8.616	65	2 acre lots, 12% imp, HSG B
	14.060	55	Woods, Good, HSG B
	8.507	70	Woods, Good, HSG C
	1.905	74	>75% Grass cover, Good, HSG C
*	0.531	98	Proposed Site Impervious
	38.304	65	Weighted Average
	35.802		93.47% Pervious Area
	2.502		6.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Subcatchment 20S: DA-1c

Runoff = 7.24 cfs @ 12.31 hrs, Volume= 0.768 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
3.294	70	Woods, Good, HSG C
0.188	74	>75% Grass cover, Good, HSG C
3.482	70	Weighted Average
3.482		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow, Offsite** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.7	207	0.0676	1.30		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.4	135	0.0518	1.59		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
34.1	442	Total			

Summary for Subcatchment 21S: DA-1d

Runoff = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (ac)	CN	Description
11.672	79	1 acre lots, 20% imp, HSG C
1.167	98	Paved parking, HSG C
12.839	81	Weighted Average
9.338		72.73% Pervious Area
3.501		27.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0660	0.16		**Sheet Flow, Offsite** Grass: Dense n= 0.240 P2= 2.39"
7.9	753	0.0510	1.58		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
18.1	853	Total			

Summary for Reach 25R: Swale 3 (Pr. Cond)

Inflow Area = 74.363 ac, 12.97% Impervious, Inflow Depth = 2.75" for 100-yr event
Inflow = 112.09 cfs @ 12.21 hrs, Volume= 17.051 af
Outflow = 112.03 cfs @ 12.22 hrs, Volume= 17.051 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.93 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 4.38 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2,930 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.96' , Surface Width= 14.59'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Summary for Reach 32R: Swale 1 (Pr. Cond)

Inflow Area = 12.839 ac, 27.27% Impervious, Inflow Depth = 3.70" for 100-yr event
Inflow = 55.57 cfs @ 12.10 hrs, Volume= 3.961 af
Outflow = 55.40 cfs @ 12.13 hrs, Volume= 3.961 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.72 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.50 fps, Avg. Travel Time= 3.0 min

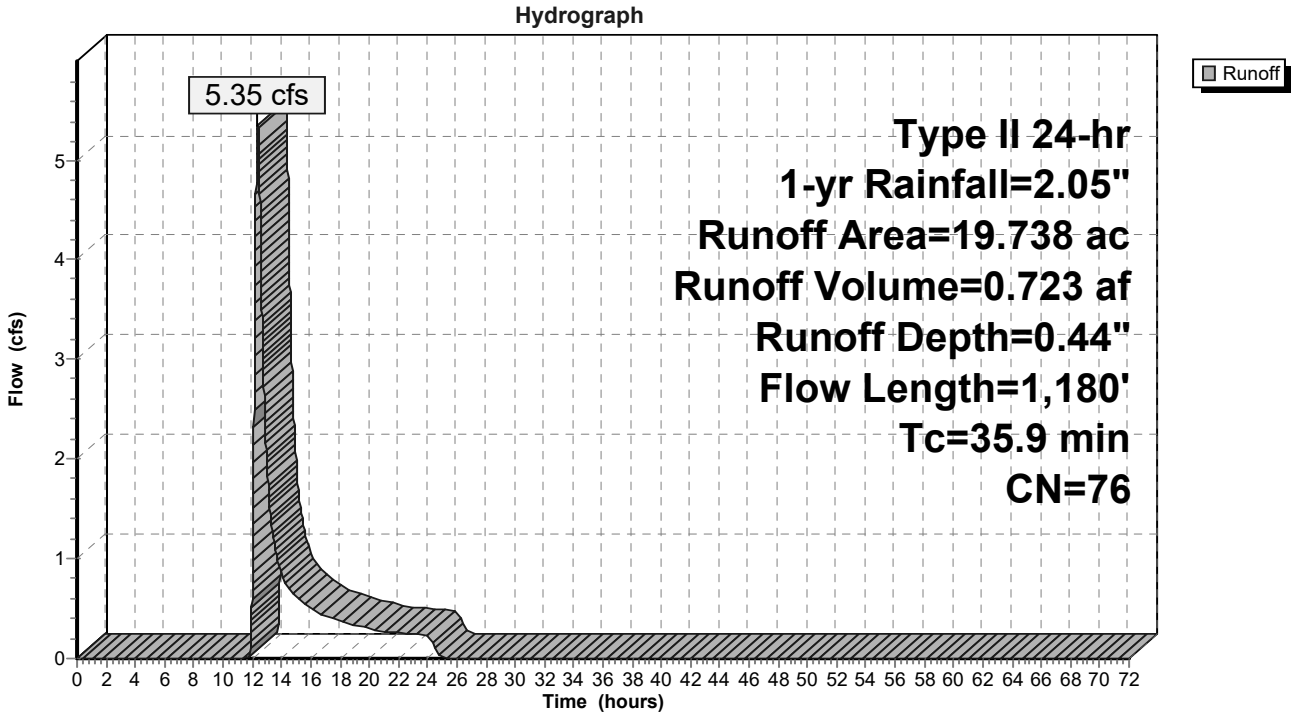
Peak Storage= 2,878 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.73' , Surface Width= 12.33'
Bank-Full Depth= 1.00' Flow Area= 10.0 sf, Capacity= 103.50 cfs

5.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 15.00'
Length= 453.0' Slope= 0.0530 '/'
Inlet Invert= 680.00', Outlet Invert= 656.00'

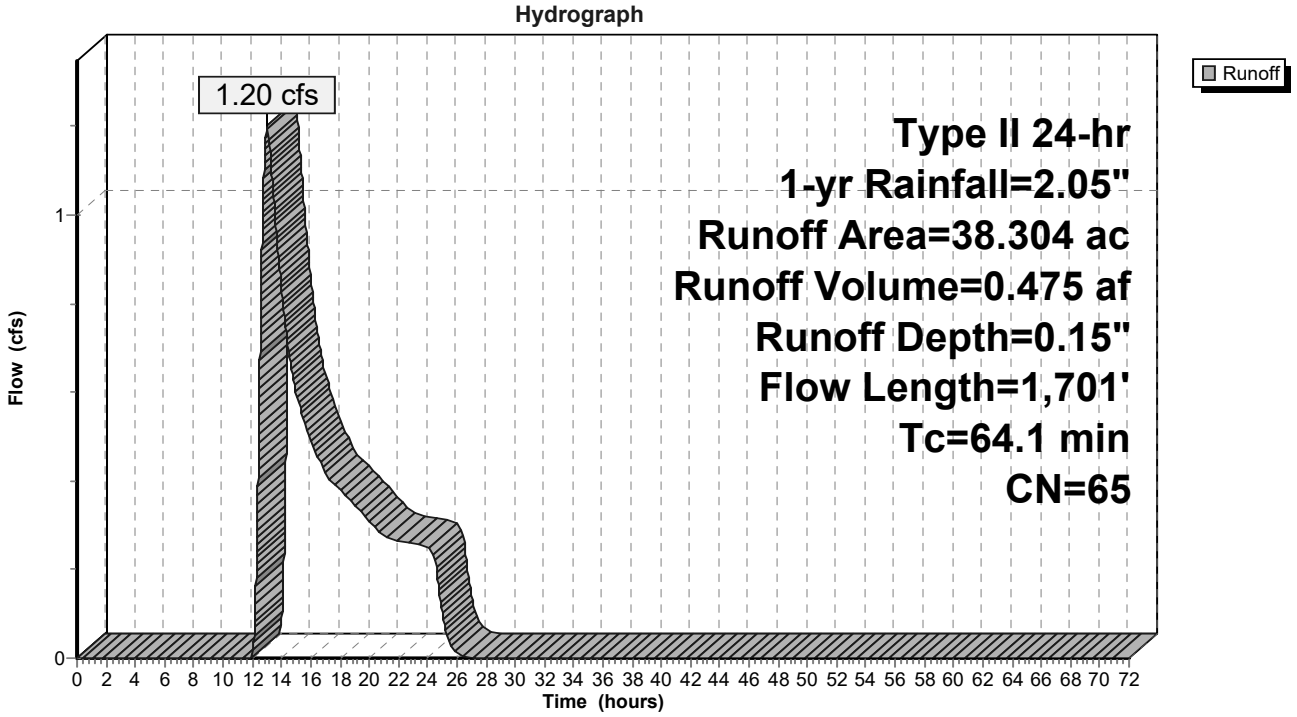


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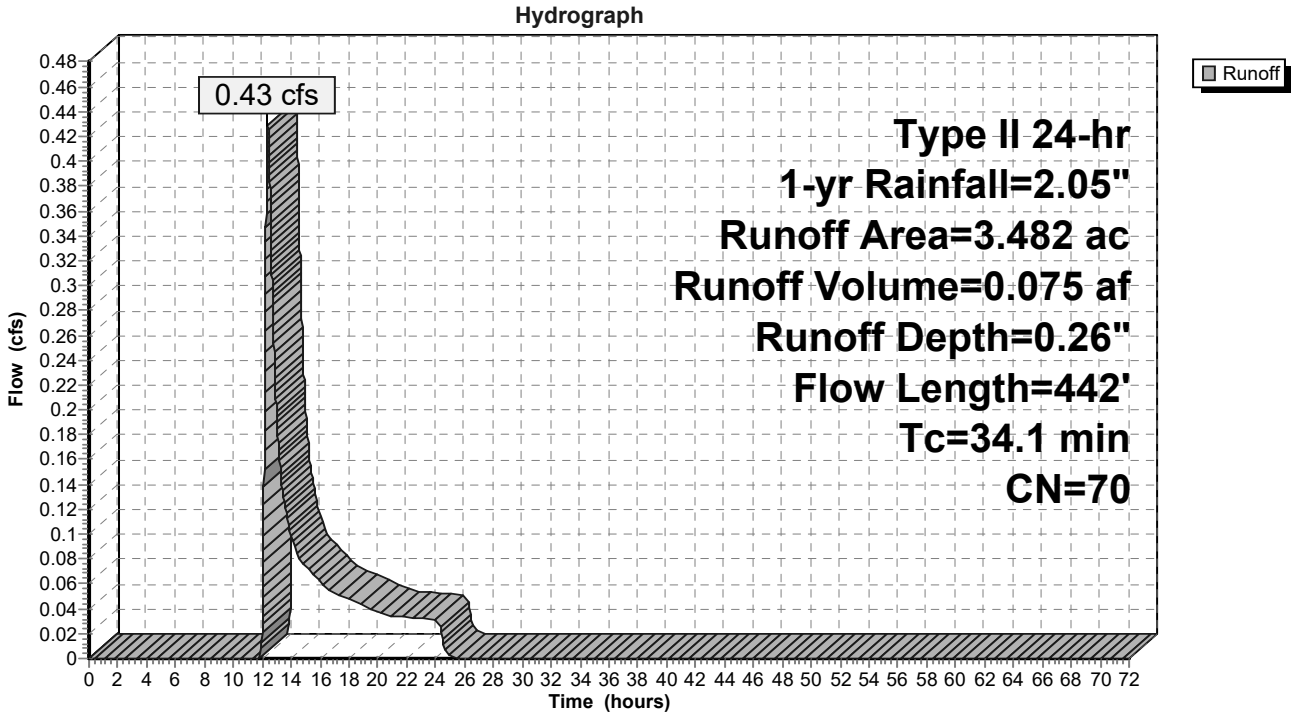
Subcatchment 14S: PRDA-1a



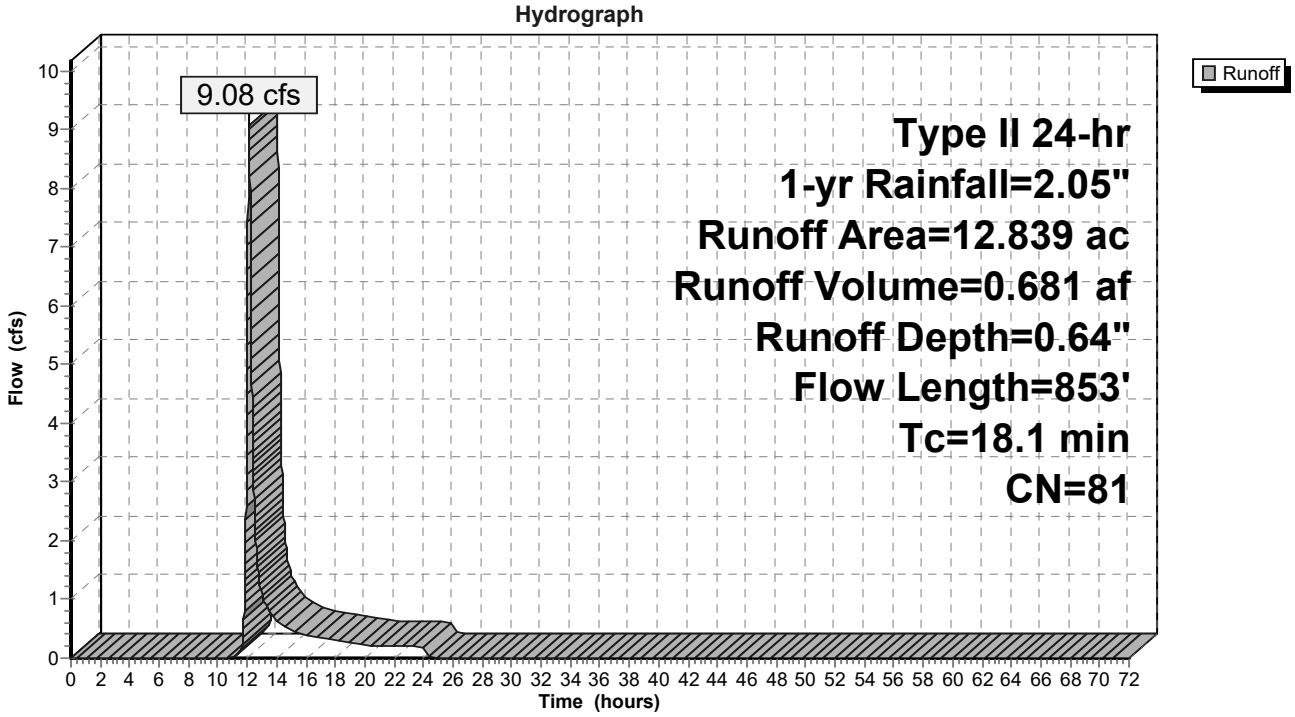
Subcatchment 19S: PRDA-1b



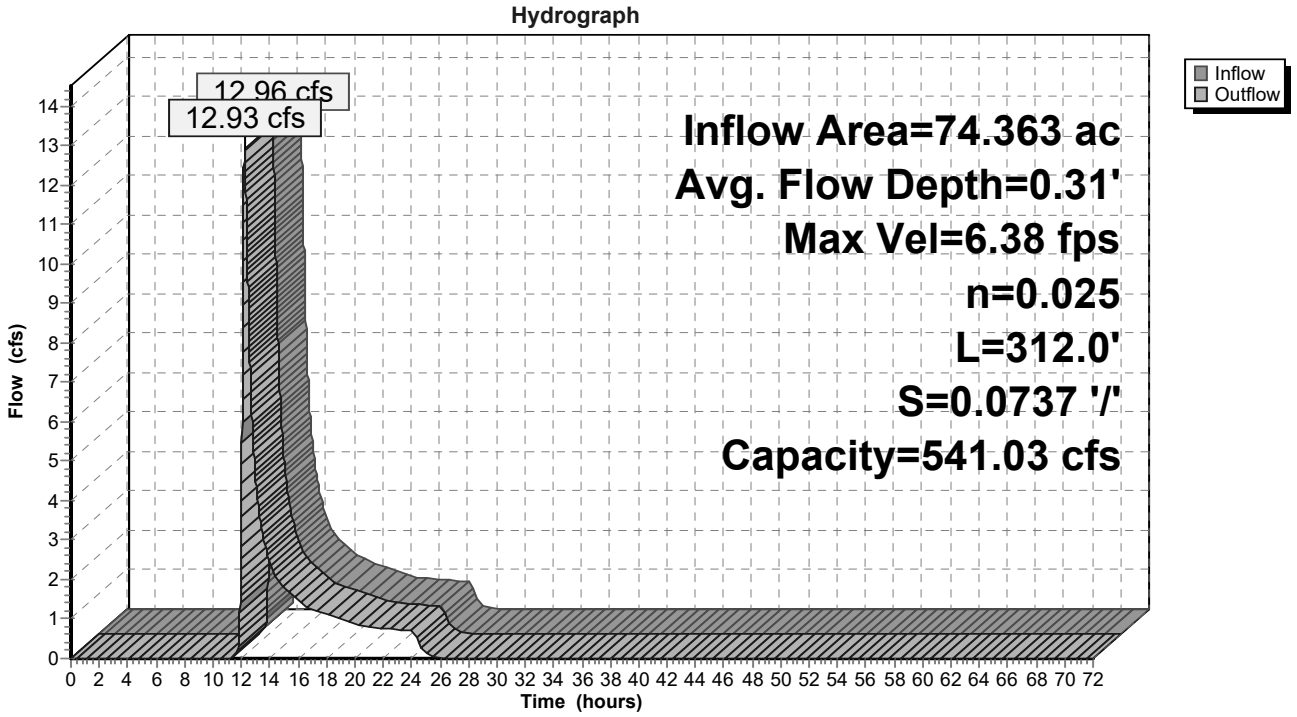
Subcatchment 20S: DA-1c



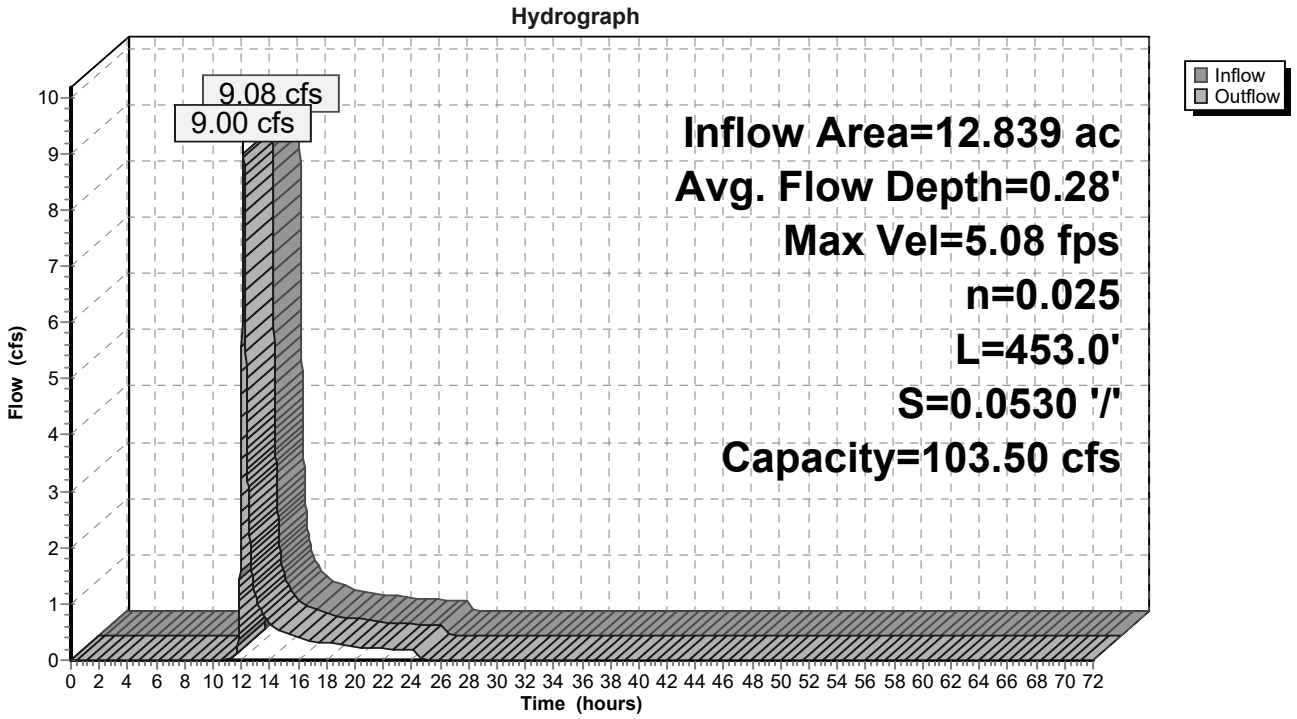
Subcatchment 21S: DA-1d



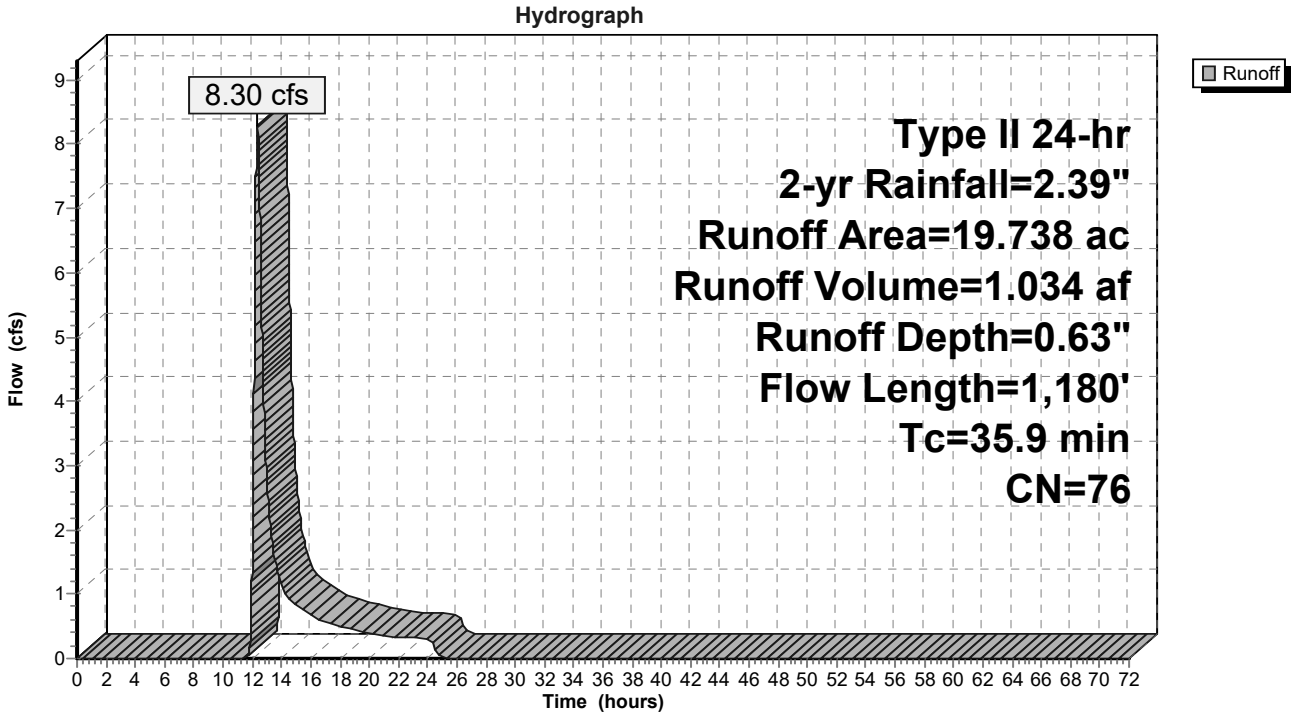
Reach 25R: Swale 3 (Pr. Cond)



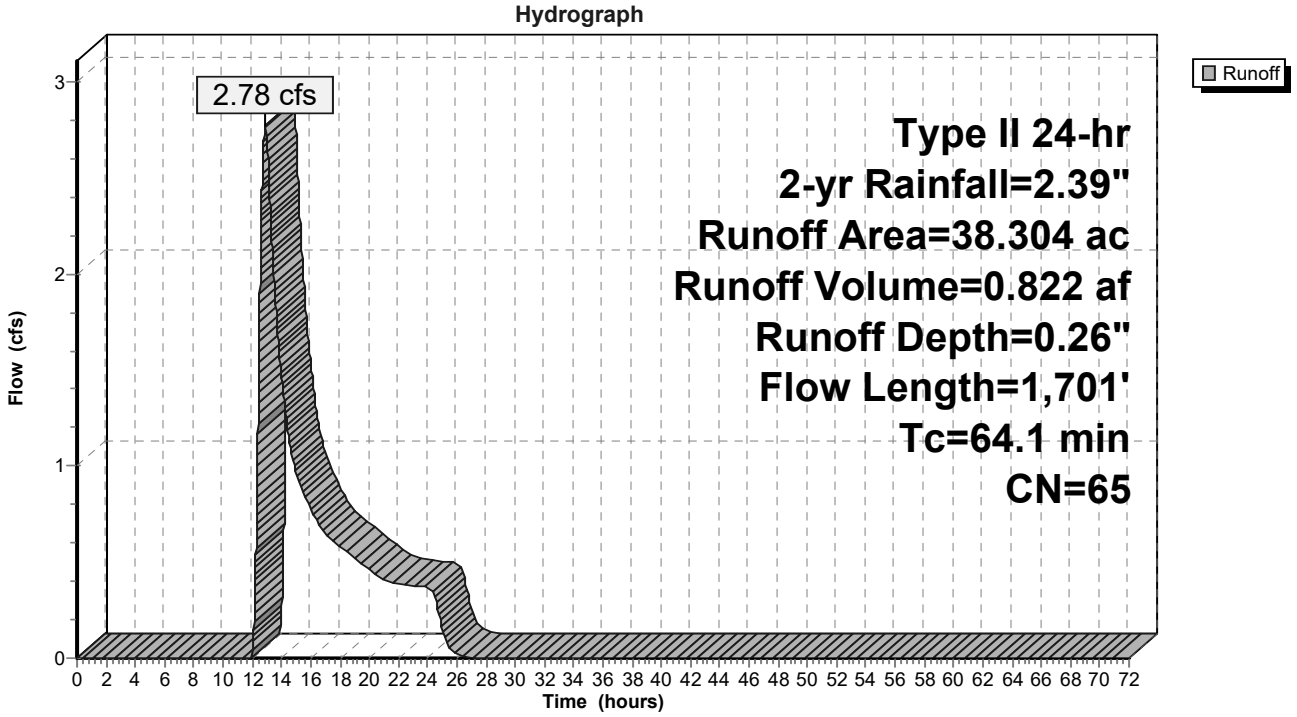
Reach 32R: Swale 1 (Pr. Cond)



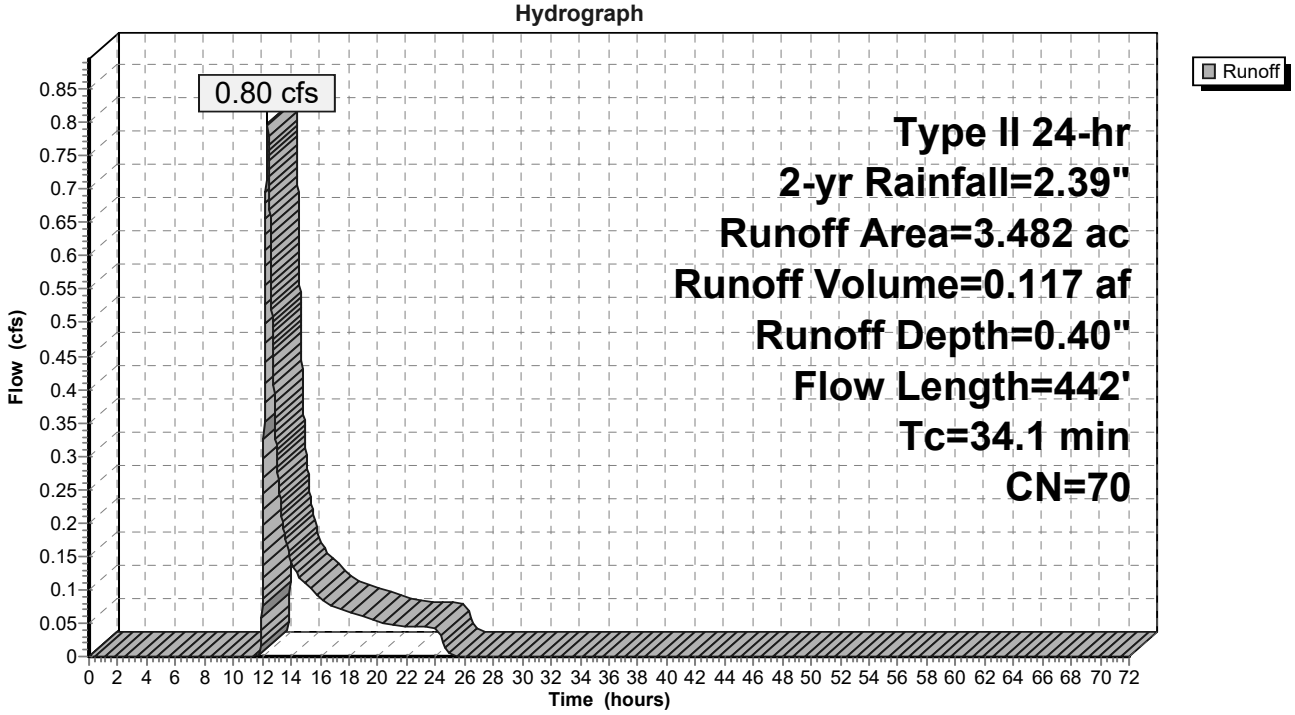
Subcatchment 14S: PRDA-1a



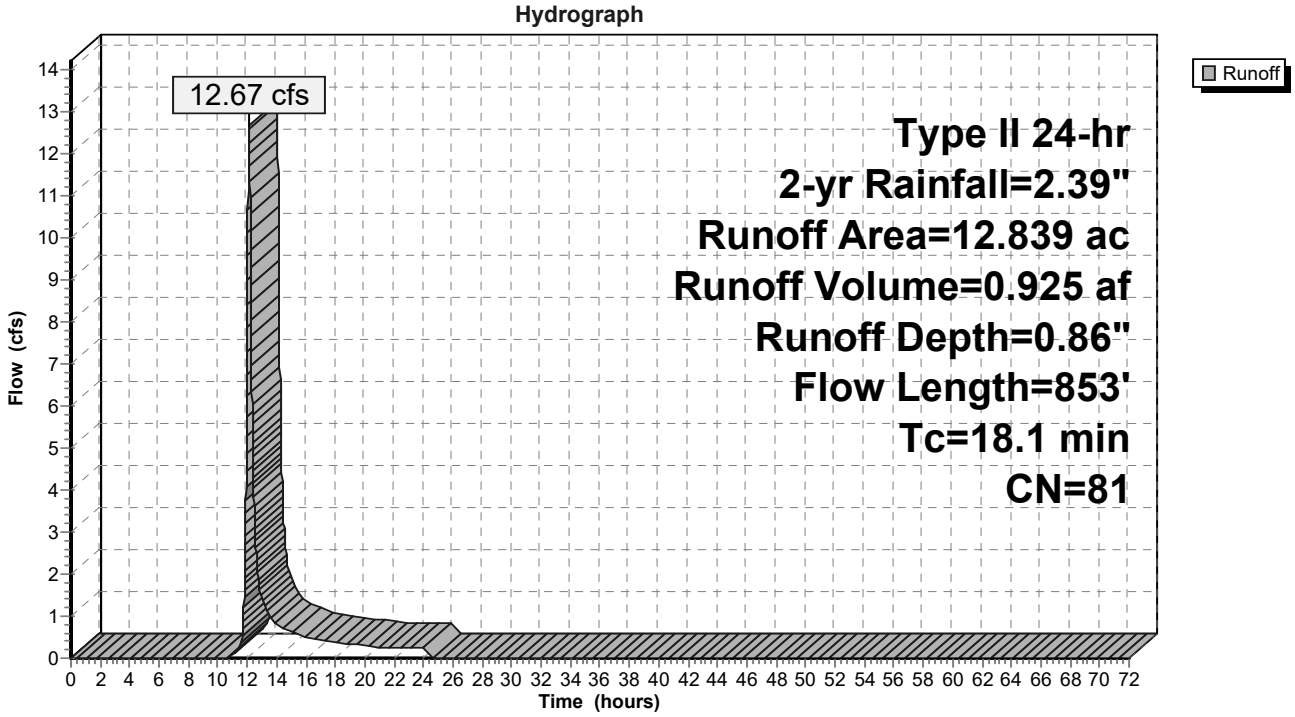
Subcatchment 19S: PRDA-1b



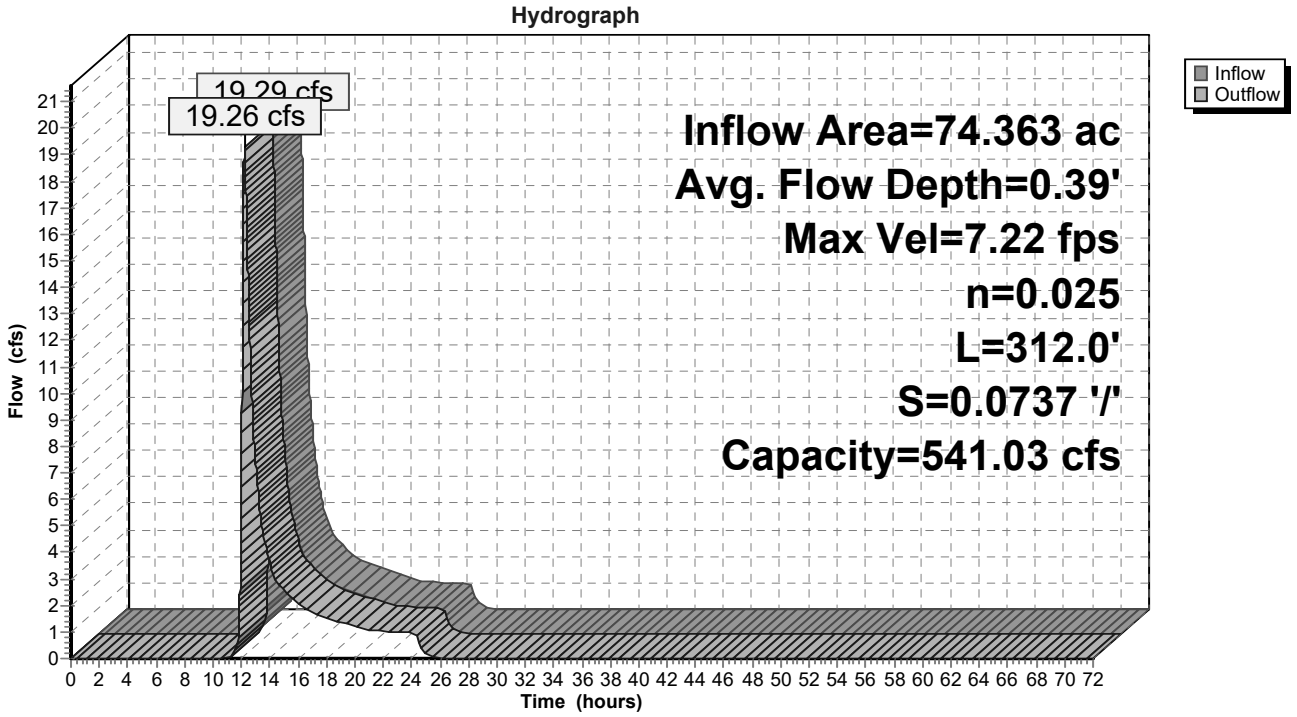
Subcatchment 20S: DA-1c



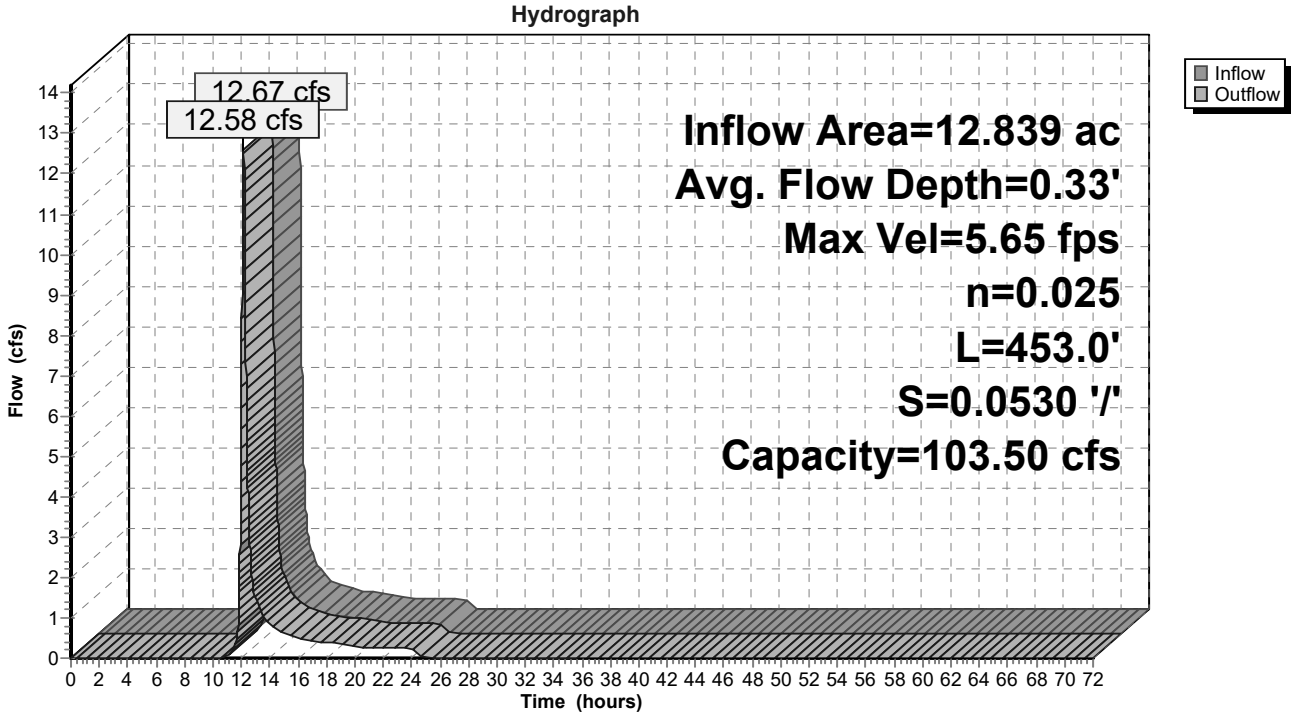
Subcatchment 21S: DA-1d



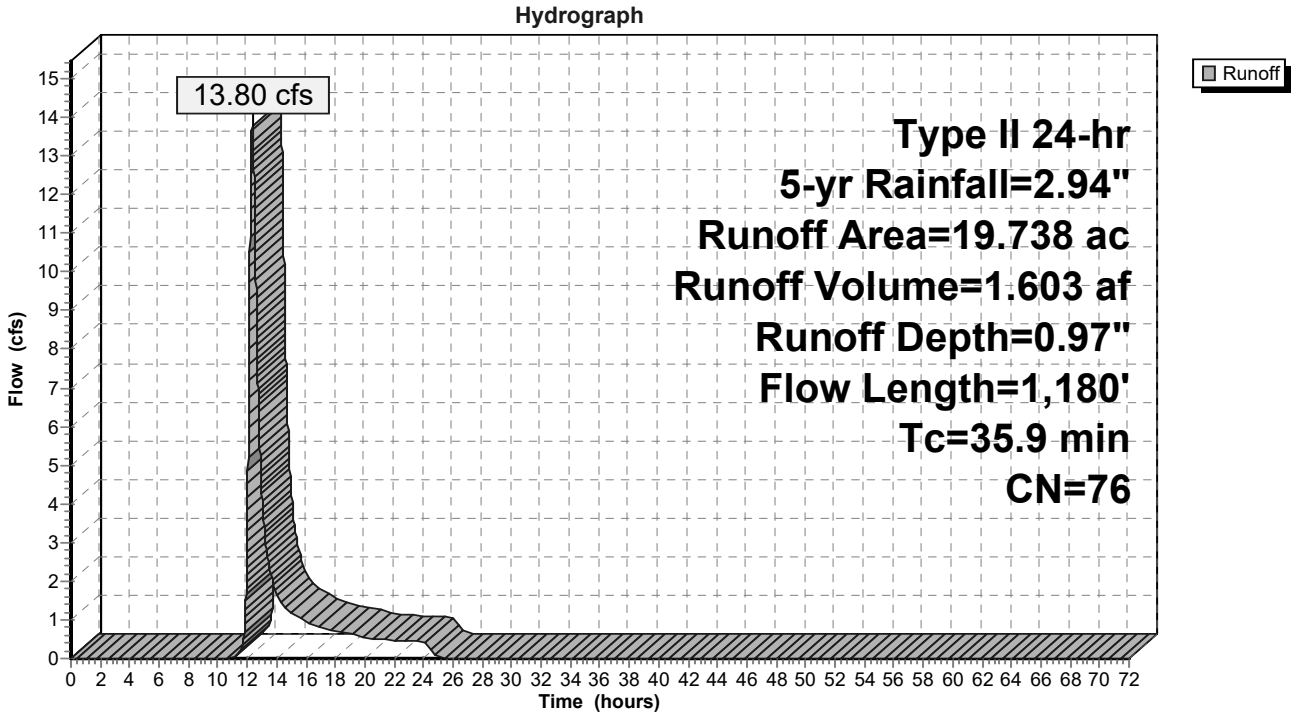
Reach 25R: Swale 3 (Pr. Cond)



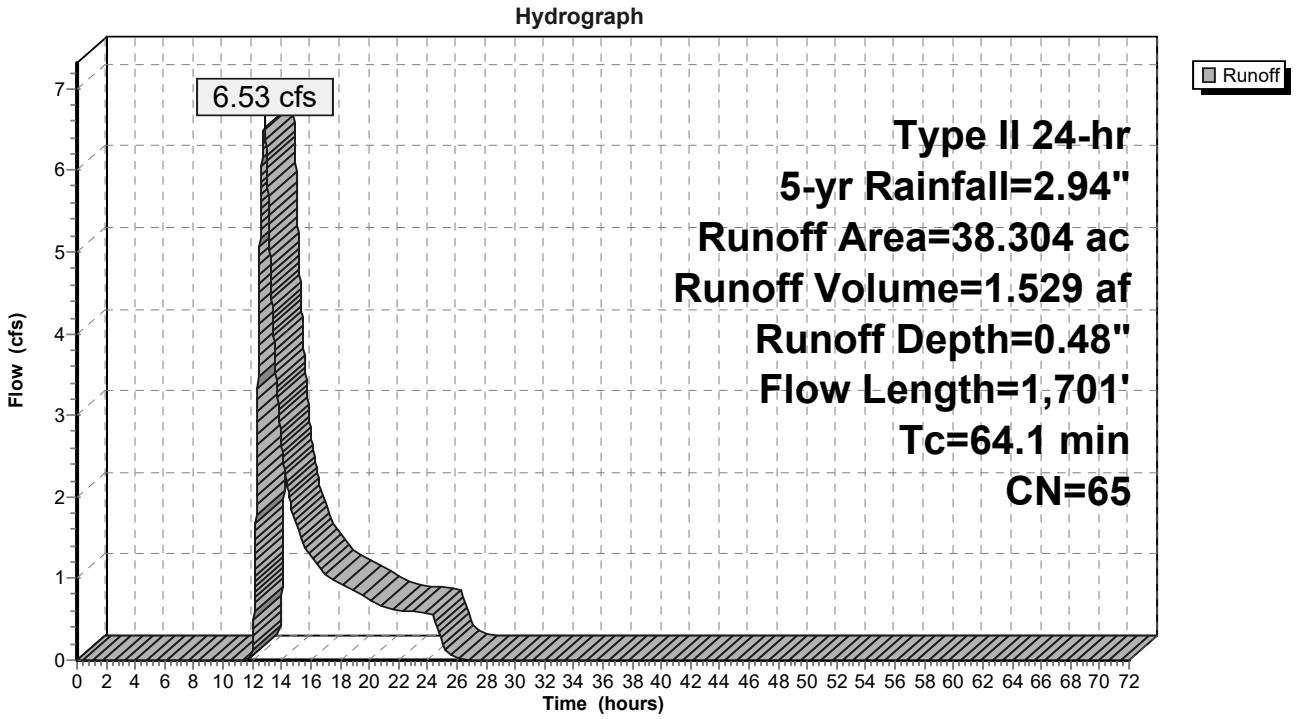
Reach 32R: Swale 1 (Pr. Cond)



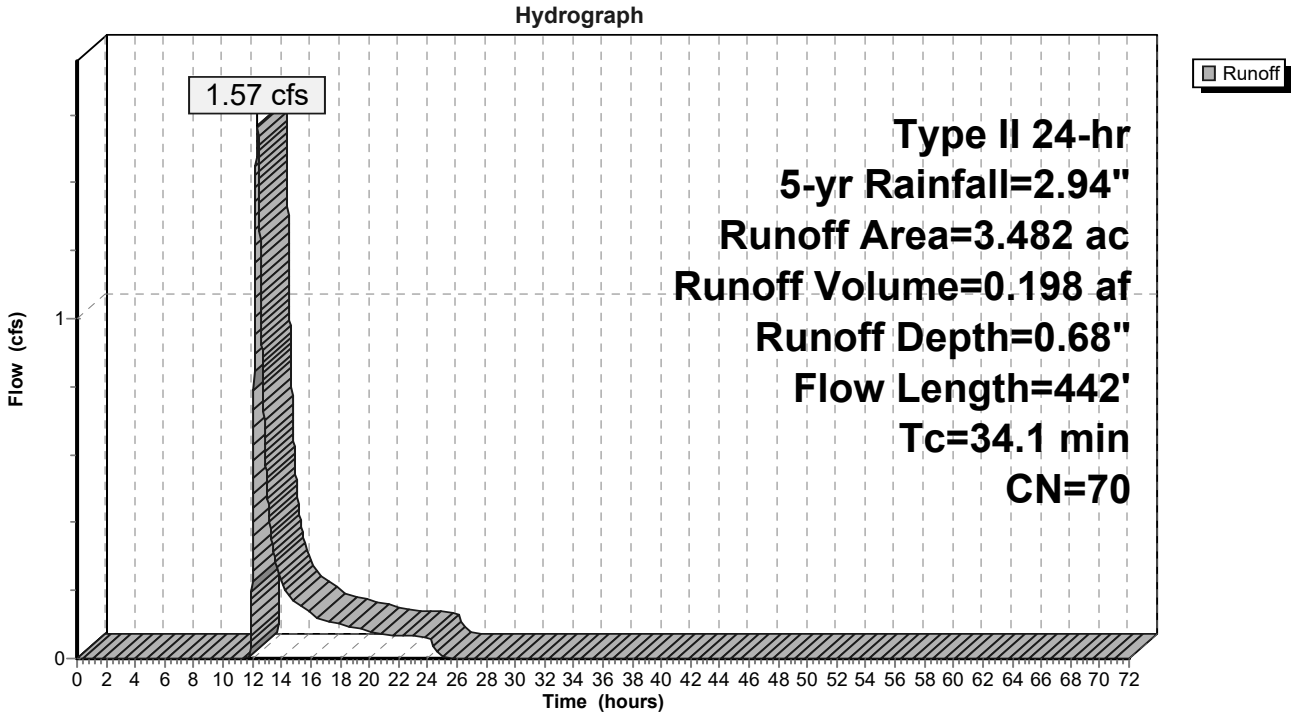
Subcatchment 14S: PRDA-1a



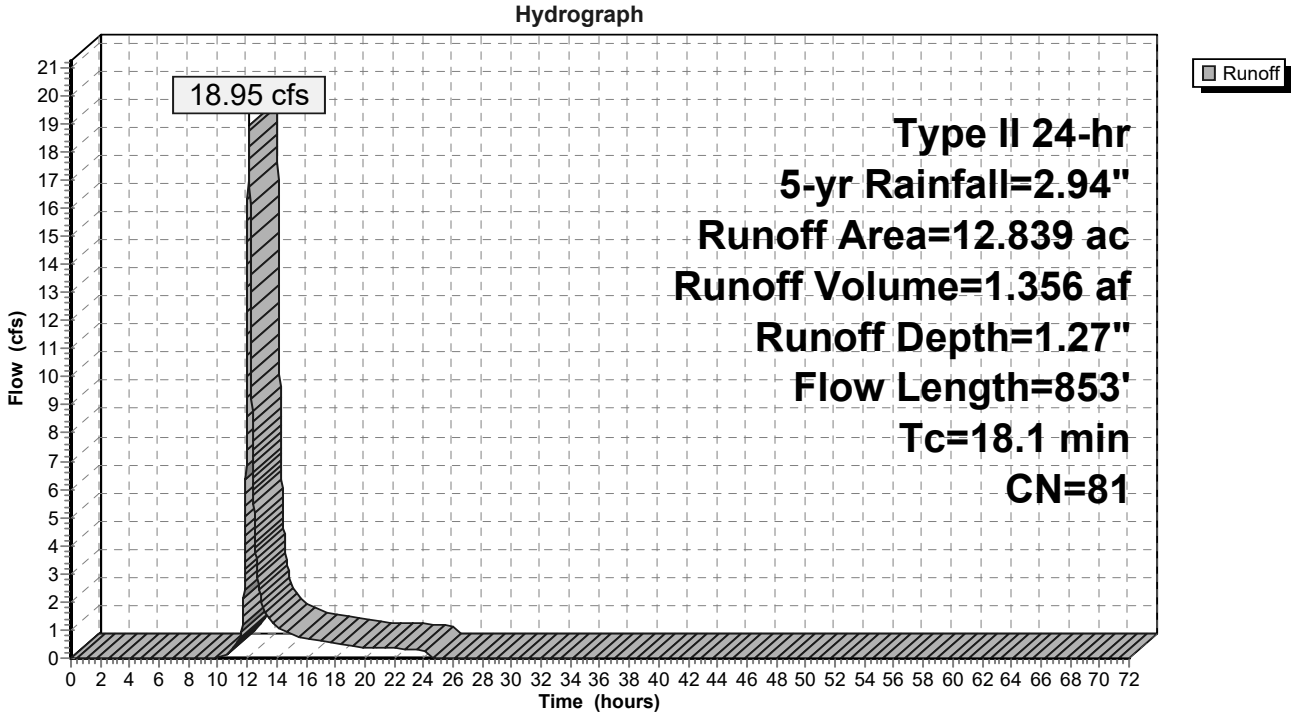
Subcatchment 19S: PRDA-1b



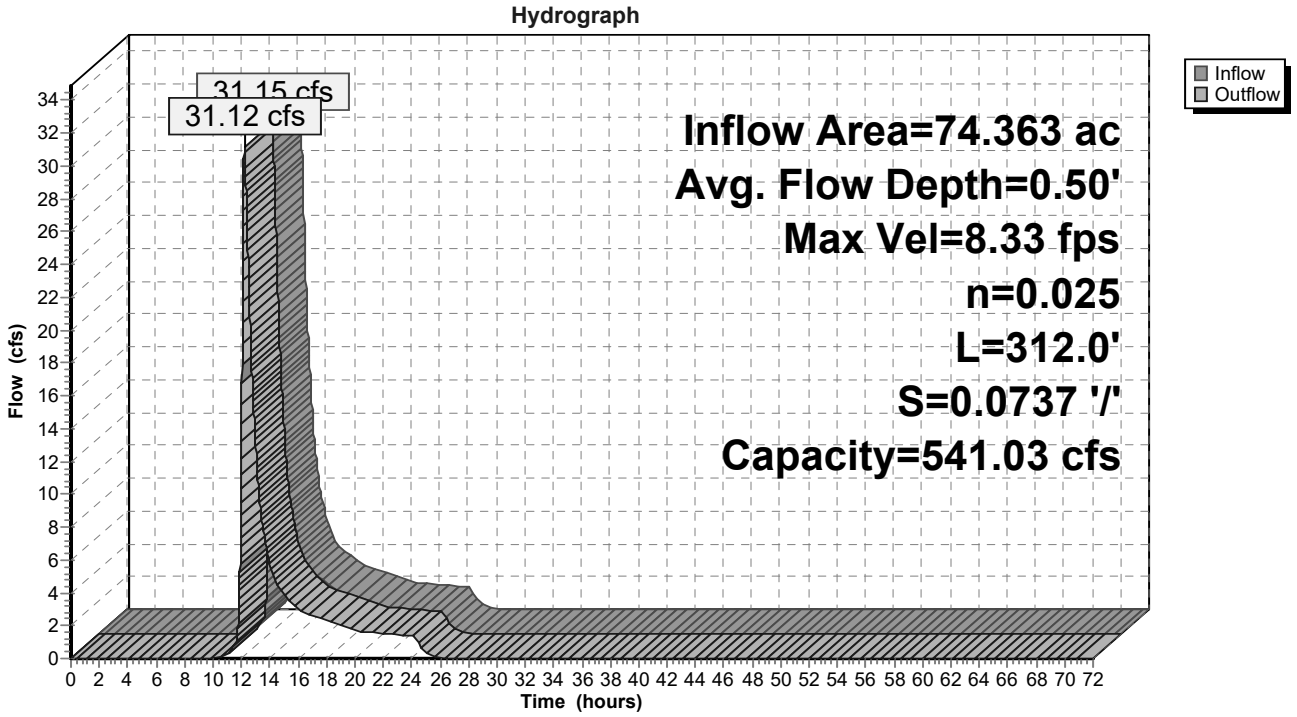
Subcatchment 20S: DA-1c



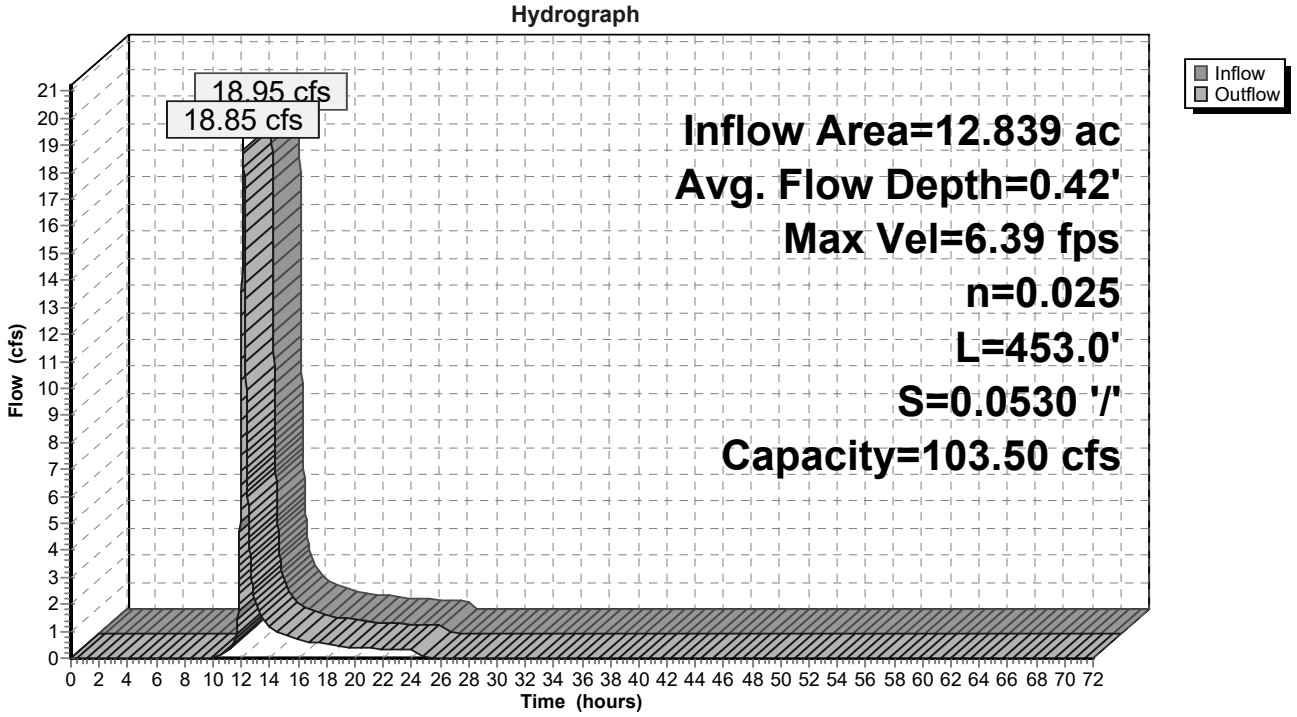
Subcatchment 21S: DA-1d



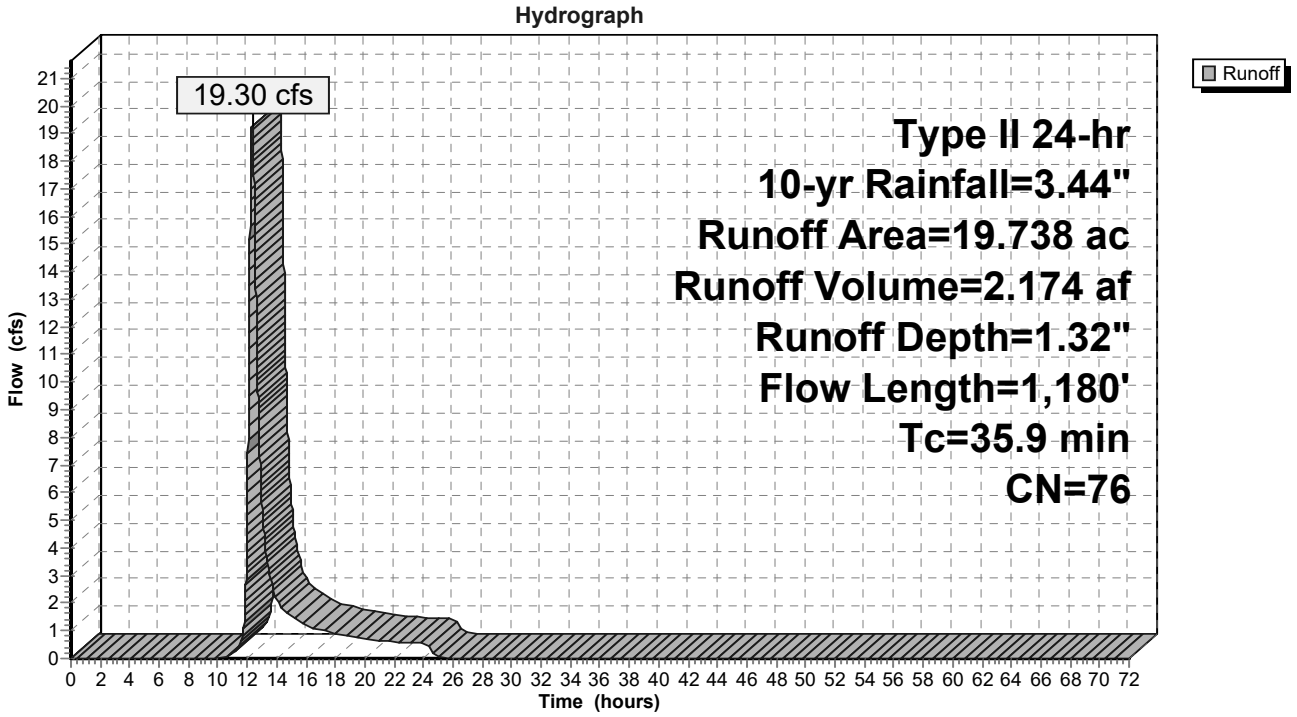
Reach 25R: Swale 3 (Pr. Cond)



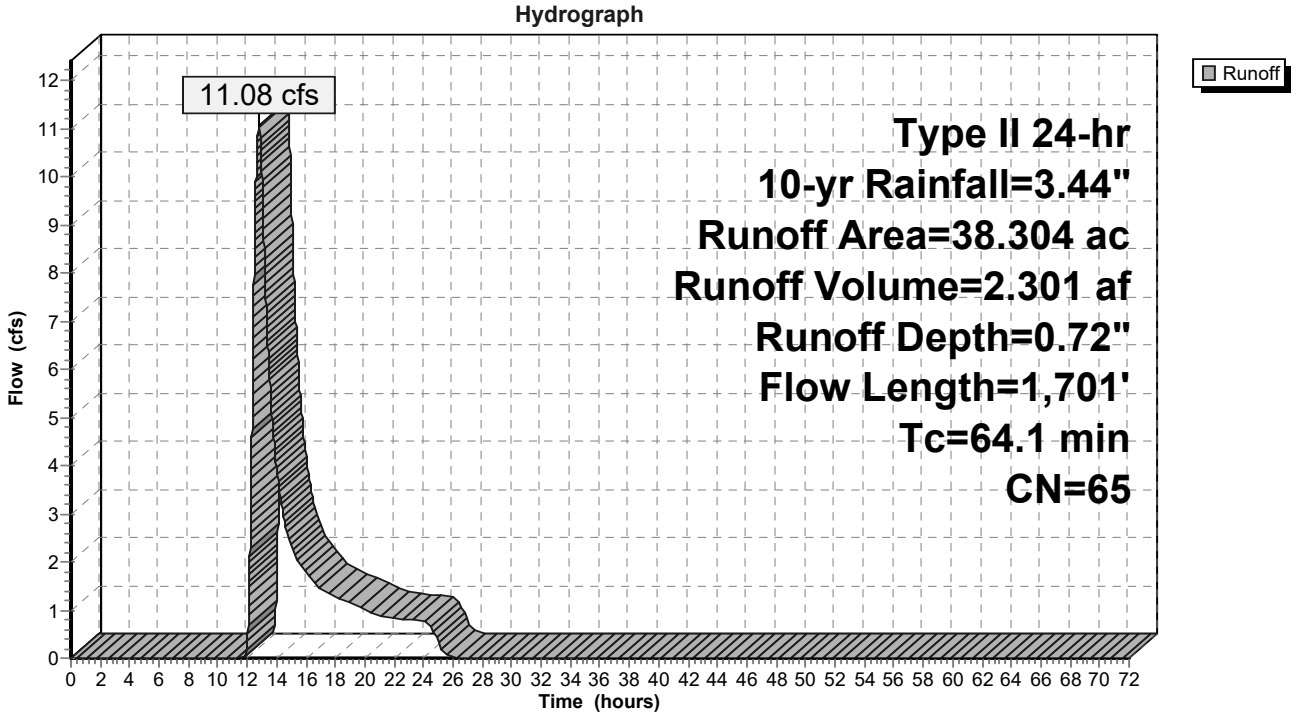
Reach 32R: Swale 1 (Pr. Cond)



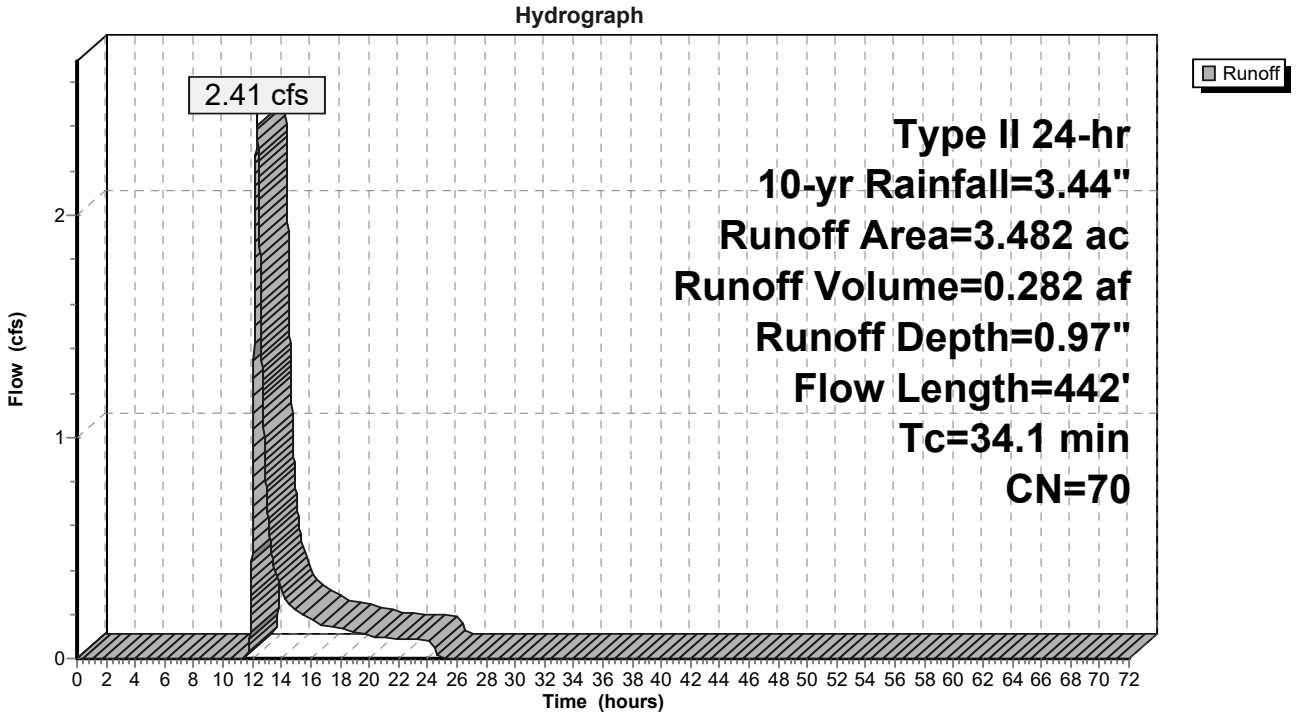
Subcatchment 14S: PRDA-1a



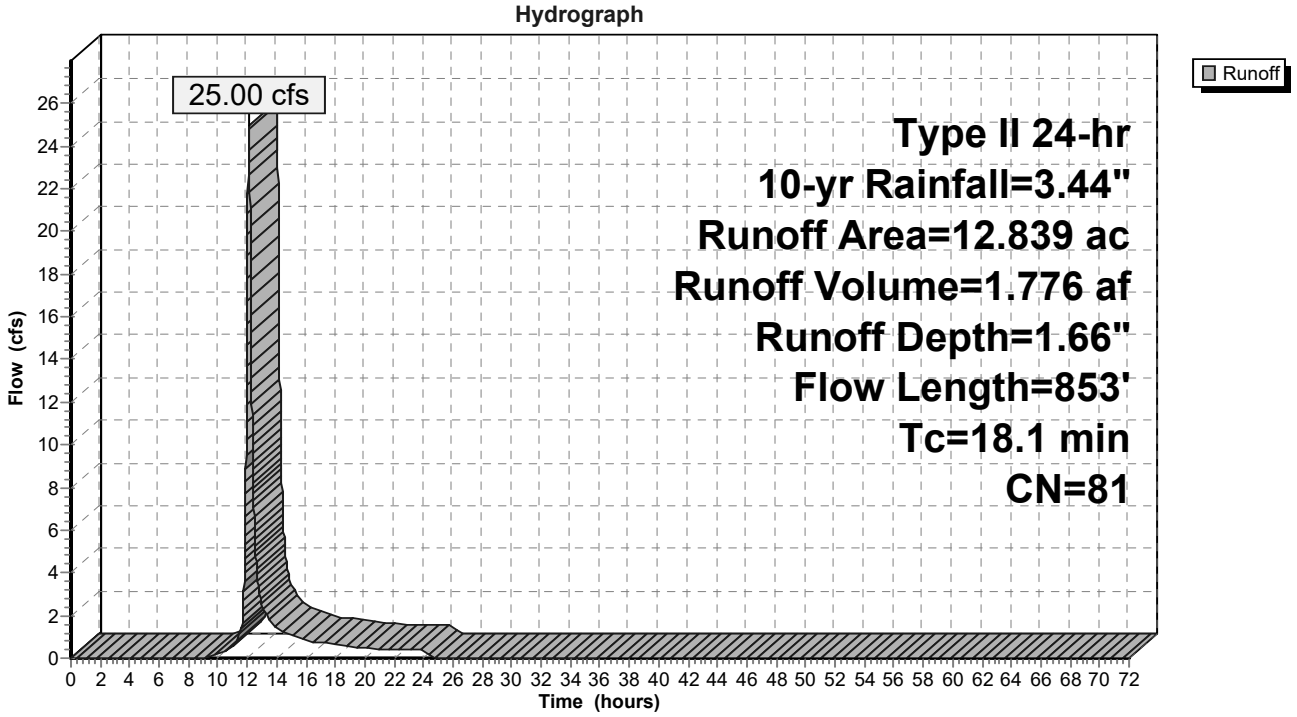
Subcatchment 19S: PRDA-1b



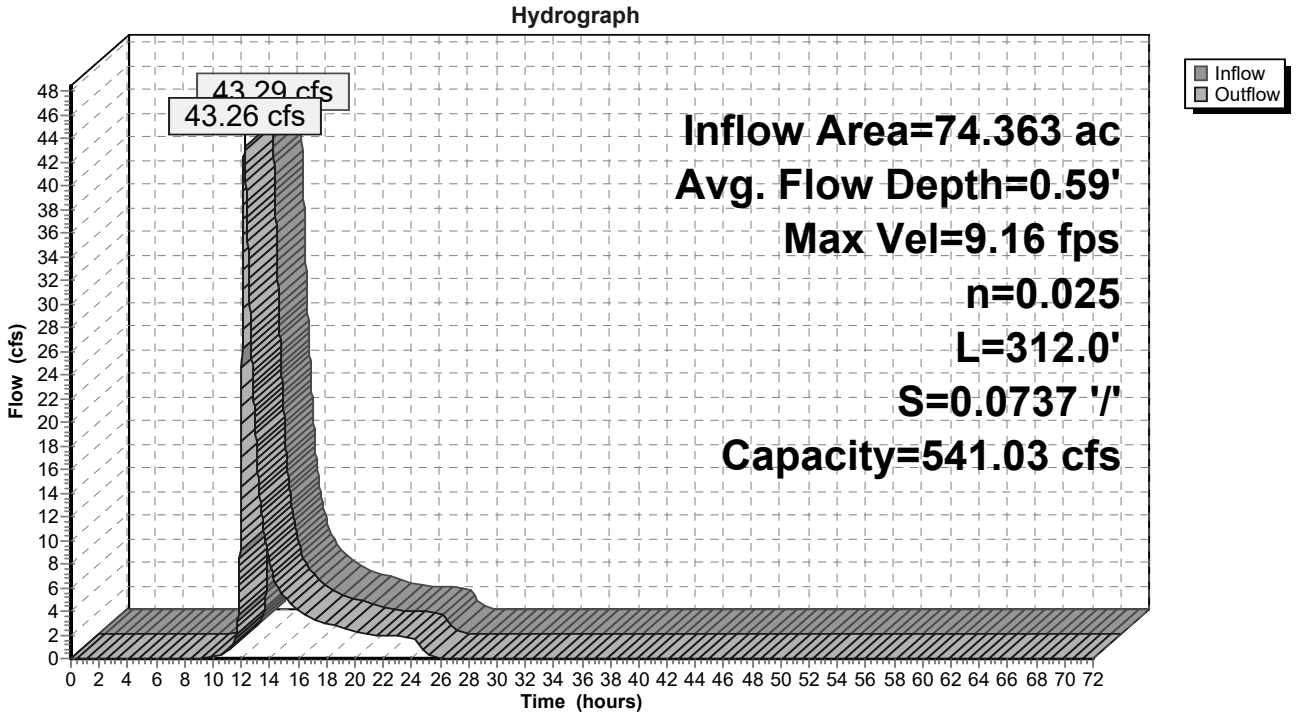
Subcatchment 20S: DA-1c



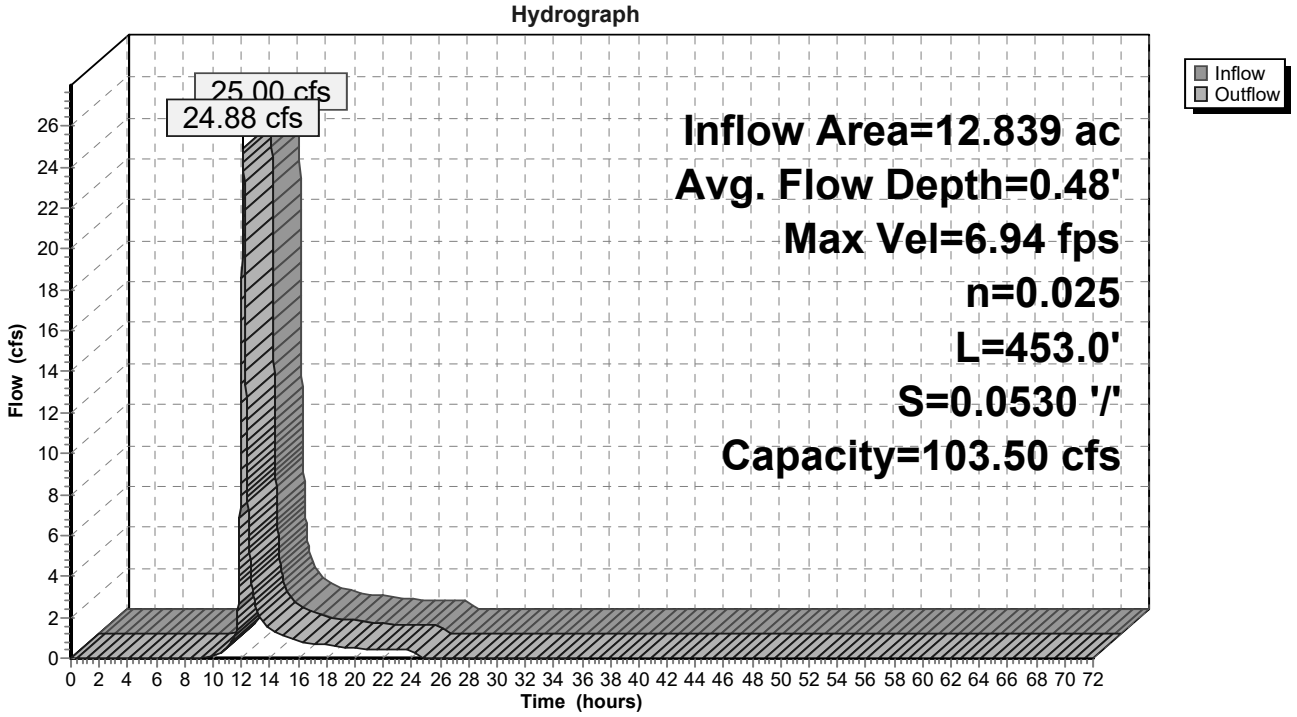
Subcatchment 21S: DA-1d



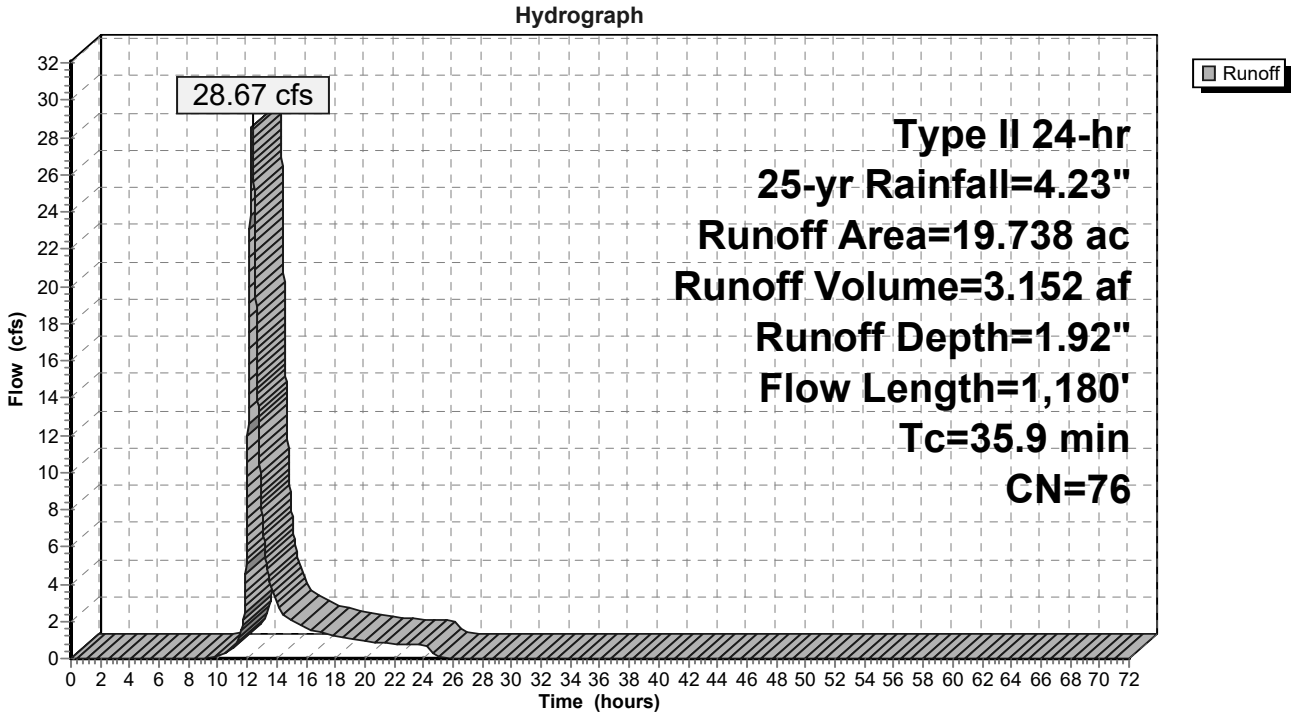
Reach 25R: Swale 3 (Pr. Cond)



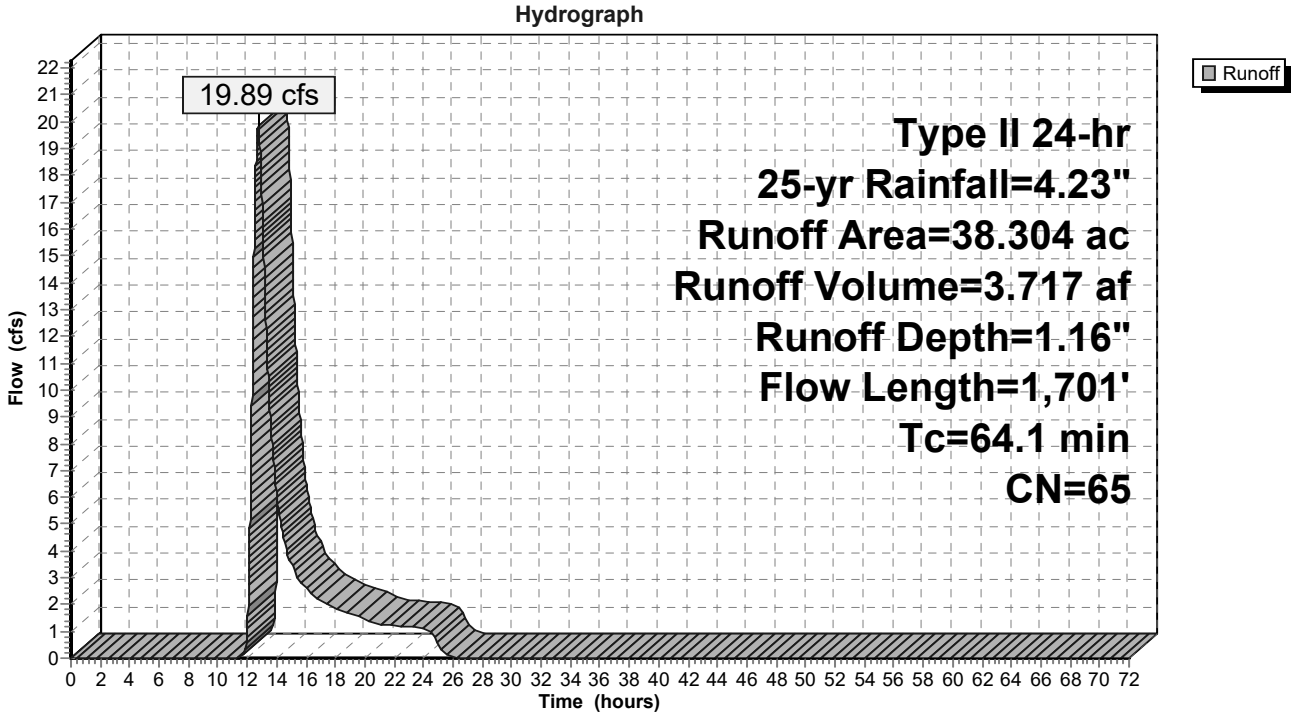
Reach 32R: Swale 1 (Pr. Cond)



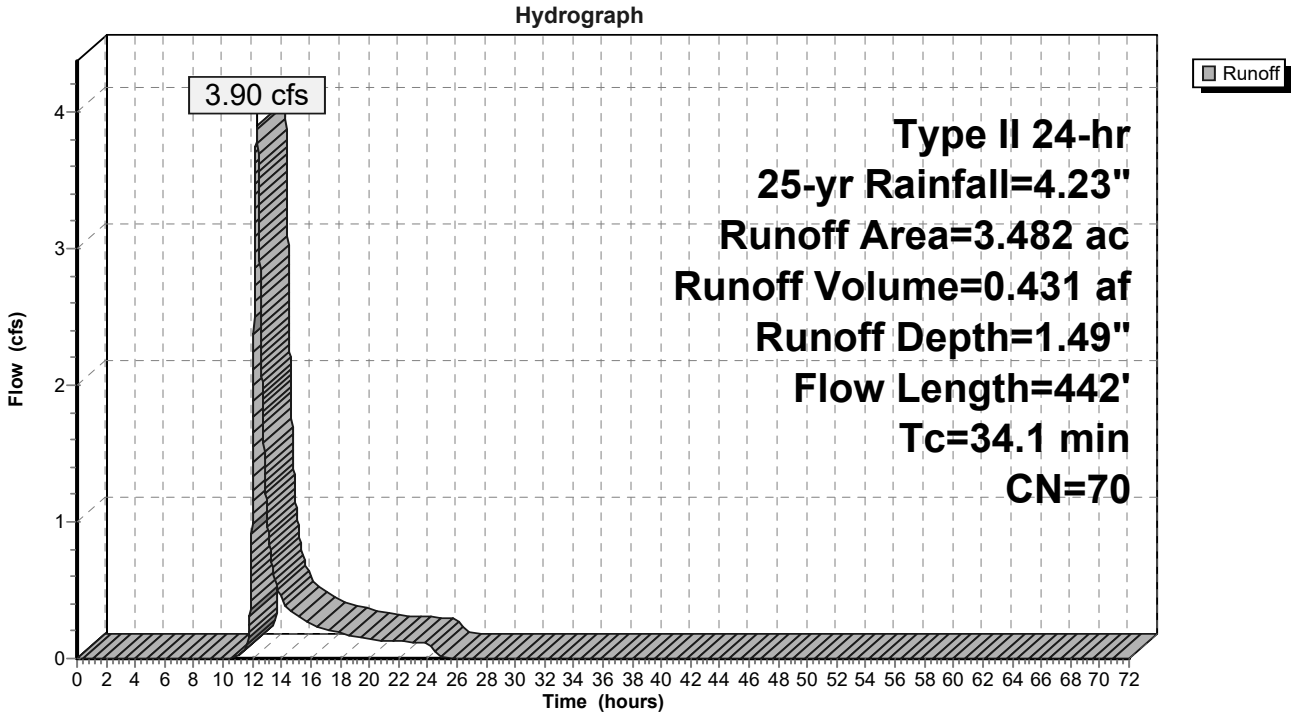
Subcatchment 14S: PRDA-1a



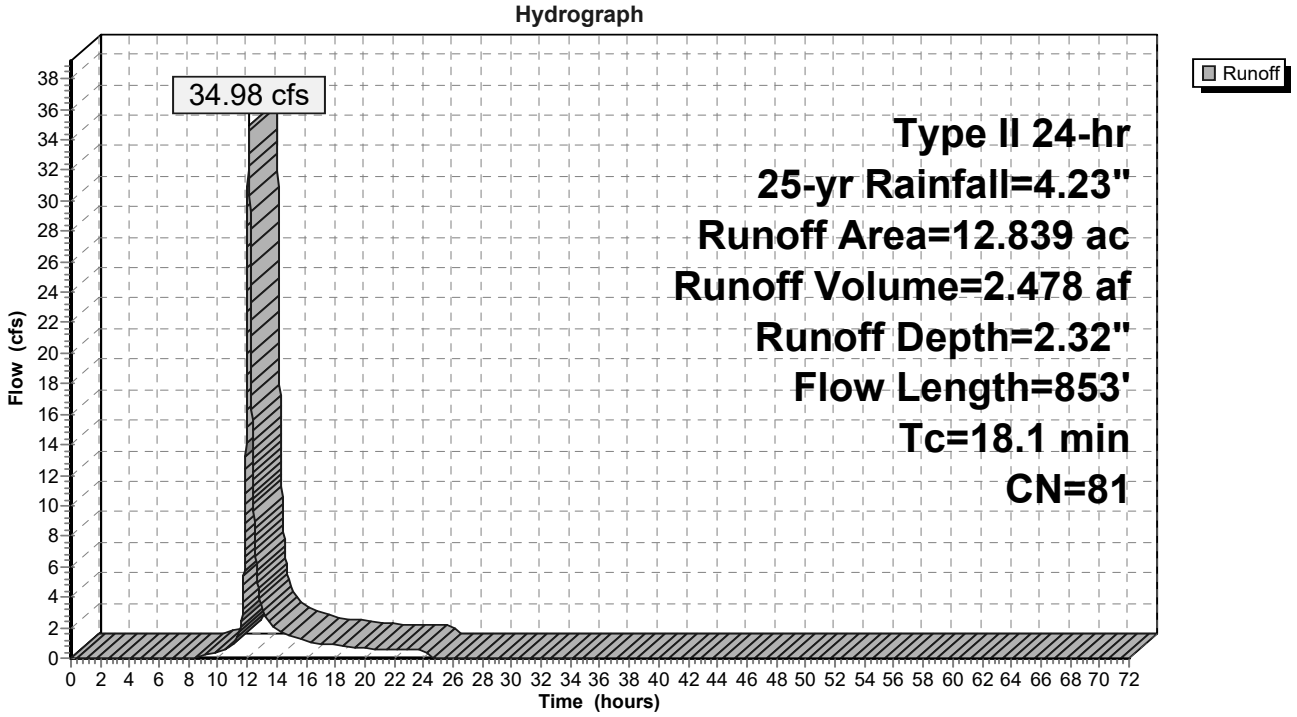
Subcatchment 19S: PRDA-1b



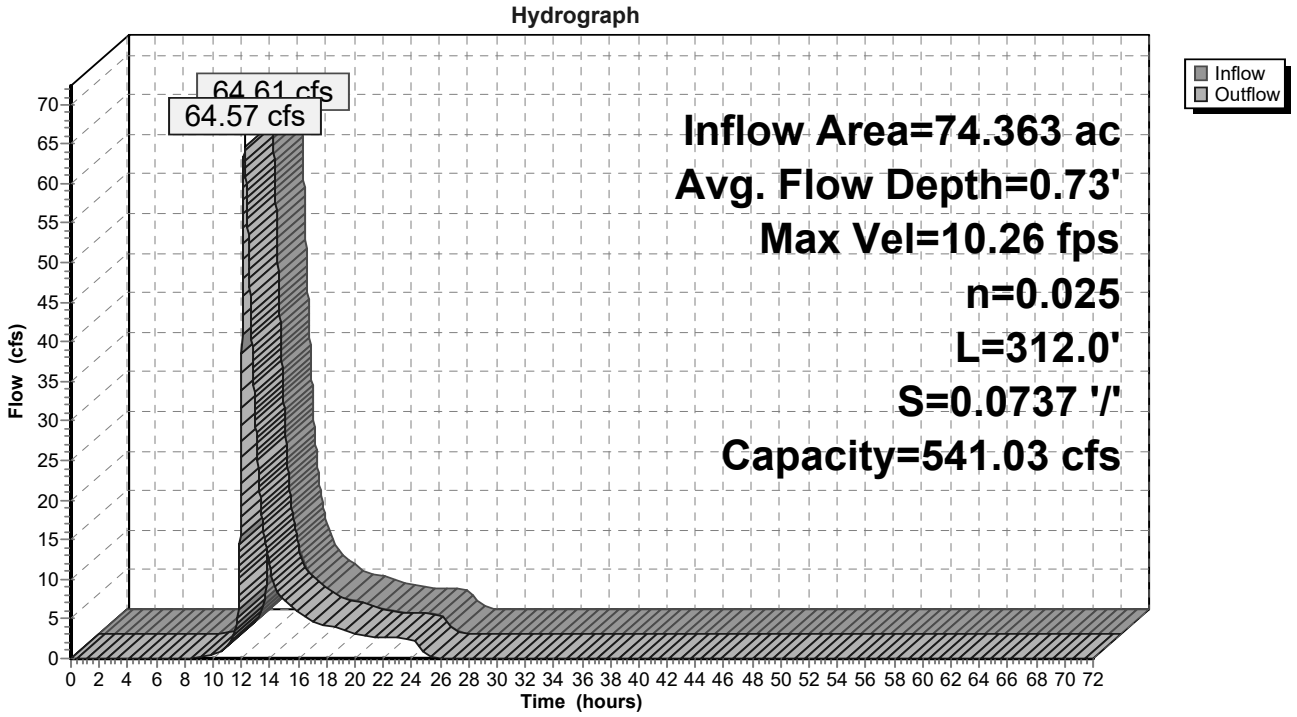
Subcatchment 20S: DA-1c



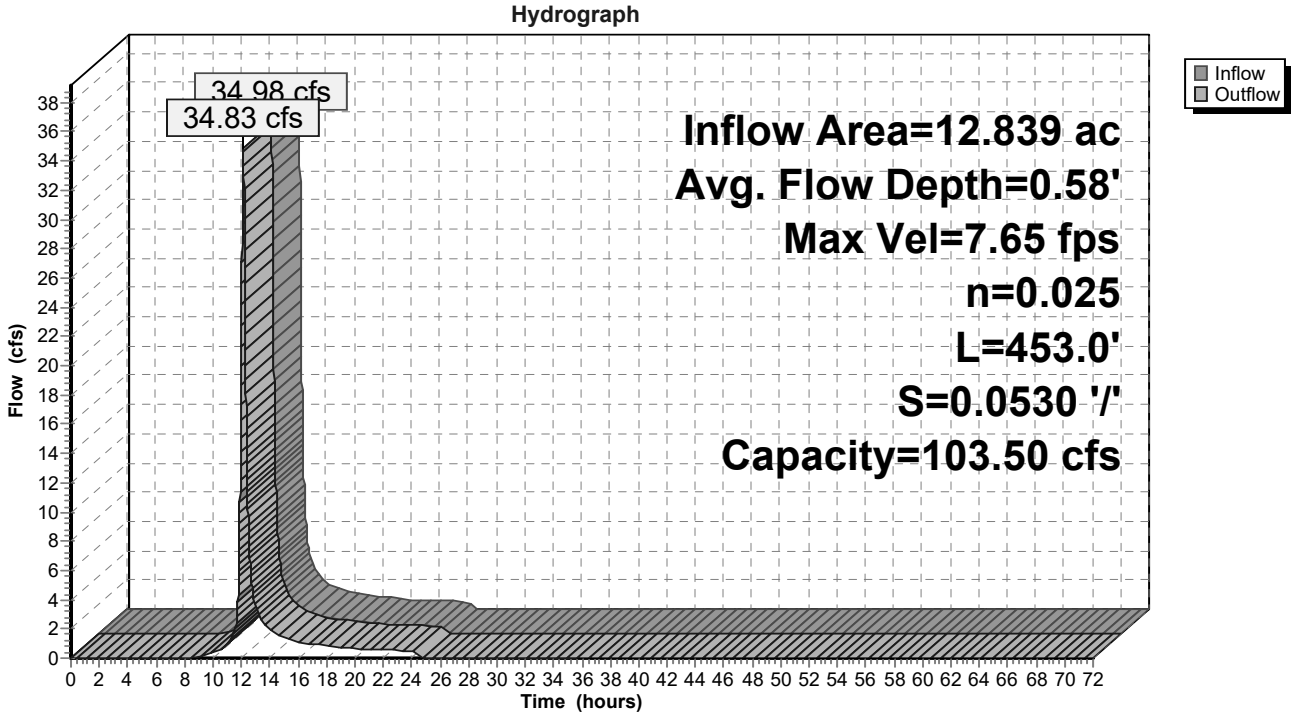
Subcatchment 21S: DA-1d



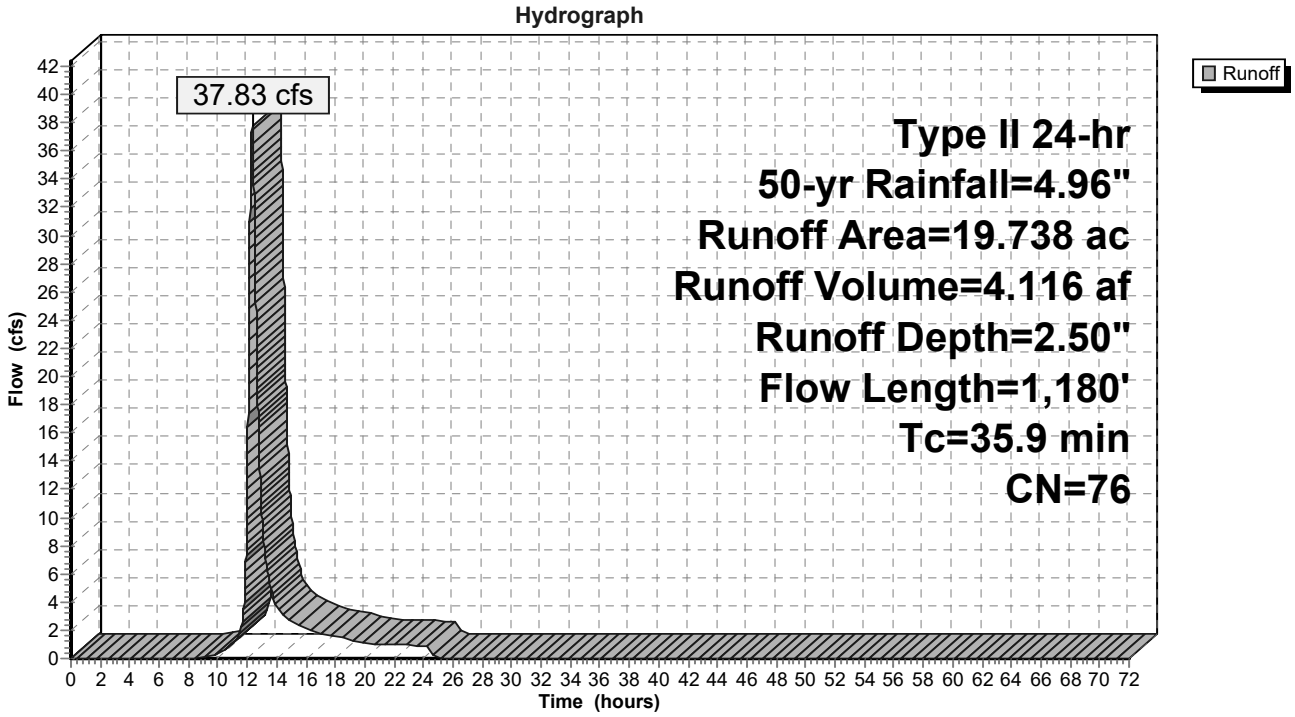
Reach 25R: Swale 3 (Pr. Cond)



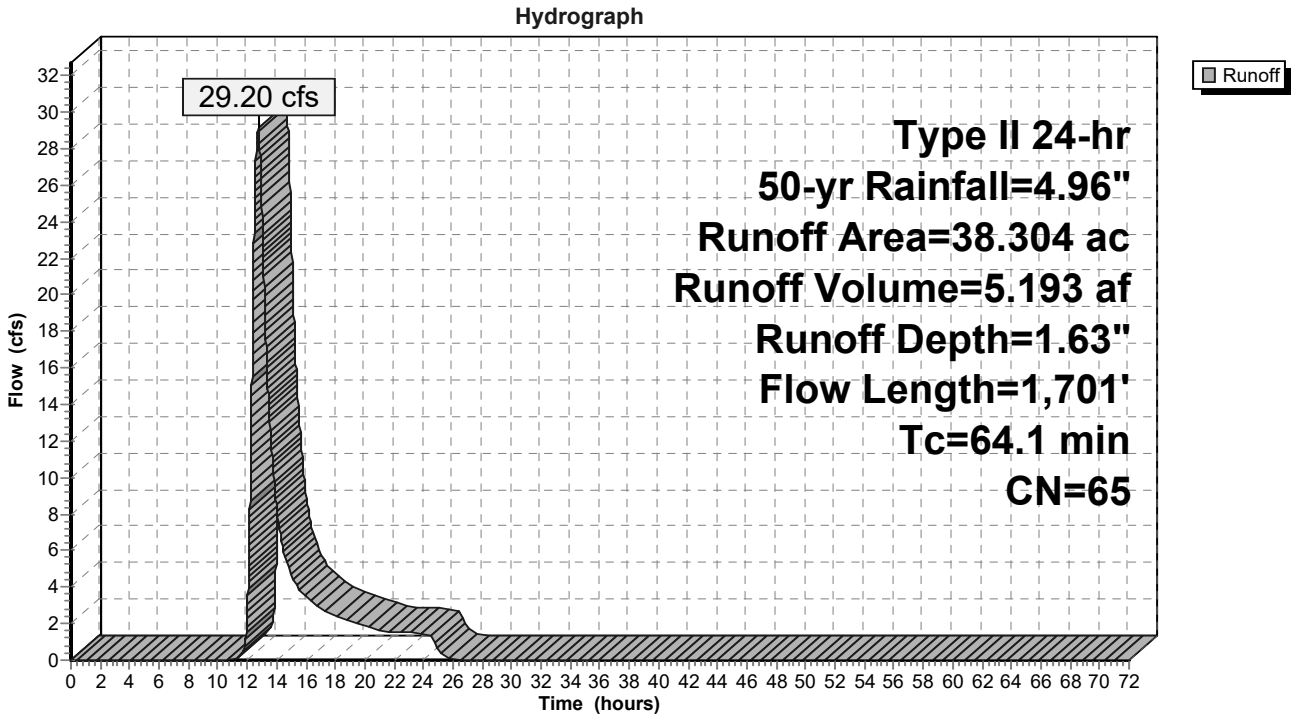
Reach 32R: Swale 1 (Pr. Cond)



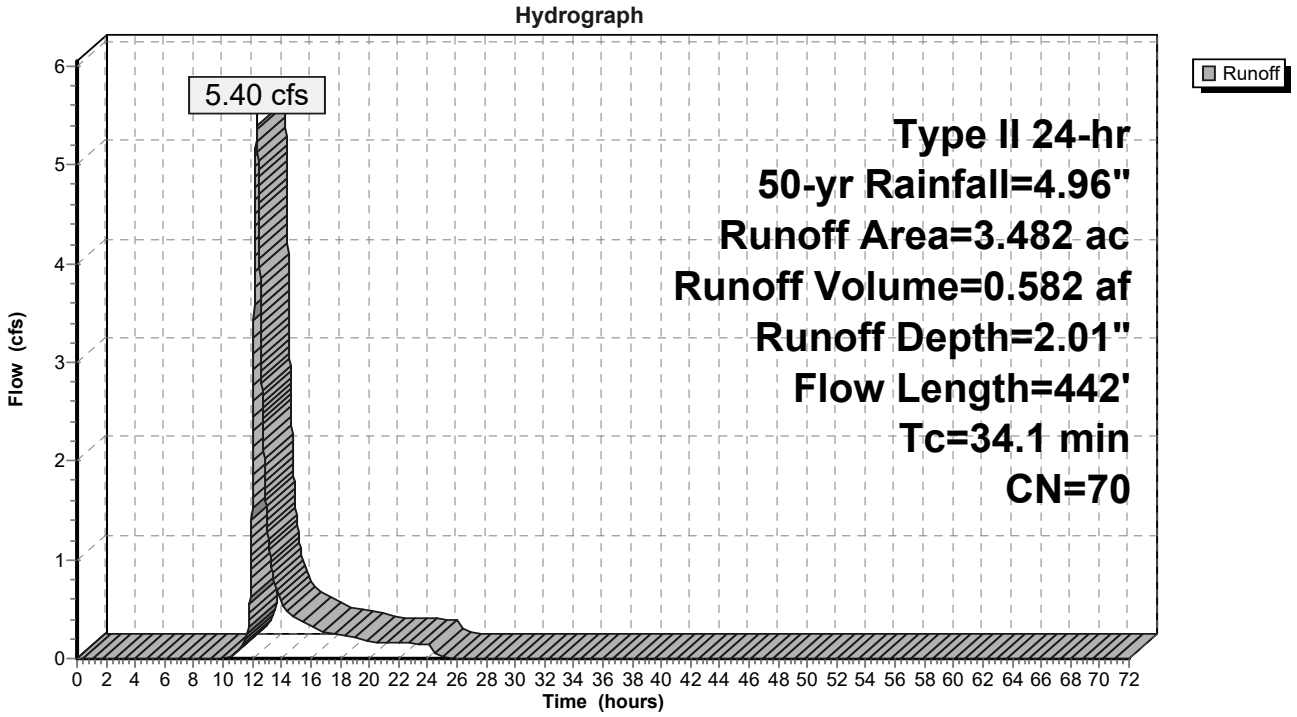
Subcatchment 14S: PRDA-1a



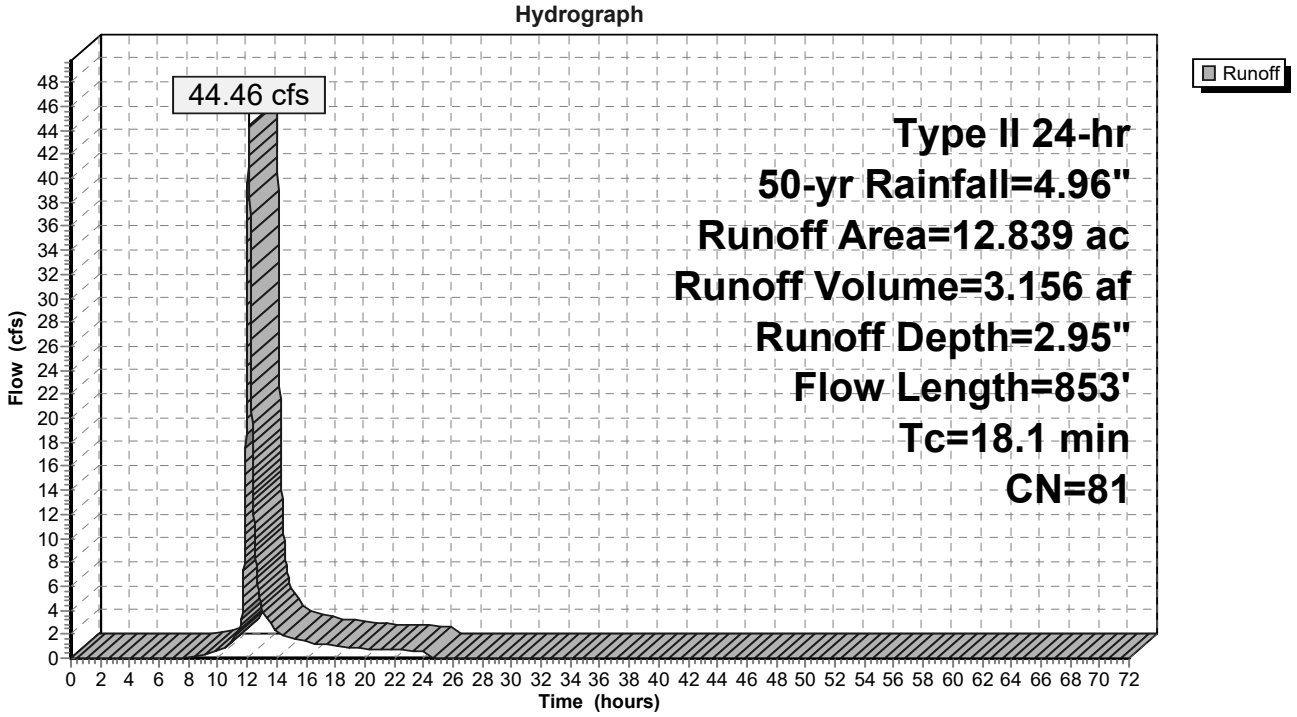
Subcatchment 19S: PRDA-1b



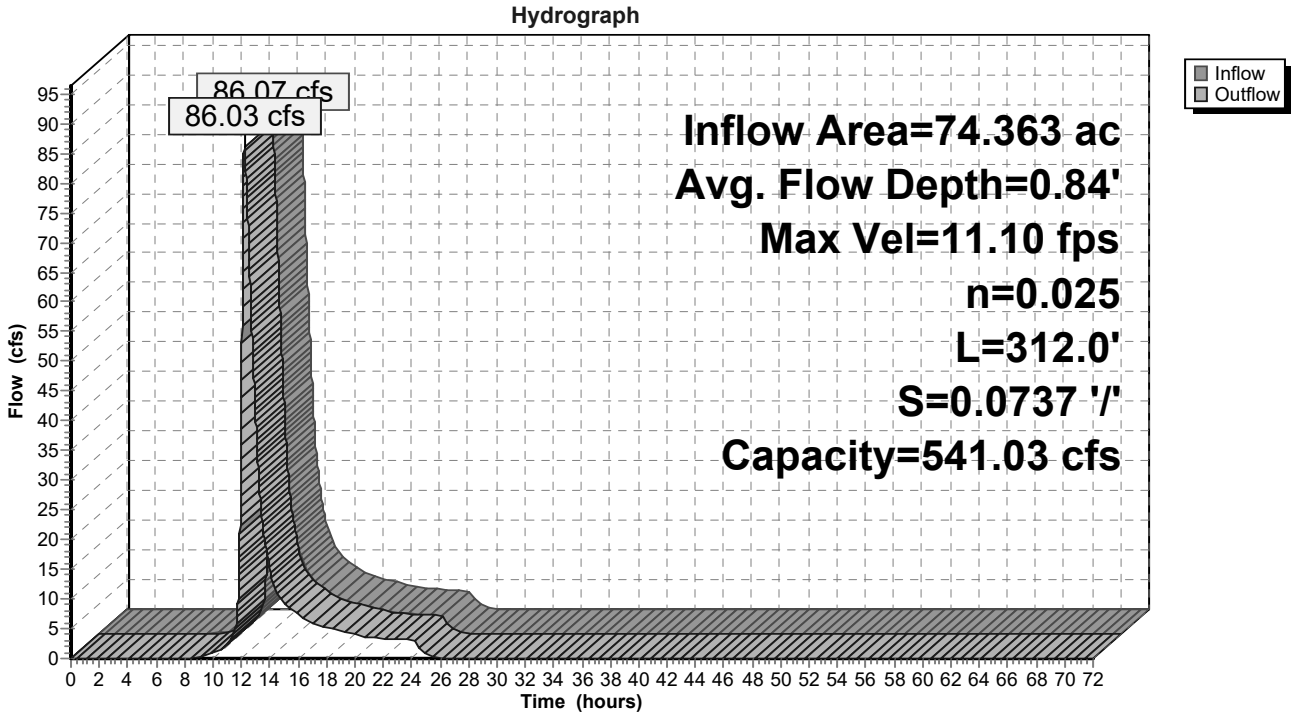
Subcatchment 20S: DA-1c



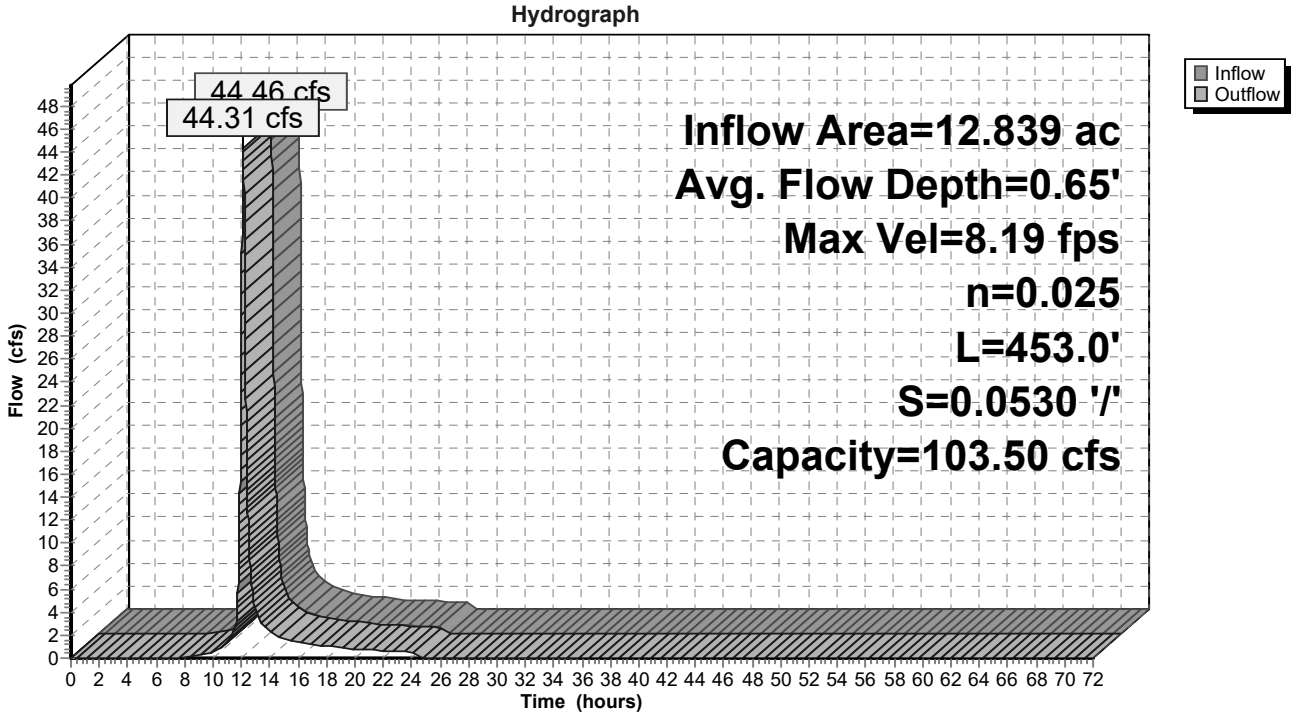
Subcatchment 21S: DA-1d



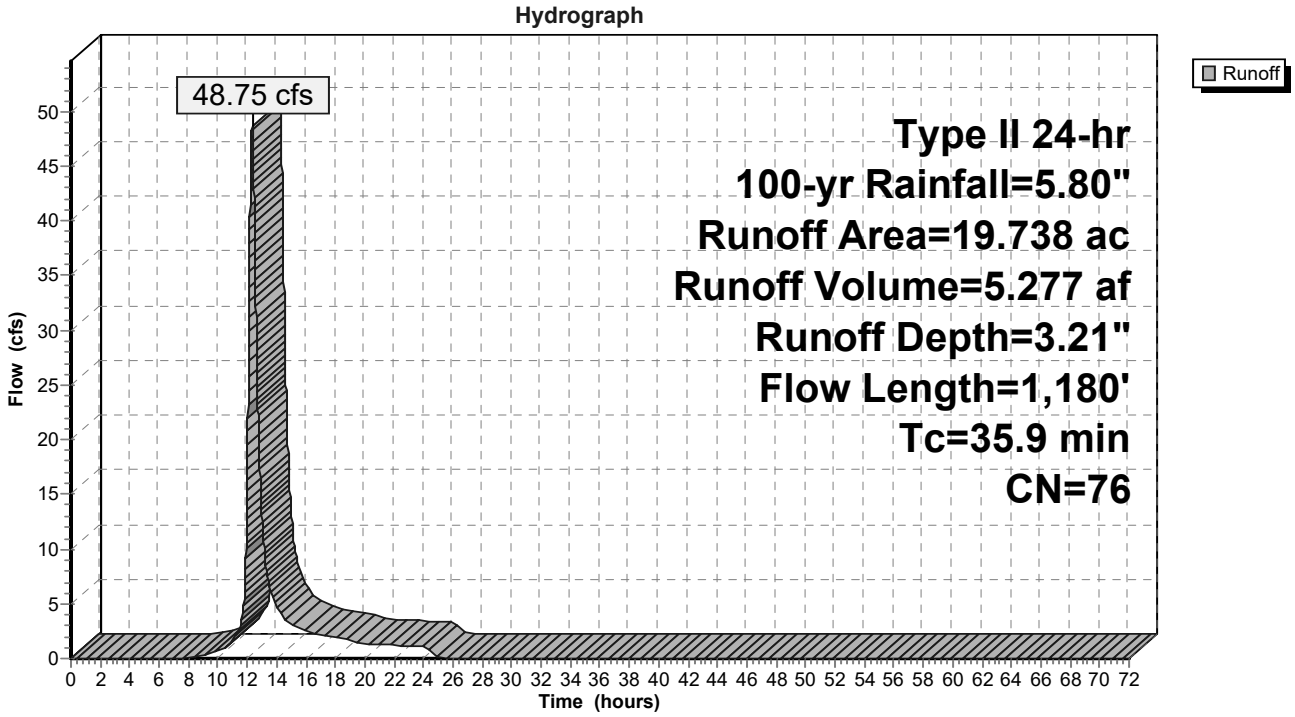
Reach 25R: Swale 3 (Pr. Cond)



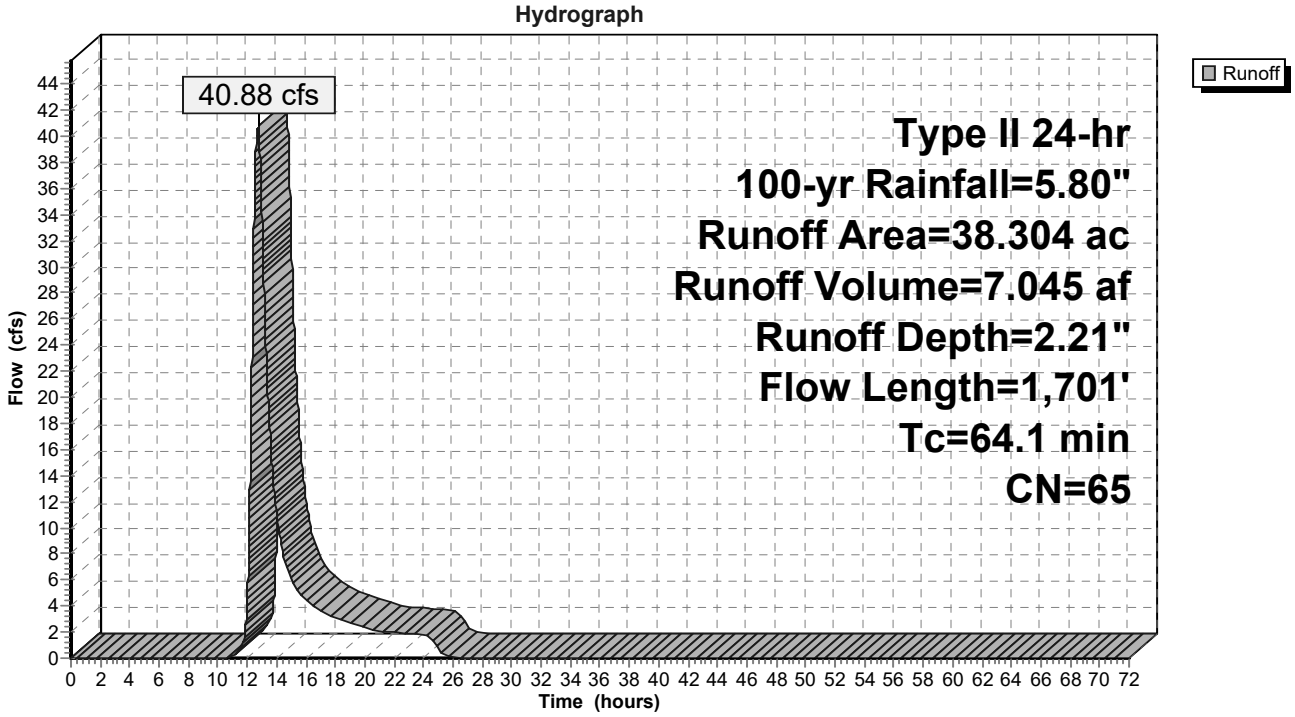
Reach 32R: Swale 1 (Pr. Cond)



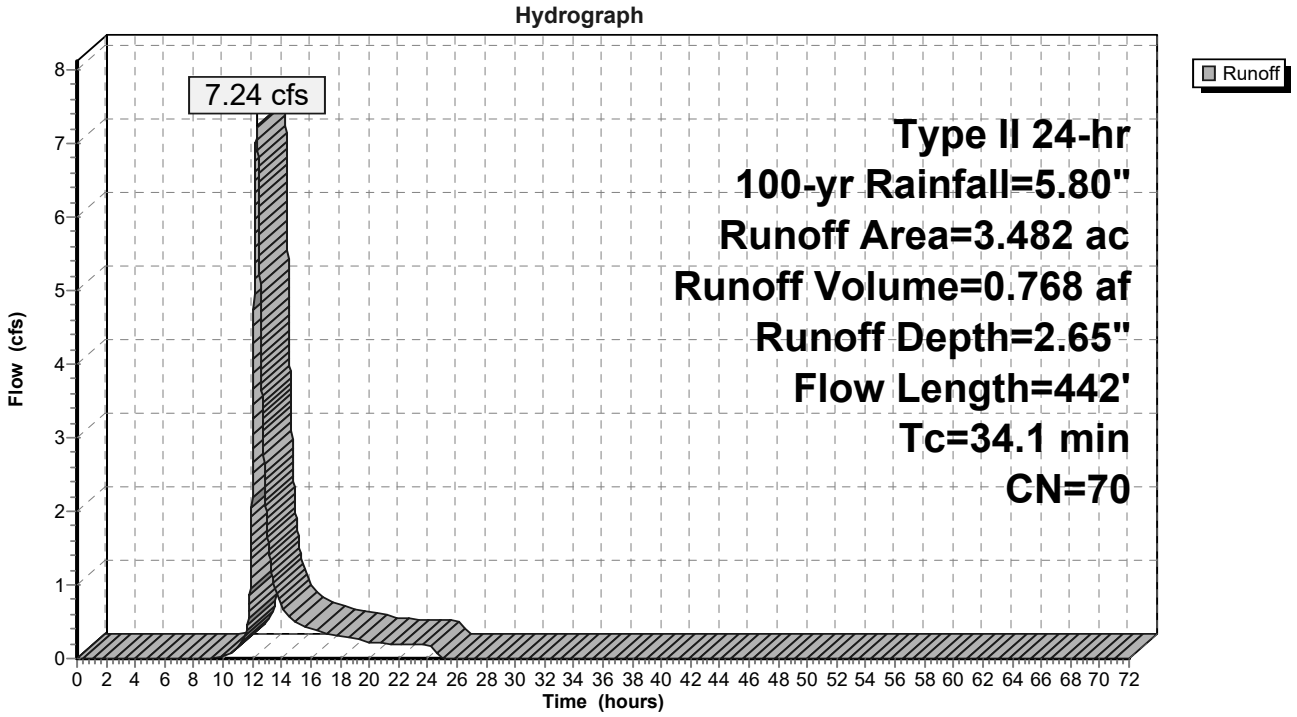
Subcatchment 14S: PRDA-1a



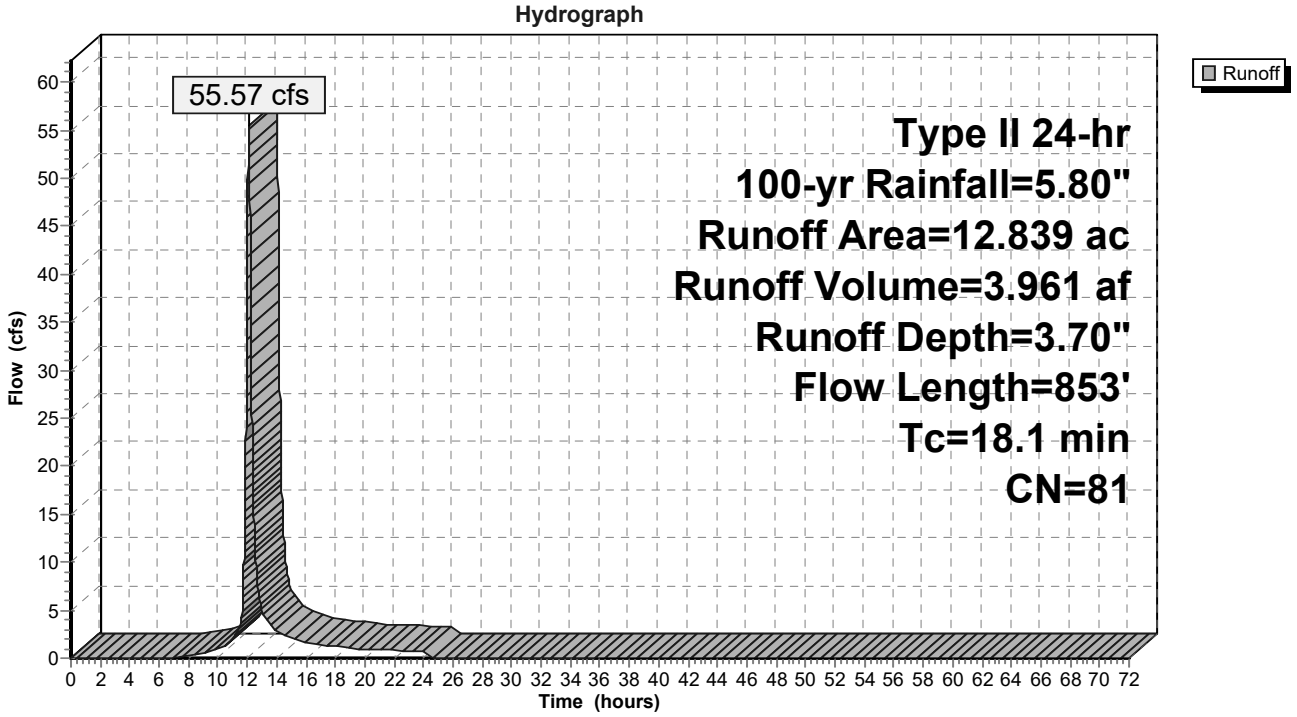
Subcatchment 19S: PRDA-1b



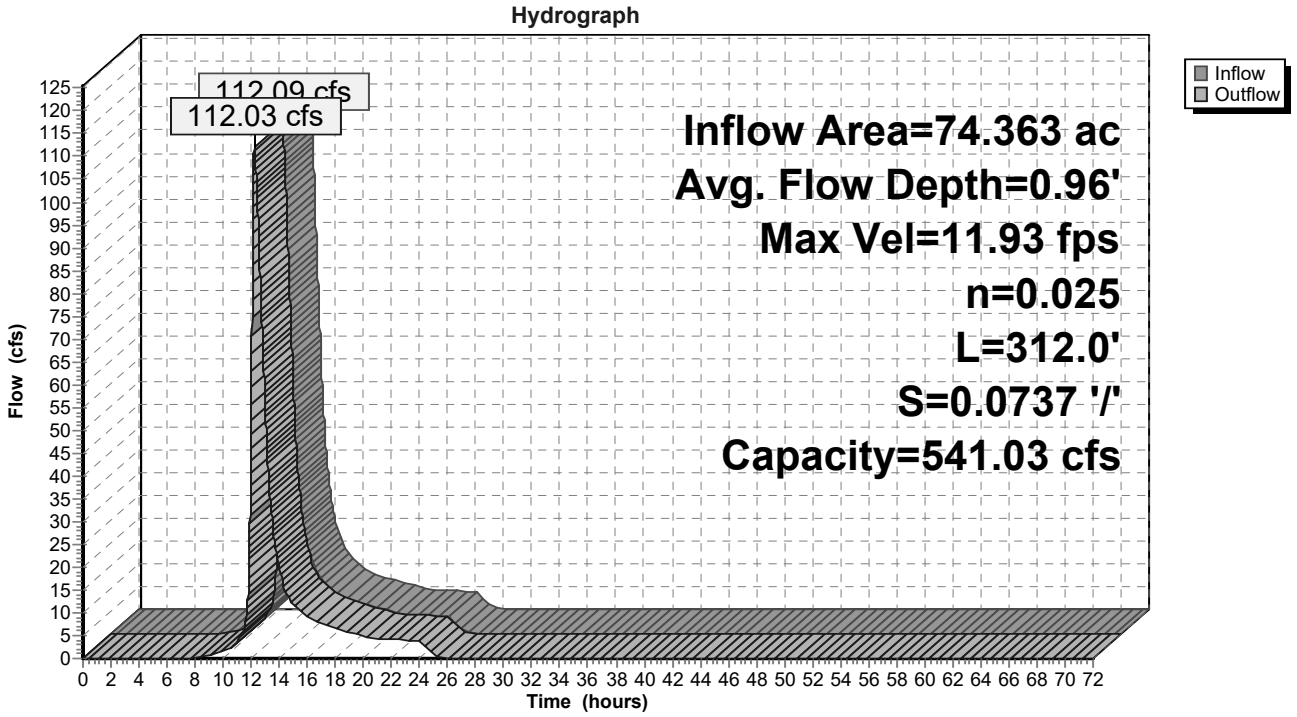
Subcatchment 20S: DA-1c



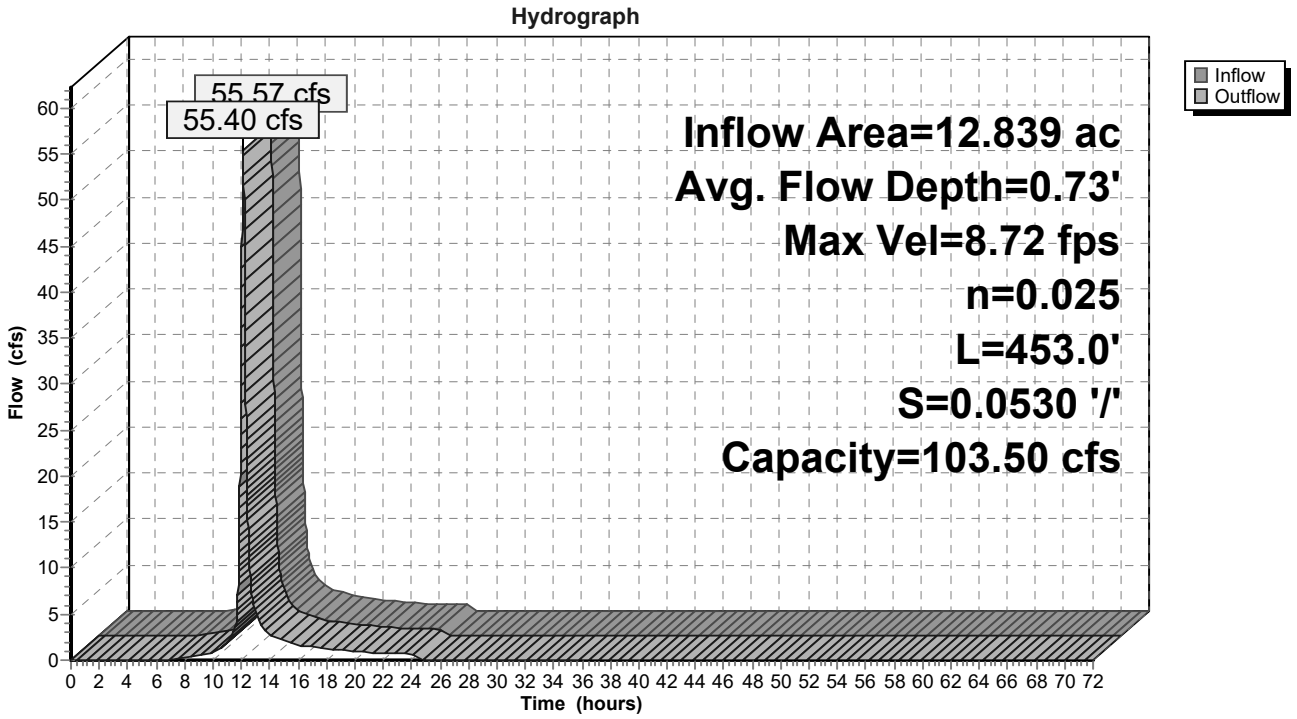
Subcatchment 21S: DA-1d



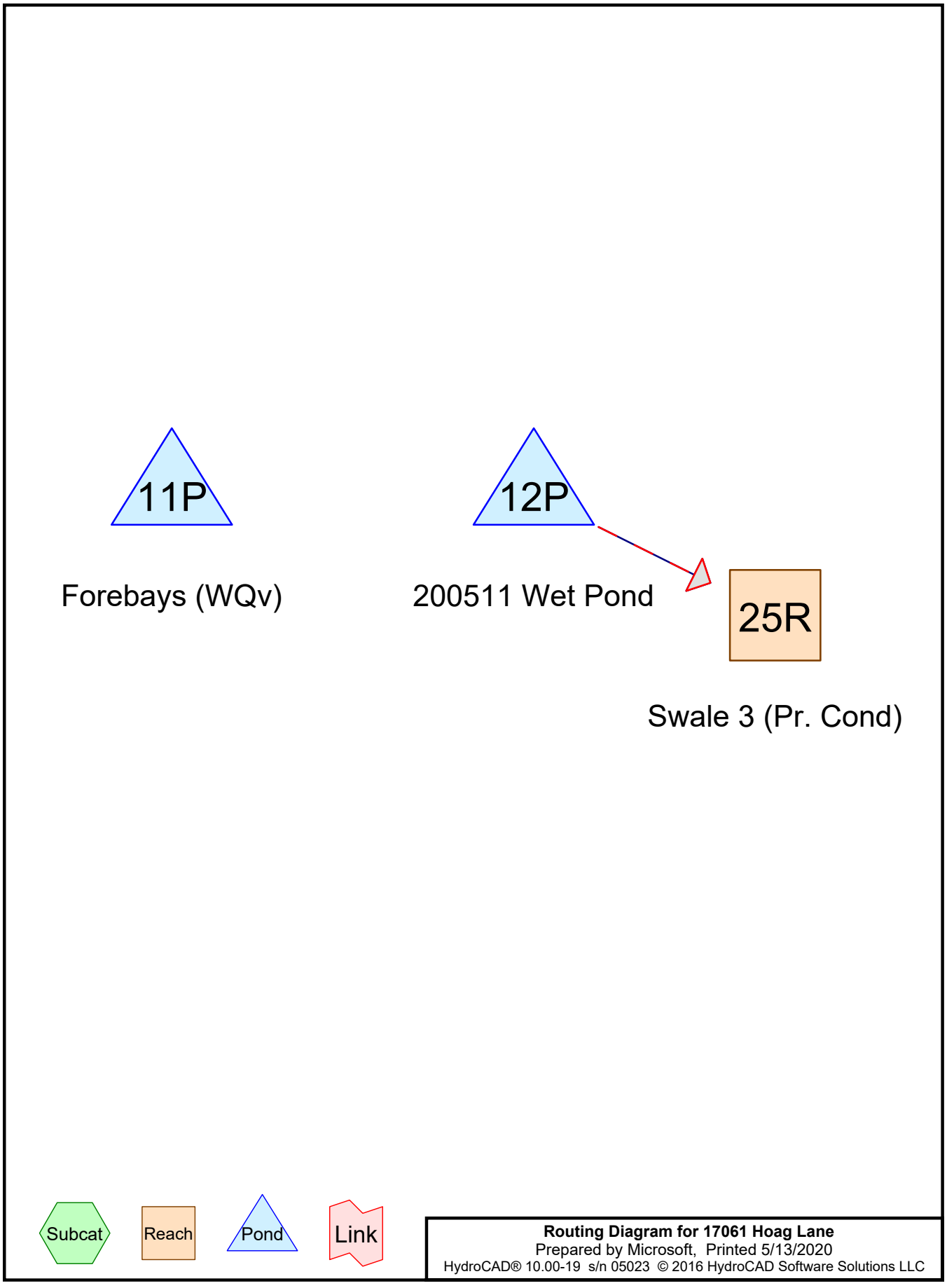
Reach 25R: Swale 3 (Pr. Cond)



Reach 32R: Swale 1 (Pr. Cond)



APPENDIX E


11P
12P
Forebays (WQv)
200511 Wet Pond
25R
Swale 3 (Pr. Cond)
Subcat
Reach
Pond
Link
Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 5/13/2020
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Reach 25R: Swale 3 (Pr. Cond)

Inflow Area = 74.363 ac, 12.97% Impervious, Inflow Depth > 0.30" for 1-yr event
Inflow = 9.24 cfs @ 12.16 hrs, Volume= 1.839 af
Outflow = 9.20 cfs @ 12.19 hrs, Volume= 1.838 af, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.73 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 3.1 min

Peak Storage= 502 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 2.00' Flow Area= 30.0 sf, Capacity= 541.03 cfs

5.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 5.0 '/' Top Width= 25.00'
Length= 312.0' Slope= 0.0737 '/'
Inlet Invert= 661.00', Outlet Invert= 638.00'



‡

Stage-Area-Storage for Reach 25R: Swale 3 (Pr. Cond)

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
661.00	0.0	0
661.02	0.1	32
661.04	0.2	65
661.06	0.3	99
661.08	0.4	135
661.10	0.6	172
661.12	0.7	210
661.14	0.8	249
661.16	0.9	290
661.18	1.1	331
661.20	1.2	374
661.22	1.3	419
661.24	1.5	464
661.26	1.6	511
661.28	1.8	559
661.30	1.9	608
661.32	2.1	659
661.34	2.3	711
661.36	2.4	764
661.38	2.6	818
661.40	2.8	874
661.42	3.0	930
661.44	3.2	988
661.46	3.4	1,048
661.48	3.6	1,108
661.50	3.8	1,170
661.52	4.0	1,233
661.54	4.2	1,297
661.56	4.4	1,363
661.58	4.6	1,430
661.60	4.8	1,498
661.62	5.0	1,567
661.64	5.2	1,637
661.66	5.5	1,709
661.68	5.7	1,782
661.70	6.0	1,856
661.72	6.2	1,932
661.74	6.4	2,009
661.76	6.7	2,087
661.78	6.9	2,166
661.80	7.2	2,246
661.82	7.5	2,328
661.84	7.7	2,411
661.86	8.0	2,495
661.88	8.3	2,581
661.90	8.6	2,668
661.92	8.8	2,756
661.94	9.1	2,845
661.96	9.4	2,935
661.98	9.7	3,027
662.00	10.0	3,120
662.02	10.3	3,214
662.04	10.6	3,310
662.06	10.9	3,406
662.08	11.2	3,504
662.10	11.6	3,604
662.12	11.9	3,704
662.14	12.2	3,806
662.16	12.5	3,909
662.18	12.9	4,013
662.20	13.2	4,118
662.22	13.5	4,225
662.24	13.9	4,333
662.26	14.2	4,442
662.28	14.6	4,553
662.30	15.0	4,664
662.32	15.3	4,777
662.34	15.7	4,892
662.36	16.0	5,007
662.38	16.4	5,124
662.40	16.8	5,242
662.42	17.2	5,361
662.44	17.6	5,481
662.46	18.0	5,603
662.48	18.4	5,726
662.50	18.8	5,850
662.52	19.2	5,975
662.54	19.6	6,102
662.56	20.0	6,230
662.58	20.4	6,359
662.60	20.8	6,490
662.62	21.2	6,621
662.64	21.6	6,754
662.66	22.1	6,888
662.68	22.5	7,024
662.70	22.9	7,160
662.72	23.4	7,298
662.74	23.8	7,437
662.76	24.3	7,578
662.78	24.7	7,720
662.80	25.2	7,862
662.82	25.7	8,007
662.84	26.1	8,152
662.86	26.6	8,299
662.88	27.1	8,446
662.90	27.6	8,596
662.92	28.0	8,746
662.94	28.5	8,898
662.96	29.0	9,050
662.98	29.5	9,205
663.00	**30.0**	**9,360**

Summary for Pond 11P: Forebays (WQv)

Volume	Invert	Avail.Storage	Storage Description
#1	672.00'	4,429 cf	**Forebay #1 (Prismatic)**Listed below (Recalc) x 2
#2	672.00'	5,446 cf	**Forebay #2 (Prismatic)**Listed below (Recalc) x 2
		9,875 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	528	0	0
673.00	1,072	800	800
674.00	1,757	1,415	2,215

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
672.00	752	0	0
673.00	1,329	1,041	1,041
674.00	2,036	1,683	2,723

Device	Routing	Invert	Outlet Devices
#1	Primary	676.00'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.50 Width (feet) 15.00 25.00

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
↑—**1=Custom Weir/Orifice** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 11P: Forebays (WQv)

Elevation (feet)	Storage (cubic-feet)
672.00	0
672.05	131
672.10	267
672.15	409
672.20	557
672.25	710
672.30	869
672.35	1,033
672.40	1,203
672.45	1,379
672.50	1,560
672.55	1,747
672.60	1,940
672.65	2,138
672.70	2,341
672.75	2,551
672.80	2,765
672.85	2,986
672.90	3,212
672.95	3,444
673.00	3,681
673.05	3,925
673.10	4,175
673.15	4,433
673.20	4,697
673.25	4,969
673.30	5,247
673.35	5,532
673.40	5,825
673.45	6,124
673.50	6,430
673.55	6,743
673.60	7,063
673.65	7,390
673.70	7,724
673.75	8,066
673.80	8,413
673.85	8,768
673.90	9,130
673.95	9,499
674.00	**9,875**
674.05	9,875
674.10	9,875
674.15	9,875
674.20	9,875
674.25	9,875
674.30	9,875
674.35	9,875
674.40	9,875
674.45	9,875
674.50	9,875
674.55	9,875
674.60	9,875
674.65	9,875
674.70	9,875
674.75	9,875
674.80	9,875
674.85	9,875
674.90	9,875
674.95	9,875
675.00	9,875
675.05	9,875
675.10	9,875
675.15	9,875
675.20	9,875
675.25	9,875
675.30	9,875
675.35	9,875
675.40	9,875
675.45	9,875
675.50	9,875
675.55	9,875
675.60	9,875
675.65	9,875
675.70	9,875
675.75	9,875
675.80	9,875
675.85	9,875
675.90	9,875
675.95	9,875
676.00	9,875
676.05	9,875
676.10	9,875
676.15	9,875
676.20	9,875
676.25	9,875
676.30	9,875
676.35	9,875
676.40	9,875
676.45	9,875
676.50	9,875

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 58.042 ac, 10.58% Impervious, Inflow Depth = 0.25" for 1-yr event
Inflow = 5.76 cfs @ 12.40 hrs, Volume= 1.199 af
Outflow = 0.30 cfs @ 24.57 hrs, Volume= 1.083 af, Atten= 95%, Lag= 729.8 min
Primary = 0.30 cfs @ 24.57 hrs, Volume= 1.083 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 35,139 cf
Peak Elev= 673.42' @ 24.57 hrs Surf.Area= 20,625 sf Storage= 74,964 cf (39,825 cf above start)

Plug-Flow detention time= 2,829.2 min calculated for 0.276 af (23% of inflow)
Center-of-Mass det. time= 1,317.1 min (2,270.7 - 953.5)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	164,411 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	1,537	0	0
666.00	2,644	2,091	2,091
667.00	3,903	3,274	5,364
668.00	5,307	4,605	9,969
669.00	6,960	6,134	16,103
670.00	8,720	7,840	23,943
671.00	13,672	11,196	35,139
672.00	15,804	14,738	49,877
673.00	18,037	16,921	66,797
674.00	24,162	21,100	87,897
675.00	28,220	26,191	114,088
676.00	34,146	31,183	145,271
676.50	42,414	19,140	164,411

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

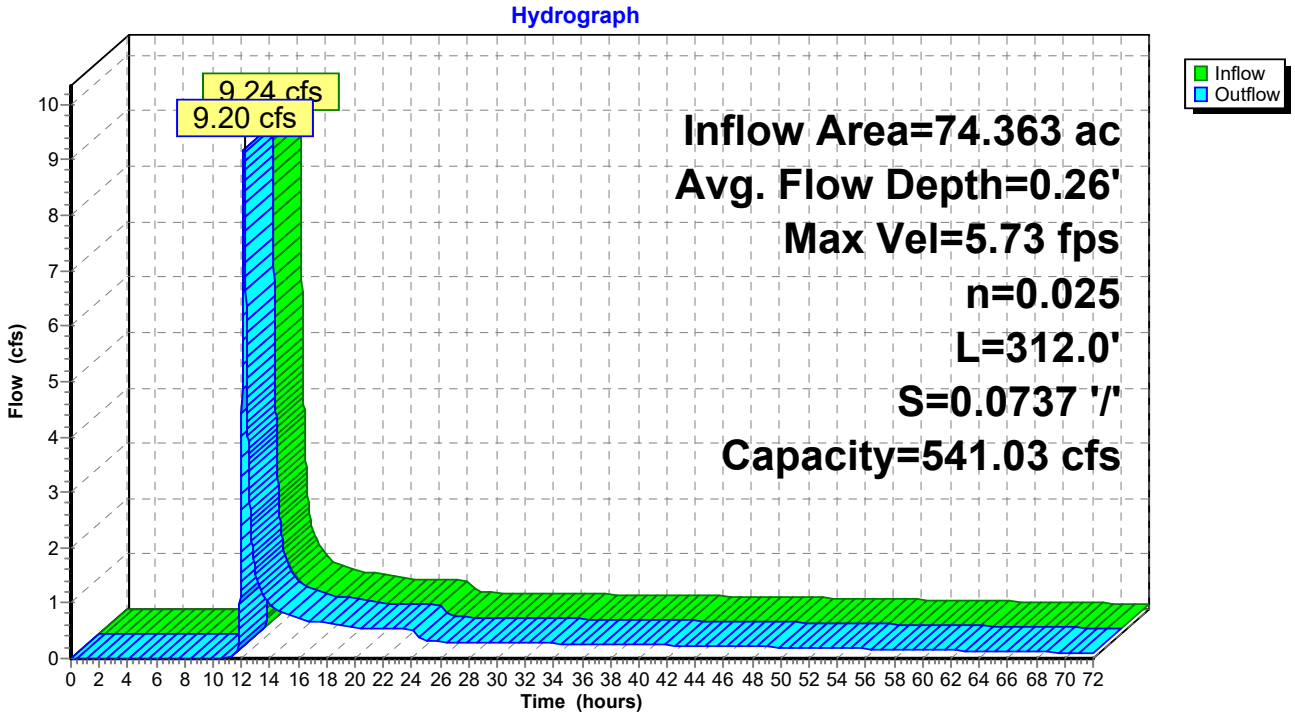
Primary OutFlow Max=0.30 cfs @ 24.57 hrs HW=673.42' (Free Discharge)
└─**1=Outlet Culvert** (Passes 0.30 cfs of 81.30 cfs potential flow)
  ├─**3=2"x3" Orifice** (Orifice Controls 0.30 cfs @ 7.30 fps)
  ├─**4=Rims** (Controls 0.00 cfs)
  └─**5=Rectangular Orifice** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
└─**2=Spillway** (Controls 0.00 cfs)

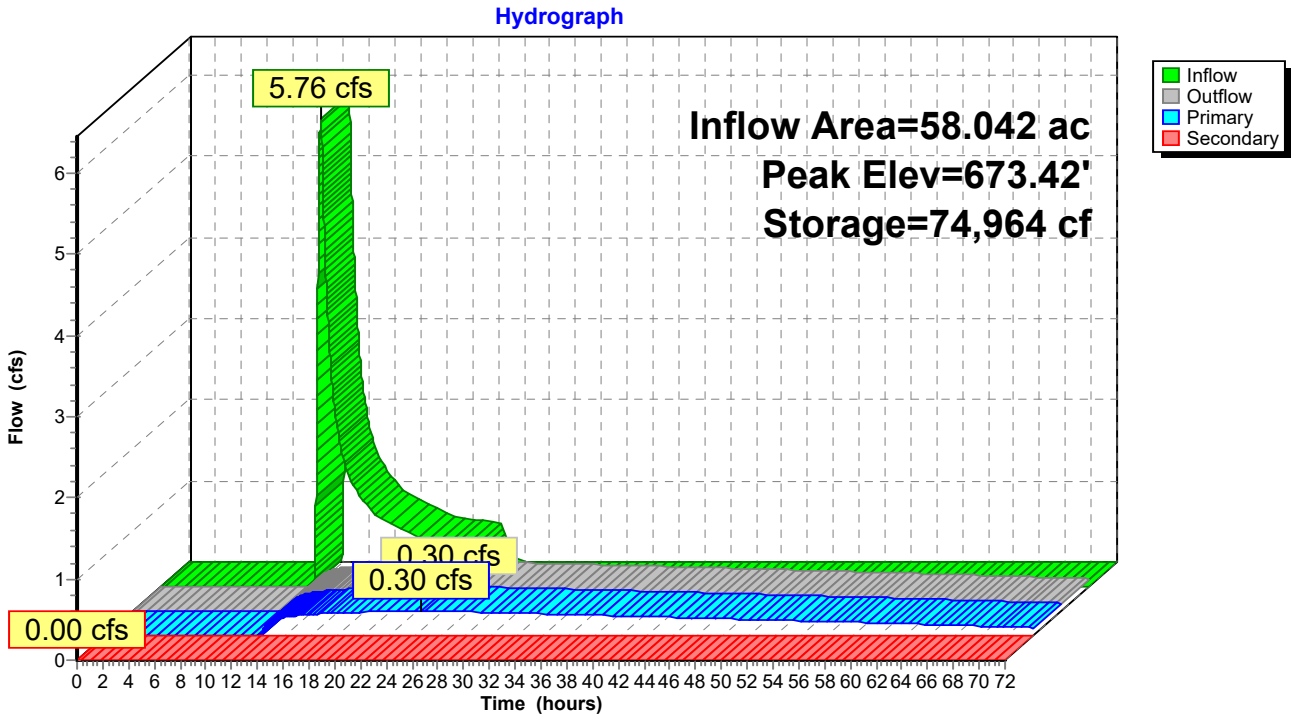
Stage-Area-Storage for Pond 12P: 200511 Wet Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
665.00	1,537	0
665.15	1,703	243
665.30	1,869	511
665.45	2,035	804
665.60	2,201	1,121
665.75	2,367	1,464
665.90	2,533	1,832
666.05	2,707	2,224
666.20	2,896	2,644
666.35	3,085	3,093
666.50	3,274	3,570
666.65	3,462	4,075
666.80	3,651	4,609
666.95	3,840	5,170
667.10	4,043	5,761
667.25	4,254	6,384
667.40	4,465	7,038
667.55	4,675	7,723
667.70	4,886	8,440
667.85	5,096	9,189
668.00	5,307	9,969
668.15	5,555	10,784
668.30	5,803	11,635
668.45	6,051	12,525
668.60	6,299	13,451
668.75	6,547	14,414
668.90	6,795	15,415
669.05	7,048	16,453
669.20	7,312	17,530
669.35	7,576	18,646
669.50	7,840	19,803
669.65	8,104	20,998
669.80	8,368	22,234
669.95	8,632	23,509
670.10	9,215	24,839
670.25	9,958	26,277
670.40	10,701	27,827
670.55	11,444	29,487
670.70	12,186	31,260
670.85	12,929	33,143
671.00	13,672	35,139
671.15	13,992	37,213
671.30	14,312	39,336
671.45	14,631	41,507
671.60	14,951	43,725
671.75	15,271	45,992
671.90	15,591	48,307
672.05	15,916	50,669
672.20	16,251	53,082
672.35	16,586	55,545
672.50	16,921	58,058
672.65	17,255	60,621
672.80	17,590	63,234
672.95	17,925	65,898
673.10	18,650	68,631
673.25	19,568	71,498
673.40	20,487	74,502
673.55	21,406	77,644
673.70	22,325	80,924
673.85	23,243	84,341
674.00	24,162	87,897
674.15	24,771	91,566
674.30	25,379	95,328
674.45	25,988	99,180
674.60	26,597	103,124
674.75	27,206	107,159
674.90	27,814	111,286
675.05	28,516	115,506
675.20	29,405	119,850
675.35	30,294	124,327
675.50	31,183	128,938
675.65	32,072	133,682
675.80	32,961	138,560
675.95	33,850	143,571
676.10	35,800	148,768
676.25	38,280	154,324
676.40	**40,760**	**160,252**
676.55	**42,414**	**164,411**
676.70	42,414	164,411
676.85	42,414	164,411
677.00	42,414	164,411

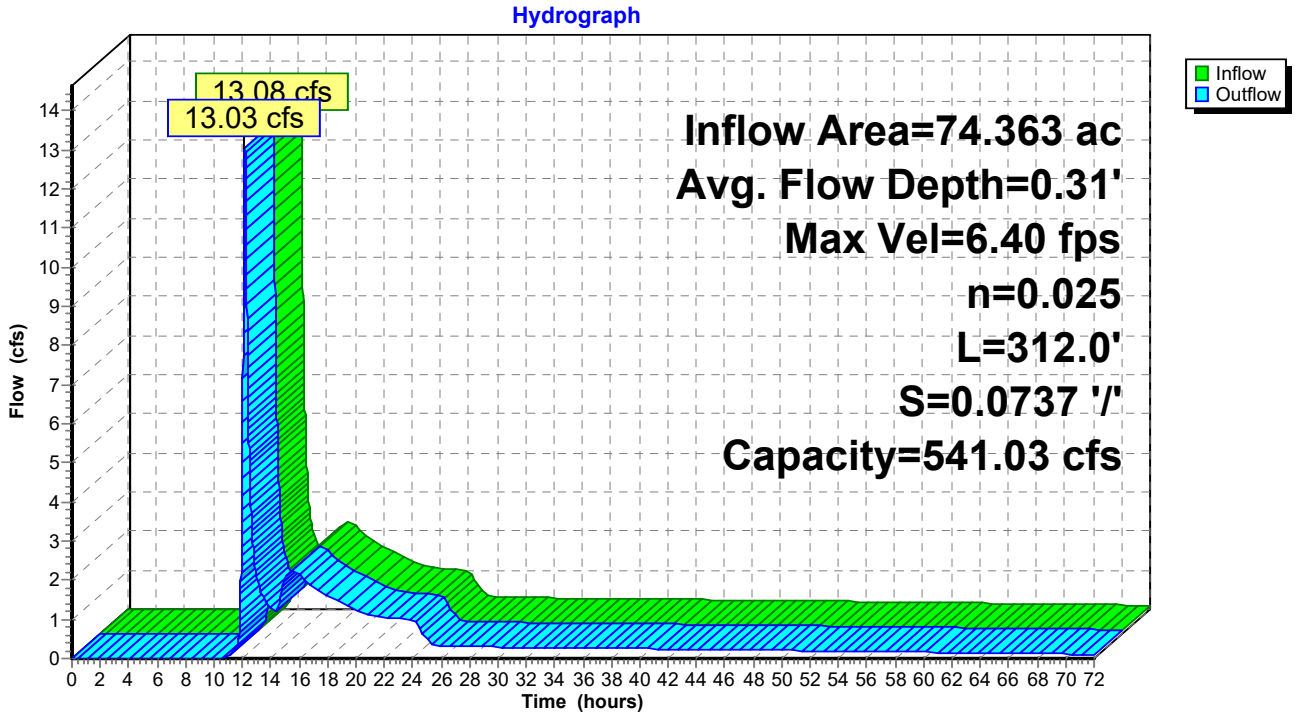
Reach 25R: Swale 3 (Pr. Cond)



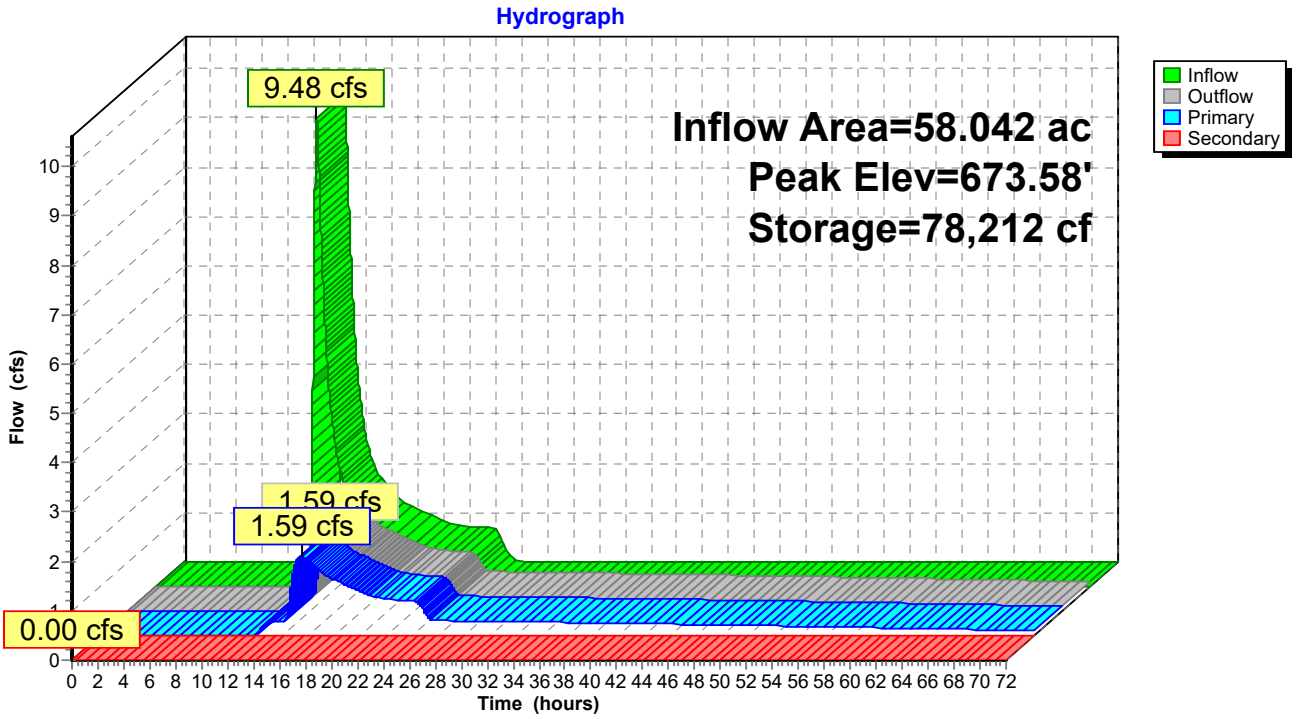
Pond 12P: 200511 Wet Pond



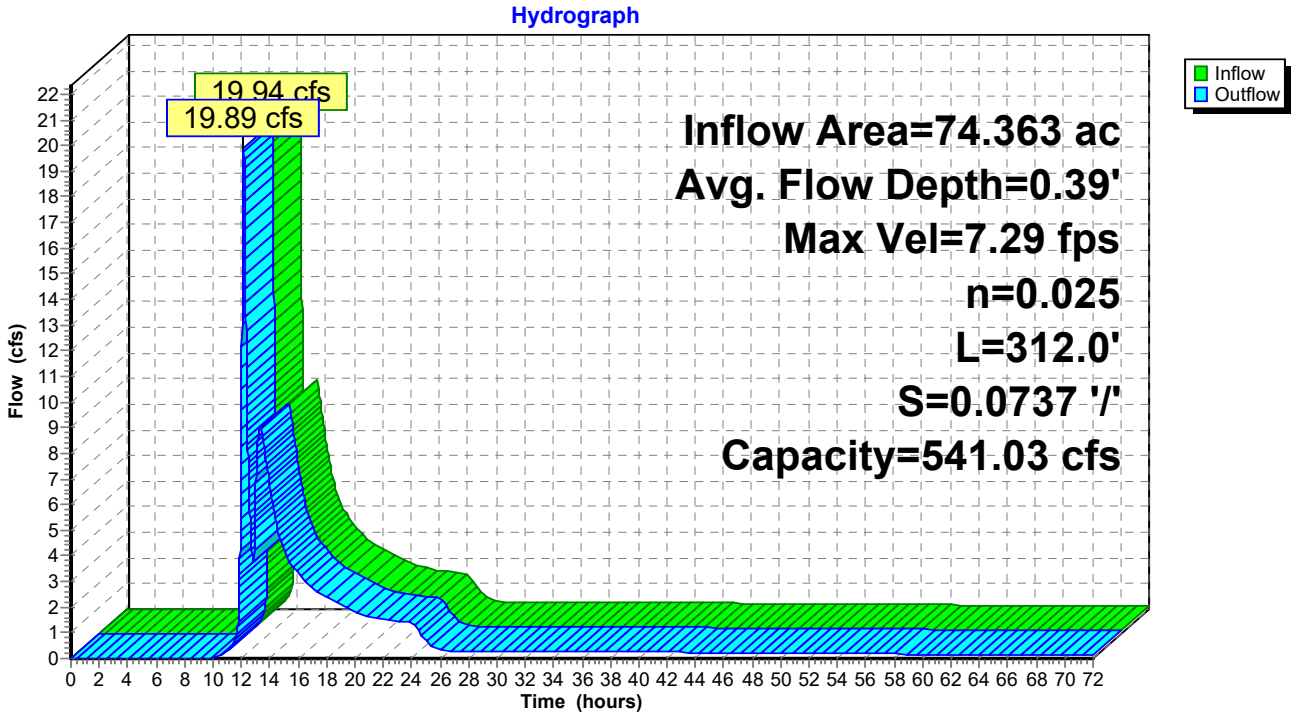
Reach 25R: Swale 3 (Pr. Cond)



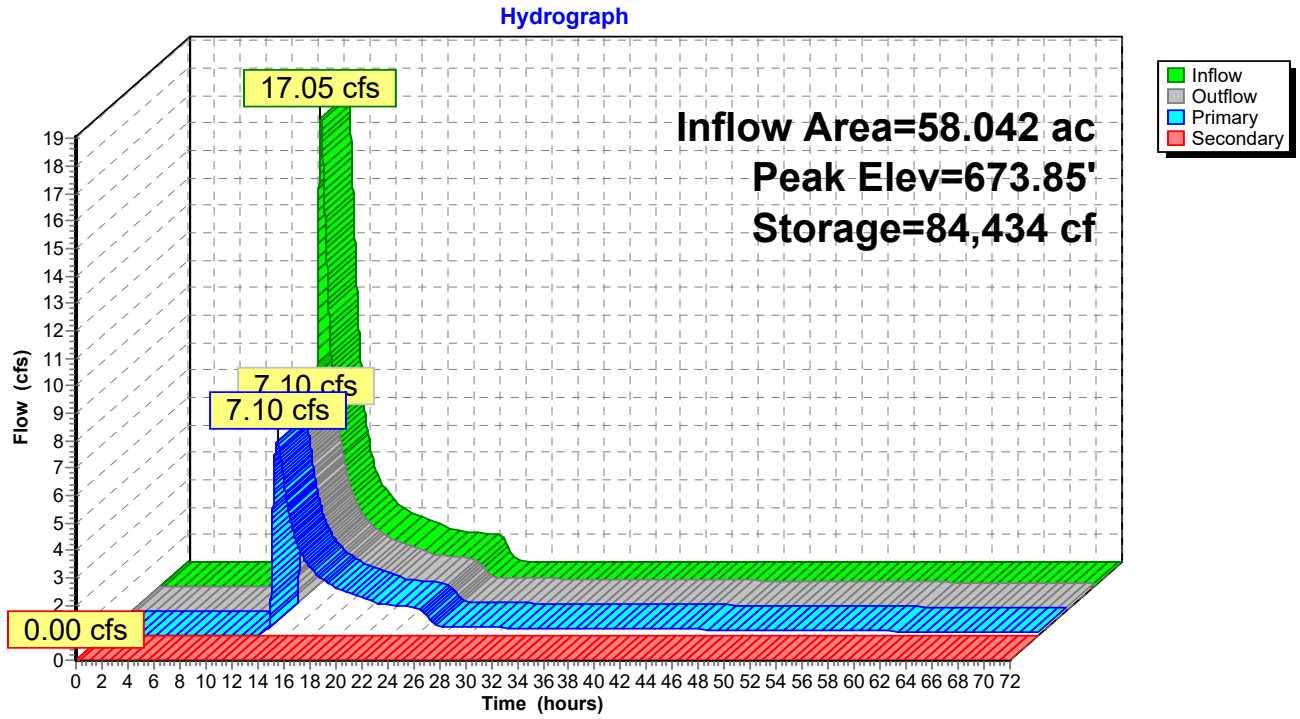
Pond 12P: 200511 Wet Pond



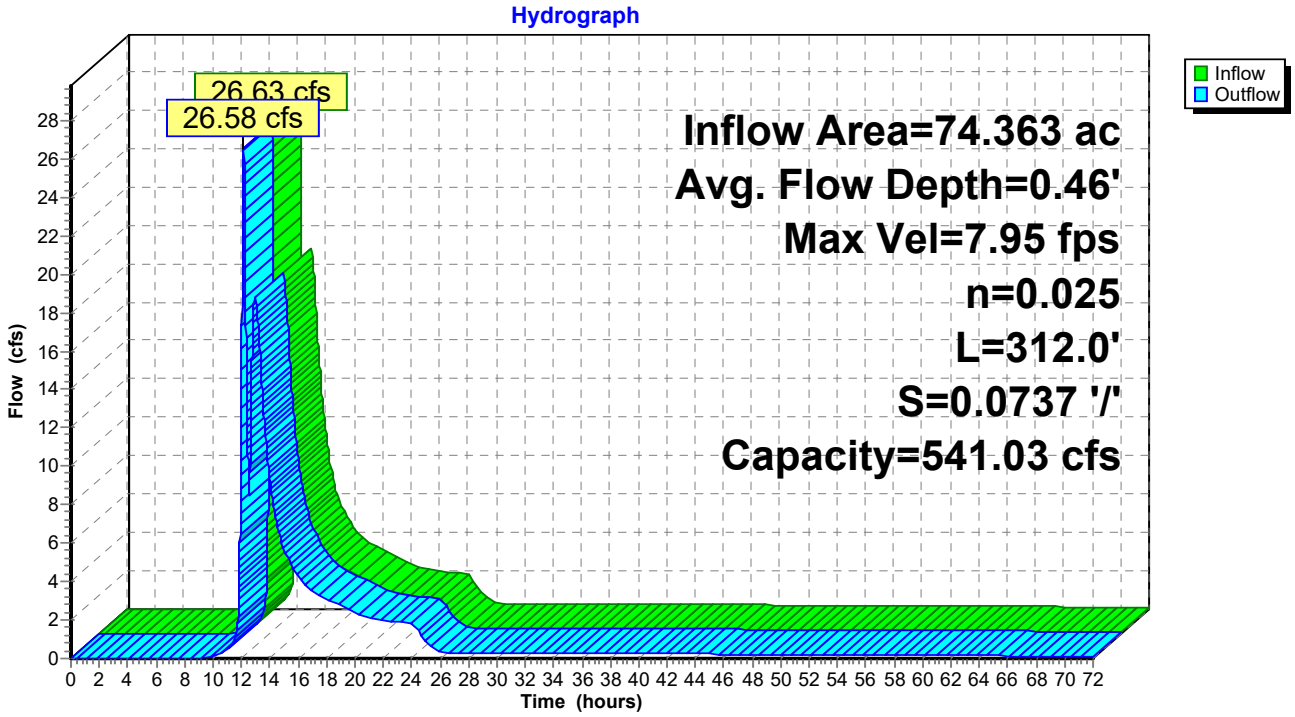
Reach 25R: Swale 3 (Pr. Cond)



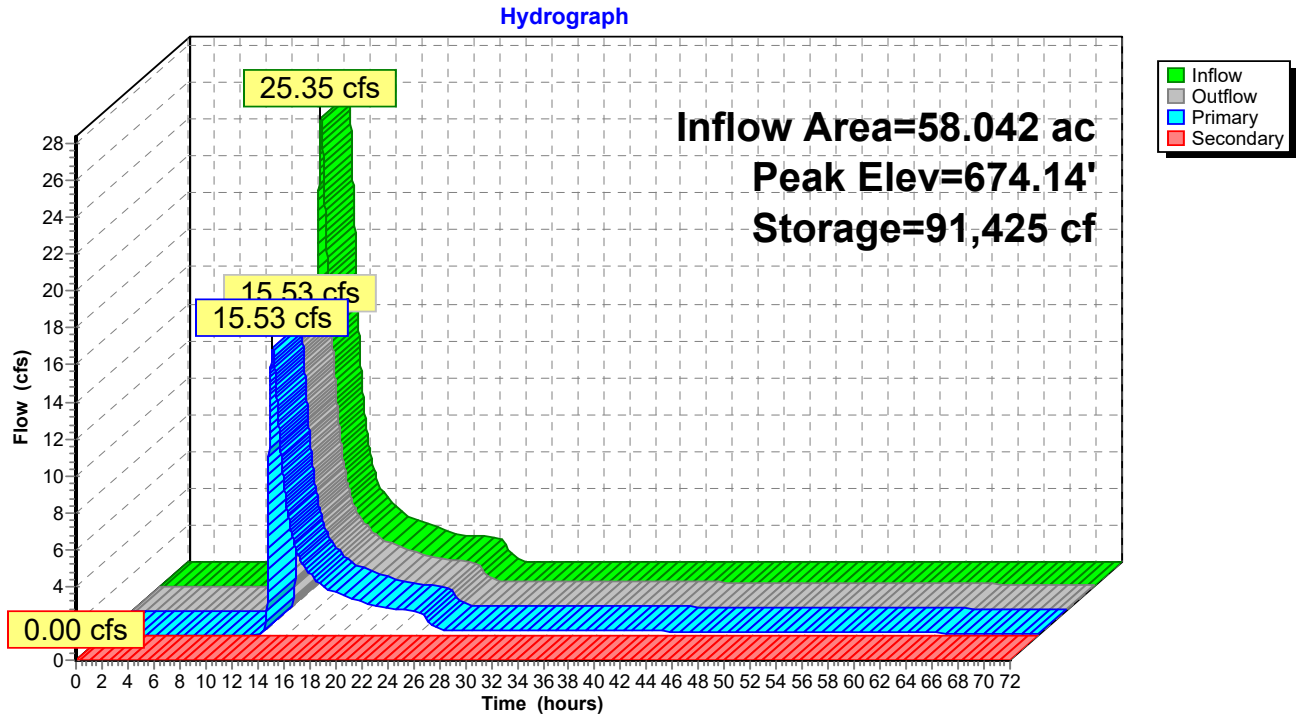
Pond 12P: 200511 Wet Pond



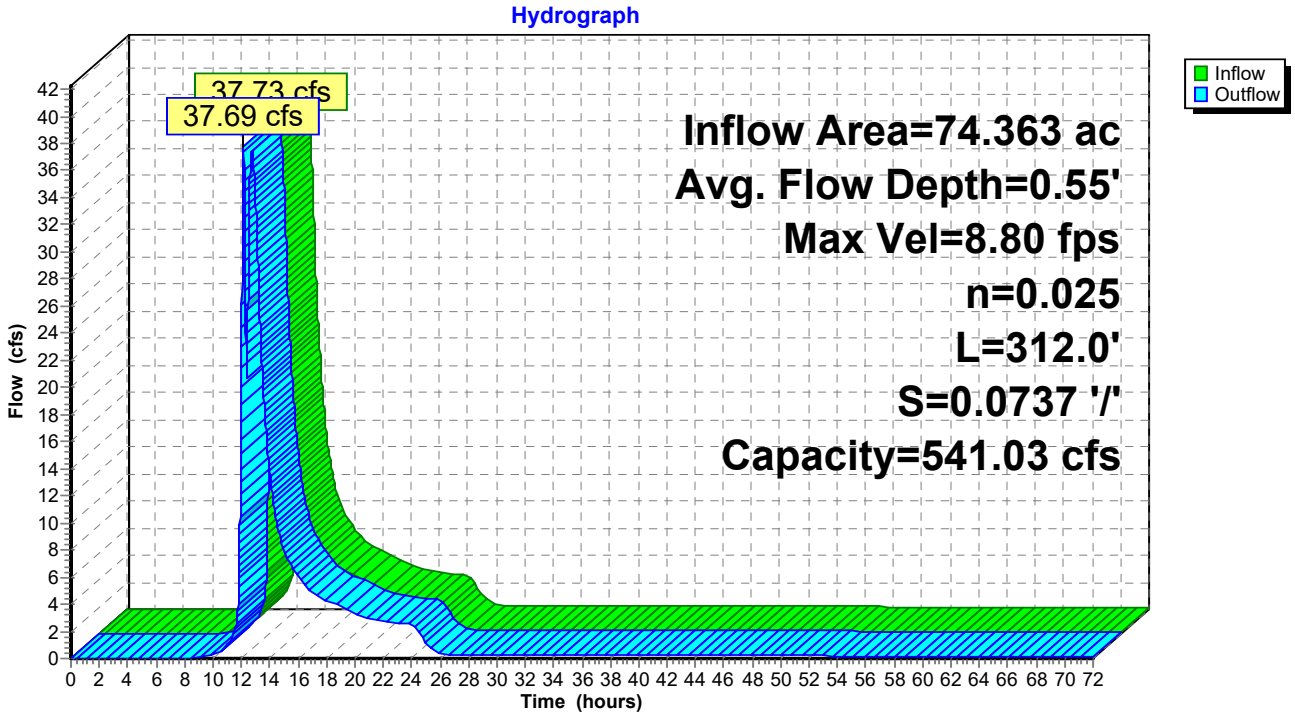
Reach 25R: Swale 3 (Pr. Cond)



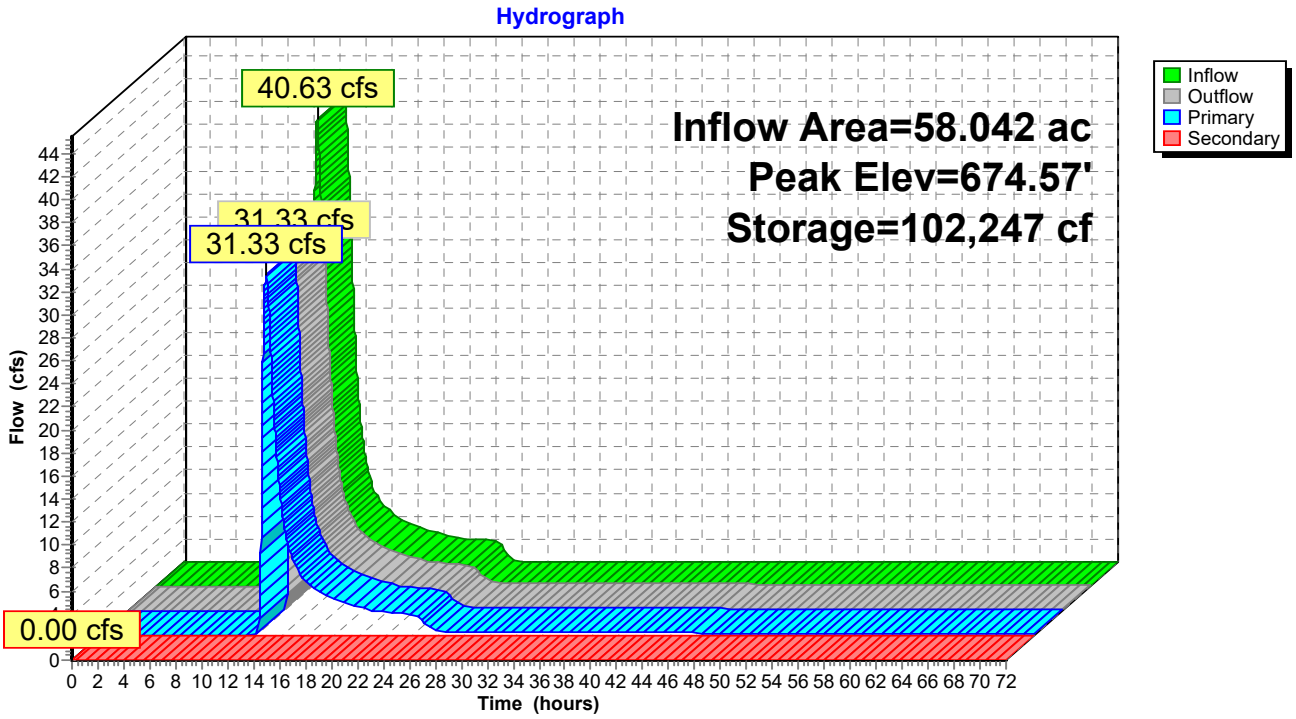
Pond 12P: 200511 Wet Pond



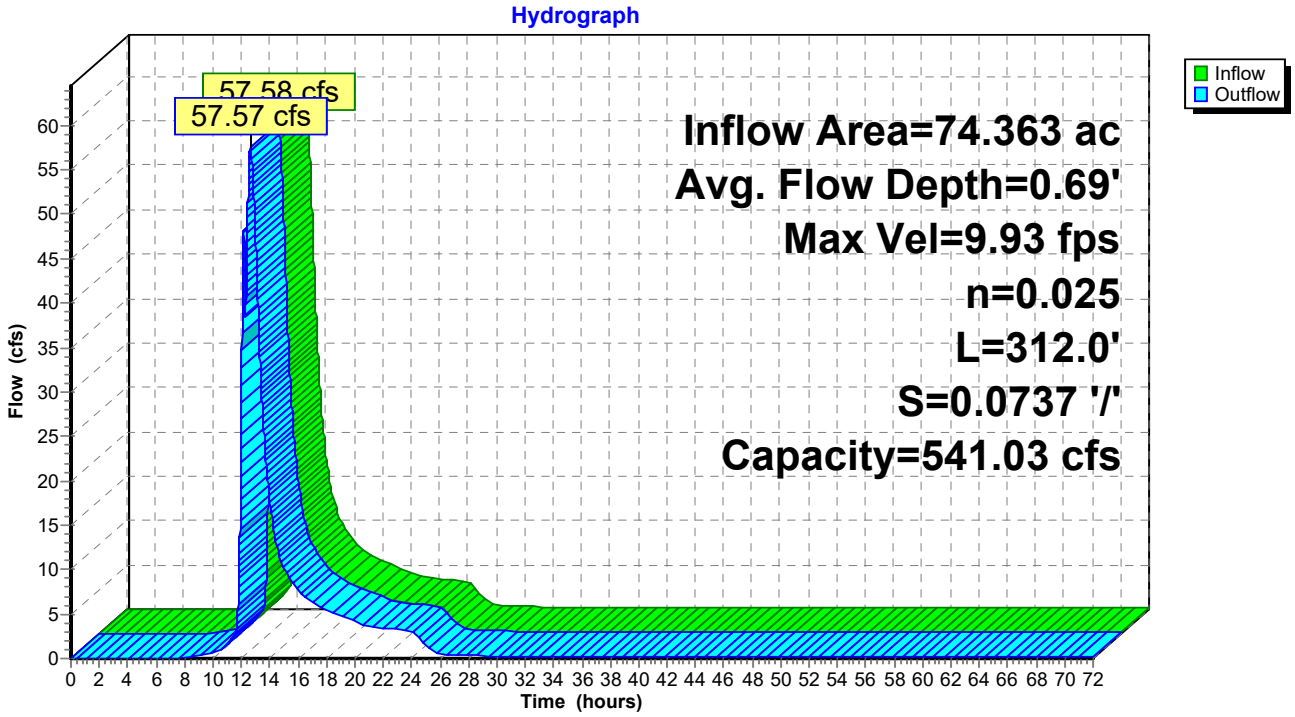
Reach 25R: Swale 3 (Pr. Cond)



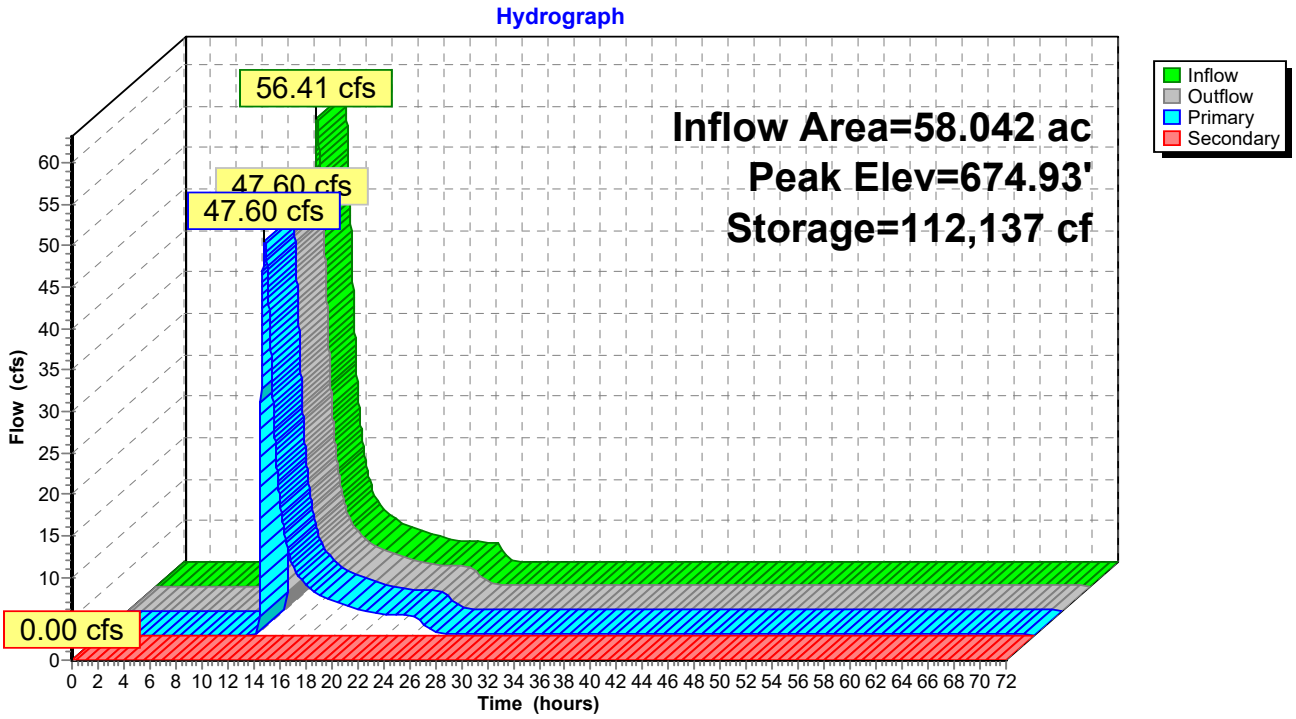
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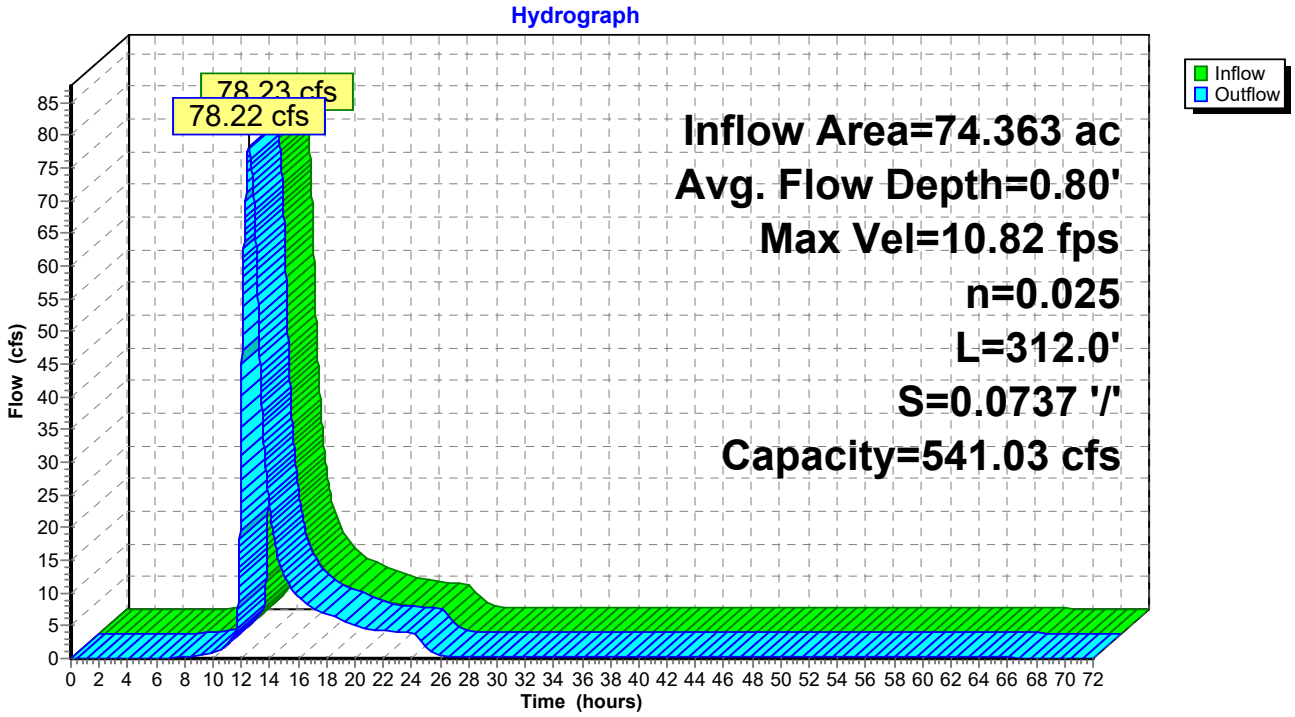
Reach 25R: Swale 3 (Pr. Cond)



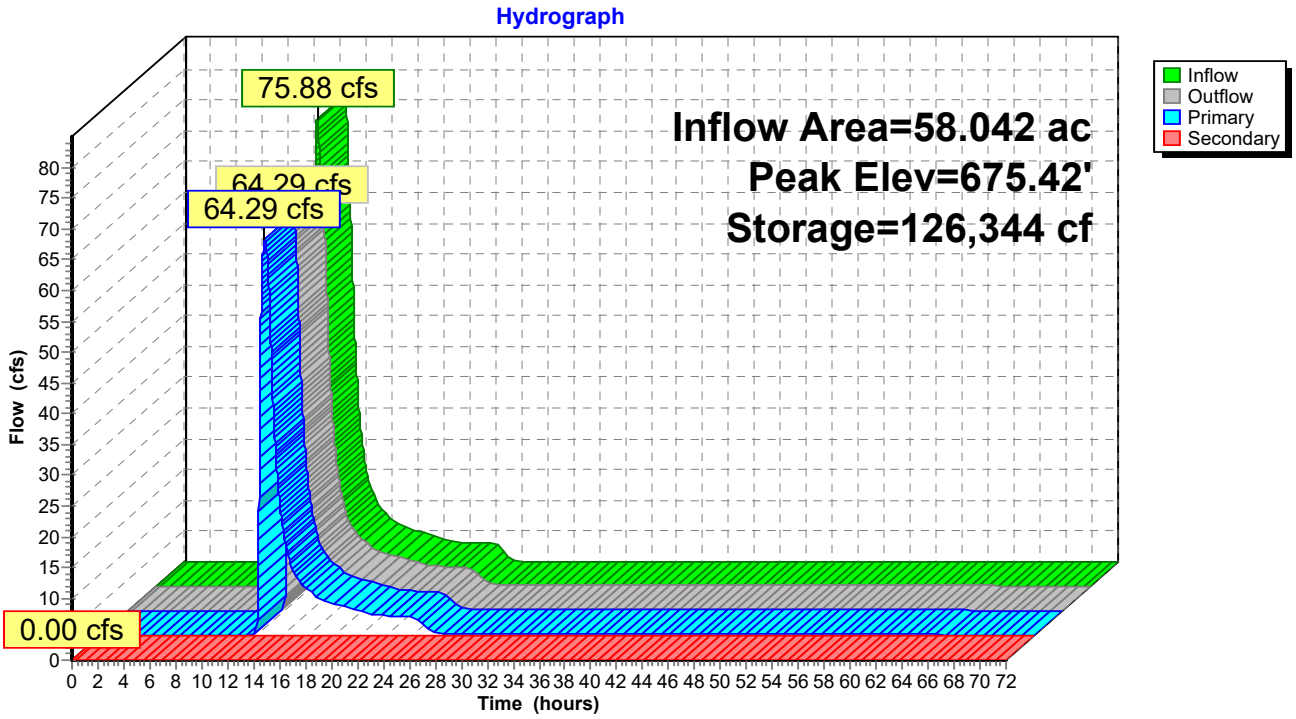
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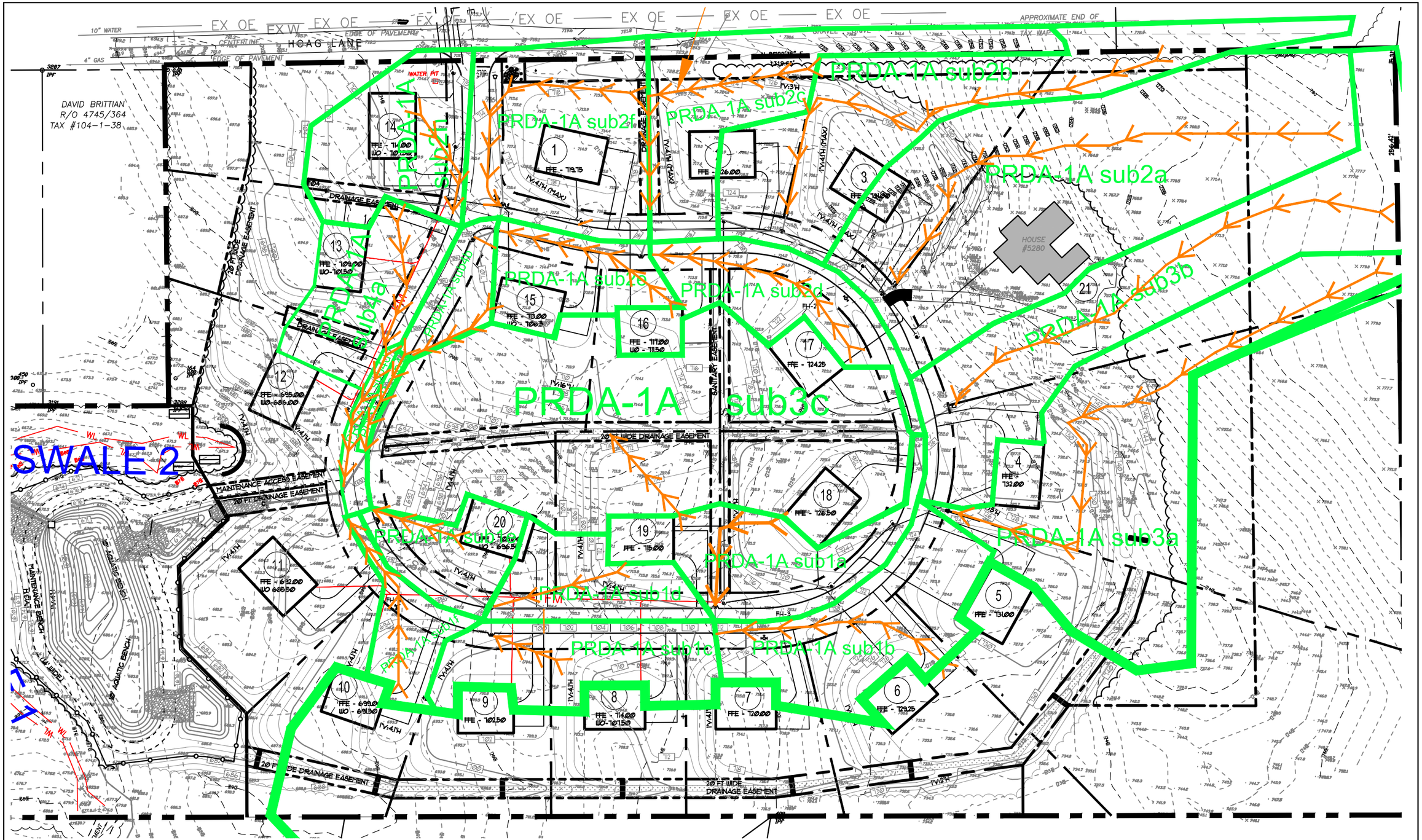
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



APPENDIX F

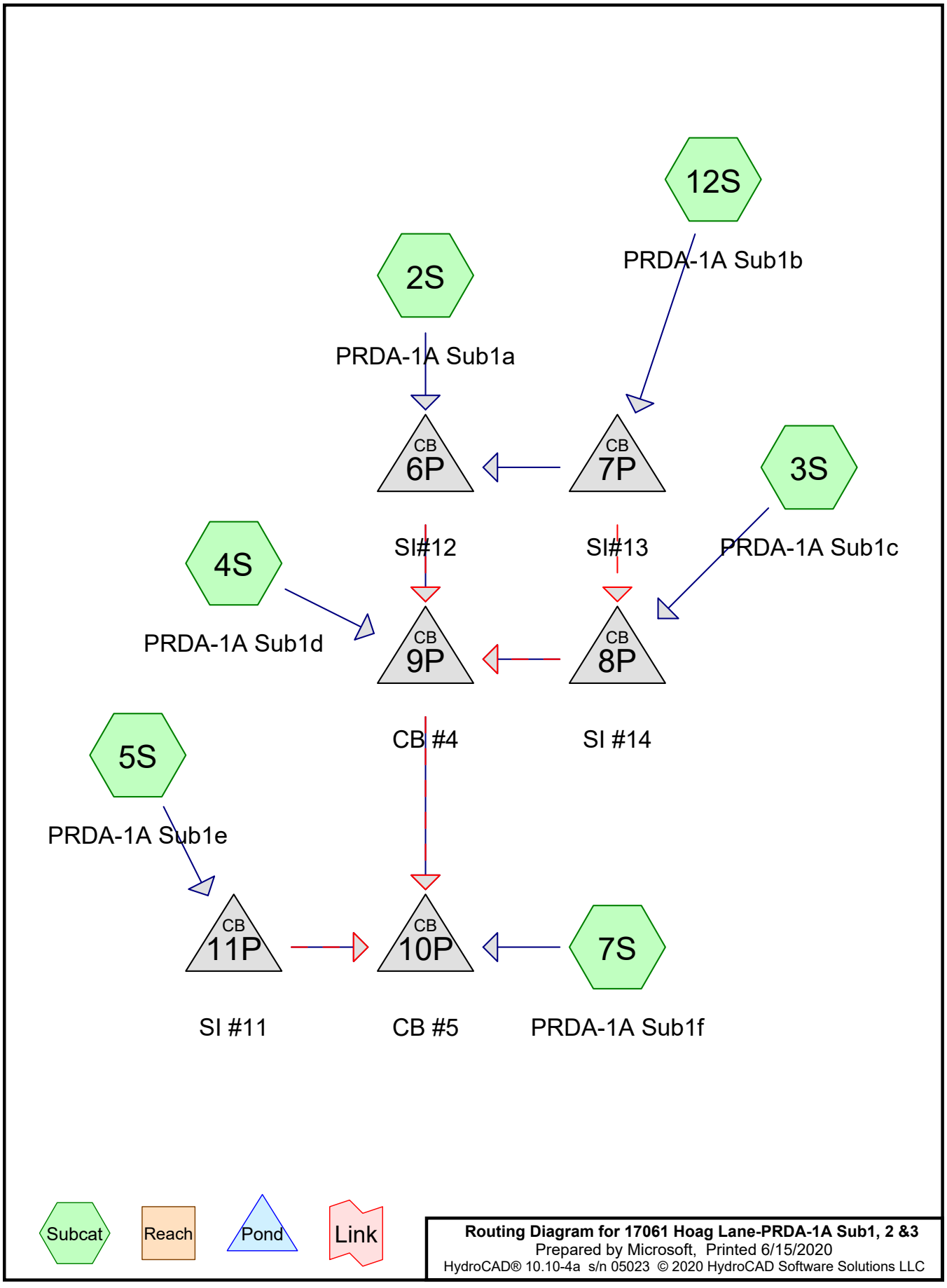


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure F: Proposed Sub-Watersheds

SCALE: 1:300
Updated: 06/15/20

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 2S: PRDA-1A Sub1a

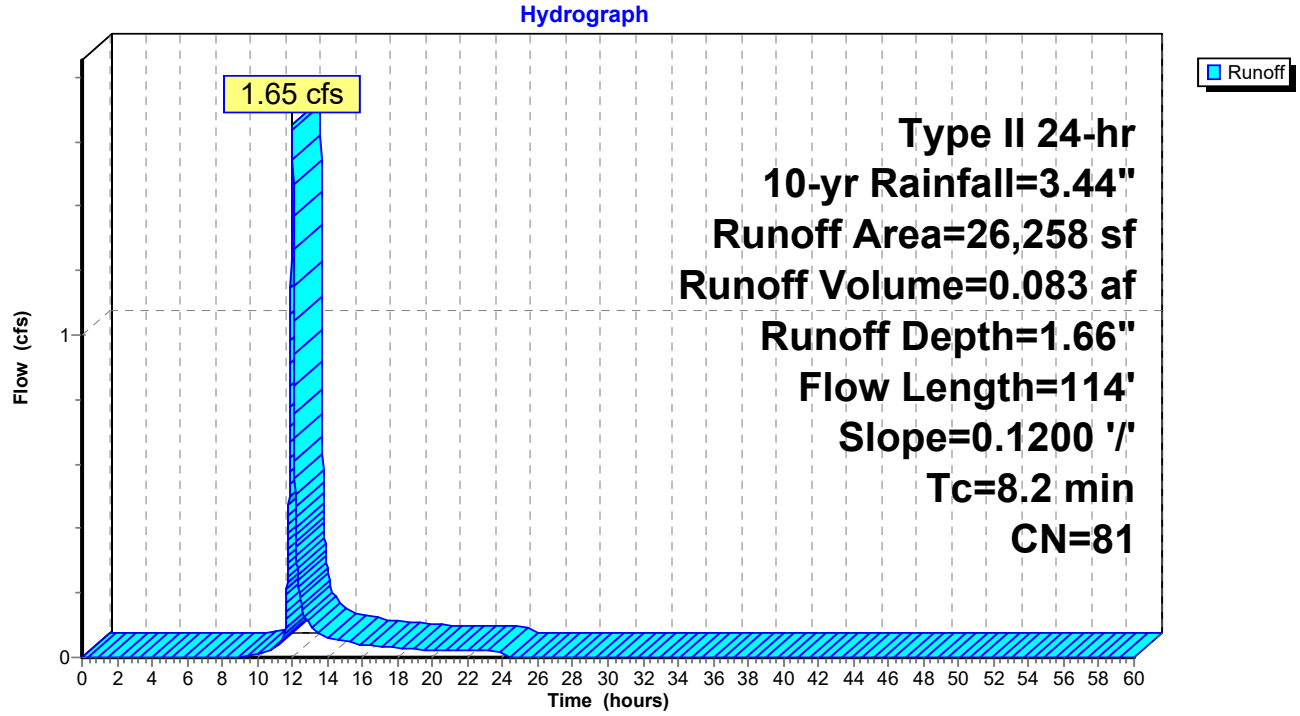
Runoff = 1.65 cfs @ 12.00 hrs, Volume= 0.083 af, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	3,870	98	Pavement, HSG D
	18,849	74	>75% Grass cover, Good, HSG C
	3,539	98	Roofs, HSG C
	26,258	81	Weighted Average
	18,849		71.78% Pervious Area
	7,409		28.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.1200	0.21		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.1	14	0.1200	2.42		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.2	114	Total			

Subcatchment 2S: PRDA-1A Sub1a



Summary for Subcatchment 3S: PRDA-1A Sub1c

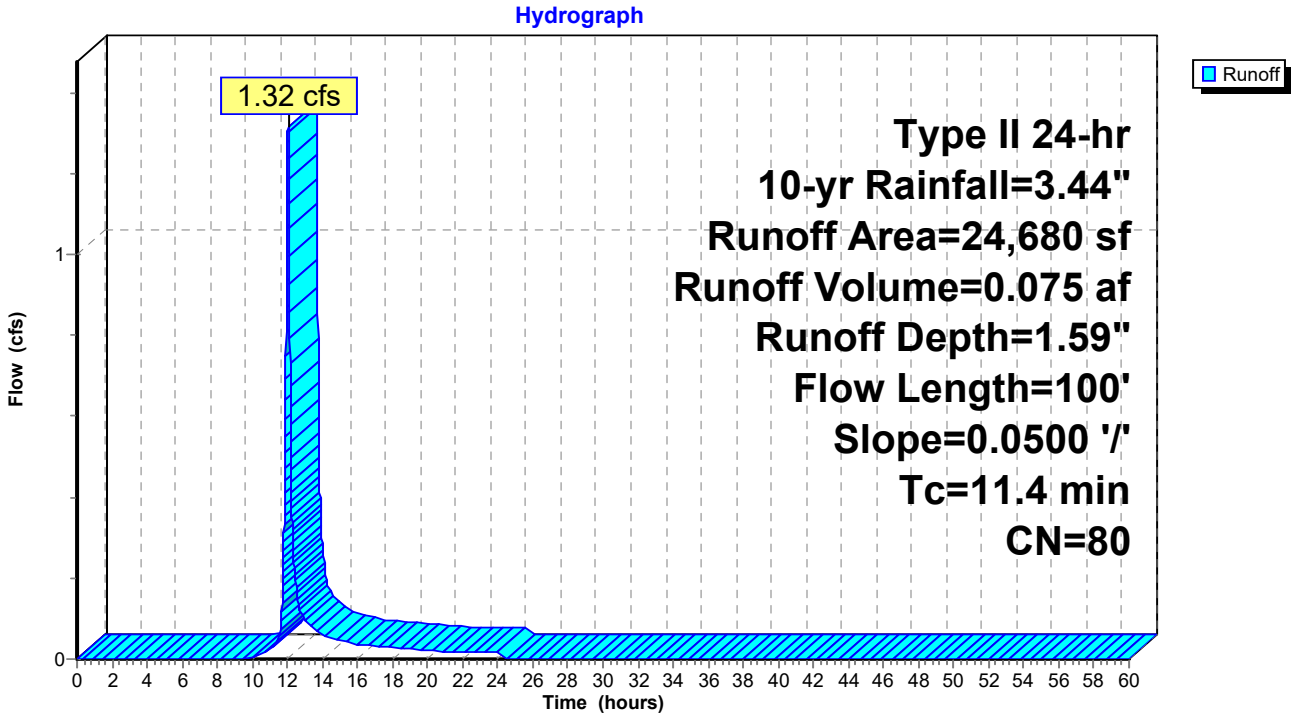
Runoff = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af, Depth= 1.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
6,172	98	Paved parking, HSG C
18,508	74	>75% Grass cover, Good, HSG C
24,680	80	Weighted Average
18,508		74.99% Pervious Area
6,172		25.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	100	0.0500	0.15		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 3S: PRDA-1A Sub1c



Summary for Subcatchment 4S: PRDA-1A Sub1d

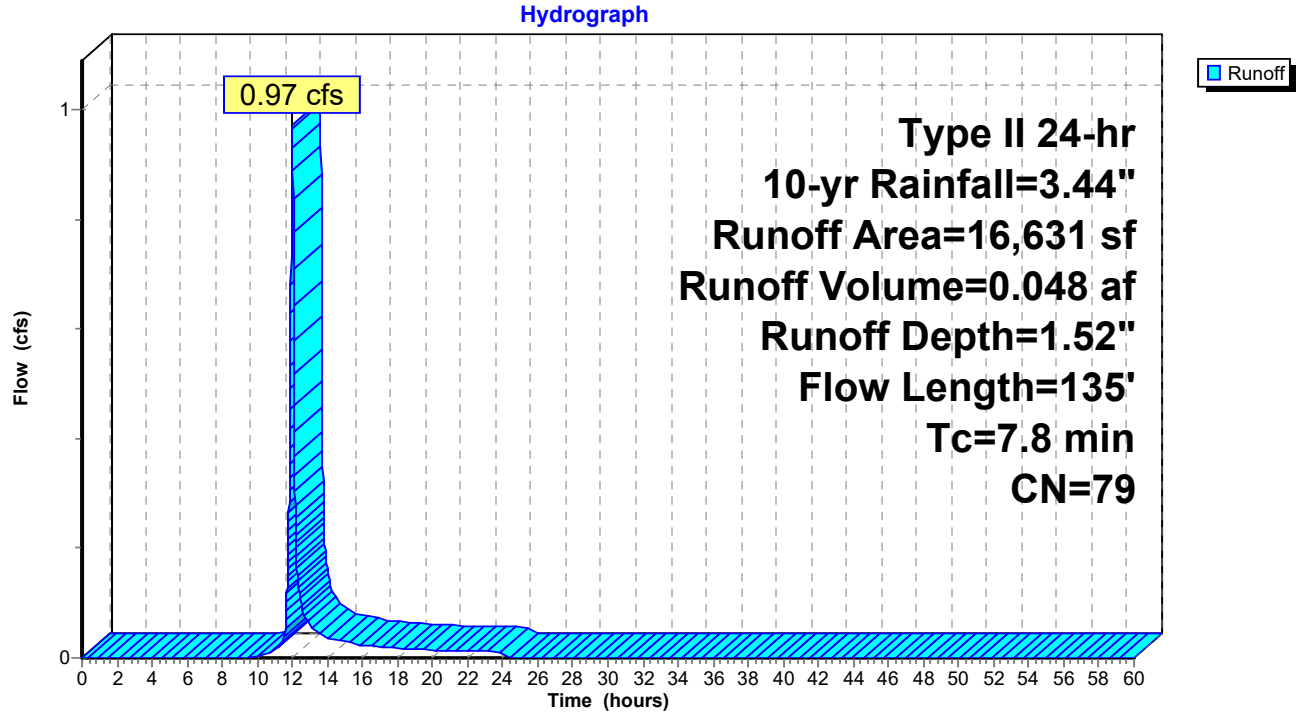
Runoff = 0.97 cfs @ 12.00 hrs, Volume= 0.048 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	3,503	98	Pavement, HSG D
	13,128	74	>75% Grass cover, Good, HSG C
	16,631	79	Weighted Average
	13,128		78.94% Pervious Area
	3,503		21.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.2	35	0.1300	2.52		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
7.8	135	Total			

Subcatchment 4S: PRDA-1A Sub1d



Summary for Subcatchment 5S: PRDA-1A Sub1e

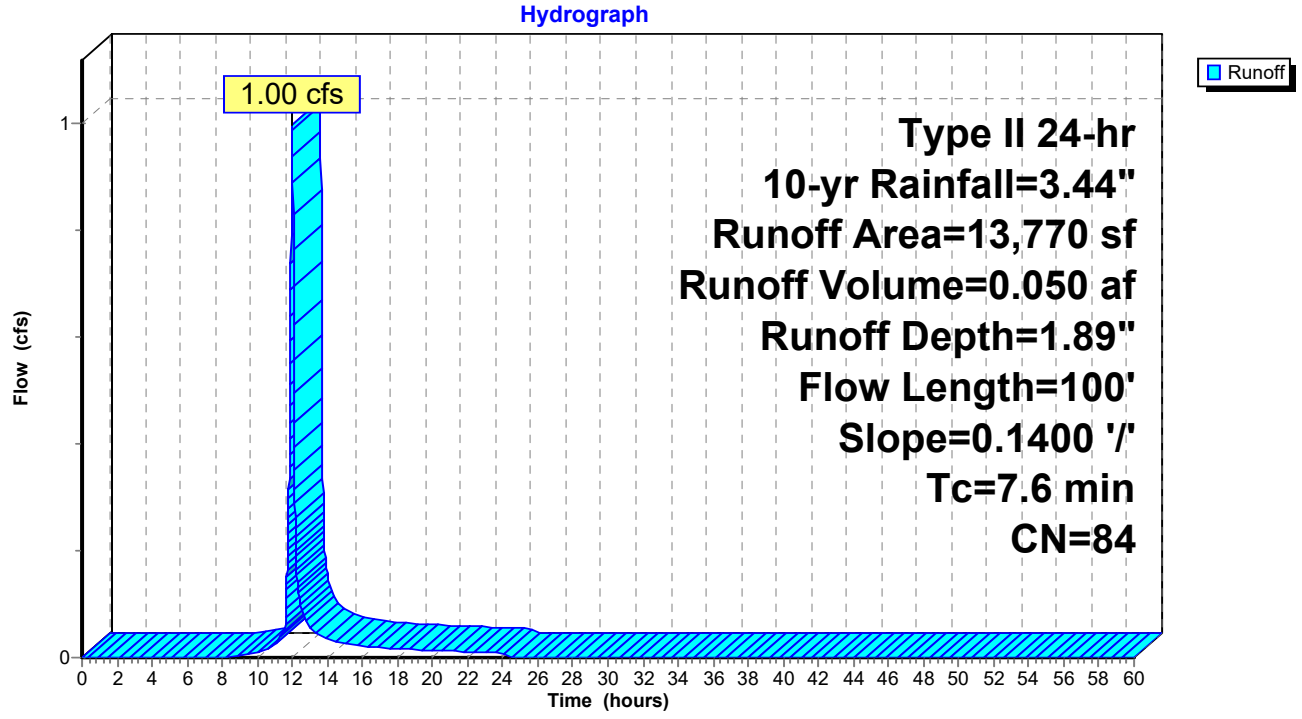
Runoff = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	2,260	98	Pavement, HSG D
	8,031	74	>75% Grass cover, Good, HSG C
	3,479	98	Roofs, HSG C
	13,770	84	Weighted Average
	8,031		58.32% Pervious Area
	5,739		41.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	100	0.1400	0.22		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 5S: PRDA-1A Sub1e



Summary for Subcatchment 7S: PRDA-1A Sub1f

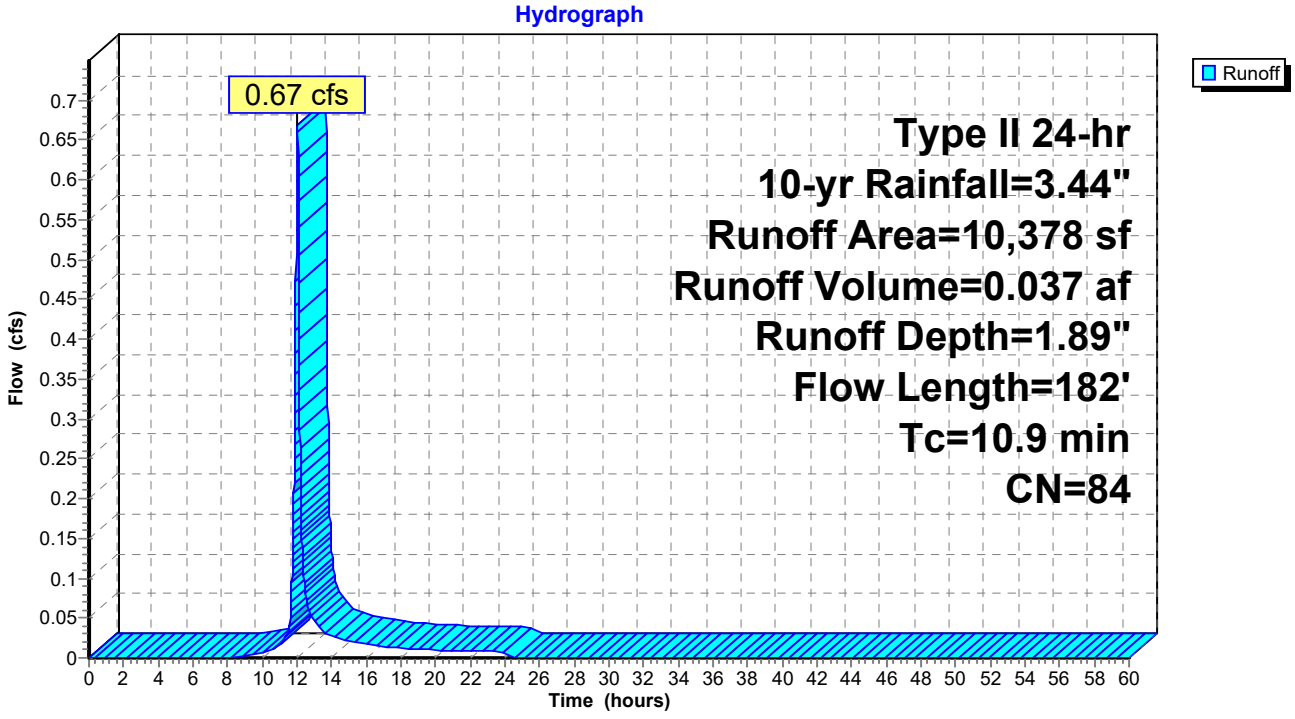
Runoff = 0.67 cfs @ 12.03 hrs, Volume= 0.037 af, Depth= 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	4,306	98	Pavement, HSG C
	6,072	74	>75% Grass cover, Good, HSG C
	10,378	84	Weighted Average
	6,072		58.51% Pervious Area
	4,306		41.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.0625	0.16		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.4	82	0.0320	3.63		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.9	182	Total			

Subcatchment 7S: PRDA-1A Sub1f



Summary for Subcatchment 12S: PRDA-1A Sub1b

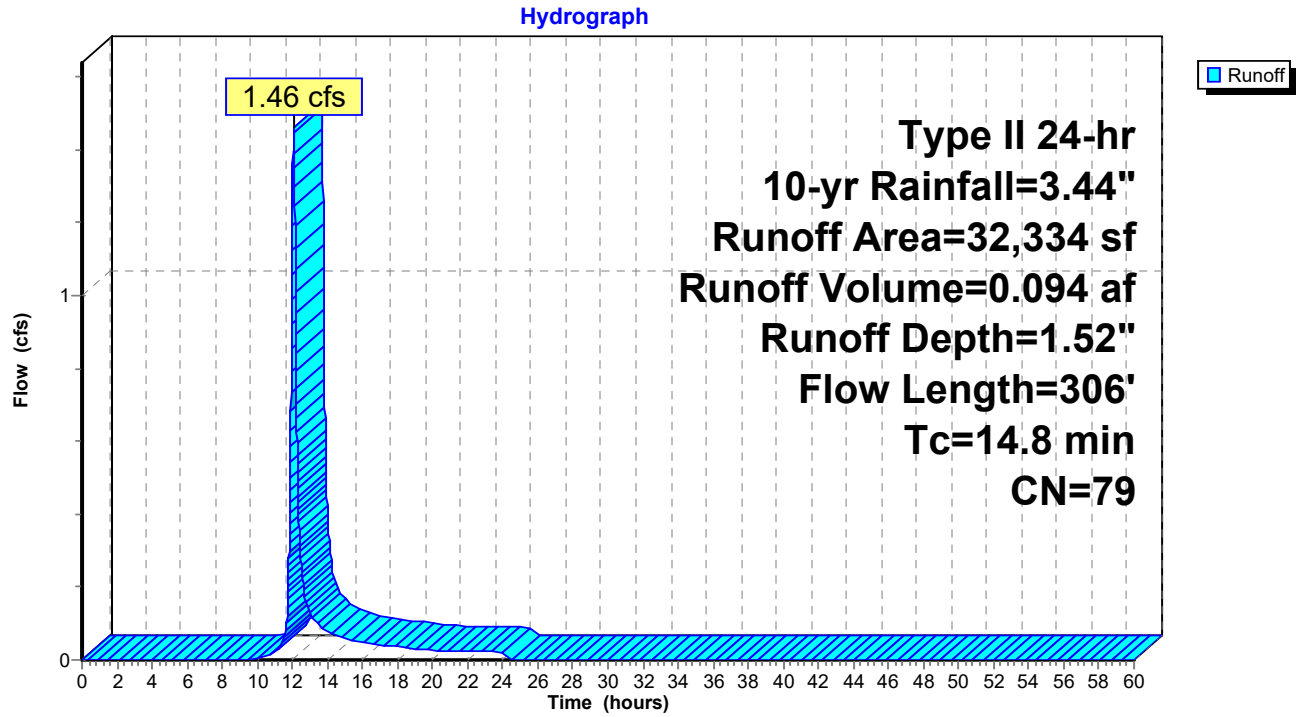
Runoff = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

	Area (sf)	CN	Description
*	7,320	98	Pavement, HSG C
	25,014	74	>75% Grass cover, Good, HSG C
	32,334	79	Weighted Average
	25,014		77.36% Pervious Area
	7,320		22.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.4	100	0.0340	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
1.1	109	0.0600	1.71		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	97	0.0600	4.97		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.8	306	Total			

Subcatchment 12S: PRDA-1A Sub1b



Summary for Pond 6P: SI#12

Inflow Area = 1.345 ac, 25.14% Impervious, Inflow Depth = 1.58" for 10-yr event
Inflow = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af
Outflow = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af, Atten= 0%, Lag= 0.0 min
Primary = 2.91 cfs @ 12.02 hrs, Volume= 0.177 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

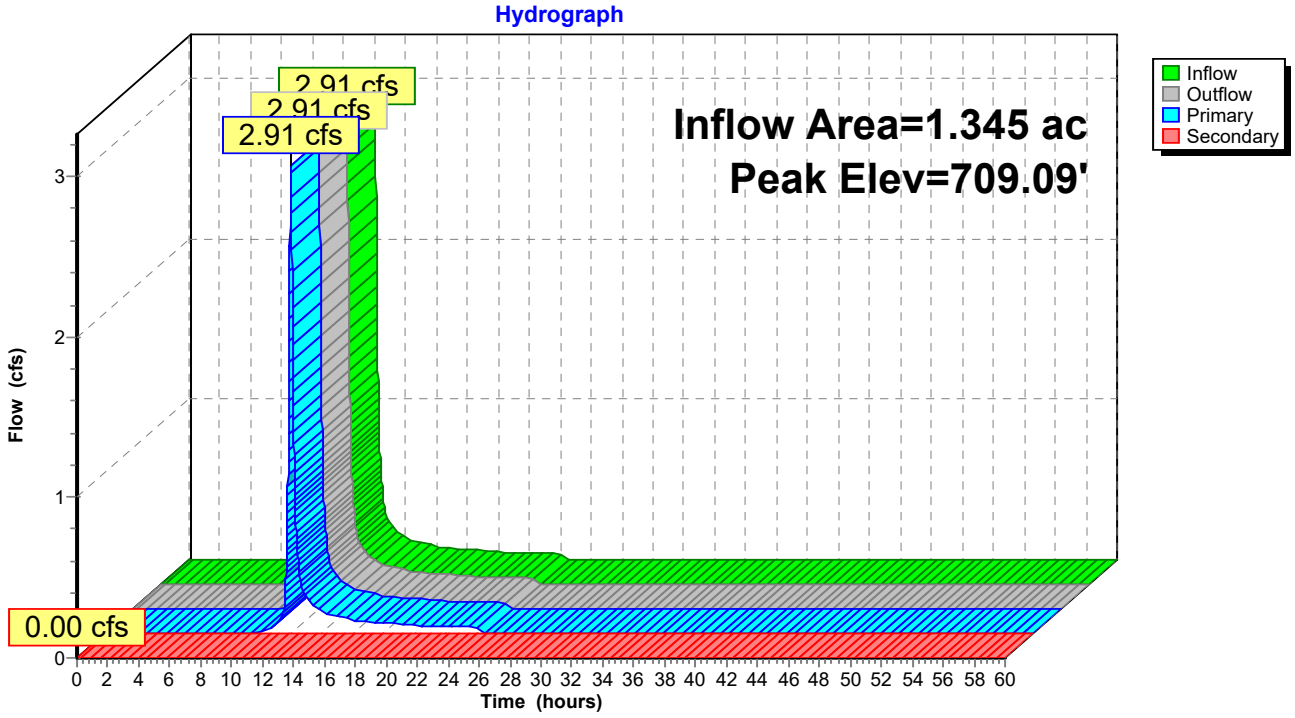
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 709.09' @ 12.02 hrs
Flood Elev= 711.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	708.00'	**12.0" Round Culvert** L= 237.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 708.00' / 693.75' S= 0.0601 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	711.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.91 cfs @ 12.02 hrs HW=709.09' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.91 cfs @ 3.71 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=708.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 6P: SI#12



Summary for Pond 7P: SI#13

Inflow Area = 0.742 ac, 22.64% Impervious, Inflow Depth = 1.52" for 10-yr event
Inflow = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af
Outflow = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af, Atten= 0%, Lag= 0.0 min
Primary = 1.46 cfs @ 12.07 hrs, Volume= 0.094 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

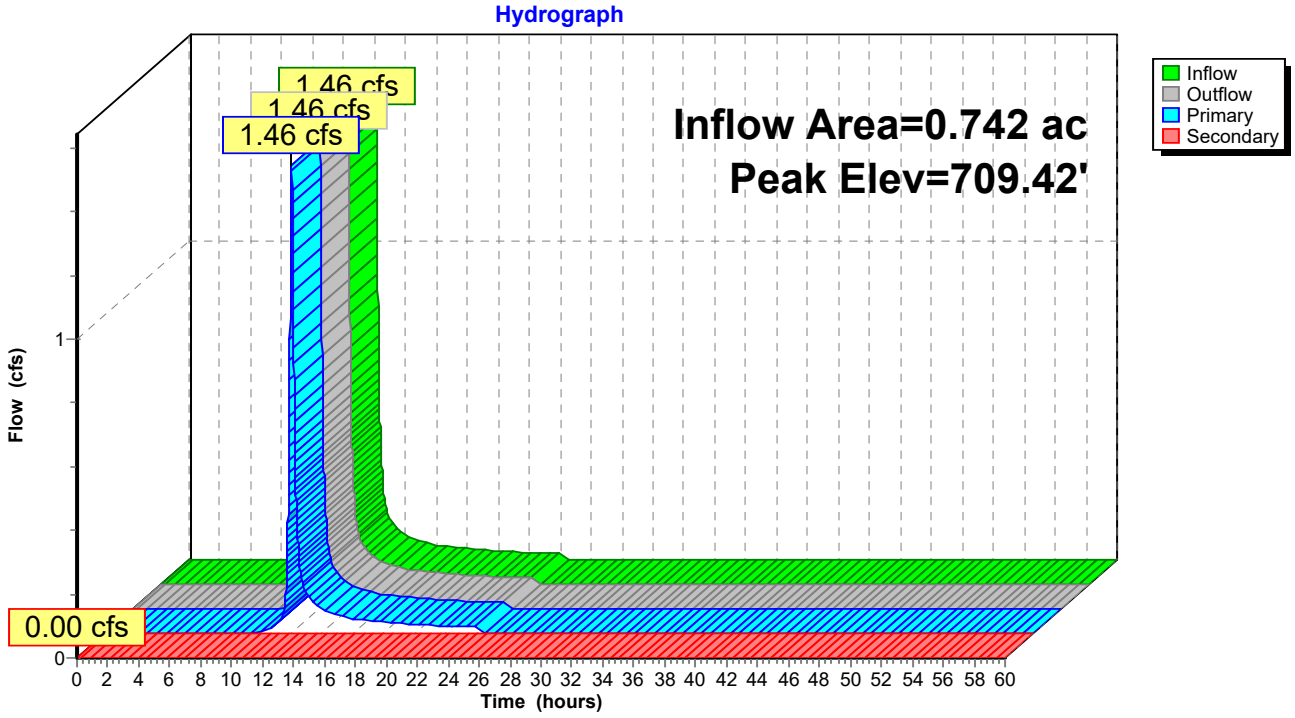
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 709.42' @ 12.07 hrs
Flood Elev= 711.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	708.50'	**10.0" Round Culvert** L= 26.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 708.50' / 708.25' S= 0.0096 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	711.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.46 cfs @ 12.07 hrs HW=709.42' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.46 cfs @ 3.02 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=708.50' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: SI#13



Summary for Pond 8P: SI #14

Inflow Area = 0.567 ac, 25.01% Impervious, Inflow Depth = 1.59" for 10-yr event
Inflow = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af
Outflow = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.04 hrs, Volume= 0.075 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

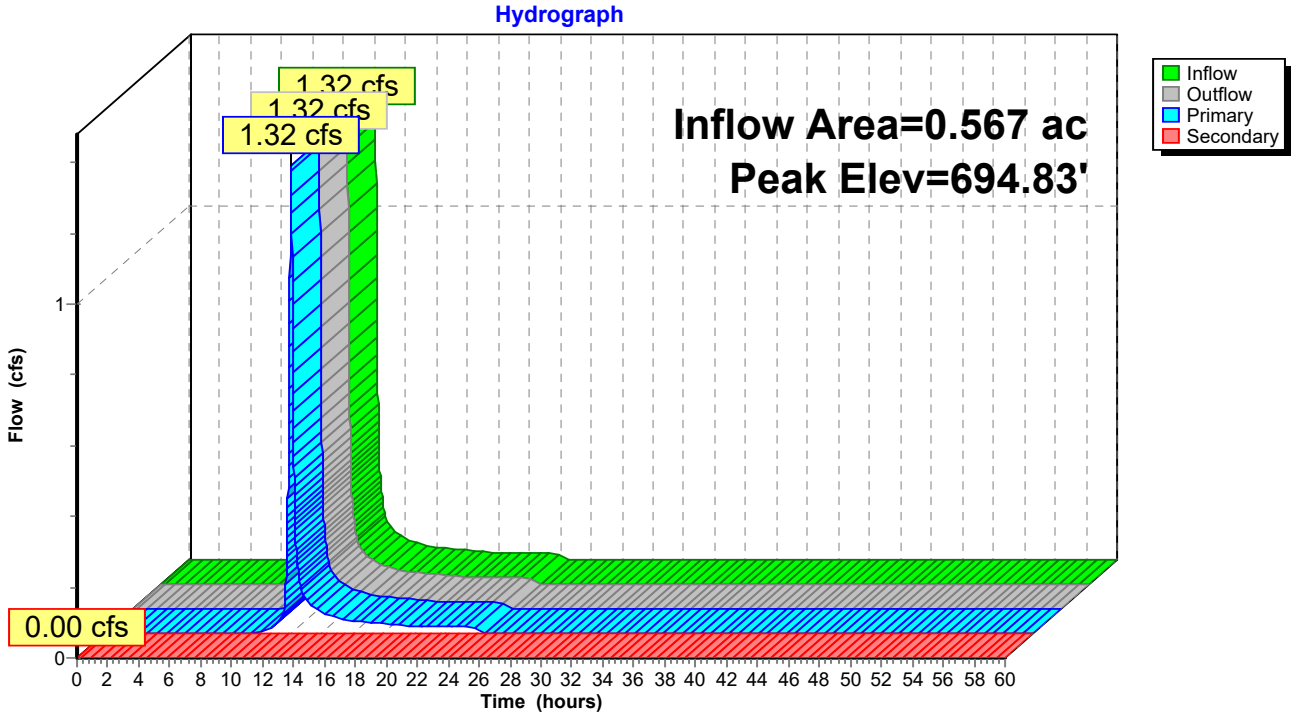
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 694.83' @ 12.04 hrs
Flood Elev= 696.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	693.90'	**10.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.90' / 693.75' S= 0.0060 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	696.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.32 cfs @ 12.04 hrs HW=694.82' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.32 cfs @ 2.72 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=693.90' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: SI #14



Summary for Pond 9P: CB #4

Inflow Area = 2.293 ac, 24.43% Impervious, Inflow Depth = 1.57" for 10-yr event
Inflow = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af
Outflow = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min
Primary = 5.15 cfs @ 12.02 hrs, Volume= 0.301 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

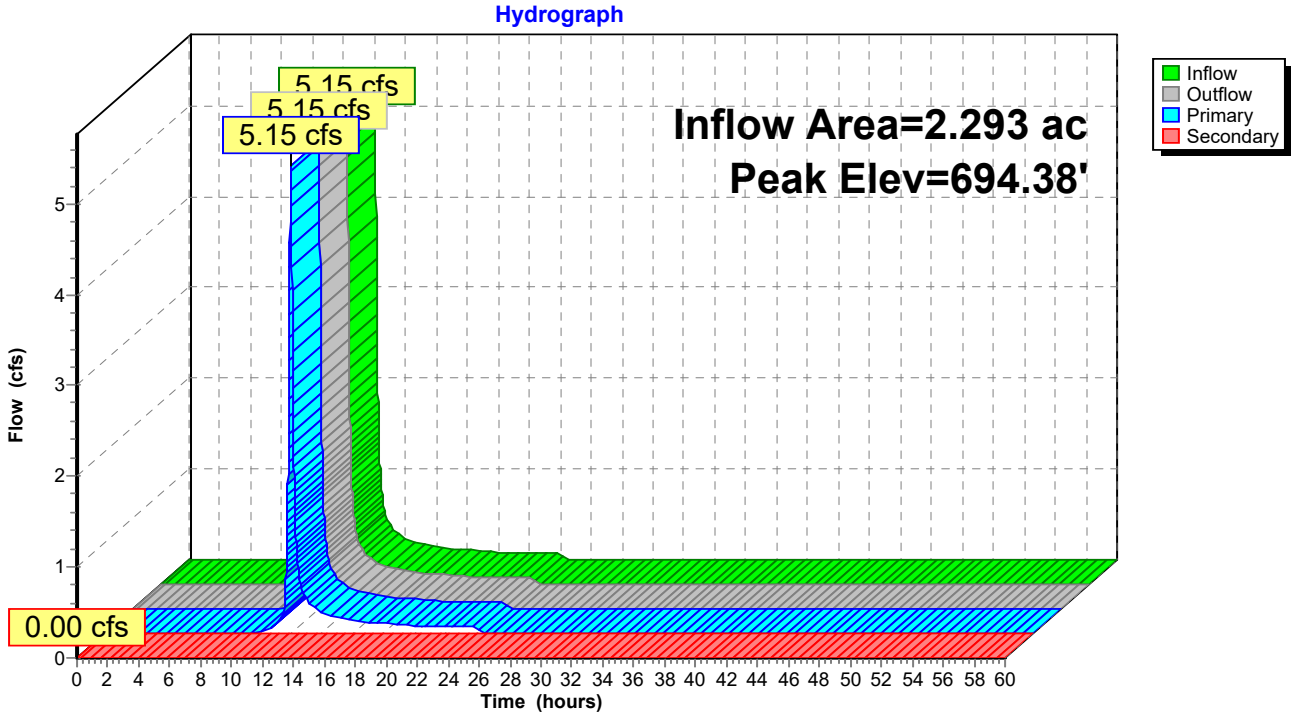
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 694.38' @ 12.02 hrs
Flood Elev= 696.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	693.25'	**18.0" Round Culvert** L= 179.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 693.25' / 685.50' S= 0.0433 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	696.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.15 cfs @ 12.02 hrs HW=694.38' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.15 cfs @ 3.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=693.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 9P: CB #4



Summary for Pond 10P: CB #5

Inflow Area = 2.848 ac, 27.77% Impervious, Inflow Depth = 1.63" for 10-yr event
Inflow = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af
Outflow = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af, Atten= 0%, Lag= 0.0 min
Primary = 6.76 cfs @ 12.01 hrs, Volume= 0.388 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

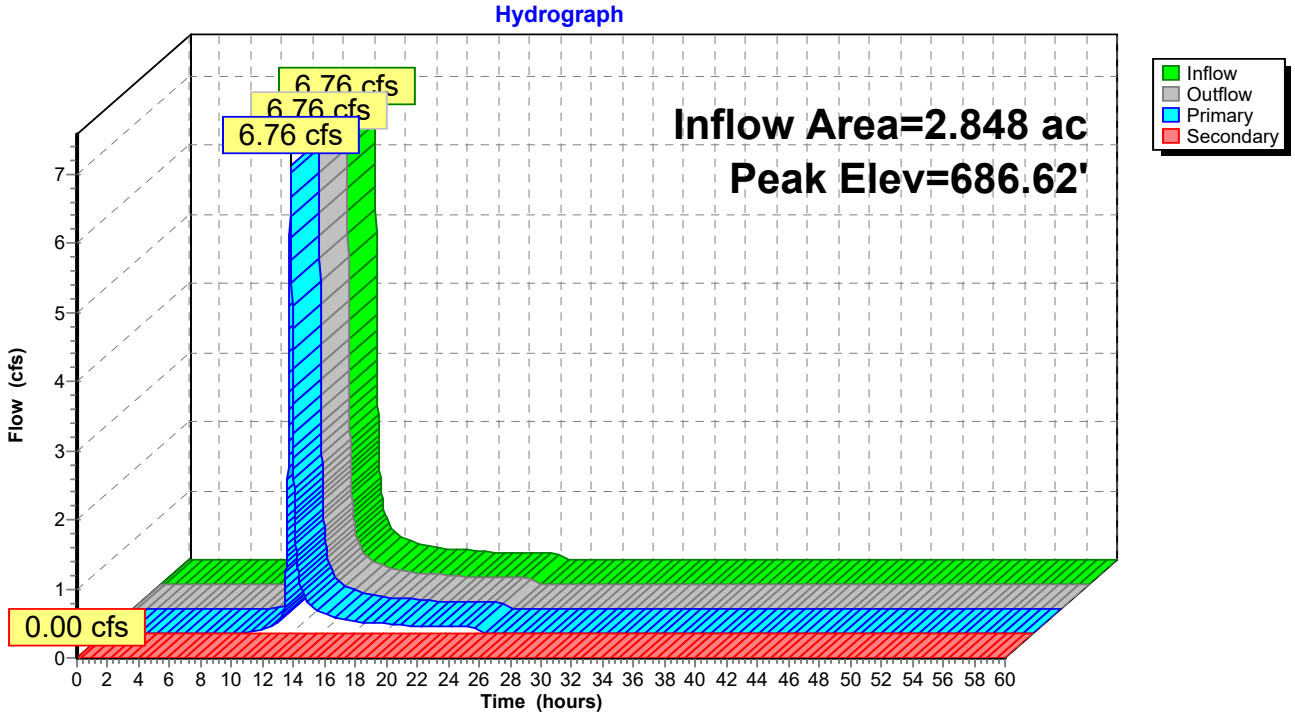
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 686.62' @ 12.01 hrs
Flood Elev= 689.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	685.25'	**24.0" Round Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 685.25' / 685.00' S= 0.0100 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	691.42'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.75 cfs @ 12.01 hrs HW=686.62' (Free Discharge)
└**1=Culvert** (Barrel Controls 6.75 cfs @ 4.15 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=685.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 10P: CB #5



Summary for Pond 11P: SI #11

Inflow Area = 0.316 ac, 41.68% Impervious, Inflow Depth = 1.89" for 10-yr event
Inflow = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af
Outflow = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af, Atten= 0%, Lag= 0.0 min
Primary = 1.00 cfs @ 11.99 hrs, Volume= 0.050 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

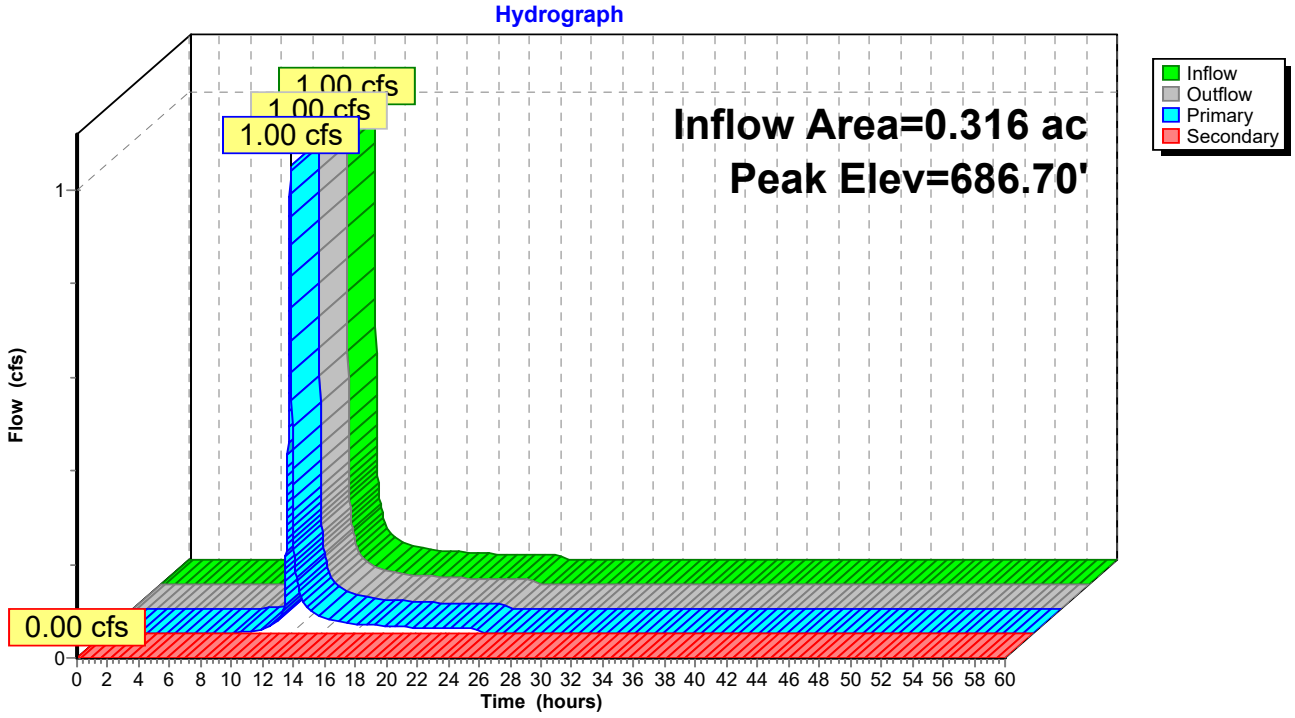
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 686.70' @ 11.99 hrs
Flood Elev= 689.68'

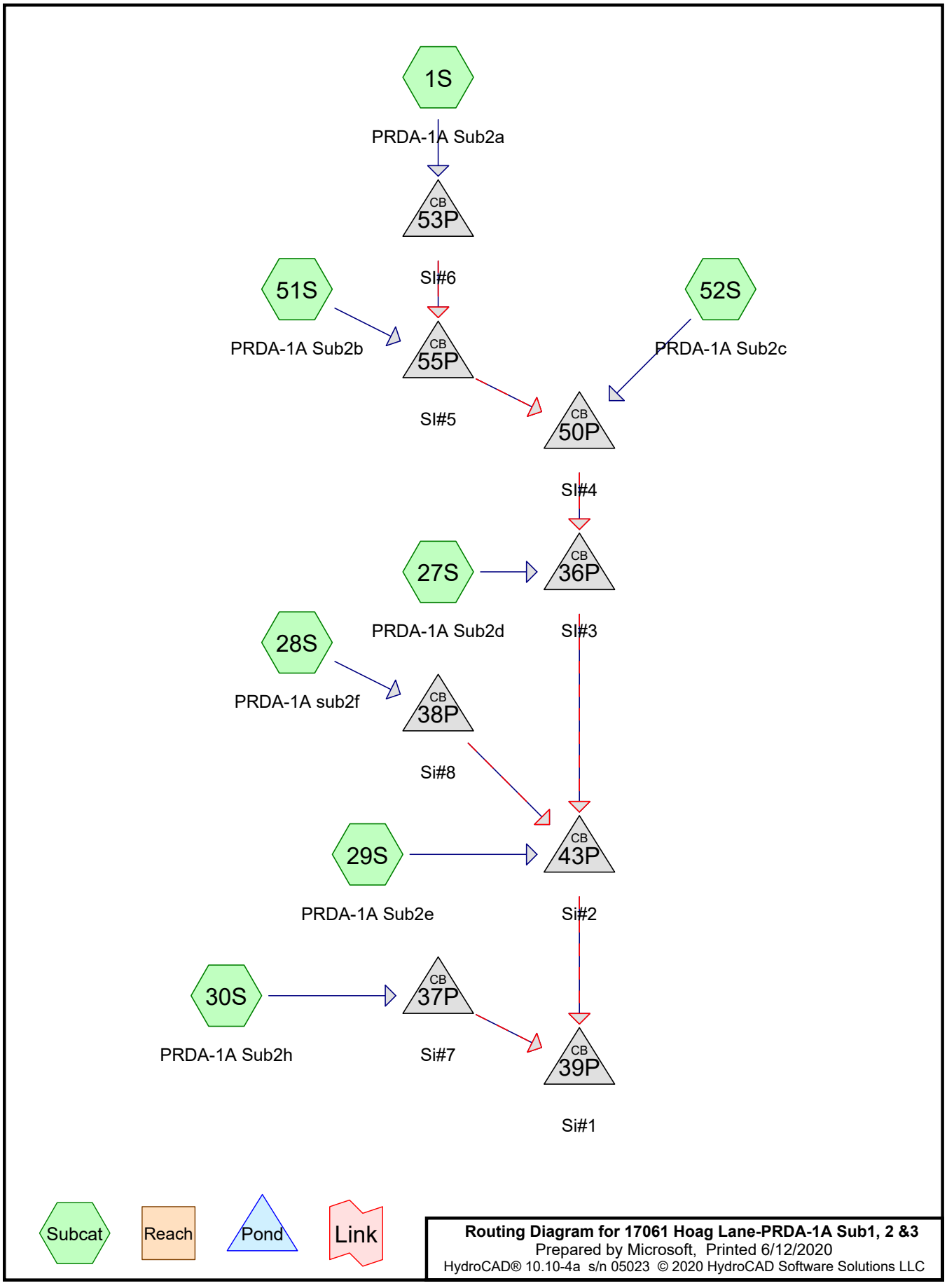
Device	Routing	Invert	Outlet Devices
#1	Primary	686.00'	**10.0" Round Culvert** L= 27.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 686.00' / 685.75' S= 0.0093 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	691.42'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.00 cfs @ 11.99 hrs HW=686.70' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.00 cfs @ 2.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=686.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 11P: SI #11





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/12/2020
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Summary for Subcatchment 1S: PRDA-1A Sub2a

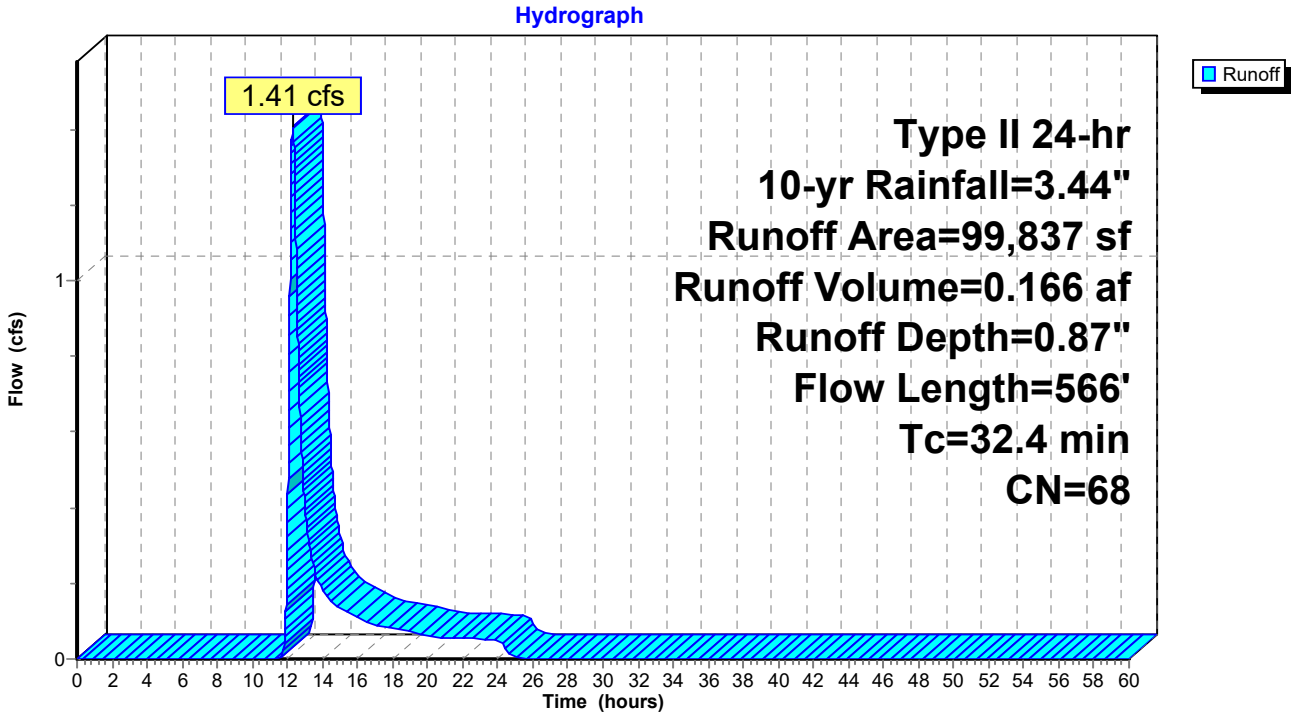
Runoff = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
32,390	74	>75% Grass cover, Good, HSG C
47,582	55	Woods, Good, HSG B
6,956	70	Woods, Good, HSG C
12,909	98	Paved parking, HSG C
99,837	68	Weighted Average
86,928		87.07% Pervious Area
12,909		12.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
27.9	100	0.0600	0.06		**Sheet Flow, Sub1 Sheet** Woods: Dense underbrush n= 0.800 P2= 2.39"
3.3	311	0.0990	1.57		**Shallow Concentrated Flow, Sub1 Shallow** Woodland Kv= 5.0 fps
1.2	155	0.0980	2.19		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
32.4	566	Total			

Subcatchment 1S: PRDA-1A Sub2a



Summary for Subcatchment 27S: PRDA-1A Sub2d

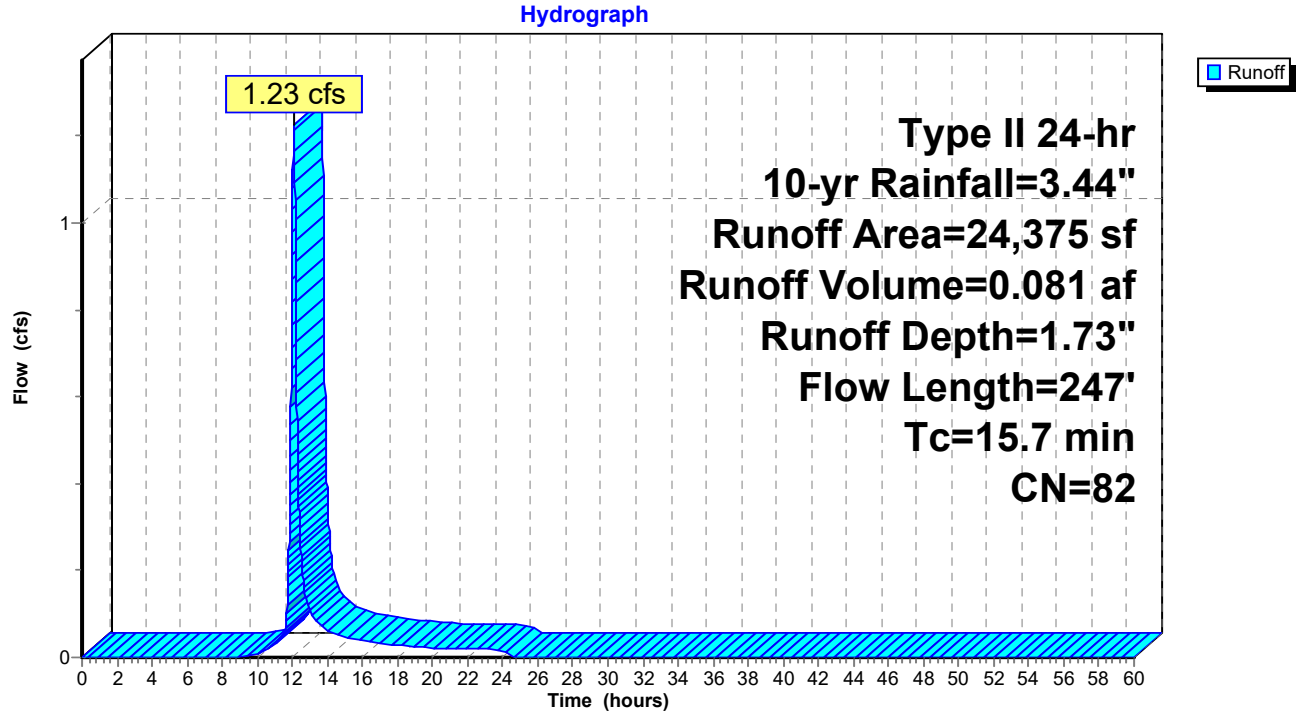
Runoff = 1.23 cfs @ 12.08 hrs, Volume= 0.081 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
15,892	74	>75% Grass cover, Good, HSG C
4,983	98	Paved parking, HSG C
3,500	98	Roofs, HSG C
24,375	82	Weighted Average
15,892		65.20% Pervious Area
8,483		34.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0250	0.11		**Sheet Flow, Sub1 Sheet** Grass: Dense n= 0.240 P2= 2.39"
0.6	147	0.3500	4.14		**Shallow Concentrated Flow, Sub1 Shallow** Short Grass Pasture Kv= 7.0 fps
15.7	247	Total			

Subcatchment 27S: PRDA-1A Sub2d



Summary for Subcatchment 28S: PRDA-1A sub2f

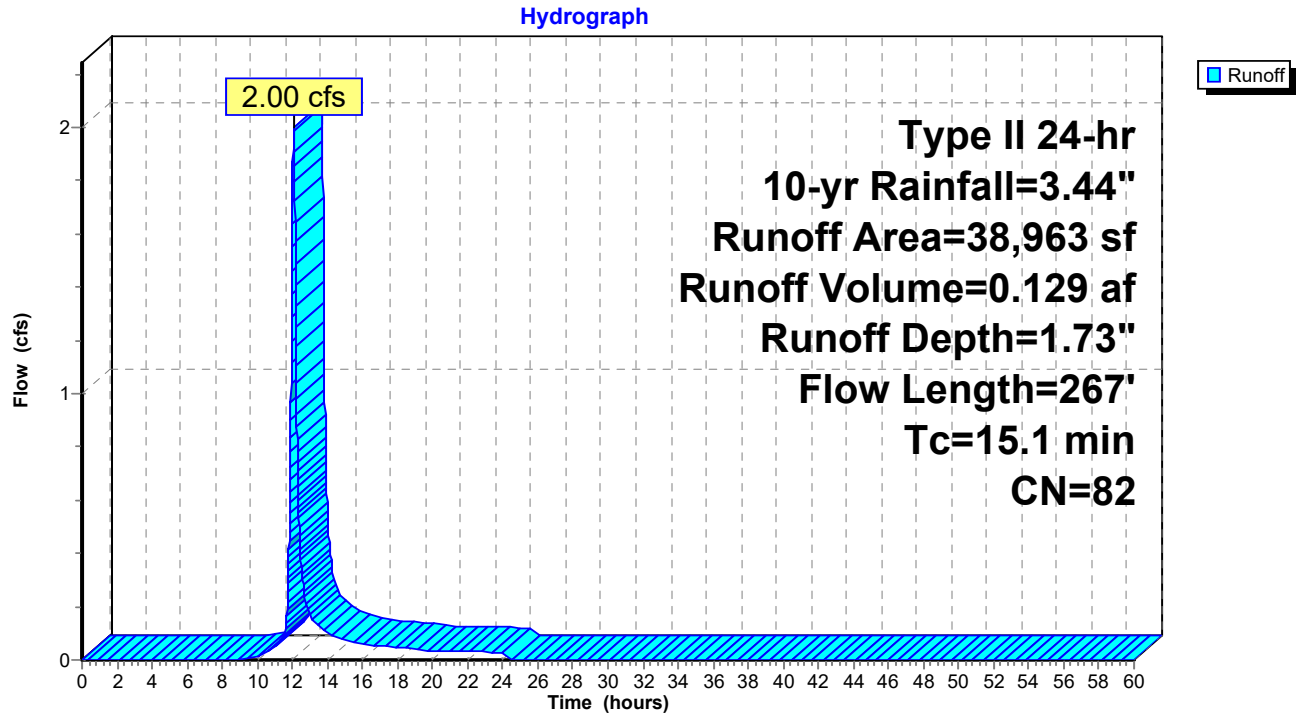
Runoff = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
26,277	74	>75% Grass cover, Good, HSG C
12,686	98	Paved parking, HSG C
38,963	82	Weighted Average
26,277		67.44% Pervious Area
12,686		32.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	100	0.0300	0.12		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.7	60	0.0400	1.40		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.4	107	0.0500	4.54		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
15.1	267	Total			

Subcatchment 28S: PRDA-1A sub2f



Summary for Subcatchment 29S: PRDA-1A Sub2e

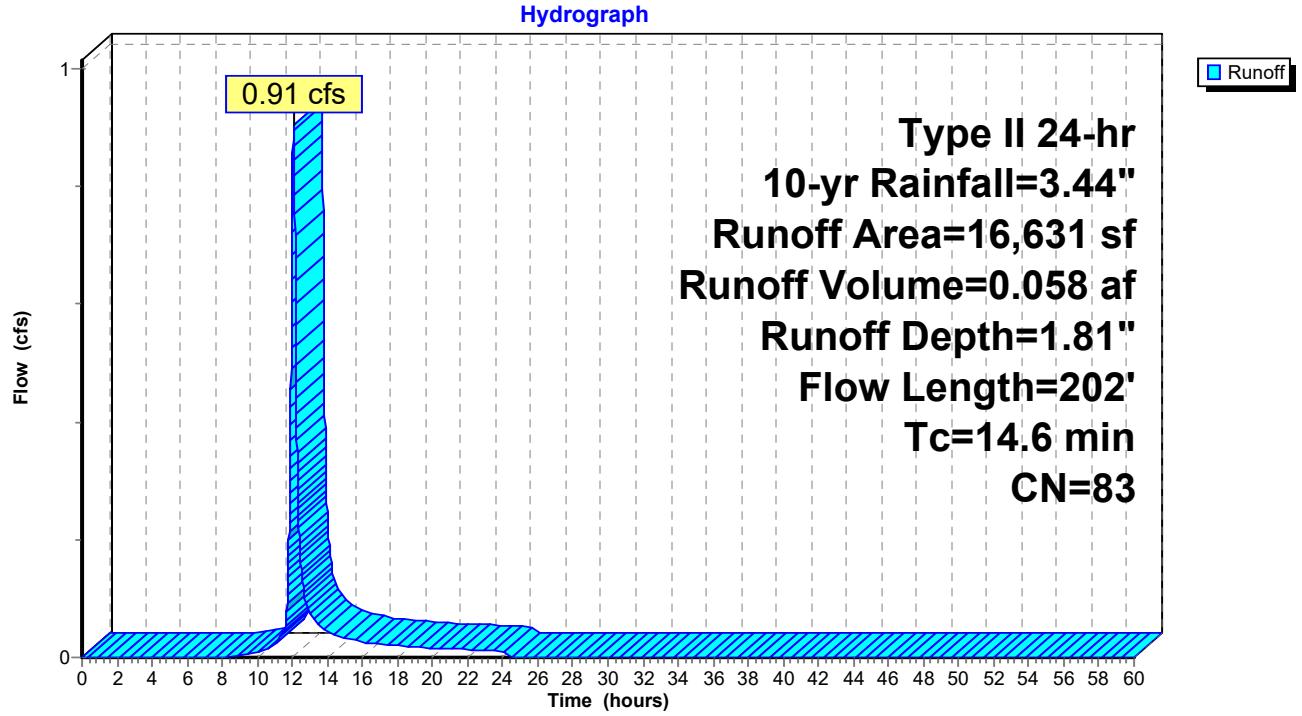
Runoff = 0.91 cfs @ 12.07 hrs, Volume= 0.058 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
10,673	74	>75% Grass cover, Good, HSG C
2,458	98	Paved parking, HSG C
3,500	98	Roofs, HSG C
16,631	83	Weighted Average
10,673		64.18% Pervious Area
5,958		35.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.1	82	0.0200	0.10		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.5	120	0.0400	4.06		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
14.6	202	Total			

Subcatchment 29S: PRDA-1A Sub2e



Summary for Subcatchment 30S: PRDA-1A Sub2h

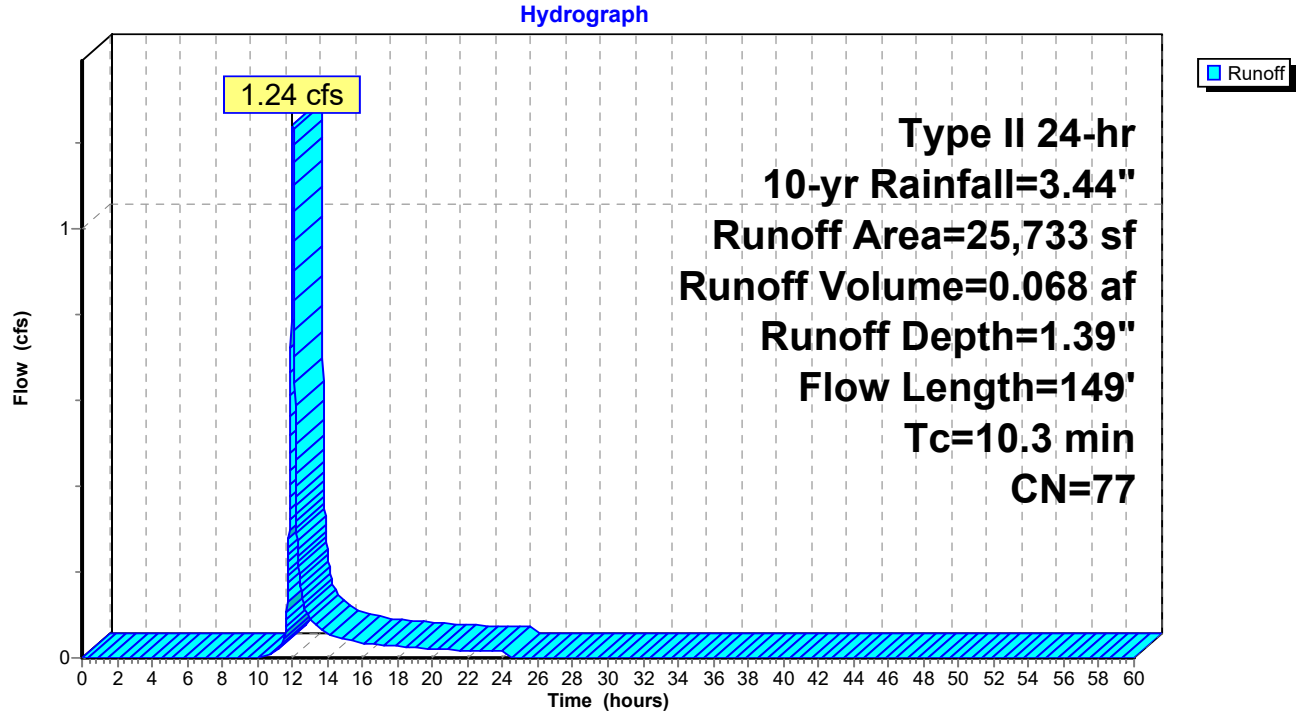
Runoff = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af, Depth= 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
22,325	74	>75% Grass cover, Good, HSG C
3,408	98	Paved parking, HSG C
25,733	77	Weighted Average
22,325		86.76% Pervious Area
3,408		13.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	76	0.0400	0.13		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.3	73	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
10.3	149	Total			

Subcatchment 30S: PRDA-1A Sub2h



Summary for Subcatchment 51S: PRDA-1A Sub2b

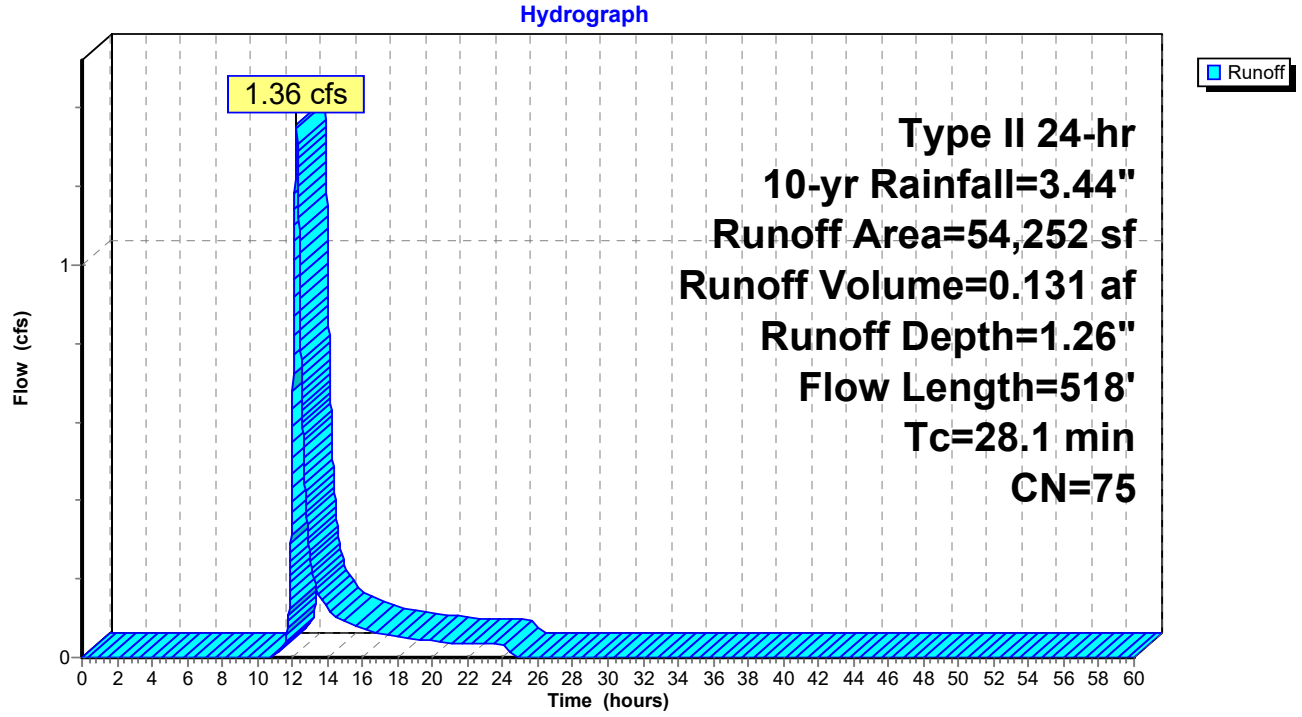
Runoff = 1.36 cfs @ 12.24 hrs, Volume= 0.131 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
27,099	74	>75% Grass cover, Good, HSG C
7,888	55	Woods, Good, HSG B
8,073	70	Woods, Good, HSG C
6,997	98	Paved parking, HSG C
4,195	96	Gravel surface, HSG C
54,252	75	Weighted Average
47,255		87.10% Pervious Area
6,997		12.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	100	0.0800	0.07		**Sheet Flow, Sub1 Sheet** Woods: Dense underbrush n= 0.800 P2= 2.39"
1.2	144	0.1530	1.96		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.1	274	0.0985	2.20		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
28.1	518	Total			

Subcatchment 51S: PRDA-1A Sub2b



Summary for Subcatchment 52S: PRDA-1A Sub2c

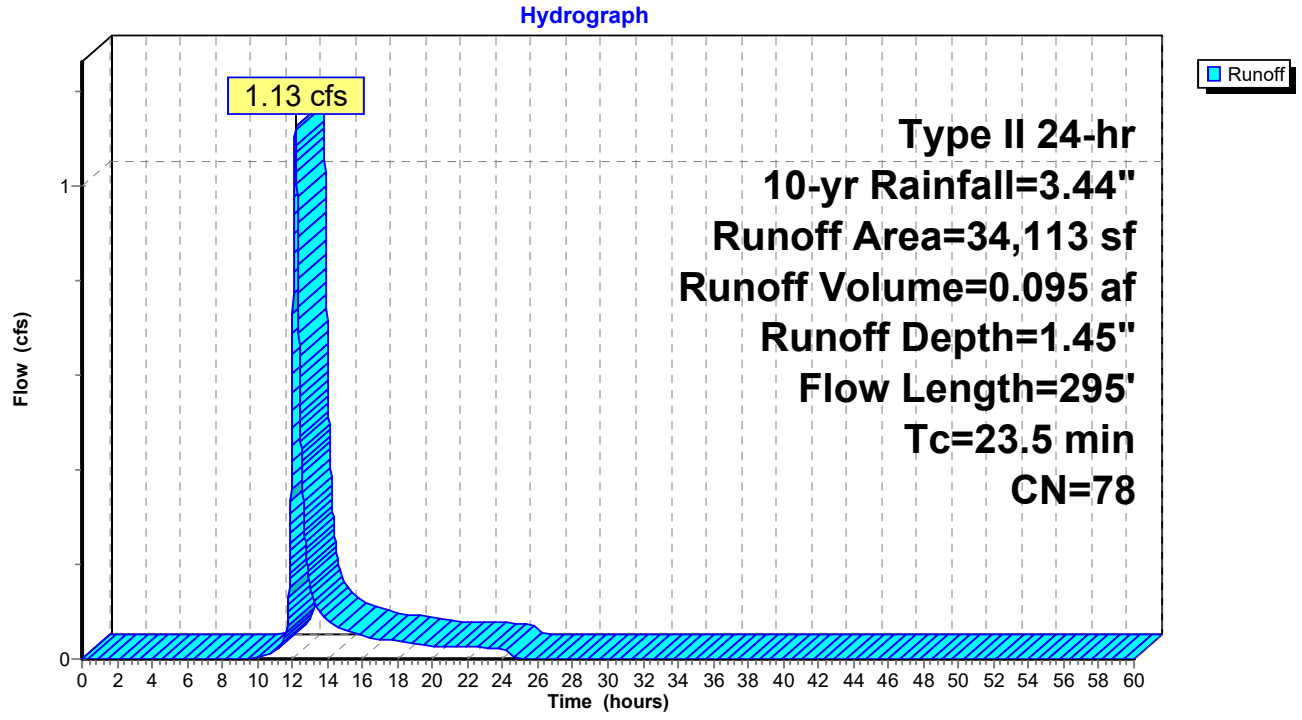
Runoff = 1.13 cfs @ 12.17 hrs, Volume= 0.095 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
25,970	74	>75% Grass cover, Good, HSG C
1,664	70	Woods, Good, HSG C
2,929	98	Paved parking, HSG C
3,550	96	Gravel surface, HSG C
34,113	78	Weighted Average
31,184		91.41% Pervious Area
2,929		8.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.2	58	0.0400	0.05		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
0.5	42	0.0429	1.45		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	195	0.0667	1.81		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
23.5	295	Total			

Subcatchment 52S: PRDA-1A Sub2c



Summary for Pond 36P: SI#3

Inflow Area = 4.880 ac, 14.73% Impervious, Inflow Depth = 1.16" for 10-yr event
Inflow = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af
Outflow = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af, Atten= 0%, Lag= 0.0 min
Primary = 4.49 cfs @ 12.20 hrs, Volume= 0.472 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

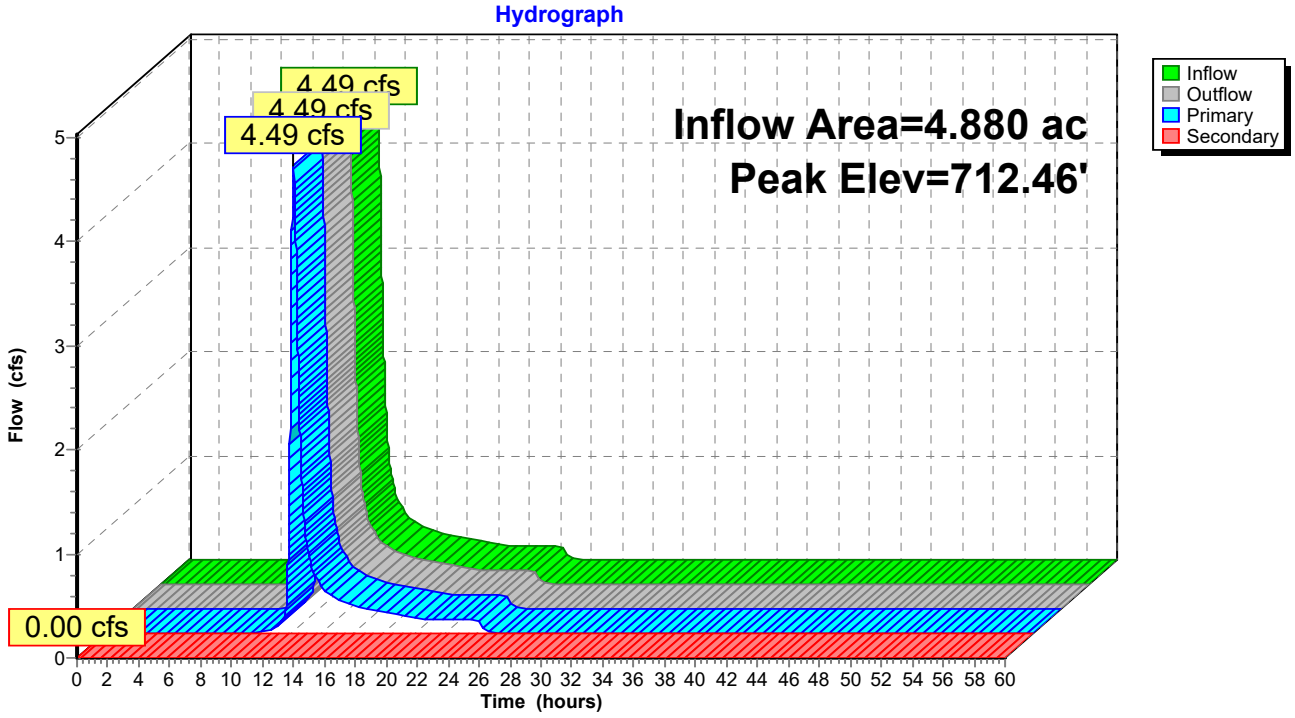
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 712.46' @ 12.20 hrs
Flood Elev= 715.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	711.25'	**18.0" Round Culvert** L= 155.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 711.25' / 707.25' S= 0.0258 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	715.90'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.49 cfs @ 12.20 hrs HW=712.46' (Free Discharge)
└**1=Culvert** (Inlet Controls 4.49 cfs @ 2.95 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=711.25' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 36P: SI#3



Summary for Pond 37P: Si#7

Inflow Area = 0.591 ac, 13.24% Impervious, Inflow Depth = 1.39" for 10-yr event
Inflow = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af
Outflow = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.03 hrs, Volume= 0.068 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

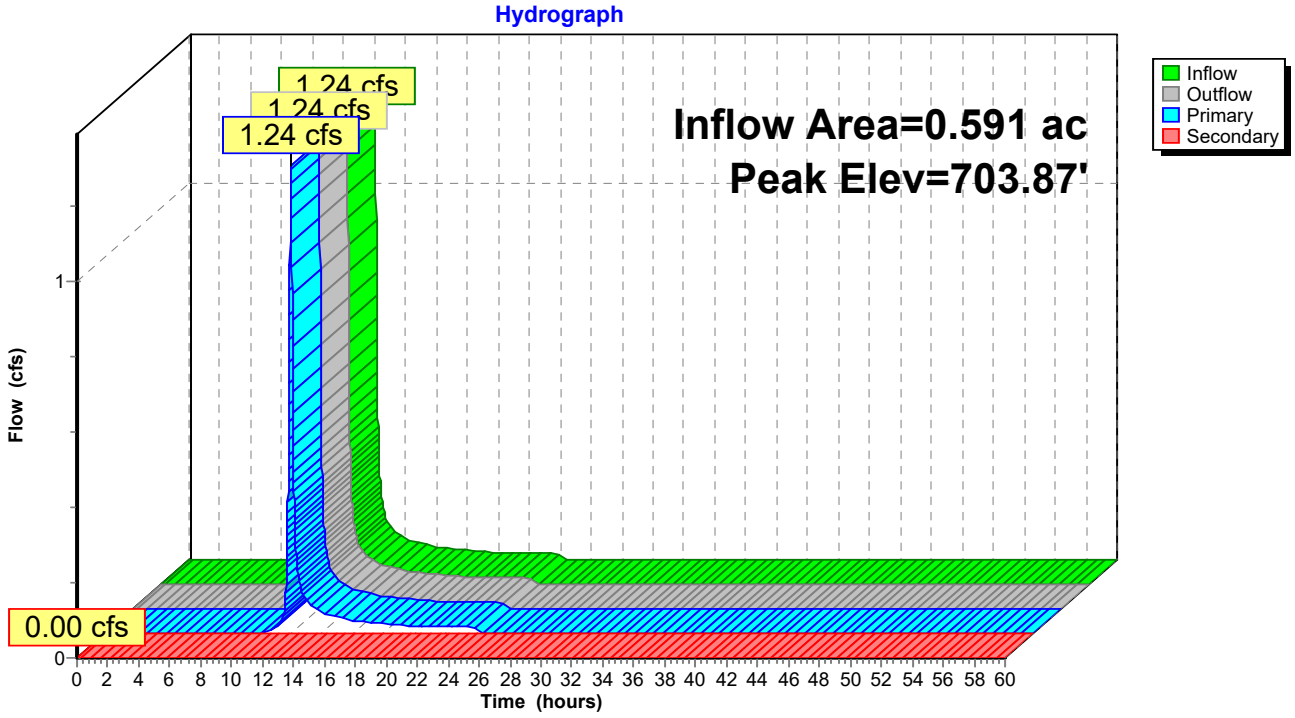
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 703.87' @ 12.03 hrs
Flood Elev= 709.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	703.10'	**10.0" Round Culvert** L= 37.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 703.10' / 702.10' S= 0.0270 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.55 sf
#2	Secondary	709.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.25 cfs @ 12.03 hrs HW=703.87' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.25 cfs @ 2.36 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=703.10' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 37P: Si#7



Summary for Pond 38P: Si#8

Inflow Area = 0.894 ac, 32.56% Impervious, Inflow Depth = 1.73" for 10-yr event
Inflow = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af
Outflow = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min
Primary = 2.00 cfs @ 12.07 hrs, Volume= 0.129 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

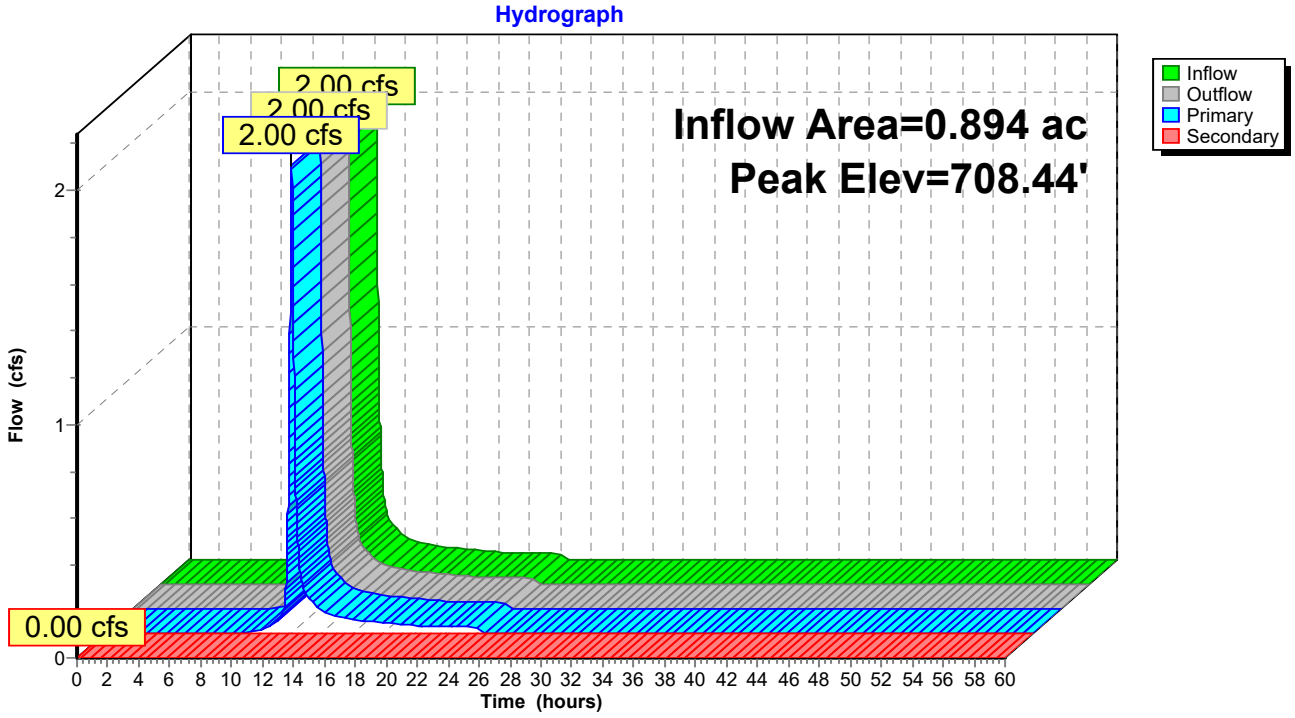
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 708.44' @ 12.07 hrs
Flood Elev= 710.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	707.50'	**12.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 707.50' / 706.75' S= 0.0288 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	710.55'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.00 cfs @ 12.07 hrs HW=708.44' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.00 cfs @ 2.61 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=707.50' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 38P: Si#8



Summary for Pond 39P: Si#1

Inflow Area = 6.747 ac, 18.16% Impervious, Inflow Depth = 1.29" for 10-yr event
Inflow = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af
Outflow = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af, Atten= 0%, Lag= 0.0 min
Primary = 7.73 cfs @ 12.09 hrs, Volume= 0.727 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

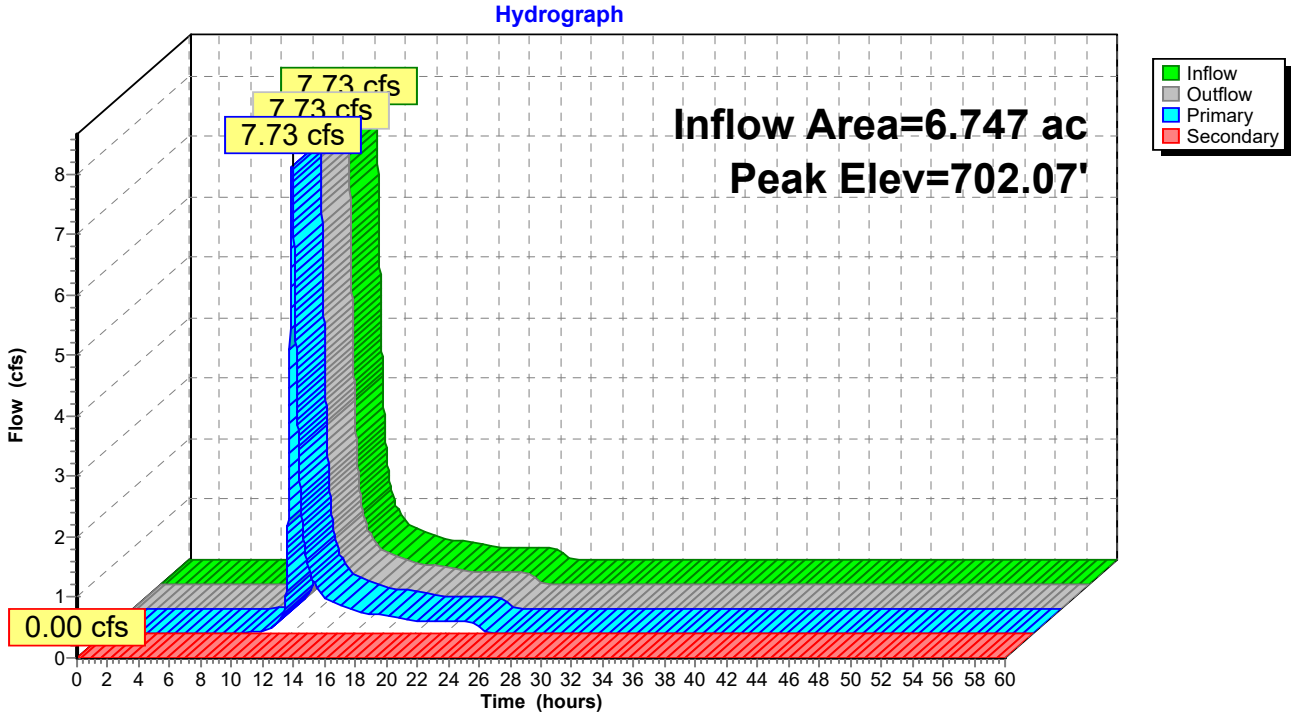
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 702.07' @ 12.09 hrs
Flood Elev= 707.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	700.00'	**18.0" Round Culvert** L= 147.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 700.00' / 694.00' S= 0.0408 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	707.75'	**24.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.72 cfs @ 12.09 hrs HW=702.07' (Free Discharge)
└**1=Culvert** (Inlet Controls 7.72 cfs @ 4.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=700.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 39P: Si#1



Summary for Pond 43P: Si#2

Inflow Area = 6.156 ac, 18.63% Impervious, Inflow Depth = 1.28" for 10-yr event
Inflow = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af
Outflow = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af, Atten= 0%, Lag= 0.0 min
Primary = 6.87 cfs @ 12.12 hrs, Volume= 0.659 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

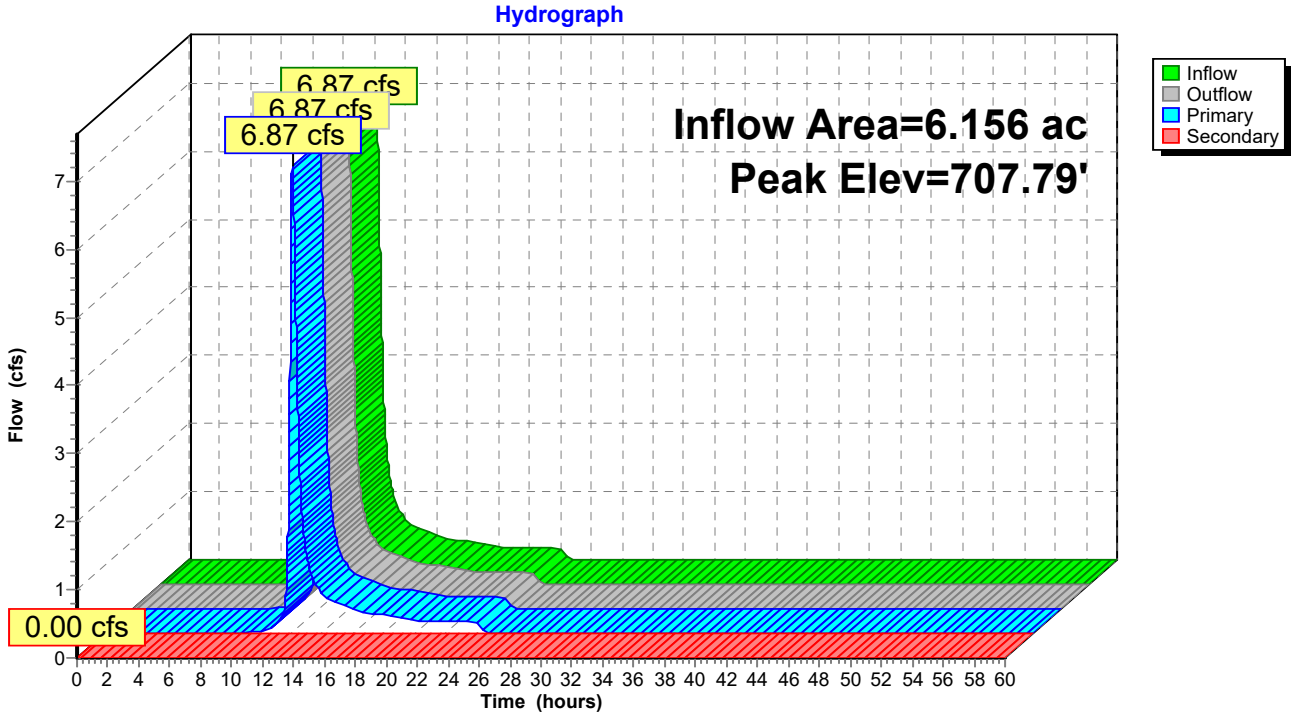
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 707.79' @ 12.12 hrs
Flood Elev= 710.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	706.00'	**18.0" Round Culvert** L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 706.00' / 702.10' S= 0.1625 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.77 sf
#2	Secondary	710.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.87 cfs @ 12.12 hrs HW=707.79' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.87 cfs @ 3.89 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=706.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 43P: Si#2



Summary for Pond 50P: SI#4

Inflow Area = 4.321 ac, 12.13% Impervious, Inflow Depth = 1.09" for 10-yr event
Inflow = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af
Outflow = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af, Atten= 0%, Lag= 0.0 min
Primary = 3.74 cfs @ 12.24 hrs, Volume= 0.391 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

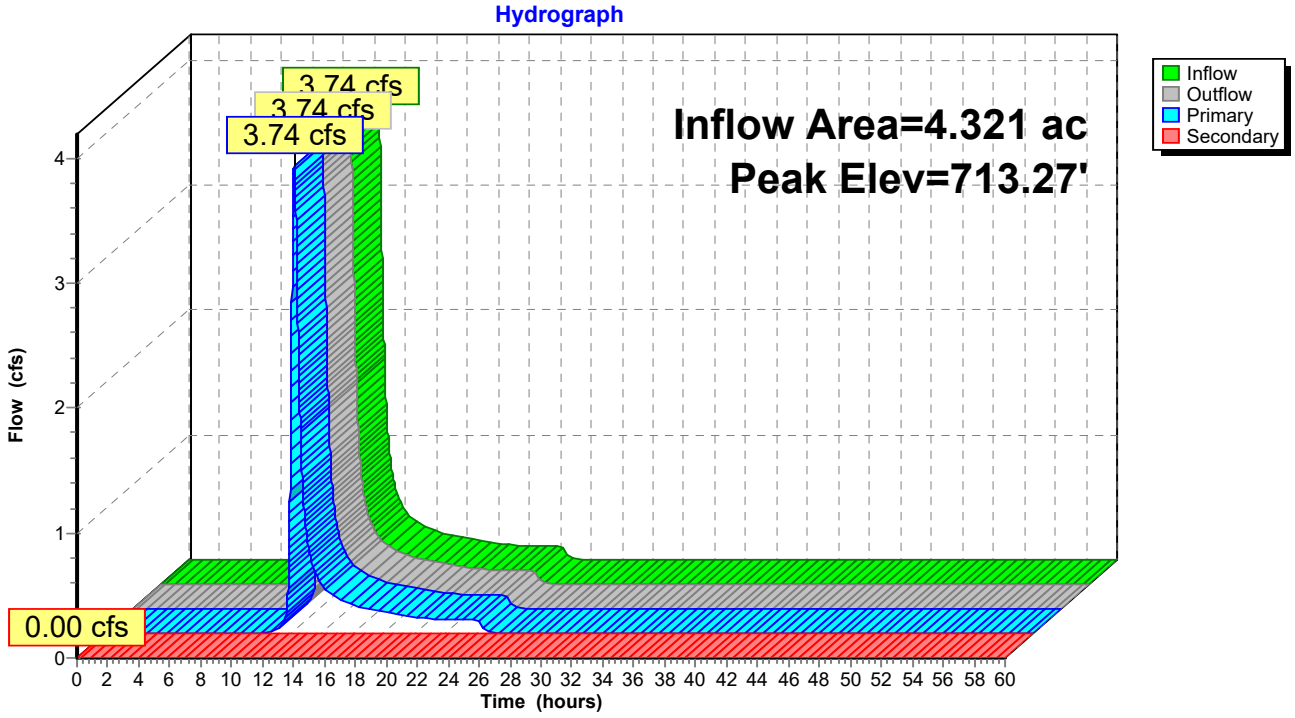
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 713.27' @ 12.24 hrs
Flood Elev= 716.05'

Device	Routing	Invert	Outlet Devices
#1	Primary	712.00'	**15.0" Round Culvert** L= 26.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 712.00' / 711.50' S= 0.0192 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf
#2	Secondary	716.05'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.74 cfs @ 12.24 hrs HW=713.27' (Free Discharge)
└**1=Culvert** (Inlet Controls 3.74 cfs @ 3.05 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=712.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 50P: SI#4



Summary for Pond 53P: SI#6

Inflow Area = 2.292 ac, 12.93% Impervious, Inflow Depth = 0.87" for 10-yr event
Inflow = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af
Outflow = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.41 cfs @ 12.31 hrs, Volume= 0.166 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

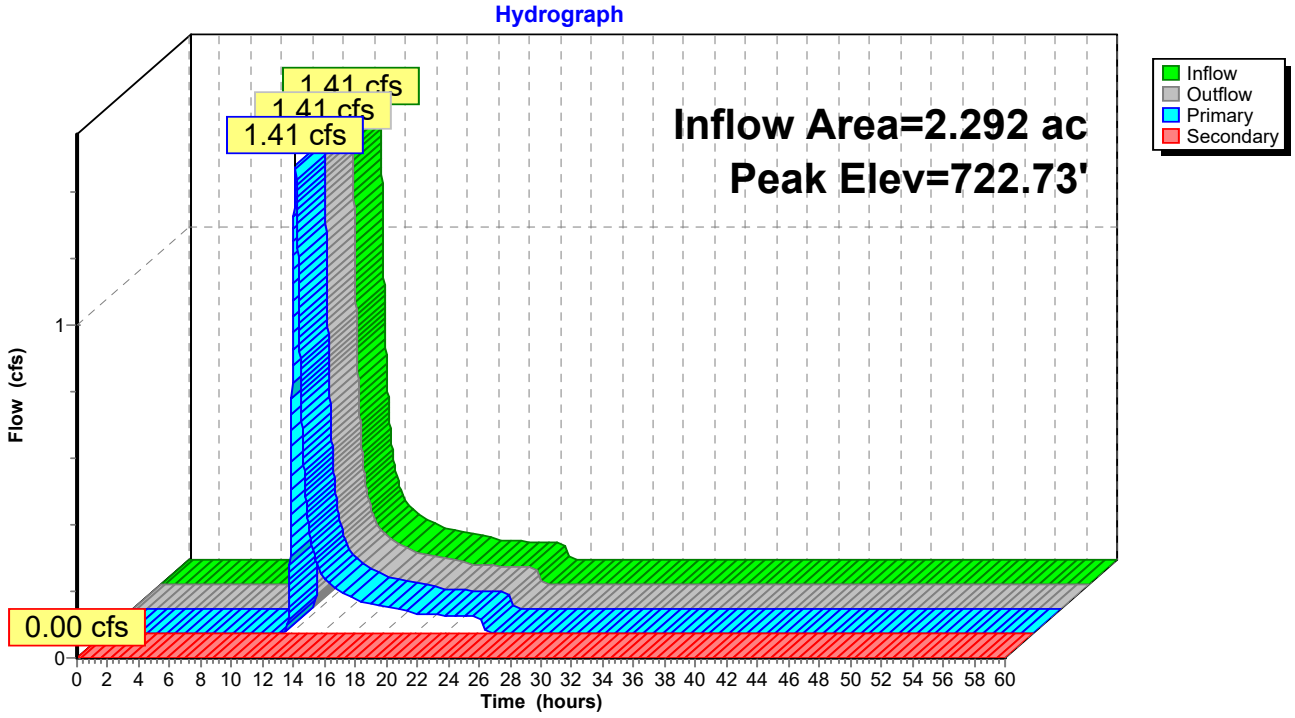
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 722.73' @ 12.31 hrs
Flood Elev= 725.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	722.00'	**12.0" Round Culvert** L= 124.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 722.00' / 718.50' S= 0.0282 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	725.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.41 cfs @ 12.31 hrs HW=722.73' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.41 cfs @ 2.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=722.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 53P: SI#6



Summary for Pond 55P: SI#5

Inflow Area = 3.537 ac, 12.92% Impervious, Inflow Depth = 1.00" for 10-yr event
Inflow = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af
Outflow = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.0 min
Primary = 2.73 cfs @ 12.27 hrs, Volume= 0.296 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

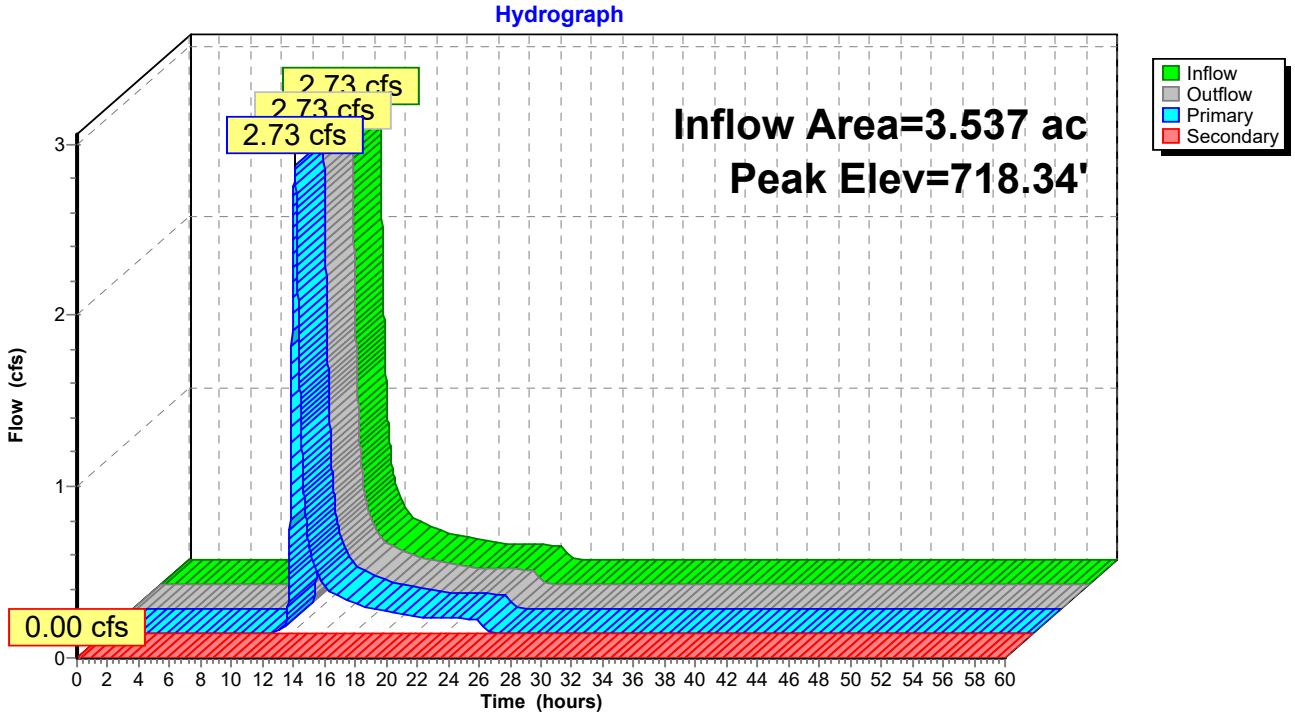
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 718.34' @ 12.27 hrs
Flood Elev= 721.50'

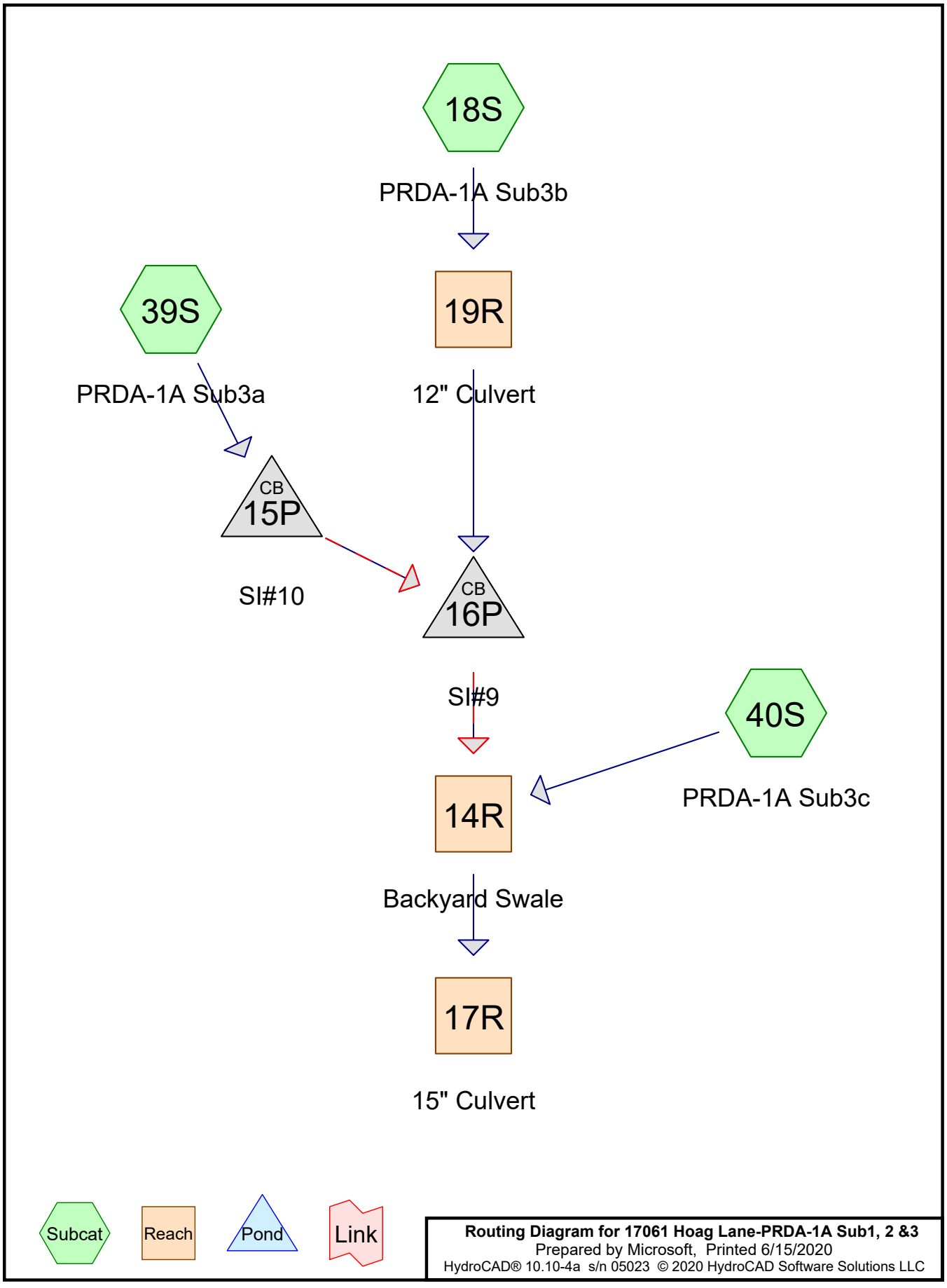
Device	Routing	Invert	Outlet Devices
#1	Primary	717.00'	**12.0" Round Culvert** L= 139.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 717.00' / 713.50' S= 0.0252 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	721.50'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.73 cfs @ 12.27 hrs HW=718.34' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.73 cfs @ 3.48 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=717.00' (Free Discharge)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 55P: SI#5





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
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Summary for Subcatchment 18S: PRDA-1A Sub3b

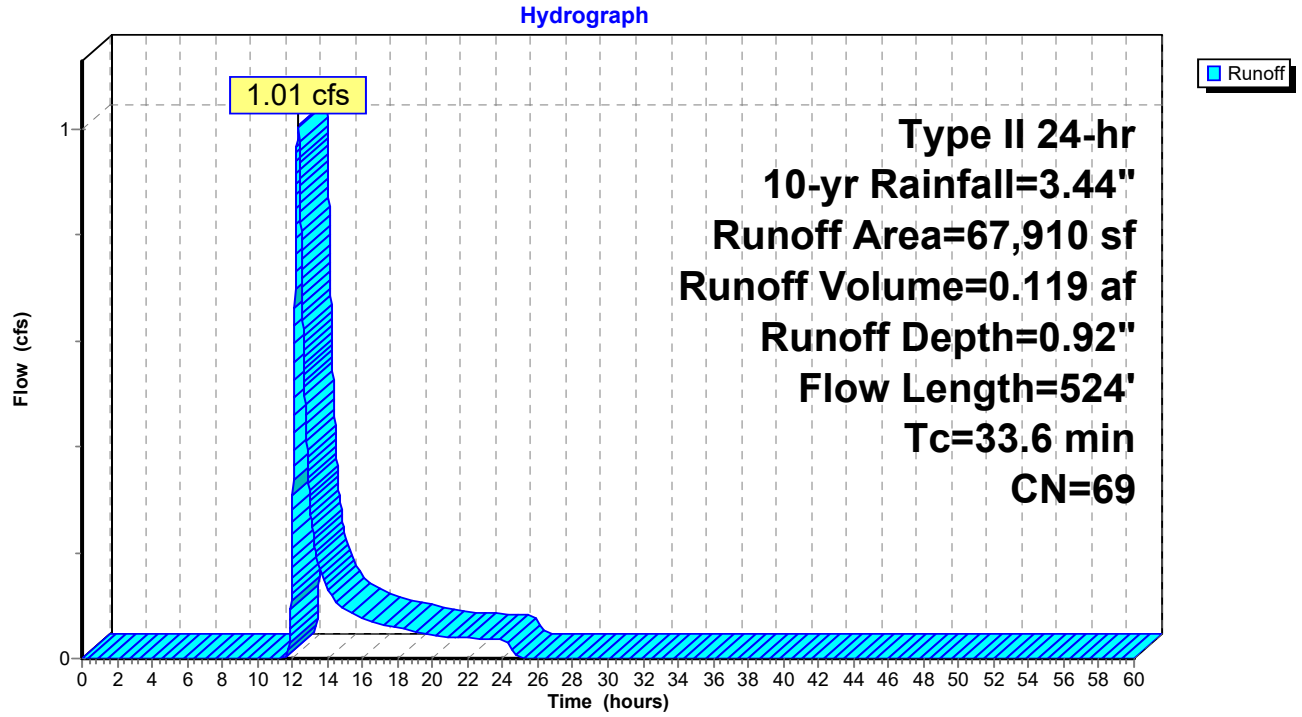
Runoff = 1.01 cfs @ 12.32 hrs, Volume= 0.119 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
26,033	74	>75% Grass cover, Good, HSG C
4,909	70	Woods, Good, HSG C
28,456	55	Woods, Good, HSG B
8,512	98	Paved parking, HSG C
67,910	69	Weighted Average
59,398		87.47% Pervious Area
8,512		12.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.0	100	0.0500	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
2.5	221	0.0860	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.9	151	0.1600	2.80		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.2	52	0.0385	3.98		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
33.6	524	Total			

Subcatchment 18S: PRDA-1A Sub3b



Summary for Subcatchment 39S: PRDA-1A Sub3a

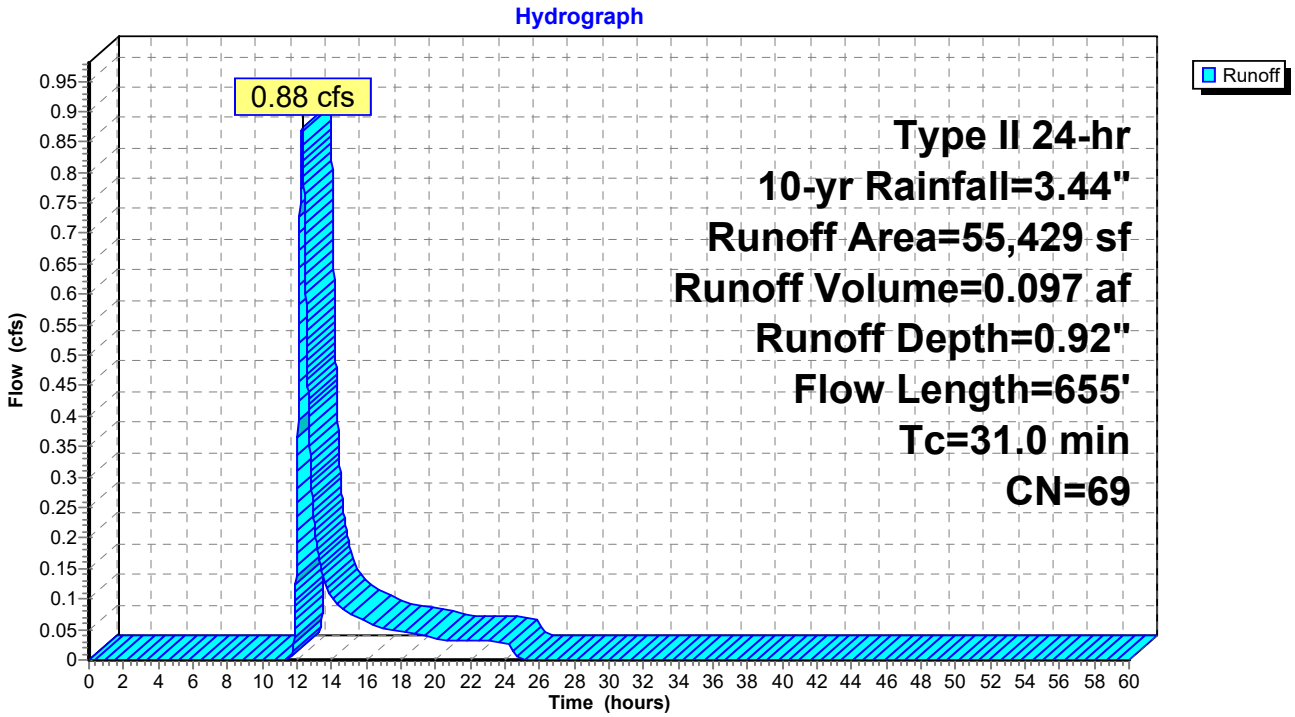
Runoff = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
37,048	74	>75% Grass cover, Good, HSG C
4,570	70	Woods, Good, HSG C
13,811	55	Woods, Good, HSG B
55,429	69	Weighted Average
55,429		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.2	100	0.0700	0.06		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
1.2	119	0.1090	1.65		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
3.6	436	0.0820	2.00		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
31.0	655	Total			

Subcatchment 39S: PRDA-1A Sub3a



Summary for Subcatchment 40S: PRDA-1A Sub3c

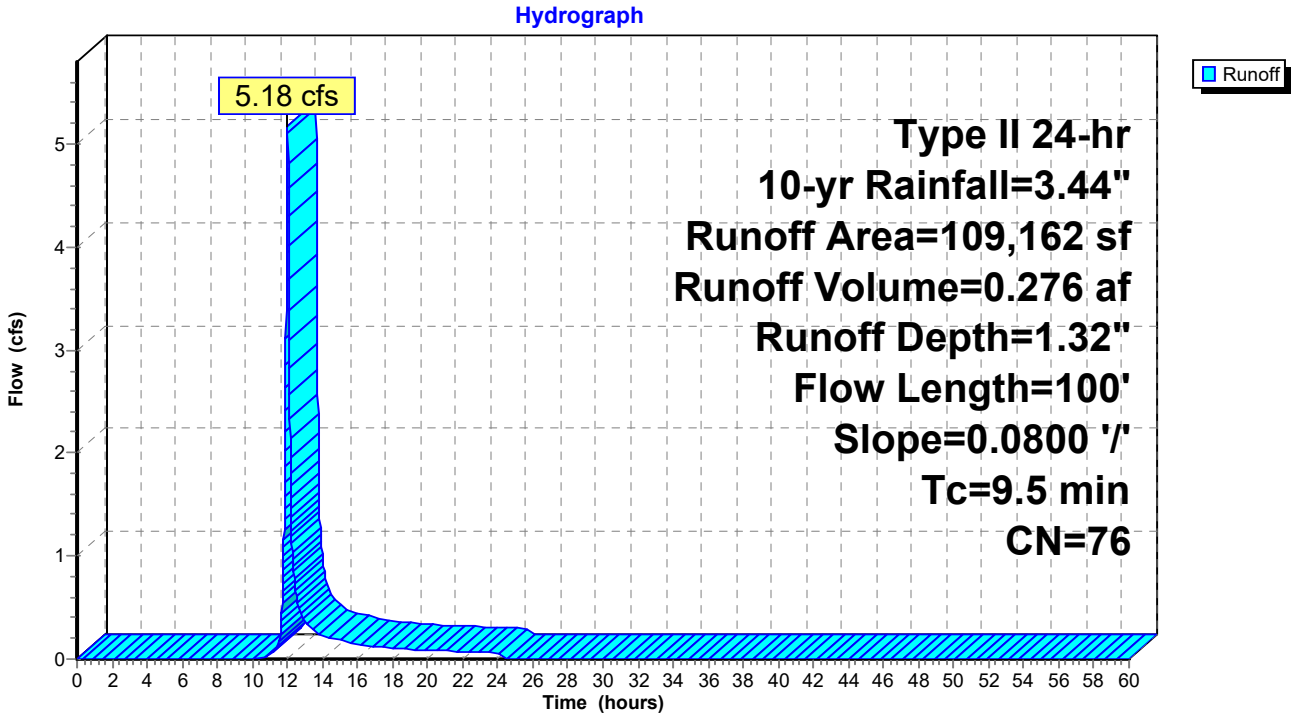
Runoff = 5.18 cfs @ 12.02 hrs, Volume= 0.276 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
102,162	74	>75% Grass cover, Good, HSG C
7,000	98	Roofs, HSG C
109,162	76	Weighted Average
102,162		93.59% Pervious Area
7,000		6.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	100	0.0800	0.18		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 40S: PRDA-1A Sub3c



Summary for Reach 14R: Backyard Swale

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 1.11" for 10-yr event
Inflow = 5.73 cfs @ 12.02 hrs, Volume= 0.493 af
Outflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af, Atten= 2%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.78 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.96 fps, Avg. Travel Time= 3.0 min

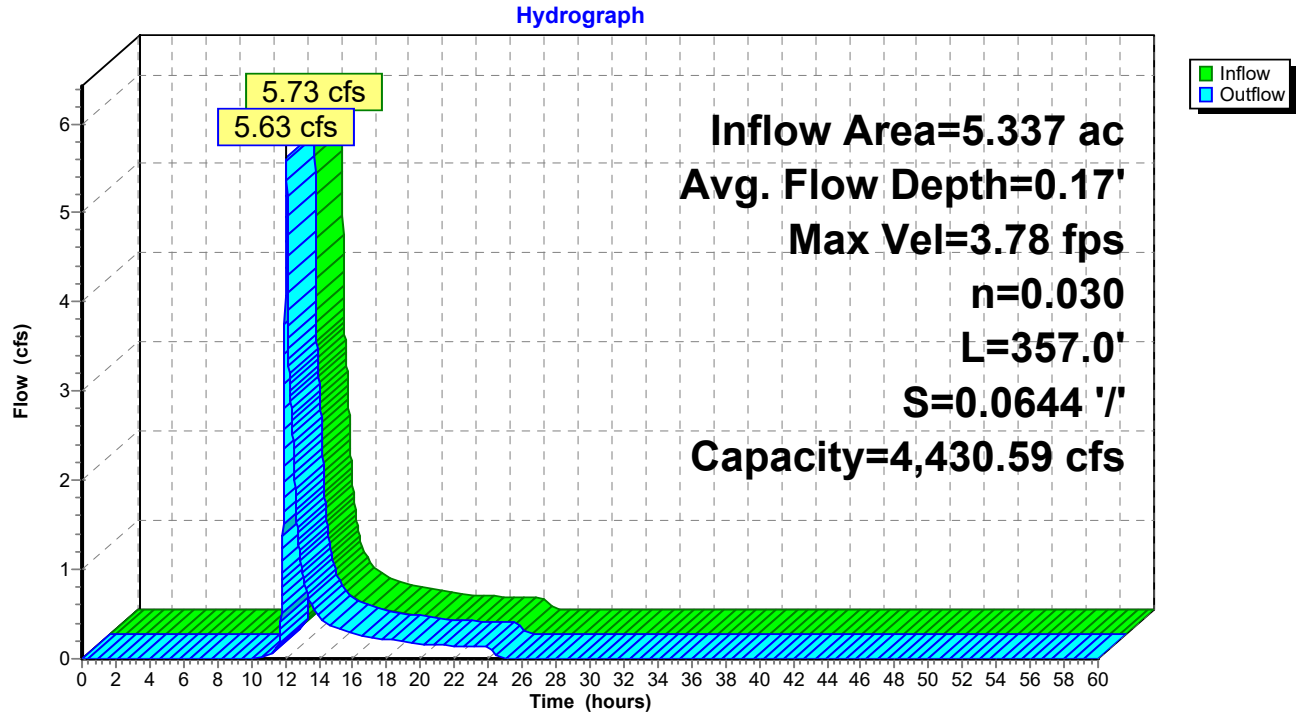
Peak Storage= 532 cf @ 12.04 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 9.05'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 4,430.59 cfs

8.00' x 6.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 44.00'
Length= 357.0' Slope= 0.0644 '/'
Inlet Invert= 716.00', Outlet Invert= 693.00'



‡

Reach 14R: Backyard Swale



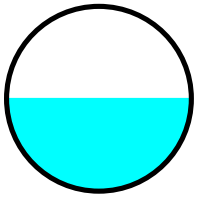
Summary for Reach 17R: 15" Culvert

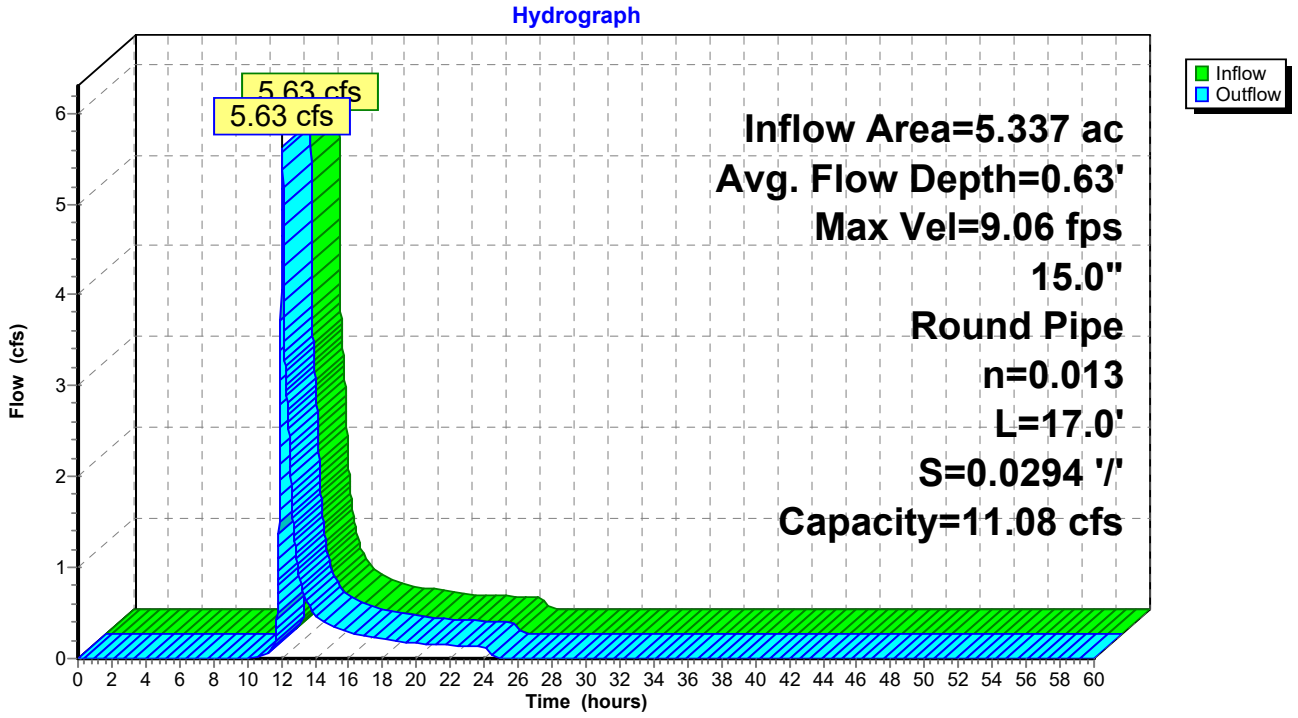
Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 1.11" for 10-yr event
Inflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af
Outflow = 5.63 cfs @ 12.07 hrs, Volume= 0.493 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 9.06 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 3.52 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.63' , Surface Width= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 11.08 cfs

15.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 17.0' Slope= 0.0294 '/'
Inlet Invert= 689.00', Outlet Invert= 688.50'





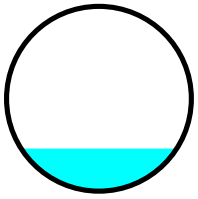
Summary for Reach 19R: 12" Culvert

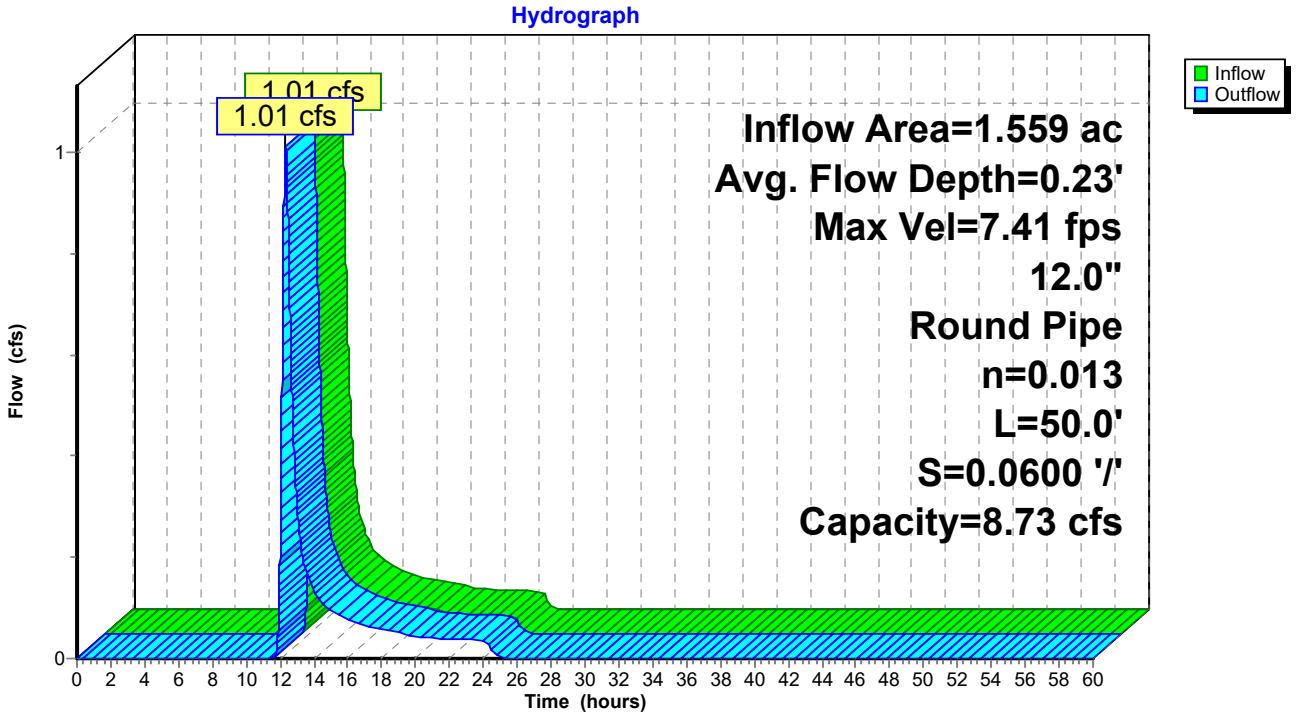
Inflow Area = 1.559 ac, 12.53% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 1.01 cfs @ 12.32 hrs, Volume= 0.119 af
Outflow = 1.01 cfs @ 12.33 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.41 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.25 fps, Avg. Travel Time= 0.3 min

Peak Storage= 7 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 0.84'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 8.73 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 50.0' Slope= 0.0600 '/'
Inlet Invert= 723.00', Outlet Invert= 720.00'





Summary for Pond 15P: SI#10

Inflow Area = 1.272 ac, 0.00% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af
Outflow = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 0.88 cfs @ 12.29 hrs, Volume= 0.097 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

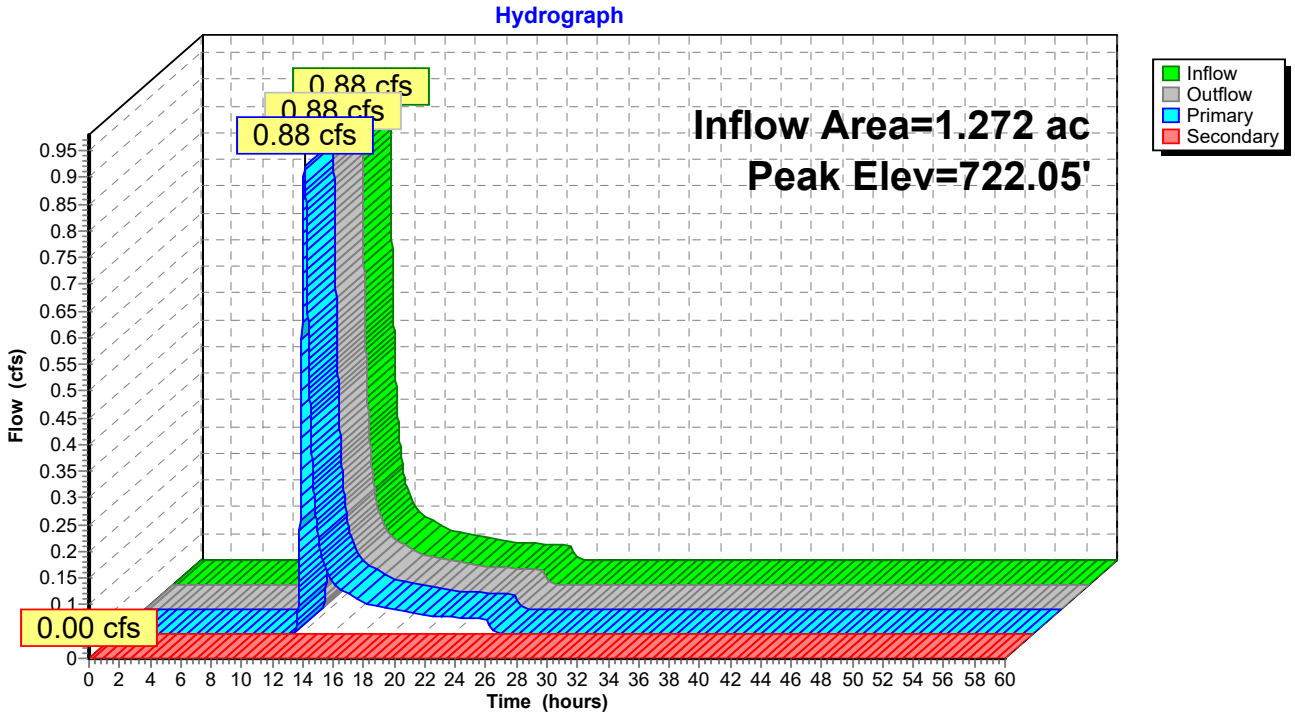
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 722.05' @ 12.29 hrs
Flood Elev= 724.65'

Device	Routing	Invert	Outlet Devices
#1	Primary	721.50'	**12.0" Round Culvert** L= 81.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 721.50' / 720.00' S= 0.0185 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	724.65'	**24.0" Horiz. Rim** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.87 cfs @ 12.29 hrs HW=722.05' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.87 cfs @ 1.99 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=721.50' (Free Discharge)
└**2=Rim** (Controls 0.00 cfs)

Pond 15P: SI#10



Summary for Pond 16P: SI#9

Inflow Area = 2.831 ac, 6.90% Impervious, Inflow Depth = 0.92" for 10-yr event
Inflow = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af
Outflow = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af, Atten= 0%, Lag= 0.0 min
Primary = 1.88 cfs @ 12.30 hrs, Volume= 0.217 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

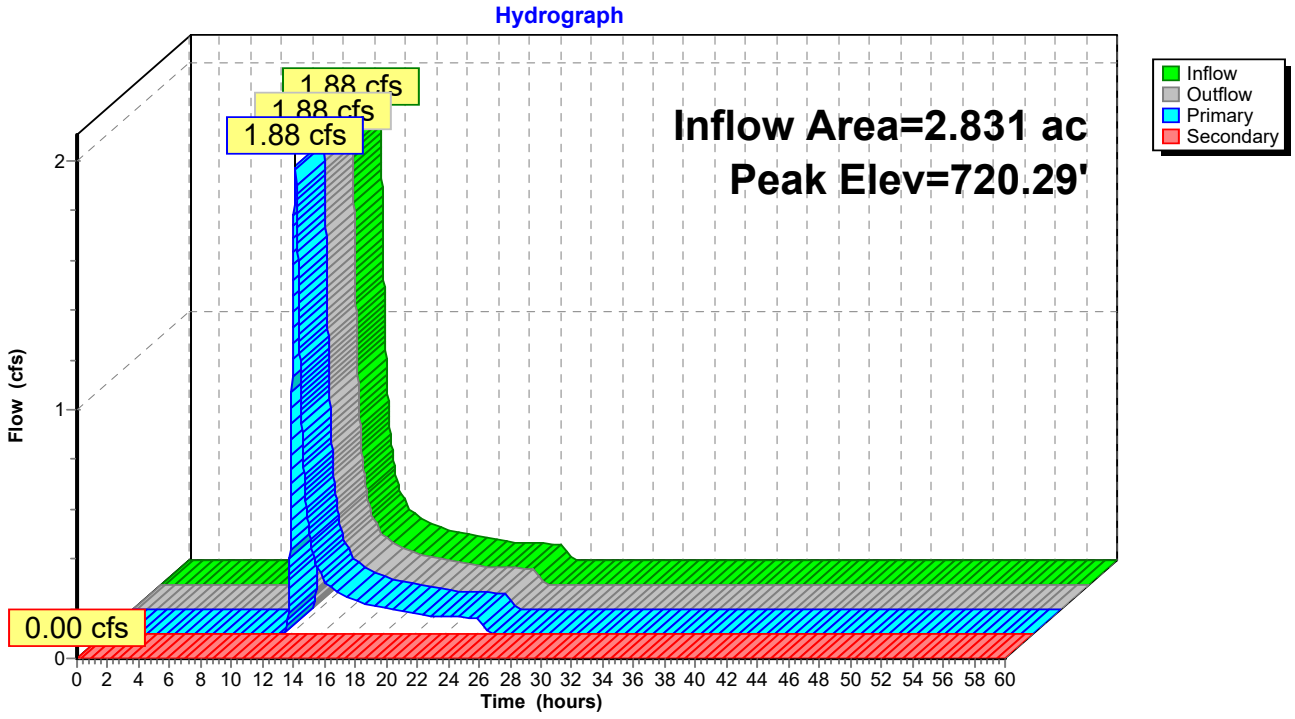
Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 720.29' @ 12.30 hrs
Flood Elev= 726.10'

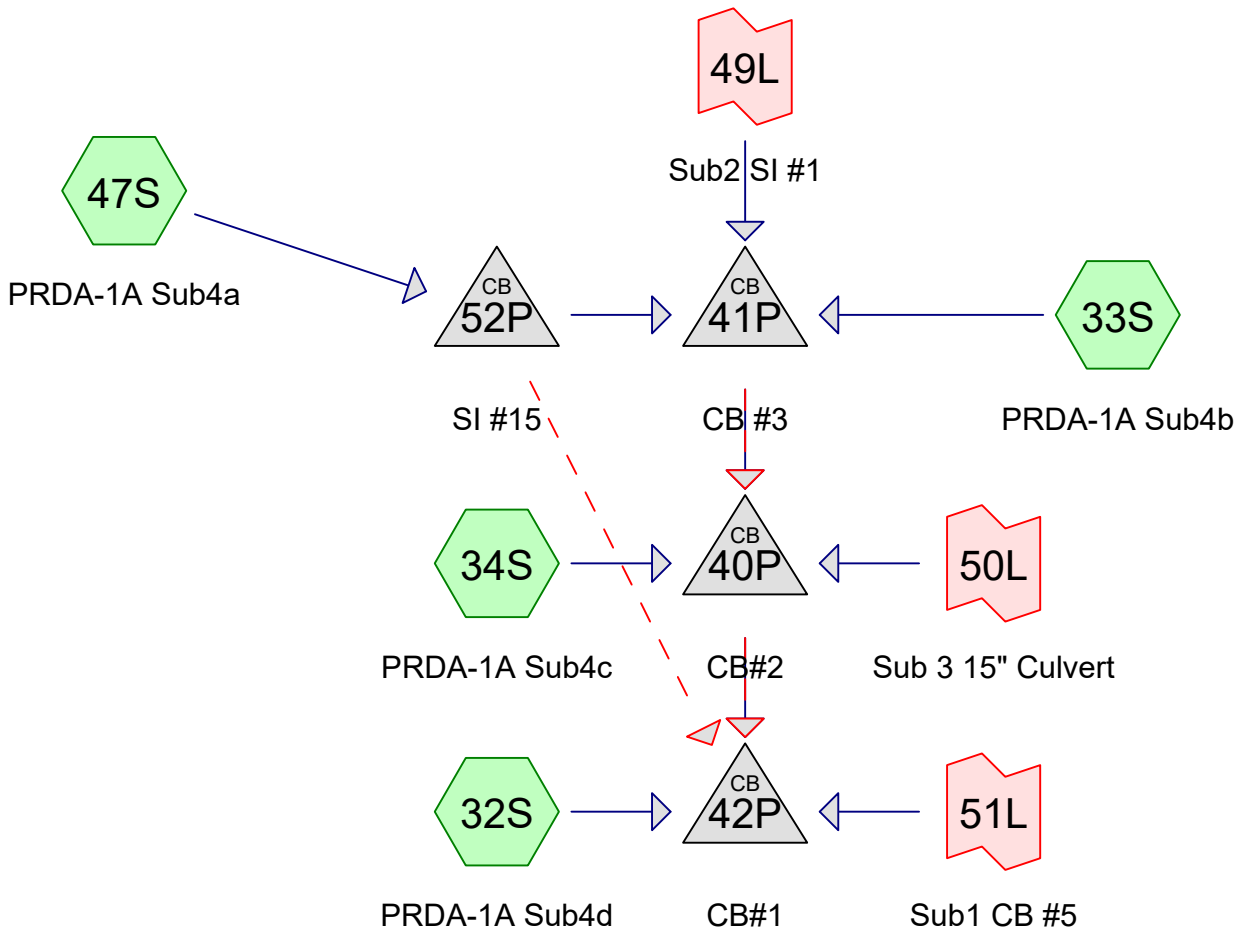
Device	Routing	Invert	Outlet Devices
#1	Primary	719.50'	**15.0" Round Culvert** L= 145.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 719.50' / 718.00' S= 0.0103 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 1.23 sf
#2	Secondary	726.10'	**24.0" Horiz. Rim** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.88 cfs @ 12.30 hrs HW=720.29' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.88 cfs @ 3.26 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=719.50' (Free Discharge)
└**2=Rim** (Controls 0.00 cfs)

Pond 16P: SI#9





Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub4
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 32S: PRDA-1A Sub4d

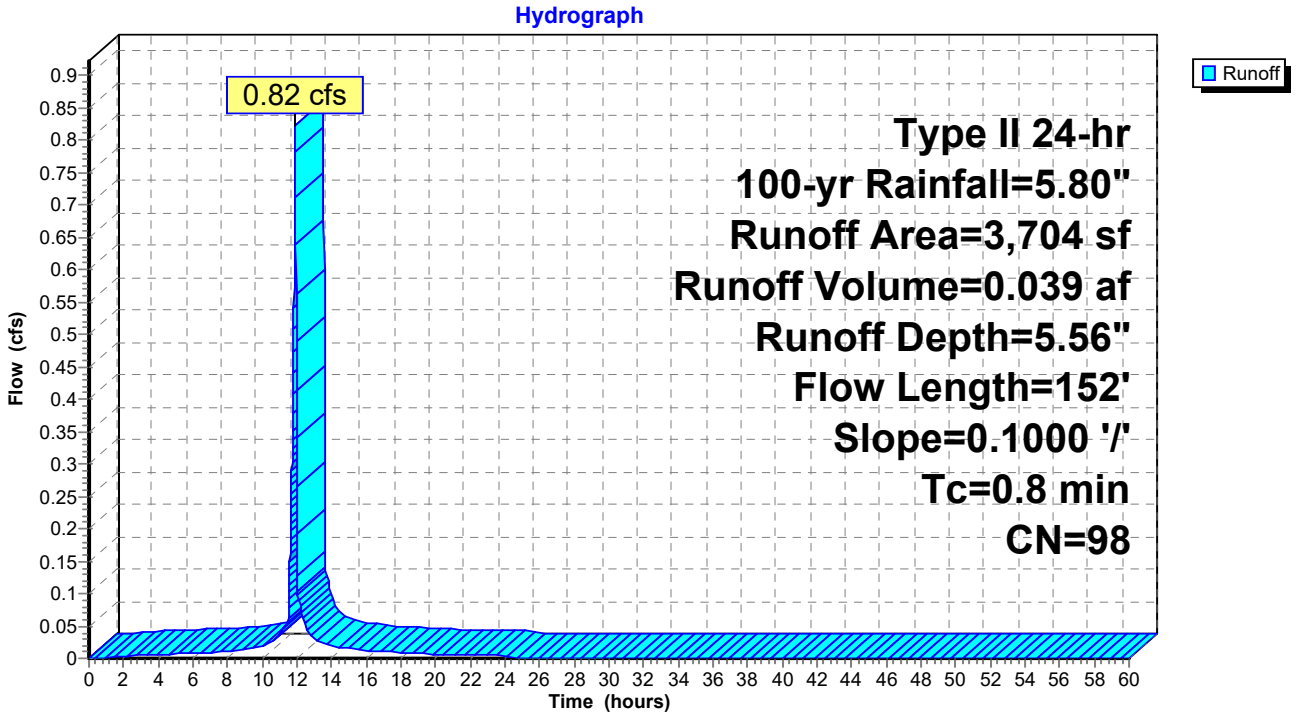
Runoff = 0.82 cfs @ 11.91 hrs, Volume= 0.039 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
3,704	98	Paved parking, HSG C
3,704		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	100	0.1000	2.26		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.39"
0.1	52	0.1000	6.42		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.8	152	Total			

Subcatchment 32S: PRDA-1A Sub4d



Summary for Subcatchment 33S: PRDA-1A Sub4b

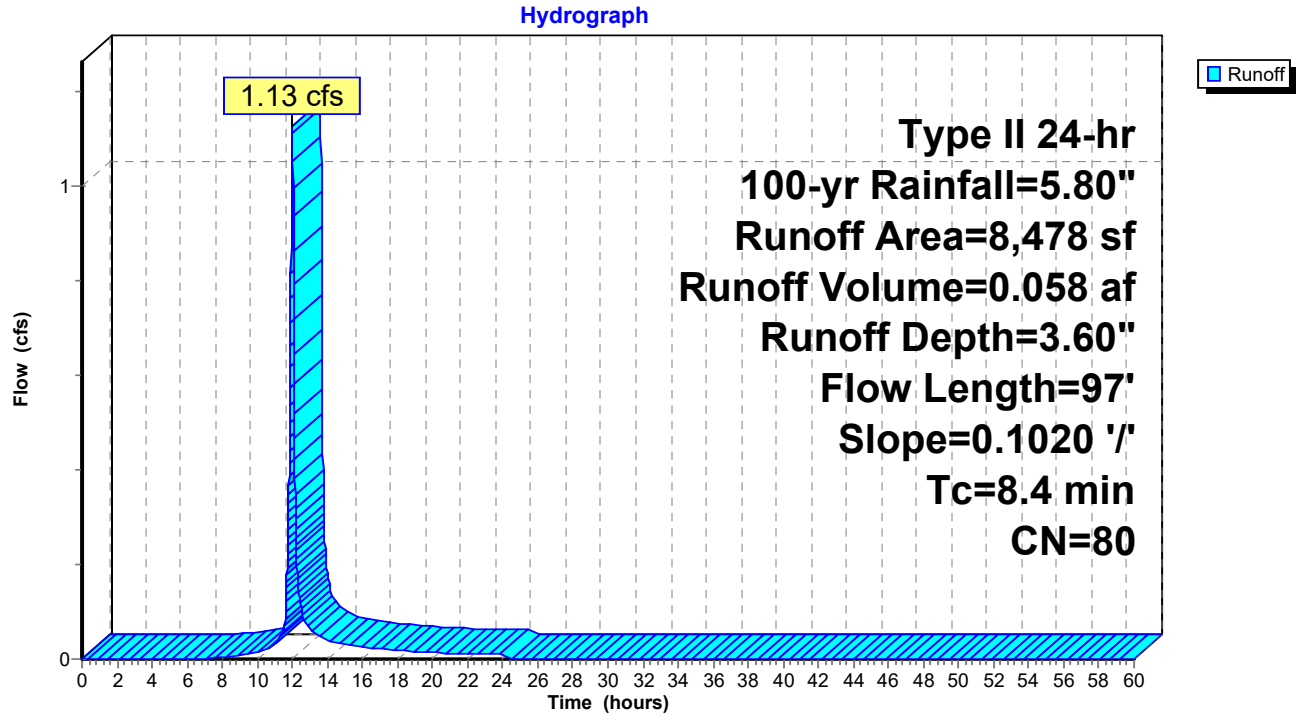
Runoff = 1.13 cfs @ 12.00 hrs, Volume= 0.058 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
1,968	98	Paved parking, HSG C
6,510	74	>75% Grass cover, Good, HSG C
8,478	80	Weighted Average
6,510		76.79% Pervious Area
1,968		23.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	97	0.1020	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"

Subcatchment 33S: PRDA-1A Sub4b



Summary for Subcatchment 34S: PRDA-1A Sub4c

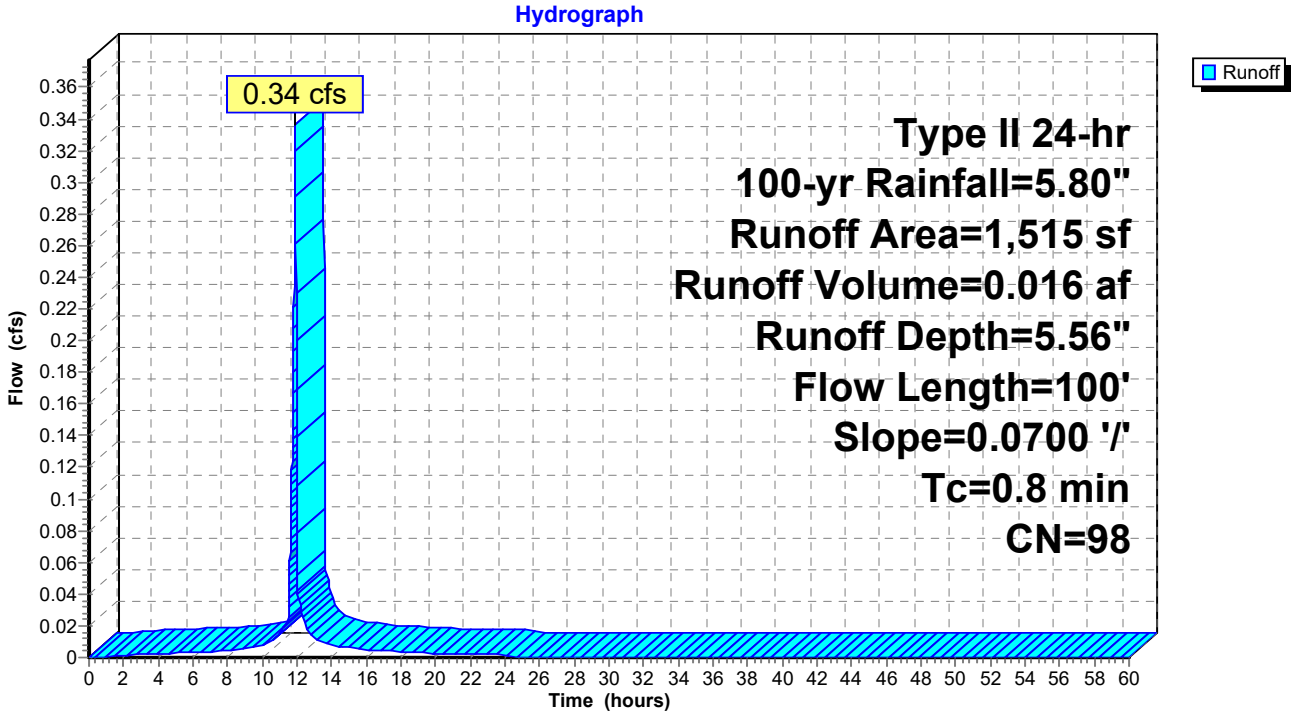
Runoff = 0.34 cfs @ 11.91 hrs, Volume= 0.016 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
1,515	98	Paved parking, HSG C
1,515		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	100	0.0700	1.96		**Sheet Flow, Sub1 Sheet** Smooth surfaces n= 0.011 P2= 2.39"

Subcatchment 34S: PRDA-1A Sub4c



Summary for Subcatchment 47S: PRDA-1A Sub4a

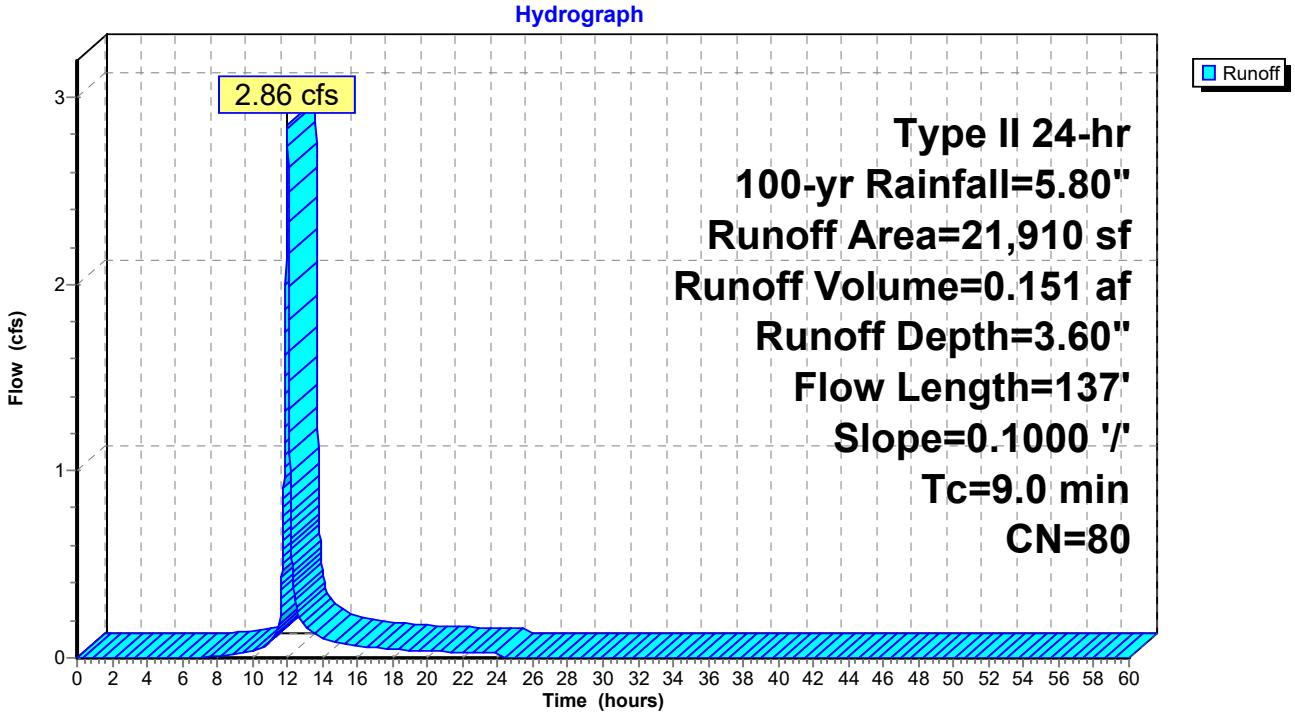
Runoff = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
5,483	98	Paved parking, HSG C
16,427	74	>75% Grass cover, Good, HSG C
21,910	80	Weighted Average
16,427		74.97% Pervious Area
5,483		25.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.1000	0.19		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.39"
0.3	37	0.1000	2.21		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
9.0	137	Total			

Subcatchment 47S: PRDA-1A Sub4a



Summary for Pond 40P: CB#2

Inflow Area = 12.495 ac, 14.30% Impervious, Inflow Depth = 3.05" for 100-yr event
Inflow = 31.34 cfs @ 12.06 hrs, Volume= 3.179 af
Outflow = 31.34 cfs @ 12.06 hrs, Volume= 3.179 af, Atten= 0%, Lag= 0.0 min
Primary = 20.56 cfs @ 12.34 hrs, Volume= 2.738 af
Secondary = 16.79 cfs @ 12.05 hrs, Volume= 0.442 af

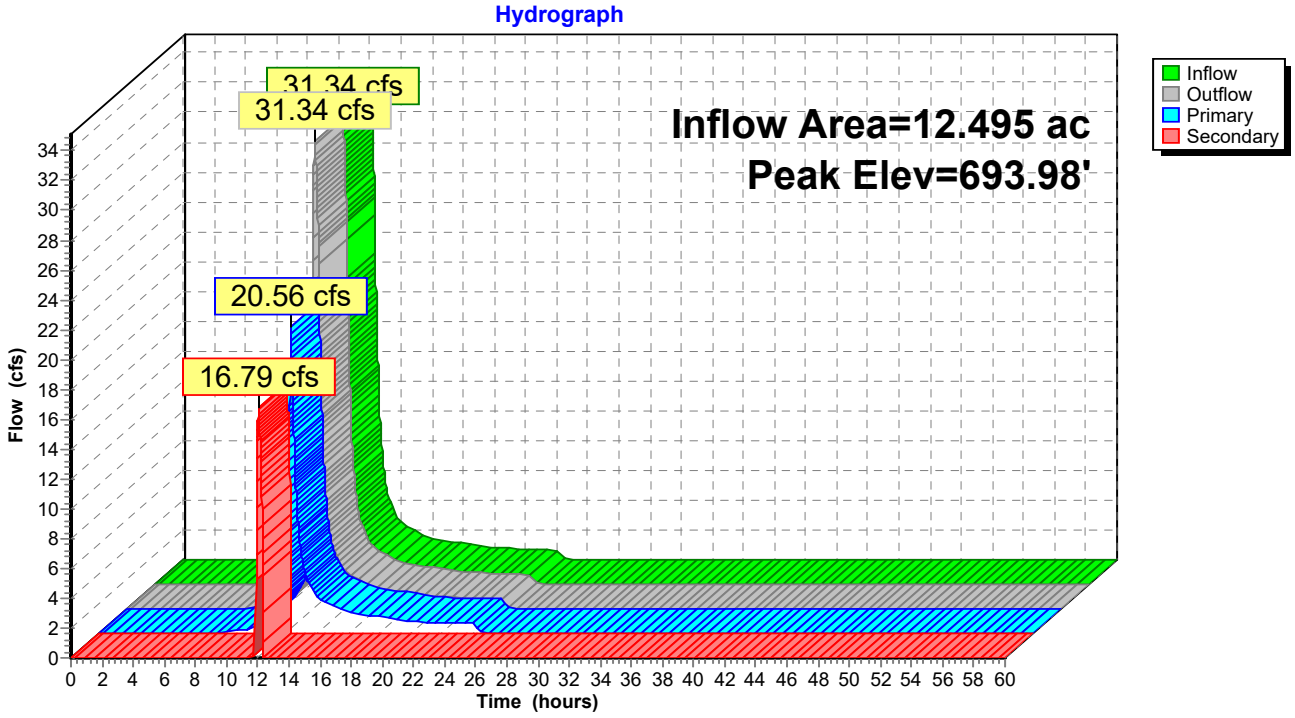
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 693.98' @ 12.05 hrs
Flood Elev= 692.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	687.50'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 687.50' / 684.50' S= 0.0600 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	692.75'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=19.32 cfs @ 12.34 hrs HW=692.28' TW=689.66' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 19.32 cfs @ 6.15 fps)

Secondary OutFlow Max=16.79 cfs @ 12.05 hrs HW=693.98' TW=692.52' (Dynamic Tailwater)
└**2=Orifice/Grate** (Orifice Controls 16.79 cfs @ 5.34 fps)

Pond 40P: CB#2



Summary for Pond 41P: CB #3

Inflow Area = 7.123 ac, 19.60% Impervious, Inflow Depth = 3.18" for 100-yr event
Inflow = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af
Outflow = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af, Atten= 0%, Lag= 0.0 min
Primary = 20.23 cfs @ 12.06 hrs, Volume= 1.889 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

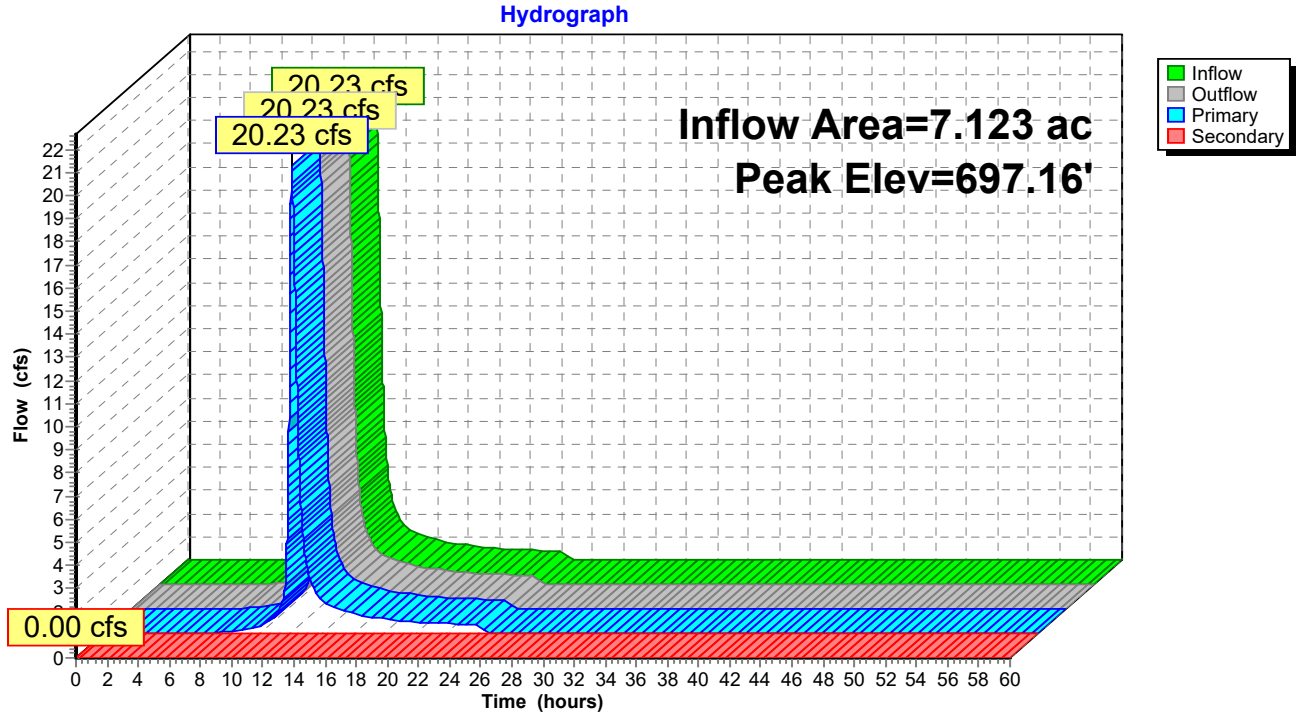
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 697.16' @ 12.06 hrs
Flood Elev= 698.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	690.80'	**24.0" Round Culvert** L= 102.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 690.80' / 688.75' S= 0.0201 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	697.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=20.30 cfs @ 12.06 hrs HW=697.15' TW=693.97' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 20.30 cfs @ 6.46 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=690.80' TW=687.50' (Dynamic Tailwater)
↑**2=Orifice/Grate** (Controls 0.00 cfs)

Pond 41P: CB #3



Summary for Pond 42P: CB#1

Inflow Area = 15.428 ac, 17.26% Impervious, Inflow Depth = 3.18" for 100-yr event
Inflow = 45.51 cfs @ 12.03 hrs, Volume= 4.089 af
Outflow = 45.51 cfs @ 12.03 hrs, Volume= 4.089 af, Atten= 0%, Lag= 0.0 min
Primary = 31.71 cfs @ 12.03 hrs, Volume= 3.878 af
Secondary = 13.79 cfs @ 12.03 hrs, Volume= 0.211 af

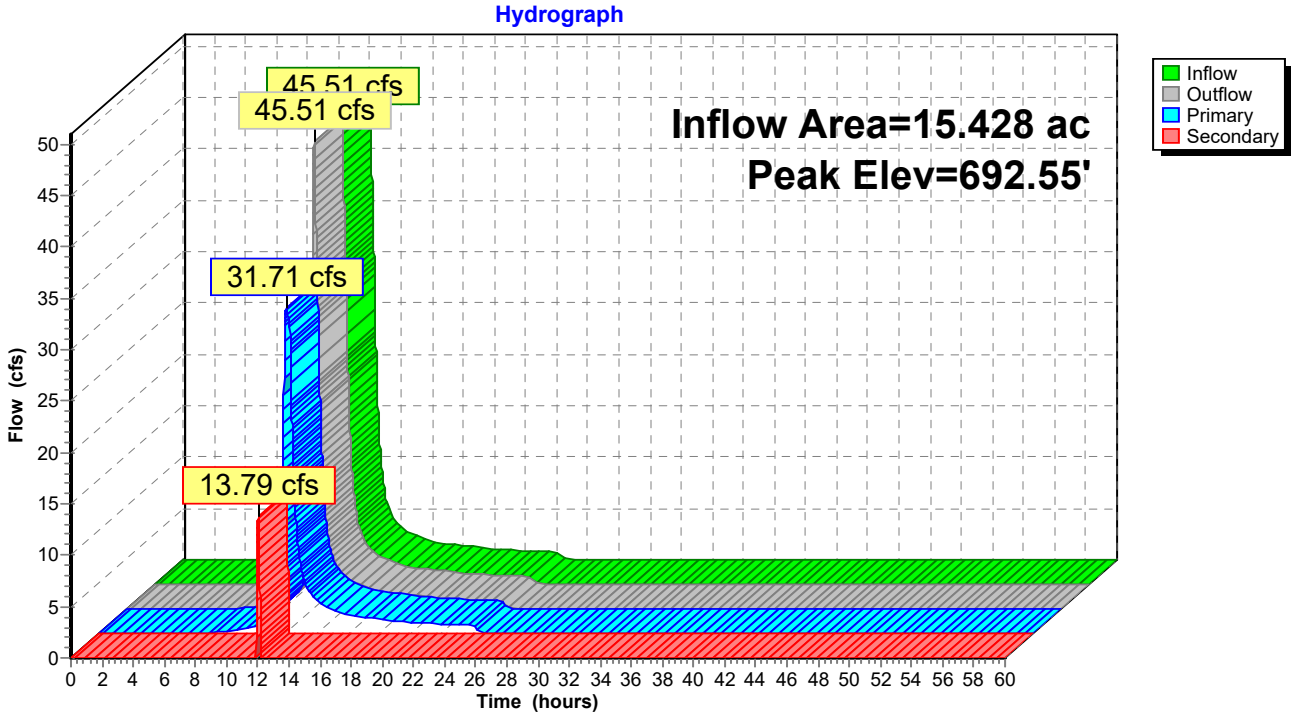
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 692.55' @ 12.03 hrs
Flood Elev= 691.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	684.50'	**24.0" Round Culvert** L= 80.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 684.50' / 678.00' S= 0.0813 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 3.14 sf
#2	Secondary	691.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=31.71 cfs @ 12.03 hrs HW=692.55' (Free Discharge)
└**1=Culvert** (Inlet Controls 31.71 cfs @ 10.09 fps)

Secondary OutFlow Max=13.77 cfs @ 12.03 hrs HW=692.55' (Free Discharge)
└**2=Orifice/Grate** (Orifice Controls 13.77 cfs @ 4.38 fps)

Pond 42P: CB#1



Summary for Pond 52P: SI #15

Inflow Area = 0.503 ac, 25.03% Impervious, Inflow Depth = 3.60" for 100-yr event
Inflow = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af
Outflow = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af, Atten= 0%, Lag= 0.0 min
Primary = 2.86 cfs @ 12.01 hrs, Volume= 0.151 af
Secondary = 0.14 cfs @ 12.05 hrs, Volume= 0.000 af

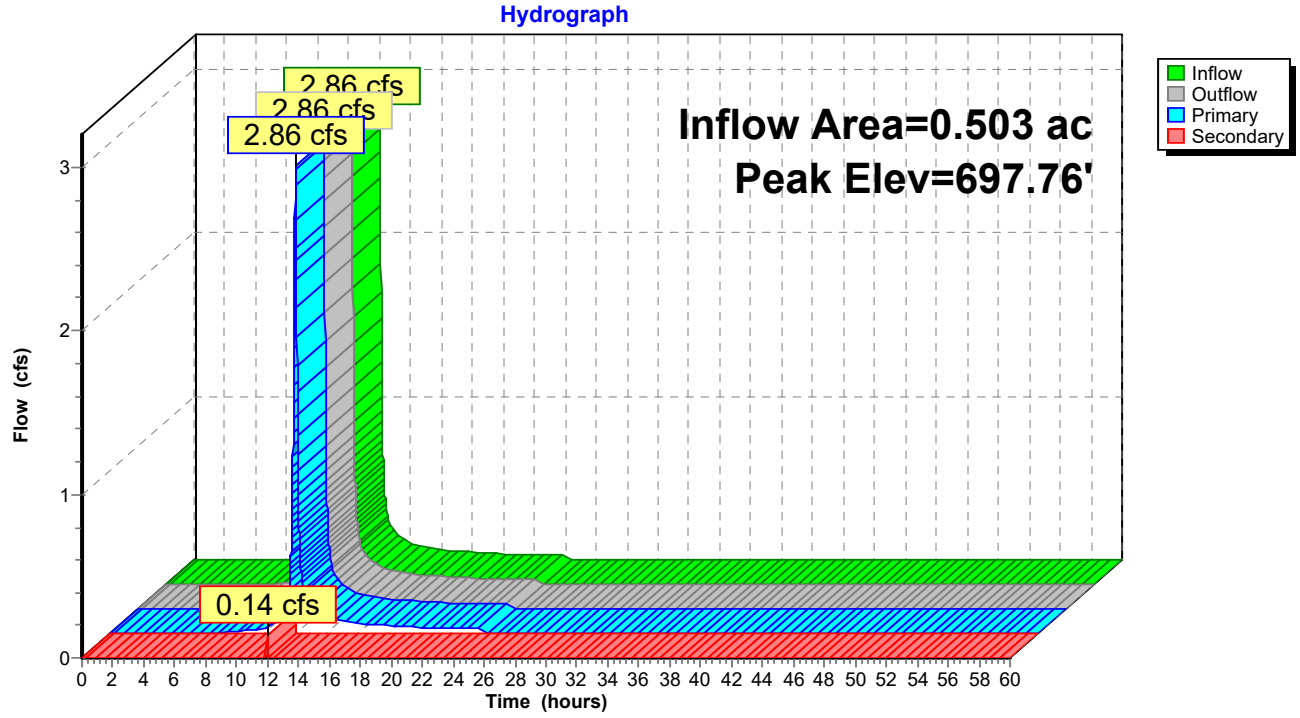
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 697.76' @ 12.05 hrs
Flood Elev= 698.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	691.00'	**12.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 691.00' / 690.90' S= 0.0040 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 0.79 sf
#2	Secondary	697.72'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.77 cfs @ 12.01 hrs HW=697.24' TW=696.38' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.77 cfs @ 3.52 fps)

Secondary OutFlow Max=0.13 cfs @ 12.05 hrs HW=697.75' TW=692.53' (Dynamic Tailwater)
└**2=Orifice/Grate** (Weir Controls 0.13 cfs @ 0.61 fps)

Pond 52P: SI #15



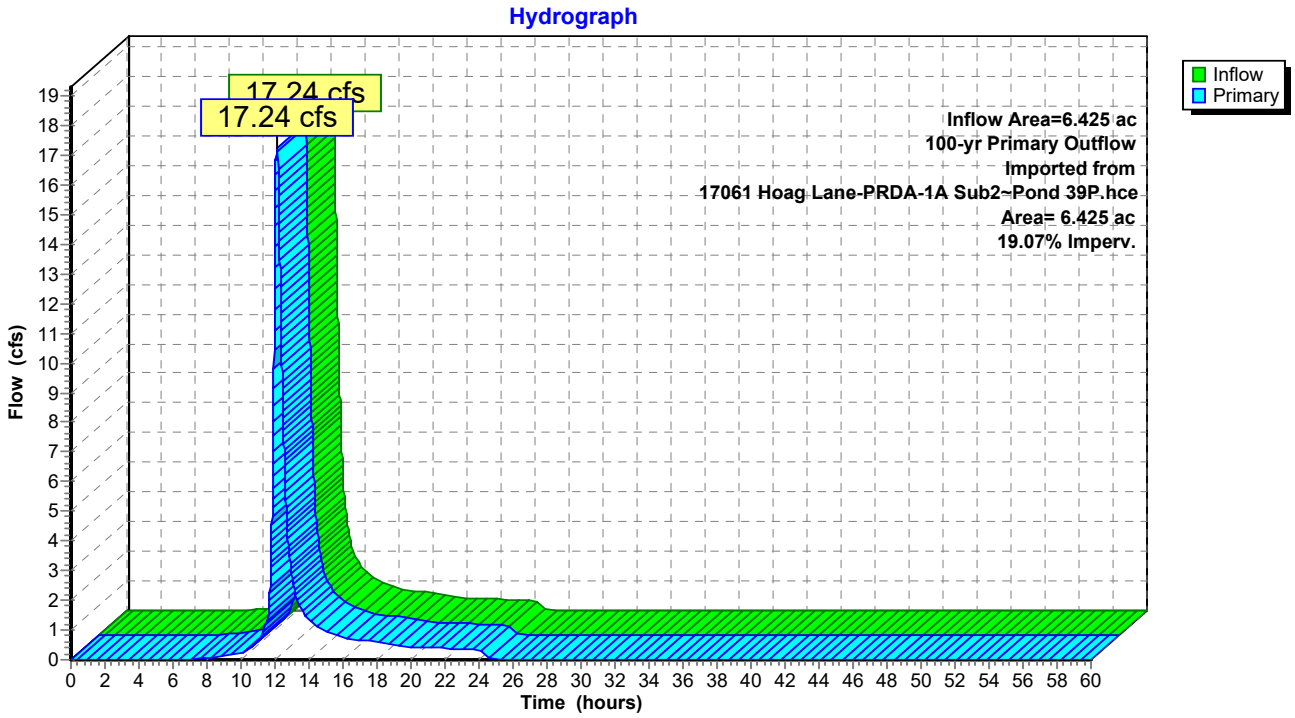
Summary for Link 49L: Sub2 SI #1

Inflow Area = 6.425 ac, 19.07% Impervious, Inflow Depth = 3.14" for 100-yr event
Inflow = 17.24 cfs @ 12.11 hrs, Volume= 1.680 af
Primary = 17.24 cfs @ 12.11 hrs, Volume= 1.680 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Primary Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub2~Pond 39P.hce

Link 49L: Sub2 SI #1



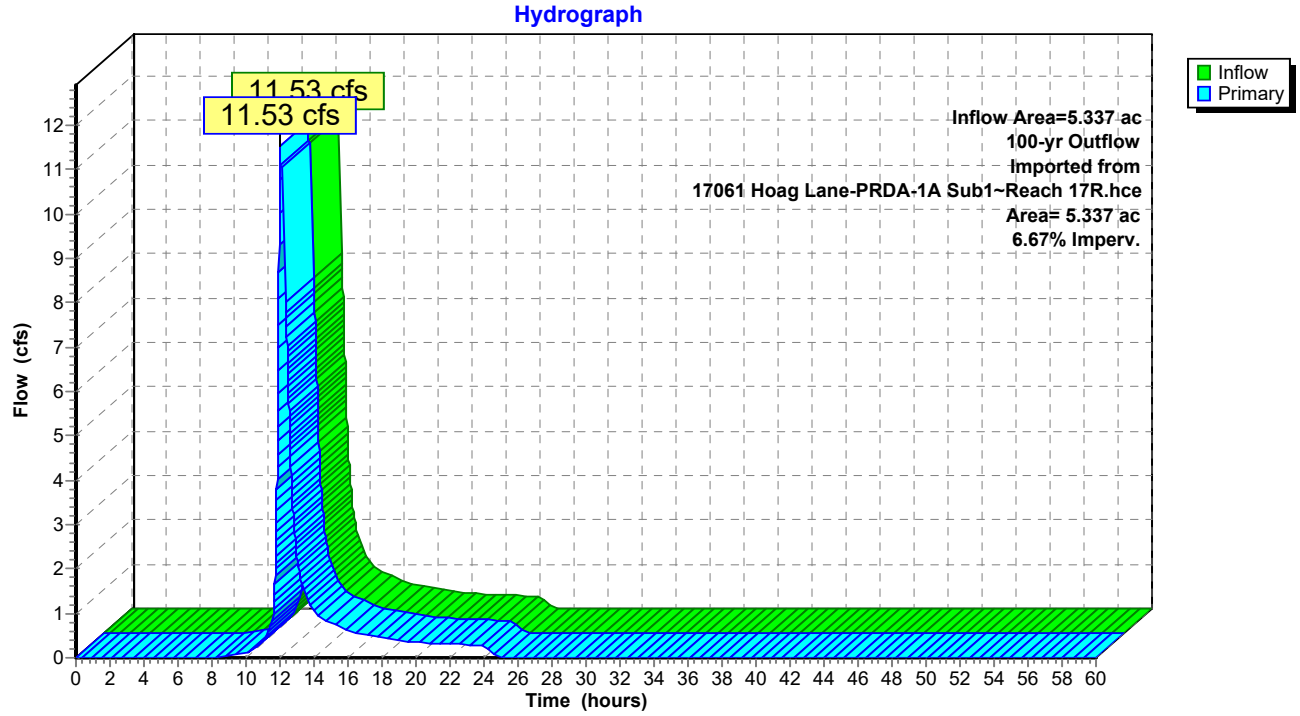
Summary for Link 50L: Sub 3 15" Culvert

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 2.86" for 100-yr event
Inflow = 11.53 cfs @ 11.98 hrs, Volume= 1.273 af
Primary = 11.53 cfs @ 11.98 hrs, Volume= 1.273 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub1~Reach 17R.hce

Link 50L: Sub 3 15" Culvert



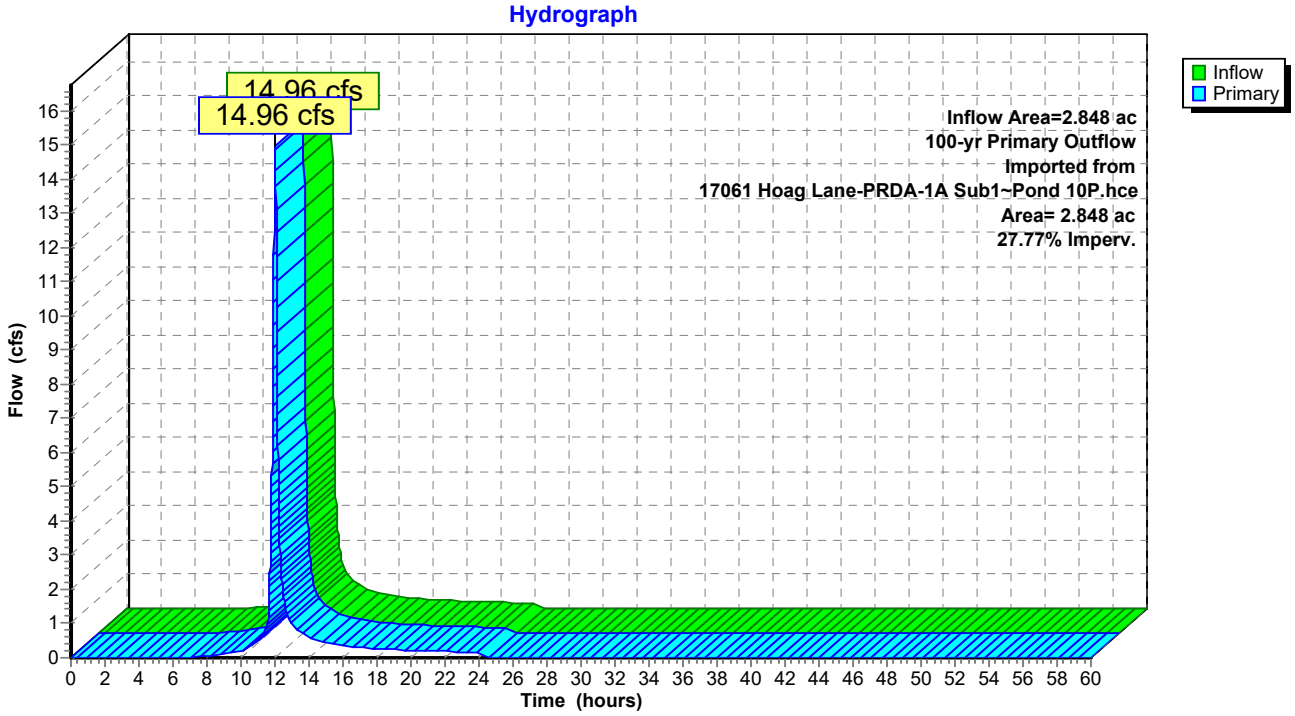
Summary for Link 51L: Sub1 CB #5

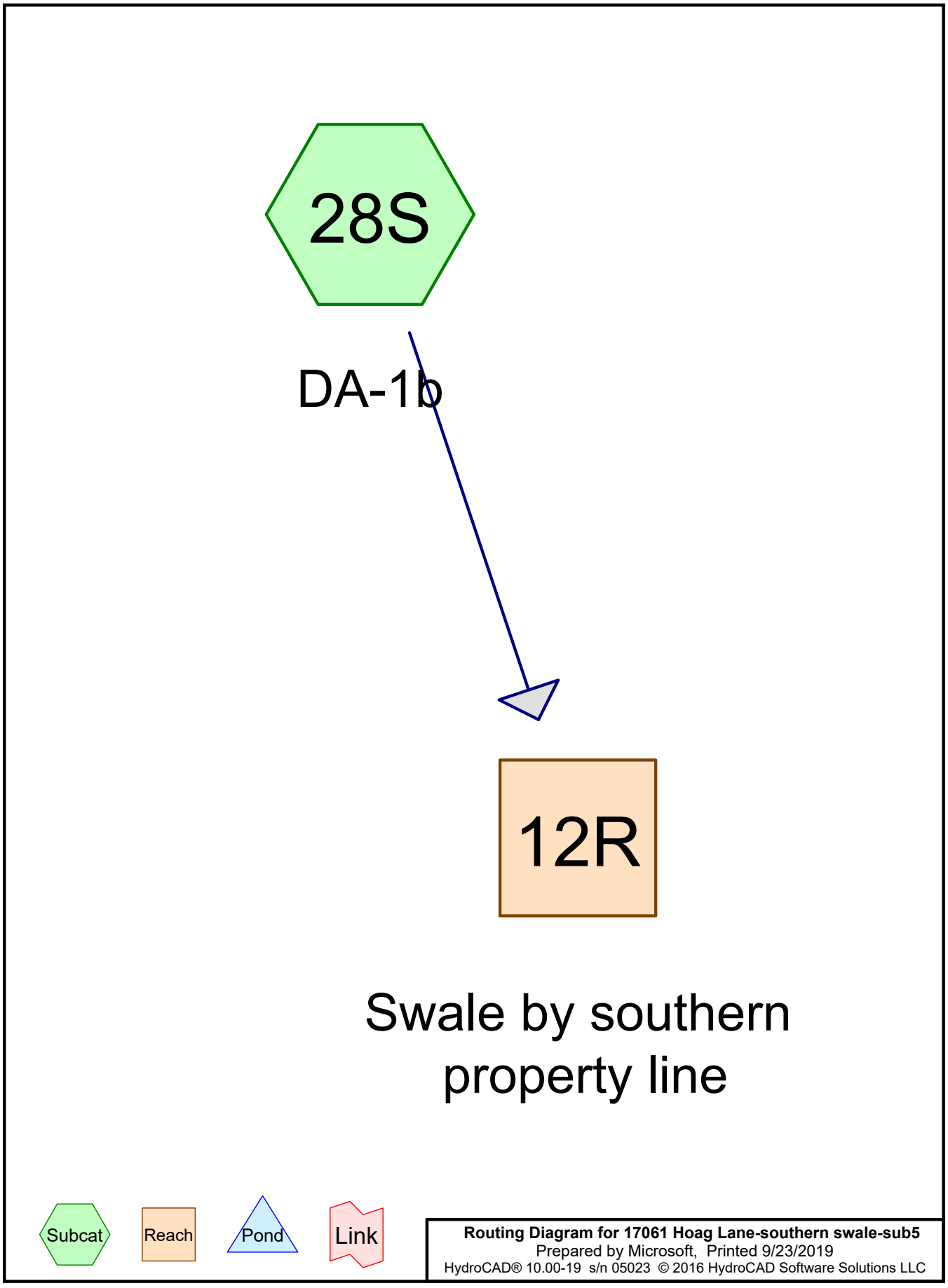
Inflow Area = 2.848 ac, 27.77% Impervious, Inflow Depth = 3.66" for 100-yr event
Inflow = 14.96 cfs @ 12.01 hrs, Volume= 0.869 af
Primary = 14.96 cfs @ 12.01 hrs, Volume= 0.869 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

100-yr Primary Outflow Imported from 17061 Hoag Lane-PRDA-1A Sub1~Pond 10P.hce

Link 51L: Sub1 CB #5





Routing Diagram for 17061 Hoag Lane-southern swale-sub5
Prepared by Microsoft, Printed 9/23/2019
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 28S: DA-1b

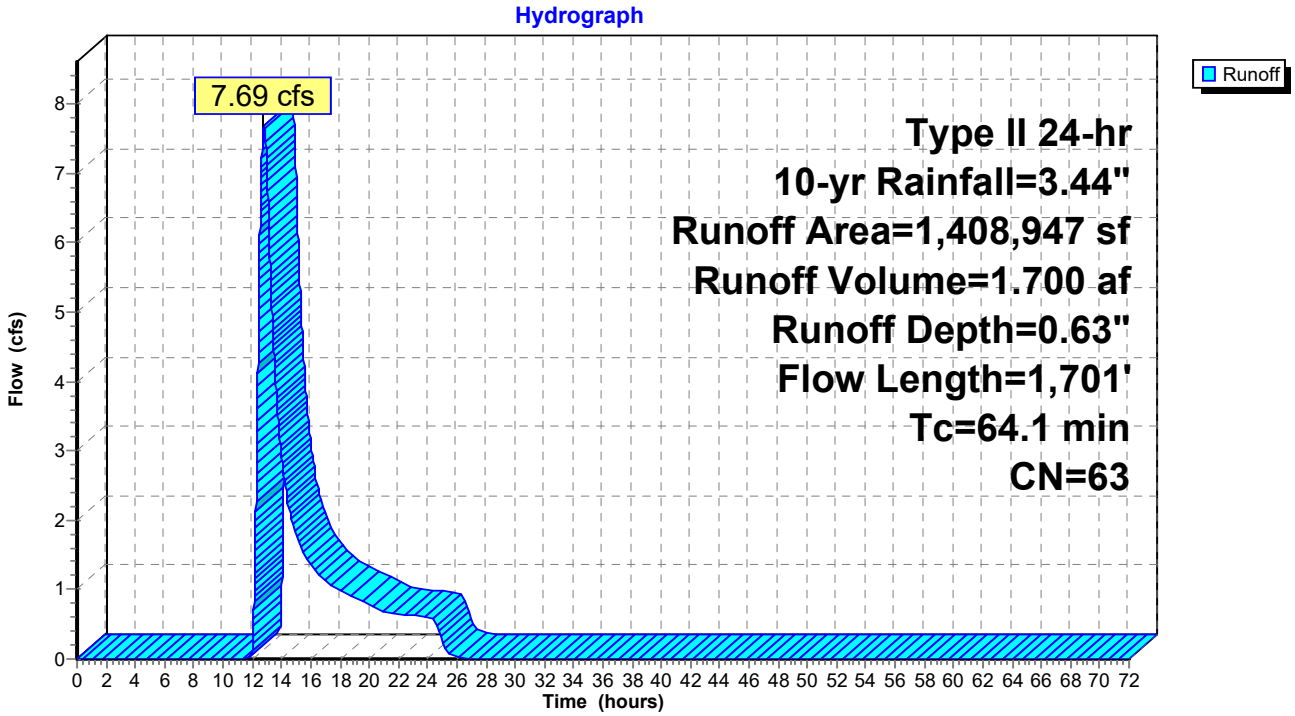
Runoff = 7.69 cfs @ 12.76 hrs, Volume= 1.700 af, Depth= 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.44"

Area (sf)	CN	Description
122,055	79	1 acre lots, 20% imp, HSG C
463,478	65	2 acre lots, 12% imp, HSG B
536,833	55	Woods, Good, HSG B
286,581	70	Woods, Good, HSG C
1,408,947	63	Weighted Average
1,328,919		94.32% Pervious Area
80,028		5.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Subcatchment 28S: DA-1b



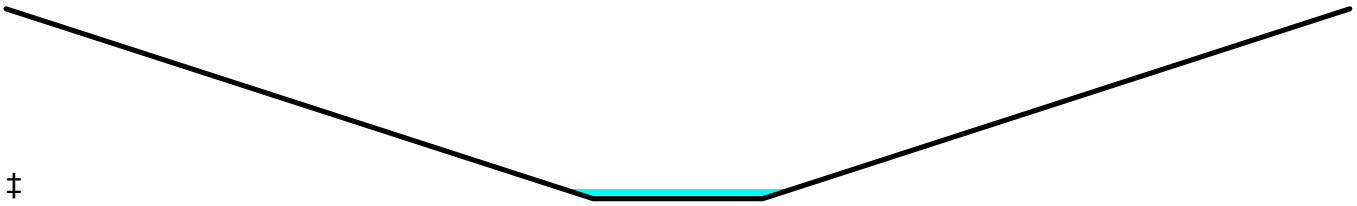
Summary for Reach 12R: Swale by southern property line

Inflow Area = 32.345 ac, 5.68% Impervious, Inflow Depth = 0.63" for 10-yr event
Inflow = 7.69 cfs @ 12.76 hrs, Volume= 1.700 af
Outflow = 7.68 cfs @ 12.87 hrs, Volume= 1.700 af, Atten= 0%, Lag= 6.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.31 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 5.2 min

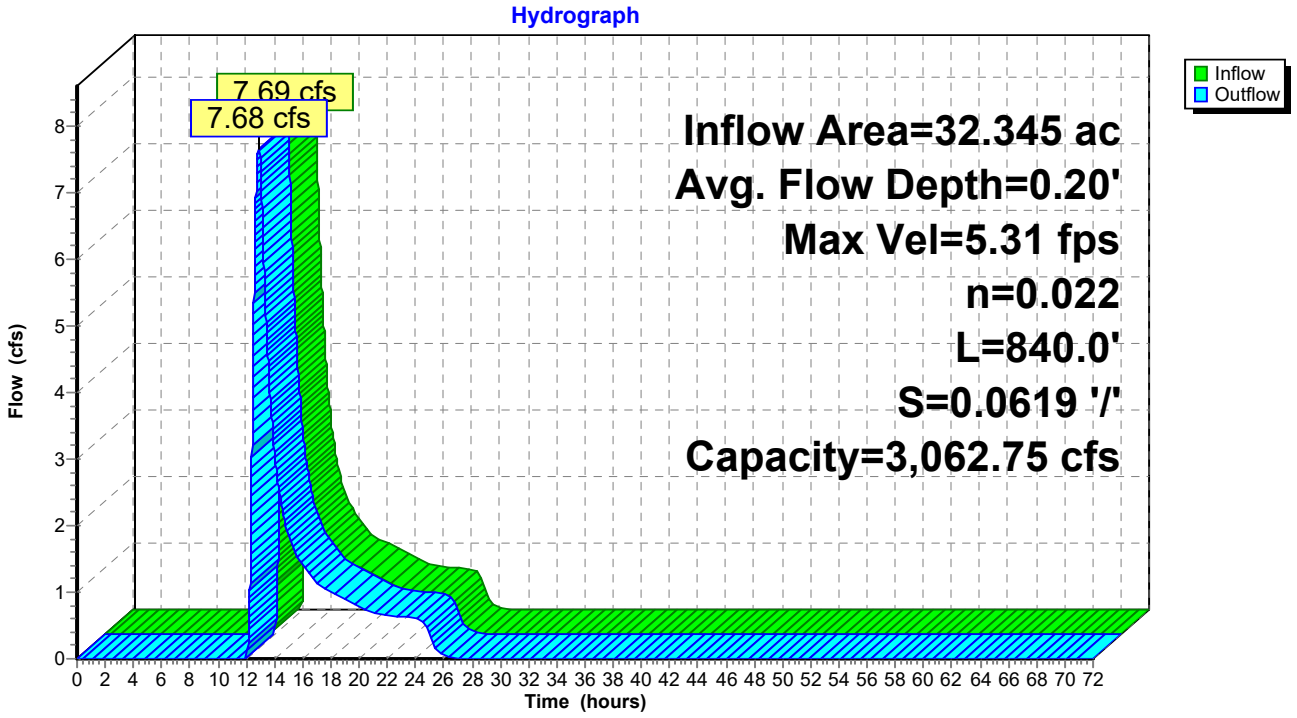
Peak Storage= 1,215 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 4.00' Flow Area= 107.2 sf, Capacity= 3,062.75 cfs

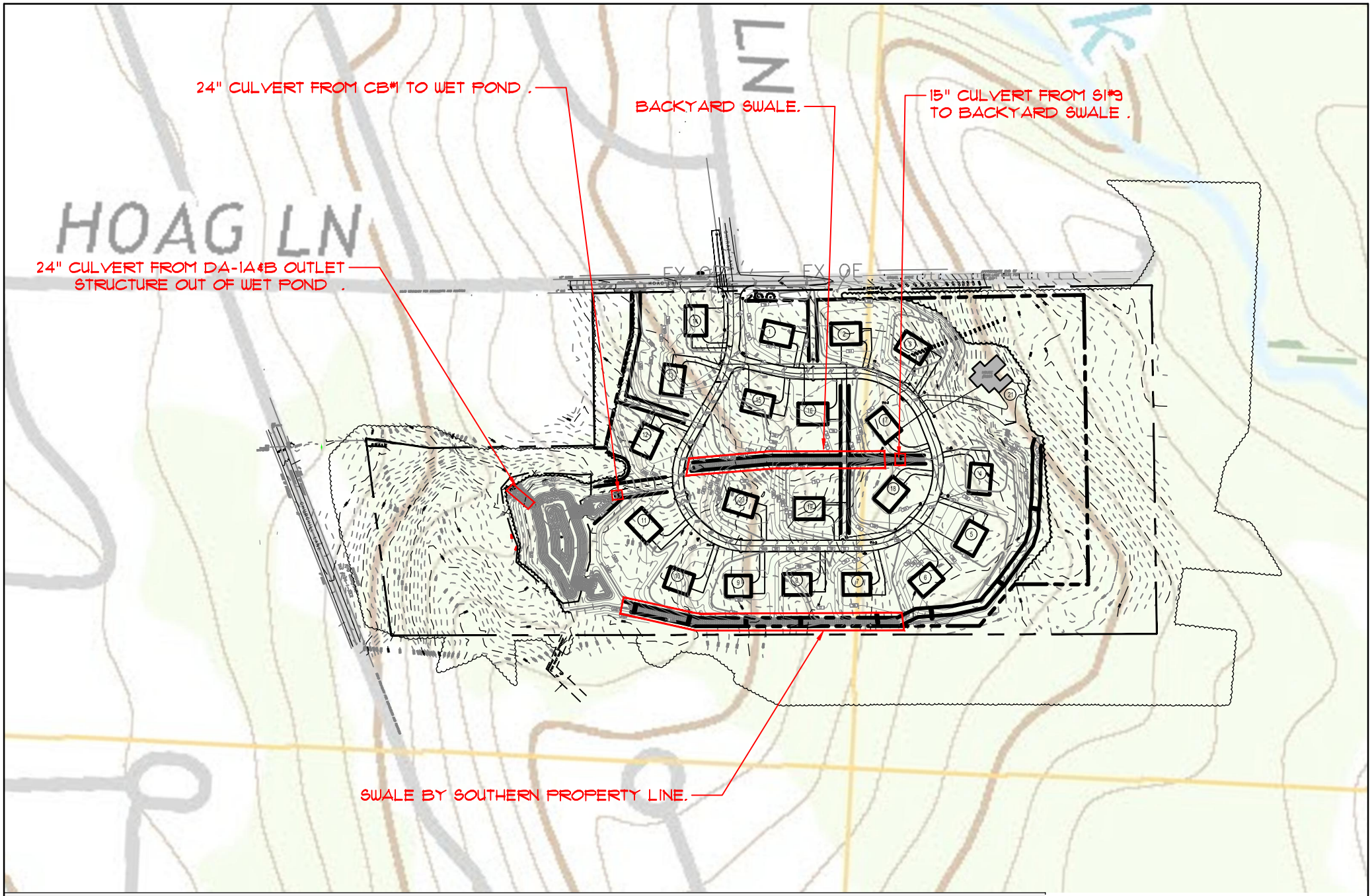
6.00' x 4.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.2 '/' Top Width= 47.60'
Length= 840.0' Slope= 0.0619 '/'
Inlet Invert= 728.00', Outlet Invert= 676.00'



‡

Reach 12R: Swale by southern property line





Hoag Lane Subdivision

Town of Manlius, Onondaga County, NY

Riprap Sizing

N

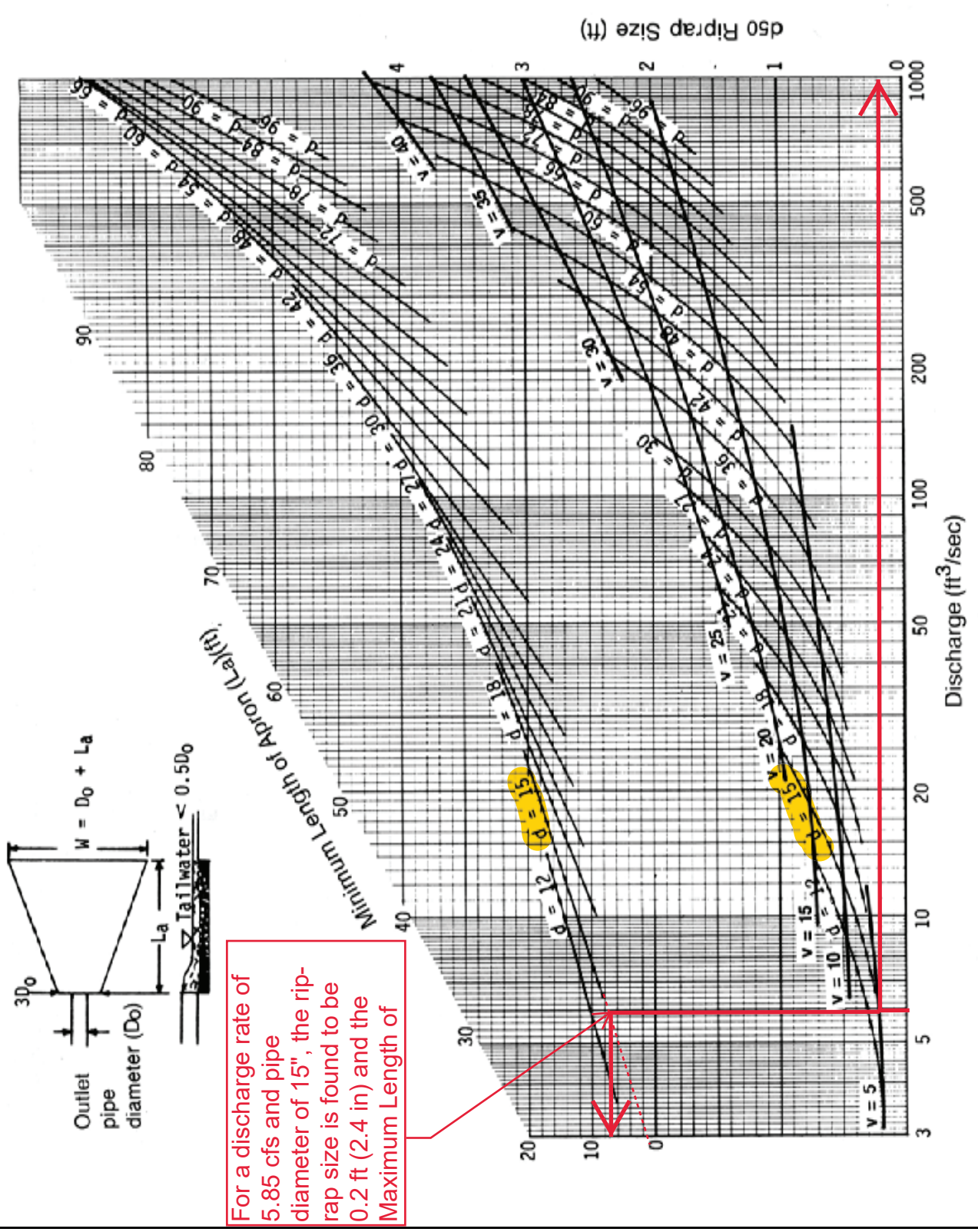
Appendix F- Riprap sizing

SCALE: 1:300

Updated: 06/01/18

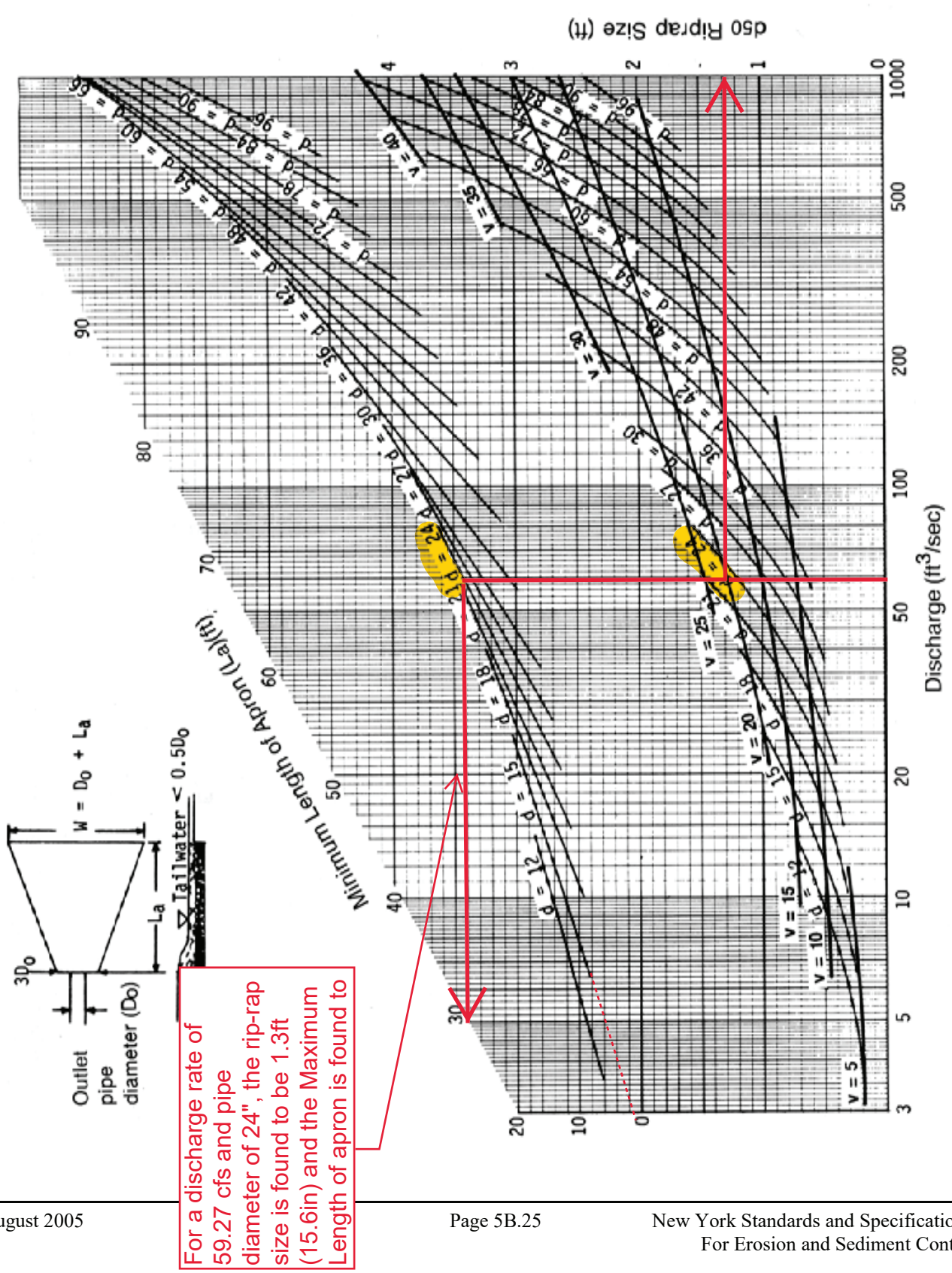
RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



15" Culvert from SI#9 to Backyard Swale

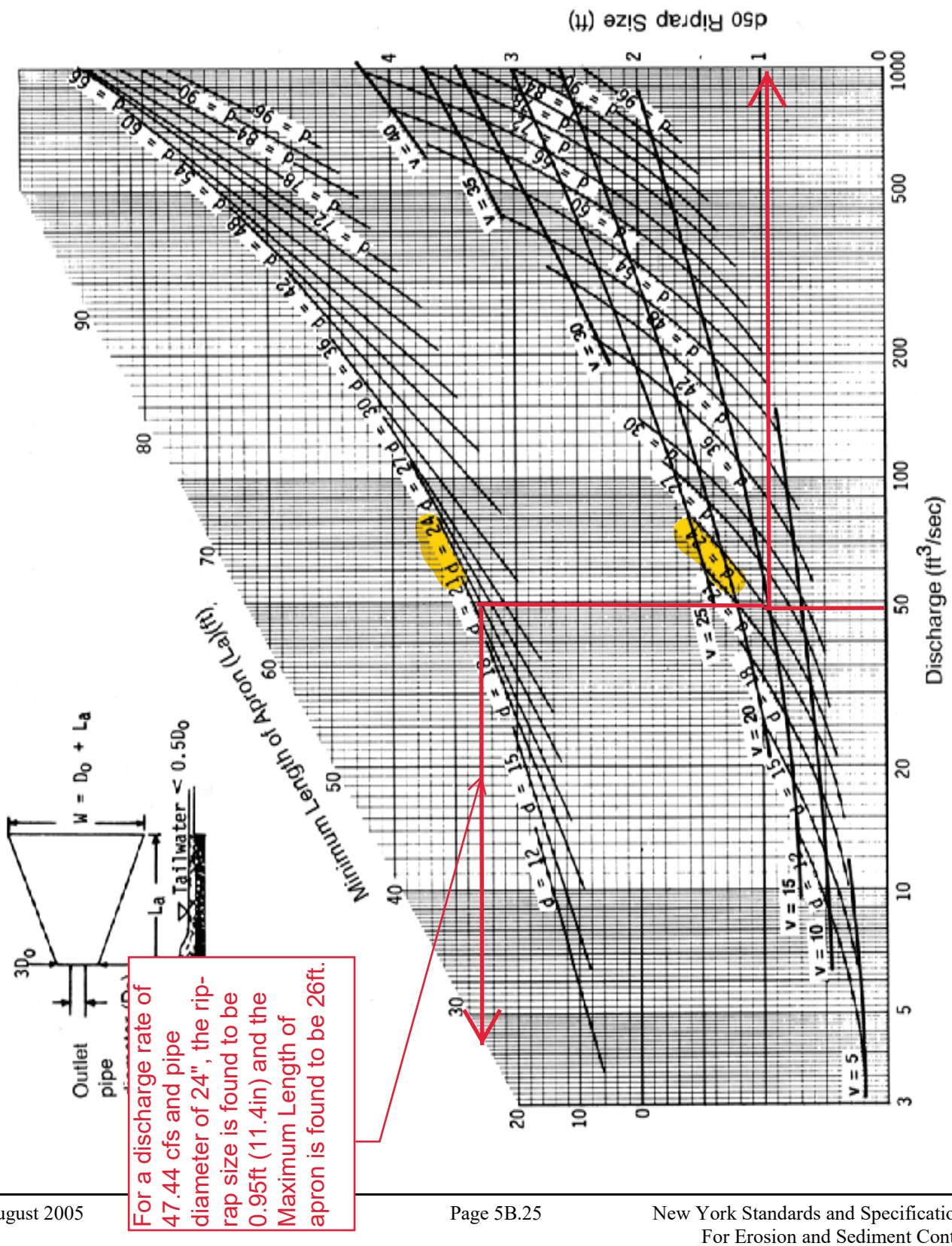
Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



24" Culvert from DA-1A&1B Outlet Structure out of Wet-pond

For a discharge rate of 59.27 cfs and pipe diameter of 24", the rip-rap size is found to be 1.3ft (15.6in) and the Maximum Length of apron is found to

Figure 5B.12
Outlet Protection Design—Minimum Tailwater Condition
(Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



24" Culvert from CB#1 to Wet-Pond

For a discharge rate of 47.44 cfs and pipe diameter of 24", the rip-rap size is found to be 0.95ft (11.4in) and the Maximum Length of apron is found to be 26ft.



Swale by southern property line

Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane-southern swale-sub5
Prepared by Microsoft, Printed 11/26/2019
HydroCAD® 10.00-20 s/n 05023 © 2017 HydroCAD Software Solutions LLC

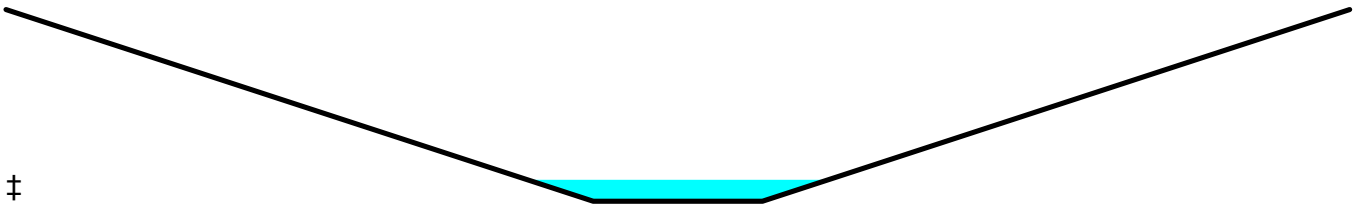
Summary for Reach 12R: Swale by southern property line

Inflow Area = 32.345 ac, 5.68% Impervious, Inflow Depth = 2.04" for 100-yr event
Inflow = 31.37 cfs @ 12.74 hrs, Volume= 5.493 af
Outflow = 31.33 cfs @ 12.78 hrs, Volume= 5.493 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 8.34 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 3.57 fps, Avg. Travel Time= 3.9 min

Peak Storage= 3,157 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.45'
Bank-Full Depth= 4.00' Flow Area= 107.2 sf, Capacity= 3,062.75 cfs

6.00' x 4.00' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 5.2 '/' Top Width= 47.60'
Length= 840.0' Slope= 0.0619 '/'
Inlet Invert= 728.00', Outlet Invert= 676.00'



‡

Reach 12R: Swale by southern property line

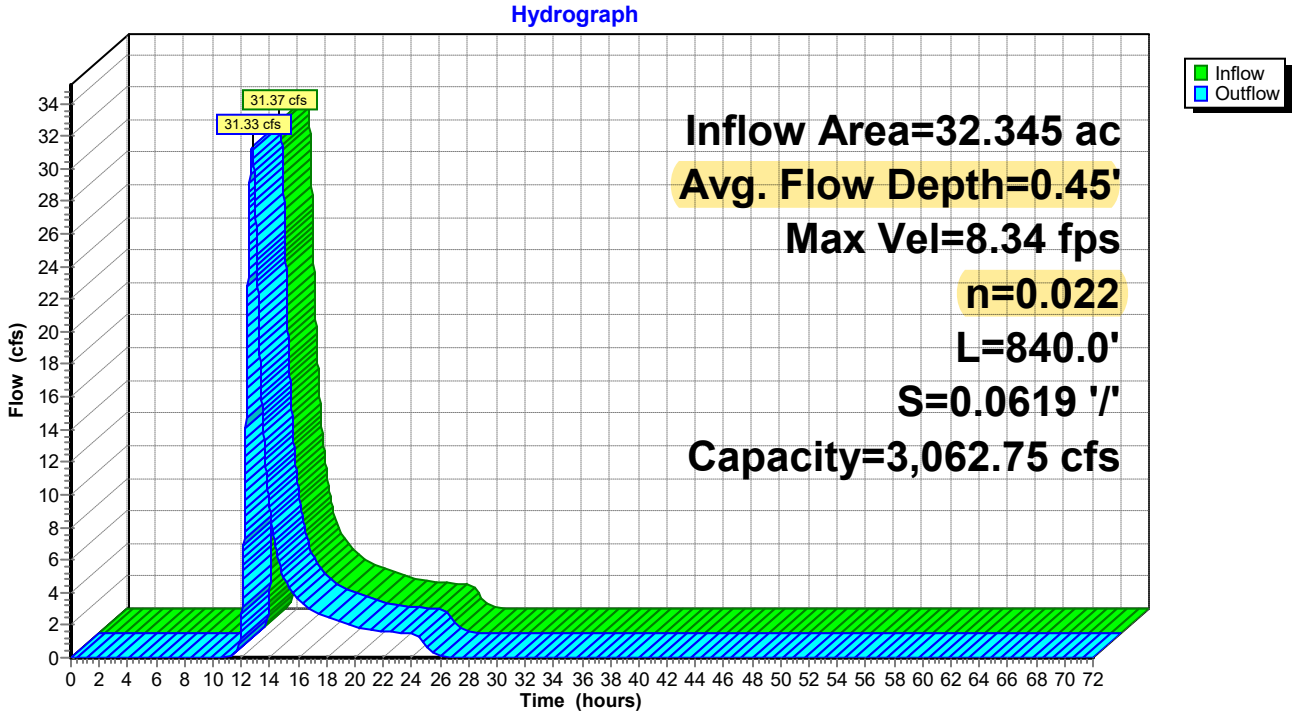
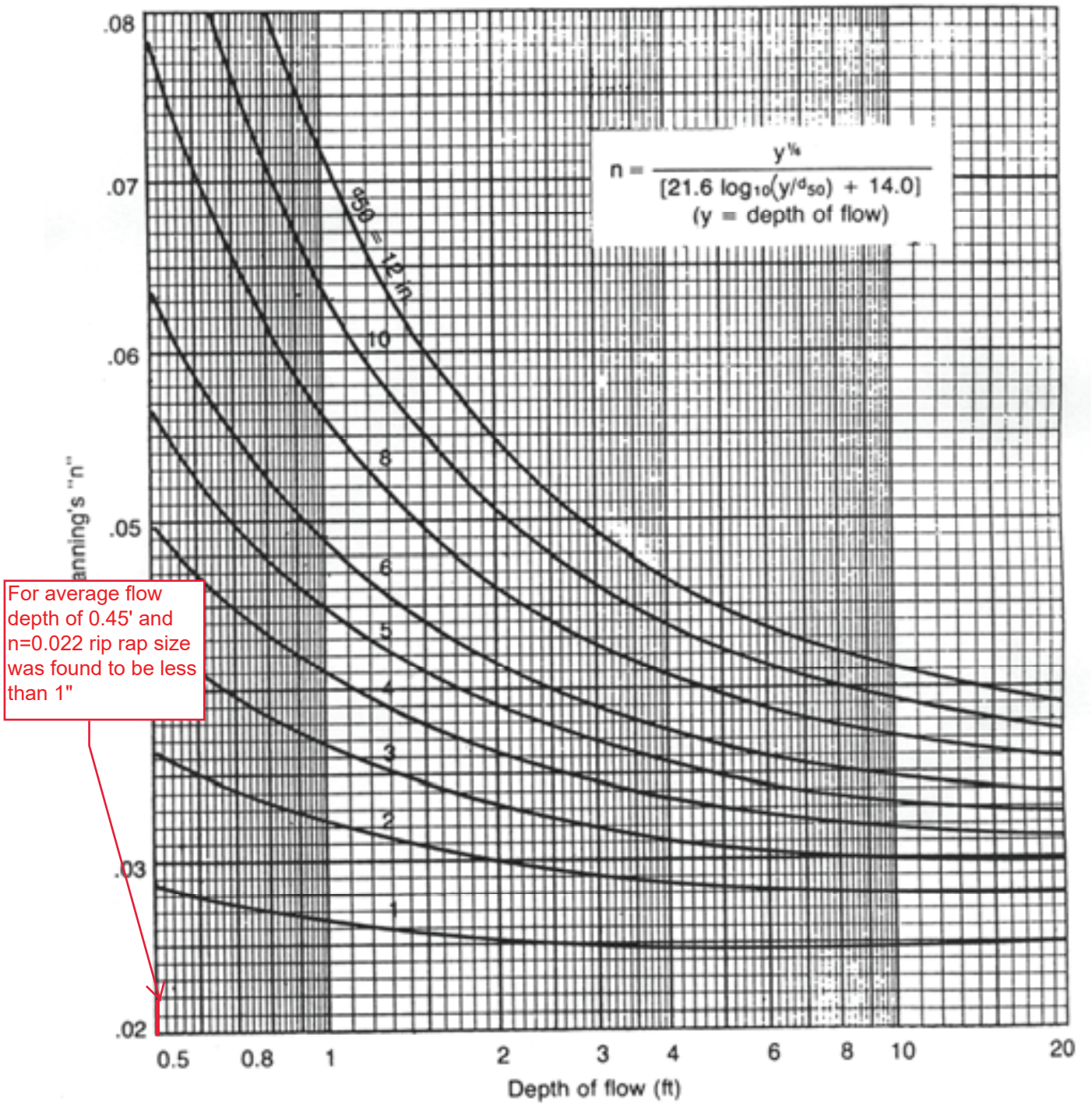
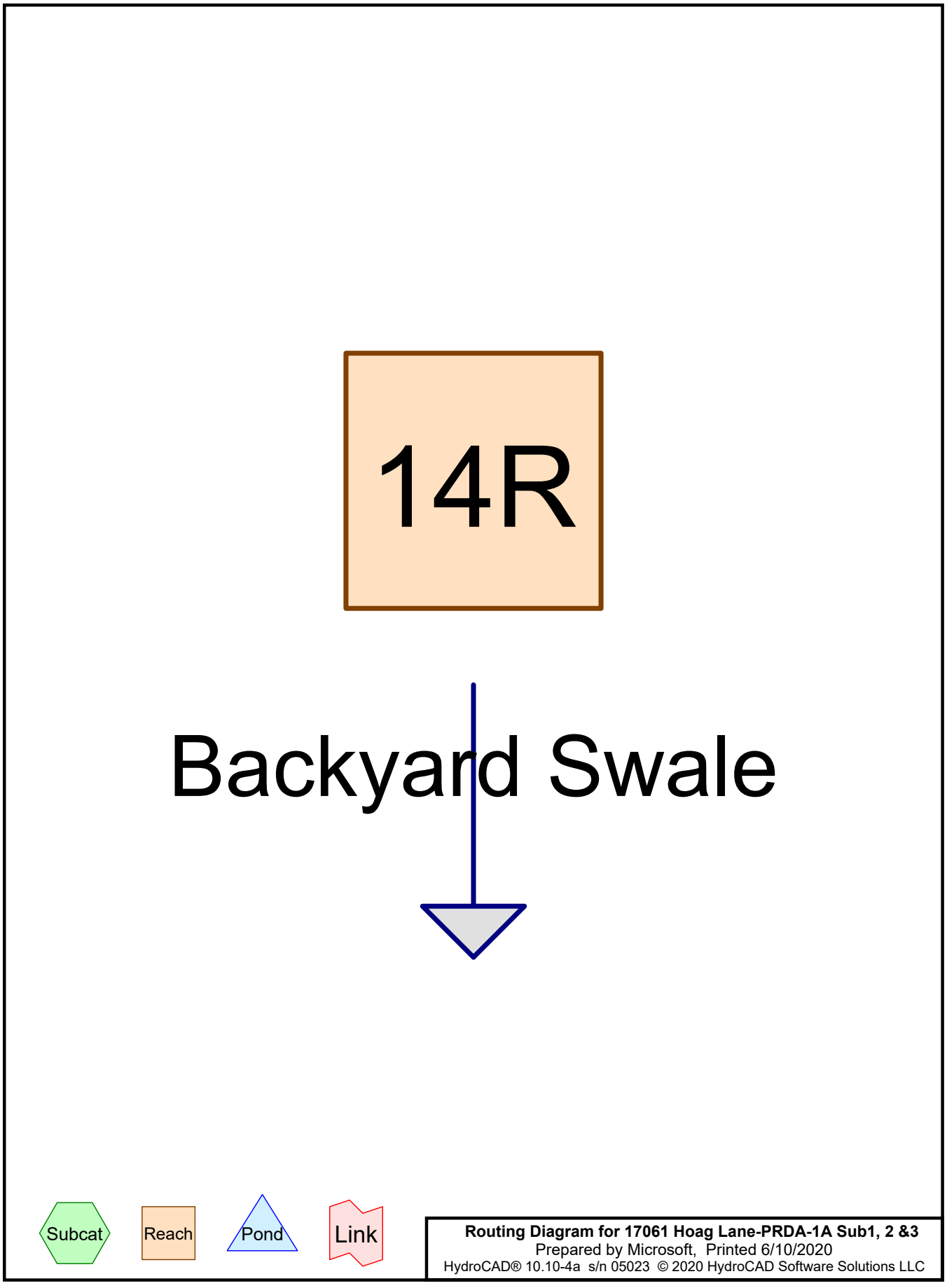


Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)





Routing Diagram for 17061 Hoag Lane-PRDA-1A Sub1, 2 &3
Prepared by Microsoft, Printed 6/10/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Reach 14R: Backyard Swale

Inflow Area = 5.337 ac, 6.67% Impervious, Inflow Depth = 2.86" for 100-yr event
Inflow = 14.96 cfs @ 12.02 hrs, Volume= 1.273 af
Outflow = 14.85 cfs @ 12.05 hrs, Volume= 1.273 af, Atten= 1%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.37 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 2.06 fps, Avg. Travel Time= 2.9 min

Peak Storage= 988 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.31' , Surface Width= 9.86'
Bank-Full Depth= 6.00' Flow Area= 156.0 sf, Capacity= 4,430.59 cfs

8.00' x 6.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 44.00'
Length= 357.0' Slope= 0.0644 '/'
Inlet Invert= 716.00', Outlet Invert= 693.00'



‡

Reach 14R: Backyard Swale

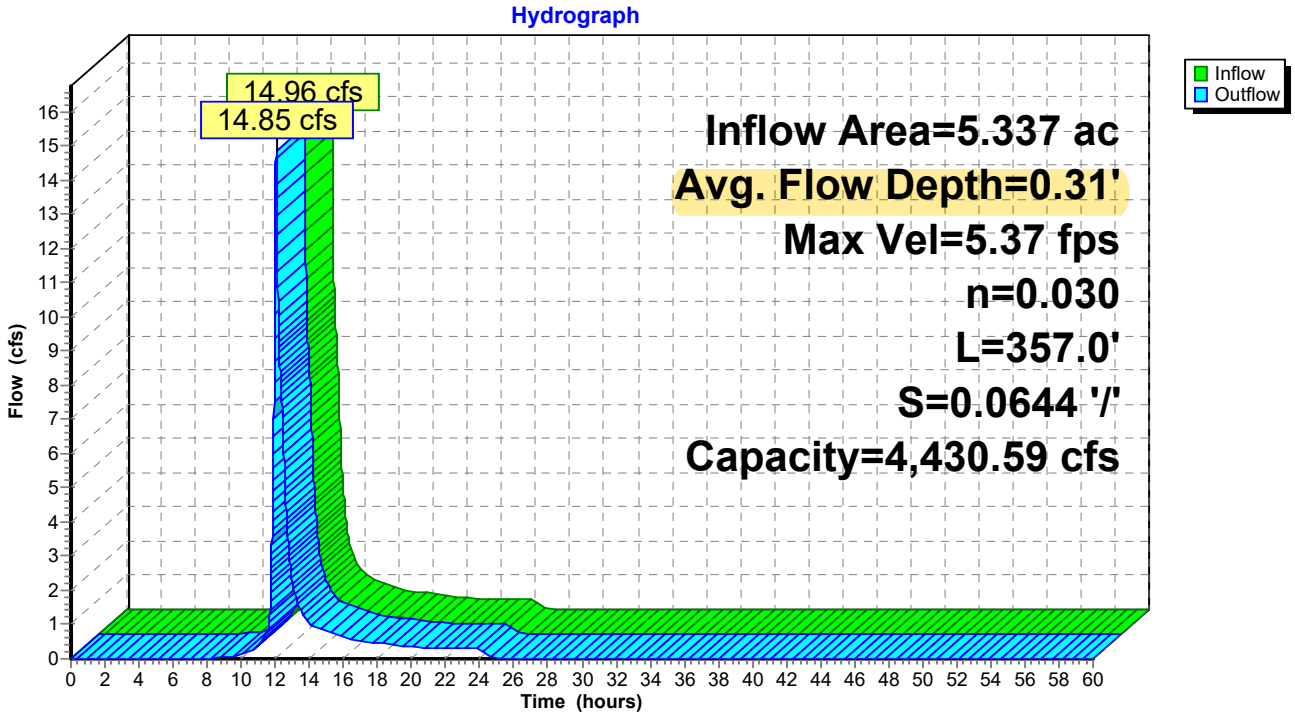
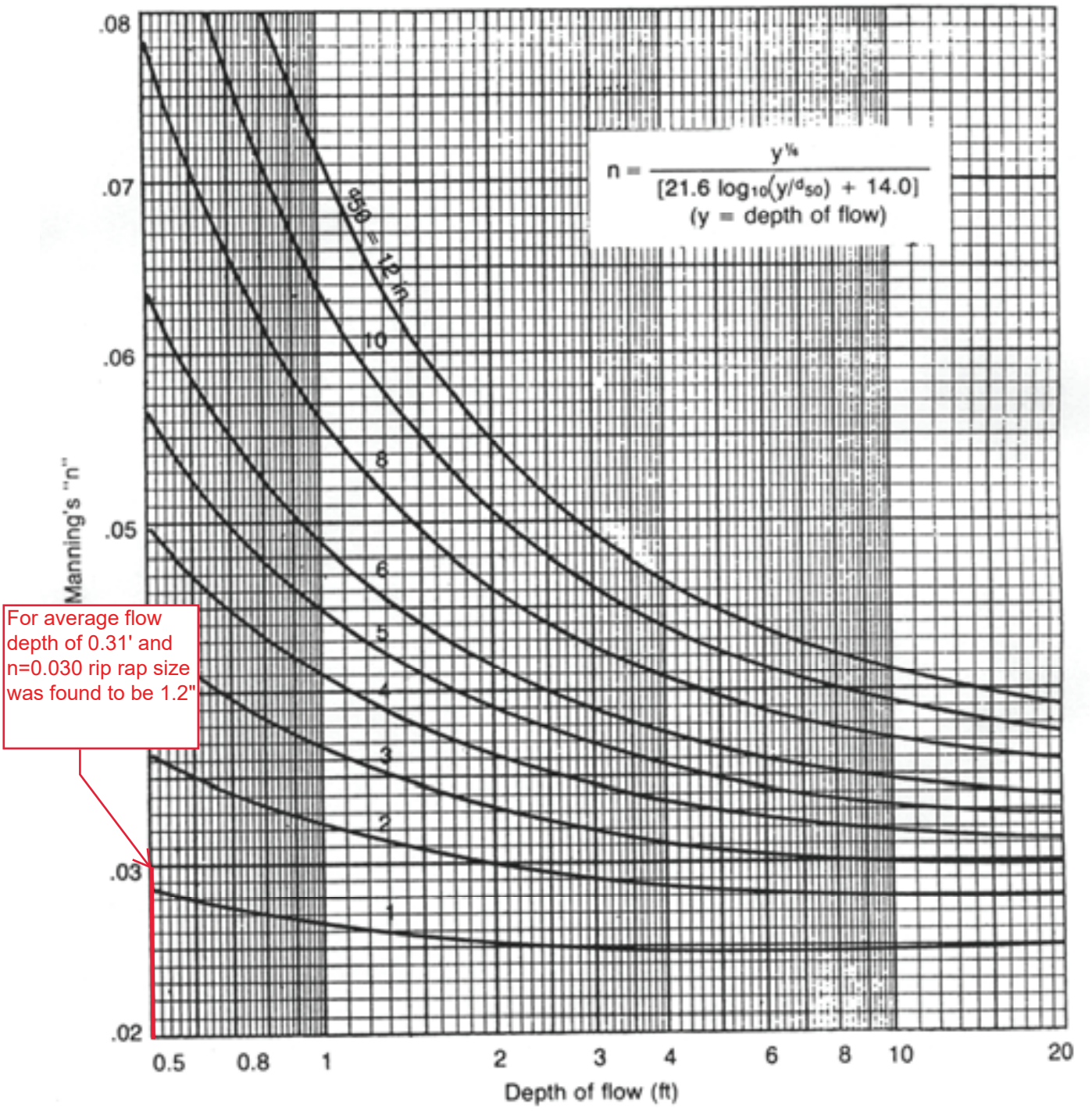


Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)



WATER & POLLUTION CONTROL FEDERATION

C-VALUES

storm, is common. The range of coefficients, classified with respect to the general character of the tributary area reported in use, is:

Description of Area	Runoff Coefficients
Business	
Downtown	0.70 to 0.95
Neighborhood	0.50 to 0.70
Residential	
Single-family	0.30 to 0.50
Multi-units, detached	0.40 to 0.60
Multi-units, attached	0.60 to 0.75
Residential (suburban)	0.25 to 0.40
Apartment	0.50 to 0.70
Industrial	
Light	0.50 to 0.80
Heavy	0.60 to 0.90
Parks, cemeteries	0.10 to 0.25
Playgrounds	0.20 to 0.35
Railroad yard	0.20 to 0.35
Unimproved	0.10 to 0.30

Downtown .95

Residential = 0.40

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

Character of Surface	Runoff Coefficients
Pavement	
Asphaltic and Concrete	0.70 to 0.95
Brick	0.70 to 0.85
Roofs	0.75 to 0.95
Lawns, sandy soil	
Flat, 2 percent	0.05 to 0.10
Average, 2 to 7 percent	0.10 to 0.15
Steep, 7 percent	0.15 to 0.20
Lawns, heavy soil	
Flat, 2 percent	0.13 to 0.17
Average, 2 to 7 percent	0.18 to 0.22
Steep, 7 percent	0.25 to 0.35

The coefficients in these two tabulations are applicable for storms of 5- to 10-yr frequencies. Less frequent, higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

(c) Coefficients Varying with Time.—Figure 11 shows the variation of the runoff coefficient with respect to length of time of prior wetting,

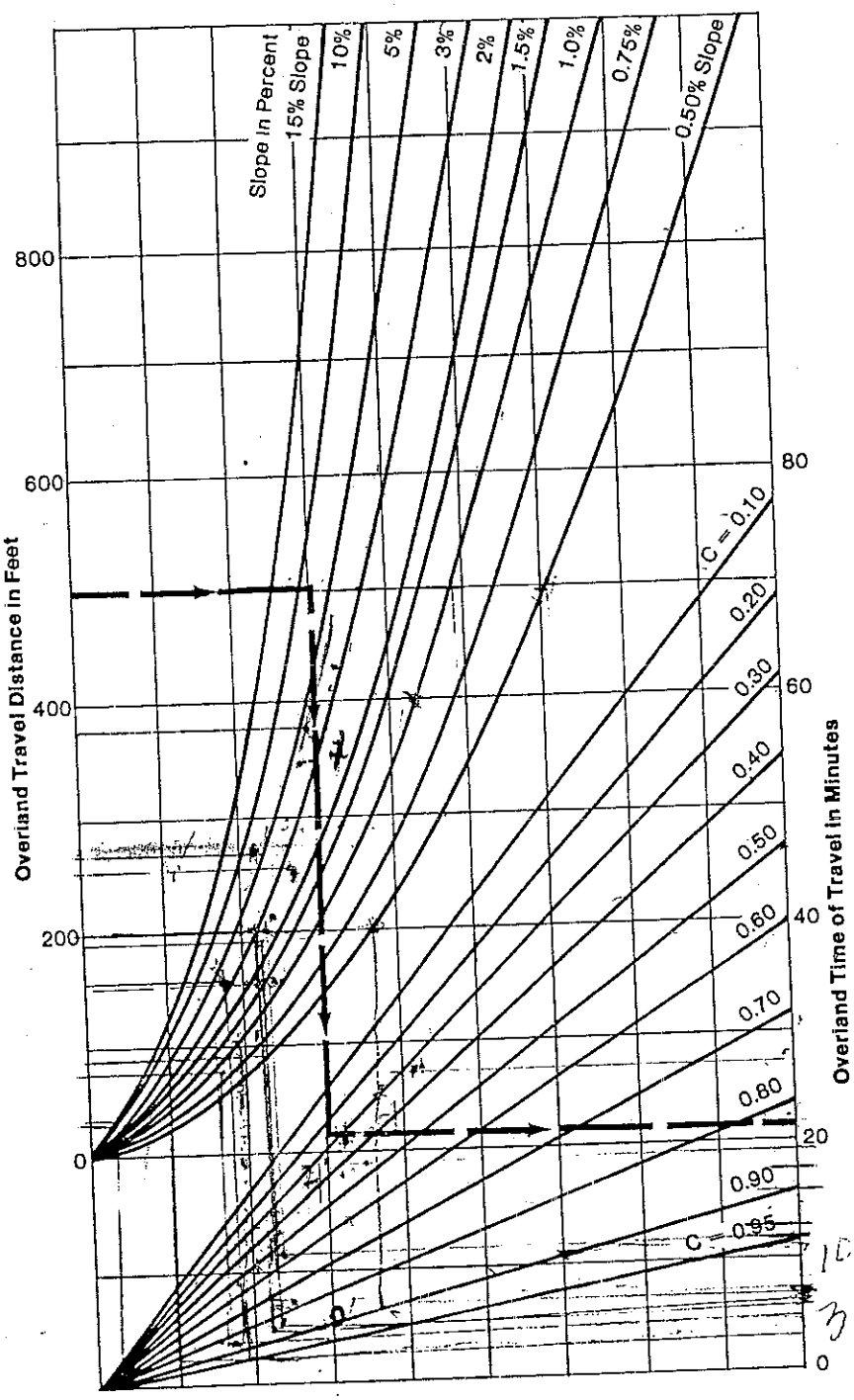
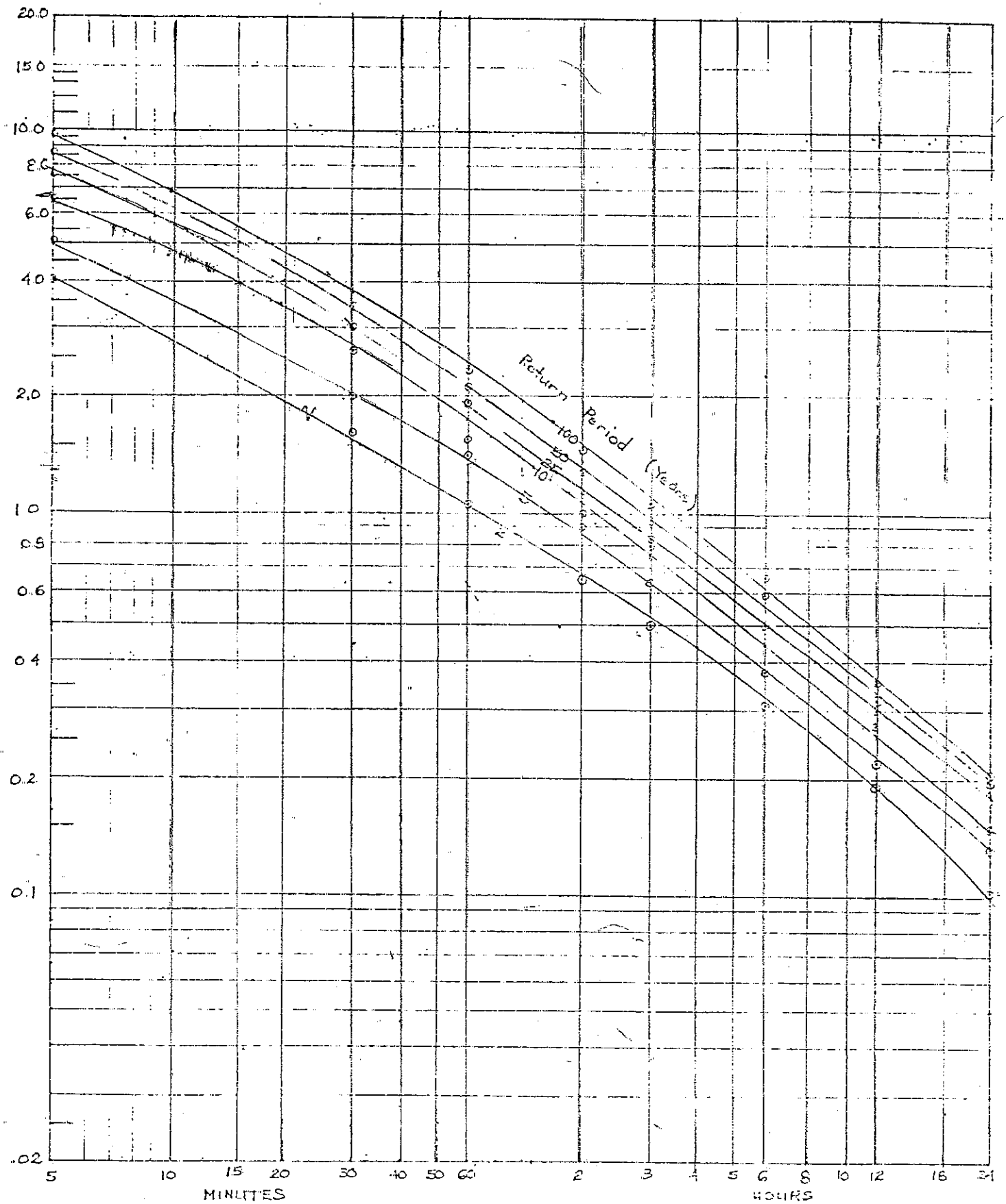


Figure 3-10 Overland time of flow graph

Syracuse, New York 1903-1970



APPENDIX G

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **5/13/2020**

100% New Impervious

Water Quality Calculations

Owner: Project No.: **17061**

Location: **Hoag Lane**

Drawings: **Grading and Site Plans** Estimated By: **HJM** **DA-1a**

WQv = (P)(Rv)(A)/12

P= 90% Rainfall Number - Figure 4.1 = **1.00**

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

100% New Impervious =	3.341	Acres
Total Site Area =	19.738	Acres
% Impervious=	0.169	

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(16.93 %)

Rv = **0.202**

A= Total Site Area = **19.738 Acres**

Therefore Water Quality Volume WQv =

WQv = [(P)(Rv)(A)]/12

= **0.333 acre feet**

or

= **14497.49 cubic feet**

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **5/13/2020**

100% New Impervious

Water Quality Calculations

Owner: Project No.: **17061**

Location: **Hoag Lane**

Drawings: **Grading and Site Plans** Estimated By: **MJB** **PRDA-1b**

WQv = (P)(Rv)(A)/12

P= 90% Rainfall Number - Figure 4.1 = **1.00**

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

100% New Impervious =	3.191	Acres
Total Site Area =	38.304	Acres
% Impervious=	0.083	

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(8.33 %)

Rv = **0.125**

A= Total Site Area = **38.304 Acres**

Therefore Water Quality Volume WQv =

WQv = [(P)(Rv)(A)]/12

= **0.399 acre feet**

or

= **17377.17 cubic feet**

Total WQv = DA-1a + DA-1b =

0.732 acre feet

or

31874.67 cubic feet

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: **Hoag Lane Subdivision** Date: **11/6/2019**

Channel Protection Volume

Owner: Project No.: **17061**

Location: **Hoag Lane, Manlius, NY**

Drawings: **Grading and Site Plans** Estimated By: **HJM** **DA for CPv**

Calculate Unit Peak Discharge (qu) using TR-55 & Type II Rainfall Distribution

Curve Number (CN) from Hyrdocadd analysis	69
Initial Abstraction (Ia)	0.90
Rainfall (P) - 1 year storm	2.05
Ia/P	0.44
Tc from Hydrocadd analysis in hrs	1.35
Unit Peak Discharge (qu) from TR-55 Exhibit 4-II	190.00
Ratio of Outflow to Inflow (qo/qi) from qu and Figure 8.5)	0.090

Calculate Channel Protection Volume per Appendix B

$$V_s/V_r = 0.682 - 1.43*(q_o/qi) + 1.64*(qo/qi)^2 - 0.804*(qo/qi)^3$$

V_r = runoff volume 1 year post development(acre-feet) 1.136 acre-feet

V_s/V_r= 0.565998 (no units)

Therefore V_s = 0.642974 acre-feet

Cpv = **0.643 acre feet**

or

= **28007.93 cubic feet**

Calculate Runoff Rate for 24 hr. detention time

Channel Protection Volume =	0.643 acre feet
Time to release Vs =	24 hours
Projected release rate =	**0.32 cfs**



191106 DA pond inflow for CPv

Subcat Reach Pond Link

Routing Diagram for 17061 Hoag Lane
Prepared by Microsoft, Printed 5/13/2020
HydroCAD® 10.00-19 s/n 05023 © 2016 HydroCAD Software Solutions LLC

Summary for Subcatchment 15S: 191106 DA pond inflow for CPv

Runoff = 3.99 cfs @ 12.89 hrs, Volume= 1.136 af, Depth= 0.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.05"

	Area (ac)	CN	Description
	1.883	68	1 acre lots, 20% imp, HSG B
	2.802	79	1 acre lots, 20% imp, HSG C
	8.616	65	2 acre lots, 12% imp, HSG B
	16.408	55	Woods, Good, HSG B
	8.821	70	Woods, Good, HSG C
	15.116	74	>75% Grass cover, Good, HSG C
*	4.096	98	Proposed Site Impervious
*	0.300	98	Permanent Pool of Wet Pond
	58.042	69	Weighted Average
	51.675		89.03% Pervious Area
	6.367		10.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Subcatchment 15S: 191106 DA pond inflow for CPv

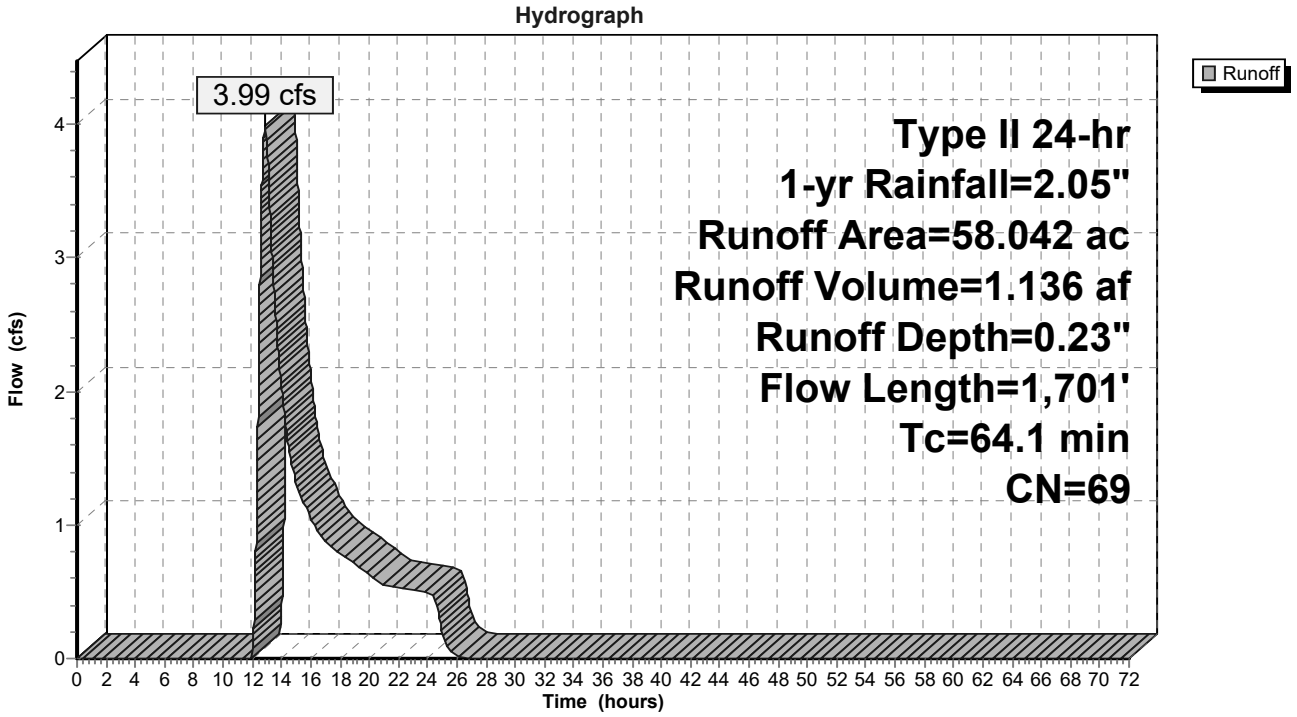
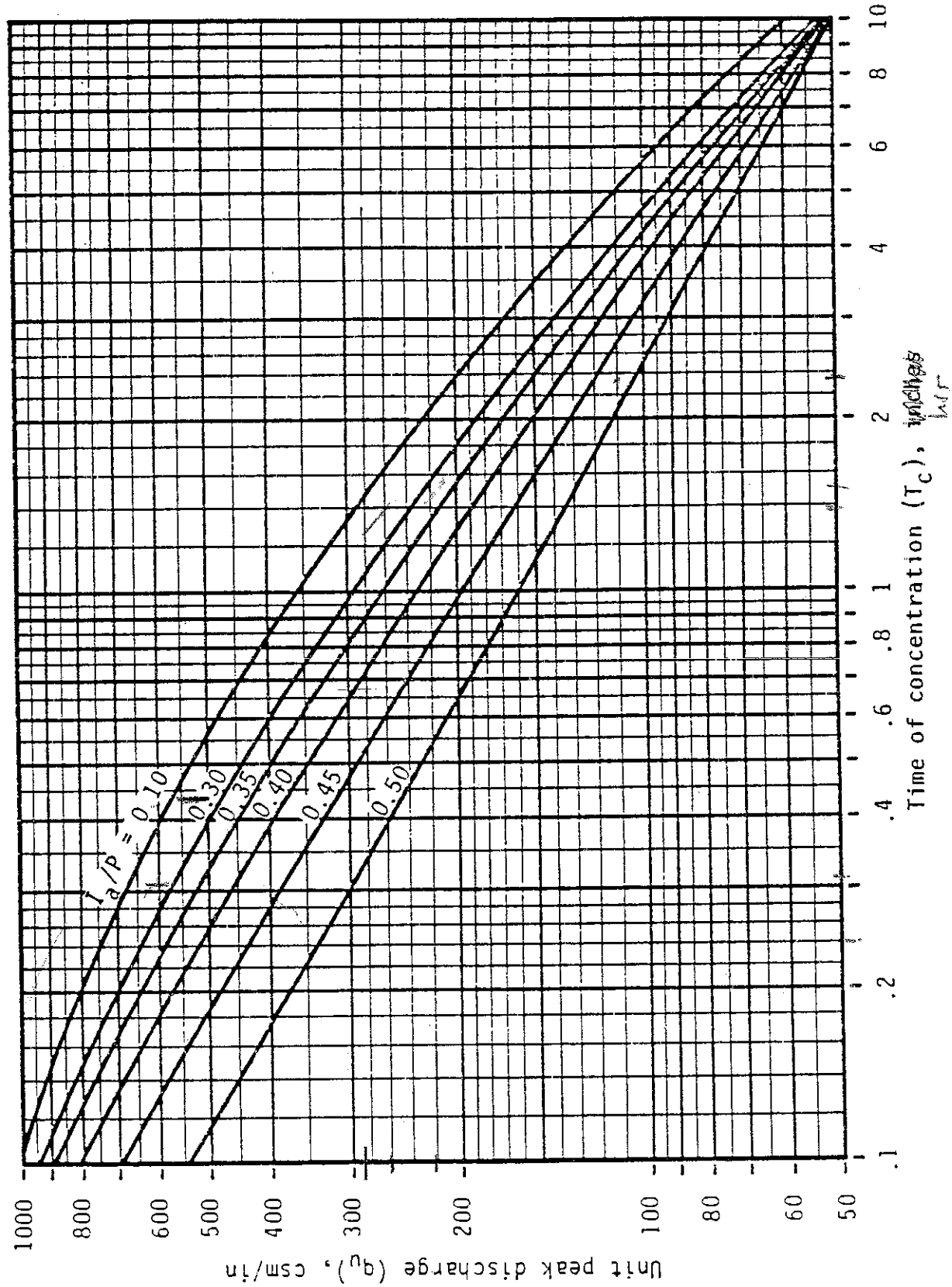


Exhibit 4-II: Unit peak discharge (q_u) for SCS type II rainfall distribution



Compute Stream Channel Protection Volume, (Cp_v) (see Section 4.3 and Appendix B)

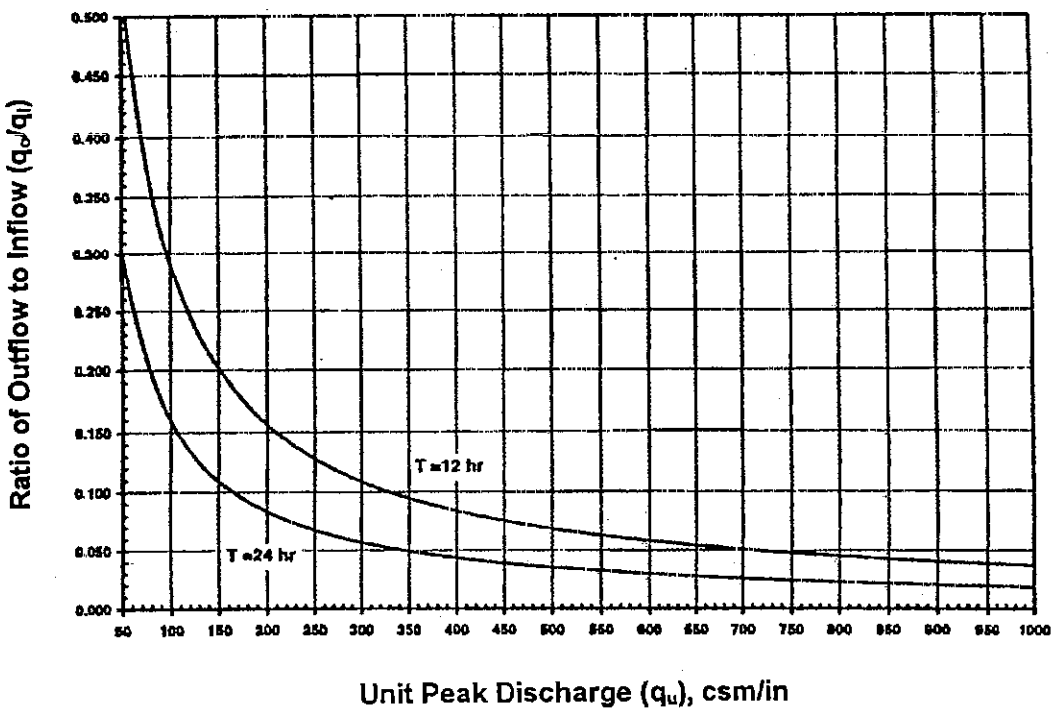
For stream channel protection, provide 24 hours of extended detention (T) for the one-year event.

Compute Channel Protection Storage Volume

First, determine the value of the unit peak discharge (q_u) using TR-55 and Type II Rainfall Distribution

- Initial abstraction (Ia) for CN of 78 is 0.564: [Ia = (200/CN - 2)]
- Ia/P = (0.564)/ 2.3 inches = 0.245
- T_c = 0.35 hours
- Using the above data and Exhibit 4-II from TR-55 (NRCS, 1986), q_u = 570 csm/in (cubic feet per second per square mile per year)

Figure 8.5 Detention Time vs. Discharge Ratios (Source: MDE, 2000)



APPENDIX H

0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____
(for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

-IMPORTANT-

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR **MUST SIGN FORM**

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)
Hoag Road Properties LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Allen

Owner/Operator Contact Person First Name
Thomas

Owner/Operator Mailing Address
201 Solar Street

City
Syracuse

State
NY

Zip
13204 - ____

Phone (Owner/Operator)
___ - ___ - ____

Fax (Owner/Operator)
___ - ___ - ____

Email (Owner/Operator)
thomasallenhomes@yahoo.com

FED TAX ID
__ - _____ (not required for individuals)

Project Site Information

Project/Site Name
Hoag Lane Subdivision

Street Address (NOT P.O. BOX)
5290-5320 Hoag Lane

Side of Street
○ **North** ● **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Manlius

State: NY
Zip: 13066-
County: Onondaga
DEC Region: 7

Name of Nearest Cross Street
Churchill Lane

Distance to Nearest Cross Street (Feet)
1400

Project In Relation to Cross Street
○ **North** ○ **South** ● **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
104.-01-39.2

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 4 1 9 8 7 8
Ex. -73.749

Y Coordinates (Northing)
4 7 6 3 2 1 2
Ex. 42.652

2. What is the nature of this construction project?

● **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ● SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ● SINGLE FAMILY SUBDIVISION — Number of Lots: 24
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY (water, sewer, gas, etc.)
- ○ PARKING LOT
- ○ CLEARING/GRADING ONLY
- ○ DEMOLITION, NO REDEVELOPMENT
- ○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
- ○ OTHER

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
30.4	23.2	0.3	3.9

5. Do you plan to disturb more than 5 acres of soil at any one time? ● **Yes** ○ **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	54 %	46 %

7. Is this a phased project? ● **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date / / – **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Limestone Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ● Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

.

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ● **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

Town of Manlius

17. Does any runoff from the site enter a sewer classified as a Combined Sewer? ○ **Yes** ● **No** ○ **Unknown**

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law? ○ **Yes** ● **No**

19. Is this property owned by a state authority, state agency, federal government or local government? ○ **Yes** ● **No**

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.) ○ **Yes** ● **No**

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? ● **Yes** ○ **No**

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? ● **Yes** ○ **No**
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? ● **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
RZ Engineering, PLLC

Contact Name (Last, Space, First)
Zona Rudy

Mailing Address
6320 Fly Road Suite 109

City
East Syracuse

State NY Zip 13057-

Phone 315-432-1089

Fax

Email
rzona@rzengineering.com

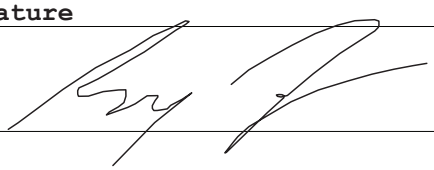
SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name Rudy **MI** L

Last Name Zona

Signature



Date 06/15/2020

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ● Check Dams
- ● Construction Road Stabilization
- ● Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ● Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ● Grassed Waterway
- ● Mulching
- ● Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ● Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ● Diversion
- ○ Grade Stabilization Structure
- ● Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ● Retaining Wall
- ○ Riprap Slope Protection
- ● Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ● **Preservation of Undisturbed Areas**
- ● **Preservation of Buffers**
- ● **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ● All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

		0	.	7	3	2

acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)	
RR Techniques (Area Reduction)				
● Conservation of Natural Areas (RR-1)	6.54	and/or		
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or		
● Tree Planting/Tree Pit (RR-3)	0.096	and/or	0.096	
● Disconnection of Rooftop Runoff (RR-4)		and/or	1.61	
RR Techniques (Volume Reduction)				
○ Vegetated Swale (RR-5)				
○ Rain Garden (RR-6)				
○ Stormwater Planter (RR-7)				
○ Rain Barrel/Cistern (RR-8)				
○ Porous Pavement (RR-9)				
○ Green Roof (RR-10)				
Standard SMPs with RRv Capacity				
○ Infiltration Trench (I-1)				
○ Infiltration Basin (I-2)				
○ Dry Well (I-3)				
○ Underground Infiltration System (I-4)				
○ Bioretention (F-5)				
○ Dry Swale (O-1)				
Standard SMPs				
○ Micropool Extended Detention (P-1)				
● Wet Pond (P-2)			4.83	
○ Wet Extended Detention (P-3)				
○ Multiple Pond System (P-4)				
○ Pocket Pond (P-5)				
○ Surface Sand Filter (F-1)				
○ Underground Sand Filter (F-2)				
○ Perimeter Sand Filter (F-3)				
○ Organic Filter (F-4)				
○ Shallow Wetland (W-1)				
○ Extended Detention Wetland (W-2)				
○ Pond/Wetland System (W-3)				
○ Pocket Wetland (W-4)				
○ Wet Swale (O-2)				

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area(acres)
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.156 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.155 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

0.927 **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

1.083

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ● **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

CPv Required

0.643 **acre-feet**

CPv Provided

0.927 **acre-feet**

36a. The need to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a fifth order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development

33.84 **CFS**

Post-development

26.58 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

97.89 **CFS**

Post-development

78.22 **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

Homeowner's Association

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required(#28). (See question 32a) This space can also be used for other pertinent project information.

The wet pond was designed to accommodate runoff and treatment from the entire contributing watershed.

Groundwater tables at the depths of the proposed wet pond elevations prohibited the use of onsite infiltration techniques.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N][Y][R][ ][ ][ ][ ][ ][ ]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ][ ][ ][ ][ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N][Y][R][ ][ ][ ][ ][ ][ ]

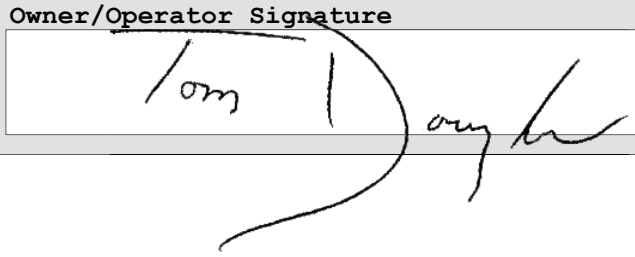
Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name: Tom

MI: A

Print Last Name: Douglas

Owner/Operator Signature: 

Date: 06/15/2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

SWPPP Preparer Certification Form

SPDES General Permit for Stormwater Discharges From Construction Activity (GP-0-20-001)

Project Site Information

Project/Site Name

Hoag Lane Subdivision

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Hoag Road Properties LLC

Certification Statement – SWPPP Preparer

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Rudy	L	Zona
First name	MI	Last Name

Signature

6/12/2020

Date

Revised: January 2020

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Hoag Road Properties LLC
2. Contact Person:	Thomas Allen
3. Street Address:	201 Solar Street
4. City/State/Zip:	Syracuse, NY 13204
II. Project Site Information	
5. Project/Site Name:	Hoag Lane Subdivision
6. Street Address:	5290-5320 Hoag Lane
7. City/State/Zip:	Manlius, NY 13066
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

SITE PLAN/SKETCH

_____ _____

Inspector (print name) **Date of Inspection**

_____ _____

Qualified Professional (print name) **Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location: Municipality: County:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] _____

_____

_____

_____

_____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge_____

_____

_____

_____

_____

Describe any other water quality standards or permit violations _____

_____

_____

Additional Comments:_____

_____

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☐ Photographs attached

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. ☐ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
***Date final stabilization completed** (month/year): _____

9b. ☐ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. ☐ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? ☐ yes ☐ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? ☐ yes ☐ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? ☐ yes ☐ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

☐ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

☐ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

☐ For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

☐ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? ☐ yes ☐ no
(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2010)

APPENDIX I

Erosion and Sedimentation Control Measures Maintenance Schedule

1. Temporary Construction Entrance: During Construction inspect periodically. Maintain entrance in a manner that will prevent tracking of sediment into public right of ways. Remove built up sediment deposits; and clean, repair, or replace temporary construction entrance as required.
2. Temporary Sediment Trap: During construction inspect weekly. Clean and restore traps to their original size when sediment has accumulated to one-half of the basin depth. Remove temporary sediment traps and stabilize areas when their contributory drainage area is stabilized.
3. Temporary Silt Fence: During construction inspect weekly. Remove built up sediment deposits; and clean, repair, or replace silt fence as required. Remove temporary silt fence when contributory drainage areas are stabilized.
4. Grass-Lined Drainage Channels: During construction inspect weekly to insure their stability and to locate points of scour, rodent-holes, breaches, and deposition of sediment or other obstructions. Clean, repair, and re-seed drainage channels as required. After construction inspect semi-annually and after every heavy rainfall.
5. Culvert: During construction inspect weekly to insure structural integrity, detect vandalism and damage, and for cleaning. Clean, repair, or replace culvert as required. After construction inspect semi-annually and after every heavy rainfall.
6. Stone Erosion Protection Aprons: During construction inspect weekly to insure structural integrity and to verify that stone is not by-passed, or developing excessive scour at the stone base or sediment build-up. Remove sediment accumulated within the riprap stone aprons at inlets and outlets of culverts and grassed waterways, or replace stone, as required, to allow the stormwater to drain through the stone to reduce erosive velocities and prevent large flows from carrying sediment over their tops. After construction inspect semi-annually and after every heavy rainfall.
7. Disturbed Soil Areas: Seed and mulch upon final grading of topsoil. During construction inspect weekly and repair and re-seed areas, as required. After construction inspect and maintain on regular basis permanent lawns and grassed areas consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION



Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.

2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.

3. Provide surface drainage and divert excess runoff to stabilized areas.

4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.

5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.

6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR PROTECTING VEGETATION DURING CONSTRUCTION



Definition & Scope

The protection of trees, shrubs, ground cover and other vegetation from damage by construction equipment. In order to preserve existing vegetation determined to be important for soil erosion control, water quality protection, shade, screening, buffers, wildlife habitat, wetland protection, and other values.

Conditions Where Practices Applies

On planned construction sites where valued vegetation exists and needs to be preserved.

Design Criteria

1. Planning Considerations

   A. Inventory:

      1) Property boundaries, topography, vegetation and soils information should be gathered. Identify potentially high erosion areas, areas with tree windthrow potential, etc. A vegetative cover type map should be made on a copy of a topographic map which shows other natural and manmade features. Vegetation that is desirable to preserve because of its value for screening, shade, critical erosion control, endangered species, aesthetics, etc., should be identified and marked on the map.

      2) Based upon this data, general statements should be prepared about the present condition, potential problem areas, and unique features of the property.

   B. Planning:

      1) After engineering plans (plot maps) are prepared, another field review should take place and recommendations made for the vegetation to be saved. Minor adjustments in location of roads, dwellings, and utilities may be needed. Construction on steep slopes, erodible soils, wetlands, and streams should be avoided. Clearing limits should be delineated (See "Determine Limits of Clearing and Grading" on page 2.2).

      2) Areas to be seeded and planted should be identified. Remaining vegetation should blend with their surroundings and/or provide special function such as a filter strip, buffer zone, or screen.

      3) Trees and shrubs of special seasonal interest, such as flowering dogwood, red maple, striped maple, serviceberry, or shadbush, and valuable potential shade trees should be identified and marked for special protective treatment as appropriate.

      4) Trees to be cut should be marked on the plans. If timber can be removed for salable products, a forester should be consulted for marketing advice.

      5) Trees that may become a hazard to people, personal property, or utilities should be removed. These include trees that are weak-wooded, disease-prone, subject to windthrow, or those that have severely damaged root systems.

      6) The vigor of remaining trees may be improved by a selective thinning. A forester should be consulted for implementing this practice.

2. Measures to Protect Vegetation

   A. Limit soil placement over existing tree and shrub roots to a maximum of 3 inches. Soils with loamy texture and good structure should be used.

   B. Use retaining walls and terraces to protect roots of trees and shrubs when grades are lowered. Lowered grades should start no closer than the dripline of the tree. For narrow-canopied trees and shrubs, the stem diameter in inches is converted to feet and doubled, such that a 10 inch tree should be protected to 20 feet.

   C. Trenching across tree root systems should be the same minimum distance from the trunk, as in "B". Tunnels under root systems for underground utilities should start 18 inches or deeper below the normal ground surface. Tree roots which must be severed should be cut clean. Backfill material that will be in contact with the roots should be topsoil or a prepared planting soil mixture.

   D. Construct sturdy fences, or barriers, of wood, steel, or other protective material around valuable

vegetation for protection from construction equipment. Place barriers far enough away from trees, but not less than the specifications in "B", so that tall equipment such as backhoes and dump trucks do not contact tree branches.

E. Construction limits should be identified and clearly marked to exclude equipment.

F. Avoid spills of oil/gas and other contaminants.

G. Obstructive and broken branches should be pruned properly. The branch collar on all branches whether living or dead should not be damaged. The 3 or 4 cut method should be used on all branches larger than two inches at the cut. First cut about one-third the way through the underside of the limb (about 6-12 inches from the tree trunk). Then (approximately an inch further out) make a second cut through the limb from the upper side. When the branch is removed, there is no splintering of the main tree trunk. Remove the stub. If the branch is larger than 5-6 inches in diameter, use the four cut system. Cuts 1 and 2 remain the same and cut 3 should be from the underside of the limb, on the outside of the branch collar. Cut 4 should be from the top and in alignment with the 3rd cut. Cut 3 should be 1/4 to 1/3 the way through the limb. This will prevent the bark from peeling down the trunk. Do not paint the cut surface.

H. Penalties for damage to valuable trees, shrubs, and herbaceous plants should be clearly spelled out in the contract.

PROTECTING TREES IN HEAVY USE AREAS

The compaction of soil over the roots of trees and shrubs by the trampling of recreationists, vehicular traffic, etc., reduces oxygen, water, and nutrient uptake by feeder roots. This weakens and may eventually kill the plants. Table 2.6 rates the “Susceptibility of Tree Species to Compaction.”

Where heavy compaction is anticipated, apply and maintain a 3 to 4 inch layer of undecayed wood chips or 2 inches of No. 2 washed, crushed gravel. In addition, use of a wooden or plastic mat may be used to lessen compaction, if applicable.

Table 2.6
Susceptibility of Tree Species to Compaction[1]

Resistant:

Box elder……	*Acer negundo*	Willows……	*Salix spp.*
Green ash……..	*Fraxinus pennsylvanica*	Honey locust……	*Gleditsia triacanthos*
Red elm……..	*Ulmus rubra*	Eastern cottonwood…….	*Populus deltoides*
Hawthornes……	*Crataegus spp.*	Swamp white oak…….	*Quercus bicolor*
Bur oak……..	*Quercus macrocarpa*	Hophornbeam……	*Ostrya virginiana*
Northern white cedar….	*Thuja occidentalis*		

Intermediate:

Red maple…….	*Acer rubrum*	Sweetgum…….	*Liquidambar styraciflua*
Silver maple……..	*Acer saccharinum*	Norway maple…….	*Acer platanoides*
Hackberry…….	*Celtis occidentalis*	Shagbark hickory…….	*Carya ovata*
Black gum……	*Nyssa sylvatica*	London plane……..	*Platanus x hybrida*
Red oak……	*Quercus rubra*	Pin oak…….	*Quercus palustris*
Basswood…….	*Tilia americana*		

Susceptible:

Sugar maple…….	*Acer saccharum*	Austrian Pine……	*Pinus nigra*
White pine……	*Pinus strobus*	White ash…….	*Fraxinus americana*
Blue spruce……..	*Picea pungens*	Paper birch……..	*Betula papyrifera*
White oak……	*Quercus alba*	Moutain ash…….	*Sorbus aucuparia*
Red pine……..	*Pinus resinosa*	Japanese maple……	*Acer palmatum*

[1] If a tree species does not appear on the list, insufficient information is available to rate it for this purpose.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

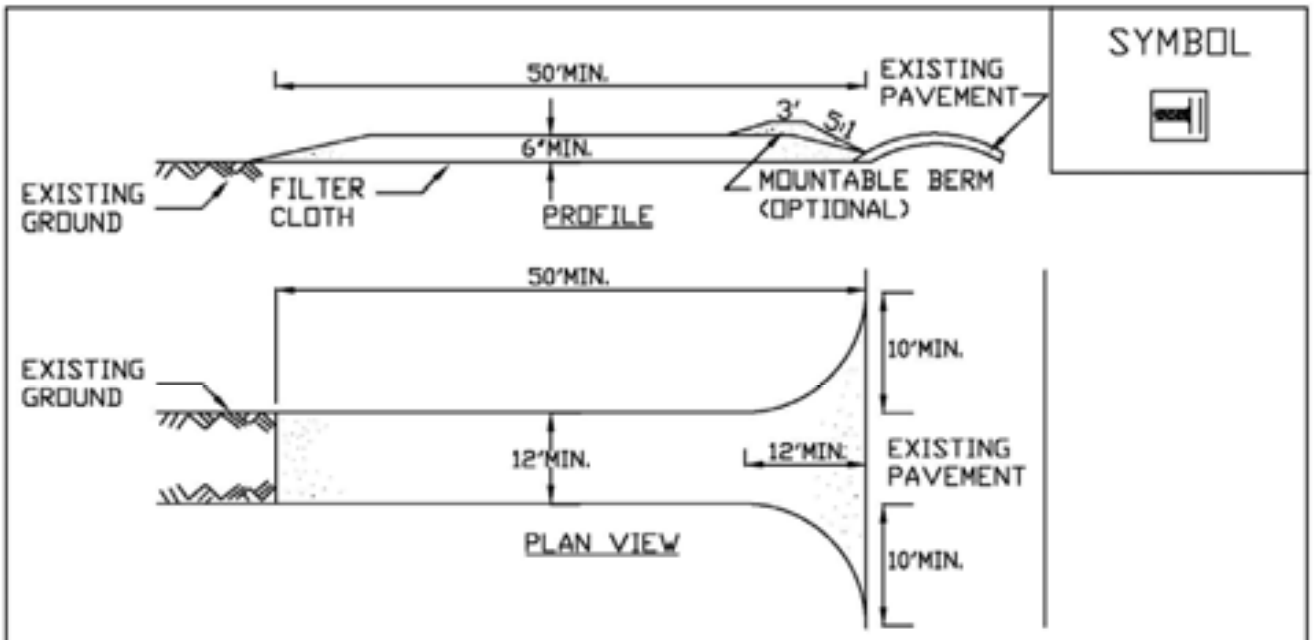
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR CHECK DAM



Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore: $$S = \frac{h}{s}$$

Where: S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows: $$S = \frac{2\ \text{ft}}{0.04\ \frac{\text{ft}}{\text{ft}}} = 50\ \text{ft}$$

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

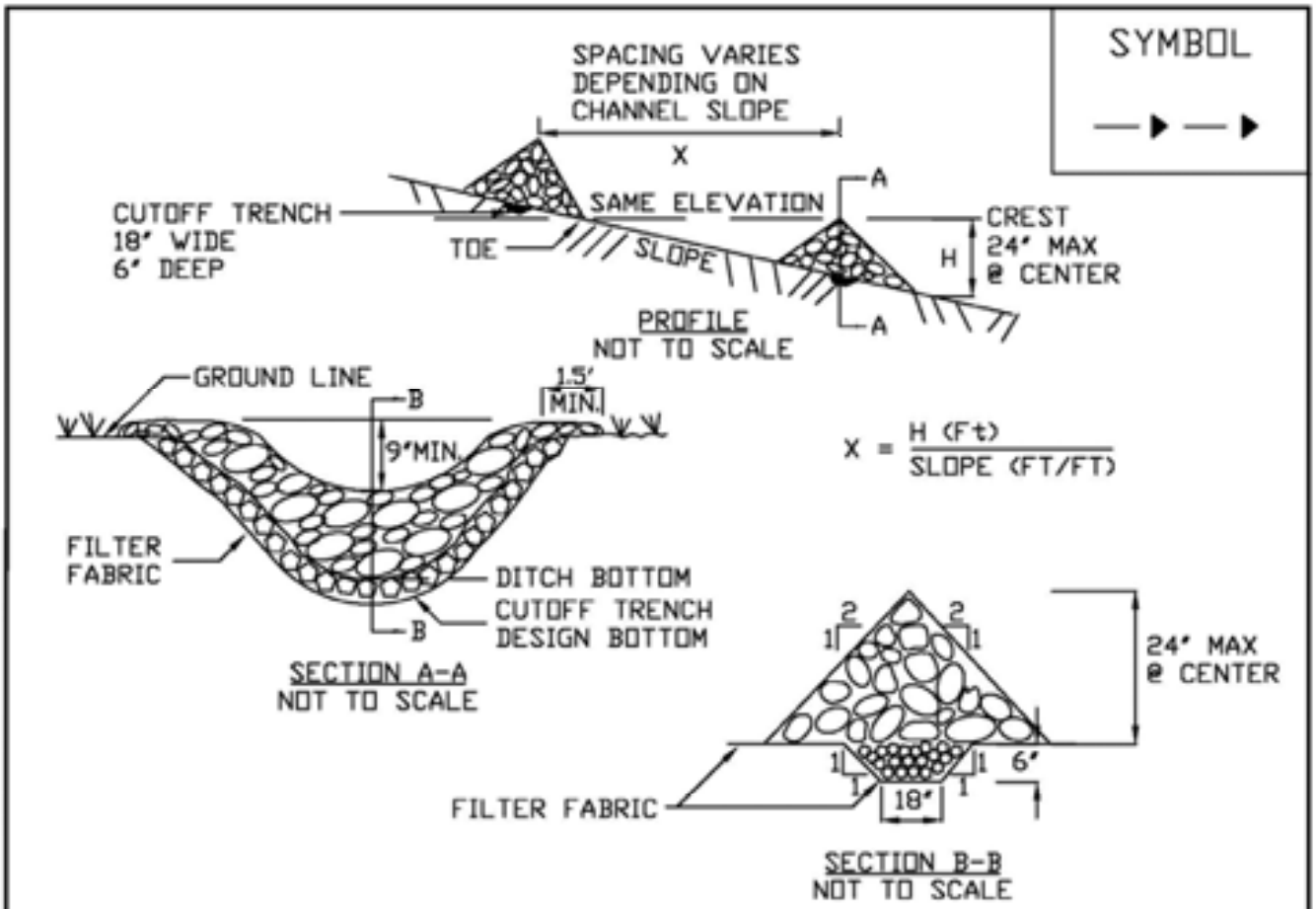
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION DITCH



Definition & Scope

A **temporary** excavated drainage way to intercept sediment laden water and divert it to a sediment trapping device or to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet.

Conditions Where Practice Applies

Construction ditches are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Ditches collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.2 on page 3.6 for details.

General

	Ditch A	Ditch B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft.	6 ft.
Depth of Flow Channel	1 ft.	1 ft.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Grassed Waterways on page 3.23 and 3.24.

Stabilization

Stabilization of the ditch shall be completed within 2 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

The seeding for vegetative stabilization shall be in accordance with the standard on Page 4.78. The seeded area will be mulched in accordance with the standard on Page 4.39.

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP[2], Sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP[2], Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
2 Rolled Erosion Control Product.

Outlet

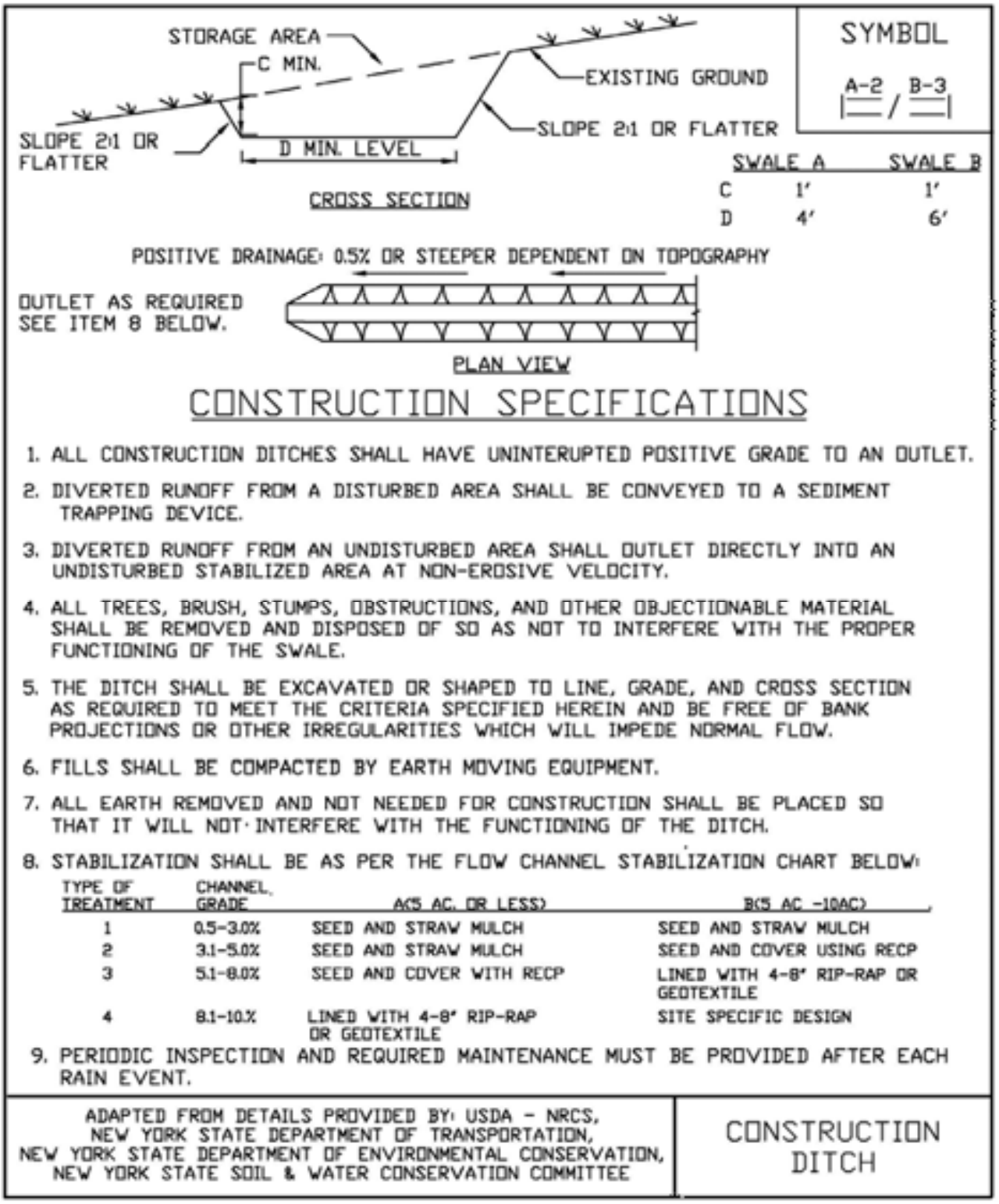
Ditch shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the ditch is adequately stabilized.

The on-site location may need to be adusted to meet field conditions in order to utilize the most suitable outlet condition.

If a ditch is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 3.2
Construction Ditch Detail



CONSTRUCTION SPECIFICATIONS

1. ALL CONSTRUCTION DITCHES SHALL HAVE UNINTERUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET DIRECTLY INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE SWALE.
5. THE DITCH SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
6. FILLS SHALL BE COMPACTED BY EARTH MOVING EQUIPMENT.
7. ALL EARTH REMOVED AND NOT NEEDED FOR CONSTRUCTION SHALL BE PLACED SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DITCH.
8. STABILIZATION SHALL BE AS PER THE FLOW CHANNEL STABILIZATION CHART BELOW:

TYPE OF TREATMENT	CHANNEL GRADE	A(5 AC. OR LESS)	B(5 AC -10AC)
1	0.5-3.0%	SEED AND STRAW MULCH	SEED AND STRAW MULCH
2	3.1-5.0%	SEED AND STRAW MULCH	SEED AND COVER USING RECP
3	5.1-8.0%	SEED AND COVER WITH RECP	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE
4	8.1-10.%	LINED WITH 4-8" RIP-RAP OR GEOTEXTILE	SITE SPECIFIC DESIGN

9. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

CONSTRUCTION DITCH

STANDARD AND SPECIFICATIONS FOR DEWATERING SUMP PIT



Discharge of turbid water pumped from the standpipe should be to a sediment trap, sediment basin, filter bag or stabilized area, such as a filter strip. If water from the sump pit will be pumped directly to a storm drain system, filter cloth with an equivalent sieve size between 40-80 should be wrapped around the standpipe to ensure clean water discharge. It is recommended that ¼ to ½ inch hardware cloth be wrapped around and secured to the standpipe prior to attaching the filter cloth. This will increase the rate of water seepage into the standpipe.

Definition & Scope

A **temporary** pit which is constructed using pipe and stone for pumping excessive water from excavations to a suitable discharge area.



Conditions Where Practice Applies

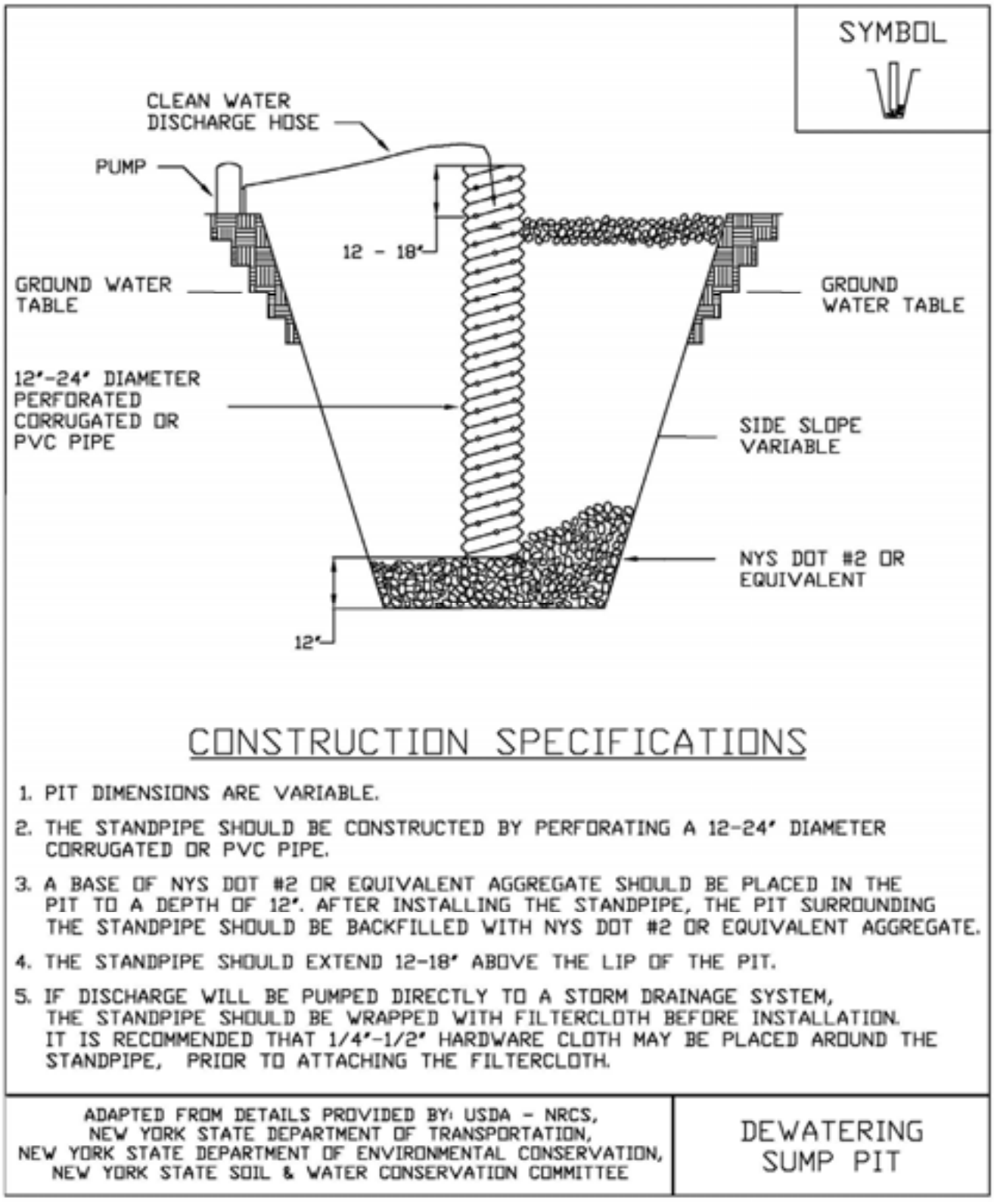
Sump pits are constructed when water collects during the excavation phase of construction. This practice is particularly useful in urban areas during excavation for building foundations. It may also be necessary during construction activities that encounter high ground water tables in floodplain locations.

Design Criteria

The number of sump pits and their locations shall be determined by the contractor/engineer. A design is not required, but construction should conform to the general criteria outlined on Figure 3.3 on page 3.8.

A perforated vertical standpipe is placed in the center of the pit and surrounded with a stone screening material to collect filtered water. Water is then pumped from the center of the pipe to a suitable discharge area.

Figure 3.3
Dewatering Sump Pit Detail



STANDARD AND SPECIFICATIONS FOR GRASSED WATERWAY



Definition & Scope

A natural or **permanent** man-made channel of parabolic or trapezoidal cross-section that is below adjacent ground level and is stabilized by suitable vegetation. The flow channel is normally wide and shallow and conveys the runoff down the slope without causing damage by erosion.

Conditions Where Practice Applies

Grass waterways are used where added vegetative protection is needed to control erosion resulting from concentrated runoff.

Design Criteria

Capacity

The minimum capacity shall be that required to confine the peak rate of runoff expected from a 10-year 24 hour frequency rainfall event or a higher frequency corresponding to the hazard involved. This requirement for confinement may be waived on slopes of less than one (1) percent where out-of-bank flow will not cause erosion or property damage.

Peak rates of runoff values used in determining the capacity requirements shall be computed by appropriate methods. Where there is base flow, it shall be handled by a stone center, subsurface drain, or other suitable means since sustained wetness usually prevents adequate vegetative cover. The cross-sectional area of the stone center or subsurface drain size to be provided shall be determined by using a flow rate of 0.1 cfs/acre or by actual measurement of the maximum base flow.

Velocity

Please see Table 3.1, Diversion Maximum Permissible Design Velocities on page 3.10, for seed, soil, and velocity variables.

Cross Section

The design water surface elevation of a grassed waterway receiving water from diversions or other tributary channels shall be equal to or less than the design water surface elevation in the diversion or other tributary channels.

The top width of parabolic waterways shall not exceed 30 feet and the bottom width of trapezoidal waterways shall not exceed 15 feet unless multiple or divided waterways, stone center, or other means are provided to control meandering of low flows.

Structural Measures

In cases where grade or erosion problems exist, special control measures may be needed such as lined waterways (see page 3.27), or grade stabilization measures (see page 3.21). Where needed, these measures will be supported by adequate design computations. For typical cross sections of waterways with riprap sections or stone centers, refer to Figure 3.8 on page 3.24.

The design procedures for parabolic and trapezoidal channels are available in the NRCS Engineering Field Handbook. Figure 3.9 on page 3.25 also provides a design chart for parabolic waterway.

Outlets

Each waterway shall have a stable outlet. The outlet may be another waterway, a stabilized open channel, grade stabilization structure, etc. In all cases, the outlet must discharge in such a manner as not to cause erosion. Outlets shall be constructed and stabilized prior to the operation of the waterway.

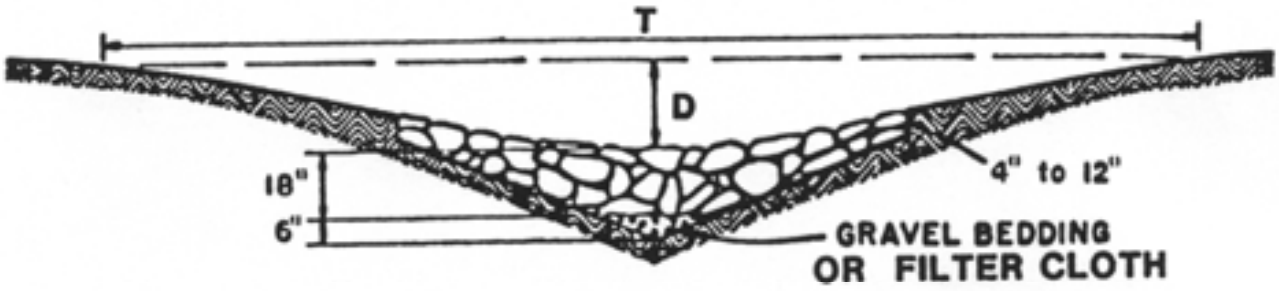
Stabilization

Waterways shall be stabilized in accordance with the appropriate vegetative stabilization standard and specifications, and will be dependent on such factors as slope, soil class, etc. See standard for Vegetating Waterways on Page 4.78.

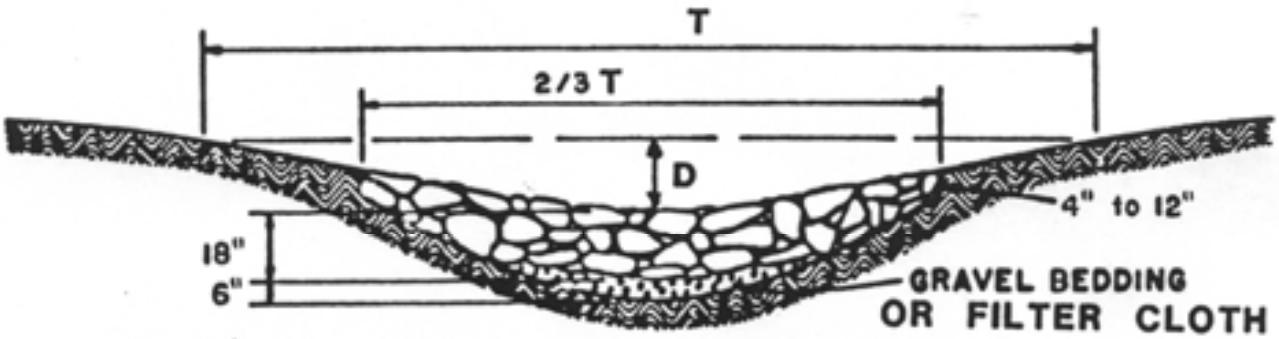
Construction Specifications

See Figure 3.10 on page 3.26 for details.

Figure 3.8
Typical Waterway Cross Sections Details



Waterway with stone center drain. "V" section shaped by motor grader.



Waterway with stone center drain. Rounded section shaped by bulldozer.

Figure 3.9
Parabolic Waterway Design Chart (USDA - NRCS)

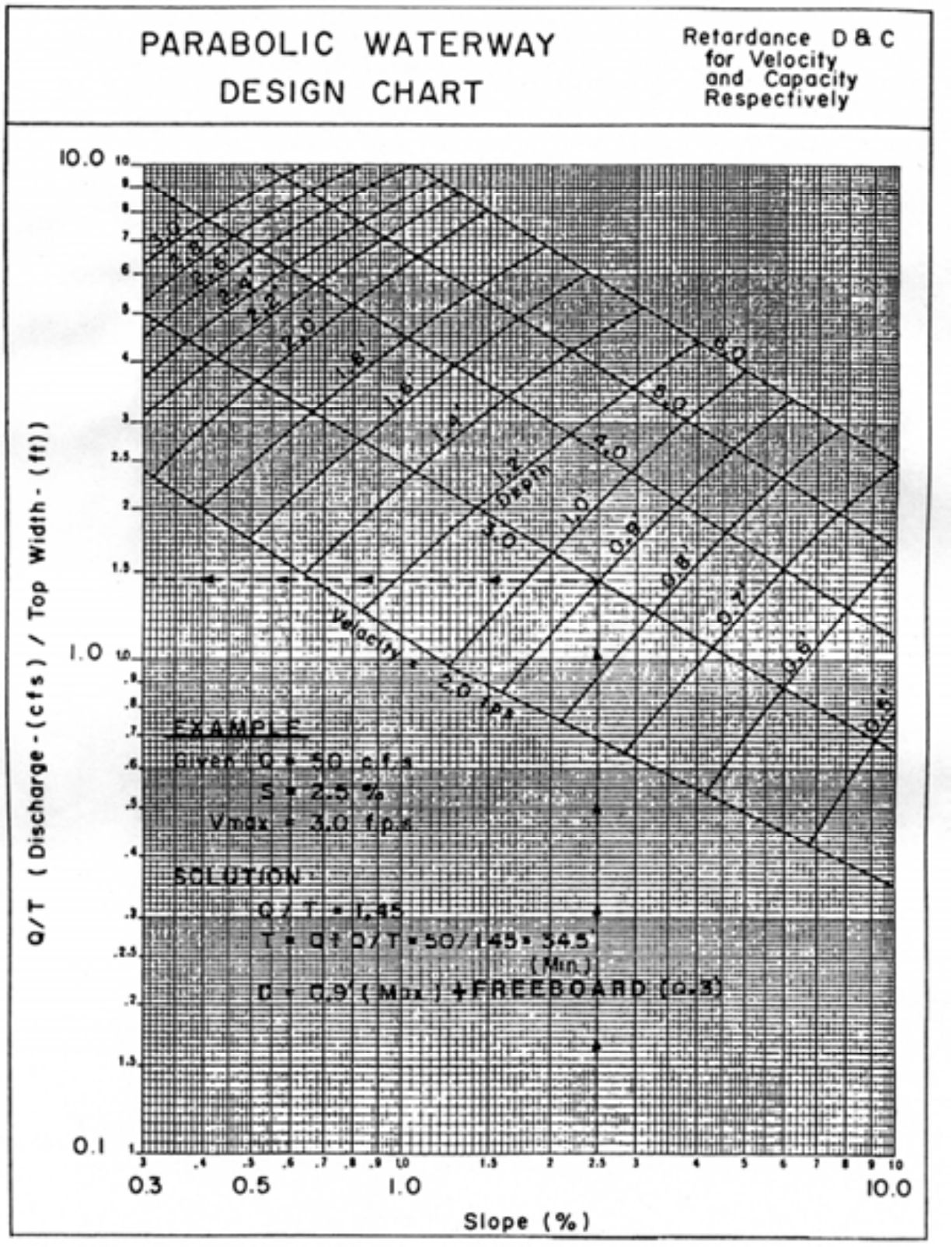
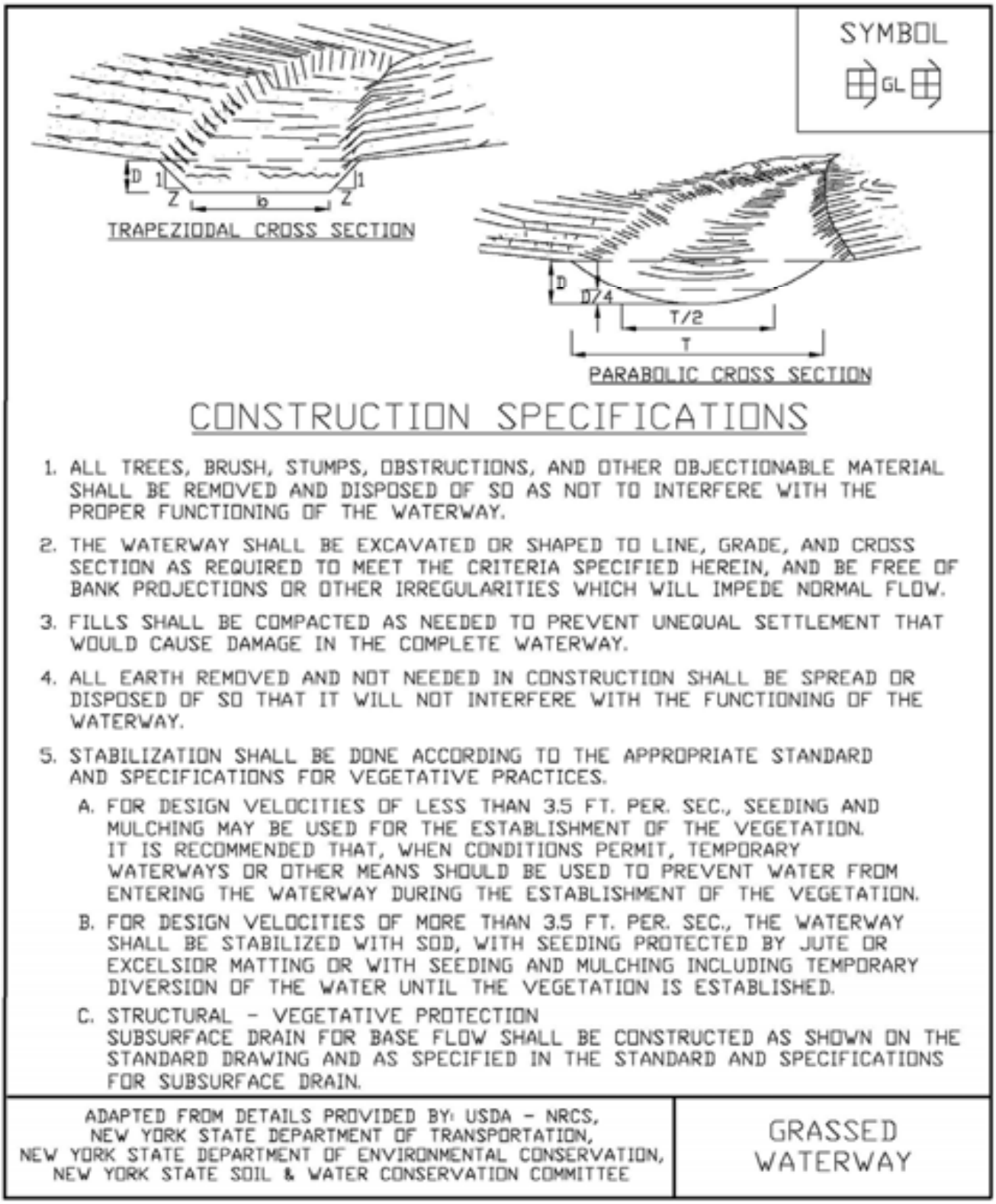


Figure 3.10
Grassed Waterway Detail



STANDARD AND SPECIFICATIONS FOR LINED WATERWAY



Definition & Scope

A **permanent** waterway or outlet with a lining of concrete, stone, or other durable, hardened material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

The lined waterway is constructed to provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Conditions Where Practice Applies

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. Lined waterways should not be used if they are directly discharging to C(T) or higher streams unless thermal impacts are mitigated by biotechnical practices (Section 4). The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.
2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion.
3. The location is such that damage from use by people or animals precludes use of vegetated waterways or outlets.
4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.
5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

Lined Material	"n"
Concrete (Type):	
Trowel Finish	0.015
Float Finish	0.019
Gunite	0.019
Flagstone	0.022
Riprap	Determine from Figure 3.11 on page 3.30
Gabion	0.030

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Zeeb Road, Ann Arbor, Michigan 48106, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

Design Flow Depth (ft.)	Maximum Velocity (ft./sec.)
0.0 - 0.5	25
0.5 - 1.0	15
Greater than 1.0	10

2. Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

1. Non-Reinforced Concrete
   Hand-placed, formed concrete
   Height of lining, 1.5 ft or less ..... Vertical
   Hand placed screened concrete or mortared
   In-place flagstone
   Height of lining, less than 2 ft ..... 1 to 1
   Height of lining, more than 2 ft ..... 2 to 1
2. Slip form concrete:
   Height of lining, less than 3 ft ..... 1 to 1
3. Rock Riprap ..... 2 to 1
4. Gabions ..... Vertical
5. Pre-cast Concrete Sections ..... Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

1. Concrete ..... 4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing)

2. Rock Riprap ..... 1.5 x maximum stone size plus thickness of filter or bedding.

3. Flagstone ..... 4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

Velocity (f.p.s.)	d_{max} (in.)
5.0	6
8.5	12
10	18
12	24
15	36

A complete listing riprap gradations is provided in Table 4.1, page 4.9.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

Construction Specifications

1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.

2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.

3. No abrupt deviations from design grade or horizontal alignment shall be permitted.

4. Concrete linings shall be placed to the thickness shown on the plans and trowel finished. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.

5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.

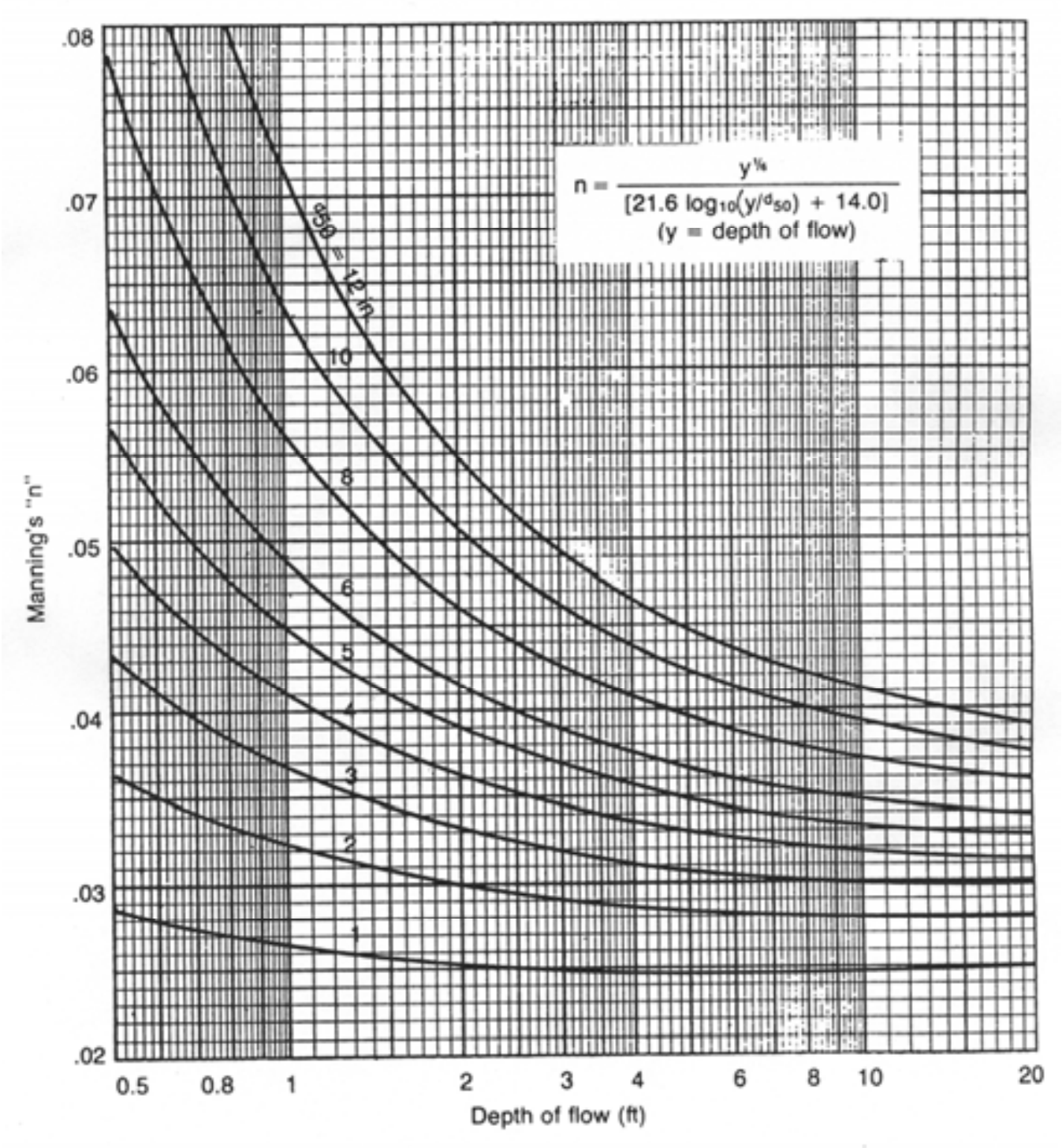
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall meet all design requirements for the appropriate finish. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage.

Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Construction Area Planting on page 4.42.

Figure 3.11
Determining "n" for Riprap Lined Channel using Depth of Flow Chart
(USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42
Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

D_{50} (inches)	d_{max} (inches)	Minimum Blanket Thickness (inches)
4	6	9
6	9	14
9	14	20
12	18	27
15	22	32
18	27	32
21	32	38
24	36	43

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer's recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.

2. Determine the tailwater condition at the outlet to establish which curve to use.

3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.

4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.

2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.

4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure 3.16
Outlet Protection Design—Minimum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)

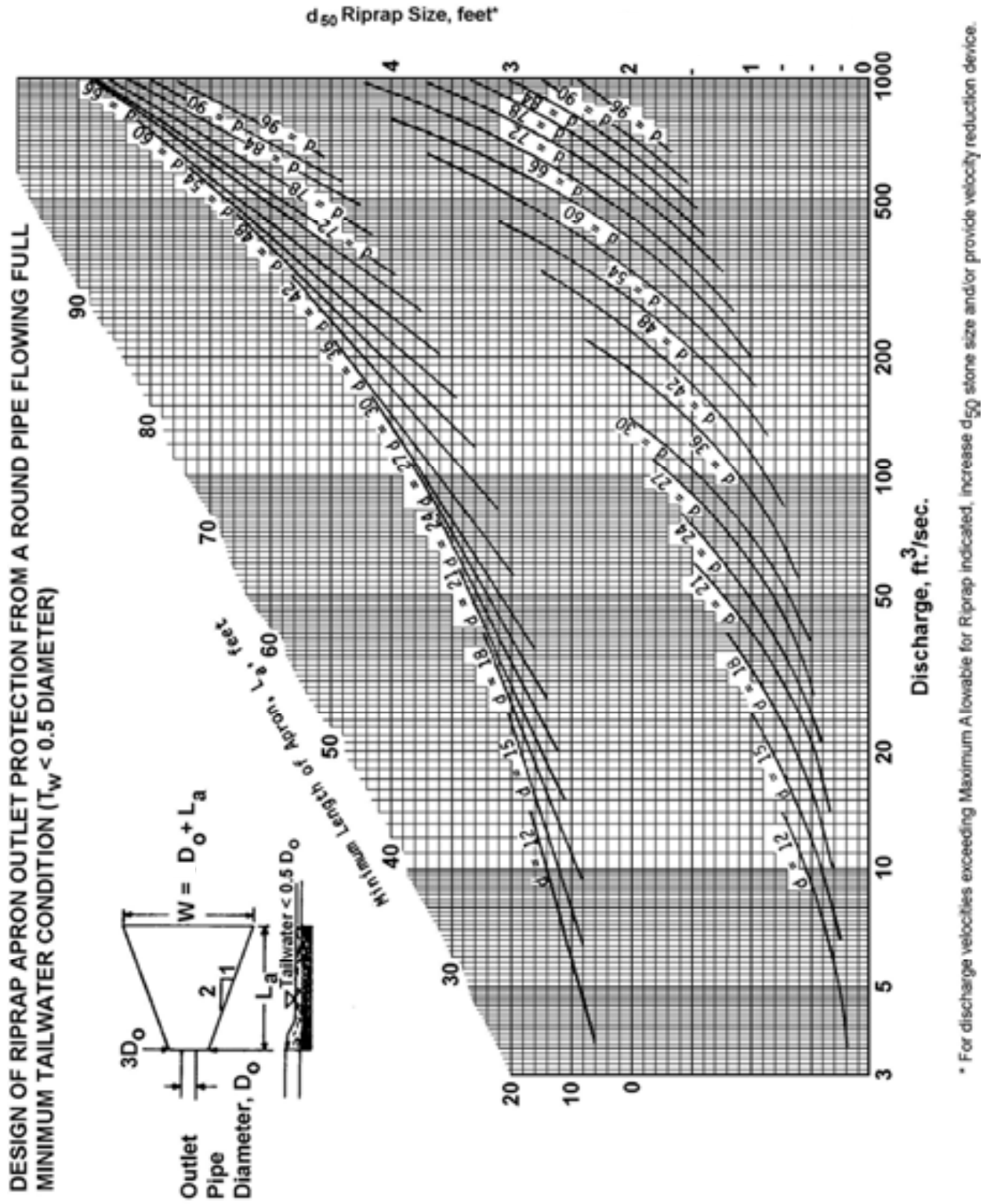


Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)

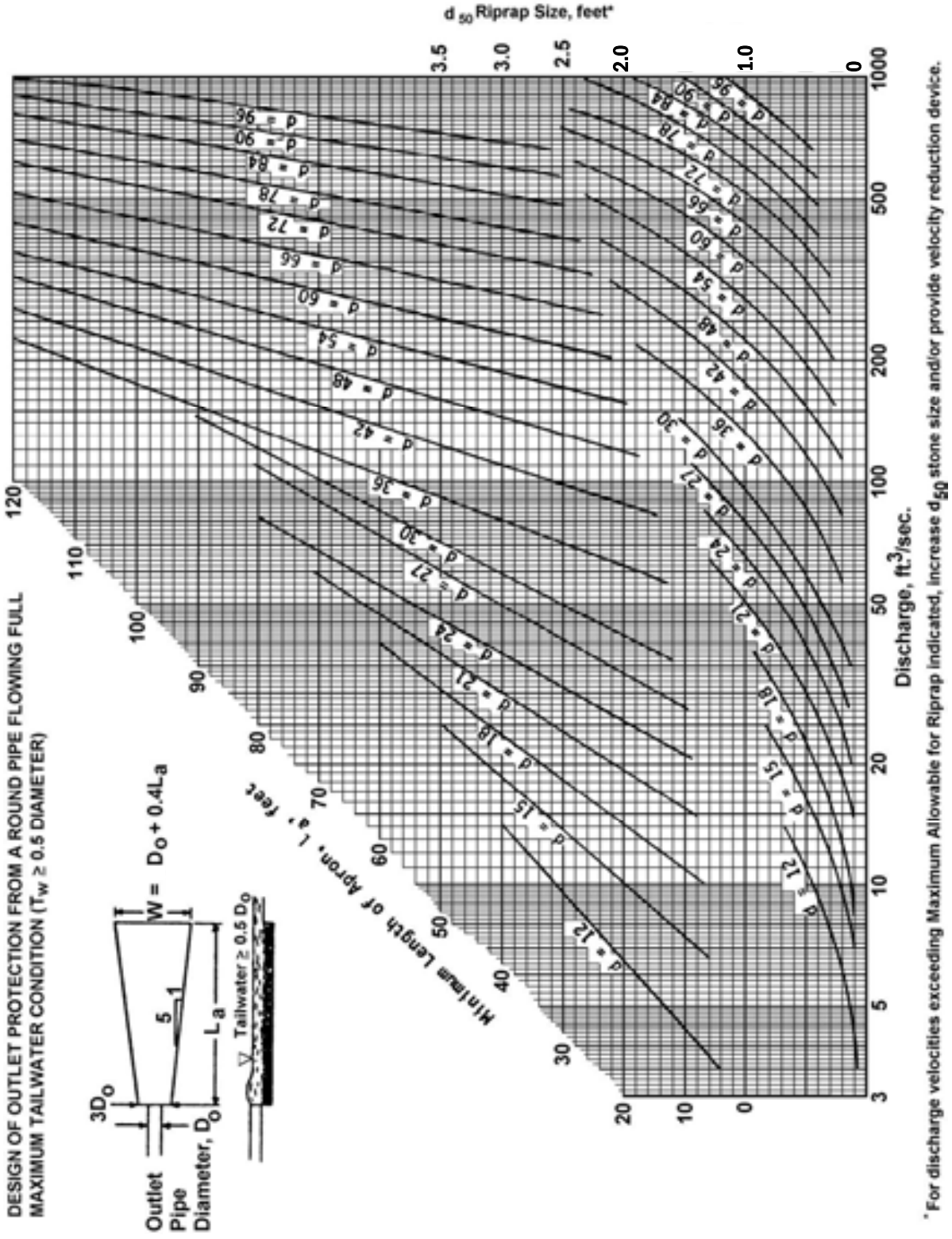


Figure 3.18
Riprap Outlet Protection Detail (1)

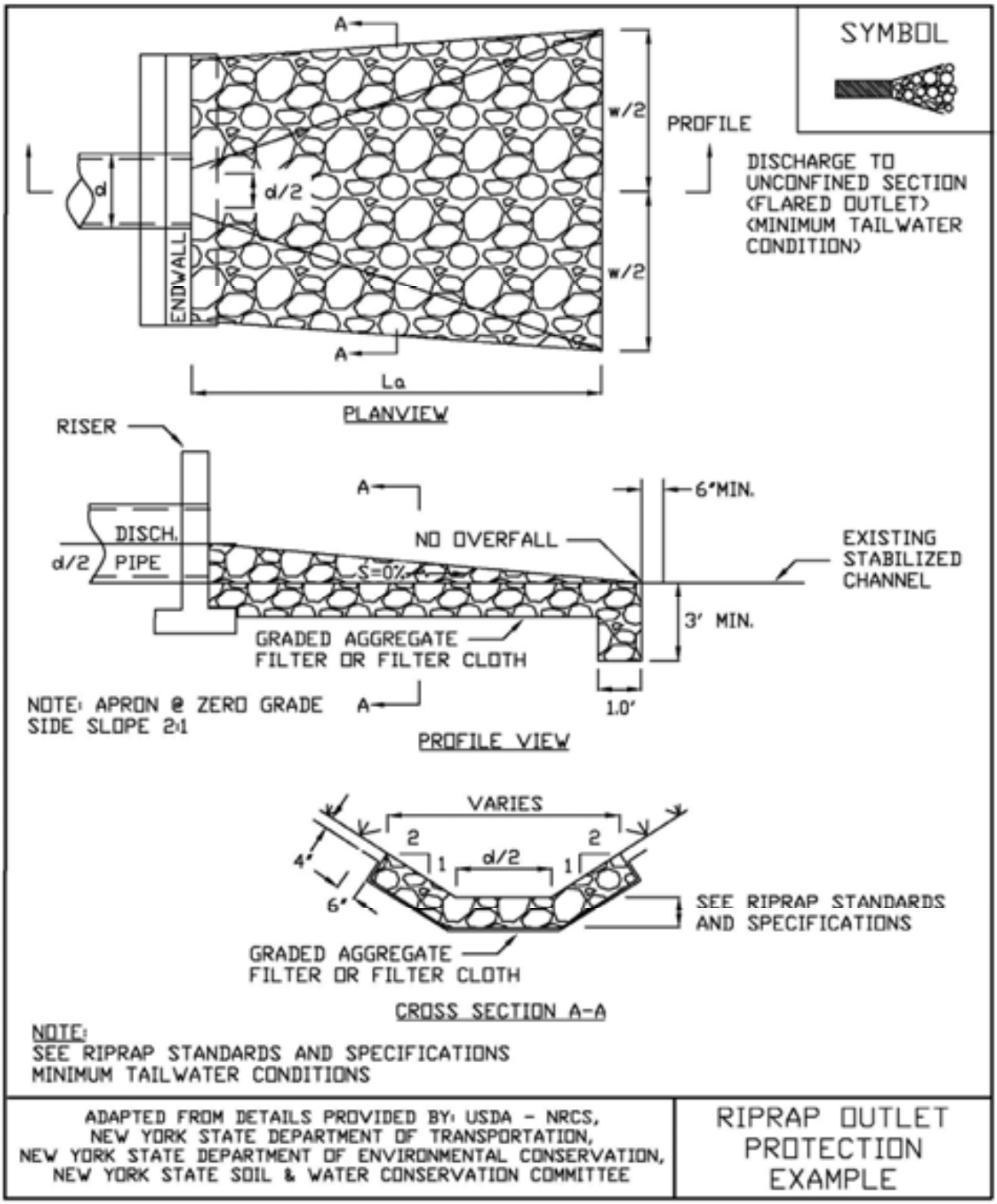


Figure 3.19
Riprap Outlet Protection Detail (2)

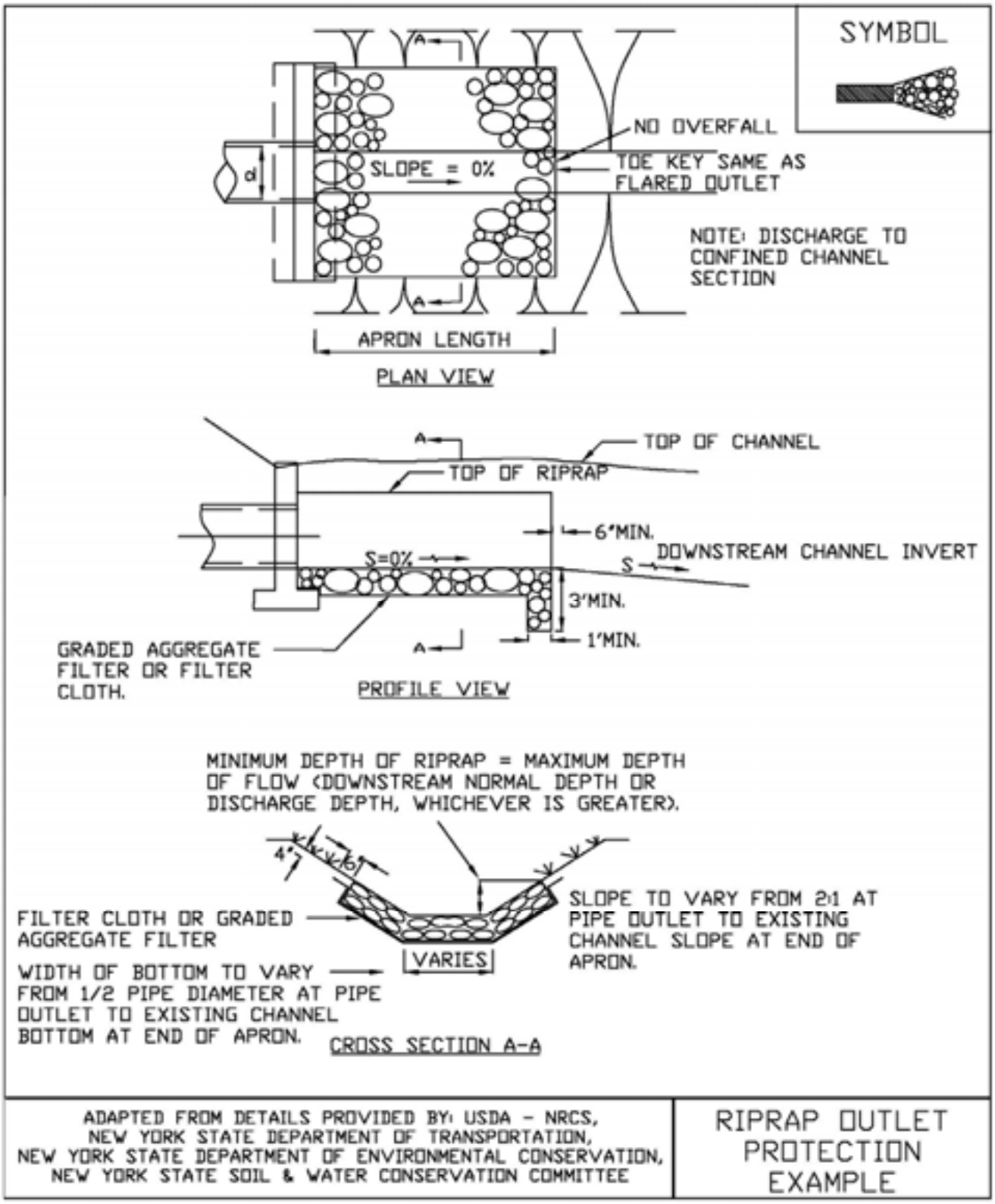
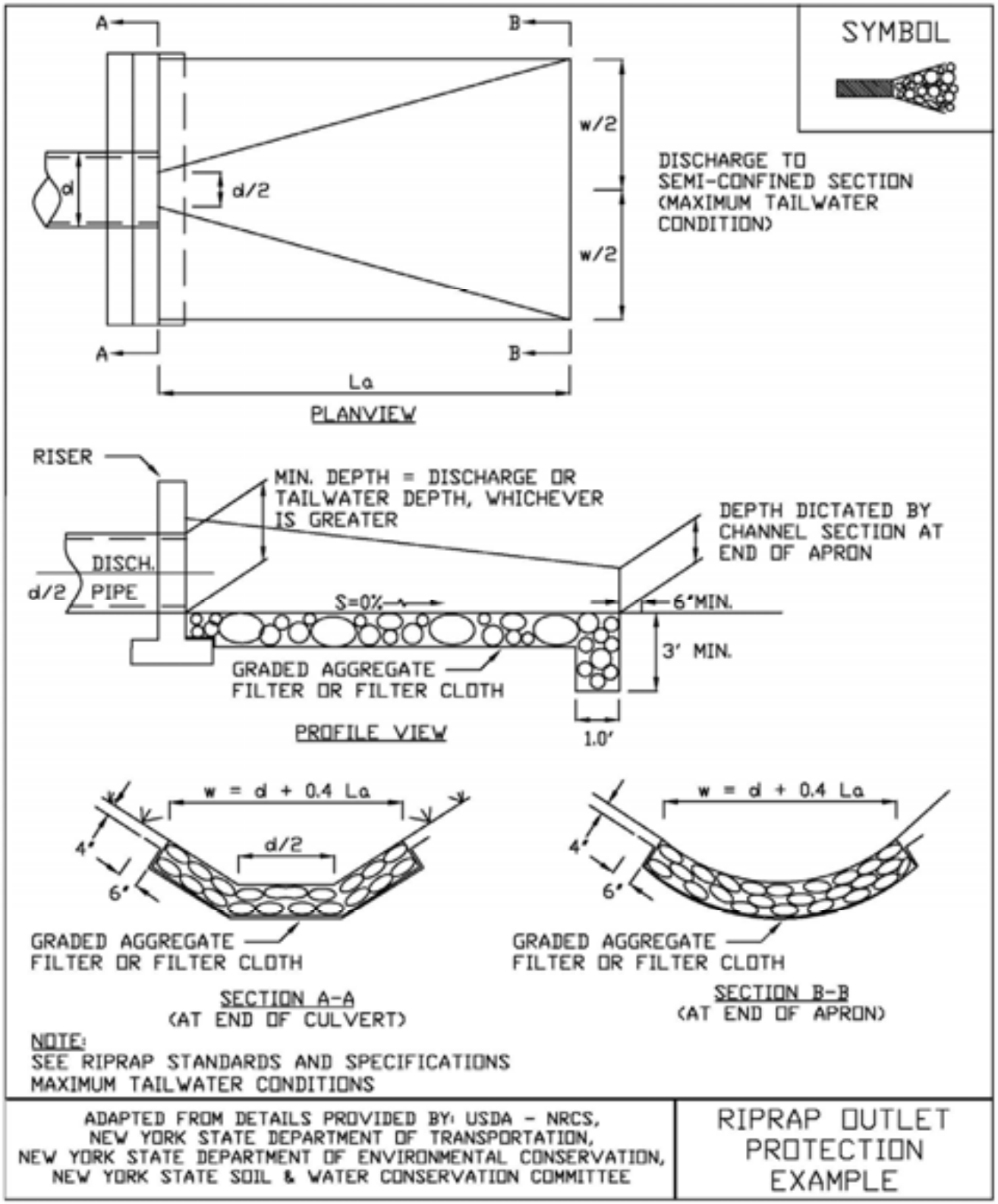


Figure 3.20
Riprap Outlet Protection Detail (3)



STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION



Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.



Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.
2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

Type of Soil Disturbance	Soil Restoration Requirement		Comments/Examples
No soil disturbance	Restoration not permitted		Preservation of Natural Features
Minimal soil disturbance	Restoration not required		Clearing and grubbing
Areas where topsoil is stripped only - no change in grade	HSG A&B	HSG C&D	Protect area from any ongoing construction activities.
	Apply 6 inches of topsoil	Aerate* and apply 6 inches of topsoil	
Areas of cut or fill	HSG A&B	HSG C&D	
	Aerate* and apply 6 inches of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls)	Apply full Soil Restoration (decompaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration practices are applied	Restoration not required, but may be applied to enhance the reduction specified for appropriate practices.		Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area
Redevelopment projects	Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area.		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

STANDARD AND SPECIFICATIONS FOR STABILIZATION WITH SOD



Definition & Scope

Stabilizing restored, exposed soil surfaces by establishing long term stands of grass with sod to reduce damage from sediment and runoff to downstream areas and enhance natural beauty.

Conditions Where Practice Applies

On exposed soils that have a potential for causing off site environmental damage where a quick vegetative cover is desired. Moisture, either applied or natural, is essential to success.

Design Criteria

1. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist.

2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch. Measurement for thickness shall exclude top growth and thatch.

3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

4. Sod shall be free of weeds and undesirable coarse weedy grasses. Wild native or pasture grass sod shall not be used unless specified.

5. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved by the contracting officer or his designated representative prior to its installation.

Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test and the contracting officer agrees, fertilizer and lime materials may be applied in amounts shown in subsection 2 below. Slope land such as to provide good surface water drainage. Avoid depressions or pockets.

1. Prior to sodding, the surface shall be smoothed and cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, fertilizing or maintenance operations.

2. **The soil should be tested to determine the amounts of amendments needed.** Where the soil is acid or composed of heavy clays, ground limestone shall be spread to raise the pH to 6.5. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 20 lbs. of 5-5-10 (or equivalent) and mix into the top 3 inches of soil with the required lime for every 1,000 square feet. Soil should be moist prior to sodding. Arrange for temporary storage of sod to keep it shaded and cool.

Sod Installation

1. For the operation of laying, tamping, and irrigating for any areas, sod shall be completed within eight hours. During periods of excessively high temperature, the soil shall be lightly moistened immediately prior to laying the sod.

2. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly wedged against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with

staggered joints.

3. Secure the sod by tamping and pegging, or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface.

4. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Keep sod moist for at least two weeks.

Sod Maintenance

1. In the absence of adequate rainfall, watering shall be performed daily, or as often as deemed necessary by the inspector, during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done in the morning. Avoid excessive watering during applications.

2. After the first week, sod shall be watered as necessary to maintain adequate moisture and ensure establishment.

3. The first mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified. Avoid heavy mowing equipment for several weeks to prevent rutting.

4. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply fertilizer three to four weeks after sodding, at a rate of 1 pound nitrogen/1,000 sq.ft. Use a complete fertilizer with a 2-1-1 ratio.

5. Weed Control: Target herbicides for weeds present. Consult current Cornell Pest Control Recommendations for Commercial Turfgrass Management or consult the local office of Cornell Cooperative Extension.

6. Disease Control: Consult the local office of the Cornell Cooperative Extension.

Additional References

1. Home Lawns, Establishment and Maintenance, CCE Information Bulletin 185, Revised November 1994. Cornell University, Ithaca, NY.

2. Installing a Sod Lawn. CCE Suffolk County, NY. Thomas Kowalsick February 1994, Revised January 1999. www.cce.cornell.edu/counties/suffolk/grownet

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR VEGETATING WATERWAYS



Definition & Scope

Waterways are a **permanently** constructed conveyance channel, shaped or graded. They are vegetated for the safe transport of excess surface water from construction sites and urban areas without damage from erosion.

Conditions Where Practice Applies

This standard applies to vegetating waterways and similar water carrying structures.

Supplemental measures may be required with this practice. These may include: subsurface drainage to permit the growth of suitable vegetation and to eliminate wet spots; a section stabilized with asphalt, stone, or other suitable means; or additional storm drains to handle snowmelt or storm runoff.

Retardance factors for determining waterway dimensions are shown in Table 3.1 on page 3.10 and "Maximum Permissible Velocities for Selected Grass and Legume Mixtures" (See Table 4.10 on page 4.79).

Design Criteria

Waterways or outlets shall be protected against erosion by vegetative means as soon after construction as practical. Vegetation must be well established before diversions or other channels are outletted into them. Consideration should be given to the use of turf reinforcement mats, excelsior matting, other rolled erosion control products, or sodding of channels to provide erosion protection as soon after construction as possible. It is strongly recommended that the center line of the waterway be protected with one of the above materials to avoid center gullies and to protect seedlings from erosion before establishment.

1. Liming, fertilizing, and seedbed preparation.

   A. Lime to pH 6.5.

   B. **The soil should be tested to determine the amounts of amendments needed.** If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 1.0 lbs/1,000 sq. ft. of N, P_2O_5, and K_2O.

   C. Lime and fertilizer shall be mixed thoroughly into the seedbed during preparation.

   D. Channels, except for paved section, shall have at least 4 inches of topsoil.

   E. Remove stones and other obstructions that will hinder maintenance.

2. Timing of Seeding.

   A. Early spring and late August are best.

   B. Temporary cover to protect from erosion is recommended during periods when seedings may fail.

3. Seed Mixtures:

Mixtures	Rate per Acre (lbs)	Rate per 1,000 sq. ft. (lbs)
A. White clover or ladino clover[1]	8	0.20
Smooth bromegrass	20	0.45
Creeping red fescue[2]	2	0.05
Total	30	0.70
OR		
B. Smooth bromegass[3]	25	0.60
Creeping red fescue	20	0.50
Perennial ryegrass	10	0.20
Total	55	1.30

[1] Inoculate with appropriate inoculum immediately prior to seeding. Ladino or birdsfoot trefoil may be substituted for common white clover and seeded at the same rate.

[2] Perennial ryegrass may be substituted for the creeping red fescue but increase seeding rate to 5 lbs/acre (0.1 lb/1,000 sq. ft).

[3] Use this mixture in areas which are mowed frequently. Common white clover may be added if desired and seeded at 8 lbs/acre (0.2 lb/1,000 sq. ft.)

4. Seeding

Select the appropriate seed mixture and apply uniformly over the area. Rolling or cultipacking across the waterway is desirable.

Waterway centers or crucial areas may be sodded. Refer to the standard and specification for Stabilization with Sod. Be sure sod is securely anchored using staples or stakes.

5. Mulching

All seeded areas will be mulched. Channels more than 300 feet long, and/or where the slope is 5 percent or more, must have the mulch securely anchored. Refer to the standard and specifications for Mulching for details.

6. Maintenance

Fertilize, lime, and mow as needed to maintain dense protective vegetative cover.

Waterways shall not be used for roadways.

If rills develop in the centerline of a waterway, prompt attention is required to avoid the formation of gullies. Either stone and/or compacted soil fill with excelsior or filter fabric as necessary may be used during the establishment phase. See Figure 4.25, Rill Maintenance Measures. Spacing between rill maintenance barriers shall not exceed 100 feet.

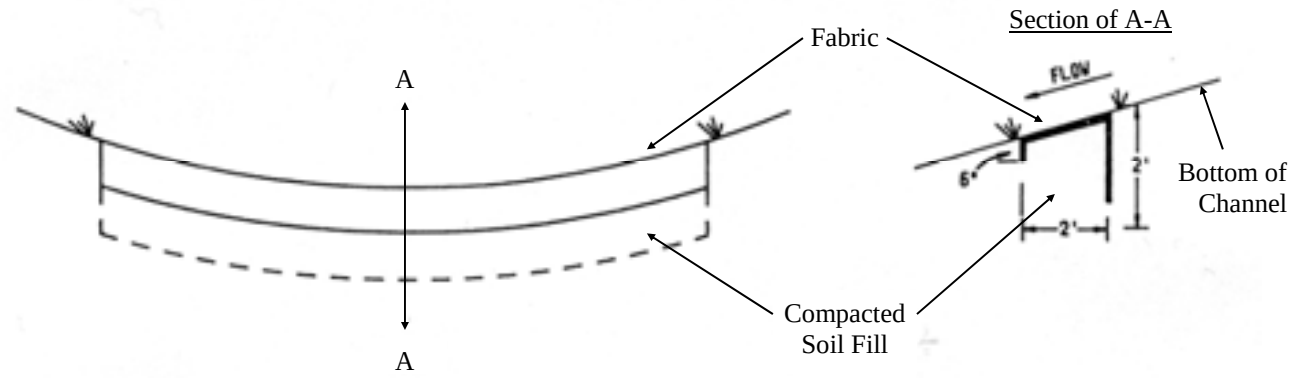
Table 4.10
Maximum Permissible Velocities for Selected Seed Mixtures

Cover	Slope Range [2] (%)	Permissible Velocity [1]	
		Erosion-resistant Soils (ft. per sec.) K=0.10 - 0.35 [3]	Easily Eroded Soils (ft. per sec.) K=0.36 - 0.80
Smooth Bromegrass Hard Fescue	0-5 5-10 Over 10	7 6 5	5 4 3
Grass Mixtures	[2] 0-5 5-10	5 4	4 3
White/Red Clover Alfalfa Red Fescue	[4] 0-5	3.5	2.5

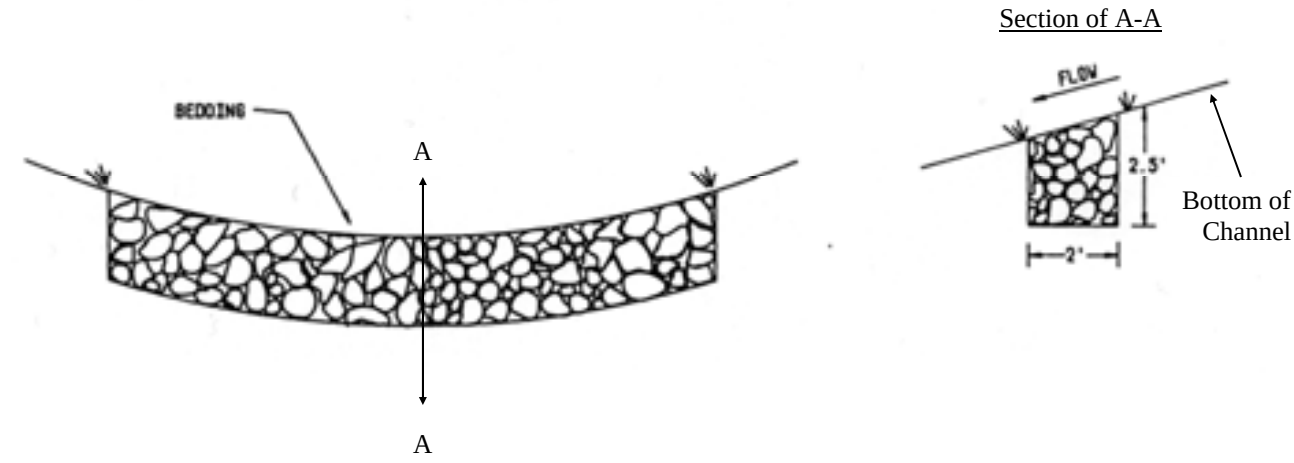
[1] Use velocities exceeding 5 feet per second only where good covers and proper maintenance can be obtained.
[2] Do not use on slopes steeper than 10 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[3] K is the soil erodibility factor used in the Revised Universal Soil Loss Equation. Visit Appendix A or consult the appropriate USDA-NRCS technical guide for K values for New York State soils.
[4] Do not use on slopes steeper than 5 percent except for vegetated side slopes in combination with a stone, concrete, or highly resistant vegetative center section.
[5] Annuals - use on mild slopes or as temporary protection until permanent covers are established.
[6] Use on slopes steeper than 5 percent is not recommended.

Figure 4.25
Rill Maintenance Measures

Filter Fabric



Stone



STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK



Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	**5**	**10**	**20**	**25**	**33**	**50**
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50
* Length in feet							



5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

7. Compost filter socks shall be anchored in earth with 2" x 2" wooden stakes driven 12" into the soil on 10 foot centers on the centerline of the sock. On uneven terrain, effective ground contact can be enhanced by the placement of a fillet of filter media on the disturbed area side of the compost sock.

8. All specific construction details and material specifications shall appear on the erosion and sediment control constructions drawings when compost filter socks are included in the plan.

Maintenance

1. Traffic shall not be permitted to cross filter socks.

2. Accumulated sediment shall be removed when it reaches half the above ground height of the sock and disposed of in accordance with the plan.

3. Socks shall be inspected weekly and after each runoff event. Damaged socks shall be repaired in the manner required by the manufacturer or replaced within 24 hours of inspection notification.

4. Biodegradable filter socks shall be replaced after 6 months; photodegradable filter socks after 1 year. Polypropylene socks shall be replaced according to the manufacturer's recommendations.

5. Upon stabilization of the area contributory to the sock, stakes shall be removed. The sock may be left in place and vegetated or removed in accordance with the stabilization plan. For removal the mesh can be cut and the compost spread as an additional mulch to act as a soil supplement.

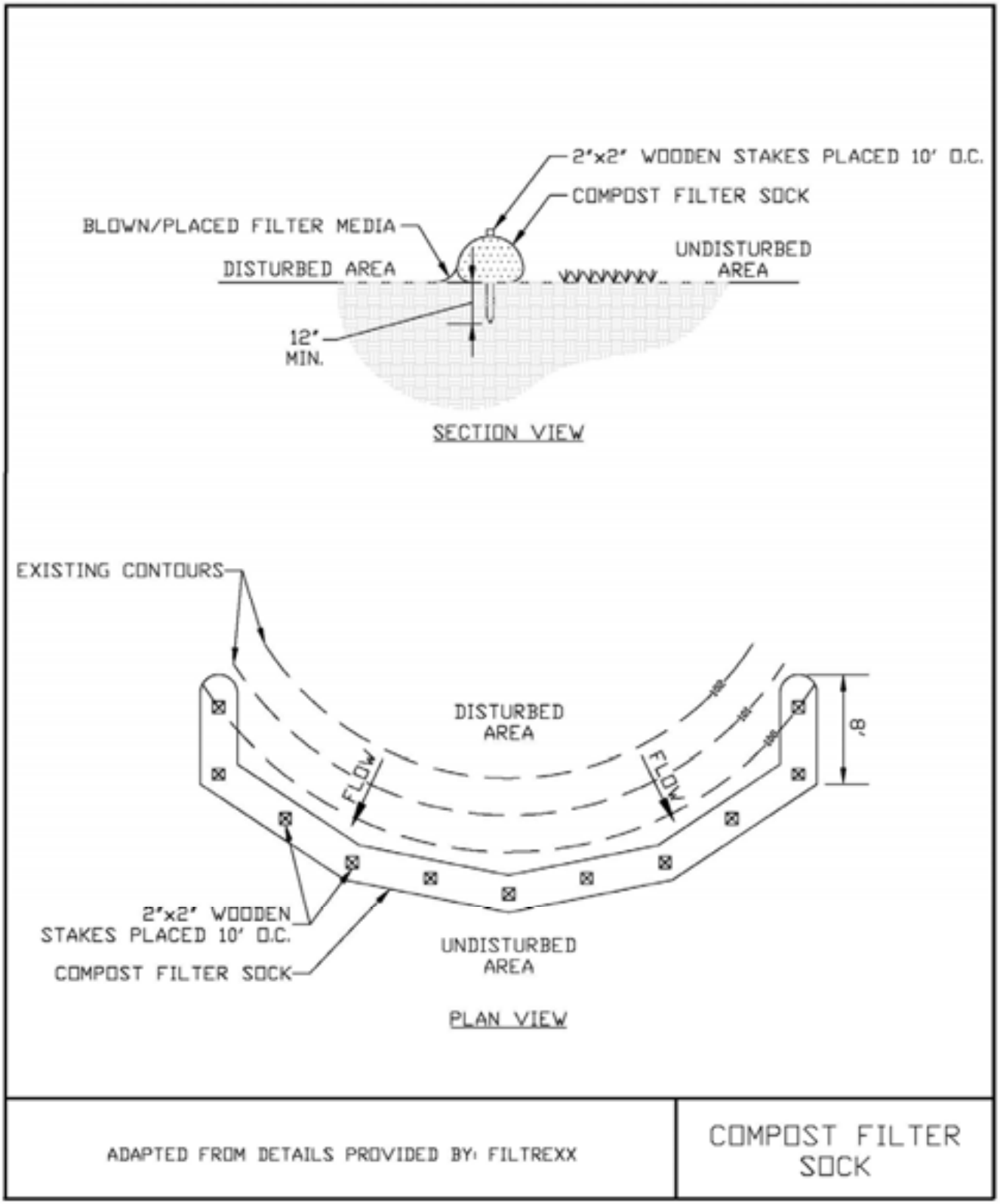
Table 5.1 - Compost Sock Fabric Minimum Specifications Table

Material Type	3 mil HDPE	5 mil HDPE	5 mil HDPE	Multi-Filament Polypropylene (MFPP)	Heavy Duty Multi-Filament Polypropylene (HDMFPP)
Material Characteristics	Photodegradable	Photodegradable	Biodegradable	Photodegradable	Photodegradable
Sock Diameters	12" 18"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"	12" 18" 24" 32"
Mesh Opening	3/8"	3/8"	3/8"	3/8"	1/8"
Tensile Strength		26 psi	26 psi	44 psi	202 psi
Ultraviolet Stability % Original Strength (ASTM G-155)	23% at 1000 hr.	23% at 1000 hr.		100% at 1000 hr.	100% at 1000 hr.
Minimum Functional Longevity	6 months	9 months	6 months	1 year	2 years

Table 5.2 - Compost Standards Table

Organic matter content	25% - 100% (dry weight)
Organic portion	Fibrous and elongated
pH	6.0 – 8.0
Moisture content	30% - 60%
Particle size	100% passing a 1" screen and 10 - 50% passing a 3/8" screen
Soluble salt concentration	5.0 dS/m (mmhos/cm) maximum

Figure 5.2
Compost Filter Sock



STANDARD AND SPECIFICATIONS FOR DEWATERING DEVICE



Definition & Scope

An appurtenance to a sediment trapping structure such as a basin or trap that allows sediment laden water to pond allowing sediment to settle out while removing relatively clean water to a suitable, stable outlet.

Condition Where Practice Applies

Dewatering devices are appropriate where the discharge from a trap or basin will be by gravity flow through a riser and pipe outlet system. The skimmer dewatering device is the preferred option. A fixed pipe dewatering device, configured as a perforated vertical riser surrounded by filter fabric and stone material is an alternate option for small structures.

Design Criteria

Skimmer Device

1. Skimmers must be designed so as to float just beneath the water surface to remove the least sediment laden water effectively.
2. Skimmer shall be constructed with a 4 foot long flexible pipe elbow to allow for vertical movement of the skimmer for its designated range of operation.
3. The designer will provide a table that shows all required dimensions for the skimmer. An example of this table is shown in Figure 5.4 on page 5.12. See design example in Appendix B.
4. The skimmer will be provided with vertical travel guides and a resting stone pad set at the appropriate design elevation.
5. The orifice plate will be at the "T" intersection of the perforated skimmer section with the non-perforated extension arm.

Riser-Pipe Device

1. The riser-pipe device is constructed as a fixed rigid structure with a larger diameter pipe as the vertical riser connected to a smaller diameter horizontal pipe barrel.
2. The joint of these two conduits will be anchored by means of a concrete block or welded steel plate to prevent flotation.
3. The riser will be perforated above the bottom of the dewatering zone elevation and wrapped with a geotextile filter fabric to filter out sediment.
4. The filter fabric shall be covered with stone graded as NYSDOT #1, #2, or a blend of both, to protect the fabric from deterioration.
5. An orifice plate shall be placed in the riser at the bottom of the dewatering zone elevation to control the dewatering rate.

Dewatering Drawdown

As a minimum, sediment traps and basins should have their temporary storage dewatered over a 48 hour period to maximize sediment retention. If the soils disturbed within the drainage area will have 60% - 80% fines the settling time should be increased to 4 days. Soils containing greater than 80% fines will need longer settling times but in no case longer than 7 days to maintain the hydraulic performance of the basin for recurring runoff events.

1. Skimmer orifices may be sized by using the design chart shown in Figure 5.3 on page 5.11.
2. Riser-pipe orifice sizes may be approximated by the following formula:

$$A_0 = \frac{A_s \times 2h^{0.5}}{T \times C_d \times 20{,}428}$$

Where:

A_0 = Areas of the dewatering orifice (ft^2)

As = Surface area of the basin/trap (ft^2)

h = head of water above the orifice (ft)

C_d = 0.6 (contraction coefficient of an orifice)

T = Detention time needed to dewater basin (48 hours minimum)

Therefore, the minimum A_o formula for 48 hrs. reduces to:

$$A_o = \frac{A_s \times 2h^{0.5}}{588{,}326}$$

Material Specifications

1. Skimmer Devices - These devices shall be constructed with Schedule 40 PVC pipe with diameters of 4 to 6 inches. The flexible arm shall be equal diameter of non -perforated, corrugated, plastic tubing.

2. Riser-pipe Devices - These devices shall be constructed of Schedule 40 PVC if plastic pipe is used or galvanized corrugated steel or aluminum pipe. The minimum diameter shall be 6 inches if the device is used in conjunction with another permanent riser. All perforations will be at the interior of the corrugations.

Maintenance

1. Dewatering devices shall be inspected weekly and after each runoff event.

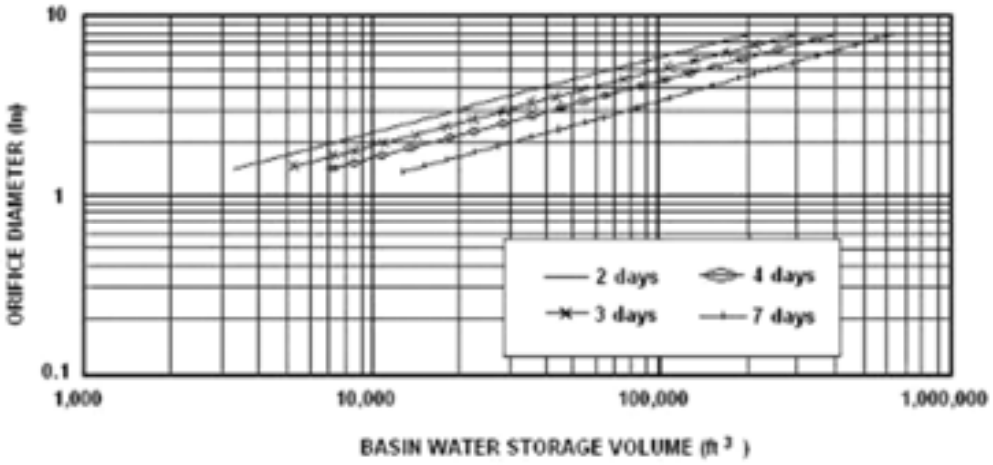
2. Filter fabric or media will be replaced as needed.

3. Any malfunctioning skimmer or its components shall be repaired or replaced within 24 hours of inspection notification.

4. Sediment shall be removed from the system when it reaches the level marked in a sediment cleanout stake or the top of the skimmer landing area.

5. The structure shall only be removed when the tributary area has been properly stabilized.

Figure 5.3 - Skimmer Orifice Design Chart



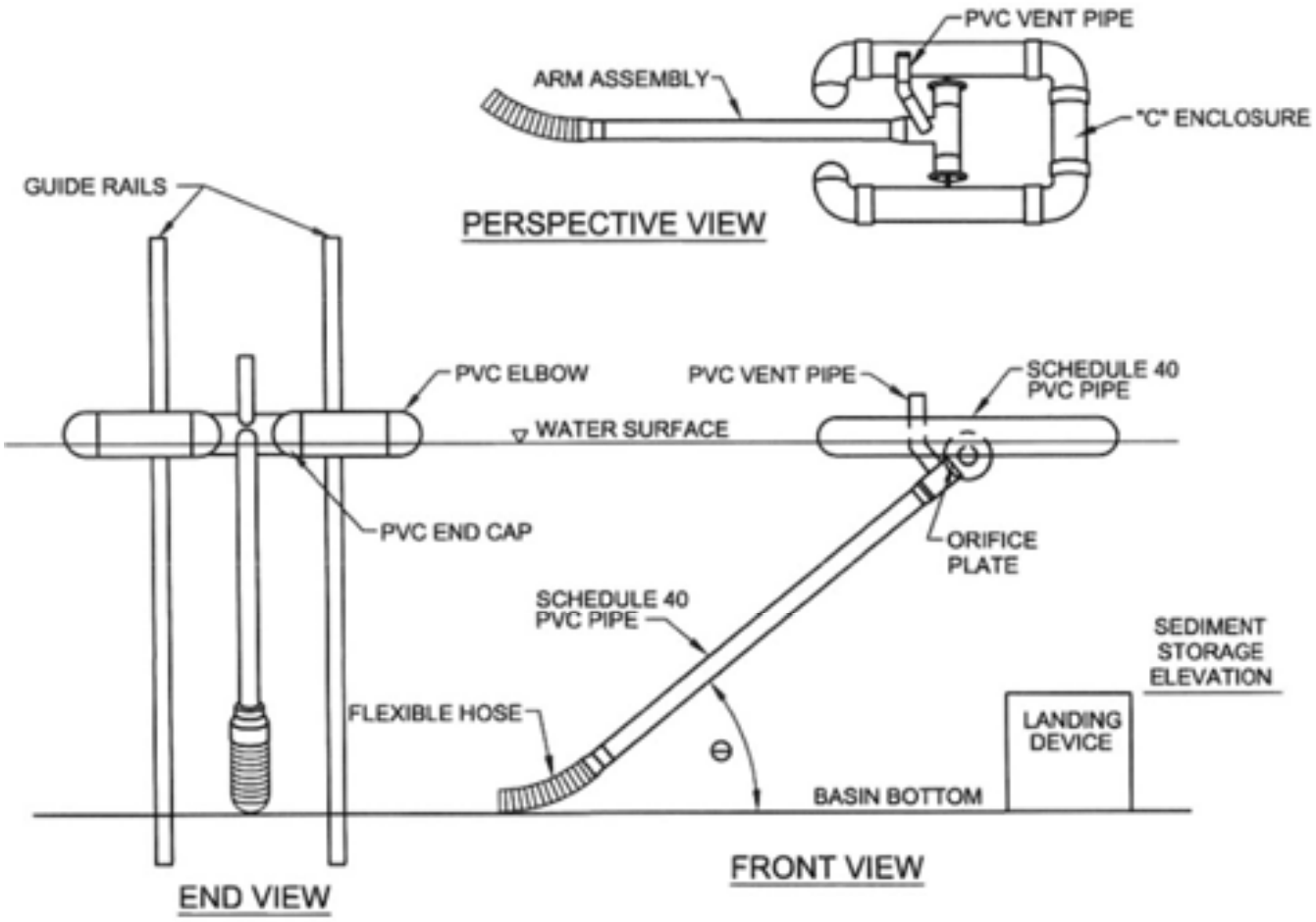
* Figure adapted from Penn State Agricultural and Biological Fact Sheet F-253

Notes:

1. Figure 5.3 is for use in designing the orifice plate for the skimmer shown in Figure 5.4. It assumes 3" to 5" head (depending upon the size of the skimmer). The required head for use of Figure 5.3 varies as follows: For a skimmer with a dewatering tube ≤ 2 1/2" diameter, use a 2" head. For a 3" diameter tube, use a 2.5" head; 4" tube, use 3.3" head, 5" tube use 4" head, and 6" diameter tube use 5" head.

2. Find the vertical line representing the basin's dewatering zone volume. At the intersection of the vertical line with the desired dewatering time, read horizontally to the left to find the required skimmer orifice diameter.

Figure 5.4
Skimmer Dewatering Device



* Figure adapted from Penn State Agricultural and Biological Fact Sheet F-253

Basin No.	Water Surface Elevation (ft.)	Arm Length* (ft.)	Arm Dia. (in.)	Orifice Size** (in.)	Top of Landing Device Elevation (ft.)	Flexible Hose Length (in.)	Flexible Hose Attachment Elevation (ft.)

* Minimum Arm length = Full design storage depth x 1.414 (for 45 degree angle)
** Must be equal to or less than arm diameter

Skimmer Construction Notes

1. Pipe flotation section shall be solvent welded to ensure an airtight assembly. The contractor is required to conduct a test to check for leaks prior to installation.

2. Skimmer section shall have 12 rows of 1/2" diameter holes, 1 1/4" on center. If additional filtration is necessary, the filtering media shall consist of a Type GD-II geotextile fabric wrapped around the perforated portion of the skimmer and attached with plastic snap ties, bands, etc.

3. Flexible pipe shall be inserted into solid pipe and fastened with 2 #8 wood screws.

4. At a minimum, the structure shall be inspected after each rain and repairs made as needed. If vandalism is a problem, more frequent inspection may be necessary.

5. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.

6. The structure shall only be removed when the contributing drainage area has been properly stabilized.

Materials

(Note: materials for a 4" diameter arm assembly)

1. Solid Pipe - 4" Schedule 40 PVC

2. Perforated Pipe - 4" Schedule 40 PVC

3. 90º Tee (1 each) - 4" Schedule 40 PVC

4. 90º Elbow (4 each) - 4" Schedule 40 PVC

5. Cap (2 each) - 4" Schedule 40 PVC, solid

6. Flexible pipe - 4" Corrugated Plastic Tubing (non-perforated)

Figure 5.5
Riser Pipe Dewatering Device

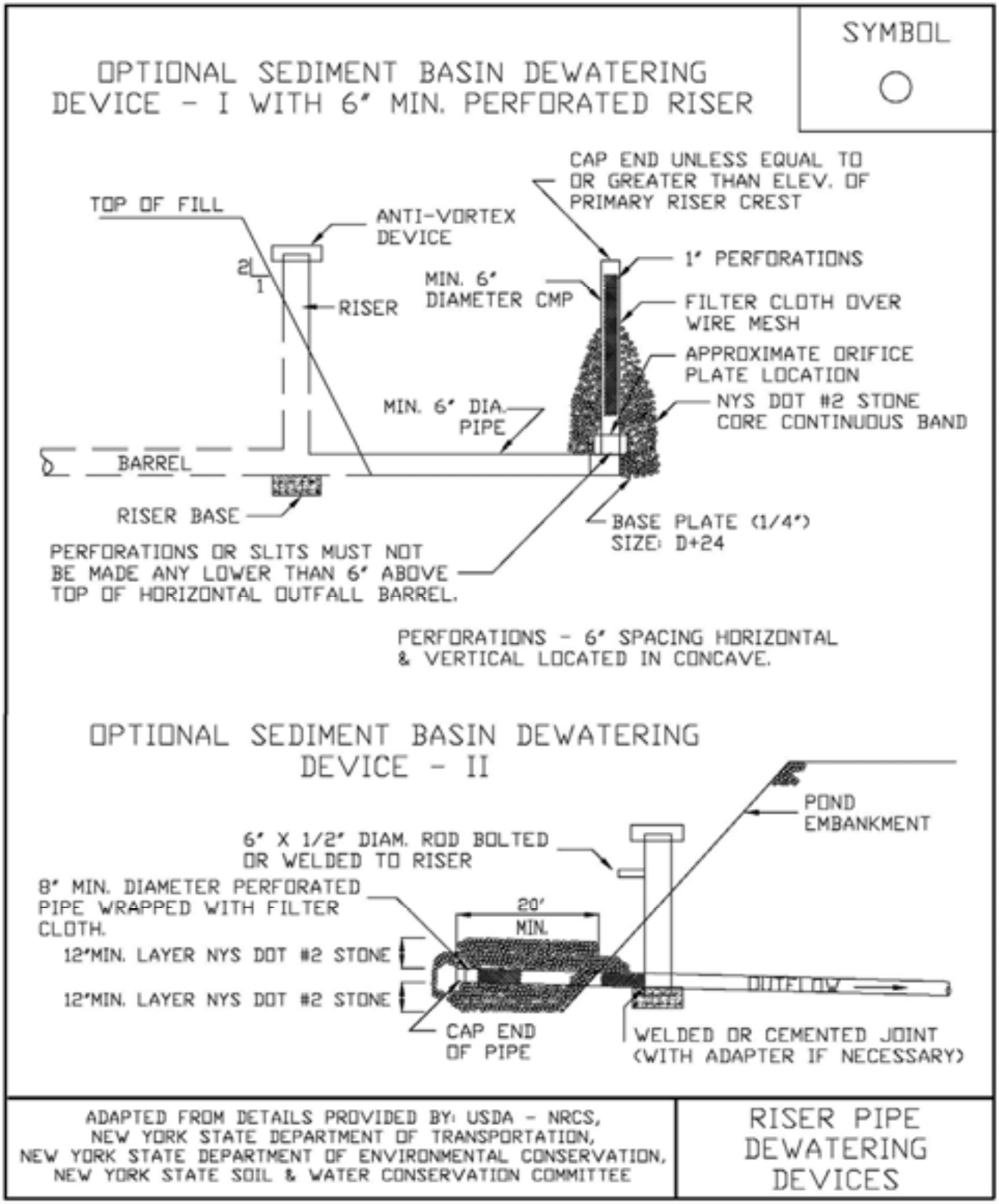


Figure 5.6
Riser Pipe Dewatering Device Construction Notes

Riser Pipe Construction Notes

1. Standpipe and connector pipe shall be a minimum of 6 inches diameter.

2. Metal pipe may be galvanized steel or aluminum; plastic pipe may be Schedule 40 PVC or HDPP.

3. Construction operations shall be carried out in such a manner that erosion and water pollution are minimized.

4. The structure shall only be removed when the contributing drainage area has been properly stabilized.

5. All pipe connections shall be watertight. The lower portion of the standpipe, at a point above the barrel connection, shall be fitted with an internal orifice plate sized to release the volume of the basin no sooner than 48 hours.

6. The top 2/3 of the standpipe shall be perforated with 1 inch diameter hole or slit spaced 6 inches vertically and horizontally and placed in the concave portion of the pipe. No holes will be allowed within 6 inches inches of the horizontal connector pipe.

7. The riser shall be wrapped with a Type GD-II geotextile fabric. The fabric shall extend 6inches above the highest hole and 6" below the lowest hole. Where ends of fabric come together, they shall be overlapped, folded and stapled to prevent bypass.

8. Straps or connecting bands shall be used to hold the fabric and wire mesh (as needed) in place. They shall be placed at the top and bottom of the cloth.

9. The standpipe shall be anchored with either concrete base or steel plate base to prevent flotation. Concrete bases shall be 12 inches thick with the standpipe embedded nine inches. Steel plate bases will be 1/4 inch minimum thickness attached to the standpipe by a continuous weld around the bottom to form a watertight connection. The plate shall have 2.5 feet of stone, gravel or tampered earth placed on it.

10. The perforated standpipe shall be surrounded by NYSDOT #1 or #2 stone or a blend of both to protect the filter fabric.

STANDARD AND SPECIFICATIONS FOR SILT FENCE



Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

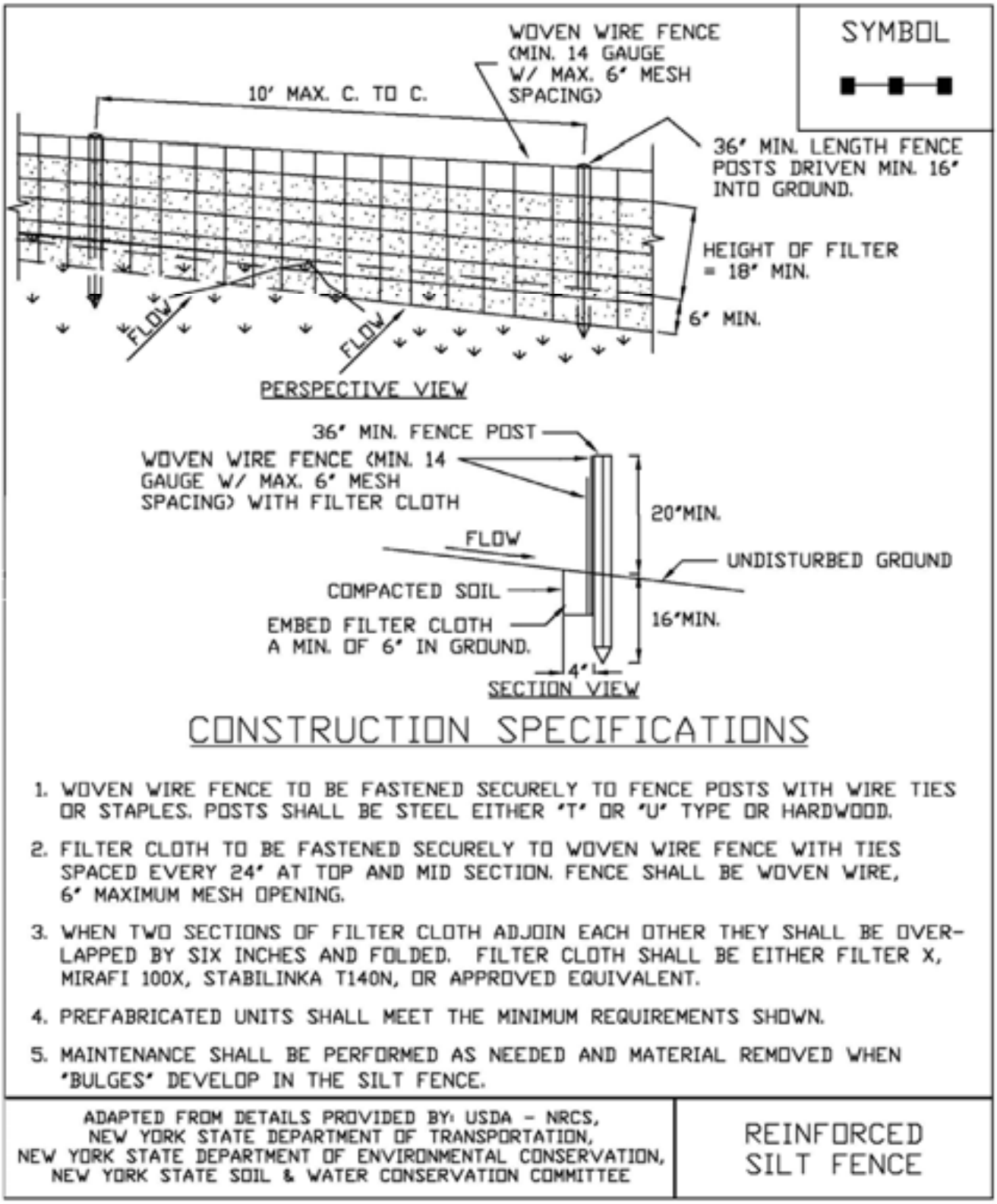
Super Silt Fence



Reinforced Silt Fence



Figure 5.30
Reinforced Silt Fence



STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION



Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection



This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet (“doughnut”). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection



This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.



The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection



The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

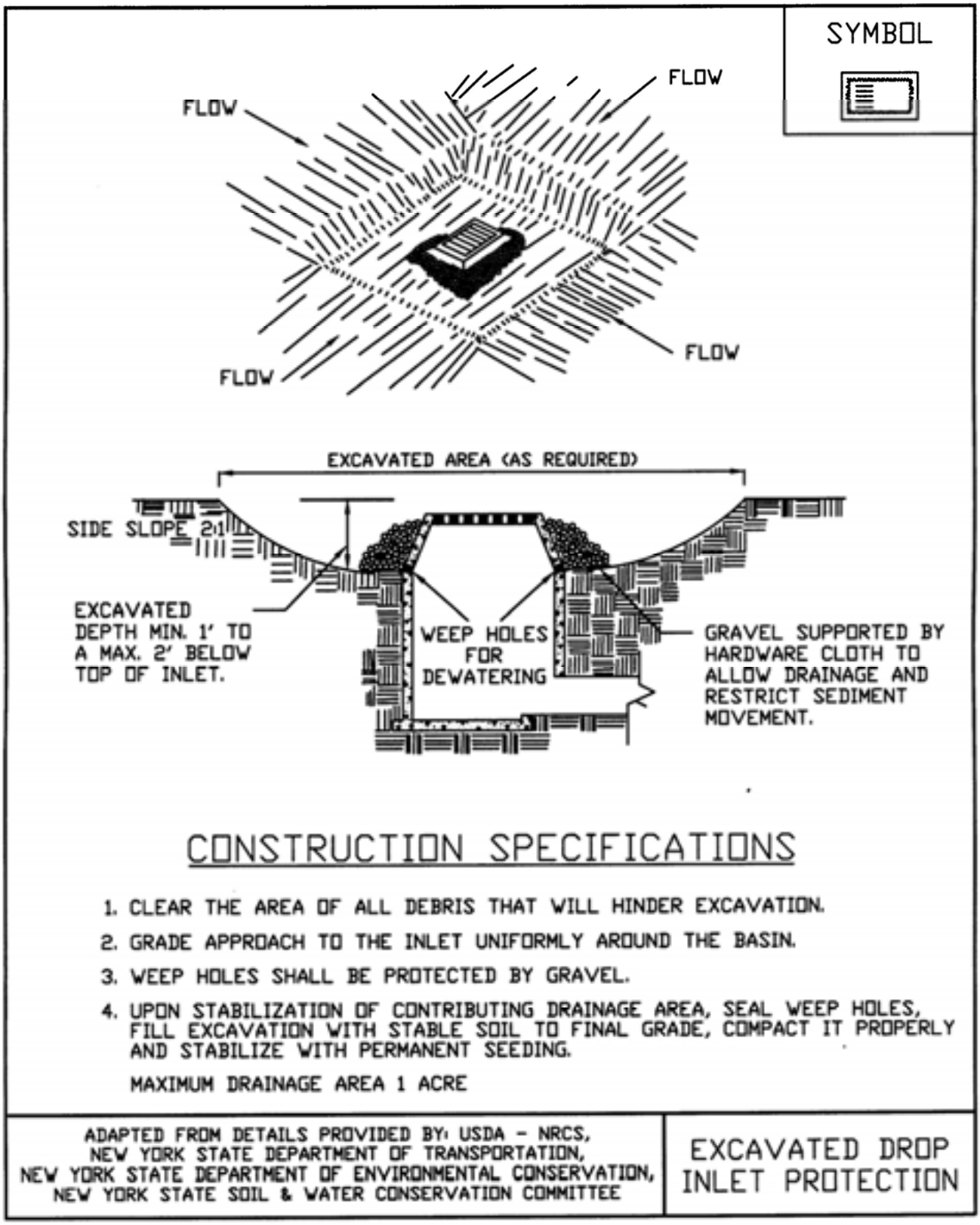


Figure 5.32
Fabric Drop Inlet Protection

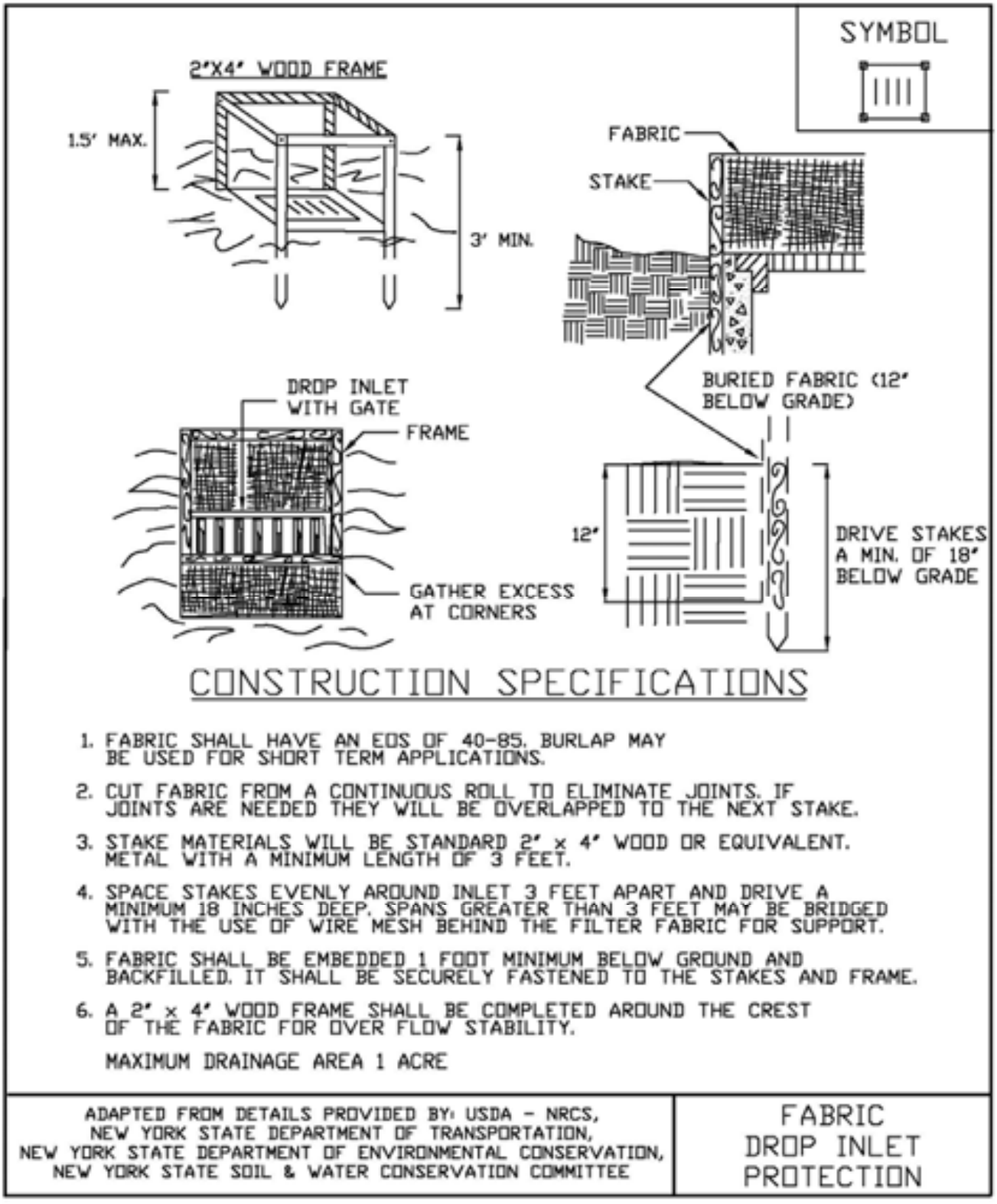
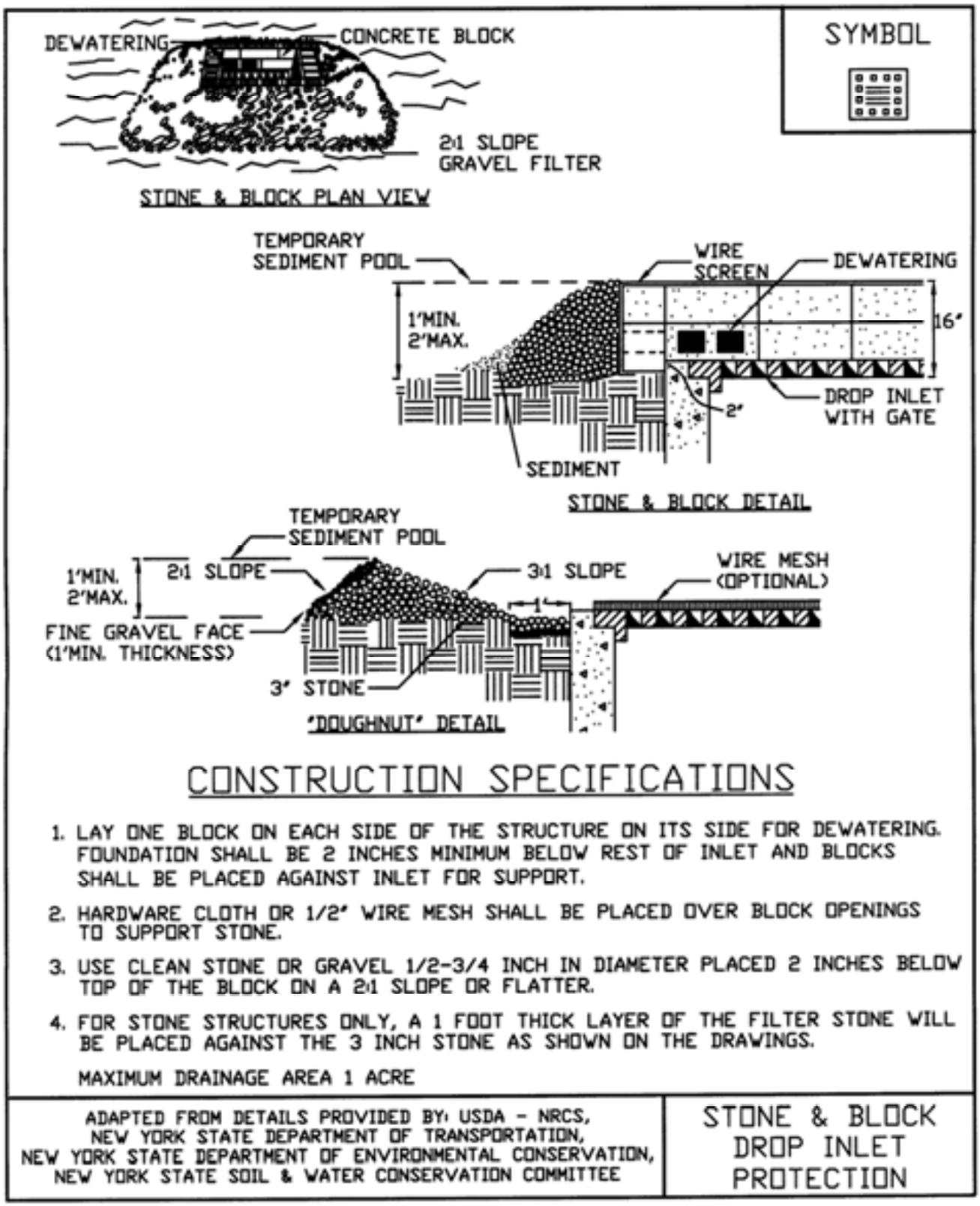


Figure 5.33
Stone & Block Drop Inlet Protection



CONSTRUCTION SPECIFICATIONS

1. LAY ONE BLOCK ON EACH SIDE OF THE STRUCTURE ON ITS SIDE FOR DEWATERING. FOUNDATION SHALL BE 2 INCHES MINIMUM BELOW REST OF INLET AND BLOCKS SHALL BE PLACED AGAINST INLET FOR SUPPORT.
2. HARDWARE CLOTH OR 1/2" WIRE MESH SHALL BE PLACED OVER BLOCK OPENINGS TO SUPPORT STONE.
3. USE CLEAN STONE OR GRAVEL 1/2-3/4 INCH IN DIAMETER PLACED 2 INCHES BELOW TOP OF THE BLOCK ON A 2:1 SLOPE OR FLATTER.
4. FOR STONE STRUCTURES ONLY, A 1 FOOT THICK LAYER OF THE FILTER STONE WILL BE PLACED AGAINST THE 3 INCH STONE AS SHOWN ON THE DRAWINGS.

MAXIMUM DRAINAGE AREA 1 ACRE

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE & BLOCK DROP INLET PROTECTION

Helen Caster

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Sunday, June 7, 2020 1:22 PM
To: 'Helen Caster (hcaster@rzengineering.com)'
Subject: FW: Compost requirements for subdivision development in Town of Manlius

Below is email from DEC regarding soil restoration

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan <vr@Keplingerfreeman.com>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com<mailto:vr@Keplingerfreeman.com>>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov<mailto:matthew.kazmierski@dec.ny.gov>>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov<mailto:david.gasper@dec.ny.gov>>; Scott Freeman <sf@Keplingerfreeman.com<mailto:sf@Keplingerfreeman.com>>; 'Rudy Zona (rzona@rzengineering.com<mailto:rzona@rzengineering.com>)' <rzona@rzengineering.com<mailto:rzona@rzengineering.com>>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.
Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating

we apply full restoration per "deep Ripping and De-compaction, DEC 2008" and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
vr@keplingerfreeman.com<mailto:vr@keplingerfreeman.com>
(p) 315 -445-7980 x 110

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New York State
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Water

Deep-Ripping and Decompaction

April 2008

New York State
Department of Environmental Conservation

Document Prepared by:

John E. Lacey,
Land Resource Consultant and Environmental Compliance Monitor
(Formerly with the Division of Agricultural Protection and Development Services,
NYS Dept. of Agriculture & Markets)

Alternative Stormwater Management
Deep-Ripping and Decompaction

Description

The two-phase practice of 1) “Deep Ripping;” and 2) “Decompaction” (deep subsoiling), of the soil material as a step in the cleanup and restoration/landscaping of a construction site, helps mitigate the physically induced impacts of soil compression; i.e.: soil compaction or the substantial increase in the bulk density of the soil material.

Deep Ripping and Decompaction are key factors which help in restoring soil pore space and permeability for water infiltration. Conversely, the physical actions of cut-and-fill work, land grading, the ongoing movement of construction equipment and the transport of building materials throughout a site alter the architecture and structure of the soil, resulting in: the mixing of layers (horizons) of soil materials, compression of those materials and diminished soil porosity which, if left unchecked, severely impairs the soil’s water holding capacity and vertical drainage (rainfall infiltration), from the surface downward.

In a humid climate region, compaction damage on a site is virtually guaranteed over the duration of a project. Soil in very moist to wet condition when compacted, will have severely reduced permeability. Figure 1 displays the early stage of the deep-ripping phase (Note that all topsoil was stripped prior to construction access, and it remains stockpiled until the next phase – decompaction – is complete). A heavy-duty tractor is pulling a three-shank ripper on the first of several series of incrementally deepening passes through the construction access corridor's densely compressed subsoil material. Figure 2 illustrates the approximate volumetric composition of a loam surface soil when conditions are good for plant growth, with adequate natural pore space for fluctuating moisture conditions.



Fig. 1. A typical deep ripping phase of this practice, during the first in a series of progressively deeper “rips” through severely compressed subsoil.

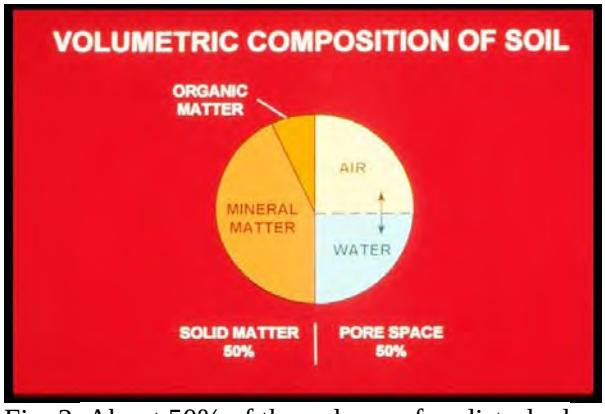


Fig. 2. About 50% of the volume of undisturbed loam surface soil is pore space, when soil is in good condition for plant growth. Brady, 2002.

Recommended Application of Practice

The objective of Deep Ripping and Decompaction is to effectively fracture (vertically and laterallly) through the thickness of the physically compressed subsoil material (see Figure 3), restoring soil porosity and permeability and aiding infiltration to help reduce runoff. Together with topsoil stripping, the "two-phase" practice of Deep Ripping and Decompaction first became established as a "best management practice" through ongoing success on commercial farmlands affected by heavy utility construction right-of-way projects (transmission pipelines and large power lines).



Fig. 3. Construction site with significant compaction of the deep basal till subsoil extends 24 inches below this exposed cut-and-fill work surface.

Soil permeability, soil drainage and cropland productivity were restored. For broader construction application, the two-phase practice of Deep Ripping and Decompaction is best adapted to areas impacted with significant soil compaction, on contiguous open portions of large construction sites and inside long, open construction corridors used as temporary access over the duration of construction. Each mitigation area should have minimal above-and-below-ground obstructions for the easy avoidance and maneuvering of a large tractor and ripping/decompacting implements. Conversely, the complete two-phase practice is not recommended in congested or obstructed areas due to the limitations on tractor and implement movement.

Benefits

Aggressive "deep ripping" through the compressed thickness of exposed subsoil before the replacement/respreading of the topsoil layer, followed by "decompaction," i.e.: "sub-soiling," through the restored topsoil layer down into the subsoil, offers the following benefits:

- Increases the project (larger size) area's direct surface infiltration of rainfall by providing the open site's mitigated soil condition and lowers the demand on concentrated runoff control structures

- Enhances direct groundwater recharge through greater dispersion across and through a broader surface than afforded by some runoff-control structural measures

- Decreases runoff volume generated and provides hydrologic source control

- May be planned for application in feasible open locations either alone or in

conjunction with plans for structural practices (e.g., subsurface drain line or infiltration basin) serving the same or contiguous areas

- Promotes successful long-term revegetation by restoring soil permeability, drainage and water holding capacity for healthy (rather than restricted) root-system development of trees, shrubs and deep rooted ground cover, minimizing plant drowning during wet periods and burnout during dry periods.

Feasibility / Limitations

The effectiveness of Deep Ripping and Decompaction is governed mostly by site factors such as: the original (undisturbed) soil's hydrologic characteristics; the general slope; local weather/timing (soil moisture) for implementation; the space-related freedom of equipment/implement maneuverability (noted above in **Recommended Application of Practice**), and by the proper selection and operation of tractor and implements (explained below in **Design Guidance**). The more notable site-related factors include:

Soil

In the undisturbed condition, each identified soil type comprising a site is grouped into one of four categories of soil hydrology, Hydrologic Soil Group A, B, C or D, determined primarily by a range of characteristics including soil texture, drainage capability when thoroughly wet, and depth to water table. The natural rates of infiltration and transmission of soil-water through the undisturbed soil layers for Group A is "high" with a low runoff potential while soils in Group B are moderate in infiltration and the transmission of soil-water with a moderate runoff potential, depending somewhat on slope. Soils in Group C have slow rates of infiltration and transmission of soil-water and a moderately high runoff potential influenced by soil texture and slope; while soils in Group D have exceptionally slow rates of infiltration and transmission of soil-water, and high runoff potential.

In Figure 4, the profile displays the undisturbed horizons of a soil in Hydrologic Soil Group C and the naturally slow rate of infiltration through the subsoil. The slow rate of infiltration begins immediately below the topsoil horizon (30 cm), due to the limited amount of macro pores, e.g.: natural subsoil fractures, worm holes and root channels. Infiltration after the construction-induced mixing and compression of such subsoil material is virtually absent; but can be restored back to this natural level with the two-phase practice of deep ripping and decompaction, followed by the permanent establishment of an appropriate, deep taproot

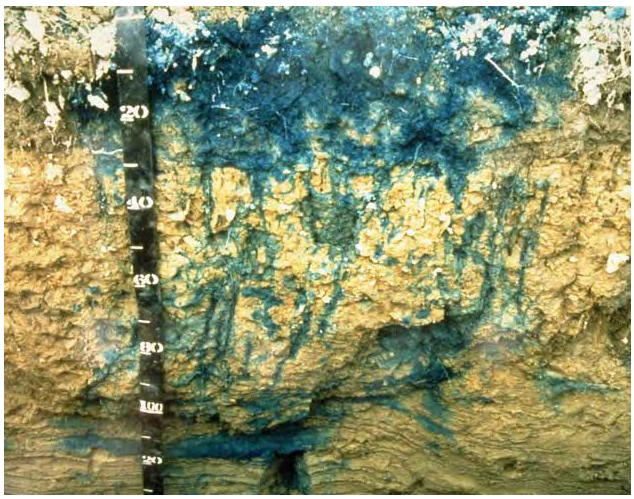


Fig. 4. Profile (in centimeters) displaying the infiltration test result of the natural undisturbed horizons of a soil in Hydrologic Soil Group C.

lawn/ground cover to help maintain the restored subsoil structure. Infiltration after construction-induced mixing and compression of such subsoil material can be notably rehabilitated with the Deep Ripping and Decompaction practice, which prepares the site for the appropriate long-term lawn/ground cover mix including deep taproot plants such as clover, fescue or trefoil, etc. needed for all rehabilitated soils.

Generally, soils in Hydrologic Soil Groups A and B, which respectively may include deep, well-drained, sandy-gravelly materials or deep, moderately well-drained basal till materials, are among the easier ones to restore permeability and infiltration, by deep ripping and decompaction. Among the many different soils in Hydrologic Soil Group C are those unique glacial tills having a natural fragipan zone, beginning about 12 to 18 inches (30 – 45cm), below surface. Although soils in Hydrologic Soil Group C do require a somewhat more carefully applied level of the Deep Ripping and Decompaction practice, it can greatly benefit such affected areas by reducing the runoff and fostering infiltration to a level equal to that of pre-disturbance.

Soils in Hydrologic Soil Group D typically have a permanent high water table close to the surface, influenced by a clay or other highly impervious layer of material. In many locations with clay subsoil material, the bulk density is so naturally high that heavy trafficking has little or no added impact on infiltration; and structural runoff control practices rather than Deep Ripping and Decompaction should be considered.

The information about Hydrologic Soil Groups is merely a general guideline. Site-specific data such as limited depths of cut-and-fill grading with minimal removal or translocation of the inherent subsoil materials (as analyzed in the county soil survey) or, conversely, the excavation and translocation of deeper, unconsolidated substratum or consolidated bedrock materials (unlike the analyzed subsoil horizons' materials referred to in the county soil survey) should always be taken into account.

Sites made up with significant quantities of large rocks, or having a very shallow depth to bedrock, are not conducive to deep ripping and decompation (subsoiling); and other measures may be more practical.

Slope

The two-phase application of 1) deep ripping and 2) decompaction (deep subsoiling), is most practical on flat, gentle and moderate slopes. In some situations, such as but not limited to temporary construction access corridors, inclusion areas that are moderately steep along a project's otherwise gentle or moderate slope may also be deep ripped and decompacted. For limited instances of moderate steepness on other projects, however, the post-construction land use and the relative alignment of the potential ripping and decompaction work in relation to the lay of the slope should be reviewed for safety and practicality. In broad construction areas predominated by moderately steep or steep slopes, the practice is generally not used.

Local Weather/Timing/Soil Moisture

Effective fracturing of compressed subsoil material from the exposed work surface, laterally and vertically down through the affected zone is achieved only when the soil material is moderately dry to moderately moist. Neither one of the two-phases, deep ripping nor decompaction (deep

subsoiling), can be effectively conducted when the soil material (subsoil or replaced topsoil) is in either a "plastic" or "liquid" state of soil consistency. Pulling the respective implements legs through the soil when it is overly moist only results in the "slicing and smearing" of the material or added "squeezing and compression" instead of the necessary fracturing. Ample drying time is needed for a "rippable" soil condition not merely in the material close to the surface, but throughout the material located down to the bottom of the physically compressed zone of the subsoil.

The "poor man's Atterberg field test" for soil plasticity is a simple "hand-roll" method used for quick, on-site determination of whether or not the moisture level of the affected soil material is low enough for: effective deep ripping of subsoil; respreading of topsoil in a friable state; and final decompaction (deep subsoiling). Using a sample of soil material obtained from the planned bottom depth of ripping, e.g.: 20 - 24 inches below exposed subsoil surface, the sample is hand rolled between the palms down to a 1/8-inch diameter thread. (Use the same test for stored topsoil material before respreading on the site.) If the respective soil sample crumbles apart in segments no greater than 3/8 of an inch long, by the time it is rolled down to 1/8 inch diameter, it is low enough in moisture for deep ripping (or topsoil replacement), and decompaction. Conversely, as shown in Figure 5, if the rolled sample stretches out in increments greater than 3/8 of an inch long before crumbling, it is in a "plastic" state of soil consistency and is too wet for subsoil ripping (as well as topsoil replacement) and final decompaction.



Fig. 5. Augered from a depth of 19 inches below the surface of the replaced topsoil, this subsoil sample was hand rolled to a 1/8-inch diameter. The test shows the soil at this site stretches out too far without crumbling; it indicates the material is in a plastic state of consistence, too wet for final decompaction (deep subsoiling) at this time.

Design Guidance

Beyond the above-noted site factors, a vital requirement for the effective Deep Ripping and Decompaction (deep subsoiling), is implementing the practice in its distinct, two-phase process:

1) Deep rip the affected thickness of exposed subsoil material (see Figure 10 and 11), aggressively fracturing it before the protected topsoil is reapplied on the site (see Figure 12); and

2) Decompact (deep subsoil), simultaneously through the restored topsoil layer and the upper half of the affected subsoil (Figure 13). The second phase, "decompaction," mitigates the partial recompaction which occurs during the heavy process of topsoil spreading/grading. Prior to deep ripping and decompacting the site, all construction activity, including construction equipment and material storage, site cleanup and trafficking (Figure 14), should be finished; and the site closed off to further disturbance. Likewise, once the practice is underway and the area's soil permeability and

rainfall infiltration are being restored, a policy limiting all further traffic to permanent travel lanes is maintained.

The other critical elements, outlined below, are: using the proper implements (deep, heavy-duty rippers and subsoilers), and ample pulling-power equipment (tractors); and conducting the practice at the appropriate speed, depth and pattern(s) of movement.

Note that an appropriate plan for the separate practice of establishing a healthy perennial ground cover, with deep rooting to help maintain the restored soil structure, should be developed in advance. This may require the assistance of an agronomist or landscape horticulturist.

Implements

Avoid the use of all undersize implements. The small-to-medium, light-duty tool will, at best, only "scarify" the uppermost surface portion of the mass of compacted subsoil material. The term "chisel plow" is commonly but incorrectly applied to a broad range of implements. While a few may be adapted for the moderate subsoiling of non-impacted soils, the majority are less durable and used for only lighter land-fitting (see Figure 6).



Fig. 6. A light duty chisel implement, not adequate for either the deep ripping or decompaction (deep subsoiling) phase.



Fig. 7. One of several variations of an agricultural ripper. This unit has long, rugged shanks mounted on a steel V-frame for deep, aggressive fracturing through Phase 1.

Use a "heavy duty" agricultural-grade, deep ripper (see Figures 7,9,10 and 11) for the first phase: the lateral and vertical fracturing of the mass of exposed and compressed subsoil, down and through, to the bottom of impact, prior to the replacement of the topsoil layer. (Any oversize rocks which are uplifted to the subsoil surface during the deep ripping phase are picked and removed.) Like the heavy-duty class of implement for the first phase, the decompaction (deep subsoiling) of Phase 2 is conducted with the heavy-duty version of the deep subsoiler. More preferable is the angled-leg variety of deep subsoiler (shown in Figures 8 and 13). It minimizes the inversion of the subsoil and topsoil layers while laterally and vertically fracturing the upper half of the previously ripped subsoil layer and all of the topsoil layer by delivering a momentary, wave-like "lifting and shattering" action up through the soil layers as it is pulled.

Pulling-Power of Equipment

Use the following rule of thumb for tractor horsepower (hp) whenever deep ripping and decompacting a significantly impacted site: For both types of implement, have at least 40 hp of tractor pull available for each mounted shank/ leg.

Using the examples of a 3-shank and a 5-shank implement, the respective tractors should have 120 and 200 hp available for fracturing down to the final depth of 20-to-24 inches per phase. Final depth for the deep ripping in Phase 1 is achieved incrementally by a progressive series of passes (see Depth and Patterns of Movement, below); while for Phase 2, the full operating depth of the deep subsoiler is applied from the beginning.

The operating speed for pulling both types of implement should not exceed 2 to 3 mph. At this slow and managed rate of operating speed, maximum functional performance is sustained by the tractor and the implement performing the soil fracturing. Referring to Figure 8, the implement is the 6-leg version of the deep angled-leg subsoiler. Its two outside legs are "chained up" so that only four legs will be engaged (at the maximum depth), requiring no less than 160 hp, (rather than 240 hp) of pull. The 4-wheel drive, articulated-frame tractor in Figure 8 is 174 hp. It will be decompacting this unobstructed, former construction access area simultaneously through 11 inches of replaced topsoil and the upper 12 inches of the previously deep-ripped subsoil. In constricted areas of Phase 1) Deep Ripping, a medium-size tractor with adequate hp, such as the one in Figure 9 pulling a 3-shank deep ripper, may be more maneuverable.



Fig. 8. A deep, angled-leg subsoiler, ideal for Phase 2 decompaction of after the topsoil layer is graded on top of the ripped subsoil.



Fig. 9. This medium tractor is pulling a 3-shank deep ripper. The severely compacted construction access corridor is narrow, and the 120 hp tractor is more maneuverable for Phase 1 deep ripping (subsoil fracturing), here.

Some industrial-grade variations of ripping implements are attached to power graders and bulldozers. Although highly durable, they are generally not recommended. Typically, the shanks or "teeth" of these rippers are too short and stout; and they are mounted too far apart to achieve the well-distributed type of lateral and vertical fracturing of the soil materials necessary to restore soil permeability and infiltration. In addition, the power graders and bulldozers, as pullers, are far less maneuverable for turns and patterns than the tractor.

Depth and Patterns of Movement

As previously noted both Phase 1 Deep Ripping through significantly compressed, exposed subsoil and Phase 2 Decompaction (deep subsoiling) through the replaced topsoil and upper subsoil need to be performed at maximum capable depth of each implement. With an implement's guide wheels attached, some have a "normal" maximum operating depth of 18 inches, while others may go deeper. In many situations, however, the tractor/implement operator must first remove the guide wheels and other non essential elements from the implement. This adapts the ripper or the deep subsoiler for skillful pulling with its frame only a few inches above surface, while the shanks or legs, fracture the soil material 20-to-24 inches deep.

There may be construction sites where the depth of the exposed subsoil's compression is moderate, e.g.: 12 inches, rather than deep. This can be verified by using a ¾ inch cone penetrometer and a shovel to test the subsoil for its level of compaction, incrementally, every three inches of increasing depth. Once the full thickness of the subsoil's compacted zone is finally "pieced" and there is a significant drop in the psi measurements of the soil penetrometer, the depth/thickness of compaction is determined. This is repeated at several representative locations of the construction site. If the thickness of the site's subsoil compaction is verified as, for example, ten inches, then the Phase 1 Deep Ripping can be correspondingly reduced to the implement's minimum operable depth of 12 inches. However, the Phase 2 simultaneous Decompation (subsoiling) of an 11 inch thick layer of replaced topsoil and the upper subsoil should run at the subsoiling implements full operating depth.



Fig. 10. An early pass with a 3-shank deep ripper penetrating only 8 inches into this worksite's severely compressed subsoil.



Fig. 11. A repeat run of the 3-shank ripper along the same patterned pass area as Fig. 9; here, incrementally reaching 18 of the needed 22 inches of subsoil fracture.

Typically, three separate series (patterns) are used for both the Phase 1 Deep Ripping and the Phase 2 Decompaction on significantly compacted sites. For Phase 1, each series begins with a moderate depth of rip and, by repeat-pass, continues until full depth is reached. Phase 2 applies the full depth of Decompation (subsoiling), from the beginning.

Every separate series (pattern) consists of parallel, forward-and-return runs, with each progressive

pass of the implement's legs or shanks evenly staggered between those from the previous pass. This compensates for the shank or leg-spacing on the implement, e.g., with 24-to-30 inches between each shank or leg. The staggered return pass ensures lateral and vertical fracturing actuated every 12 to 15 inches across the densely compressed soil mass.

Large, Unobstructed Areas

For larger easy areas, use the standard patterns of movement:

- The first series (pattern) of passes is applied lengthwise, parallel with the longest spread of the site; gradually progressing across the site's width, with each successive pass.

- The second series runs obliquely, crossing the first series at an angle of about 45 degrees.

- The third series runs at right angle (or 90 degrees), to the first series to complete the fracturing and shattering on severely compacted sites, and avoid leaving large unbroken blocks of compressed soil material. (In certain instances, the third series may be optional, depending on how thoroughly the first two series loosen the material and eliminate large chunks/blocks of material as verified by tests with a ¾-inch cone penetrometer.)



Fig. 12. Moderately dry topsoil is being replaced on the affected site now that Phase 1 deep ripping of the compressed subsoil is complete.



Fig. 13. The same deep, angled-leg subsoiler shown in Fig. 7 is engaged at maximum depth for Phase 2, decompaction (deep soiling), of the replaced topsoil and the upper subsoil materials.

Corridors

In long corridors of limited width and less maneuverability than larger sites, e.g.: along compacted areas used as temporary construction access, a modified series of pattern passes are used.

- First, apply the same initial lengthwise, parallel series of passes described above.

● A second series of passes makes a broad “S” shaped pattern of rips, continually and gradually alternating the “S” curves between opposite edges inside the compacted corridor.

● The third and final series again uses the broad, alternating S pattern, but it is “flip-flopped” to continually cross the previous S pattern along the corridor’s centerline. This final series of the S pattern curves back along the edge areas skipped by the second series.

Maintenance and Cost

Once the two-phase practice of Deep Ripping and Decompation is completed, two items are essential for maintaining a site’s soil porosity and permeability for infiltration. They are: planting and maintaining the appropriate ground cover with deep roots to maintain the soil structure (see Figure 15); and keeping the site free of traffic or other weight loads.

Note that site-specific choice of an appropriate vegetative ground-cover seed mix, including the proper seeding ratio of one or more perennial species with a deep taproot system and the proper amount of lime and soil nutrients (fertilizer mix) adapted to the soil-needs, are basic to the final practice of landscaping, i.e: surface tillage, seeding/planting/fertilizing and culti-packing or mulching is applied. The "maintenance" of an effectively deep-ripped and decompacted area is generally limited to the successful perennial (long-term) landscape ground cover; as long as no weight-bearing force of soil compaction is applied.



Fig. 14. The severely compacted soil of a temporary construction yard used daily by heavy equipment for four months; shown before deep ripping, topsoil replacement, and decompaction.



Fig. 15. The same site as Fig. 14 after deep ripping of the exposed subsoil, topsoil replacement, decompaction through the topsoil and upper subsoil and final surface tillage and revegetation to maintain soil permeability and infiltration.

The Deep Ripping and Decompaction practice is, by necessity, more extensive than periodic subsoiling of farmland.The cost of deep ripping and decompacting (deep subsoiling), will vary according to the depth and severity of soil-material compression and the relative amount of tractor and implement time that is required. In some instances, depending on open maneuverability, two-to-three acres of compacted project area may be deep-ripped in one day. In other situations of more severe compaction and - or less maneuverability, as little as one acre may be fully ripped in a day. Generally, if the Phase 1) Deep Ripping is fully effective, the Phase 2) Decompaction should be completed in 2/3 to 3/4 of the time required for Phase 1.

Using the example of two acres of Phase 1) Deep Ripping in one day, at $1800 per day, the net cost is $900 per acre. If the Phase 2) Decompacting or deep subsoiling takes 3/4 the time as Phase 1, it costs $675 per acre for a combined total of $1575 per acre to complete the practice (these figures do not include the cost of the separate practice of topsoil stripping and replacement). Due to the many variables, it must be recognized that cost will be determined by the specific conditions or constraints of the site and the availability of proper equipment.

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- US Department of Agriculture in cooperation with Cornell University Agricultural Experiment Station. Various years. *Soil Survey of (various names) County, New York.* USDA.

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- Examples of implements:

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- Soils data of USDA Natural Resources Conservation Service. *NRCS Web Soil Survey.* http://websoilsurvey.nrcs.usda.gov/app/ and *USDA-NRCS Official Soil Series Descriptions; View by Name.* http://ortho.ftw.nrcs.usda.gov/cgi-bin/osd/osdname.cgi . *Last visited Jan. 08.*

- Soil penetrometer information. Access by internet searches of: *Diagnosing Soil Compaction using a Penetrometer (soil compaction tester), PSU Extension;* as well as *Dickey-john Soil Compaction Tester*. http://www.dickey-johnproducts.com/pdf/SoilCompactionTest.pdf and http://cropsoil.psu.edu/Extension/Facts/uc178pdf Last visited Sept. 07

Helen Caster

From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Sunday, June 7, 2020 1:22 PM
To: 'Helen Caster (hcaster@rzengineering.com)'
Subject: FW: Compost requirements for subdivision development in Town of Manlius

Below is email from DEC regarding soil restoration

From: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov>
Sent: Wednesday, March 11, 2020 8:36 AM
To: Vincent Ryan <vr@Keplingerfreeman.com>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>; 'Rudy Zona (rzona@rzengineering.com)' <rzona@rzengineering.com>
Subject: RE: Compost requirements for subdivision development in Town of Manlius

Hi Vincent,

Yes per table 4.6, cut and fill areas in type C soils only require deep ripping and de-compaction. Compost only needs to be added in areas where impervious cover is being turned into green space or in high traffic areas. The way the standard is written is confusing, the description of full restoration on page 4.52 seems to indicate that compost is needed. However, the footnote in table 4.6 is meant to clarify that compost is not needed for cut and fill areas.

Let me know if you have any questions.

Matt

From: Vincent Ryan <vr@Keplingerfreeman.com<mailto:vr@Keplingerfreeman.com>>
Sent: Tuesday, March 10, 2020 1:44 PM
To: Kazmierski, Matthew J (DEC) <matthew.kazmierski@dec.ny.gov<mailto:matthew.kazmierski@dec.ny.gov>>
Cc: Gasper, David J (DEC) <david.gasper@dec.ny.gov<mailto:david.gasper@dec.ny.gov>>; Scott Freeman <sf@Keplingerfreeman.com<mailto:sf@Keplingerfreeman.com>>; 'Rudy Zona (rzona@rzengineering.com<mailto:rzona@rzengineering.com>)' <rzona@rzengineering.com<mailto:rzona@rzengineering.com>>
Subject: Compost requirements for subdivision development in Town of Manlius

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.
Dear Matt,

Thank you for taking the time to answer our questions regarding the compost requirements as per the soil restoration standards and specifications. I have attached a grading plan of the proposed project for your review. Per our conversation it is safe to assume, based on our Geotech investigation that found a majority of soils to be HSG C, that we would follow Table 4.6 of the Soil Restoration requirements stating

we apply full restoration per "deep Ripping and De-compaction, DEC 2008" and not be required to provide compost enhancements as described in the specification for full soil restoration on page 4.52. Please let us know if you have any other comments or questions regarding this project.

Thank you.

Vincent E. Ryan
Landscape Designer
Keplinger Freeman Asssociates
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(p) 315 -445-7980 x 110

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APPENDIX J

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

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Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharges*.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are <u>not</u> subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has <u>not</u> been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

   a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River **-** Figure 1
- Onondaga Lake Watershed **-** Figure 2
- Greenwood Lake Watershed **-**Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

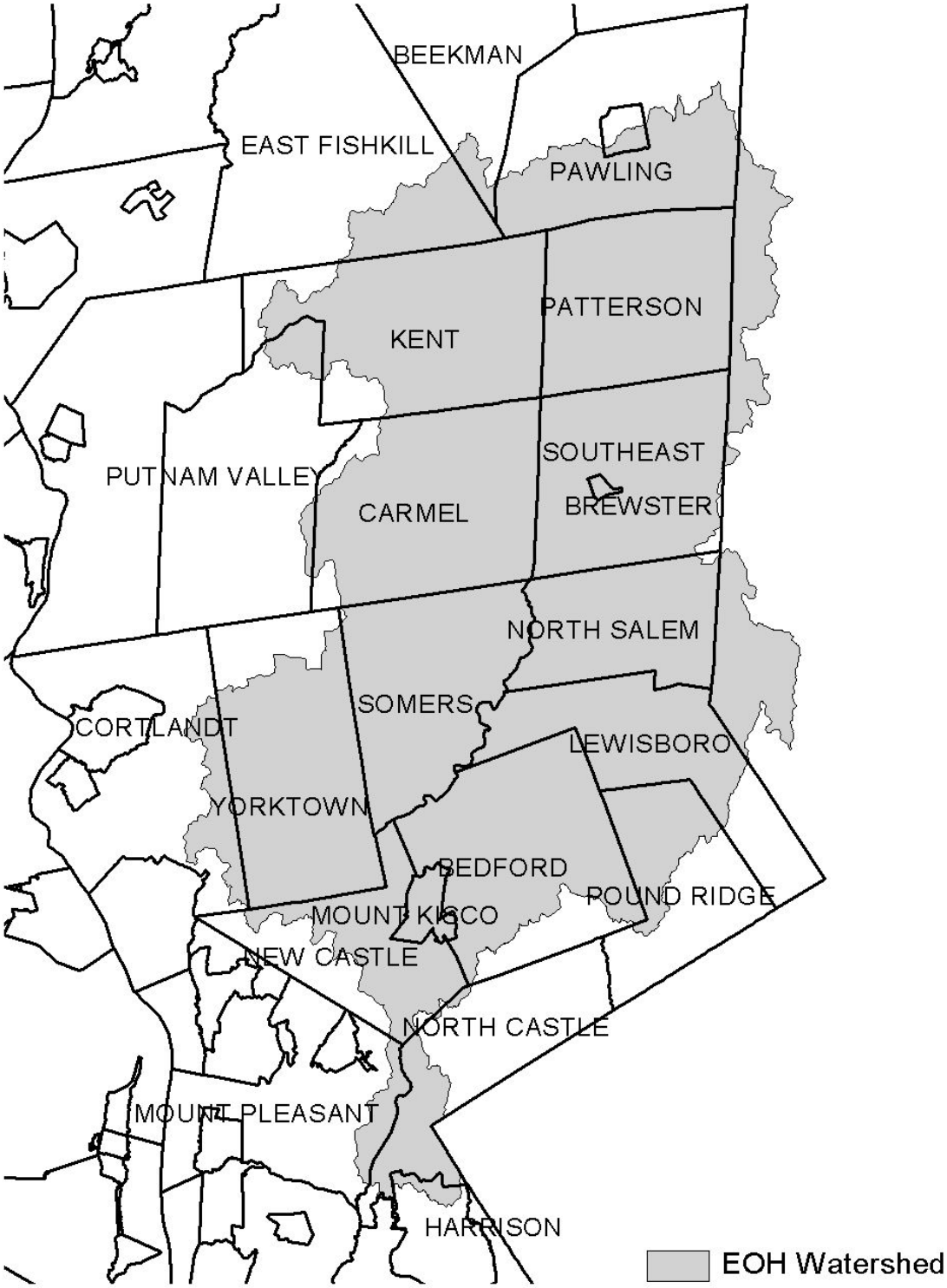


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed

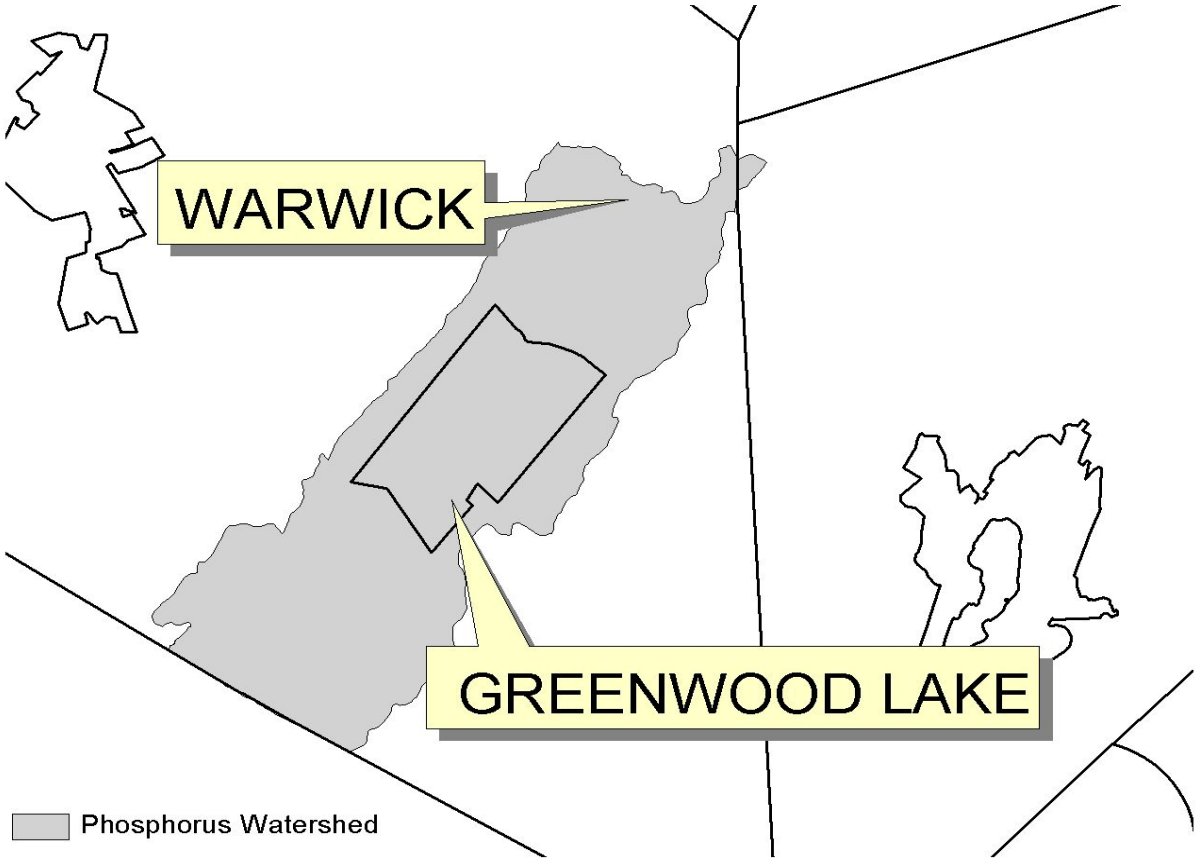


Figure 4 - Oscawana Lake Watershed

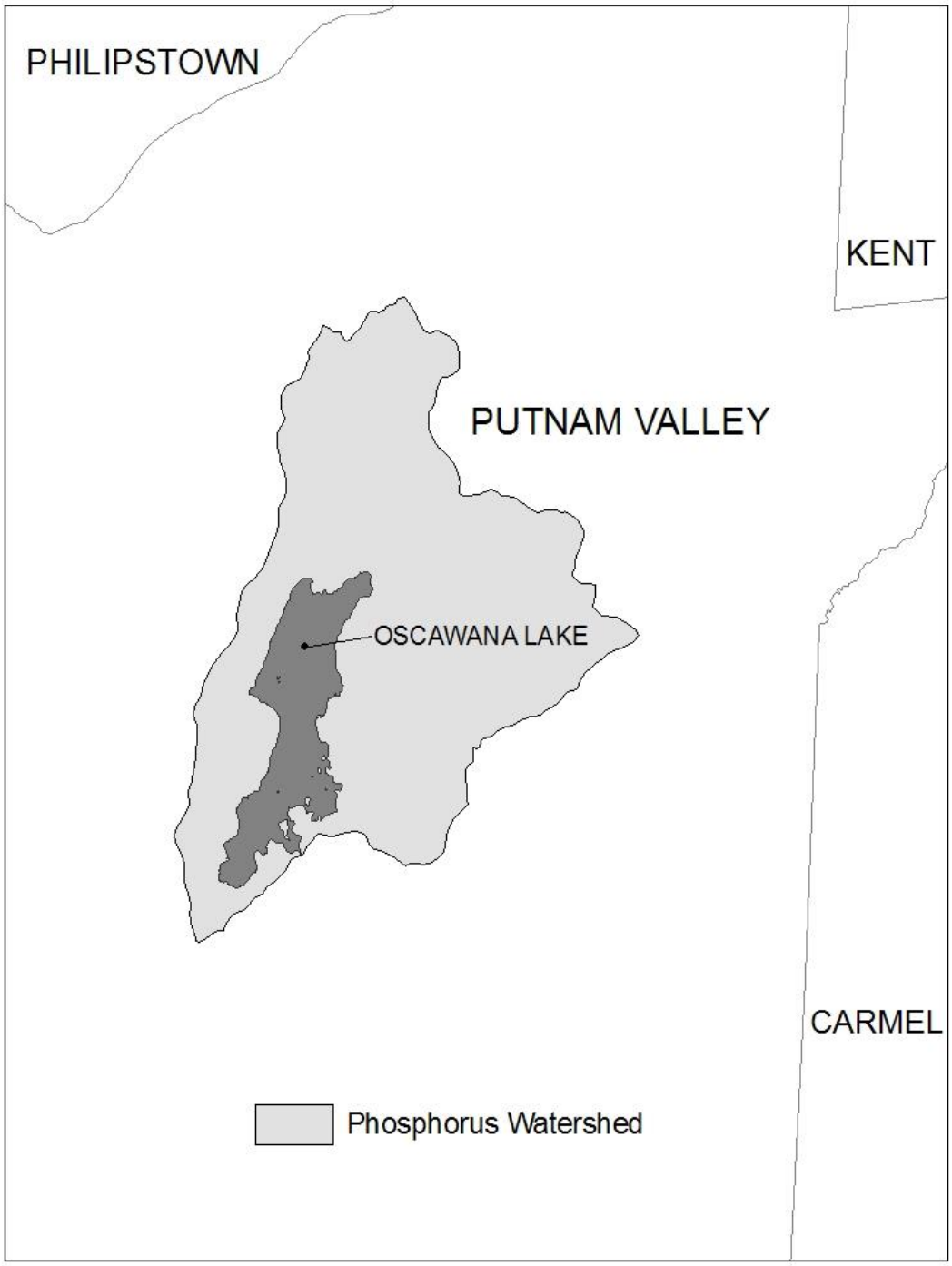
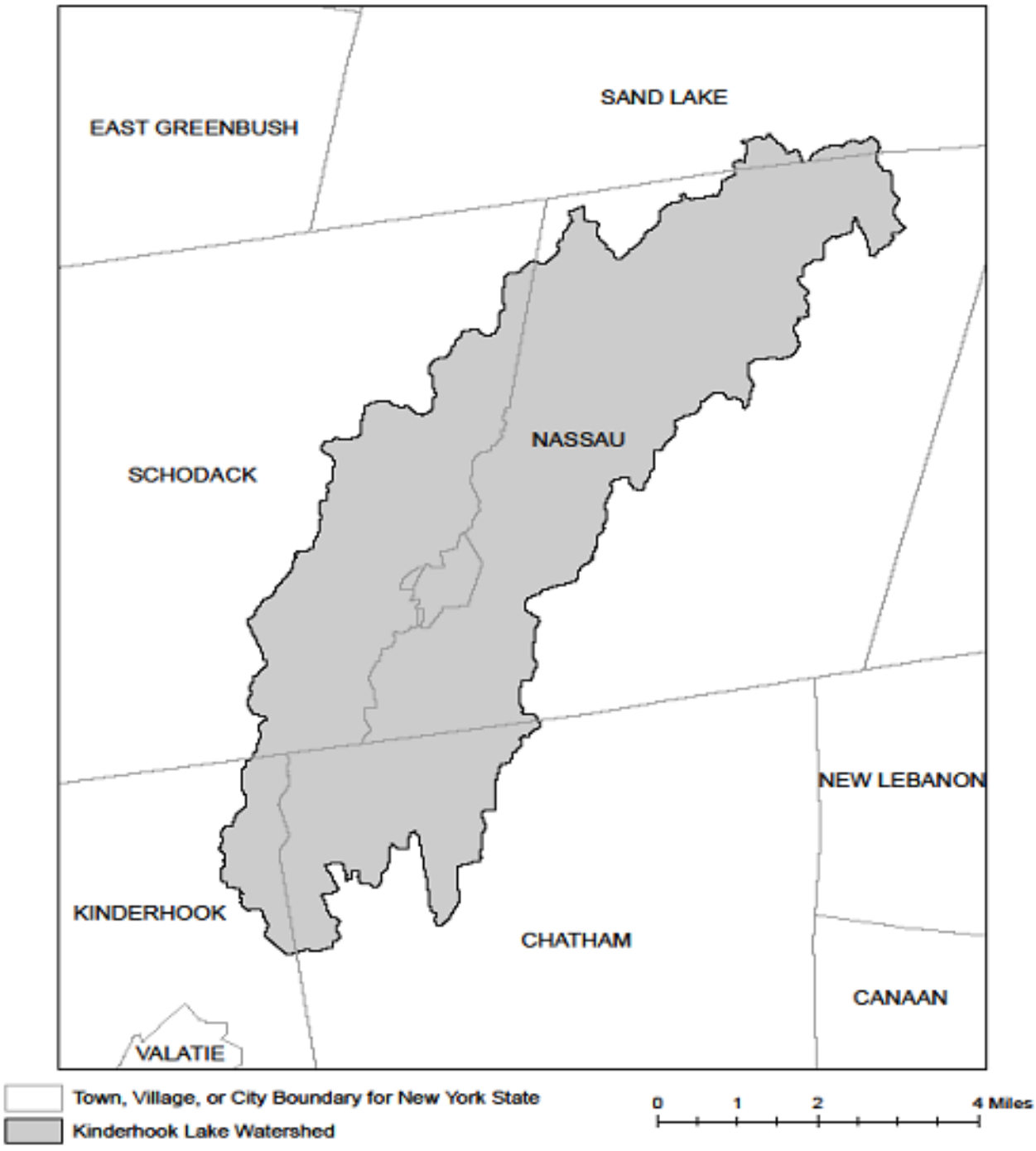


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River **-** See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1w White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

APPENDIX K

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Pond and Wetland Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

PW Drainage Area

Look for areas that are uphill from the pond.

Problem (Check if Present)	**Follow-Up Actions**
☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and straw areas of bare soil to establish vegetation. ☐ Fill in eroded areas with soil, compact, seed and mulch with straw to establish vegetation. ☐ Other:

☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Kick-Out to Level 2 Inspection: If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ If large areas of soil have been eroded or larger channels are forming, this may require rerouting of flow paths or use of an erosion-control seed mat or blanket to reestablish acceptable ground cover or anchor sod where it is practical.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Remove excessive vegetation or woody debris that can block drainage systems. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances exposed to rain in the drainage area	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ If the problem can be remedied with hand tools and done in a safe manner, remove vegetation, trash, woody debris, etc. from blocking inlet structures. ☐ Other: ☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.

Pond Inlets

Look for all areas where water flows into the pond during storms. Note that there may be multiple points of inflow and types of structures (e.g., pipes, open ditches, etc.).

Problem (Check if Present)		Follow-Up Actions
	☐ Inlets are buried, covered or filled with silt, debris, or trash, or blocked by excessive vegetation.	☐ Kick-Out to Level 2 or 3 Inspection: If the amount of material is too large to handle OR there are ANY safety concerns about working in standing water, soft sediment, etc., the work will likely have to be performed by a qualified contractor.
	☐ Inlets are broken, and, with pieces of pipe or concrete falling into the pond, there is erosion around the inlet, there is open space under the pipe, or there is erosion where the inlet meets the pond	☐ Kick-Out to Level 2 Inspection: These types of structural or erosion problems are more serious and will require a qualified contractor to repair.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ If the problem can be remedied with hand tools and done in a safe manner, use a flat shovel or other equipment to remove small amounts of sediment. ☐ Remove trash and excessive vegetation from forebays if this can be done in a safe manner. ☐ Other:

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The pretreatment area(s) or forebay(s) are filled with sediment, trash, vegetation, or other debris.	☐ Kick-Out to Level 2 Inspection: Large amounts of sediment or debris will have to be removed by a qualified contractor. ANY condition that poses a safety concern for working in standing water or soft sediments should be referred to a Level 2 Inspection or qualified contractor.
	☐ The pond area itself has accumulated sediment, trash, debris, or excessive vegetation that is choking the flow of the water, OR the pond area is covered with algae or aquatic plants.	☐ Level 1 includes handling only small amounts of material that can be removed by hand, or with rakes or other hand tools. Do not attempt any repair that poses a safety issue. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most cases will call for a Level 2 Inspection and/or a qualified contractor. ☐ You are not sure what type and amount of vegetation is supposed to be in the pond. ☐ The algae or aquatic plants should be identified so that proper control techniques can be applied.
	☐ The side slopes of the pond are unstable, eroding, and have areas of bare dirt.	☐ If there are only minor areas, try filling in small rills or gullies with topsoil, compacting, and seeding and mulching all bare dirt areas with an appropriate seed. Alternatively, try using herbaceous plugs to get vegetation established in tricky areas, such as steep slopes. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Erosion and many bare dirt areas on steep side slopes will require a Level 2 Inspection and repair by a qualified contractor.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
 	☐ The riser structure is clogged with trash, debris, sediment, vegetation, etc., OR is open, unlocked, or has a steep drop and poses a safety concern. The pond level may have dropped below its "normal" level.	☐ If you can safely access the riser on foot or with a small boat, clear minor amounts of debris and remove it from the pond area for safe disposal. ☐ Other: ☐ Kick-Out to Level 2 Inspection: The riser cannot be accessed safely, the amount of debris is substantial, or the riser seems to be completely clogged and the water level has risen too high. ☐ There are safety issues with the riser and concern about access to pipes, drops, or any other life safety concern. ☐ The riser is leaning, broken, settling or slumping, corroded, eroded or any other structural problem.
	☐ The dam/embankment is slumping, sinking, settling, eroding, or has medium or large trees growing on it.	☐ If there are small isolated areas, try to fix them by adding clean material (clay and topsoil) and seeding and mulching. ☐ Periodically mow embankments to enable inspection of the banks and to minimize establishment of woody vegetation. ☐ Remove any woody vegetation that has already established on embankments. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Most of these situations will require a Level 2 Inspection or evaluation and repair by a qualified contractor. Seepage through the dam or problems with the pipe through the dam can be a serious issue that should be addressed to avoid possible dam failure.

PW Pond Area and Embankments

Examine both interior and exterior pond banks as well as the pond body. Observe from the inlet pipes to the outfall structure and emergency overflow.

Problem (Check if Present)		Follow-Up Actions
	☐ The emergency spillway or outfall (if it exists) has ☐ Erosion, settlement, or loss of material. Rock-lined spillways have excessive debris or vegetation.	☐ Clear light debris and vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Displacement of rock lining, excessive vegetation and erosion/settlement may warrant review and decision by Level 2 Inspector to check against original plan. ☐ Any uncertainty about the integrity of the emergency spillway should be referred to a Level 2 Inspector. ☐ Erosion or settlement such that design has been compromised should be reviewed by an engineer.

PW Pond Outlet

Examine the outlet of the pipe on the downstream side of the dam/embankment where it empties into a stream, channel, or drainage system.

Problem (Check if Present)	Follow-Up Actions
 ☐ The pond outlet is clogged with sediment, trash, debris, vegetation, or is eroding, caving in, slumping, or falling apart.	☐ If there is a minor blockage, remove the debris or vegetation to allow free flow of water. ☐ Remove any accumulated trash at the outlet. ☐ Outlet: ☐ Kick-Out to Level 2 Inspection: ☐ If the area at the outlet cannot be easily accessed or if the blockage is substantial, a Level 2 Inspection is warranted. ☐ Erosion at and downstream of the outfall should be evaluated by a qualified professional. ☐ Any structural problems, such as broken pipes, structures falling into the stream, or holes or tunnels around the outfall pipe, should be evaluated by a Level 2 Inspector and will require repair by a qualified contractor. ☐ The pool of water at the outlet pipe is discolored, has an odor, or has excessive algae or vegetative growth.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Pond and Wetland Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: PONDS and WETLANDS

Recommended Repairs and Required Skills	Triggers for Level 3 Inspection
Observed Condition: Bare Soil or Erosion in the Drainage Area	
☐ Condition 1: Extensive problem spots, but no channels or rills forming Reseed problem areas. If problem persists or grass does not take, consider hiring a landscape contractor. ☐ Condition 2: Problem is extensive, and rills/channels are beginning to form May be necessary to divert or redirect water that is causing the erosion problem. If it appears that simple regrading—such as installing a berm or leveling a low spot–will fix the problem, make repairs and ensure that the problem is repaired after the next storm.	• Large rills or gullies are forming in the drainage area. • An attempt to regrade the drainage area has been unsuccessful. • Fixing the problem would require major regrading (i.e., redirecting more than a 100-square-foot area. • It is not clear why the problem is occurring. ☐ Level 3 inspection necessary
Observed Condition: Manholes or Inlet Pipe Buried or Covered with Vegetation	
☐ Condition 1: Nearest manhole and inlet pipe not found Consult as-built drawings to get to closest suspected location and use metal detector to search for metal manhole cover. If unsuccessful, identify nearest drain inlets and approximate pipe direction to locate next manhole. ☐ Condition 2: Manhole located and inspected Never enter a manhole, except by following confined-space entry protocols. If outlet pipe is not visible or greater than 25% full of sediment/debris or trash, it will typically require a qualified contractor to flush, clean and clear blockages. ☐ Condition 3: Inlet pipe not found at pond Clear vegetation and brush that may be covering the inlet pipe. Buried inlet pipes may be found through use of a metal probe. ☐ Condition 4: Inlet pipe buried in sediment or blocked by vegetation Once located, the pipe path can be cleared of vegetation with brush hook or other brush tools. Light digging may clear sediment from the end of the pipe.	• To locate buried manholes and lost storm lines, it is sometimes necessary to hire a pipeline inspection contractor with televising equipment or ground-penetrating radar and enter at the closest upstream access point. • Locating a buried inlet pipe may require wading in the edge of the pond and using a metal probe and brush axe to find and expose the pipe. • If other than light digging is necessary to remove accumulated sediment, a contractor with heavy equipment may be required. ☐ Level 3 inspection necessary

Level 2 Inspection: PONDS and WETLANDS	
Recommended Repairs and Required Skills	**Triggers for Level 3 Inspection**
Observed Condition: Pipe or Headwall Settlement, Erosion, Corrosion or Failure	
☐ Condition 1: Pipe or headwall settlement or failure Severe sinkholes, settlement or corrosion should be kicked out to Level 3 Inspection. ☐ Condition 2: Flow not confined to pipe and visible outside pipe wall With flashlight, observe the inside of the pipe and note its condition. Take photographs. Look for sinkholes developing that indicate pipe failure beneath the surface. Kick out to Level 3 inspection.	• Where blockages are visible, a decision is needed on whether to clear them or leave in place. If a third of the pipe is full of sediment, it should be removed by a contractor with pipe-cleaning equipment. • Corrosion of inlet pipes that allows flow around the pipe exterior is a structural concern because it can lead to settlement, sinkholes and undermining pond embankment. Evidence of this type of failure may require specialized pipe-inspection equipment and investigation by an engineer. ☐ Level 3 inspection necessary
Observed Condition: Pond Conditions	
☐ Condition 1: Pond pre-treatment zone is full of sediment or not constructed as shown on as-built drawings. ☐ Condition 2: Excessive buildup of sediment or overgrowth If the pre-treatment area or pond pool is overgrown or filled with sediment so that the original design is compromised, corrective measures are required. If plants have died, then replanting is necessary. If none of the original design exists due to alteration or sediment, kick out to Level 3 inspection.	• It may require inspection by an engineer to determine next steps for clearing, replanting or reconstruction. • Erosion or settlement such that design has been compromised should be reviewed by an engineer. Recurring erosion may require redesign and/or regrading to direct flow away from eroding area. • If sediment has filled more than 50% of the pond's capacity, dredging is likely needed and should be evaluated by a qualified contractor. • Removal or control of excessive algae or aquatic plants can be assessed by a qualified pond maintenance company. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

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Inspector/Operator: _____ Date: _____

Disconnection & Sheetflow Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the drainage area.

Problem (Check if Present)	**Follow-Up Actions**
 ☐ Changes in flow; more runoff; runoff bypassing the practice	☐ For rooftop areas, make sure downspouts are still disconnected and conveying water into the treatment area. ☐ Look for and remove any “dams” of sediment and grass clippings that prevent water from entering the treatment area as sheet flow. ☐ Other:

Table 2.4.1 D&S Drainage Area

Visually inspect any surfaces in the drainage area.

Problem (Check if Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Changes to drainage area size or amount of runoff due to construction, tillage, etc.
 ☐ For parking lots in the drainage area—sediment, grass clippings, or other debris has accumulated at pavement edge.	☐ For small, isolated amounts of debris, sweep up by hand and dispose properly so that it will not be exposed to runoff. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment is widespread and cannot be removed by manual sweeping.
 ☐ For parking lots in the drainage area—dips or damage at pavement edge caused flow to concentrate.	☐ Kick-Out to Level 2 Inspection: This will likely require special expertise to diagnose and fix pavement edge.

Table 2.4.2 D&S Level Spreader/Energy Dissipator

Inspect the energy dissipator closely, during a rain event if possible.

Problem (Check if Present)	Follow-Up Actions
 ☐ Debris and/or sediment accumulated behind or around the level spreader.	☐ Remove debris and sediment by hand and ensure that the area behind the level spreader is relatively flat. Too much debris and sediment can cause runoff to bypass the level spreader structure. ☐ Other:
 ☐ Sinking, cracking, sloughing, or other structural problem makes the energy dissipator no longer level.	☐ For stone/gravel spreaders, add new material or rake out as needed to make it even. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Structural issues that cannot be easily fixed by hand

Table 2.4.3 D&S Treatment Area

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

Problem (Check if Present)	Follow-Up Actions
☐ Trash and/or debris in the treatment area	☐ Collect trash/debris and dispose of properly.
 ☐ Grass filter strip has grown very tall, to the point that runoff cannot easily enter or is getting concentrated.	☐ Mow filter strip twice a year or more frequently in a residential yard.

Table 2.4.3 D&S Treatment Area

Examine where flow enters the treatment area as well as the whole flow path. Look for signs of concentrated flow.

Problem (Check if Present)	Follow-Up Actions
☐ Sparse vegetation or bare spots	☐ For grassy areas, add topsoil (as needed), grass seed, mulch, and water during the growing season to re-establish consistent vegetation cover. ☐ Other:
 ☐ Rills or gullies are forming in treatment area where flow has become concentrated	☐ For minor rills, fill in with soil, compact, and add seed and straw to establish vegetation. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.

Additional Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Disconnection & Sheetflow Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Significant sediment on pavement that drains to disconnection area (e.g., grass strip)	
☐ Condition 1: Sediment on parking lot is widespread Enlist a mechanical sweeper or vacuum sweeper to remove sediment across entire pavement surface. Pay special attention to downhill edges of pavement where more sediment may have accumulated.	• Sediment accumulation is so serious that it cannot be sufficiently removed with mechanical sweeper. May indicate a high sediment load from uphill in the drainage area that needs to be mitigated. ☐ Level 3 inspection necessary
Observed Condition: Pavement edge deteriorating	
☐ Condition 1: Dips or damage at pavement edge causing runoff to concentrate Determine whether the damaged edge is causing significant enough concentration of runoff to warrant repair or regrading of the pavement.	• Edge must be patched or re-paved to make secure and level. • Parking lot not draining properly to the energy dissipator and treatment area. ☐ Level 3 inspection necessary
Observed Condition: Level spreader/energy dissipator	
☐ Condition 1: Level spreader sinking or uneven If basic equipment can be used, prop up and secure any section of level spreader that is sinking. Regrade soil all around level spreader and add stone as necessary to prevent erosion and bypassing. ☐ Condition 2: Level spreader is broken These repairs can be simple for small, residential-scale practices, such as at a downspout. Ensure the level spreader is level across, keyed in to soil at the edges, and made of durable material that can withstand the flow of water running across it. Larger or more complicated level spreaders (e.g., concrete) will likely require specialized skill and equipment.	• Level spreader requires specialized equipment, regrading, or large amount of material to make level again. • Level spreader needs to be re-designed and replaced. ☐ Level 3 inspection necessary

Level 2 Inspection – DISCONNECTION AND SHEETFLOW	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Erosion in treatment area	
☐ Condition 1: Rills from concentrated flow Inspect energy dissipator to see whether it needs to be improved to better spread out incoming flow. Regrade flow path to ensure that it is relatively flat (if minor). If major re-grading is needed, the treatment area may need to be redesigned and fixed with specialized equipment.	• Major rills and gullies • Treatment area needs to be re-designed and major grading needed. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

TP Watering

Inspect the trees to determine whether they need watering.

Problem (Check if Present)	**Follow-Up Actions**
☐ Soil is not moist to the touch and/or it has not rained in a week, and leaves/needles are starting to appear wilted/dry.	☐ Water trees deeply and slowly near the base. Soaker hoses and drip irrigation work best for deep watering of trees and shrubs. ☐ Other:

TP Mulch

Mulch should be applied in the late spring and during leaf fall. Check the depth of mulch regularly. Rake the old mulch to break up any matted layers and to refresh the appearance.

Problem (Check if Present)	Follow-Up Actions
☐ Mulch is too thin or thick (should be approximately 3" deep) or does not extend to tree canopy (or 5' radius if tree has a larger than 10' canopy reach).	☐ Add or remove mulch around tree canopy to maximum 5' radius but not within 3" of the bark. ☐ If mulch is against the stems or tree trunks, pull it back several inches to expose the base of the trunk and root crown. ☐ Other:

TP Pruning

Examine the branches and tree shape.

Problem (Check if Present)	Follow-Up Actions
☐ Presence of suckers, dead or diseased branches, branches that interfere with pedestrian traffic	☐ Selective cutting ☐ Prune to make the tree more aesthetically pleasing and remove disease. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Use an arborist or landscaper for more extensive pruning jobs.

Additional Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Tree Planting Stormwater Management Practices
Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: TREE PLANTING	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Appearance of fungus or pest damage	
☐ Condition 1: Fungus, discoloration, browning leaves or holes in leaves Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection. ☐ Condition 2: Burrowing insects, holes Check with arborist or other tree professional about the best way to proceed. This requires a Level 3 inspection.	• Any concerns about how to address infestation or disease ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

Swale Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

SW Drainage Area

Look at areas that are uphill from the swale.

Problem (Check if Present)	Follow-Up Actions
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch or sod areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and add seed and straw to establish vegetation. ☐ If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous.
☐ Grass dying at edge of road	☐ Seed and mulch; add topsoil or compost if needed. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Grass on edge of pavement continues to die off for unknown reasons. Swale edge may need to be replaced with other materials (e.g., stone diaphragm).

SW Inlets

Stand in the swale and look for all the places where water flows in.

Problem (Check if Present)	Follow-Up Actions
☐ Inlets or the swale edge are collecting grit, grass clippings, or debris or have grass/weeds growing. Some water may not be getting into the swale. The objective is to have a clear pathway for water to flow into the swale.	☐ Use a flat shovel to remove grit and debris (especially at curb inlets or opening). Parking lots will generate fine grit that will accumulate at these spots. ☐ Pull out clumps of growing grass or weeds, and scoop out the soil or grit that the plants are growing in. ☐ Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets or along the edge of the swale where water is supposed to enter. ☐ For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the swale. ☐ Dispose of all material properly in an area where it will not re-enter the swale. ☐ Other:
	☐ Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the swale.
 ☐ Some or all of the inlets are eroding so that rills, gullies, and other erosion are present, or there is bare dirt that is washing into the swale.	☐ For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone. ☐ In some cases, reseeding and applying an erosion control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor. ☐ Other:
	☐ Level 2 Inspection: Erosion is occurring at most of the inlets or along much of the swale edge. The inlet design may have to be modified.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
☐ Minor areas of sediment, grit, trash, or other debris are accumulating in the swale.	☐ Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the swale. ☐ If removing the material creates a hole or low area, fill with good topsoil and add seed and straw to re-vegetate. ☐ Remove trash, vegetative debris, and other undesirable materials. ☐ If the swale is densely vegetated, it may be difficult to do the maintenance; check for excessive ponding or other issues described in this section to see if the accumulated material is causing a problem. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Sediment has accumulated more than 3 inches deep and covers 25% or more of the swale surface. ☐ The source of sediment is unknown or cannot be controlled with simple measures.
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows through the swale or on the slopes.	☐ Try filling the eroded areas with clean topsoil, and then seed and mulch to establish vegetation. ☐ If the problem recurs, you may have to use some type of matting, stone (e.g., river cobble), or other material to fill in eroded areas. ☐ If the erosion is on a side slope, fill with soil and cover with erosion-control matting or at least straw mulch after re-seeding. ☐ Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3 inches deep and seems to be an issue with how water enters and moves through the swale. ☐ Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water, but a collapse or sinking of the surface (e.g., “sinkhole”) due to some underground problem.
☐ Water does not flow evenly down the length of the swale, but ponds in certain areas for long periods of time (e.g., 72 hours after a storm). The swale does not seem to have “positive drainage.” Check during or immediately after a rain storm.	☐ If the problem is minor (just small, isolated areas), try using a metal rake or other tools to create a more even flow path; remove excessive vegetative growth, sediment, or other debris that may be blocking the flow. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Water ponds in more than 25% of the swale for three days or more after a storm. The issue may be with the underlying soil or the grade of the swale. ☐ Water ponds behind check dams for three days or more after a storm. Check dams may be clogged or not functioning properly.

SW Surface Area

Examine the entire swale surface and side slopes.

Problem (Check if Present)	Follow-Up Actions
 ☐ Check dams (if present): water is flowing around the edges of check dams, creating erosion or sinkholes on the uphill or downhill side, or the check dams are breaking apart or breaching .	☐ If the problem is isolated to just a few check dams, try simple repairs. ☐ It is very important for the center of each check dam (where most of the water flows) to be lower (by at least several inches) than the edges of the check dams where they meet the side slopes. Also, the check dams should be keyed into side slopes so water does not flow between the check dam and side slope. ☐ Use a level to check the right check-dam configuration, as noted above. Repair by moving around stone, filling and compacting soil, or adding new material so that water will be directed to the center of the check dam instead of the edges. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Many check dams are impacted and/or the problem seems to be a design issue with height, spacing, shape, or materials used to construct them.

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too overgrown to access swale for maintenance activities	☐ Mow or bush-hog the path. ☐ Other:

SW Vegetation

Assess the swale vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance: pulling weeds, removing dead and diseased plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, block flow, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole swale, bush-hog the entire area before seed heads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Replant with species that are aesthetically pleasing and seem to be doing well in the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.
☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the swale. If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., in residential yards), this task will likely require a landscape design professional or horticulturalist.

SW Outlets

Examine outlets that release water out of the swale.

Problem (Check if Present)	Follow-Up Actions
☐ Outlet is obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the swale. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

Additional Notes:

Inspector:_____ Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

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Inspector/Operator: _____ Date: _____

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Swale Stormwater Management Practices Level 2 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

Level 2 Inspection: SWALE	
Recommended Repairs	**Triggers for Level 3 Inspection**
Observed Condition: Water Stands on Surface for More than 72 Hours after Storm	
☐ Condition 1: Small pockets of standing water Use a soil probe or auger to examine the soil profile. If isolated areas have accumulated grit, fines, or vegetative debris or have compacted soil, try scraping off top 3 to 6 inches of soil and replacing with clean material. Also check to see that surface is level and water is not ponding selectively in certain areas. ☐ Condition 2: Standing water is widespread or covers entire surface Requires diagnosis and resolution of problem: • Bad or compacted soil • Filter fabric on the swale bottom • Too much sediment/grit washing in from drainage area? • Too much ponding depth? • Longitudinal slope is too flat?	• Soil is overly compacted or clogged and problem is not evident from Level 2 inspection. • Level 2 inspection identifies problem, but it cannot be resolved easily or is associated with the original design of the practice (e.g., not enough slope down through the swale). ☐ Level 3 inspection necessary
Observed Condition: Vegetation is predominantly weeds and invasive species	
For a small area, weed and dig up invasive plants. Replant with natives or plants from original planting plan. If longer than 100 feet, develop a new planting plan and have it professionally reviewed.	• Vegetation deviates significantly from original planting plan; swale has been neglected and suffered from deferred maintenance. • Owner/responsible party does not know how to maintain the practice. • For large area, hire a professional to develop a grading plan and develop a planting plan. ☐ Level 3 inspection necessary

Notes:

Inspector:_____ Date: _____

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Inspector/Operator: _____ Date: _____

APPENDIX L

STORMWATER MANAGEMENT PLAN WORKSHEET

RZ Engineering, PLLC
6320 Fly Road Suite 109 East Syracuse, NY 13057
315-432-1089

Runoff Reduction Volume (RRv) Worksheets

Project #: 17061
Name of project: Hoag Lane Subdivision **Date:** 6/9/2020 **Initial:** HJM
Drainage Area: DA-1a and DA-1b

Watershed Drainage Area, DA (acres):	HSG(s)	90% Rain, P (inches):
58.042	C	1.00

Planning

1. Plan to preserve, avoid, and minimize(underline all concepts utilized):

-Preserve undisturbed, natural buffer, and critical environment areas
-Employ open space, conservation, and clustering site design techniques
-Avoid developing in environmentallyu sensitive areas: floodplain, steep slopes, habitat, ecosystems, bedrock, wetlands, shorelines, shallow groundwater, impervious soils, or unstable soils
-Minimize impervous surfaces: building footprints, parking, roads, sidewalks, and driveways
-Minimize clearing and grading

Water Quality Volume

2. Calculate water quality volume(WQv): WQv= P*A*Rv/12

DA= 58.042 acres Impervious Area*(AI) = 6.53 acres Rv= 0.151 Original WQv= **0.731742** ac-ft

*If soil restoration is not practices include construction compacted areas as impervious.

3. Minimum RRv requirements (when 100% WQv reduction cannot be achieved)

(Calculate minimum required Runoff Reduction Volume (RRv) using):

RRv = 90% rain(P) x .95 x S x AI/12

with S = .55 (A soils); .40(B soils); .30 (C soils); .20 (D soils); OR weighted HSG average in DA

Minimum required RRv =	P	S	AI
	1.00	0.3	6.53

Minimum RRv required= **0.155135** ac-ft

Area Reduction Practices

4. Incorporate area reduction practices (complete for all applicable practices): (area includes practice and contributing area)

Conservation of natural areas:	contributing AI=	0 ac	Area=	6.54 ac	
Riparian buffers/filter strips:	contributing AI=	0 ac	Area=	0 ac	
Tree Planting/tree preservation:	contributing AI=	0.096 ac	Area=	0.096 ac	
Total area reduction:				Total Area Reduced=	6.636 ac
Total Impervious area with area reduction:				AI in Reduced Area=	0.096 ac

5. Subtract total area reduction from DA:

Remaining drainage area(#2 area-#4 area) Remaining Drainage Area= 51.406 ac
Remaining impervious area(#2 AI-#4 AI) Remaining AI= 6.436 ac

6. Recalculate WQv for site area remaining after area reductions:

Remaining DA= 51.406 Remaining AI= 6.436 ac Rv= 0.163 area reduced WQv= **0.696892** ac-ft

7. Runoff reduction volume (RRV) from #2: (#2 WQv- #6 WQv) = RRv= **0.03485** ac-ft

8. **Incorporate rooftop area disconnection:**

Total disconnected rooftop area(now considered pervious for RV calculation(s)) Area= 1.61 ac

9. Recalculate WQv with RV modified for impervious disconnection:

DA(from #5)= 51.406 (remaining AI = 4.83 ac) Rv= 0.134492083 Rv reduced WQV= 0.576142 ac-ft

10. Runoff reduction volume: #6 (area reduced WQv - #9 (Rv reduced WQv) = **RRv =** 0.12075 ac-ft

Source Control WQv Treatment Practices

(From attached worksheet)

11a. Subtotal DA tributary to Souce Control treatment practices= 0 (acres)
11b. Subtotal AI treated by Source Control practices AI= 0 (ac-ft)
11c. Subtotal Runoff Reduction Volume (RRv)= Subtotal(Rv) RRv (ac-ft)

Total Runoff Reduction Volume (RRv)

12a. Total drainage area treated with area reduction and source control(#4+#11a) DA treated= 6.636 ac-ft
12b. Total Impervious Area treated with area reduction or source control RRv(AI #4+AI#8+AI#11b) Total treated AI = 1.71 ac-ft

13. Total RRV provided(#7+#10+#11c)=Total RRv= Total provided RRv= **0.1556** ac-ft

14. Is Provided RRv (#12b >= minimum WQv (#2)? Yes ____ No X If yes, skip to #18

15. Is provided RRv(#12b) >= minimum RRv (#3)? Yes X No ____ If no, provide additional RRv and recalculate, or provide justification

Standard WQv Treatment

16. **Provide treatment for any remaining untreated watershed DA with standard practices: *Minimum Rv for standard practices is .2**

Remaining untreated DA = Watershed (#2)	58.042	-	RRv DA(#12a)	6.64 acres	=	51.41	acres
Remaining impervious area = Total AI(#2)	6.53	-	treated AI(#12b)	1.71 acres	=	4.83	acres

STORMWATER MANAGEMENT PLAN WORKSHEET

RZ Engineering, PLLC
6320 Fly Road Suite 109 East Syracuse, NY 13057
315-432-1089

Ponds	DA Tributary	51.41	acres	AI treated	4.83	acres	WQv provided-= 40.46421 ac-ft
Wetlands	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Infiltration	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Filters	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Open channels	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft
Total	DA Tributary		acres	AI treated		acres	WQv provided-= ac-ft

Drainage Area Treated

17a. Total DA treated with RRv practices (#12a) =	6.636	acres
17b. Total DA treated with Standard WQv practices (16) =	51.41	acres
17c. Total DA treated (17a + 17b) =	58.04	acres

18. Is all of the watershed DA treated by either RRv practices or standard WQv treatment practices?

Yes X No

Peak Flow Attenuation

19. Calculate peak runoff rates for pre-development site conditions: (method used =) HydroCAD

-->>>> Provided in SWPPP

DA= acres RCN= Tc= hours
Q1 cfs
Q10 cfs
Q25 cfs
Q100 cfs

20. Calculate peak runoff rates for post-development site conditions (with Runoff Reduction practices: (method used =) HydroCAD

-->>>> Provided in SWPPP

DA= acres RCN= Tc= hours
Q1 cfs
Q10 cfs
Q25 cfs
Q100 cfs

If soil restoration practices are not employed, reduce Hydrologic soil group one leter for RCN computation.
If existing soil is D use RCN of 94 for non-restored soil.

20. Provide necessary stormwater storage volume detention for channel protection, overband and extreme storm runoff to mitigate any increase in post-developed runoff from pre-developed conditions using:
(complete for all applicable practices)

Pond	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Wetlands	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Dry detention	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Underground storage	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft
Blue roofs	CP volume=	ac-ft	OB volume=	ac-ft	ES Volume=	ac-ft

11. **Source Control WQv Treatment Practices Worksheet** (complete for all applicable practices and soil types)

Standard Practices (used as source control)

*Infiltration(soils with k>.5"/hour only) DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv = _____	ac-ft (k>.5"/hour soils only)
*Bioretention DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	80% WQv = _____ 40% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Dry Swale DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	40% WQv = _____ 20% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)

Green Infrastructure Practices

*Vegetated swale DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	40% WQv = _____ 20% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Green Roof DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft
*Rain Garden DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv = _____ 40% WQv = _____	ac-ft (A/B soils) OR ac-ft (C/D soils)
*Stormwater planters DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft

*Cistern/ rain barrels DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft
*Porous pavement(A/B/C soils only) DA tributary to practice: _____ acre(s)	AI = _____ acre(s)	RV= _____	WQv= _____ ac-ft	100% WQv =	_____ ac-ft (A/B/C soils)

11a. Subtotal DA tributary to Source Control WQv treatment practices= 0 (acres)

11b. Subtotal AI treated by Source control practices AI= 0 (acres)

11c. Subtotal Runoff Reduction Volume (RRv): Subtotal (Rv) RRv= _____ (ac-ft)

APPENDIX M

EROSION CONTROL NOTES and EROSION CONTROL SEQUENCING

X-SWPPP-EC-NOTES-HOAG

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE SITE PLAN AND AS OTHERWISE REQUIRED, SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL AND THE SWPPP PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
2. BARE SOILS SHALL BE MULCHED WITH HAY AT A RATE OF TWO TONS PER ACRE WITHIN 7 DAYS OF DISTURBANCE. CONSTRUCTION ON AN AREA IS SUSPENDED, THE AREA SHALL BE SEEDED IMMEDIATELY.
3. SITE PREPARATION SHALL INCLUDE:
   A. SEEDBED PREPARATION - SCARIFY IF COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROOTS OR STUMPS.
   B. SOIL AMENDMENTS
      1. LIME TO pH 6.8
      2. FERTILIZER 400 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (14 LBS/1000 SQ FT.)
   C. SEED MIXTURES
      TEMPORARY SEEDINGS
      1. RYEGRASS (ANNUAL OR PERENNIAL) = 30 LBS/ACRE (0.7 LBS/1000 SQ FT.)
         a. CERTIFIED "UNSCREENED" WINTER RYE (CEREAL RYE) = 100 LBS/ACRE (2.5 LBS/1000 SQ FT.)
      2. PERMANENT SEEDINGS
         a. ROUGH OR OCCASIONALLY MOWED AREAS:

	LBS/ACRE	LBS/1000 SQ FT
EMPIRE BIRDSFOOT (TREFOIL OR COTTON)	8	0.20
WHITE CLOVER PLUS*	20	0.25
TALL FESCUE PLUS	100	0.45
REDTOP	2	0.05
RYEGRASS (PERENNIAL)	5	0.10

      *ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING
   D. METHOD OF SEEDING
      BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.
4. DISTURBED AREAS SHALL BE SEEDED AS NOTED ABOVE AND MULCHED WITH CLEAN STRAW AS OUTLINED IN NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL ON SLOPES GREATER THAN 3:1 SEEDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.
6. ACCESS TO DISTURBED AREAS SHALL BE LIMITED TO THE AREAS SHOWN ON THE PLAN. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THE LOCATION SHOWN ON THE PLAN. NO ACCESS IS PERMISSIBLE FROM BEACH ROAD.
7. ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.
8. TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO 1 THE DEPTH OF THE STORMWATER BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.
9. DIRECT ACCESS SHALL BE PROVIDED TO ALL BASINPOND AREAS FOR MAINTENANCE AND REHABILITATION.
10. ALL DESIGN AND MAINTENANCE MEASURES OUTLINED IN THE SWPPP PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.
11. THE PERMITTEE 4 ITS SUBCONTRACTORS ARE RESPONSIBLE FOR MEANS 4 METHODS OF EROSION CONTROL FACILITIES DURING CONSTRUCTION. IT SHOULD BE NOTED THAT FACILITIES ON THIS DRAWING ARE CONSIDERED MINIMUM 4 ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS CONSTRUCTION PROGRESSES. THE PERMITTEE 4 ITS SUBCONTRACTORS ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.
12. PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJOINING PROPERTY, STREETS, WATERWAYS, AND ON SITE IMPROVEMENTS BEYOND THE LIMITS OF WORK, COMPLY WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL" AND THE NYSDEC'S "REDUCING THE IMPACTS OF STORMWATER RUNOFF FROM NEW DEVELOPMENT".
13. MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (1 RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING. REPLACING DAMAGED OR SILTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES, AND STABILIZING ERODED OR WASHED OUT SLOPED AREAS.
14. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE, LAWN HAS BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.
15. CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL."

EROSION CONTROL and CONSTRUCTION STAGING AND SEQUENCE:

THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 20.81+ ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY SEVEN (7) STAGES. THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION ISSUES DURING THE CONSTRUCTION PROCESS. REFER TO SHEETS L-100 THRU L-105 STAGING PLANS FOR DISTURBANCE LIMITS IN EACH STAGE. BELOW IS A LISTING OF THE ANTICIPATED STAGES:

STAGE 1- PROPOSED STORMWATER BASIN 4 ROUGH GRADING

1. STAGE 1 TO CONSIST OF CONSTRUCTION PROPOSED WET POND AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
2. PRIOR TO ANY SITE DISTURBANCE, CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF SHIRAZ AND HOAG LANE AS SHOWN ON THE DRAWING.
3. SILT FENCE - INSTALL PERIMETER SILT FENCE AS SHOWN ON PLAN PRIOR TO EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK.
4. CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN STAGE 1 PRIOR TO EARTHWORK.
5. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN. DOUNED TREES, BRANCHES, STUMPS AND VEGETATION TO BE CHIPPED AND BLENDED WITH STRIPPED TOPSOIL. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
6. EXCAVATE PROPOSED WET POND AND WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN(S). PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON THE DRAWING. FINE GRADE, SEED AND MULCH within SEVEN (7) DAYS OF DISTURBANCE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
7. REFER TO DRAWING L-102 FOR STAGING PLAN.

STAGE 2- SITE ROUGH GRADING

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-103 FOR STAGING PLAN.

STAGE 3- SITE ROUGH GRADING (CONT.)

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-104 FOR STAGING PLAN.

STAGE 4- FINAL ROUGH EARTHWORK

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-105 FOR STAGING PLAN.

STAGE 5- UTILITY INSTALLATION

1. PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING.
2. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 6- ROAD BASE AND KICKUP GUTTERS

1. EXCAVATE AND FILL WEST OF SITE AREAS FOR ROADWAY. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE.
2. PLACE ROAD SUBBASE.
3. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE.
4. REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
5. CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
6. FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN AND ON THE DETAILS.
7. INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
8. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 7- FINE GRADING AND LOT IMPROVEMENTS

1. CLEAR VEGETATION ON RESIDENTIAL LOTS TO BE CONSTRUCTED. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
2. PREPARE BUILDING PAD AND DRIVEWAY AREA SUBGRADE.
3. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS within SEVEN (7) DAYS OF DISTURBANCE. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
4. CLEAN STORMWATER BMP'S AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
5. SEE DRAWING L-106 FIRST INDEPENDENT LOT EROSION CONTROL PLANS.
6. SEE DRAWING L-108 FOR STAGING PLAN.

FINAL CLEAN UP & PREVENTATIVE MAINTENANCE

1. REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
2. REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
3. FINAL CLEAN UP - REMOVE EROSION CONTROL MEASURES AND CLEAN OUT ALL DRAINAGE STRUCTURES, PIPES, POND AND SWALES AFTER LAWN IS WELL ESTABLISHED. OWNER IS RESPONSIBLE FOR MAINTAINING SITE UPON PROJECT CLOSEOUT.
4. CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SWPPP INSPECTION REPORTS.

SOIL RESTORATION NOTES

1. ACCORDING TO SECTION 5 OF THE NYS STORMWATER DESIGN MANUAL, SOIL RESTORATION PRACTICES MUST BE APPLIED ACROSS THE SITE IN AREAS OF SOIL DISTURBANCE. SOIL RESTORATION WILL BE COMPLETED IN ACCORDANCE WITH TABLE 4A ON PAGE 4-35.
2. SOIL RESTORATION REQUIREMENTS PER TABLE 4.4 OF NYS BLUEBOOK, 2016:

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED
AREAS WHERE TOPSOIL IS STRIPPED ONLY - NO CHANGE IN GRADE	HSG A/B - APPLY 6 INCHES OF TOPSOIL HSG C/D - APPLY 6 INCHES OF TOPSOIL
AREAS OF CUT OR FILL (PHASE 1-4)	HSG A/B - AERATE AND APPLY 6 INCHES OF TOPSOIL HSG C/D - APPLY FULL SOIL RESTORATION*
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY IN ZONE 5-25 FEET AROUND BUILDINGS BUT NOT within A 5 FOOT DIAMETER AROUND FOUNDATION WALLS) (PHASE 7)	APPLY FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT)
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES.
TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA.

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH PUNKY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUB-SOILER.

*PERI "DEEP RIPPING AND DE-COMPACTION, DEC 2009", SEE APPENDIX I IN SWPPP, DATED 06/15/2020.

3. GENERAL SOIL RESTORATION PRACTICE IMPLEMENTATION:

DURING PERIODS OF RELATIVELY LOW TO MODERATE RUNOFF POTENTIAL, MOISTURE, THE DISTURBED SUBSOILS ARE LOOSENED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TRACTOR-PULLED DISC OR TILLER, PLOWING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS. A ROCK-PICK UNTIL UPLIFTED STONE/ROCK FRAGMENTS OF FOUR INCHES AND LARGER SIZE ARE CLEARED OFF THE SITE.
3. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
4. AMENDMENTS AS REQUIRED BY APPROVED PLAN.
5. COMPOST SHALL BE AGED, FROM PLANT DERIVED MATERIALS, FREE OF VISIBLE SEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALF INCH SCREEN AND HAVE A pH SUITABLE TO GROW DESIRED PLANTS.

FIGURES 5.16 AND 5.17 TO THE BELOW SHOW TWO ATTACHMENTS USED FOR SOIL DECOMPACTION. TILLING (STEP 2 ABOVE) SHOULD NOT BE PERFORMED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATION THAT ARE WITHIN 24 INCHES OF THE SURFACE.

Figure 5. 16 Ball aerator implement



Figure 5. 17 Ball aerator implement



4. AT THE END OF THE PROJECT AN INSPECTOR SHOULD BE ABLE TO PUSH A 3/8" METAL BAR 12 INCHES INTO THE SOIL JUST WITH BODY WEIGHT.
5. THE CONTRACTOR MUST KEEP THE SITE FREE OF VEHICULAR AND FOOT TRAFFIC OR OTHER WEIGHT LOADS. CONSIDER PEDESTRIAN FOOTPATHS. (NOTE: THIS IT MAY BE NECESSARY TO DE-THATCH THE TURF EVERY FEW YEARS)
6. ALL SOIL RESTORATION SHALL BE IN ACCORDANCE WITH NYSDEC REGULATIONS AND THE APPROVED SWPPP FOR THE PROJECT.

STORMWATER POLLUTION PREVENTION PLAN

PROJECT DESCRIPTION: PROJECT SCOPE INCLUDES THE SITEWORK NECESSARY TO CONSTRUCT TWENTY (20) PROPOSED RESIDENTIAL HOMES AND ONE (1) EXISTING HOME. SITEWORK INCLUDES THE EXTENSION OF A SANITARY LINE, INSTALLATION OF ALL UTILITIES AND THE CONSTRUCTION OF A WET POND TO MITIGATE THE INCREASE IN STORM RUNOFF.

SPEDES REQUIREMENTS: THE PROJECT REQUIRES A NOI (NOTICE OF INTENT) AND SWPPP (STORM WATER MANAGEMENT PREVENTION PLAN) TO COMPLY WITH NYSDEC'S SPEDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. ELIGIBILITY IS BASED UPON A CONSTRUCTION DISTURBANCE AREA WHICH IS GREATER THAN (1) ACRE. THE TOTAL DISTURBED AREA IS APPROXIMATELY 21 ACRES. RZ ENGINEERING HAS SUBMITTED THE (NOI) NOTICE OF INTENT TO BE AUTHORIZED TO DISCHARGE STORMWATER UNDER THIS PERMIT. THE SWPPP WILL BE SUBMITTED TO THE SITEWORK CONTRACTOR PRIOR TO CONSTRUCTION AND BE AMENDED AS REQUIRED DURING CONSTRUCTION. THE CONTRACTOR WILL ALSO MAINTAIN THE REQUIRED LOG BOOK COMPLETE WITH DOCUMENTATION OF WEEKLY SITE INSPECTIONS. ALSO, A 5 ACRE DISTURBANCE LETTER IS REQUIRED TO SUBMIT ALONG WITH THE NOTICE OF INTENT (NOI).

STORM WATER MANAGEMENT REPORT SUMMARY: THE STORM WATER MANAGEMENT REPORT SUBMITTED WILL BE REVISED BY THE TOWN ENGINEER, DOUG MILLER WITH MILLER ENGINEERS. THE STORM IMPROVEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH NYSDEC's PHASE II STORMWATER MANAGEMENT AND STORM WATER DRAINAGE COMPUTATION REQUIREMENTS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS. STORMWATER MANAGEMENT REPORT WILL BE MADE AVAILABLE IF REQUESTED.

EXISTING PROPERTY DESCRIPTION: THE EXISTING PROPERTY CONSISTS OF MAINLY WOODED AREAS WITH ONE EXISTING HOUSE LOCATED AT THE NORTHEAST OF THE PROPERTY. 4" CALIPER VEGETATION HAS BEEN CUT DOWN TO STUMPS AS OF MARCH 2019 WITH TOWN APPROVAL. REMAINING TREES AND VEGETATION UNLESS OTHERWISE IDENTIFIED AS GREEN SPACE WILL BE REMOVED PER STAGING PLANS.

SITE INFORMATION

SOIL TYPE - HYDROLOGIC SOIL TYPE C. REFER TO SWPPP FOR DETAILED SOILS INFORMATION.

RECEIVING WATER BODY - LIMESTONE CREEK

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING and EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

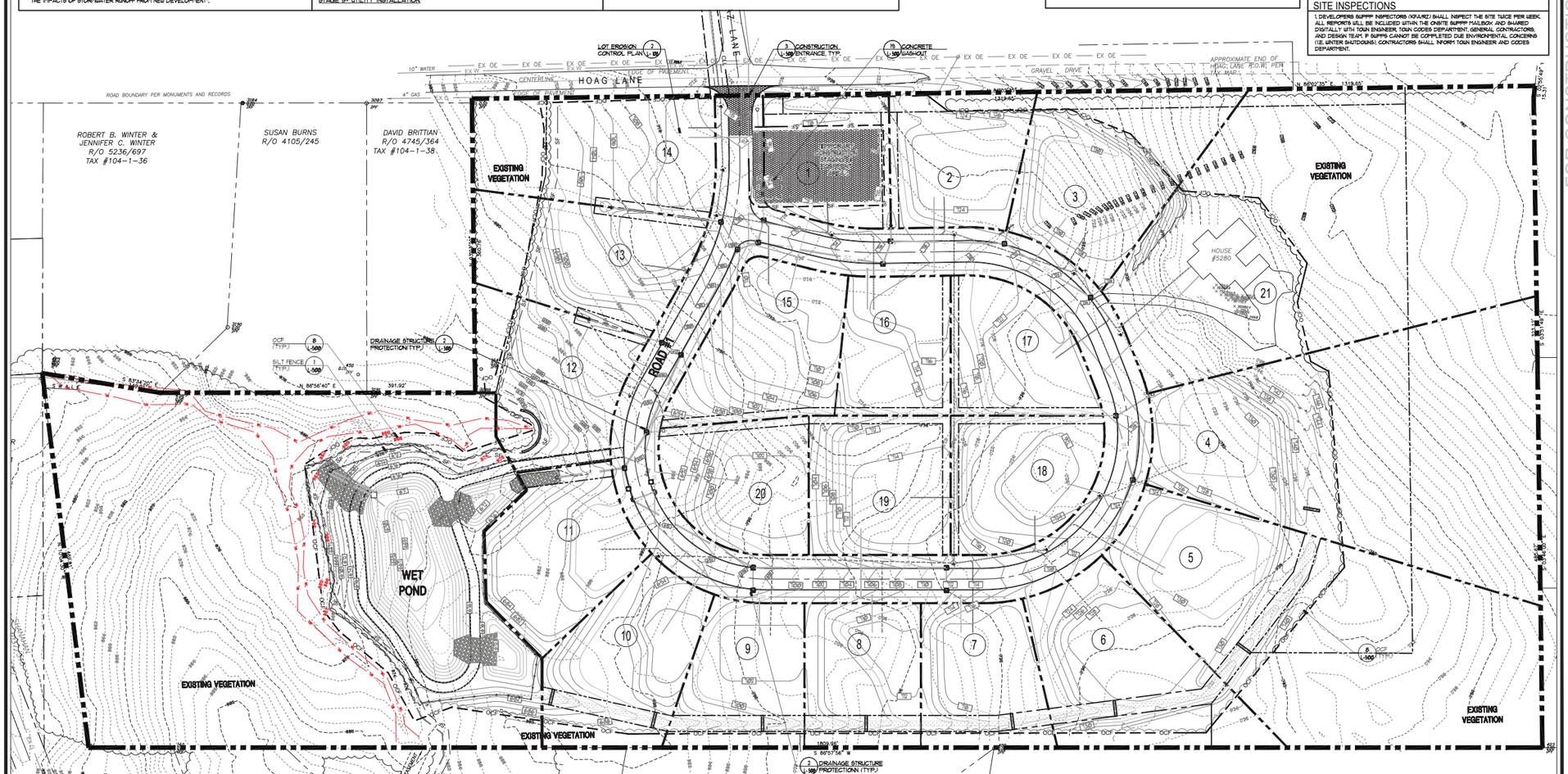
STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOUN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOUN ON THE STAGING PLANS.

DUST MONITORING PLAN

1. UNIT LOCATION AND DETAIL SHOUN ON PHASING PLANS. SEE DETAIL 8/L-501 FOR SUPPLIER AND MODEL.
2. REFER TO SWPPP APPENDIX R, DATED 06/15/20 AS PREPARED BY RZ ENGINEERING FOR ADDITIONAL DUST MONITORING PROCEDURES.

SITE INSPECTIONS

1. DEVELOPERS SWPPP INSPECTORS (KKARZ) SHALL INSPECT THE SITE TWICE PER WEEK. ALL REPORTS WILL BE INCLUDED WITHIN THE ONSITE SWPPP MAILBOX AND EMAILED DIGITALLY WITH TOWN ENGINEER, TOWN CODES DEPARTMENT, GENERAL CONTRACTORS, AND DESIGN TEAM. IF SWPPP CANNOT BE COMPLETED DUE ENVIRONMENTAL CONCERNS (IE, WINTER SHUTDOWNS), CONTRACTORS SHALL INFORM TOWN ENGINEER AND CODES DEPARTMENT.



1 L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN

SCALE IN FEET: 0 50 100 150

Monday, June 15, 2020 1:04:08 PM

Plotted By:
Date/Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6339 NYS ROAD, SUITE 100, SYRACUSE, NEW YORK 13057
PHONE: (315) 445-1980 FAX: (315) 445-1981

RZ Engineering, PLLC
6320 NYS ROAD, SUITE 200, SYRACUSE, NEW YORK 13057
PH: 315.422.2854 FAX: 315.445.7980

STATE OF NEW YORK — STEVEN L. RZEPKA — 075444 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SECTION OF MANLIUS	01/29/18
2	2	CHECK SECTION OF MANLIUS	01/29/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	MANLIUS-2-1 HOME LOTS-PLAN SET	11/30/18
7	7	MANLIUS-2-1 HOME LOTS-PLAN SET	11/30/18
8	8	TOWN COMMENTS	04/19/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	08/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	03/18/20
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

Symbol Indicates Revision Issued

NEW YORK STATE LICENSED LANDSCAPE ARCHITECT — 001413 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 3160.0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN

L-101

STORM STRUCTURE SCHEDULE

Y-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT	STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES * 1	FLARED END SECTION [3]	N/A	-	24"-668.00	SI * 7	STORM INLET [4]	709.75	LD-707.00 12"-703.20	(SE)-12"-703.10
DA-1A4B	10' DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	668.20	SI * 8	STORM INLET [4]	710.55	(N)-10"-708.00 LD-708.91	(S)-12"-707.50
FES * 2	FLARED END SECTION [3]	N/A	-	(E)-24"-676.00	FES * 4	FLARED END SECTION [3]	N/A	10"-713.00	-
CB * 1	CATCH BASIN - 6'-0" [3]	693.72	(NE)-24"-684.50 (S)-24"- 685.00 LD- 689.20	(W)-24"-684.50	FES * 5	FLARED END SECTION [3]	N/A	12"-715.00	-
					FES * 6	FLARED END SECTION [3]	N/A	12"-721.00	-
CB * 2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 LD- 691.00	(SW)-24"-687.50	FES * 8	FLARED END SECTION [3]	N/A	-	15"-689.00
					FES * 9	FLARED END SECTION [3]	N/A	-	15"-718.00
CB * 3	CATCH BASIN - 4'-0" [3]	693.72	(W)-12"-690.50 (NE)-18"-694.00 LD- 696.25	(SW)-24"-690.50	SI * 9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 LD- 724.10	(W)-15"-719.50
					SI * 10	STORM INLET [4]	724.65	(SE)-12"-721.65 LD-721.65	(N)-12"-721.50
SI * 1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00	FES * 11	FLARED END SECTION [3]	N/A	12" - 722.00	-
SI * 2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25 LD- 709.25	(SW)-18"-706.00	FES * 10	FLARED END SECTION [3]	N/A	12"- 722.00	-
					CB * 5	CATCH BASIN - 4'-0" [3]	693.42	(E)-10"-685.50 (SE)-18"-685.50 LD- 687.50	(N)-24"-685.25
SI * 3	STORM INLET [4]	715.90	(N)-15"-713.50 LD- 714.50	(W)-18"-711.25					
SI * 4	STORM INLET [4]	716.85	(N)-12"-713.50 (E)-12"-713.50 LD- 714.50	(S)-15"-712.00	CB * 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10"-693.75 (E)-12"-693.75 LD- 694.90	(NW)-18"-693.25
SI * 5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 LD- 718.00	(W)-12"-717.00	SI * 12	STORM INLET [4]	711.75	(S)-12"-708.25 LD- 709.25	(W)-12"-708.00
					SI * 13	STORM INLET [4]	711.75	LD-709.40	(N)-12"-708.50
SI * 6	STORM INLET [4]	725.75	(NE)-12"-722.50 LD- 722.75	(NW)-12"-722.00	SI * 11	STORM INLET [4]	693.42	LD-687.50	(W)-10"-686.00
					SI * 14	STORM INLET [4]	696.72	LD-694.90	(N)-10"-693.50
FES * 7	FLARED END SECTION [3]	N/A	-	12"- 725.00	SI * 15	STORM INLET [4]	693.72	(W) - 691.00	(E)-12"-691.00
FES * 3	FLARED END SECTION [3]	N/A	12" - 693.50	-				LD-696.00	
FES * 12	FLARED END SECTION [3]	N/A	12" - 704.00	-	FES * 11	FLARED END SECTION [3]	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 9/L-500.
3. INSTALL STORM INLET PER DETAIL 3/L-500.
4. INSTALL CATCH BASIN PER DETAIL 1/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

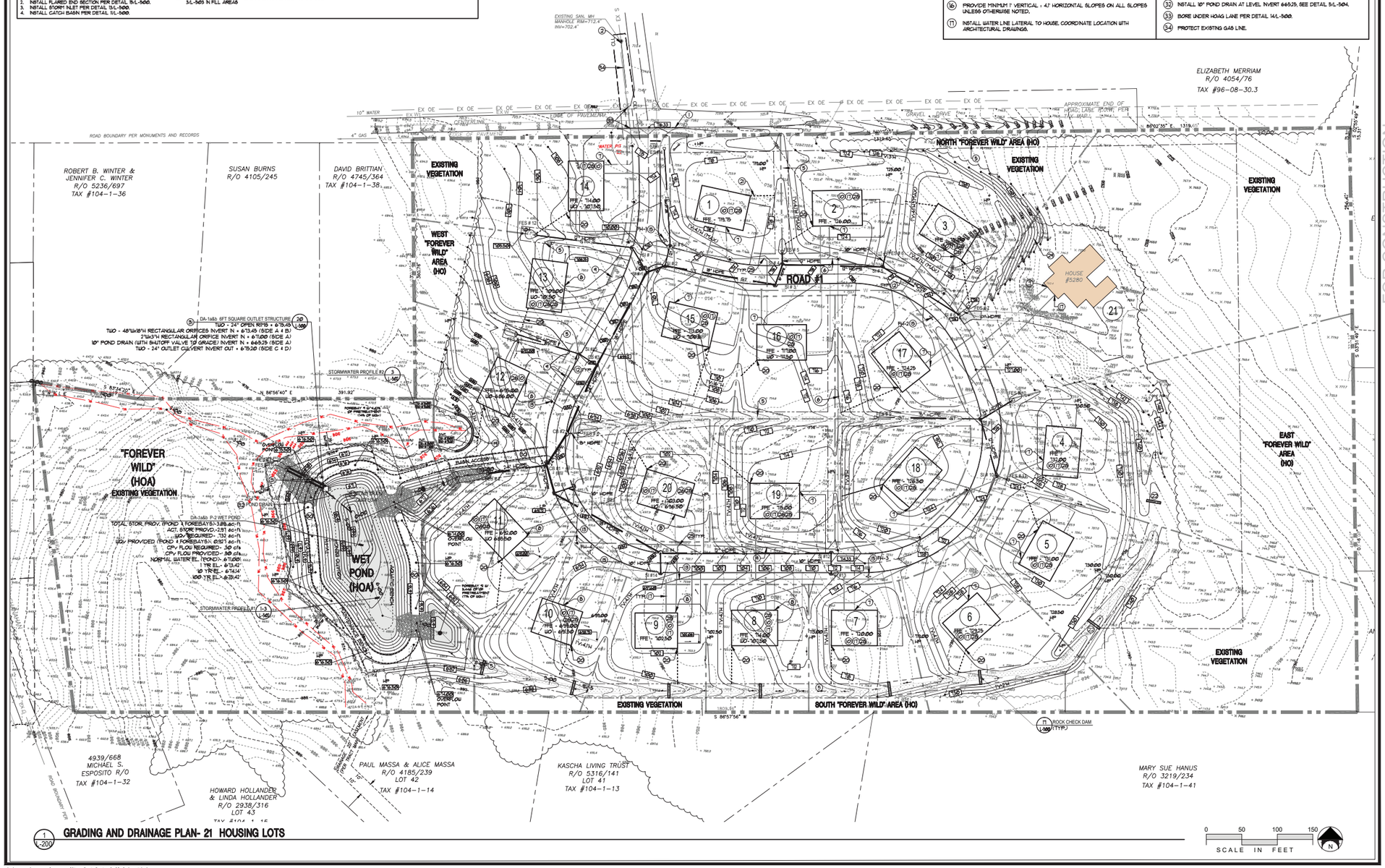
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN, FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN, FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS 4 PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501, FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE, SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE, COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS- 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP SHE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" SIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 14% SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-200 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

Monday, June 15, 2020 1:11:14 PM

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
420 EAST FAIR, SUITE 119 SYRACUSE, NEW YORK 13202
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STATE OF NEW YORK — TODD L. RYAN — 075515 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
ROAD ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
No:	Description	Date	No:	Description	Date
1	CHECK RET. TOWN OF MANLIUS	01/26/18	8	21 LOT SUBDIVISION	10/31/18
2	CHECK RET. TOWN OF MANLIUS	01/26/18	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	PUBLIC HEARING- MANLIUS	03/29/18	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	PUBLIC HEARING- MANLIUS	05/04/18	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	PUBLIC HEARING- MANLIUS	06/01/18	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	MANLIUS-21 HOME LOTS	08/31/18	13	MANLIUS- PLAN SUBMISSION	03/18/20
7	MANLIUS-21 HOME LOTS-R1 RD	11/30/18	14	MANLIUS- PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001434 — LANDSCAPE ARCHITECTURE

Drawn By: VER
Checked By: SLF
KFA Proj. No.: 3120-0
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

Plotted By:
Date Plotted:
Drawing Title:

APPENDIX N

15th June 2020

Joesph Lupia
Town of Manlius Planning Board Chairperson
(315) 477-0100 / Fax (315) 477-5071
301 Brooklea Drive
Fayetteville, NY 13066
Tel. 315-637-3414

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 201, EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

Re: **Woodland Hills Earthwork Summary**

Dear Chairman Lupia and Planning Board Members,

Please refer to the attached earthwork calculations performed by Tobin Construction utilizing Earthworks Elements. Tobin construction has reviewed this project very closely with our design team, has performed several earthwork calculations for the site and is confident that the site will be able to balance.

A. **TOTAL SITE SUMMARY** - Site Excavation Report for the entire site, attachments A and B, show a cut of 39,308 cubic yards and a fill of 53,929 cubic yards with an import of 14,620 cubic yards which is ideal for a sitework contractor. Soil testing will be required for the use and placement of the 2,480 cubic yards required to construct the fill sections of the proposed right of way. According to Tobin Construction the on site soil materials will balance and import of fill material will not be required for general filling. The import quantity of 14,620 cubic yards will accounted for as follows by the items listed below:

   1 - Road pavement and driveway subbase materials, basement excavation – 3240 cubic yards

   2 – Driveway and subbase material – 740 cubic yards

   3 – Road Underdrain - 320 cubic yards

   4 – Basements– 9,300 cubic yards

   5 – Pipe voids and pipe bedding – 900 cubic yards

   14,500+/- cubic yards total

B. **STAGE 1 SITE SUMMARY** – Site Excavation Report for Stage 1 construction (drawing L-102) , attachments B and C, show a cut of 18603 cubic yards and a fill of 17,413 cubic yards. A surplus of 1189 cubic yards will be utilized to as fill during Stage 2 construction.

C. **STAGE 2 SITE SUMMARY** - Site Excavation Report for Stage 2 construction (drawing L-103), attachments E and F, show a cut of 16,779.8 cubic yards and a fill of 15,298.9 cubic yards. A surplus of 1480.9 cubic yards will be utilized to as fill during Stage 3 construction.

On-site material will be utilized within the right of way fill areas, utilities backfilling and fill below basement slabs based in accordance with project testing specifications and field testing which will be coordinated with the Town of Manlius selected testing agency. According to the earthwork material evaluation and berm stability evaluations performed by Kenney Geotechnical Engineering Services the on-site borrow material which meets the testing criteria can be utilized for fill within the right of way and constructing the embankment.

The earthwork operations will occur within the areas shown on the staged site plans (drawings L-102, L-103, L-104, L-105, L-106, L-107, and L-108. The stockpile areas shown within the staged drawings for stockpiled materials is sufficient based on or experience with similar project.

Very truly yours,
Keplinger Freeman Associates and RZ Engineering



Scott L. Freeman, R.L.A. ASLA



Rudy Zona, P.E.

Attachment 'A' - Total Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 09:01 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

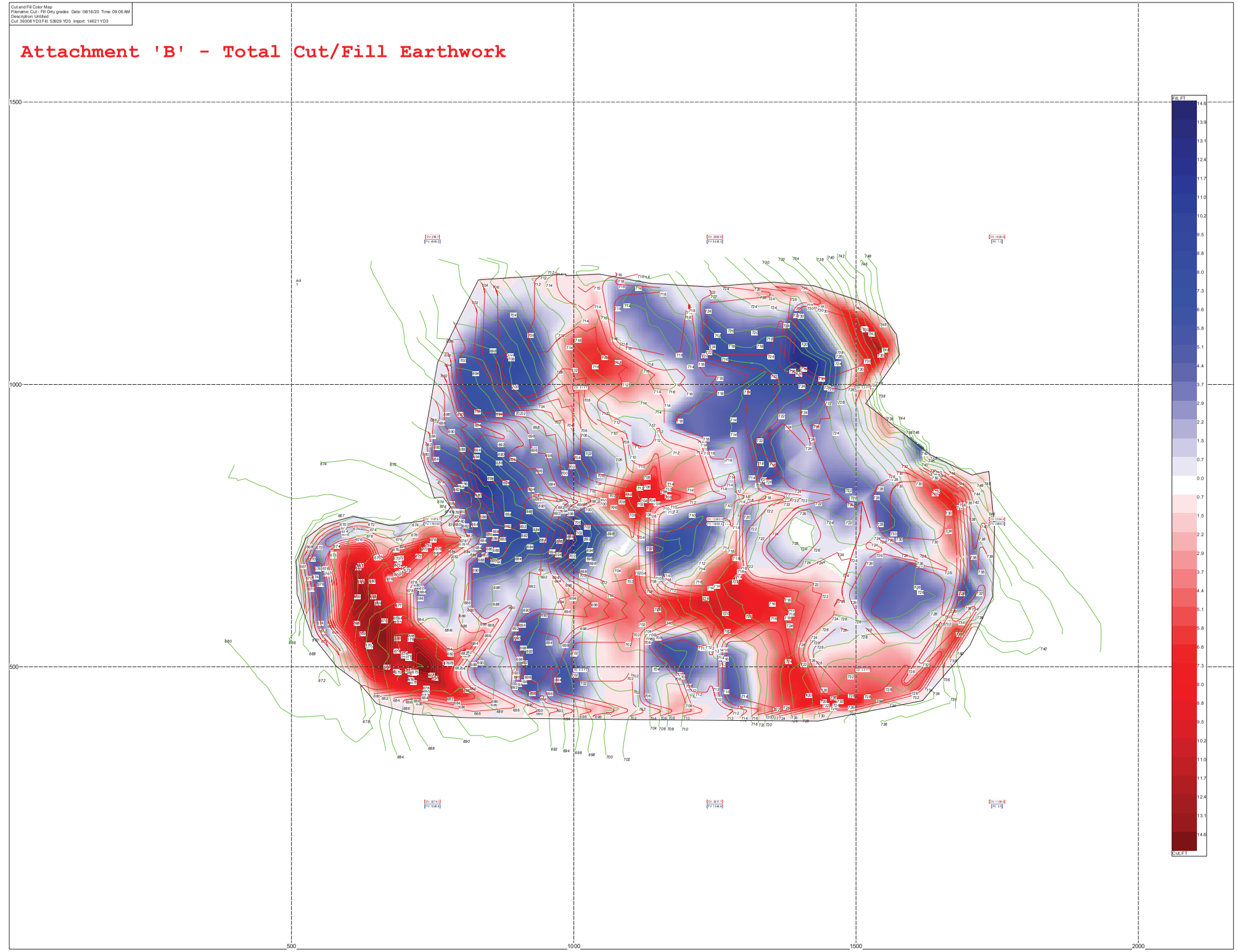
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Soil Compression: 0%
Import Soil Compression: 0%

Cut Area: 306228.0 FT2
Fill Area: 439531.0 FT2
Work Area: 751864.0 FT2

Bank Cut:	39308.2 YD3
Expanded Cut:	39308.2 YD3
Bank Fill:	53929.1 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Import:	14620.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 09:06 AM
Description: Untitled
Cut: 38308 YD3 Fill: 53929 YD3 Import: 14621 YD3

Attachment 'B' - Total Cut/Fill Earthwork



Attachment 'C' - Stage 1 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 08:18 AM

Job Filename: Cut - Fill Only grades
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

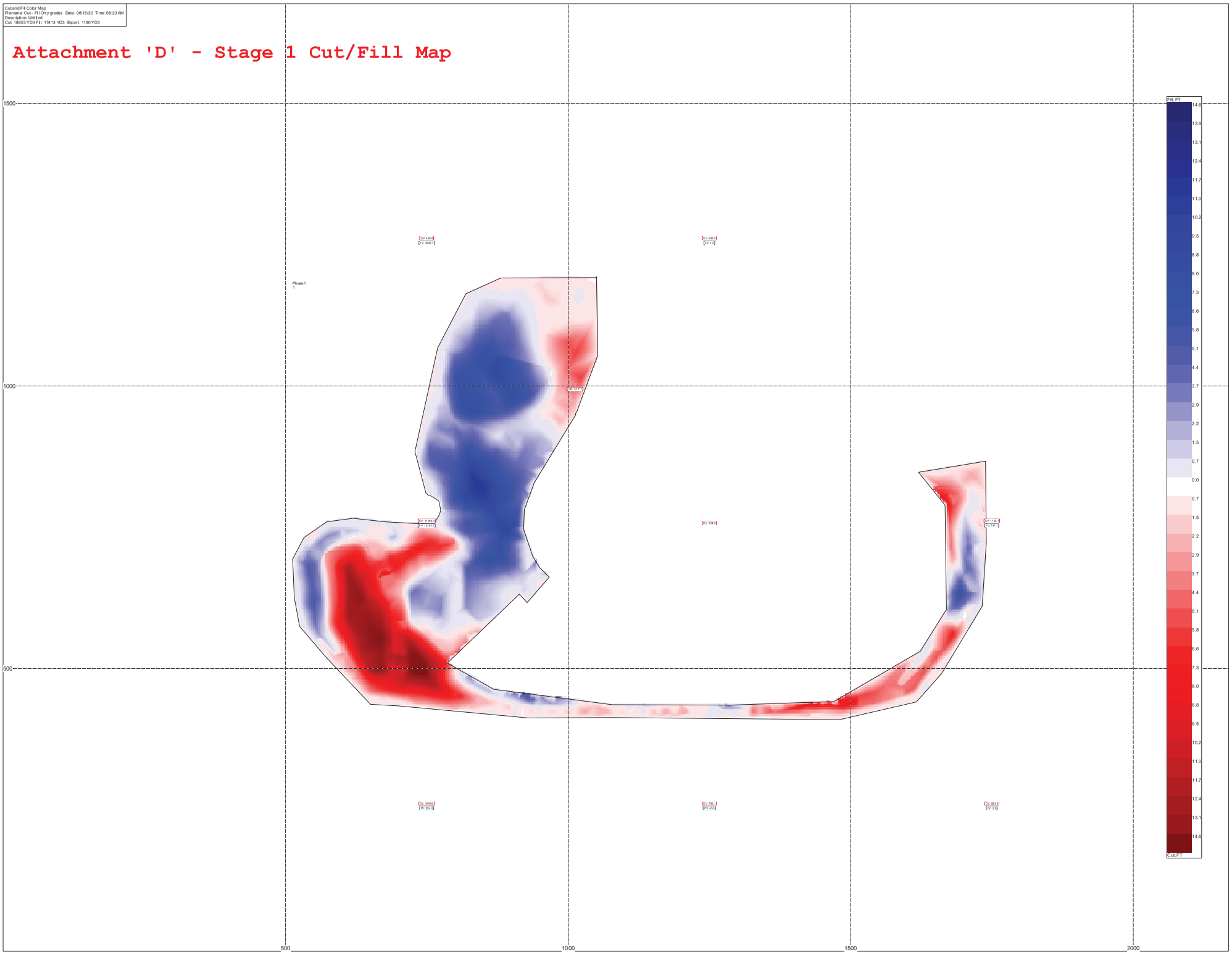
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Import Soil Compression: 0%

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Fill Area: 139320.0 FT2
Work Area: 267171.0 FT2

Bank Cut:	18603.2 YD3
Expanded Cut:	18603.2 YD3
Bank Fill:	17413.3 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1189.9 YD3

Cut and Fill Color Map
Filename: Cut - Fill Only grades Date: 06/16/20 Time: 08:23 AM
Description: Untitled
Cut: 18603 YD3 Fill: 17413 YD3 Export: 1190 YD3

Attachment 'D' - Stage 1 Cut/Fill Map



Attachment 'E' - Stage 2 Cut/Fill

EarthWorks Elements, Site Excavation Report Date: 06/16/20 Time: 10:22 AM

Job Filename: EW1
Job Description: Untitled

Scale: 1":49.3'

Cross-section spacing: 1.00 FT

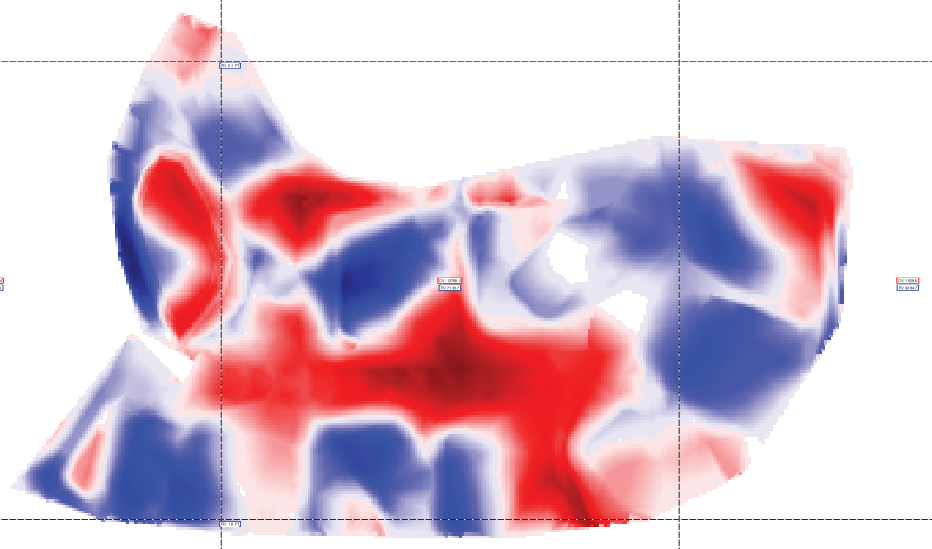
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Import Soil Compression: 0%

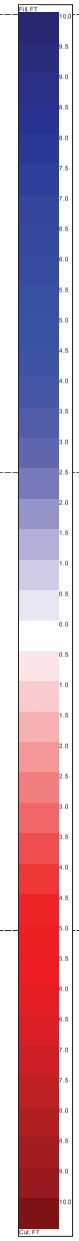
Cut Area: 156400.0 FT2
Fill Area: 174060.0 FT2
Work Area: 334776.0 FT2

Bank Cut:	16779.8 YD3
Expanded Cut:	16779.8 YD3
Bank Fill:	15298.9 YD3
Topsoil Stripped:	0.0 YD3
Topsoil Replaced:	0.0 YD3
Export:	1480.9 YD3

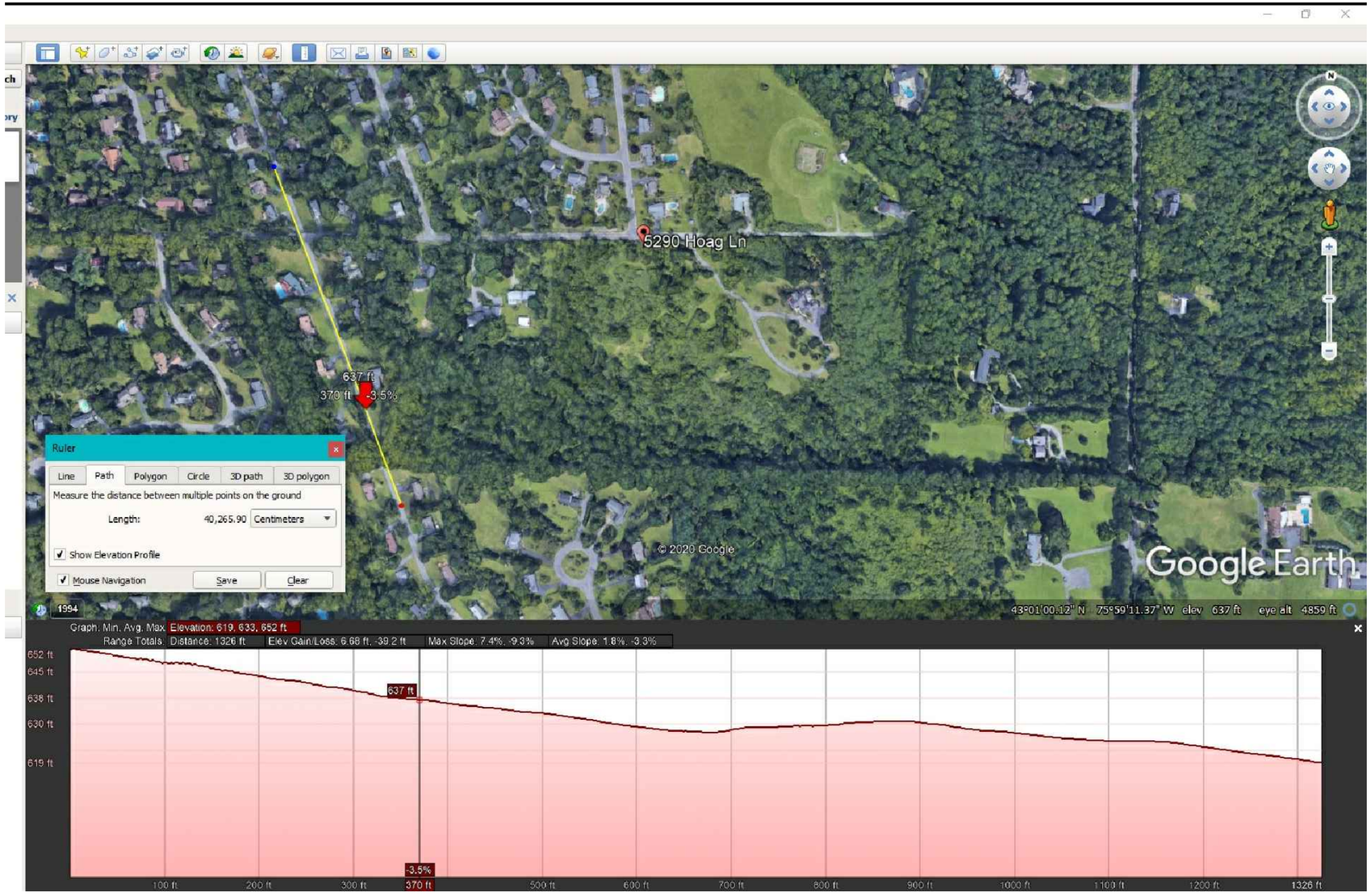
Cut and Fill Color Map
Filename: EW1 Date: 06/16/20 Time: 10:21 AM
Description: Untitled
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Attachment 'F' - Stage 2 Cut/Fill Map





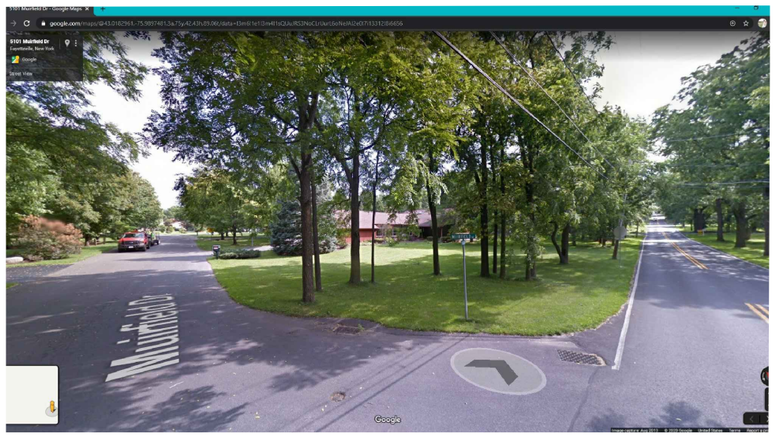
APPENDIX O

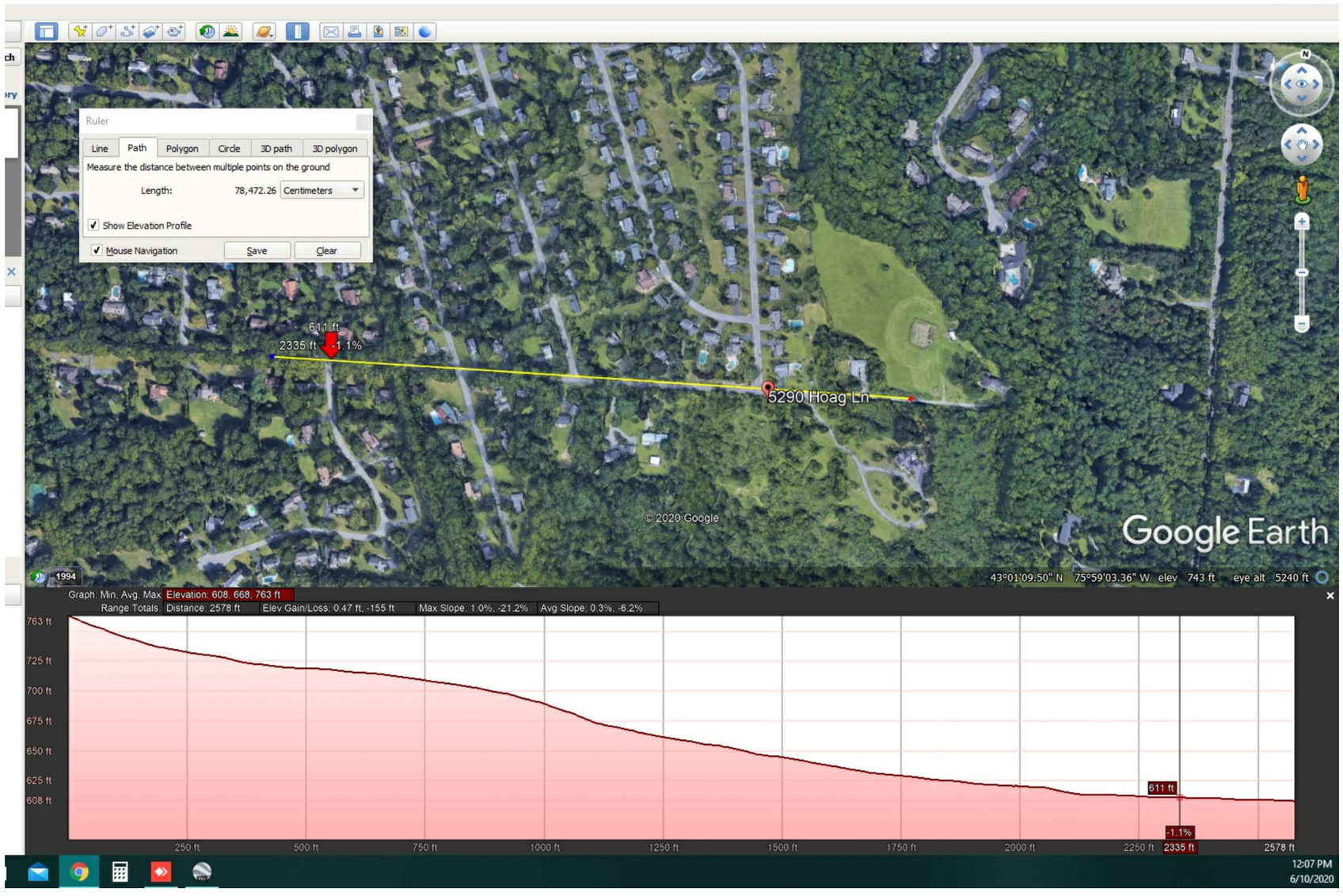


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Churchill Lane (marker at culvert)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
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FAX (315) 445-7981

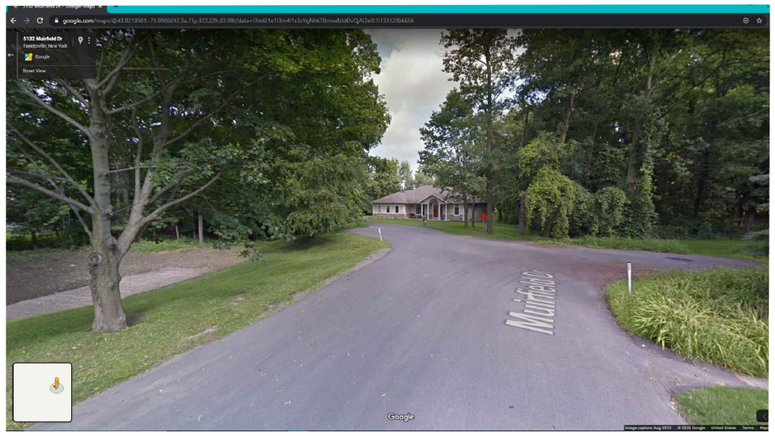


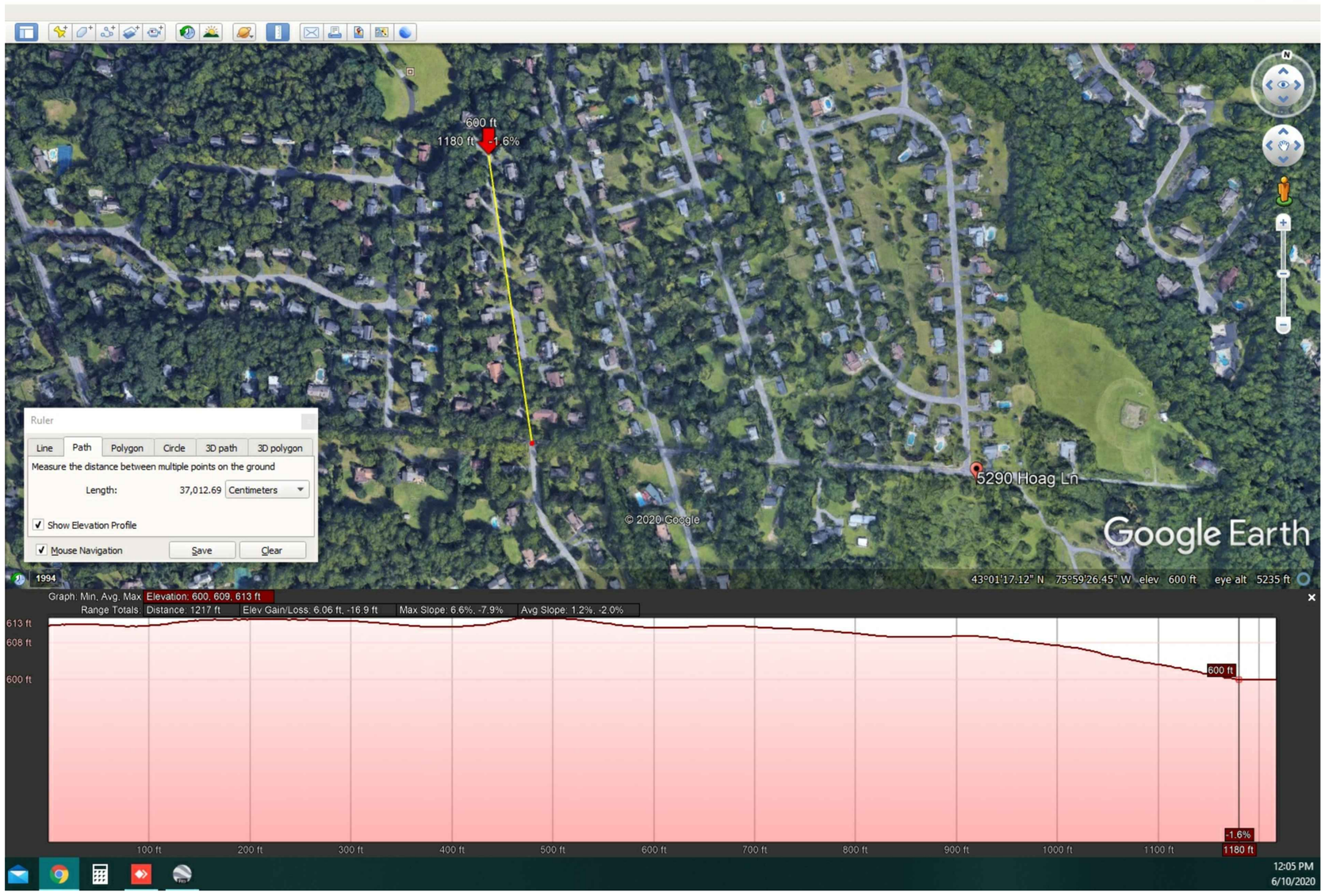


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Hoag Lane (marker at road intersection)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

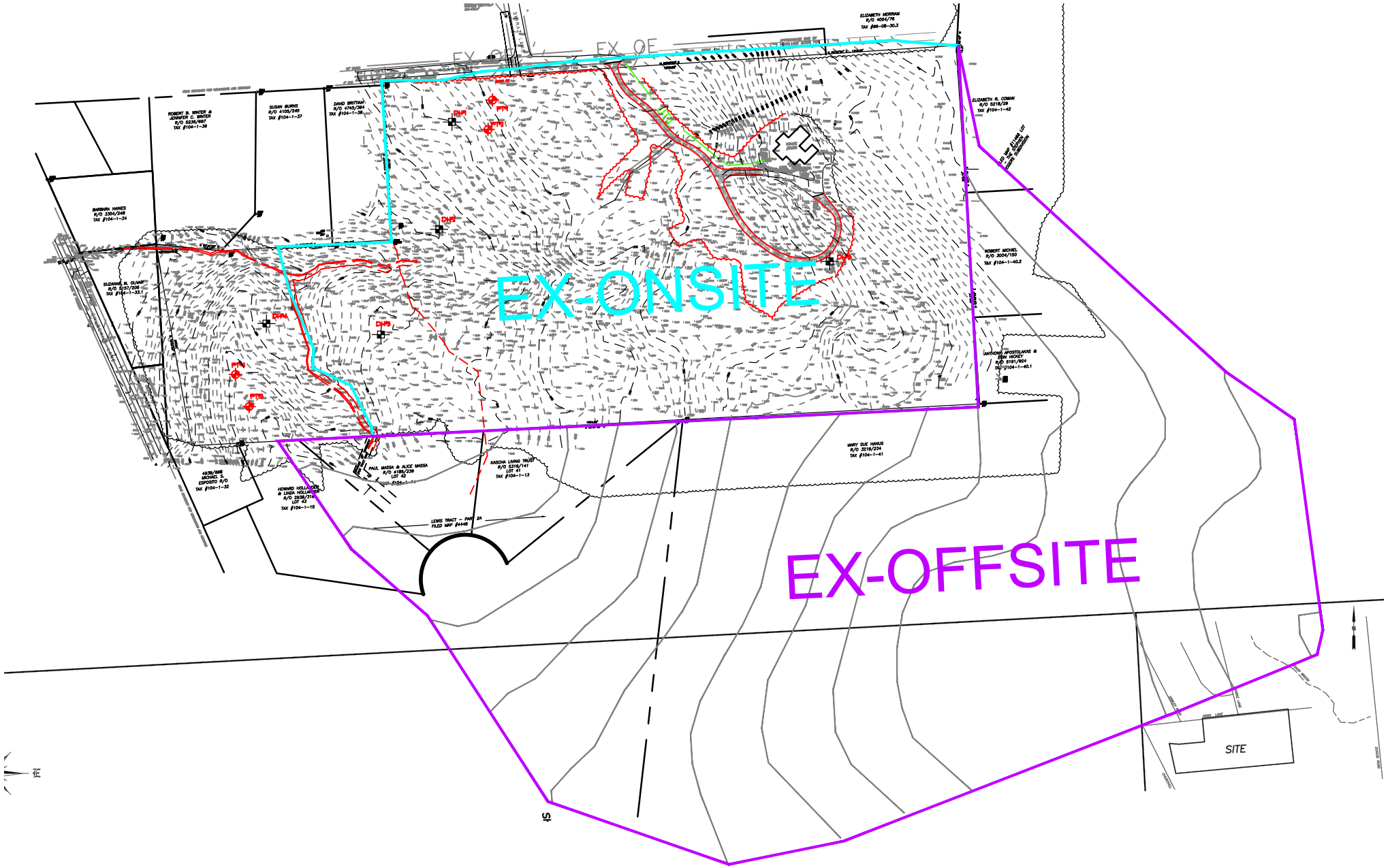




Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Appendix O- Google Earth Road Profile - Muirfield Lane (marker at existing basin)

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision

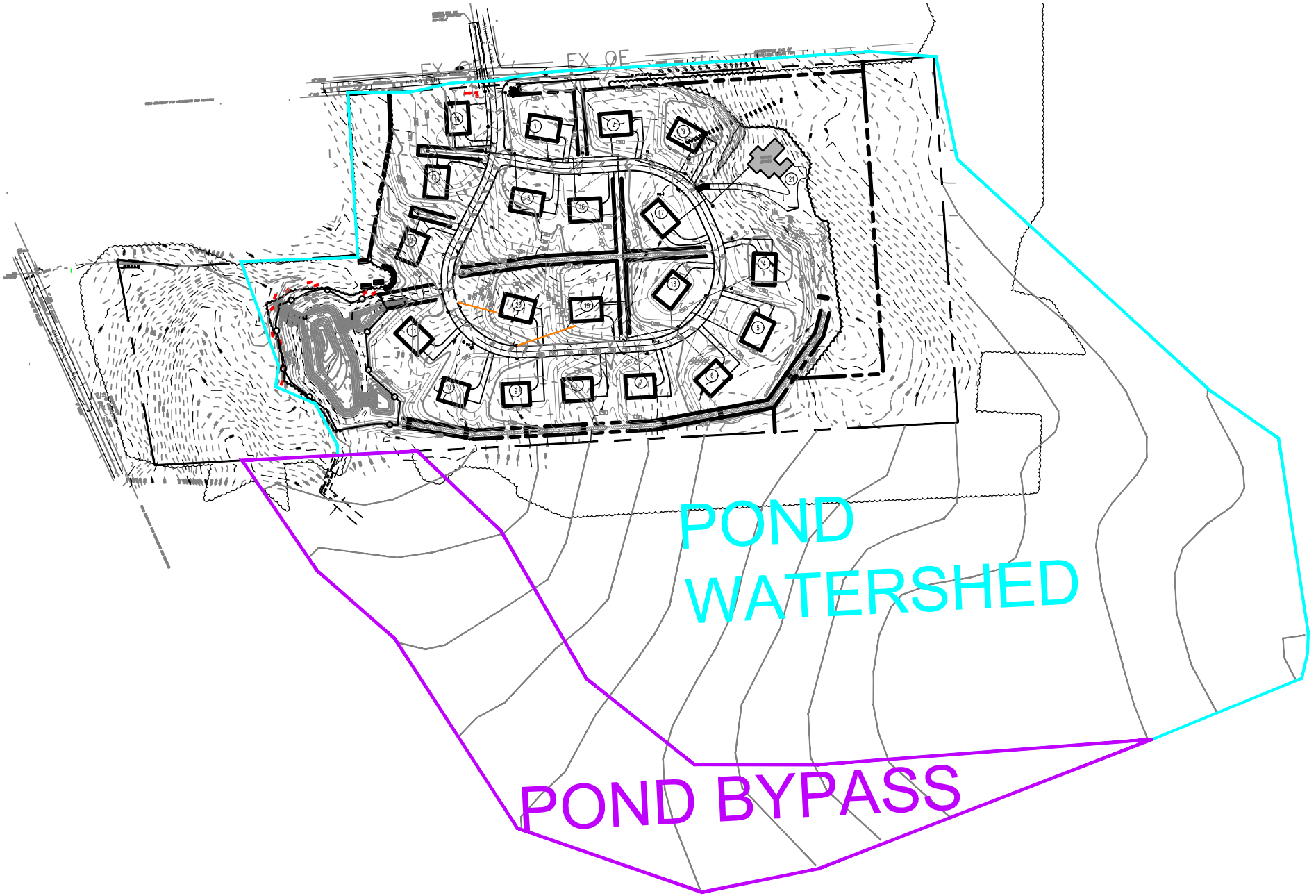
Town of Manlius, Onondaga County, NY

Appendix O- Existing Site Watersheds

SCALE: 1:300

Updated: 03/96/18

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



Hoag Lane Subdivision

Town of Manlius, Onondaga County, NY

Appendix O- Proposed Watersheds

SCALE: 1:300

RZ Engineering, PLLC
STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION
6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



□ = Storm Inlet

→ = Flow












FPD-6473





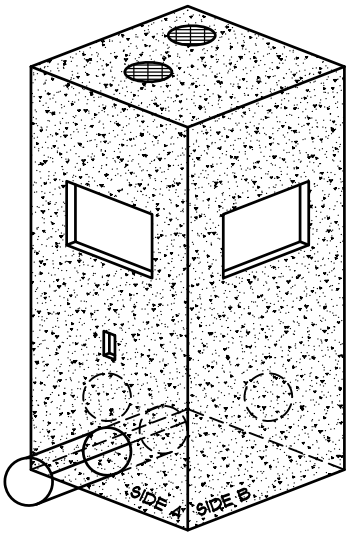



7841

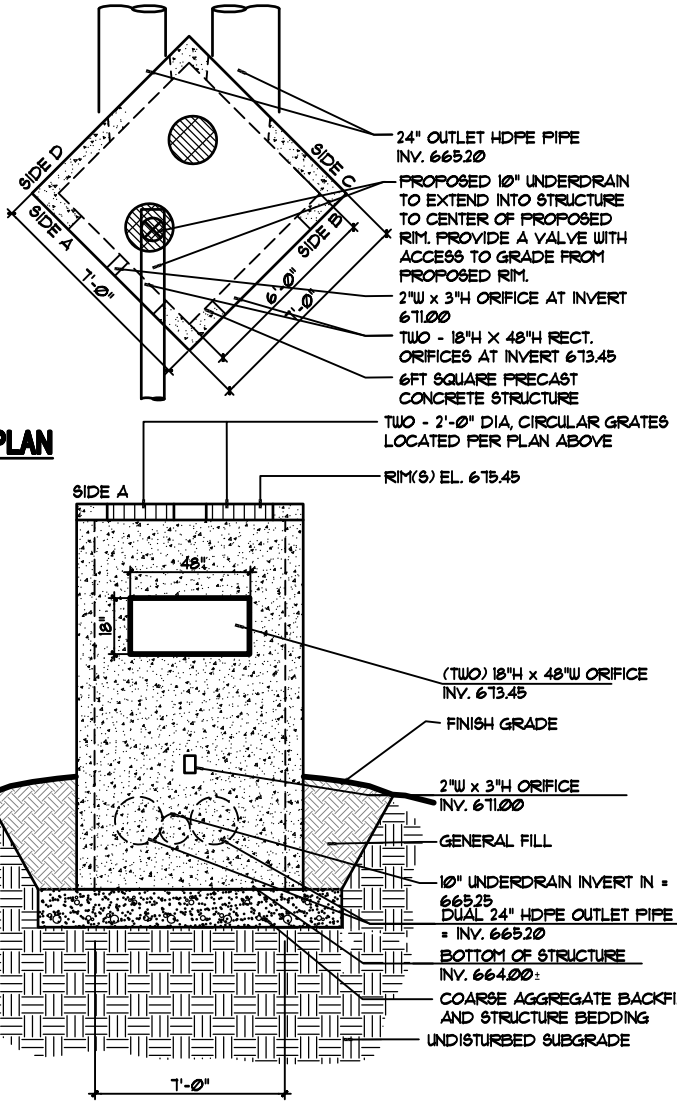




APPENDIX P



ISOMETRIC



PLAN

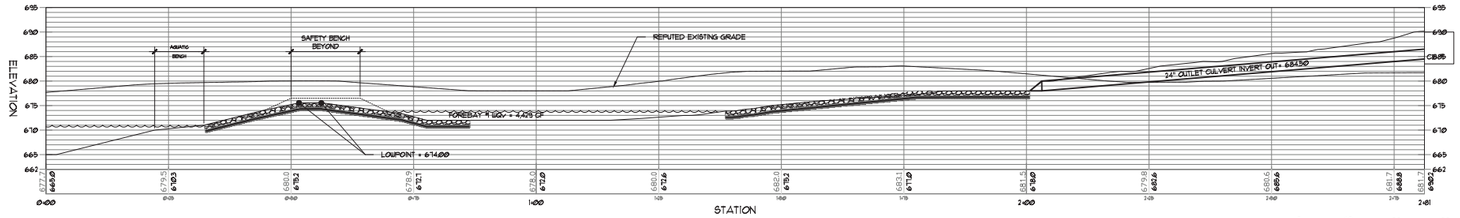
ELEVATION

NOTES:

- CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER PRIOR TO INSTALLATION

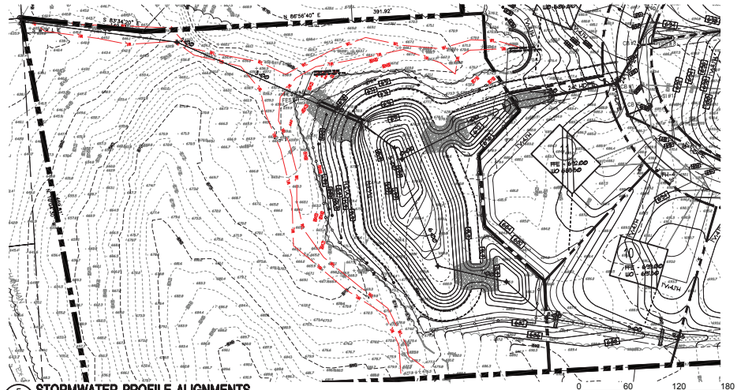
OUTLET STRUCTURE

NOT TO SCALE **33-4000-80**



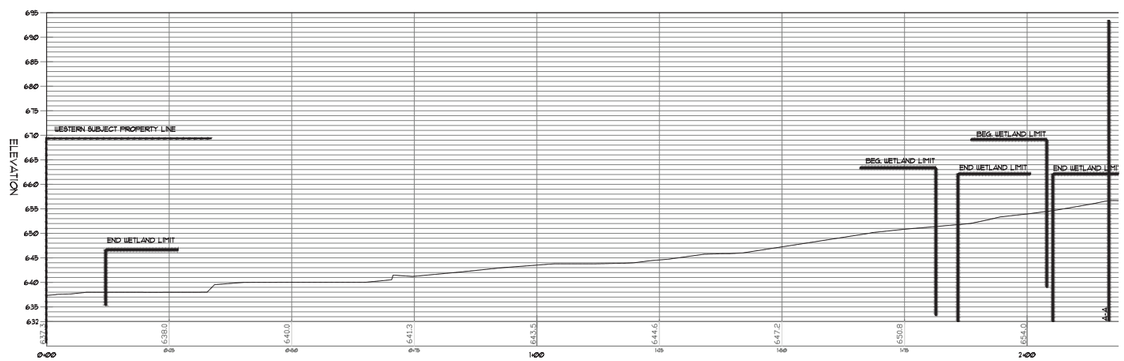
4 L-502 **STORMWATER PROFILE #2**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30



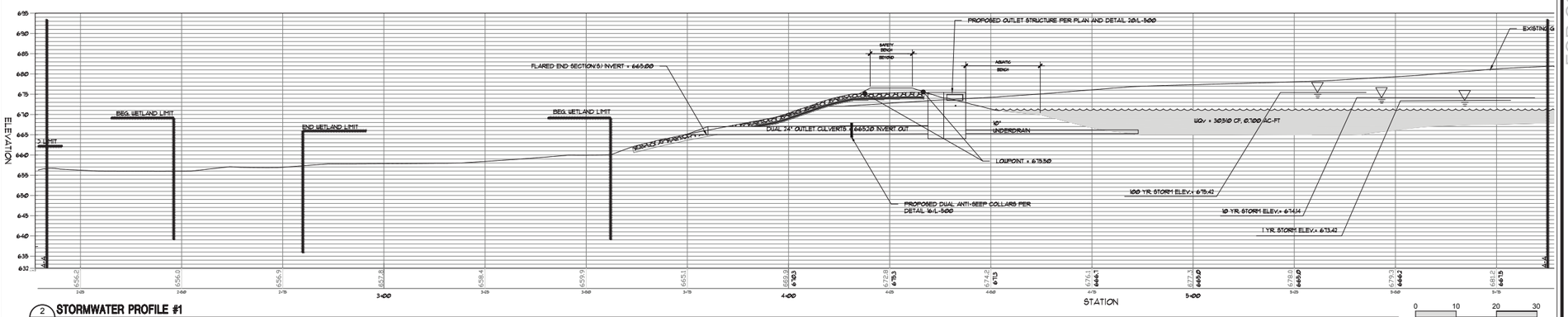
5 L-502 **STORMWATER PROFILE ALIGNMENTS**

0 60 120 180



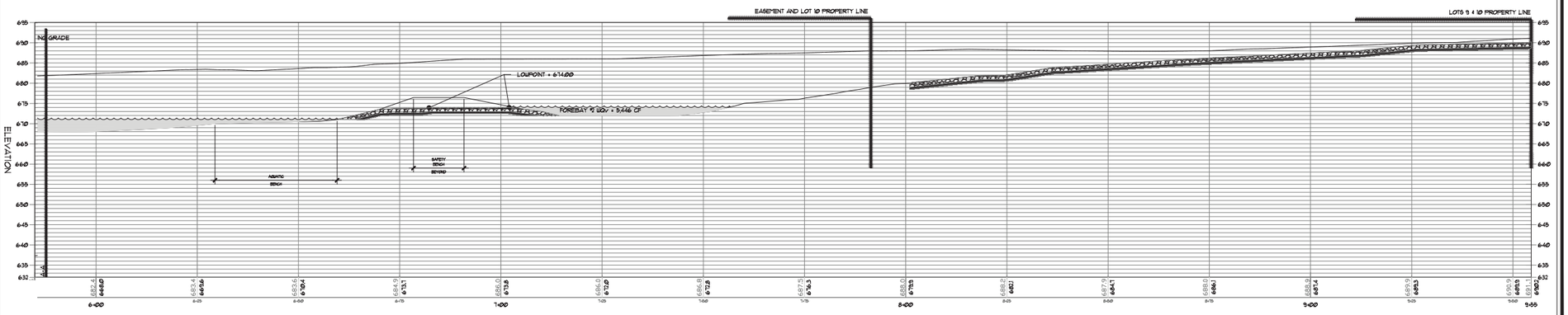
3 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30



2 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30



1 L-502 **STORMWATER PROFILE #1**
HORIZONTAL SCALE 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30

Monday, June 15, 2020 11:21:26 AM

Project No:

Date/Initial:

Drawing File:

KGA GEOLOGIC & ENGINEERING SERVICES
GEOTECHNICAL LABORATORY
LICENSED ARCHITECTURAL AND ENGINEERING SERVICES
NEW YORK STATE
RZ Engineering, PLLC
6320 FLY ROAD, SUITE 105
EAST SYRACUSE, NY 13057
PH: 315-432-0355 FAX: 315-445-7581

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/29/18
3	3	PUBLIC HEARING-MANLIUS	05/04/18
4	4	PUBLIC HEARING-MANLIUS	05/29/18
5	5	PUBLIC HEARING-MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL SET	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/29/19
11	11	MANLIUS- PLAN SUBMISSION	09/04/19
12	12	MANLIUS- PLAN SUBMISSION	12/19/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20



Drawn By: VER
Checked By: SF
KGA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
STORMWATER PROFILES

L-502

Manufactured by:
Agri Drain CORPORATION

PO Box 458 · 1462 340th Street · Adair, Iowa 50002
Phone: 1-800-232-4742 · Fax: 1-800-282-3353
www.agridrain.com · email: info@agridrain.com

Inline Water Level Control Structure™

- Available in manual or automated.
- Constructed of rugged ½" PVC with lockable plastic lid.
- Stainless steel screws and custom anodized aluminum corner extrusions used for strength and durability.*
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering.)*
- Stoplogs made of PVC in 5" and 7" heights for adjustability. (Maintenance recommended: Remove stoplogs and grease seal with white lithium grease. Ensure there is no debris in the tracks or along the bottom of the structure. Replace stoplogs after greasing.)
- ***Important!*** To minimize seepage, align stoplogs firmly against one side of the stoplog track.
- Stoplogs must remain in track during structure installation.
- Structures are not pressure rated.
- Structures are intended for gravity flow: Low pressure and some seepage may occur.
- 5-year warranty on all standard structures.
- Customized or special orders will carry a 1-year warranty on workmanship and material and are nonreturnable.

**For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

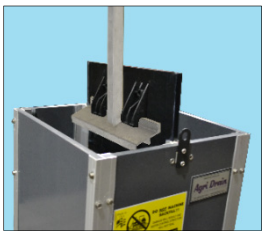


Call for details on Automated.

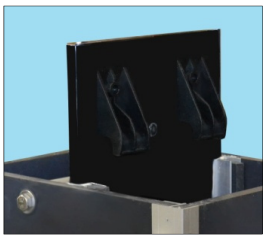
US Patent No. 6,715,508 B2
US Patent No. 6,786,234 B2
Canadian Patent No. 2,403,456
Canadian Patent No. 2,466,976

Inline Water Level Control Structure™			
Pipe Size	Available Heights	Width	Depth
4"	2' - 12'	8"	10"
6"	2' - 12'	8"	10"
8"	2' - 12'	11 5/8"	12"
10"	2' - 12'	14"	16"
12"	2' - 12'	16"	20"
15"	2' - 12'	20"	24"
18"	2' - 12'	24"	28"
24"	3' - 10'	31"	39"

Comes with a handle to install and remove stoplogs.



Stoplog seal ensures a tight fit to prevent leakage.



Rugged injection molded stoplogs used in structures with 4", 6", 8", 10", and 12" pipe sizes.



PVC stoplogs with stainless steel lifting hooks used in structures with 15", 18", and 24" pipe sizes.

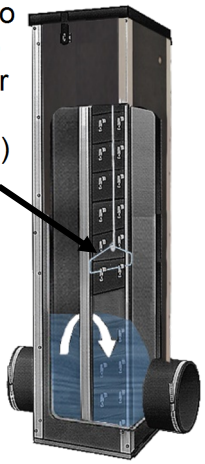


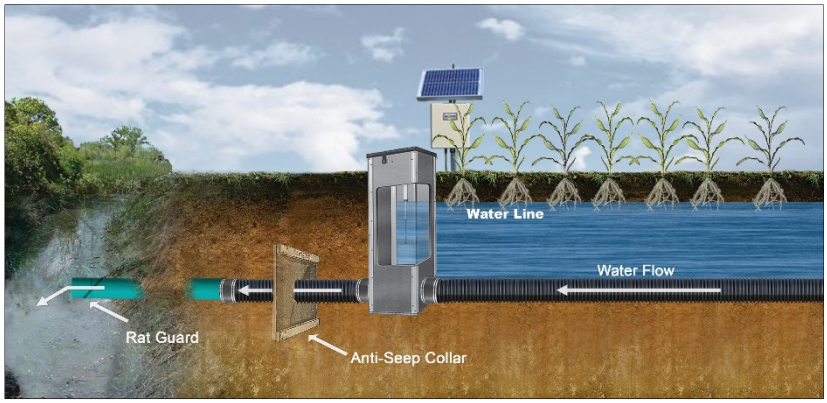
Stoplog Retainer

Hold extra stoplogs up & out of the way!

- Stainless steel retainer hooks to lowest stoplog that you want to hold up within your Inline Water Level Control Structure™.
- 10' of 3/16" nylon rope (included) attaches to the retainer and secures to the inner brace bar near the top of the structure.

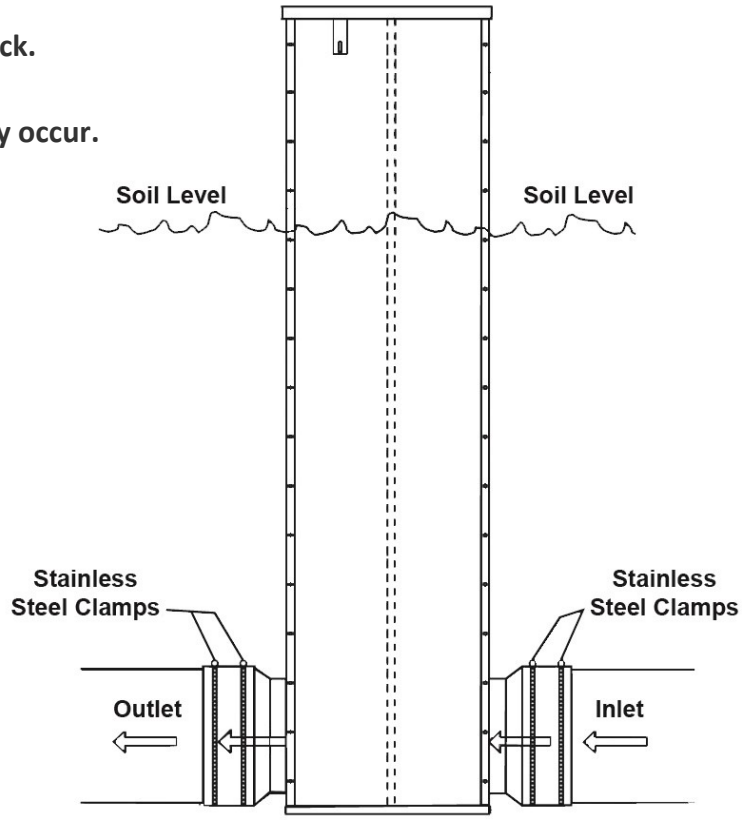






INLINE WATER LEVEL CONTROL STRUCTURE™ INSTALLATION INSTRUCTIONS

Important! **—To minimize seepage, align stoplogs firmly against one side of the stoplog track.**
—Stoplogs must remain in track during structure installation.
—Structures are intended for gravity flow: Low pressure and some seepage may occur.



1.) EXCAVATION AND GRADING

Structure base, inlet pipe, & outlet pipe must be set on compacted soil or fill sand to provide a solid, stable base. This will reduce settling and reduce stress or misalignment of pipe connections.

2.) PIPE CONNECTION

Remove stainless steel clamps from inside structure. Place pipe inside flex couplers and tighten SS clamps.

3.) BACKFILL AND COMPACTION

Level structure vertically before placing backfill. Backfill around control structure by hand in 6" lifts. Hand tamp only - **do not** mechanically compact. **Do not** use a backhoe or blade to place backfill directly against the water control structure.

—**Seal on stoplog faces downstream/outlet side of structure.**

Excessive compaction may cause structural damage or failure.

- Either the inlet or inline structure may be used for primary or secondary outlet, with larger pipe or emergency spillway as primary.
- Inline structure removes subsurface water.
- On the inline installation, the inlet end of the pipe should be held off the bottom of the impoundment to allow for siltation, and be protected with an inlet guard. The outlet end of the structure should be protected with a rodent guard.
- In a controlled drainage or subsurface irrigation application, the structure nearest the outlet should be installed with a minimum of 20' of non-perforated pipe on the downstream end. Anti-Seep Collars are recommended.

Agri Drain CORPORATION

1462 340th Street
Adair, Iowa 50002
P: 800-232-4742
F: 800-282-3353
www.agridrain.com
info@agridrain.com

— Since 1976 —

Manufactured by:
Agri Drain CORPORATION

PO Box 458 · 1462 340th Street · Adair, Iowa 50002
Phone: 1-800-232-4742 · Fax: 1-800-282-3353
www.agridrain.com · email: info@agridrain.com

Water Level Control Structures

The **Water Level Control Structures** manufactured by *Agri Drain Corp*. are constructed of rugged 1/2"-thick PVC sheets, connected at the corners by means of specially extruded anodized aluminum profiles sealed with waterproof caulking and secured with stainless steel screws.* The bottom of the structure is sealed with either a 1/2"- or 1"-thick PVC sheet (dependent upon structure size) and also utilizes waterproof caulking for sealant and stainless steel screws to hold it in place. **For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

The stoplogs* are constructed of PVC and utilize a seal that mates against the downstream surface of the extruded aluminum track and the top of the stoplog that it rests upon. The stoplogs are equipped with hooks to facilitate their removal by means of a special handle/hook assembly. ***Important!** To minimize seepage, align stoplogs firmly against one side of the stoplog track. Stoplogs must remain in track during structure installation.

In order to obtain inch-by-inch water level adjustment capabilities, the stoplogs are built in two heights: 5" and 7" tall. This allows for various combinations and nearly infinite adjustability. An additional, 7"-tall stoplog is specified with a sticker stating “Bottom Board”, and this stoplog must be placed in the bottom of the structure. Examples: 7"+7"=14", 5"+5"+5"=15", 5"+5"+7"=17", 5"+7"+7"=19", 5"+5"+5"+5"=20", etc.

The means of connecting to the downstream and upstream pipe is a flexible rubber sewer coupler. It will accommodate corrugated plastic tubing, PVC pipe, corrugated metal pipe or virtually any other conduit material.

The units are available in two different types. The first type (Inlet) is designed to be installed on the upstream end of the conduit so the water must enter the structure before it enters the pipe. The Inlet must be anchored down when installed or it may have the tendency to float. The second type (Inline) is designed to be installed in the pipe line, so the water enters the pipe, then flows into the box, over the stoplogs, then out the downstream side of the structure. The Inline structure is equipped with a lockable plastic lid and is available in manual or automated. Both structures come with a handle to remove, install, or adjust the stoplogs.

The structures are manufactured in various sizes based on diameter of the conduit and engineered to provide a minimum of 30% greater capacity than the conduit it is connected to. They are available in heights to suit the specific installation.

INLINE WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT							
	2'	3'	4'	5'	6'	8'	10'	12'
4"	50U	64U	81U	102U	121T	216T	244T	278T
6"	52U	66U	83U	103U	164T	222T	272T	320T
8"	64U	84U	105U	176T	198T	264T	320T	392T
10"	79U	107U	168T	210T	238T	300T	375T	458T
12"	99U	157T	190T	242T	294T	366T	480T	542T
15"	154T	222T	270T	322T	382T	502T	614T	722T
18"	191T	236T	340T	402T	450T	592T	710T	834T
24"	N/A	348T	454T	524T	600T	766T	946T	N/A

INLET WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT				
	2'	3'	4'	5'	6'
4"	26U	38U	51U	64U	76U
6"	35U	41U	52U	67U	78U
8"	37U	51U	67U	86U	132T
10"	49U	62U	85U	130T	150T
12"	55U	76U	125T	164T	152T
15"	82U	126T	158T	196T	216T
18"	110T	150T	186T	224T	250T
24"	178T	192T	248T	310T	336T

UPS=U
TRUCK LINE=T

Larger CMP structures also available. Call for details on custom sizes and pricing.

APPENDIX Q

NEW YORK STATE OF OPPORTUNITY.

Parks, Recreation, and Historic Preservation

ANDREW M. CUOMO
Governor

ROSE HARVEY
Commissioner

March 26, 2018

Mr. Vincent Ryan
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
East Syracuse, NY 13057

Re: DEC
Hoag Lane Subdivision
5291 Hoag Lane, Town of Manlius, Onondaga County, NY
18PR01562

Dear Mr. Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the New York State Office of Parks, Recreation and Historic Preservation's opinion that your project will have no impact on archaeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Michael F. Lynch, P.E., AIA

Director, Division for Historic Preservation

APPENDIX R

Department of Environmental Protection
Promulgation of
Chapter 13 of Title 15 of the Rules of the City of New York
Rules Pertaining to the Prevention of the Emission of Dust from Construction Related Activities

PURSUANT TO THE AUTHORITY VESTED IN THE Department of Environmental Protection by section 1043 of the New York City Charter and section 24-146 of the Administrative Code of the City of New York, the Department of Environmental Protection promulgates a rule pertaining to the prevention of the emission of dust from construction related activities (15RCNY 13-01 *et. seq.*)
These amendments were proposed and published on September 15th, 2008 in The City Record. The required public hearing was held on October 21st, 2008.

Statement of Basis and Purpose

Section 24-146(c) of the New York City Administrative Code states, in summary, that no person shall cause or permit a building or road to be constructed without taking such cautions as may be ordered by the Commissioner of Environmental Protection to prevent particulate matter from becoming airborne. Subdivision (f) of the same section states that demolition by toppling of walls shall not occur except when approved by the Commissioner of DEP.

These two provisions authorize the DEP Commissioner to promulgate rules regarding dust control in the above circumstances. No such rules currently exist, and DEP has received requests for guidance regarding methods of compliance with this section of the Air Code.

Consistent with the above, DEP promulgates the following new Rule, to be found at 15 RCNY chapter 13. This Rule sets forth "best management practices," and is similar to other local laws and rules regulating the construction industry found in many jurisdictions throughout the United States.

The Rule is authorized by section 1043 of the Charter of the City of New York and section 24-146 of the Administrative Code of the City of New York.

The text of the Rules follows.

***

Title 15 of the Rules of the City of New York is amended by adding a new Chapter 13, to read as follows:

Chapter 13

Rules pertaining to the prevention of the emission of dust from construction related activities

§13-01 *Scope and Application*

(a) The following dust prevention regulations, §13-01 et seq., shall apply to all construction related activities occurring within the city of New York.

(b) Every owner of a building or property where construction related activity occurs shall be responsible for the performance of the construction related activities by his/her agent, contractor, employee, or other representative.

(c) Every contractor and worker engaged in construction related activities shall comply with the provisions of this chapter except as otherwise specified.

(d) The Department may inspect, at a reasonable time and in a reasonable manner, any site where construction related activity is being conducted.

(e) No person shall interfere with or obstruct any employee of the Department in the performance of his/her official duties, including but not limited to the performance of inspections.

§13-02 *Definitions*

Adequately Wetted shall mean sufficiently mixed or penetrated with liquid to prevent the release of particulate matter. If visible emissions are observed coming from particulate matter, then that material has not been adequately wetted.

Board or **ECB** shall mean the environmental control board of the city of New York.

City shall mean the city of New York.

Commissioner shall mean the commissioner of environmental protection.

Contractor shall mean a public authority or any other governmental agency or instrumentality thereof, self-employed person, company, unincorporated association, firm, limited liability corporation, partnership or corporation and any owner or operator thereof, which engages in a construction project or employs persons engaged in a construction project.

Control apparatus shall mean any device which prevents or controls the emission of any air contaminant.

Construction shall mean any or all activity necessary or incidental to the erection, demolition, assembling, altering, installing or equipping of buildings, public or private highways, roads, premises, parks, utility lines including such lines in already-constructed tunnels, or other property, including land clearing, grading, excavating and filling.

Construction Material shall mean any material, regardless of composition, designed and customarily used in construction including but not limited to any rails, pillars, columns, beams, bricks, flooring, wall, ceiling, or roofing material, gravel, sand, cement or asphalt.

Controlled Filled Operations shall mean the use of a dust control apparatus that utilizes an exhaust ventilation system which bags the dust, thereby preventing dust from becoming airborne.

Demolition shall mean the dismantling or razing of a building, including all operations incidental thereto and any removal of non-structural interior building walls, partitions, finishes, equipment and fittings as would be required for an interior renovation project.

Department or **DEP** shall mean Department of Environmental Protection.

Disturbed area shall mean an area that has been significantly disrupted by fugitive dust.

Dust shall mean solid particulate matter which has been released into the open air by natural forces or by mechanical processes.

Emission shall mean dispersion of an air contaminant into the open air of the city.

Open air shall mean all the air that is available for human, animal, or plant respiration, but shall not include the air in equipment and private dwellings.

Owner shall mean and includes the owner of a freehold of the premises or lesser estate therein or mortgagee thereof, a lessee or an agent of any of the above persons, a lessee of the equipment or his or her agent, a tenant, operator, or any other person who has regular control of equipment or apparatus.

Person shall mean an individual or partnership, company, corporation, association, firm, organization, governmental agency, administration or department, or any other group of individuals, or any officer or employee thereof.

Re-suspension shall mean dust accumulation that once again becomes airborne.

Sandblasting shall mean the use of a high pressure current of air or stream carrying sand, water, or other material for the cleaning or grinding of hard surfaces, including, but not limited to, stone and metal.

§13-03 *Enforcement*

Any person who is in violation of or fails to comply with any provision, standard or requirement of these Rules or the terms and conditions of any permit issued pursuant to these Rules shall be subject to the issuance of notice(s) of violation and other civil or criminal enforcement action(s) pursuant to the provisions of Title 24, Chapter 1, Subchapter 9 of the Administrative Code of the city of New York, including but not

limited to payment of civil penalties and compliance with orders of the Commissioner and/or ECB.

§13-04 *Wetting*

(a) Provision shall be made at every construction site to control the amount of airborne dust released off site from construction operations, by wetting the construction material as necessary with appropriate spraying agents, provided wetting will not damage utility infrastructure or create any safety hazards. Other means or dust-control apparatus may also be used provided they are acceptable to the Commissioner. Fire hydrants shall not be opened to accomplish this purpose unless a fire hydrant use permit is in effect

(b) Trucks and other vehicles used to transport particulate mater shall be covered and any particulate matter kept on site shall be sufficiently wetted or stored to prevent particulate matter from becoming airborne.

(c) The wet method of dust control shall include an adequate and continuous supply of water delivered to the construction site under proper pressure and distributed by a hose system and terminating in suitable water sprays or jets at the several points of application, or shall provide the same facilities by means of a self-contained recirculating system. For excavation jobs, a fine mist is deemed to be an adequate supply of water. The application of water shall be done in such a way so as not to create a slipping hazard. Controlled filled operations shall be exempt from this section. When the fill pile is to remain on site and undisturbed overnight or longer, the pile shall be covered with a tarp.

(d) Portable hand water sprinklers or hose sprinklers are acceptable means of wetting for dust control. The water sprays or jets shall be designed to break the water stream into small droplets or otherwise to provide effective wetting.

(e) Suitable drainage means shall be provided for the removal of water and sludge which drains from the operation. When no such drainage is available, the use of access roads and other acceptable methods shall be used.

§13-05 *Construction activities requiring wetting*

(a) Prior to the commencement of demolition activities, all exterior surfaces of a building up to six stories in height shall be wetted and shall be maintained adequately wet thereafter while operations continue.

(b) All construction material shall be sufficiently wetted to prevent dust from becoming airborne before loading into trucks, vehicles or other containers. During transport, such material shall be enclosed or covered to prevent dust dispersion.

(c) Wetting shall be used to control dust where drilling, grinding, or other similar construction activities occur.

(d) Sprinklers or other effective means shall be provided to control dust produced at dumps, conveyors, chutes, and other transfer points.

(e) Wherever water sprinklers are used to control dust at transfer points, they shall be capable of being operated by the person(s) responsible for conducting the loading.

(f) Soil or debris piles shall be moistened if dust is being emitted from the piles due to prevailing winds and not from a momentary gust. Adequately secured tarps, plastic or other material may be required by the Commissioner to further reduce dust emissions.

§13-06 *Construction activities requiring additional forms of dust control*

(a) Where the demolition or renovation of any building or other structure is being performed by hand, debris, bricks, and other material shall be removed by means of chutes, by means of buckets or hoists, or through openings in the floors of the building or other structure in compliance with these Rules and the Administrative Code of the city of New York.

(b) Where windows and other exterior wall openings in buildings or other structures being renovated are more than 25 feet in height above the ground or grade level and are within 20 feet of any floor opening used for removal of debris from floors above, such windows and other openings shall be solidly boarded up during renovation operations to prevent the emission of dust into the atmosphere so long as applicable OSHA standards are followed.

(c) During sandblasting or other similar operations, installation and use of hoods, fans and dust collectors to enclose and vent the handling of dusty materials or the use of water sprays or other measures and control apparatuses acceptable to the Commissioner to suppress the dust emission or adequate containment methods shall be employed.

(d) Open-bodied trucks transporting dust producing construction materials likely to become airborne shall be covered at all times when in motion.

(e) Removal of earth or other material from paved roads, driveways and parking lots on which earth or other material has been deposited by trucking, earth moving equipment or erosion is required daily. There shall be no re-suspension of roadway dust during the removal process.

(f) Dry street sweepers, including broom sweeping, may be used if designed to prevent the re-suspension of street/sidewalk particulate matter.

(g) The use of blower devices for the removal of deposited mud or dirt is prohibited.

(h) Vehicles entering or exiting construction areas shall travel at slow speeds to minimize dust emissions.

(i) Disturbed areas shall be stabilized for the duration of the construction activity or until construction work resumes on the inactive disturbed area. All disturbed areas of a construction site, including storage piles of fill dirt and other bulk materials, which are not being actively utilized for construction purposes for a period of seven calendar days or more, shall be stabilized using one or more of the following soil stabilization methods:

(1) Water, as a dust suppressant;
(2) Chemical dust stabilizer or suppressant;
(3) Planting of trees or vegetative ground cover.

Where soil moisture or natural crushing is sufficient to limit visible dust emissions, no action is required

§13-07 *Demolition*

(a) A DEP demolition registration shall be filed with the Department 10 days prior to the commencement of demolition. Such registration shall include the following information: name of owner or demolition contractor, address of owner or demolition contractor, description of the building, structure, facility or installation, scheduled starting and completion dates of demolition, method of demolition to be employed, and procedure to be employed to meet the requirements of these Rules .

(b) Adequate wetting shall be employed before and during the demolition of any section or wall of the structure.

(c) Debris shall be transported through dust-tight chutes or in buckets and shall not be dropped or thrown from any floor. Any debris in chutes or buckets shall be sufficiently wetted to preclude dust dispersion at the point of discharge.

(d) Dust and debris from the demolition operations shall be removed daily from the adjacent streets, sidewalks and alleys.

(e) Any contractor or person who intends to demolish a building, structure, facility or installation to which the provisions of this section apply is exempt from the requirements of this section if such building, structure, facility or installation has

been declared by a state or local governmental authority to be structurally unsound and in danger of imminent collapse.

§13-08 *Sandblasting*

(a) No dry sandblasting shall be permitted except where wet sandblasting cannot be done due to unique circumstances.

(b) Whenever sandblasting is done, contaminant methods such as blast-cleaning machines and cabinets shall be used.

(c) Whenever sandblasting is done, curtains shall be used as temporary dust-containment structures.

(d) A minimum of three days notice shall be given by the contractor to owners, tenants and occupants of all structures within one hundred fifty feet of the site on which sandblasting is to be done.

§13-09 *Construction Devices*

All persons constructing or operating a large article, machine, device, equipment, such as a rock crusher, or other contrivance or facility capable of causing or permitting emission of dust into the atmosphere at a construction site shall keep on site a document detailing such equipment . Information provided on this document shall include the ownership, location, design, make and model, operation, i.e. how does it operate, as well as any other pertinent information requested by the Department. In addition, the measures utilized to reduce dust emissions resulting from the use of these items as set forth in 15 RCNY 13-01 *et seq.* shall be clearly outlined. This document shall be attached as an addendum sheet to the Noise Mitigation Plan prepared pursuant to Section 24-220 of the Noise Code.

§13-10 *Open Areas*

Owners shall take sufficient measures including wetting and covering an open area to prevent dust emissions from becoming airborne after demolition is completed.

aeroqual

DUST SENTRY

Near reference real-time particle monitor for specific dust fractions

Designed for those who need to monitor and manage specific outdoor dust and particulate emissions continuously and in real-time.

The Dust Sentry is a nephelometer-based instrument that delivers defensible and accurate mass measurement for PM_{10}, $PM_{2.5}$, PM_1, or TSP.

MCERTS certified and SCAQMD 1466 pre-approved.



What is it?

- A weather-proof nephelometer-based monitor with integrated solar shielding for outdoor monitoring of dust and particulates
- A modular and configurable monitoring platform for measurement and compliance of a specific dust and particulate designation, and the option to integrate environmental sensors e.g. wind, noise, weather, and solar
- A flexible communications platform that transfers real-time data wirelessly, and gives you access through an API
- A web interface accessed via browser on any device, see all your data in one place and set email / SMS alerts on parameters of concern

What can it measure?

- Specific dust fraction, wind and noise

PM_{10} $PM_{2.5}$ PM_1 TSP dB

Who is it for?

- **Industrial operators** who need a cost-effective and robust solution to manage and control dust and particulates from site activities within regulatory or permitted limits:
  - Construction and remediation
  - Quarry and mine operators
  - Port and bulk handling terminals
  - Waste management sites
- **Environmental consultants** who require defensible particulate measurement for their clients air quality permits
- **Regulatory authorities** who require deployable, rapid response incident monitoring
- **EHS managers** who need to demonstrate that they are providing a safe environment for the people in their care
- **Researchers** who are on a limited budget and want to collect accurate, scientifically robust data

Specifications | Dust Sentry

Particle Module	Sizes	Range	Accuracy	Resolution	Lower Detectable Limit (2σ)
Nephelometer	PM_1, $PM_{2.5}$, PM_{10} or TSP	0 to 60,000 µg/m³	<±(2 µg/m³ + 5 % of reading)	0.1 ug/m³	<1 µg/m³
System Specifications					
Control System	Embedded fanless PC, Intel Atom N2600, 1.6 GHz, 2 GB RAM, 32 GB SSD, Ubuntu Linux Operating System				
Communications	Standard: WIFI, Ethernet (LAN) Optional: Cellular IP HSPA 4G modem				
Software	Connect: Runs on embedded PC, access via browser (IE, Firefox, Chrome, Safari) Cloud: Runs on secure 'cloud' servers, accessed via web browser Connect / Cloud Features: configuration, diagnostics, journal, calibration and data acquisition, plus SMS and email alerts (optional), auto data export via FTP and email (optional), and data export API (optional)				
Data logging	32 GB Hard Drive (> 5 years data storage)				
Outputs	2 x Relay (optional) 4 x 4-20mA (optional)				
Averaging period	1 min, 5 min, 10 min, 15 min, 20 min, 30 min, 1 hr, 2 hr, 4 hr, 8 hr, 12 hr, 24 hr				
Power requirements*	100-260 VAC (standard): 21 W / 30 W * Regulated 12 VDC (if required): 21 W / 30 W				
Enclosure	Lockable IP65 GRP cabinet with integrated aluminium solar shield armour				
PM Sampling System	Inlet: Omni-directional 36 cm (14.1 inches) heated inlet; Optional sharp cut cyclones for PM10, PM2.5 or PM1 size selection Pump: 12 V brushless DC diaphragm Optics: 670nm laser, near-forward scattering nephelometer with shealth air protection				
Dimensions	483 H x 330 W x 187 D mm (19 H x 13 W x 7.4 D inches) Includes solar shield armour & mounting brackets				
Weight*	< 13 kg (28.6 lbs)				
Environmental operating range	-10 °C to +50 °C (14 °F to 122 °F)				
Mounting	Pole, tripod and wall mounting brackets included				
47mm Sample Filter (Optional)	47mm filter for particle loading analysis				
Factory Integrated & Tested Sensors (Optional)	Gill WindSonic (ultrasonic wind sensor), Vaisala WXT536 (weather transmitter), Met One MSO (weather transmitter), Cirrus MK427 Class 1 (noise sensor), Novalynx Pyranometer (solar radiation)				

* Configuration used for power and weight calculations: base unit, nephelometer, PM_{10} sharp cut, modem, heater off / heater on

APPENDIX S

EXDA-1a

DA-1b

DA-1c

DA-1d

SWALE 1

SWALE 2

SWALE 3

TC FLOWPATH

HOAG LANE

SHIRAZ LANE

CHURCHILL LANE

CAHILL RD

ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245

DAVID BRITTAIN R/O 4745/364 TAX #104-1-38

ELIZABETH MERRIAM R/O 4054/76 TAX #96-08-30.3

ELIZABETH R. COWAN R/O 5218/29 TAX #104-1-42

BARBARA HAINES R/O 3354/248 TAX #104-1-34

SUZANNE M. OLIVARI R/O 5157/206 TAX #104-1-33.1

ROBERT MICHIEL R/O 3004/150 TAX #104-1-40.2

ANTHONY APOSTOLAKAS & ERIN HICKEY R/O 5191/924 TAX #104-1-40.1

4939/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

HOWARD HOLLISTER & LINDA HOLLISTER R/O 2938/3 LOT 43 TAX #104-1-15

KASCHA LIVING TRUST R/O 5316/ LOT 41 #104-1-13

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

LEWIS TRACT – PART 2A FILED MAP #4448

Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4a: Existing Site Watershed with USGS

SCALE: 1:100
Updated: 09/19/19

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ENGINEERS SURVEYORS WATER ENVIRONMENTAL TRANSPORTATION
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EAST SYRACUSE, NY 13057
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FAX (315) 445-7981

EXDA-1a

DA-1b

DA-1c

DA-1d

SWALE 1

SWALE 2

SWALE 3

TC FLOWPATH

HOAG LANE

SHIRAZ LANE

CHURCHILL LANE

ROBERT B. WINTER & JENNIFER C. WINTER
R/O 5236/637
TAX #104-1-36

SUSAN BURNS
R/O 4105/245

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BARBARA HANCE
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TAX #104-1-42

ROBERT MICHEL
R/O 3004/150
TAX #104-1-40.2

ANTHONY APOSTOLAKAS & DEIN HICKEY
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KASCHA LIVING TRUST
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LOT 41
#104-1-13

PAUL MASSA & ALICE MASSA
R/O 4185/239
LOT 42
TAX #104-1-14

LEWIS TRACT — PART 2A
FILED MAP #4448

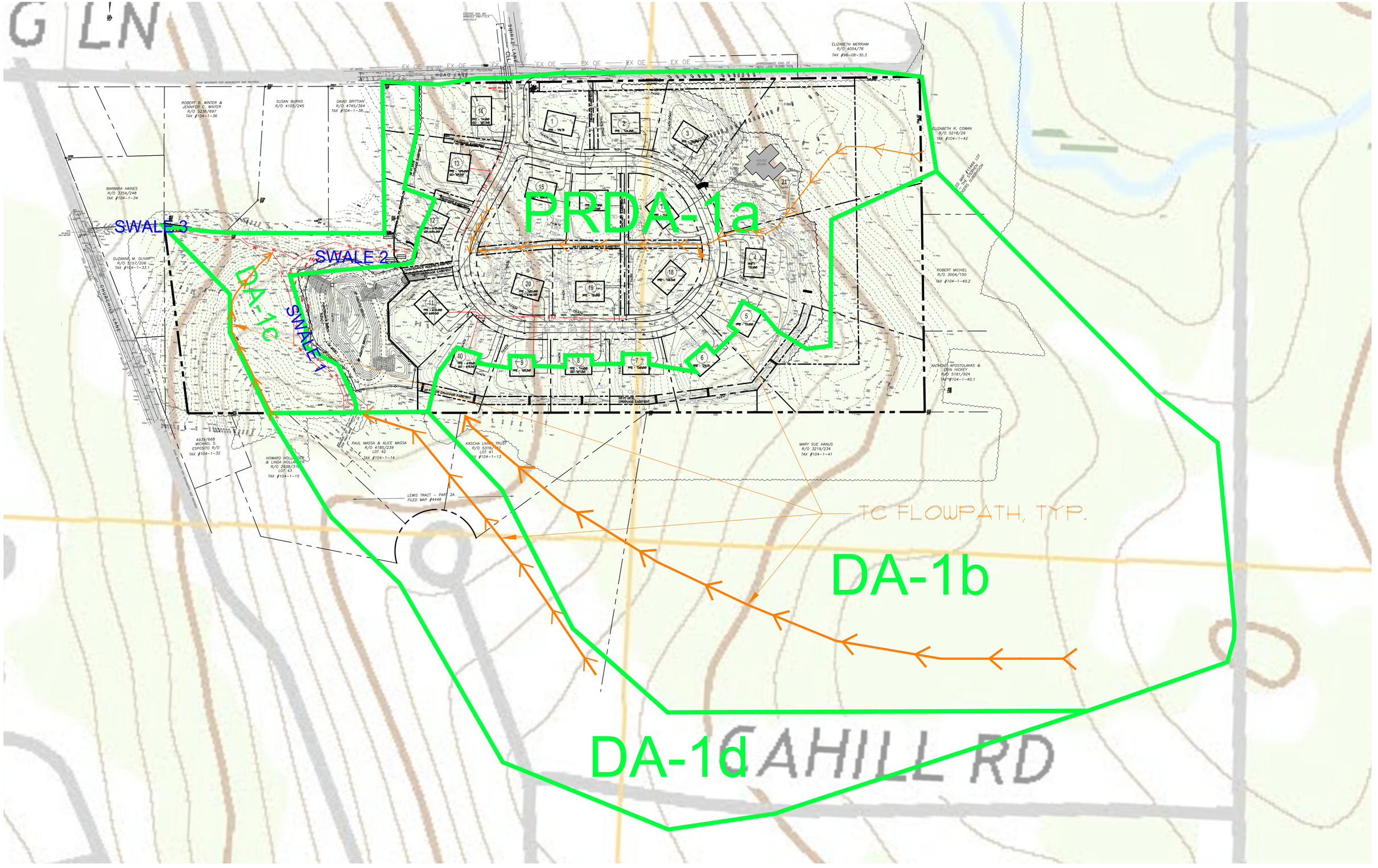
4939/668
MICHAEL S. ESPOSITO R/O
TAX #104-1-52

Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 4b: Existing Site Watershed with Aerial

SCALE: 1:100
Updated: 09/19/19

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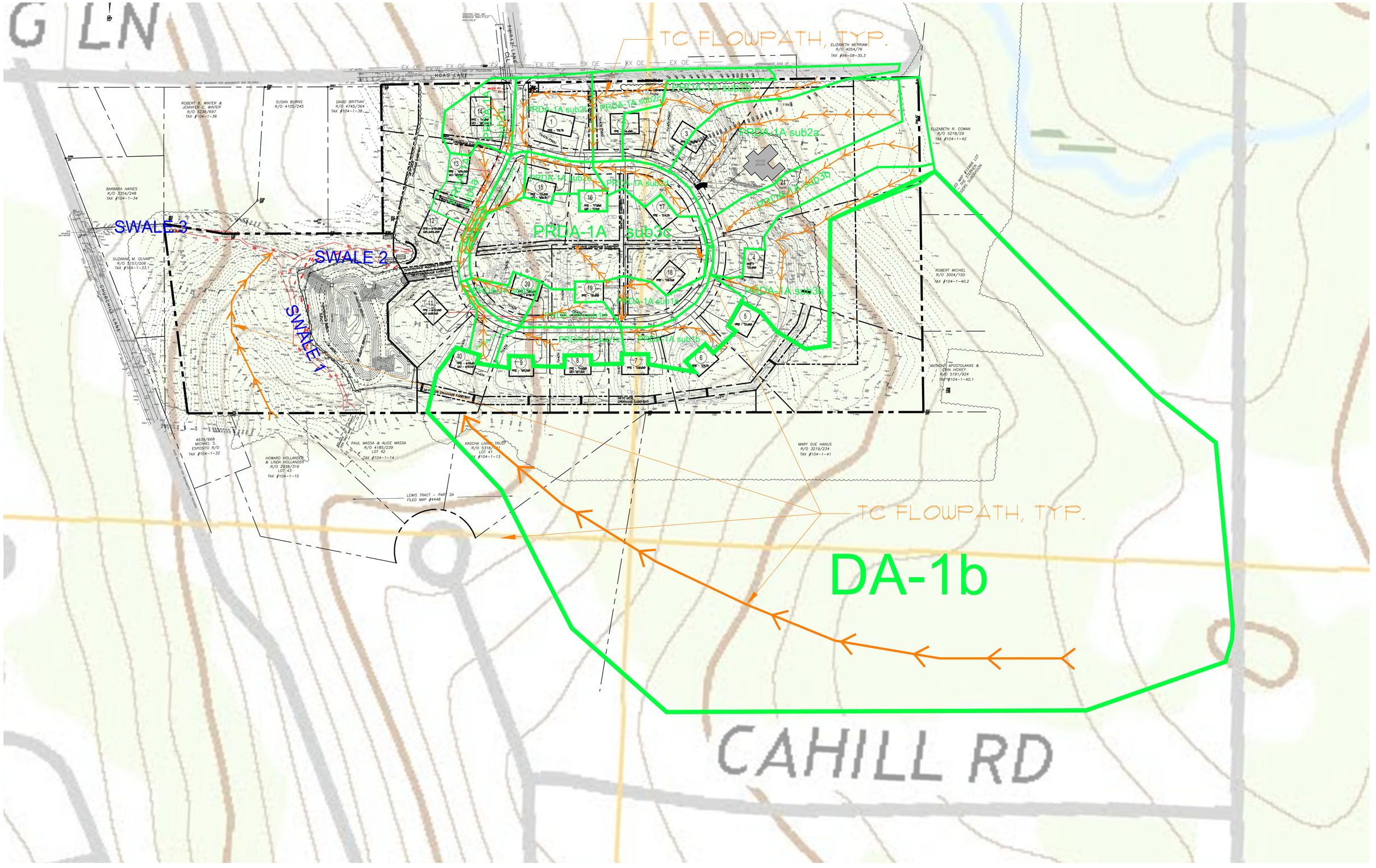


Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure 5: Proposed Watershed

SCALE: 1:100
Updated: 06/15/2020

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Hoag Lane Subdivision
Town of Manlius, Onondaga County, NY

Figure F: Proposed Sub-Watersheds

SCALE: 1:100
Updated: 09/19/19

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APPENDIX T

APPENDIX B
DESIGN EXAMPLES FOR SELECTED EROSION AND SEDIMENT CONTROL PRACTICES

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Sediment Storage Volume Design Procedure B.2

Rock Outlet Protection Design Examples B.3

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Cedar Point Section 3 Sediment Basin Design Example B.6

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APPENDIX B
DESIGN EXAMPLES FOR SELECTED EROSION AND SEDIMENT CONTROL PRACTICES

Background

Standard details and drawings for temporary erosion and sediment control practices have been used since the early 1970's. Many of these details were developed by the United States Department of Agriculture (USDA) Soil Conservation Service (SCS), now known as the Natural Resources Conservation Service (NRCS). These details were incorporated into many state design manuals. These practices included the following:

- Earth Dike
- Construction Ditch
- Perimeter Dike/Swale
- Flow Spreader
- Pipe Slope Drain
- Straw Bale Dike
- Silt Fence

What made the use of these details attractive was that they were sized based upon the drainage area, and no extensive engineering calculations were needed for design. For example, if we needed to design a construction ditch to control the runoff from 8 acres above a disturbed construction area by sloping the swale at 3 percent, we would look at page 3.4 and select Ditch B, with a channel treatment of seed and straw mulch. The Ditch B cross section is a 6-foot bottom width, 1-foot design depth, and 2:1 side slopes.

This selection process is independent of location in New York State as well as the design rainfall amount. As a result, individuals have often wondered what level of protection is actually being provided.

Site specific practice design depends on a number of variables. These include drainage area, hydrologic soil group, cover, topography, rainfall amount, and intensity or distribution.

The following design examples illustrate how these variables can be incorporated into site specific design process.

Determining Stormwater Runoff

Stormwater runoff volumes and peak discharges should be calculated using current hydrologic data. As noted in Section 1, the hydrologic data published by the Northeast Regional Climate Center (NRCC), provides updated rainfall values for a wide range on frequencies and durations on their website, **http://precip.eas.cornell.edu/**. These data combined with construction site runoff curve numbers are then used with appropriate software to calculate peak rates of runoff, runoff volumes, and flow durations.

A detailed example of this process is presented in the design example for Sediment Basin Design.

Runoff Control Practices Design Examples

This method of designing a practice or evaluating the performance of a proposed practice, is applicable to most of the temporary runoff practices. The first example evaluates the effectiveness of the construction ditch.

Example 1: Case 1 - Construction Ditch A

Given:

Drainage Area = 4.9 acres

Hydrologic Soil Group = C

Runoff Curve Number = 91 (C soil disturbed for construction)

Slope of Swale = 3%

Rainfall (P) = 2.5 inches (from NRCC) (This represents NY state's average 1-year, 24-hour storm)

Runoff (Q) = 1.6 inches (from TR55 RCN tables)

Time of Concentration for Runoff (T_c) = 6 minute (assumed 0.1 hour, the shortest allowed with TR-55)

From HydroCAD routing:

Q_p = 12.2 cfs

For Ditch A, the design cross-section shows a bottom width of 4 feet., design depth of 1 foot, and 2:1 side slopes.

Therefore, ditch area = 6 ft^2 for design depth

Compute velocity, $V = \frac{1.486}{n} \left(\frac{A}{Wp}\right)^{2/3} S^{1/2}$

Where:

n = 0.040 for vegetated channels

A = 6 sq. ft.

Wp = 8.2 ft. (wetted perimeter)

S = .03 ft/ft (slope)

Therefore, $V = \frac{1.486}{.04} \left(\frac{6}{8.2}\right)^{2/3} (.03)^{1/2}$

$= 5$ feet per second

Select the appropriate stabilization lining.

Since Q = AV, the ditch capacity is

$Q = (6\ ft^2)(5\ ft/sec) = 30$ cfs or more than twice required

Case 2—Construction Ditch B

Given:

Drainage Area = 10 acres
Hydrologic Soil Group = C
Runoff Curve Number = 91
Slope of Swale = 3%
Rainfall (P) = 2.5 inches

Runoff (Q) = 1.6 inches

Time of Concentration for Runoff (T_c) = 0.1

From HydroCAD routing:

$Q_p = 25$ cfs

For Ditch B, the design cross-section has a 6-foot bottom width, 1-foot depth, and 2:1 side slopes.

Therefore, the area = 8 ft^2

Computing velocity for a ditch slope of 3%,

$V = \frac{1.486}{.04} \left(\frac{8}{10.47}\right)^{2/3} (.03)^{1/2}$

$V = (37.15)(.836)(.173) = 5.37$ ft/sec

Since:

Q = AV, the ditch capacity is

$Q = (8\ ft^2)(5.37\ ft/sec) = 43$ cfs

Case 3 - This site is adjacent to a significant water body in Westchester County. We want to protect the site for the 2-year, 24-hour storm.

Given:

Drainage Area = 10 acres

Hydrologic Soil Group = D soils

Runoff Curve Number = 94, ("D" under construction)

Slope of Swale = 3%

Rainfall (P) = 3.5 inches (NRCC)

Runoff (Q) = 2.8 inches (TR55 RCN)

Assume Time of Concentration for Runoff (T_c) = 0.1 hour (most conservative value)

From HydroCAD routing:

Qp = 28.7 cfs

From Case 2, Ditch B, we know that the maximum capacity is 43 cfs with a velocity of 5.37 feet per second.

Our conclusions would indicate that Ditch B is adequate for capacity. The velocity is higher and thus a lining should be used to protect the ditch from erosion.

Sediment Storage Volume Design Procedure

Practices such as silt fence, straw bale dikes, earthen berms, and other slope interupters, are often used on slopes or near the toes of fill slopes to capture sediment laden runoff. These have failed many times in the field due to poor siting, improper installation, lack of maintenance, and little consideration of the proper use of the practice.

The following design example shows how careful we need to be in using these practices. We will look at the use of silt fence in the following typical situations.

Case 1 - At the toe of a 3:1 earthfill

Given:

Earthfill slope 30 feet high , slope length 95 feet

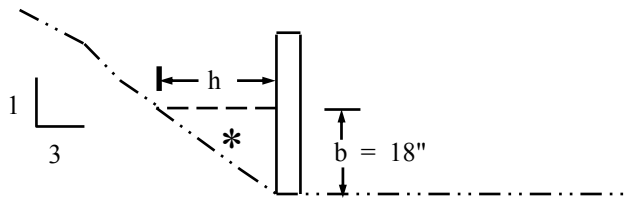
Hydrologic Soil Group—C

The Runoff Curve Number = 91 (bare soil)

Typically, the installed height of the silt fence is 30-36". The maximum design sediment depth behind the silt fence is 50% of its height, or 18" maximum.

For this case, the design sediment area is equal to:

A = 1/2bh



* Design sediment storage volume

A = 1/2 (1.5')(4-5') = 3.375 sq. ft. per linear foot

This equals 337.5 cubic feet per 100 feet of fence.

The actual slope surface is approximately 95 feet. For a rainfall of 1 inch on this site, the runoff equals 0.4 inches (TR55). The total volume of runoff would equal

$\frac{0.4 \text{ inches}}{12 \text{ inches/ft}}$ x 9500 sq. ft. = 317 cu. ft.

This example shows that the volume required for a 1-inch storm is barely provided, but the location of the fence provides no buffer for material that rolls down the slope nor room for maintenance. The fence should be located at least 10 feet from the toe of the slope.

Case 2- Determine level of protection for CASE 1 when fence is moved 10 feet from the toe of slope.

When the silt fence is moved 10' away from the 3:1 slope, the design area of storage equals,

337.5 sq. ft. + 1,500 sq. ft. = 1,837.5 cu.ft. per 100 feet of fence

Since this is the maximum runoff volume that can be controlled, the runoff depth equates to:

$\frac{1{,}837.5 \text{ ft}^3}{9{,}500 \text{ ft}^2}$ = 0.193 feet = 2.3 inches

From TR55 for a runoff Q = 2.3 inches, with a Curve Number at 91, P, rainfall is found to be 3.2 inches.

Thus, this design configuration can manage to store the runoff from a 3.2 inch rainfall event.

This method can be used to evaluate the positioning of these sediment control practices on the contour to hold sediment close to its source. It allows a designer to evaluate an existing condition, or to select a specific level of protection higher than that which may be provided by the standard details.

Rock Outlet Protection Design Examples

(Refer to Rock Outlet Protection Standard on Page 3.40)

Example 1: Pipe Flow (full) with discharge to unconfined section.

Given: A circular conduit flowing full.

Q = 280 cfs, diam. = 66 in., tailwater (surface) is 2 ft. above pipe invert (minimum tailwater condition).

Find: Read d_{50} = 1.2 and apron length (L_a) = 38 ft.
Apron width = diam. + L_a = 5.5 + 38 = 43.5 ft.

Use: d_{50} = 15", d_{max} = 22", blanket thickness = 32"

Example 2: Box Flow (partial) with high tailwater

Given: A box conduit discharging under partial flow conditions. A concrete box 5.5 ft. x 10 ft. flowing 5.0 ft. deep,

Q = 600 cfs and tailwater surface is 5 ft. above invert (max. tailwater condition).

Since this is not full pipe and does not directly fit the nomograph assumptions of Figure 7B.13 substitute depth as the diameter, to find a discharge equal to full pipe flow for that diameter, in this case 60 inches.

Since, Q = AV and $A = \frac{\pi D^2}{4}$

First, compute the actual box culvert velocity for the given flow conditions:

V = (Q/A) = (600/(5) (10)) = 12 fps

Then determine the equivalent flow through a 5 foot diameter pipe using the same velocity as the box culvert as computed above:

$Q = \frac{\pi D^2}{4}$ x $V = \frac{3.14 (5 \text{ ft})^2}{4}$ x 12 fps = 236 cfs

At the intersection of the curve d = 60 in. and Q = 236 cfs, read d_{50} = 0.4 ft.

Then reading the d = 60 in. curve, read apron length (L_a) = 40 ft.

Apron width, W = conduit width + (0.4)(L_a) = 10 + (0.4) (40) = 26 ft.

Example 3: Open Channel Flow with Discharge to Unconfined Section

Given: A trapezoidal concrete channel 5 ft. wide with 2:1 side slopes is flowing 2 ft. deep, Q = 180 cfs (velocity = 10 fps) and the tailwater surface downstream is 0.8 ft. (minimum tailwater condition).

Find: Using similar principles as Example 2, compute equivalent discharge for a 2 foot, using depth as a diameter, circular pipe flowing full at 10 feet per second.

Velocity:

$Q = \frac{\pi (2\text{ft})^2}{}$ x 10 fps = 31.4 cfs

4

At intersection of the curve, d = 24 in. and Q = 32 cfs, read d_{50} = 0.6 ft.

Then reading the d = 24 in. curve, read apron length (L_a) = 20 ft.

Apron width, W = bottom width of channel + L_a = 5 + 20 = 25 ft.

Example 4: Pipe flow (partial) with discharge to a confined section

Given: A 48 in. pipe is discharging with a depth of 3 ft. Q = 100 cfs, and discharge velocity of 10 fps (established from partial flow analysis) to a confined trapezoidal channel with a 2 ft. bottom, 2:1 side slopes, n = .04, and grade of 0.6%.

Calculation of the downstream channel (by Manning's Equation) indicates a normal depth of 3.1 ft. and normal velocity of 3.9 fps.

Since the receiving channel is confined, the maximum tailwater condition controls.

Find: discharge using previous principles:

$$Q = \frac{\pi (3ft)^2}{4} \times 10 \text{ fps} = 71 \text{ cfs}$$

At the intersection of d = 36 in. and Q = 71 cfs, read d_{50} = 0.3 ft.

Reading the d = 36" curve, read apron length (L_a) = 30 ft.

Since the maximum flow depth in this reach is 3.1 ft., that is the minimum depth of riprap to be maintained for the entire length.

Flow Diffuser Design Examples

(Refer to Flow Diffuser on Page 3.16)

The stormwater runoff from a 3.5 acre drainage area is to be discharged offsite through a flow diffuser. The drainage area is upland meadow, pasture and access road. The 10 year, 24 hour rainfall is 3.5 inches. A peak rate of runoff of 8.8 cubic feet per second results from a curve number of 80 and a time of concentration of 6 minutes (0.10 hour), using the HydroCAD computer model. This flow is being diffused off the right of way to prevent excessive flows further down the access road corridor.

A. Determine the diffuser length:

Since the maximum flow rate from the diffuser onto the vegetated buffer area is 0.25 cfs, per linear foot of weir length, the diffuser length is:

$$W = \frac{Q_{10}}{Q_D} = \frac{8.8 \text{ cfs}}{0.25 \text{ cfs.ft}} = 35.2 \text{ ft}$$

B. Using the standard minimum diffuser cross-section dimensions, solve for the d_{50} rock size:

Assume: 1:1 side slopes, 2 ft top width, h = 1.0 ft, W = 36 ft for:

$$Q = \frac{(h^{2/3})(W)}{[L/D + 2.5\ L^2]^{0.5}}$$

Where:

h = ponding depth behind the diffuser

W = linear length of diffuser along centerline

L = average horizontal flow length through the diffuser perpendicular to the centerline

D = average stone diameter (ft.) in the structure

Try a D (d50) = 0.50 ft (6 inches), from typical cross section, L=3 ft, then,

$$Q = \frac{1^{2/3} \times 36}{[3/0.5 + 2.5 + (3)^2]^{0.5}} = \frac{36}{(17)^{0.5}} = \frac{36}{4.18}$$

Therefore, Q = 8.6 cfs, this approximates the 10 year discharge and the design is balanced.

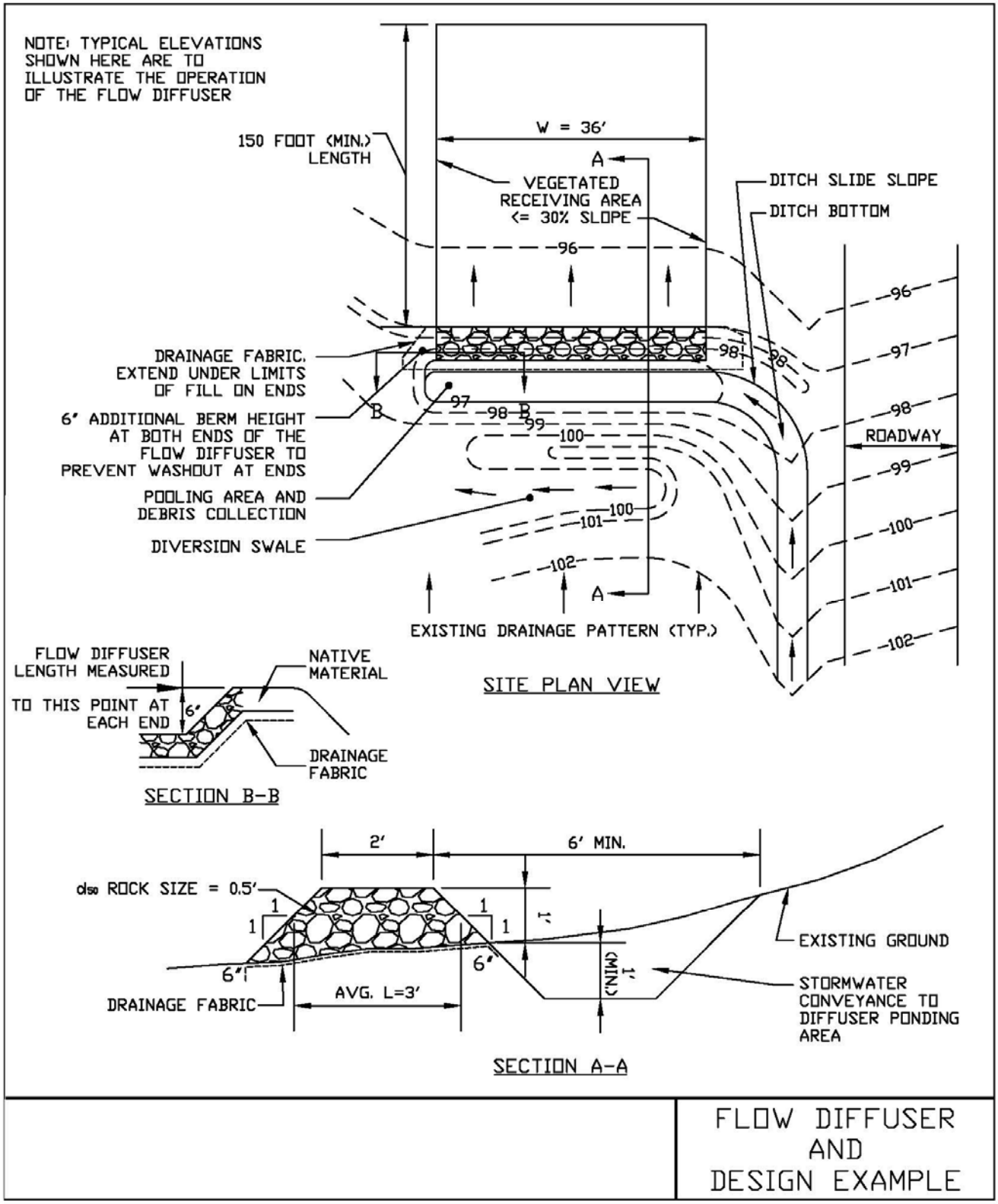
What if d_{50} is 0.75 ft. or 9 in.?, then:

$$Q = \frac{36}{[3/0.75 + 2.5 + (3)^2]^{0.5}} = \frac{36}{3.94} = 9.1 \text{ cfs}$$

And this flow exceeds the maximum allowable. Figure B.1 on page B.5 shows the dimensions and details for the final diffuser configuration.

Design Note: Changing the variables of height, side slope, rock size, and weir length, will result in a change of the diffuser discharge. All dimensions need to be balanced so the diffused flow does not exceed the maximum allowable of 0.25 cfs per linear foot of the diffuser. This practice can be modeled for storage requirements as a pond with a constant overflow rate.

Figure B.1
Flow Diffuser Design Example



CEDAR POINT SECTION 3
SEDIMENT BASIN DESIGN EXAMPLE

Cedar Point is a residential construction project in Cicero, Onondaga County, New York. Section 3 contains quarter acre lots with residential streets on approximately 20.4 acres. A sediment basin will be utilized as a component of the erosion and sediment control plan for this project. It will be located at the storm drainage outlet of the project (See Figure B.5). The drainage area to the basin is 14.9 acres.

The runoff curve number (RCN) used to calculate the stormwater runoff for design storms from this drainage area is based on the maximum disturbed construction condition. In this case it means bare soil for all the lot areas and impervious surface for the street area. This drainage area has 1.6 acres of paved roads and gutters; 6.4 acres of exposed soil in Hydrologic Soil Group (HSG) B; and 6.9 acres of exposed soil in HSG C. This results in a composite RCN of 90. Based on hydrologic data obtained from the Northeast Regional Climate Center (NRCC) and using the HydroCAD computer model, the peak discharge for the 10 year frequency storm is 39.2 cubic feet per second. See Figures B.2 to B.7 that show the development of the hydrology data. The steps to obtain this data are listed below:

1. Go to the NRCC website, **http://precip.eas.cornell.edu/**.
2. Select the tab Data and Products.
3. Use the Google Map to zoom into the project and double click.
4. From the Products list, select Extreme Precipitation Tables- Text/CSV.
5. At the bottom of the page, set smoothing to No, then click Submit.
6. Select Save when asked.
7. Set Save In to your HydroCAD IDF file or your HydroCAD projects folder.
8. Set the name for this file as NY-Cicero.hci.
9. Set the file format as “plain text”.
10. Click save and close the NRCC site.

If you are using a different computer program, import the text files into that program in accordance with the programs protocols. These text files will be converted into rainfall distribution curves for each specific rainfall frequency.

11. Open HydroCAD and click on the calculator icon.
12. Click “Rainfall”
13. Click “Import Events from IDF”
14. Click “Create Mass Curves”, then OK.
15. Click “Yes” on popup screen to replace the storm events, and accept.

This process imports rainfall values from the 1 year to the 500 year storm. This will be shown on the main screen when you toggle down the storm event window. Make sure when calculating Tc with HydroCAD that the NRCC 2 year storm value is used for the sheet flow calculation and not the older value. For our example, the 2 year rainfall is 2.37 inches and the 10 year rainfall is 3.39 inches.

The design results are shown on the following Temporary Sediment Basin Design Data Sheet. The instructions for the use of this form are shown on page 5.25.

The outlet for this sediment basin is a skimmer device. It is critical to size the orifice so that the appropriate detention time for dewatering is applied to maximize the basin efficiency. The Dewatering Device standard on page 5.10 sets the criteria for orifice sizing.

The Cedar Point Section 3 soils contain approximately 45 % fines (less than the #200 sieve size); therefore the storage volume drawdown time should be a minimum of 48 hours. The dewatering volume is calculated to be approximately 54,000 cubic feet. Therefore, from Figure 5.3 on page 5.11 of the Dewatering Device standard, enterthe bottom of the chart at 54,000 cubic feet. Travel vertically to the 2 day dewatering time line. Then read across to find the orifice diameter at approximately 4.5 inches.

The arm length for the skimmer is equal to the hypotenuse of a 45 degree right triangle using the full storage depth as the leg of the triangle (see Figure 5.4 on page 5-12). Our full storage depth is 8 feet. Therefore, the length of the skimmer arm is 8 feet x 1.414 = 11.3 feet. Use 12.0 feet for ease of field construction with a four foot flexible coupling to the bottom of the riser (see Figure B.13 on page B.18).

The design results are shown on the Temporary Sediment Basin Design Data Sheet, Figure B.9 on page B.14.

Figure B.2
NRCC Project Locator Map

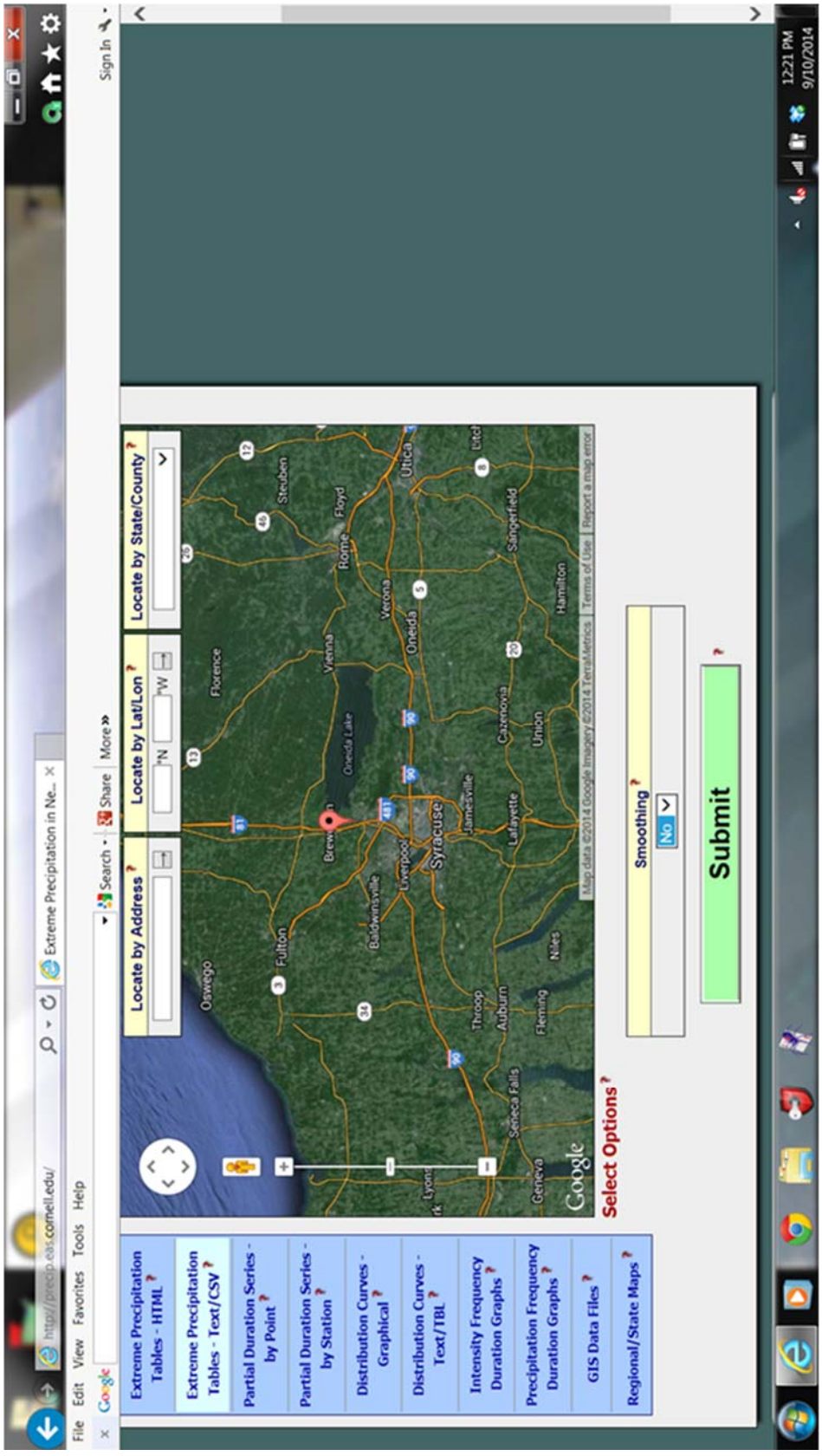


Figure B.3
NRCC Sediment Basin Location

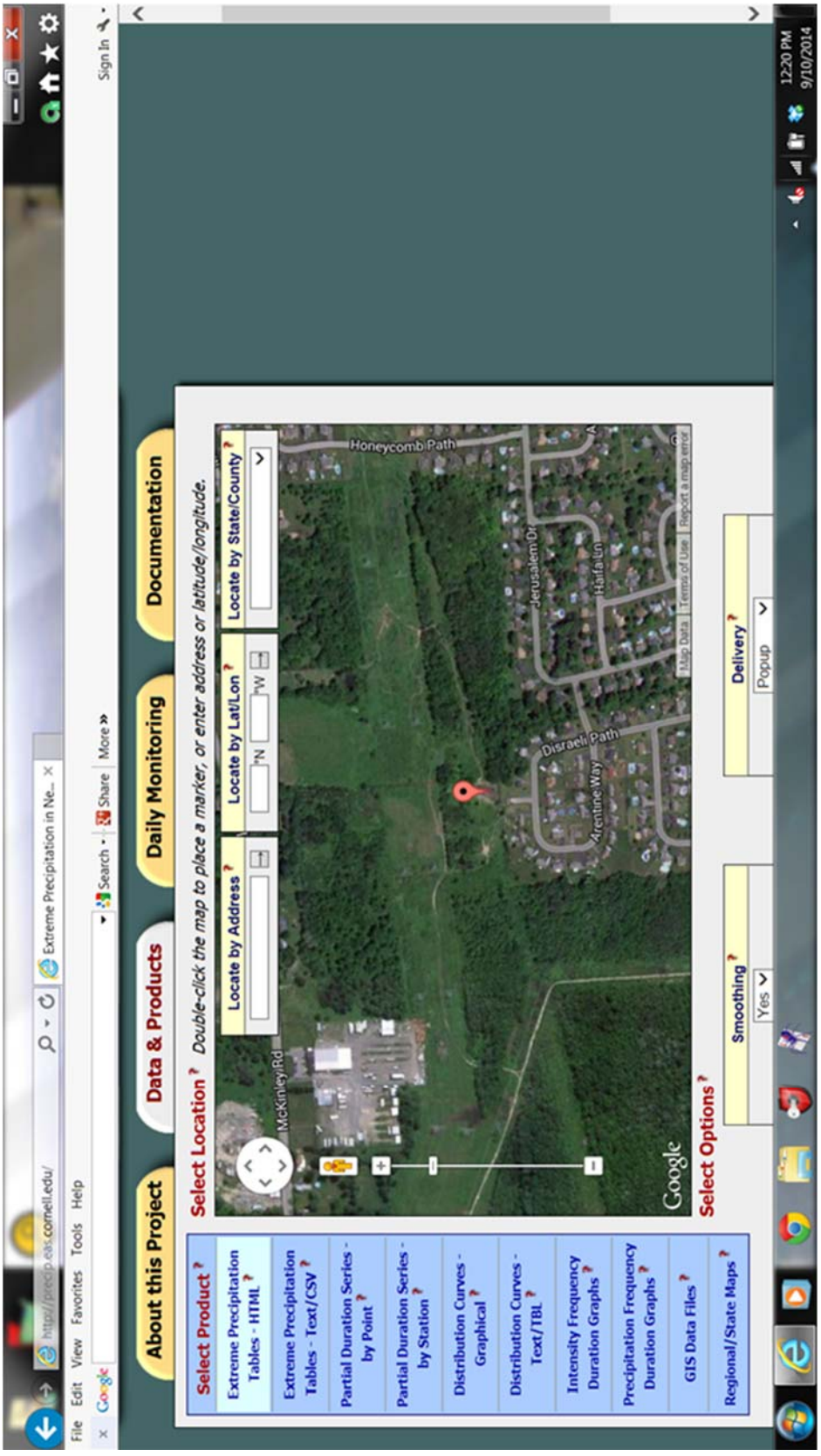


Figure B.4
Cedar Point Google Map Pre-Construction

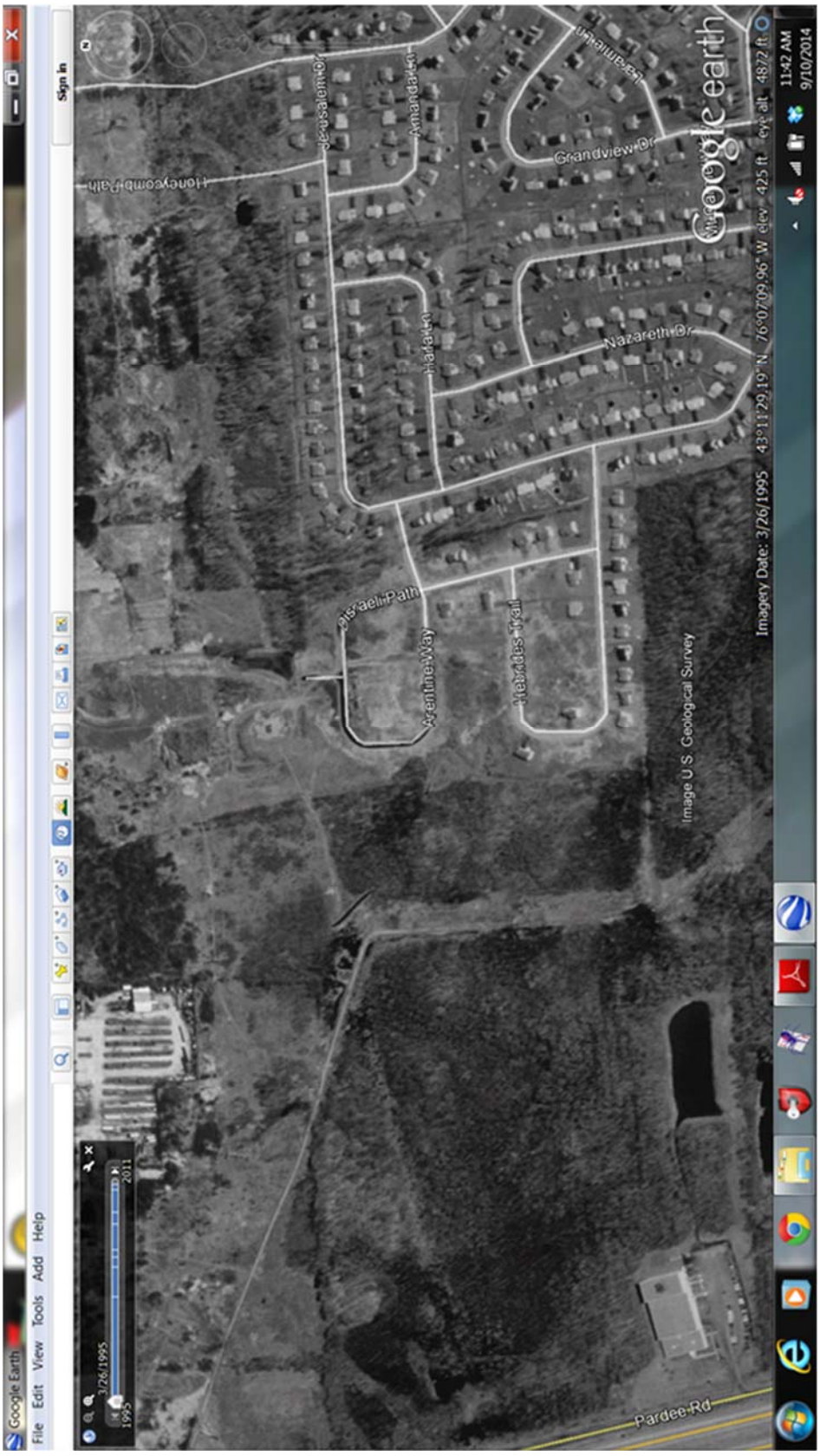


Figure B.5
Cedar Point Site Sediment Basin Photograph

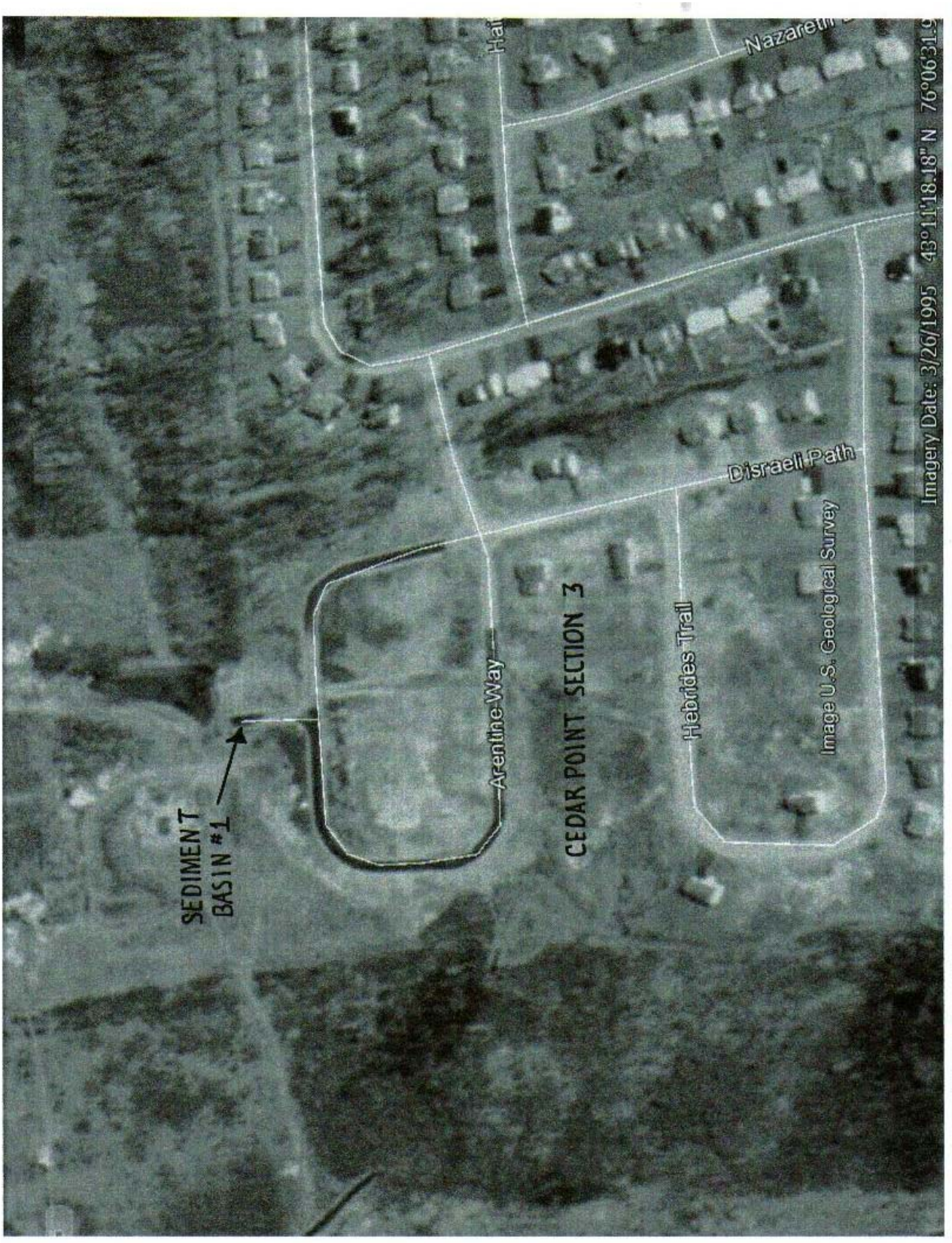


Figure B.6
NRCC Rainfall Text Table

output - Notepad

File Edit Format View Help

Northeast Regional Climate Center Extreme Precipitation estimates (inches)
Point Estimates, Unsmoothed
Data series, Partial duration series
State, New York
Location,
Lon (dd), -76.109
Lat (dd), 43.190
Elev (feet), unknown
MEAN PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.28, 0.43, 0.53, 0.71, 0.88, 1.00, 1.11, 1.39, 1.68, 2.05, 2.29, 2.65, 3.22, 3.78
2, 0.33, 0.50, 0.62, 0.84, 1.04, 1.19, 1.30, 1.63, 1.96, 2.37, 2.67, 3.03, 3.66, 4.25
5, 0.39, 0.60, 0.74, 1.02, 1.30, 1.46, 1.62, 2.00, 2.42, 2.90, 3.29, 3.69, 4.38, 5.00
10, 0.45, 0.69, 0.85, 1.19, 1.54, 1.71, 1.92, 2.35, 2.84, 3.39, 3.86, 4.28, 5.02, 5.67
25, 0.54, 0.83, 1.03, 1.47, 1.94, 2.12, 2.39, 2.89, 3.52, 4.15, 4.77, 5.22, 6.01, 6.70
50, 0.63, 0.96, 1.19, 1.71, 2.31, 2.49, 2.82, 3.39, 4.13, 4.84, 5.59, 6.06, 6.89, 7.60
100, 0.73, 1.11, 1.39, 2.00, 2.74, 2.93, 3.33, 3.97, 4.86, 5.65, 6.57, 7.05, 7.90, 8.62
200, 0.85, 1.28, 1.62, 2.35, 3.27, 3.44, 3.95, 4.66, 5.72, 6.59, 7.71, 8.19, 9.06, 9.78
500, 1.04, 1.55, 2.00, 2.90, 4.13, 4.28, 4.93, 5.76, 7.09, 8.09, 9.55,10.01,10.86,11.56

UPPER LIMIT PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.31, 0.47, 0.58, 0.78, 0.96, 1.08, 1.22, 1.56, 1.85, 2.21, 2.57, 2.84, 3.44, 4.01
2, 0.35, 0.53, 0.66, 0.89, 1.10, 1.24, 1.36, 1.70, 2.08, 2.48, 2.78, 3.13, 3.80, 4.36
5, 0.42, 0.64, 0.80, 1.09, 1.39, 1.60, 1.75, 2.20, 2.63, 3.12, 3.55, 3.96, 4.66, 5.32
10, 0.49, 0.75, 0.93, 1.30, 1.68, 1.98, 2.14, 2.70, 3.24, 3.82, 4.28, 4.75, 5.48, 6.18
25, 0.61, 0.93, 1.16, 1.66, 2.18, 2.61, 2.78, 3.57, 4.27, 4.78, 5.53, 6.06, 6.80, 7.56
50, 0.72, 1.10, 1.37, 1.97, 2.65, 3.21, 3.40, 4.40, 5.24, 5.74, 6.72, 7.30, 8.01, 8.80
100, 0.86, 1.30, 1.63, 2.36, 3.24, 3.93, 4.15, 5.44, 6.47, 6.92, 8.17, 8.80, 9.46,10.26
200, 1.02, 1.54, 1.95, 2.82, 3.93, 4.84, 5.06, 6.74, 7.99, 8.33, 9.95,10.62,11.18,11.97
500, 1.33, 1.98, 2.55, 3.70, 5.26, 6.37, 6.54, 8.94,10.58,10.69,12.95,13.67,13.94,14.69

LOWER LIMIT PRECIPITATION FREQUENCY ESTIMATES
Freq (yr),5-min,10-min,15-min,30-min,60-min,120-min,3-hr,6-hr,12-hr,24-hr,2-day,4-day,7-day,10-day
1, 0.24, 0.38, 0.46, 0.62, 0.76, 0.87, 0.93, 1.10, 1.37, 1.83, 2.07, 2.43, 2.94, 3.45
2, 0.32, 0.49, 0.61, 0.82, 1.01, 1.13, 1.26, 1.55, 1.88, 2.31, 2.59, 2.94, 3.58, 4.15
5, 0.36, 0.55, 0.69, 0.94, 1.20, 1.35, 1.49, 1.85, 2.25, 2.69, 3.05, 3.43, 4.10, 4.72
10, 0.39, 0.60, 0.74, 1.04, 1.34, 1.53, 1.68, 2.08, 2.51, 3.01, 3.42, 3.83, 4.51, 5.20
25, 0.44, 0.67, 0.83, 1.19, 1.56, 1.79, 1.99, 2.43, 2.88, 3.47, 3.97, 4.42, 5.09, 5.91
50, 0.47, 0.72, 0.89, 1.28, 1.73, 2.03, 2.24, 2.70, 3.17, 3.85, 4.41, 4.92, 5.57, 6.49
100, 0.52, 0.78, 0.98, 1.41, 1.94, 2.33, 2.54, 3.02, 3.48, 4.25, 4.90, 5.47, 6.07, 7.14
200, 0.56, 0.85, 1.07, 1.56, 2.17, 2.65, 2.87, 3.35, 3.82, 4.70, 5.42, 6.06, 6.59, 7.86
500, 0.66, 0.98, 1.26, 1.83, 2.61, 3.17, 3.45, 3.87, 4.32, 5.34, 6.16, 6.92, 7.34, 8.89

Date/time: Wed Sep 10 12:25:09 EDT 2014

12:25 PM
9/10/2014

Figure B.7
HydroCAD Summary Sheet

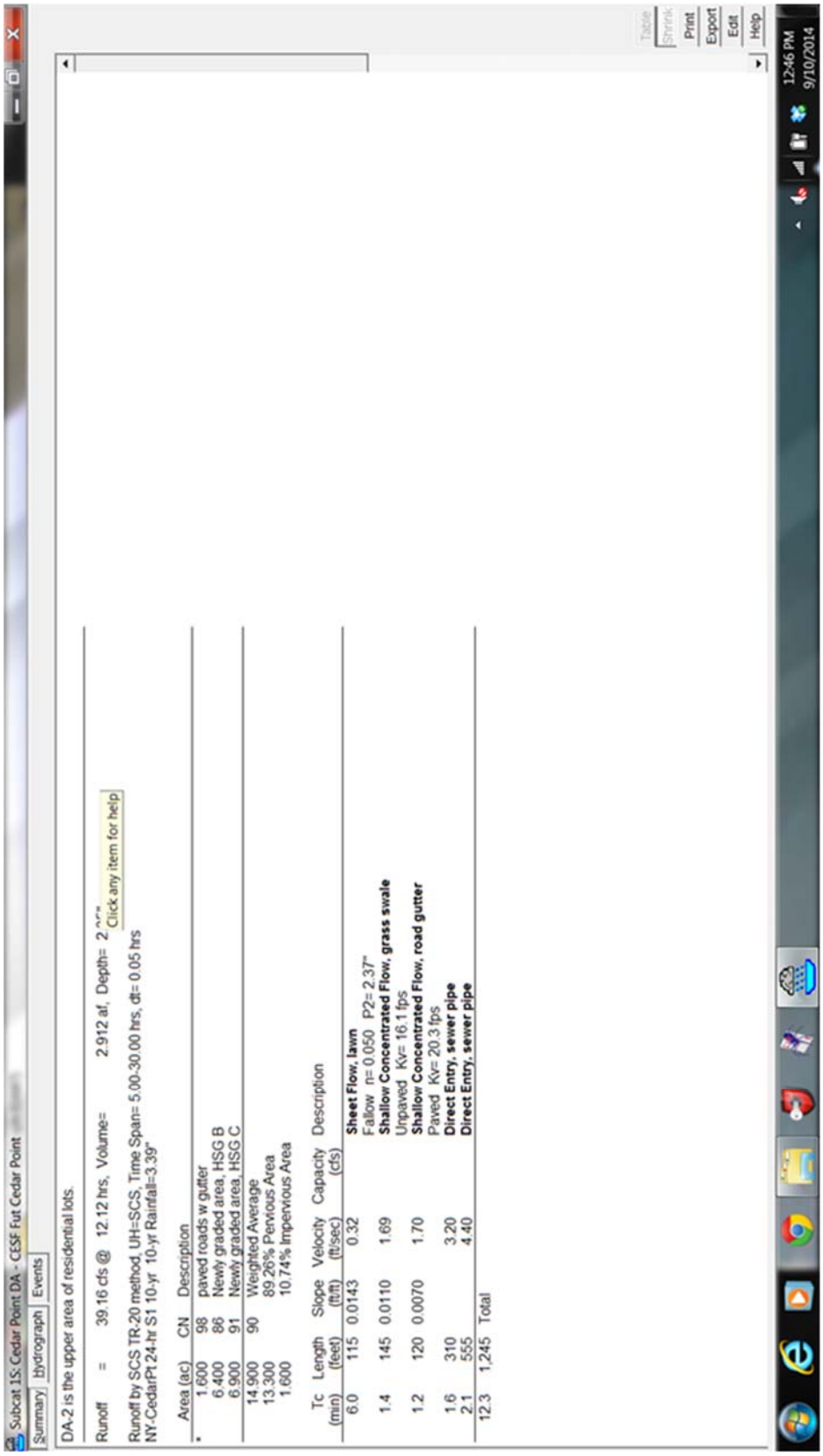


Figure B.8
Cedar Point Sediment Basin Stage - Storage Curve

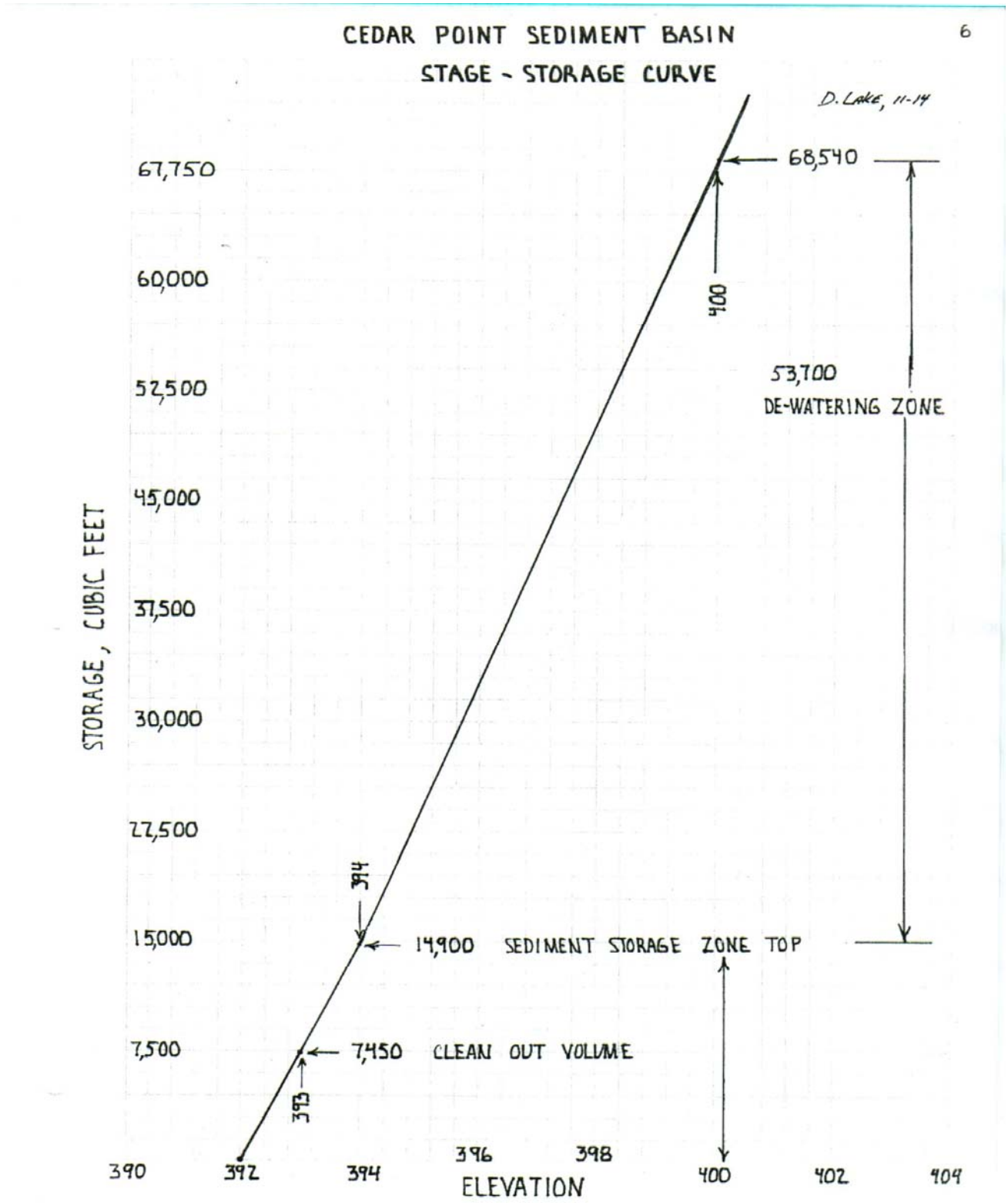


Figure B.9
Temporary Sediment Basin Design Data Sheet

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by D. Lake Date _____ Checked by _____ Date _____
Project Cedar Point Section 3 Basin # 1
Location Cicero, NY Total Area draining to basin (≤50 Ac.) 14.9 Acres

BASIN SIZE DESIGN

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres = 14900 cu. ft., Top of Zone Elev. 394.0
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 53640 cu. ft., Top of Zone Elev. 400.0
3. Length to width ratio = 3.4 : 1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 393.0
   B. Distance below top of riser 7.0 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.39 or, 0.015 DA = 0.22 use 0.4 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 39.2 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x 14.9 Drainage Area, acres = 3 cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = — cfs.
8. H, head = 8 ft. Barrel length = 60 ft
9. Barrel: Diam. 12 inches; Q_{ps} = (Q) 9.1 x (cor.fac.) 1.04 = 9.5 cfs.
10. Riser: Diam. 21 inches; Length 7.5 ft.; h = 1.0 ft. Crest Elev. 400.0
11. Trash Rack: Diameter = 30 inches; H, height = 11 inches

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = 39.2 - 9.5 = 29.7 cfs.
13. Width 12 ft.; H_p 1.0 ft Crest elevation 401.0 ; Design High Water Elev. 402.0
    Entrance channel slope 2 % ; Top of Dam Elev. 403.0
    Exit channel slope 3 %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = 7.5 ft.; z = 2.5 :1; pipe slope = 1 %, L_s = 51 ft.
    Use 2 collars, 4' - 9 inches square; projection = 1.8 ft.

Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 4.5 inches. Skimmer X or Riser ____ (check one)
16. Design dewatering time 2 days (Min. 2 days required)

Figure B.10
Temporary Sediment Basin Profile Detail

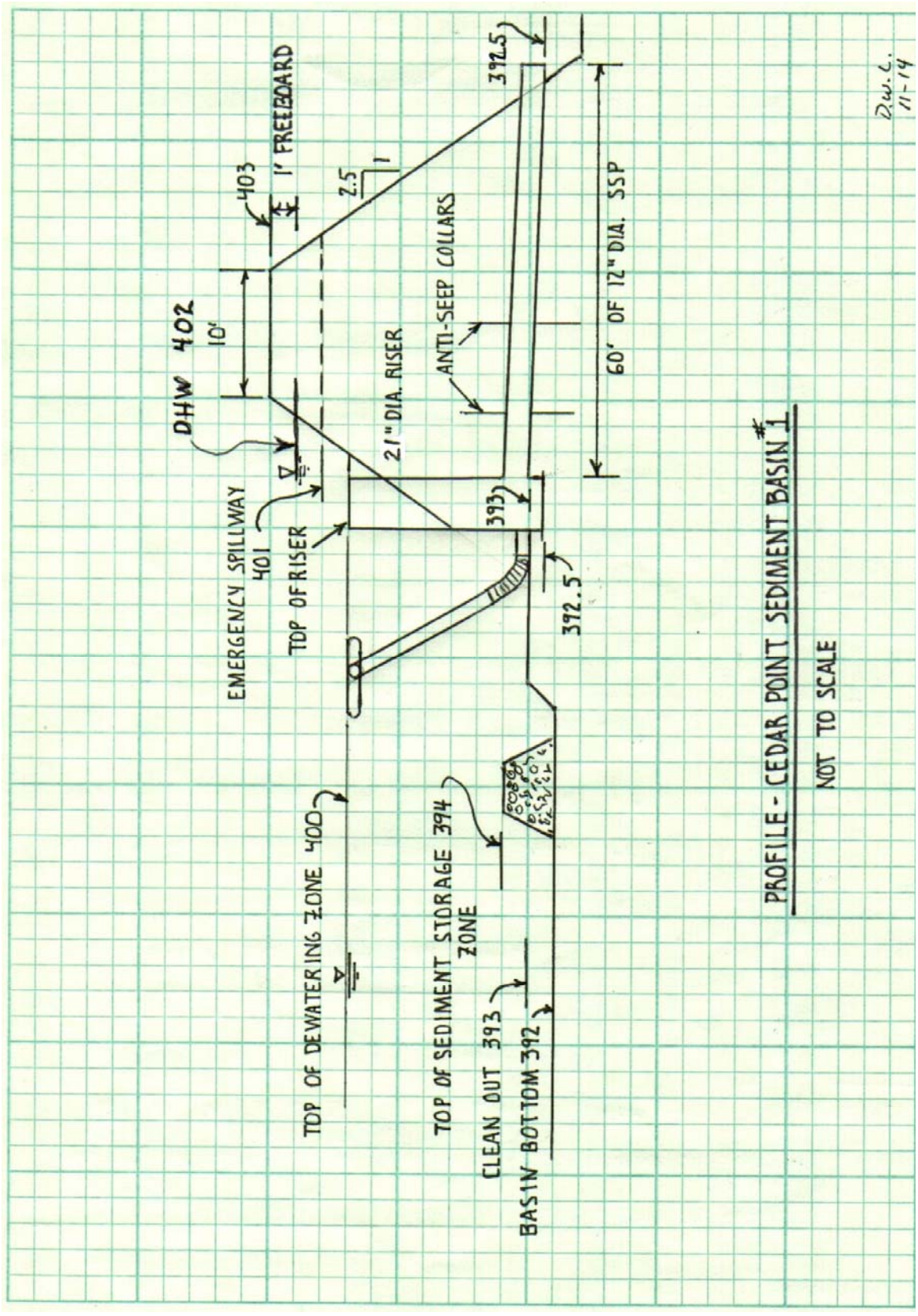


Figure B.11
Temporary Sediment Basin Spillway Detail

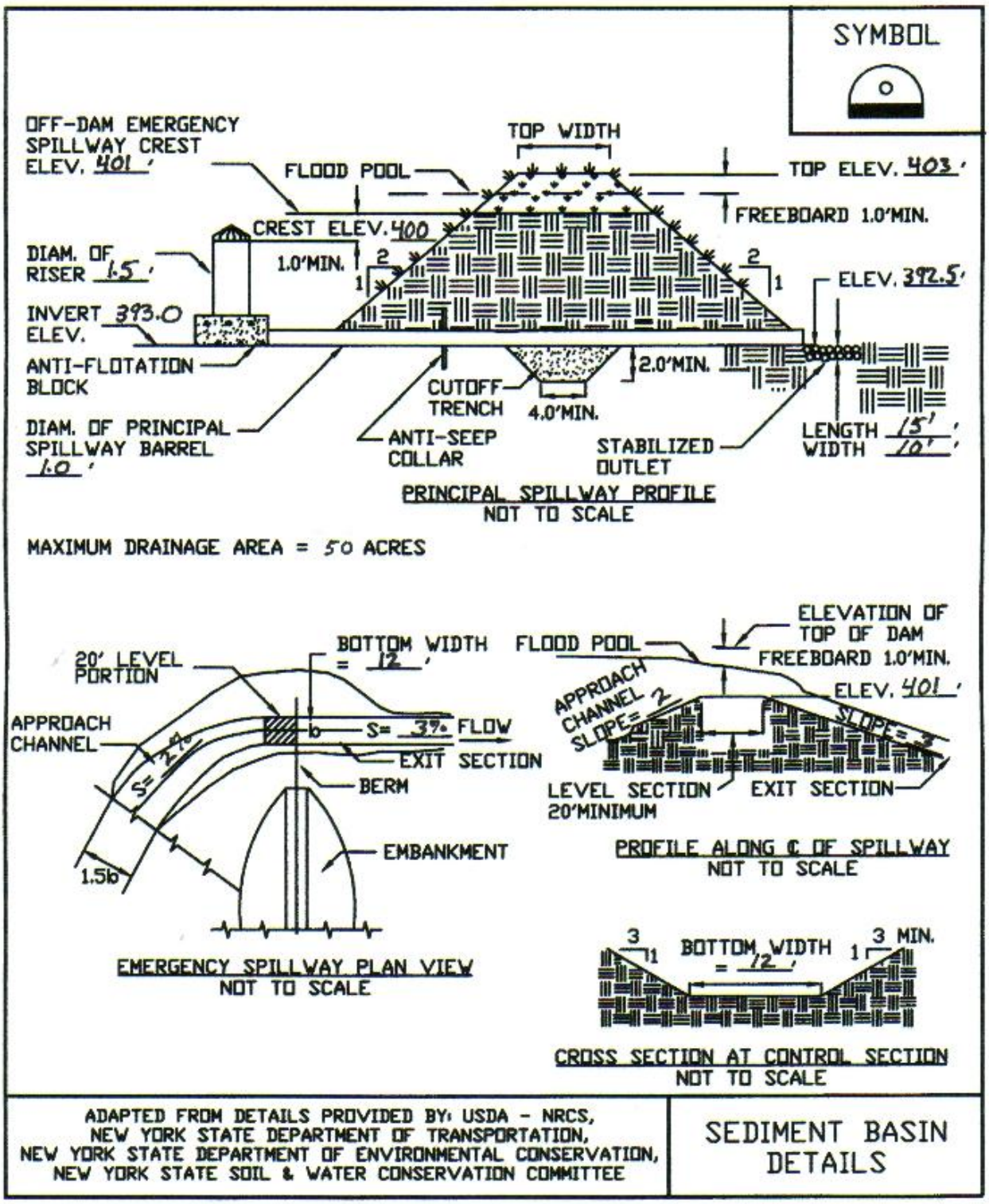


Figure B.12
Skimmer Orifice Design Chart

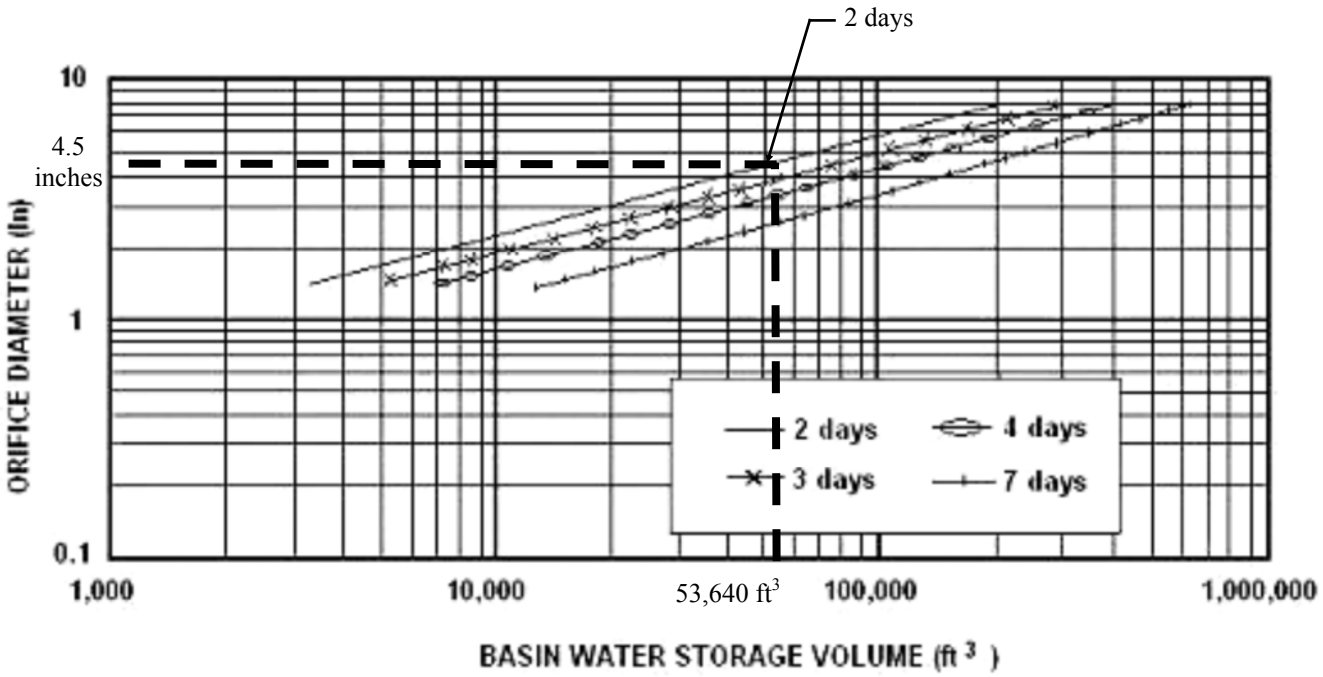
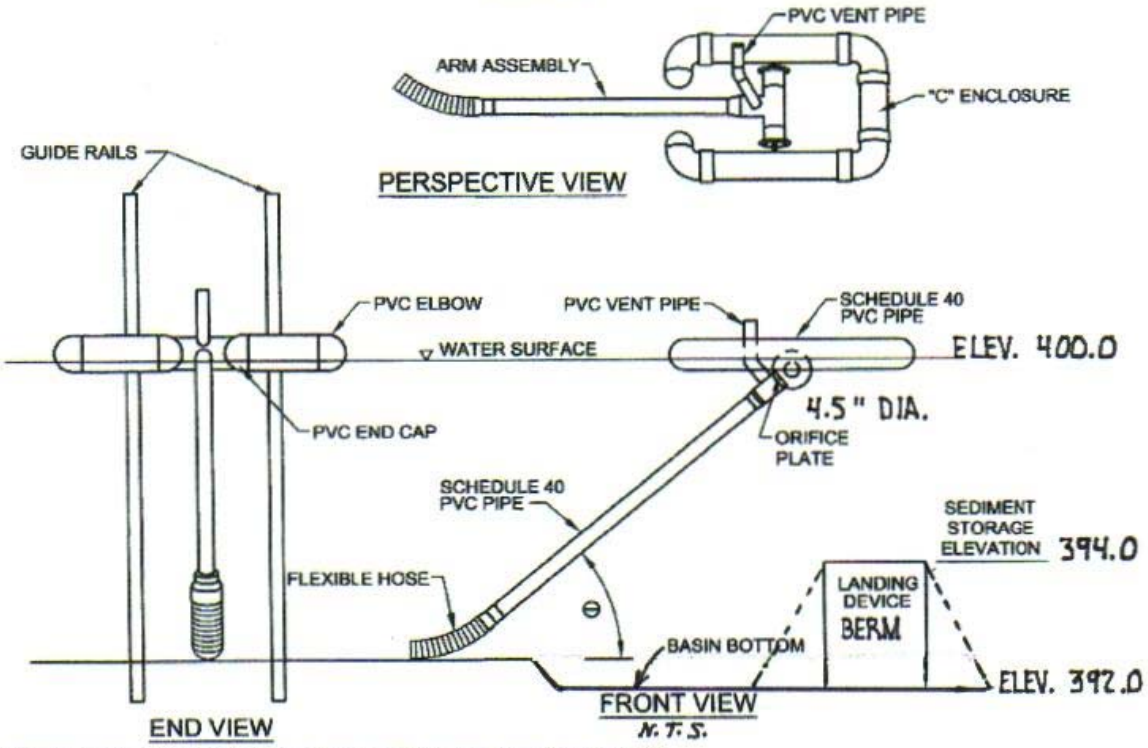


Figure B.13
Skimmer Dewatering Device Detail

CEDAR POINT

STANDARD CONSTRUCTION DETAIL

Skimmer



Adapted from Penn State Agricultural and Biological fact Sheet F-253

NOTE: This table is intentionally blank and should be filled in by the plan preparer.

Basin No.	Water Surface Elevation (ft)	Arm Length (ft)	Arm Dia. (in)	Orifice Size* (in)	Top of Landing Device Elevation (ft)	Flexible Hose Length (in)	Flexible Hose Attachment Elevation (ft)
CP-1	400.0	12	6	4.5	394.0	48	393.0

*** Must be equal to or less than arm diameter**

A rope shall be attached to the skimmer arm to facilitate access to the skimmer once installed.

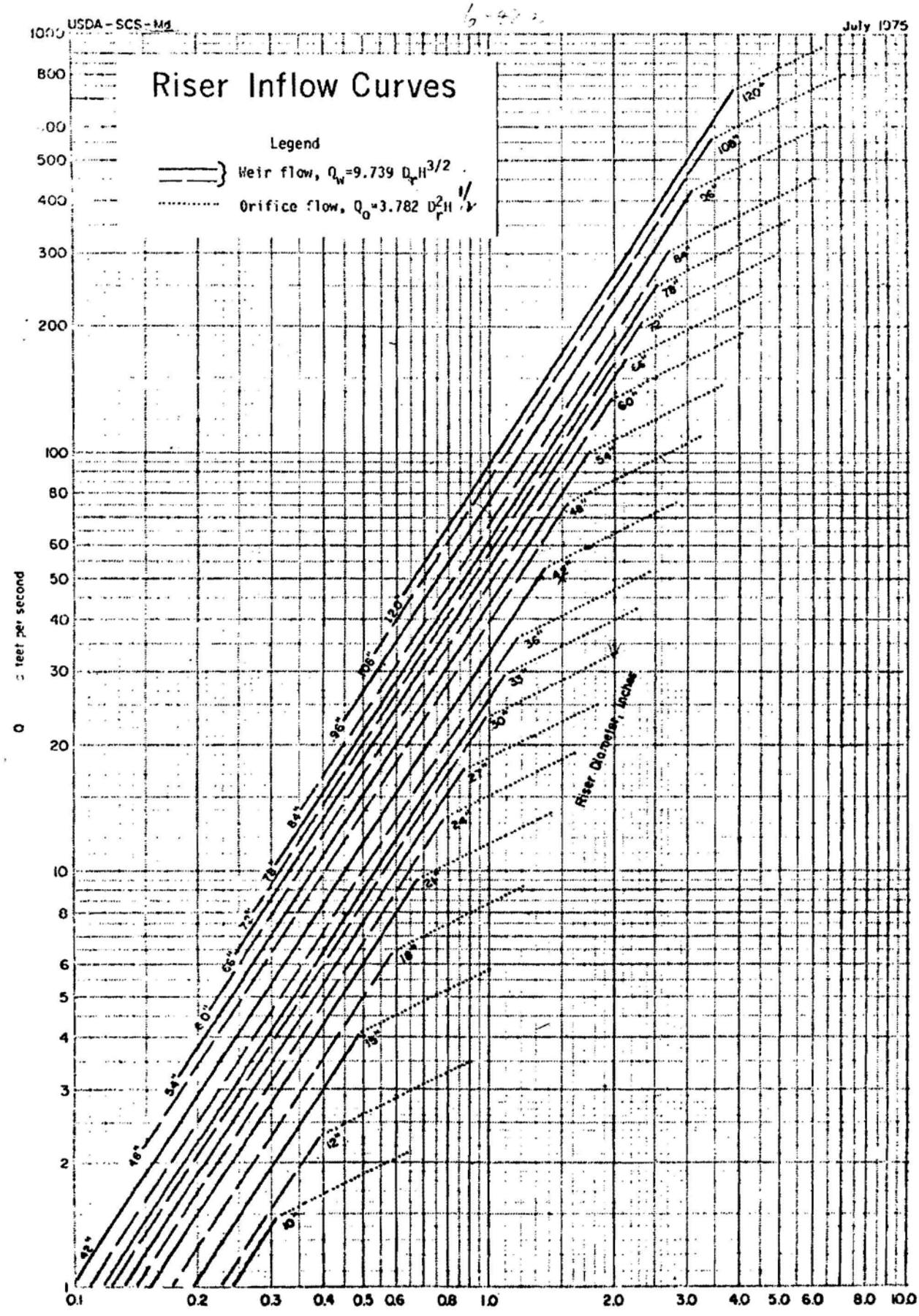
Skimmer shall be inspected weekly and after each runoff event.

Any malfunctioning skimmer shall be repaired or replaced within 24 hours of inspection.

Ice or sediment buildup around the principal spillway shall be removed so as to allow the skimmer to respond to fluctuating water elevations.

Sediment shall be removed from the basin when it reaches the level marked on the sediment clean-out stake or the top of the landing device.

A semi-circular landing zone may be substituted for the guide rails


USDA - SCS - Md
July 1975
Riser Inflow Curves
Legend
Weir flow, $Q_w = 9.739\ D_r H^{3/2}$
Orifice flow, $Q_o = 3.782\ D_r^2 H^{1/2}$
Riser Diameter, Inches
Q = cubic feet per second
Head in feet, measured from crest of riser
1000
800
600
500
400
300
200
100
80
60
50
40
30
20
10
8
6
5
4
3
2
1
0.1
0.2
0.3
0.4
0.5
0.6
0.8
1.0
2.0
3.0
4.0
5.0
6.0
8.0
10.0

A-19.14

6-42a.

Table 4/Values of $S^{1/2}$

	1	2	3	4	5	6	7	8	9
.00	—.	.0316	.0447	.0548	.0632	.0707	.0775	.0837	.0894	.0949
.01	.10	.1049	.1095	.1140	.1183	.1225	.1265	.1304	.1342	.1378
.02	.1414	.1449	.1483	.1517	.1549	.1581	.1612	.1643	.1673	.1703
.03	.1732	.1761	.1789	.1817	.1844	.1871	.1897	.1924	.1949	.1975
.04	.20	.2025	.2049	.2074	.2098	.2121	.2145	.2168	.2191	.2214
.05	.2236	.2258	.2280	.2302	.2324	.2345	.2366	.2387	.2408	.2429
.06	.2449	.2470	.2490	.2510	.2530	.2550	.2569	.2588	.2608	.2627
.07	.2646	.2665	.2683	.2702	.2720	.2739	.2757	.2775	.2793	.2811
.08	.2828	.2846	.2864	.2881	.2898	.2915	.2933	.2950	.2966	.2983
.09	.30	.3017	.3033	.3050	3066	.3082	.3098	.3114	.3130	.3146
.10	.3162	.3178	.3194	.3209	.3225	.3240	.3256	.3271	.3286	.3302

Note: numbers across top represent third decimal place e.g. if given slopes are .002 ft/ft and .034 ft/ft then respective $S^{1/2}$ values are .0447 and .1844.

Table 5/Summary of Roughness Coefficients—Manning's "n" Based on Test Results

Pipe Diam. (in)	Corrugation Configuration & Construction						
	¼ x 1½ Helical *	½ x 2⅔ Helical *	½ x 2⅔ Annular *	1 x 3 Helical *	1 x 6 Annular *	1 x 6 Helical *	2½ x 9 Annular **
6	.010						
8	.013						
10	.016						
12		.010	.026				
15		.012	.025				
18		.014	.025				
21		.016	.025				
24		.017	.025				
30		.018	.025	.019			
36		.019	.025	.020	.025		
42		.020	.024	.020	.024		
48		.020	.024	.020	.024	.020	
54		.020	.024	.021	.024	.020	
60		.021	.024	.021	.024	.021	.035
66		.021	.024	.021	.024	.021	.035
72		.021	.024	.021	.024	.021	.034
78		.021	.024	.021	.024	.021	.034
84		.021	.024	.022	.024	.021	.034
90		.021	.024	.022	.024	.021	.034
96		.021	.024	.022	.024	.021	.034
102				.022	.023	.021	.034
108				.022	.023	.022	.033
114				.022	.023	.022	.033
120				.022	.023	.022	.033
126-162							.033
168-246							.032
252							.031

from * St. Anthony Falls Hydraulic Laboratory, Minn.
** Corps of Engineers

Figure 5A.24(1)
Sediment Basin Design Example #1

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04
Project SNOOKS POND Basin # 1
Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 Ft.
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 Acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = ——— cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 12 inches; Q_{ps} = (Q) 10.2 x (cor.fac.) .945 = 9.6 cfs.
8. Riser: Diam. 21 inches; Length 9 ft.; h = 1.0 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 30 inches; H = 11 inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = 88 - 10 = 78 cfs.
11. Width 20 ft.; H_p 1.4 ft Crest elevation 101.0 ; Design High Water Elev. 102.4
    Entrance channel slope 2 % ; Top of Dam Elev. 103.4
    Exit channel slope > 2.7 %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6" inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.24(2)
Sediment Basin Design Example #2

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by DWL Date 1-04 Checked by PLS Date 1-04

Project SNOOKS POND Basin # 1

Location MANLIUS, NY Total Area draining to basin 20 Acres

BASIN SIZE DESIGN

1. Minimum sediment storage volume = 134 cu. yds. x 20 acres of drainage area = 2,680 cu.yds.
2. a. Cleanout at 50 percent of minimum required volume = 1,340 cu. yds.
   b. Elevation corresponding to scheduled time to clean out 96.5
   c. Distance below top of riser 3.5 feet
3. Minimum surface area is larger of 0.01 $Q_{(1)}$ 0.32 or, 0.015 DA = 0.30 use 0.32 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

4. $Q_{p(10)}$ = 88 cfs
   (EFH, Ch. 2, TR-55, or Section 4; Attach runoff computation sheet)

Pipe Spillway (Q_{ps})

5. Min. pipe spillway cap., Q_{ps} = 0.2 x 20 ac. Drainage = 4 cfs
   Note: If there is no emergency spillway, then req'd Q_{ps} = $Q_{p(10)}$ = 88 cfs.
6. H = 10 ft. Barrel length = 85 ft
7. Barrel: Diam. 36 inches; Q_{ps} = (Q) 91.2 x (cor.fac.) .955 = 87.1 cfs.
8. Riser: Diam. 54 inches; Length 9 ft.; h = 1.7 ft. Crest Elev. 100.0
9. Trash Rack: Diam. 78 inches; H = 25 inches

Emergency Spillway Design

10. Emergency Spillway Flow, Q_{es} = Q_p - Q_{ps} = _____ - _____ = _____ cfs.
11. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/
SEEPAGE DIAPHRAGM DESIGN

Collars:

12. y = 8 ft.; z = 2 :1; pipe slope = 1 %, L_s = 50 ft.
    Use 2 collars, 4' - 6 inches square; projection = 1.8 ft.

Diaphragms:

1 width 7 ft. height 10 ft.

DEWATERING ORIFICE SIZING

13. $Ao = \frac{A_s \times (2h)^{0.5}}{122{,}568}$ = 0.30 sq. ft.; h = 3.5 ft.; therefore use, 7.4" → USE 6" orifice

Figure 5A.25
Riser Inflow Chart (USDA - NRCS)

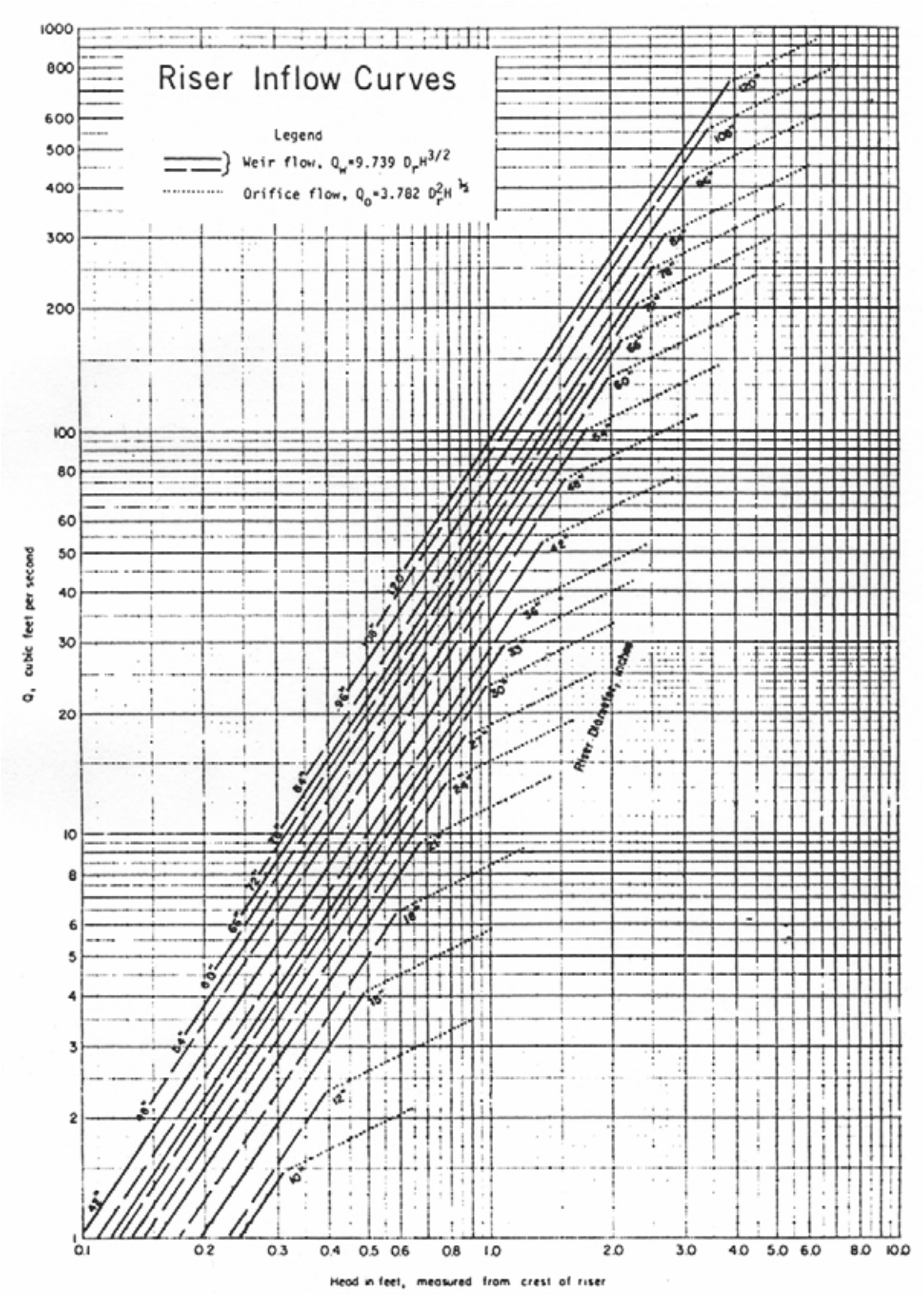


Figure 5A.26
Pipe Flow Chart; "n" = 0.025 (USDA - NRCS)

PIPE FLOW CHART n = 0.025

FOR CORRUGATED METAL PIPE INLET $K_m = K_e + K_b = 1.0$ AND 70 FEET OF CORRUGATED METAL PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

H, in feet	6"	8"	10"	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	0.33	0.70	1.25	1.98	3.48	5.47	7.99	11.0	18.8	28.8	41.1	55.7	72.6	91.8	113	137	163	191	222	255	290
2	0.47	0.99	1.76	2.80	4.92	7.74	11.3	15.6	26.6	40.8	58.2	78.8	103	130	160	194	231	271	314	360	410
3	0.58	1.22	2.16	3.43	6.02	9.48	13.8	19.1	32.6	49.9	71.2	96.5	126	159	196	237	282	331	384	441	502
4	0.67	1.40	2.49	3.97	6.96	10.9	16.0	22.1	37.6	57.7	82.3	111	145	184	226	274	326	383	444	510	580
5	0.74	1.57	2.79	4.43	7.78	12.2	17.9	24.7	42.1	64.5	92.0	125	162	205	253	306	365	428	496	570	648
6	0.82	1.72	3.05	4.86	8.52	13.4	19.6	27.0	46.1	70.6	101	136	178	225	277	336	399	469	544	624	710
7	0.88	1.86	3.30	5.25	9.20	14.5	21.1	29.2	49.8	76.3	109	147	192	243	300	362	431	506	587	674	767
8	0.94	1.99	3.53	5.61	9.84	15.5	22.6	31.2	53.2	81.5	116	158	205	260	320	388	461	541	628	721	820
9	1.00	2.11	3.74	5.95	10.4	16.4	24.0	33.1	56.4	86.5	123	167	218	275	340	411	489	574	666	764	870
10	1.05	2.22	3.94	6.27	11.0	17.3	25.3	34.9	59.5	91.2	130	176	230	290	358	433	516	605	702	806	917
11	1.10	2.33	4.13	6.58	11.5	18.2	26.5	36.6	62.4	95.6	136	185	241	304	376	454	541	635	736	845	962
12	1.15	2.43	4.32	6.87	12.1	19.0	27.7	38.2	65.2	99.9	142	193	252	318	392	475	565	663	769	883	1004
13	1.20	2.53	4.49	7.15	12.6	19.7	28.8	39.8	67.8	104	148	201	262	331	408	494	588	690	800	919	1045
14	1.25	2.63	4.66	7.42	13.0	20.5	29.9	41.3	70.4	108	154	208	272	343	424	513	610	716	830	953	1085
15	1.29	2.72	4.83	7.68	13.5	21.2	30.9	42.8	72.8	112	159	216	281	355	439	531	631	741	860	987	1123
16	1.33	2.81	4.99	7.93	13.9	21.9	32.0	44.2	75.2	115	165	223	290	367	453	548	652	765	888	1019	1160
17	1.37	2.90	5.14	8.18	14.3	22.6	32.9	45.5	77.5	119	170	230	299	378	467	565	672	789	915	1051	1195
18	1.41	2.98	5.29	8.41	14.8	23.2	33.9	46.8	79.8	120	174	236	308	389	480	581	692	812	942	1081	1230
19	1.45	3.06	5.43	8.64	15.2	23.9	34.8	48.1	82.0	126	179	243	316	400	494	597	711	834	967	1111	1264
20	1.49	3.14	5.57	8.87	15.6	24.5	35.7	49.4	84.1	129	184	249	325	410	506	613	729	856	993	1139	1297
21	1.53	3.22	5.71	9.09	15.9	25.1	36.6	50.6	86.2	132	188	255	333	421	519	628	747	877	1017	1168	1329
22	1.56	3.29	5.85	9.30	16.3	25.7	37.5	51.8	88.2	135	193	261	341	430	531	643	765	898	1041	1195	1360
23	1.60	3.37	5.98	9.51	16.7	26.2	38.3	53.0	90.2	138	197	267	348	440	543	657	782	918	1064	1222	1390
24	1.63	3.44	6.11	9.72	17.0	26.8	39.1	54.1	92.1	141	201	273	356	450	555	671	799	937	1087	1248	1420
25	1.66	3.51	6.23	9.92	17.4	27.4	39.9	55.2	94.0	144	206	279	363	459	566	685	815	957	1110	1274	1450
26	1.70	3.58	6.36	10.1	17.7	27.9	40.7	56.3	95.9	147	210	284	370	468	577	699	831	976	1132	1299	1478
27	1.73	3.65	6.48	10.3	18.1	28.4	41.5	57.4	97.7	150	214	290	377	477	588	712	847	994	1153	1324	1507
28	1.76	3.72	6.60	10.5	18.4	29.0	42.3	58.4	99.5	153	218	295	384	486	599	725	863	1013	1174	1348	1534
29	1.79	3.78	6.71	10.7	18.7	29.5	43.0	59.5	101	155	221	300	391	494	610	738	878	1030	1195	1372	1561
30	1.82	3.85	6.83	10.9	19.1	30.0	43.7	60.5	103	158	225	305	398	503	620	750	893	1048	1216	1396	1588

L, in feet	Correction Factors For Other Pipe Lengths																				
20	1.69	1.63	1.58	1.53	1.47	1.42	1.37	1.34	1.28	1.24	1.20	1.18	1.16	1.14	1.13	1.11	1.10	1.10	1.09	1.08	1.08
30	1.44	1.41	1.39	1.36	1.32	1.29	1.27	1.24	1.21	1.18	1.15	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.07	1.06	1.06
40	1.26	1.27	1.25	1.23	1.21	1.20	1.18	1.17	1.14	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.05	1.04
50	1.16	1.16	1.15	1.14	1.13	1.12	1.11	1.10	1.09	1.08	1.07	1.06	1.06	1.05	1.05	1.04	1.04	1.04	1.04	1.03	1.03
60	1.07	1.07	1.07	1.06	1.06	1.05	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.94	.94	.95	.95	.95	.95	.96	.96	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99	.99	.99
90	.89	.89	.90	.90	.91	.91	.92	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97	.97	.97	.97	.94
100	.85	.85	.86	.86	.87	.88	.89	.89	.90	.91	.92	.93	.93	.94	.94	.95	.95	.95	.96	.96	.94
120	.78	.79	.79	.80	.81	.82	.83	.83	.85	.86	.87	.89	.89	.90	.91	.89	.92	.93	.93	.94	.92
140	.72	.73	.74	.75	.76	.77	.78	.79	.81	.82	.84	.85	.86	.87	.88	.86	.89	.90	.91	.91	.90
160	.68	.69	.69	.70	.71	.73	.74	.75	.77	.79	.80	.82	.83	.84	.85	.92	.87	.88	.89	.89	

Figure 5A.27
Pipe Flow Chart; "n" = 0.013 (USDA - NRCS)

PIPE FLOW CHART n = 0.013

FOR REINFORCED CONCRETE PIPE INLET $K_m = K_e + K_b = (1.00$ AND 70 FEET OF REINFORCED CONCRETE PIPE CONDUIT (full flow assumed)

Note correction factors for pipe lengths other than 70 feet

diameter of pipe in inches

H, in feet	12"	15"	18"	21"	24"	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"
1	3.22	5.44	8.29	11.8	15.9	26.0	38.6	53.8	71.4	91.5	114	139	167	197	229	264	302	342
2	4.55	7.69	11.7	16.7	22.5	36.8	54.6	76.0	101	129	161	197	236	278	324	374	427	483
3	5.57	9.42	14.4	20.4	27.5	45.0	66.9	93.1	124	159	198	241	289	341	397	458	523	592
4	6.43	10.9	16.6	23.5	31.8	52.0	77.3	108	143	183	228	278	334	394	459	529	604	683
5	7.19	12.2	18.5	26.3	35.5	58.1	86.4	120	160	205	255	311	373	440	513	591	675	764
6	7.88	13.3	20.3	28.8	38.9	63.7	94.6	132	175	224	280	341	409	482	562	647	739	837
7	8.51	14.4	21.9	31.1	42.0	68.8	102	142	189	242	302	368	441	521	607	699	798	904
8	9.10	15.4	23.5	33.3	44.9	73.5	109	152	202	259	323	394	472	557	685	748	854	966
9	9.65	16.3	24.9	35.3	47.7	78.0	116	161	214	275	342	418	500	590	688	793	905	1025
10	10.2	17.2	26.2	37.2	50.2	82.2	122	170	226	289	361	440	527	622	725	836	954	1080
11	10.7	18.0	27.5	39.0	52.7	86.2	128	178	237	304	379	462	553	653	761	877	1001	1133
12	11.1	18.9	28.7	40.8	55.0	90.1	134	186	247	317	395	482	578	682	794	916	1045	1184
13	11.6	19.6	29.9	42.4	57.3	93.7	139	194	257	330	411	502	601	710	827	953	1088	1232
14	12.0	20.4	31.0	44.1	59.4	97.3	145	201	267	342	427	521	624	736	858	989	1129	1278
15	12.5	21.1	32.1	45.6	61.5	101	150	208	277	354	442	539	646	762	888	1024	1169	1323
16	12.9	21.8	33.2	47.1	63.5	104	155	215	286	366	457	557	667	787	917	1057	1207	1367
17	13.3	22.4	34.2	48.5	65.5	107	159	222	294	377	471	574	688	812	946	1090	1244	1409
18	13.7	23.1	35.2	49.9	67.4	110	164	228	303	388	484	591	708	835	973	1121	1280	1450
19	14.0	23.7	36.1	51.3	69.2	113	168	234	311	399	497	607	727	858	1000	1152	1315	1489
20	14.4	24.3	37.1	52.6	71.0	116	173	240	319	409	510	623	746	880	1026	1182	1350	1528
21	14.7	24.9	38.0	53.9	72.8	119	177	246	327	419	523	638	764	902	1051	1211	1383	1566
22	15.1	25.5	38.9	55.2	74.5	122	181	252	335	429	535	653	782	923	1076	1240	1415	1603
23	15.4	26.1	39.8	56.5	76.2	125	186	258	342	439	547	668	800	944	1100	1268	1447	1639
24	15.8	26.7	40.6	57.7	77.8	127	189	263	350	448	559	682	817	964	1123	1295	1478	1674
25	16.1	27.2	41.5	58.9	79.4	130	193	269	357	458	571	696	834	984	1147	1322	1509	1708
26	16.4	27.7	42.3	60.0	81.0	133	197	274	364	467	582	710	850	1004	1169	1348	1539	1742
27	16.7	28.3	43.1	61.2	82.5	135	201	279	371	476	593	723	867	1023	1192	1373	1568	1775
28	17.0	28.8	43.9	62.3	84.1	138	204	285	378	484	604	737	883	1041	1214	1399	1597	1808
29	17.3	29.3	44.7	63.4	85.5	140	208	290	384	493	615	750	898	1060	1235	1423	1625	1840
30	17.6	29.8	45.4	64.5	87.0	142	212	294	391	501	625	763	913	1078	1256	1448	1653	1871

Correction Factors For Other Pipe Lengths

L, in feet																		
20	1.30	1.24	1.21	1.18	1.15	1.12	1.10	1.08	1.07	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.03
30	1.22	1.18	1.15	1.13	1.12	1.09	1.08	1.06	1.05	1.05	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02
40	1.15	1.13	1.11	1.10	1.08	1.07	1.05	1.05	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.02	1.02	1.02
50	1.09	1.08	1.07	1.06	1.05	1.04	1.04	1.03	1.03	1.02	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01
60	1.04	1.04	1.03	1.03	1.03	1.02	1.02	1.02	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01
70	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
80	.96	.97	.97	.97	.98	.98	.98	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
90	.93	.94	.94	.95	.95	.96	.97	.97	.98	.98	.98	.98	.98	.99	.99	.99	.99	.99
100	.90	.91	.92	.93	.93	.95	.95	.96	.97	.97	.97	.98	.98	.98	.98	.98	.98	.99
120	.84	.86	.87	.89	.90	.91	.93	.94	.94	.95	.96	.96	.96	.97	.97	.97	.97	.98
140	.80	.82	.83	.85	.86	.88	.90	.91	.92	.93	.94	.94	.95	.95	.96	.96	.96	.97
160	.76	.78	.80	.82	.83	.86	.88	.89	.90	.91	.92	.93	.94	.94	.95	.95	.95	.96

TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by H. McMillen Date 6-15-20 Checked by RLZ Date _____
Project Hoag Lane Subdivision Basin # 1
Location Stage 2 Total Area draining to basin (≤50 Ac.) 9.184 Acres

BASIN SIZE DESIGN

7.82

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres = 7,820 cu. ft., Top of Zone Elev. 690
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 33,062 cu. ft., Top of Zone Elev. 695
3. Length to width ratio = 2:1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 688.49
   B. Distance below top of riser 1.51 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.21 or, 0.015 DA = 0.14 use 0.21 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 19.36 19.79 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x _____ Drainage Area, acres = _____ cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = _____ cfs.
8. H, head = _____ ft. Barrel length = _____ ft
9. Barrel: Diam. _____ inches; Q_{ps} = (Q) _____ x (cor.fac.) _____ = _____ cfs.
10. Riser: Diam. _____ inches; Length _____ ft.; h = _____ ft. Crest Elev. _____
11. Trash Rack: Diameter = _____ inches; H, height = _____ inches

Design per HydroCAD

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = _____ - _____ = _____ cfs.
13. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = _____ ft.; z = _____ :1; pipe slope = _____ %, L_s = _____ ft.
    Use _____ collars, _____ - _____ inches square; projection = _____ ft.

→ see 5/27/20 Kenney Geotech report for justification of non-usage

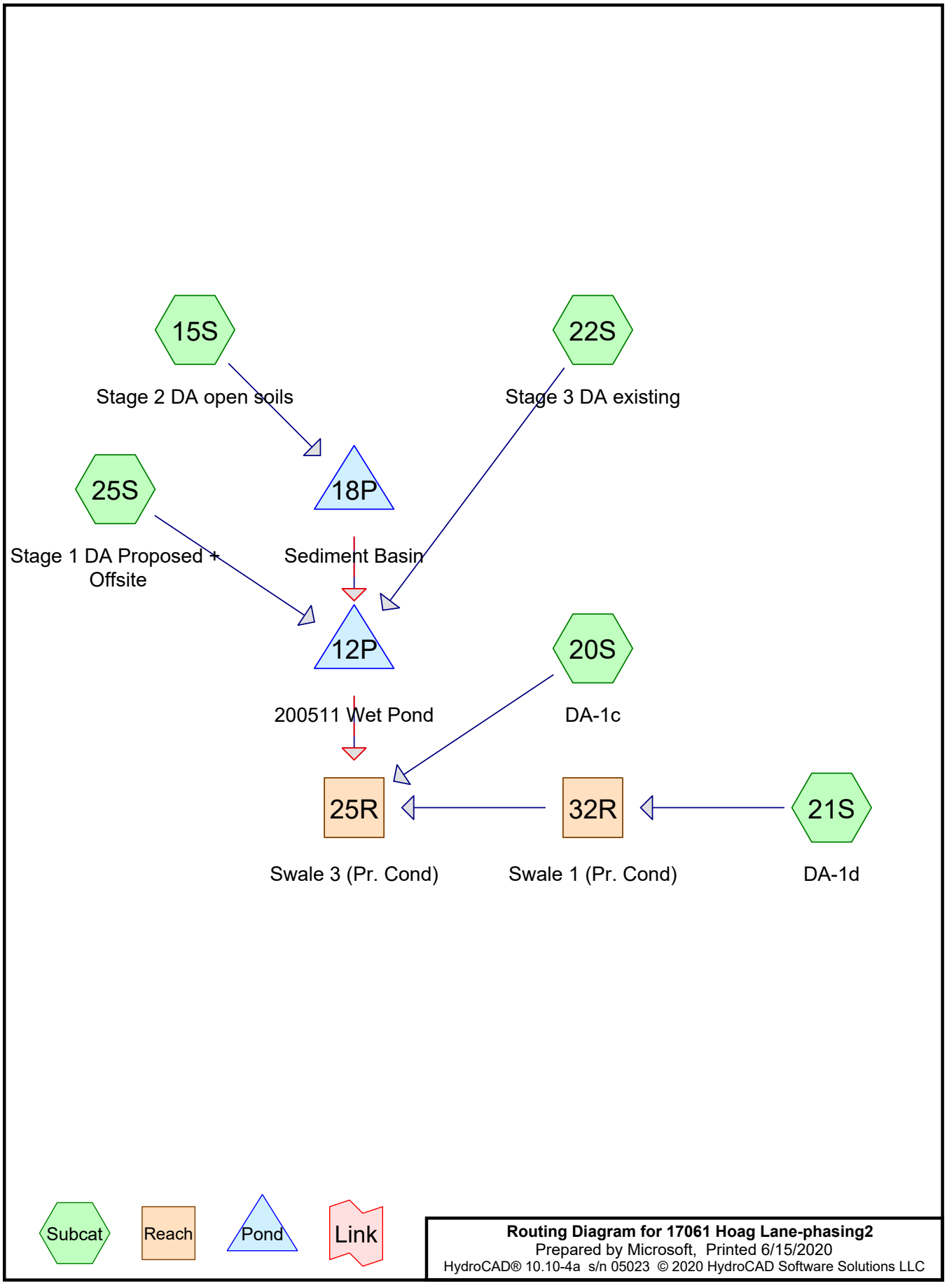
Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 5.5 inches. Skimmer X or Riser ____ (check one)
16. Design dewatering time 2 days (Min. 2 days required)



Routing Diagram for 17061 Hoag Lane-phasing2
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 15S: Stage 2 DA open soils

Runoff = 39.44 cfs @ 12.14 hrs, Volume= 3.174 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
33,147	55	Woods, Good, HSG B
9,714	70	Woods, Good, HSG C
340,639	91	Newly graded area, HSG C
383,500	87	Weighted Average
383,500		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.1	227	0.1280	3.58		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
0.1	52	0.0400	8.03	4.38	**Pipe Channel,** 10.0" Round Area= 0.5 sf Perim= 2.6' r= 0.21' n= 0.013 Corrugated PE, smooth interior
0.0	140	0.2070	58.97	3,361.40	**Trap/Vee/Rect Channel Flow,** Bot.W=10.00' D=3.00' Z= 3.0 '/' Top.W=28.00' n= 0.018 Earth, clean & straight
21.9	753	Total			

Summary for Subcatchment 22S: Stage 3 DA existing

Runoff = 17.44 cfs @ 12.20 hrs, Volume= 1.563 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
59,680	55	Woods, Good, HSG B
140,307	70	Woods, Good, HSG C
16,841	98	Paved parking, HSG C
84,654	74	>75% Grass cover, Good, HSG C
7,122	61	>75% Grass cover, Good, HSG B
308,604	70	Weighted Average
291,763		94.54% Pervious Area
16,841		5.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.3	100	0.0800	0.12		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
4.2	471	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	24	0.0210	1.01		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.0300	3.52		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	45	0.0220	1.04		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.3	60	0.0250	0.79		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
1.9	73	0.0080	0.63		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.5	259	0.0600	1.22		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
26.4	1,044	Total			

Summary for Subcatchment 25S: Stage 1 DA Proposed + Offsite

Runoff = 50.53 cfs @ 12.74 hrs, Volume= 8.598 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (sf)	CN	Description
	205,473	79	1 acre lots, 20% imp, HSG C
	375,052	65	2 acre lots, 12% imp, HSG B
	609,971	55	Woods, Good, HSG B
	383,981	70	Woods, Good, HSG C
	253,130	79	50-75% Grass cover, Fair, HSG C
*	47,480	98	Proposed Site Impervious
*	13,068	98	Permanent Pool of Wet Pond
	1,888,155	67	Weighted Average
	1,741,506		92.23% Pervious Area
	146,649		7.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 59.235 ac, 6.34% Impervious, Inflow Depth = 2.61" for 100-yr event
Inflow = 65.38 cfs @ 12.61 hrs, Volume= 12.872 af
Outflow = 60.04 cfs @ 12.87 hrs, Volume= 12.739 af, Atten= 8%, Lag= 15.7 min
Primary = 60.04 cfs @ 12.87 hrs, Volume= 12.739 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 30,510 cf
Peak Elev= 675.27' @ 12.87 hrs Surf.Area= 29,836 sf Storage= 117,376 cf (86,866 cf above start)

Plug-Flow detention time= 195.2 min calculated for 12.037 af (94% of inflow)
Center-of-Mass det. time= 143.9 min (1,029.4 - 885.5)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	159,782 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	622	0	0
666.00	1,412	1,017	1,017
667.00	2,440	1,926	2,943
668.00	4,748	3,594	6,537
669.00	6,541	5,645	12,182
670.00	8,222	7,382	19,563
671.00	13,672	10,947	30,510
672.00	15,804	14,738	45,248
673.00	18,037	16,921	62,169
674.00	24,162	21,100	83,268
675.00	28,220	26,191	109,459
676.00	34,146	31,183	140,642
676.50	42,414	19,140	159,782

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

Primary OutFlow Max=60.08 cfs @ 12.87 hrs HW=675.27' (Free Discharge)
└**1=Outlet Culvert** (Passes 60.08 cfs of 91.13 cfs potential flow)
  ├**3=2"x3" Orifice** (Orifice Controls 0.41 cfs @ 9.81 fps)
  ├**4=Rims** (Controls 0.00 cfs)
  └**5=Rectangular Orifice** (Orifice Controls 59.67 cfs @ 4.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
└**2=Spillway** (Controls 0.00 cfs)

Summary for Pond 18P: Sediment Basin

Inflow Area = 8.804 ac, 0.00% Impervious, Inflow Depth = 4.33" for 100-yr event
Inflow = 39.44 cfs @ 12.14 hrs, Volume= 3.174 af
Outflow = 9.58 cfs @ 12.58 hrs, Volume= 2.711 af, Atten= 76%, Lag= 26.1 min
Primary = 9.58 cfs @ 12.58 hrs, Volume= 2.711 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 693.99' @ 12.58 hrs Surf.Area= 26,040 sf Storage= 58,837 cf

Plug-Flow detention time= 123.3 min calculated for 2.711 af (85% of inflow)
Center-of-Mass det. time= 56.6 min (864.0 - 807.4)

Volume	Invert	Avail.Storage	Storage Description
#1	688.00'	18,058 cf	**Sediment Storage Zone (Prismatic)**Listed below (Recalc)
#2	691.00'	57,082 cf	**Dewatering Zone (Prismatic)**Listed below (Recalc)
		75,140 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
688.00	7,846	0	0
689.00	9,013	8,430	8,430
690.00	10,244	9,629	18,058

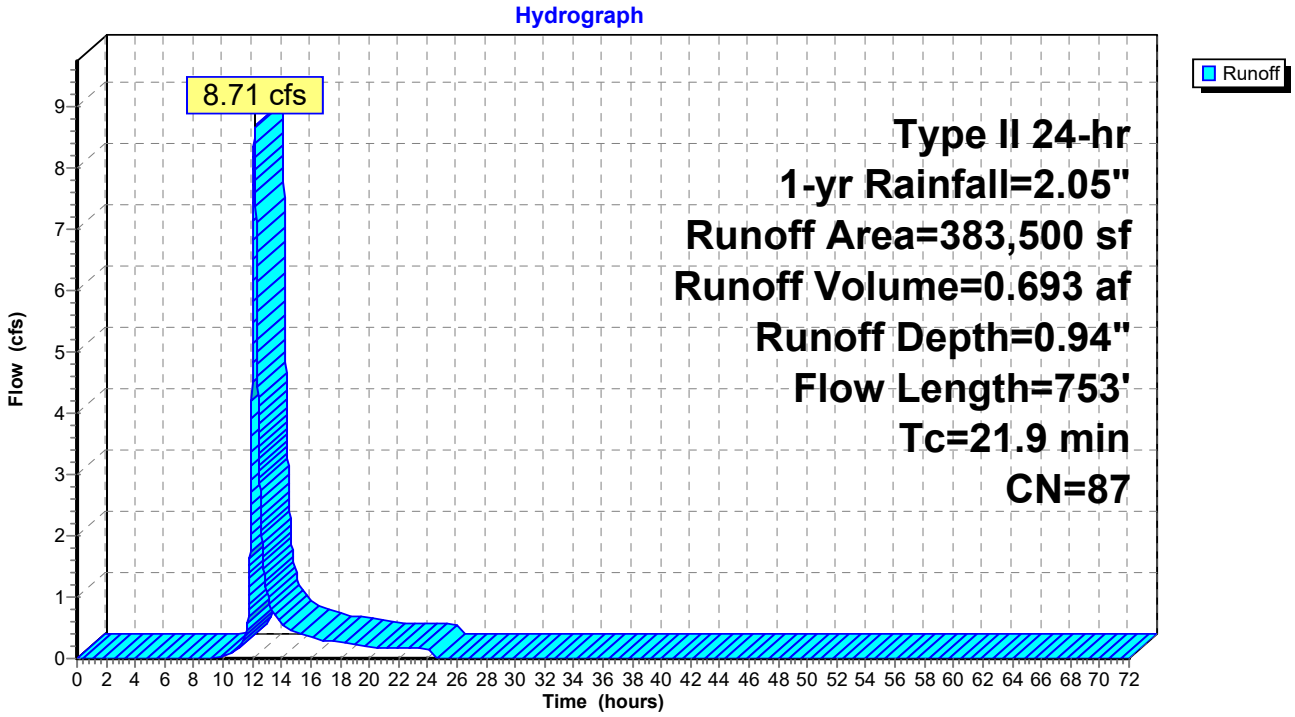
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
691.00	11,539	0	0
692.00	12,898	12,219	12,219
693.00	14,320	13,609	25,828
694.00	15,807	15,064	40,891
695.00	16,575	16,191	57,082

Device	Routing	Invert	Outlet Devices
#1	Primary	684.00'	**12.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 684.00' / 683.00' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	690.00'	**15.0" Horiz. Standpipe** C= 0.600 Limited to weir flow at low heads
#3	Secondary	694.00'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 10.00 15.00

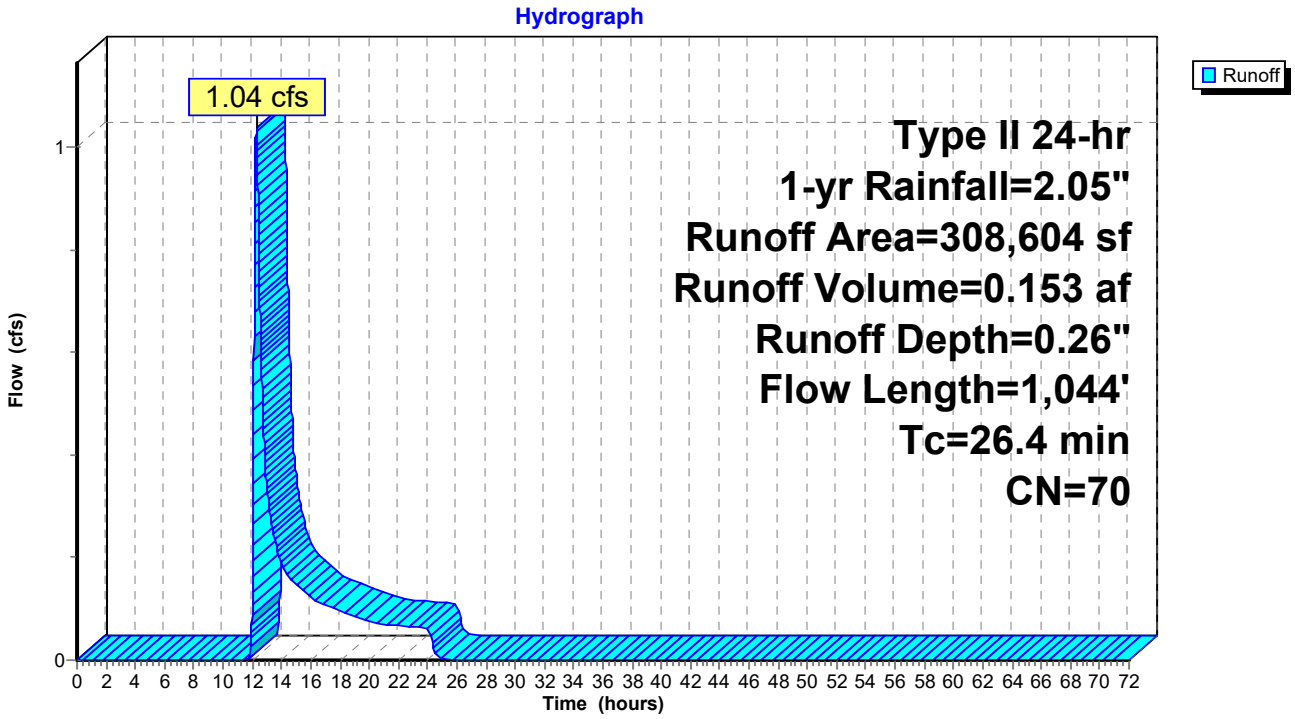
Primary OutFlow Max=9.58 cfs @ 12.58 hrs HW=693.99' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.58 cfs @ 12.20 fps)
└**2=Standpipe** (Passes 9.58 cfs of 11.81 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=688.00' (Free Discharge)
└**3=Emergency Spillway** (Controls 0.00 cfs)

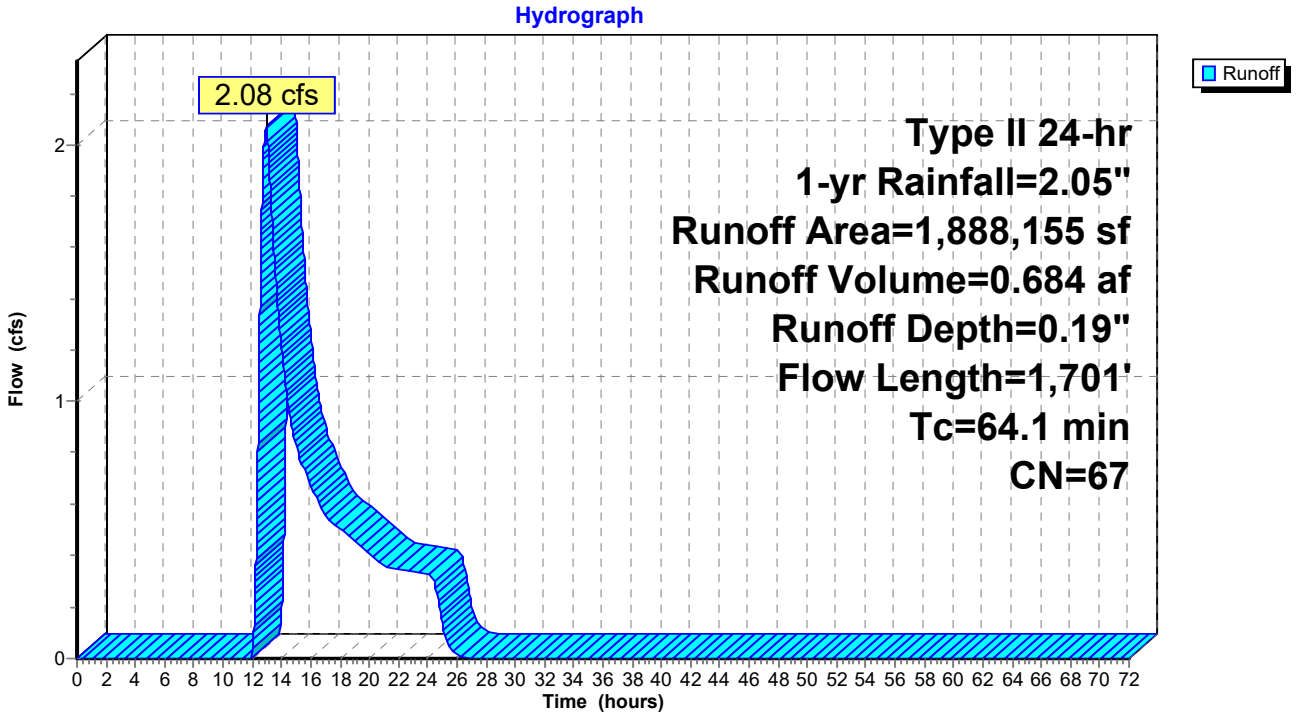
Subcatchment 15S: Stage 2 DA open soils



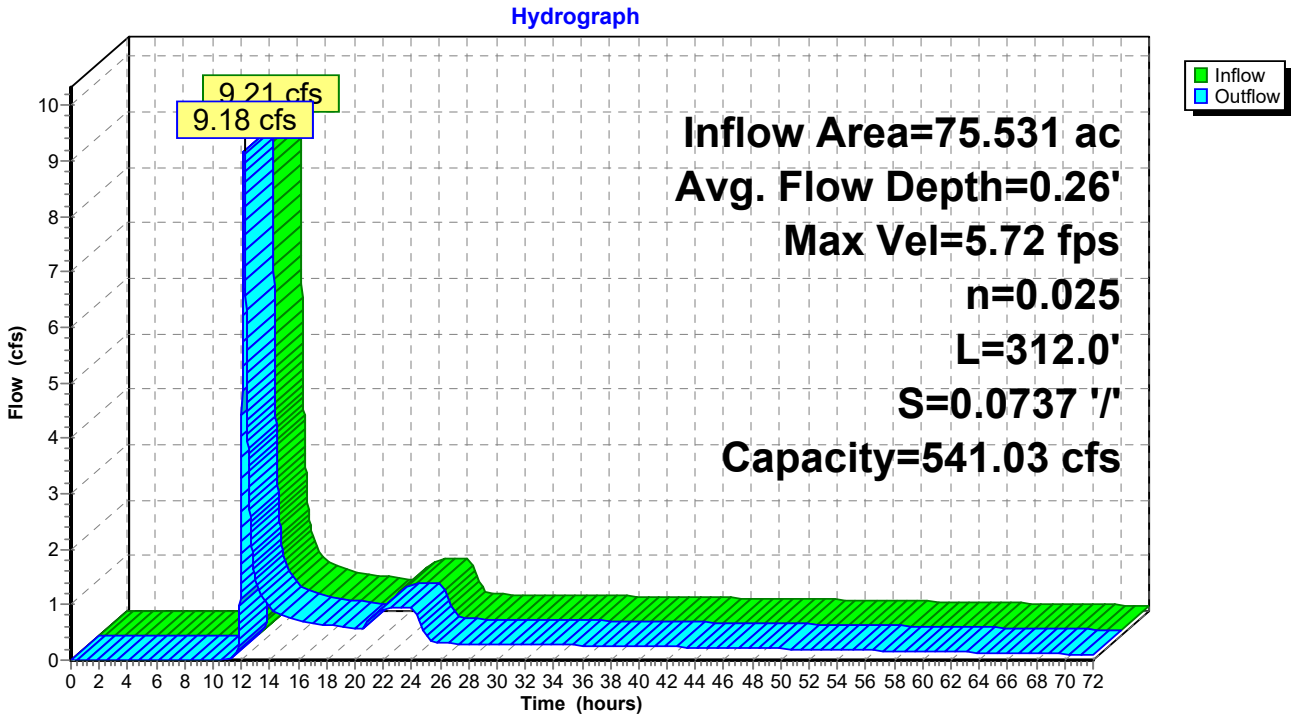
Subcatchment 22S: Stage 3 DA existing



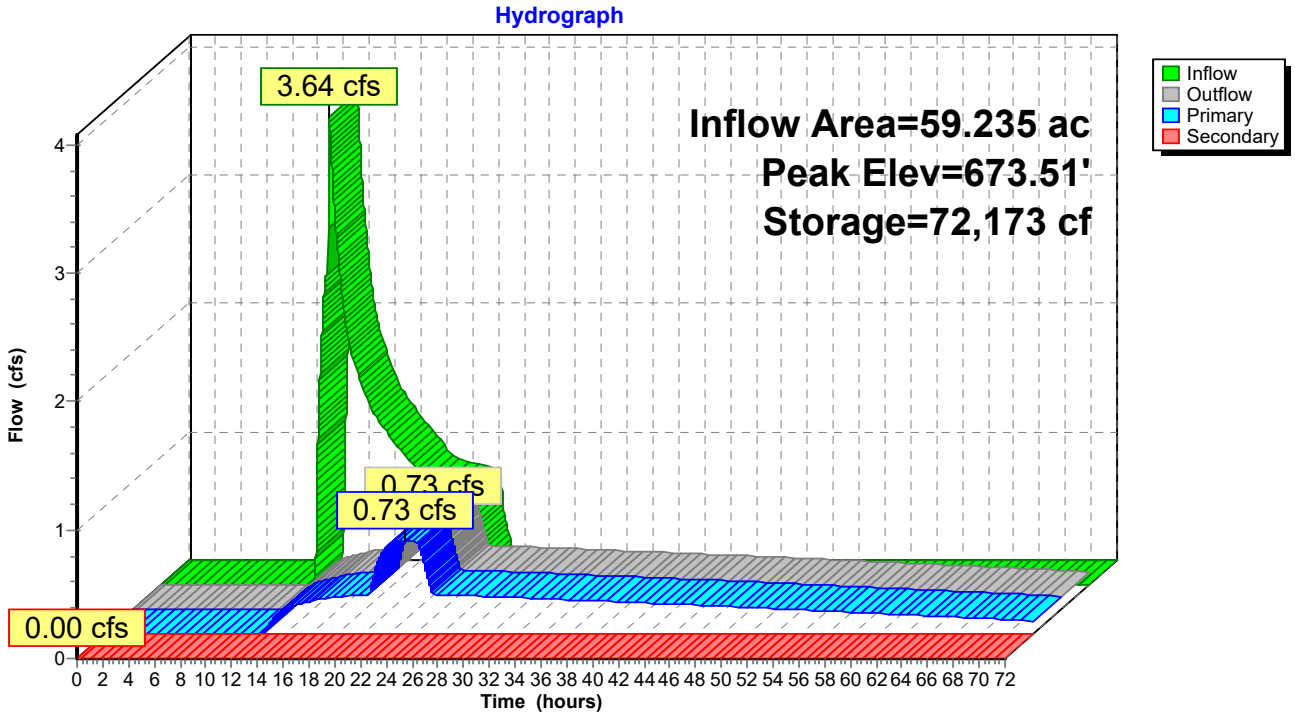
Subcatchment 25S: Stage 1 DA Proposed + Offsite



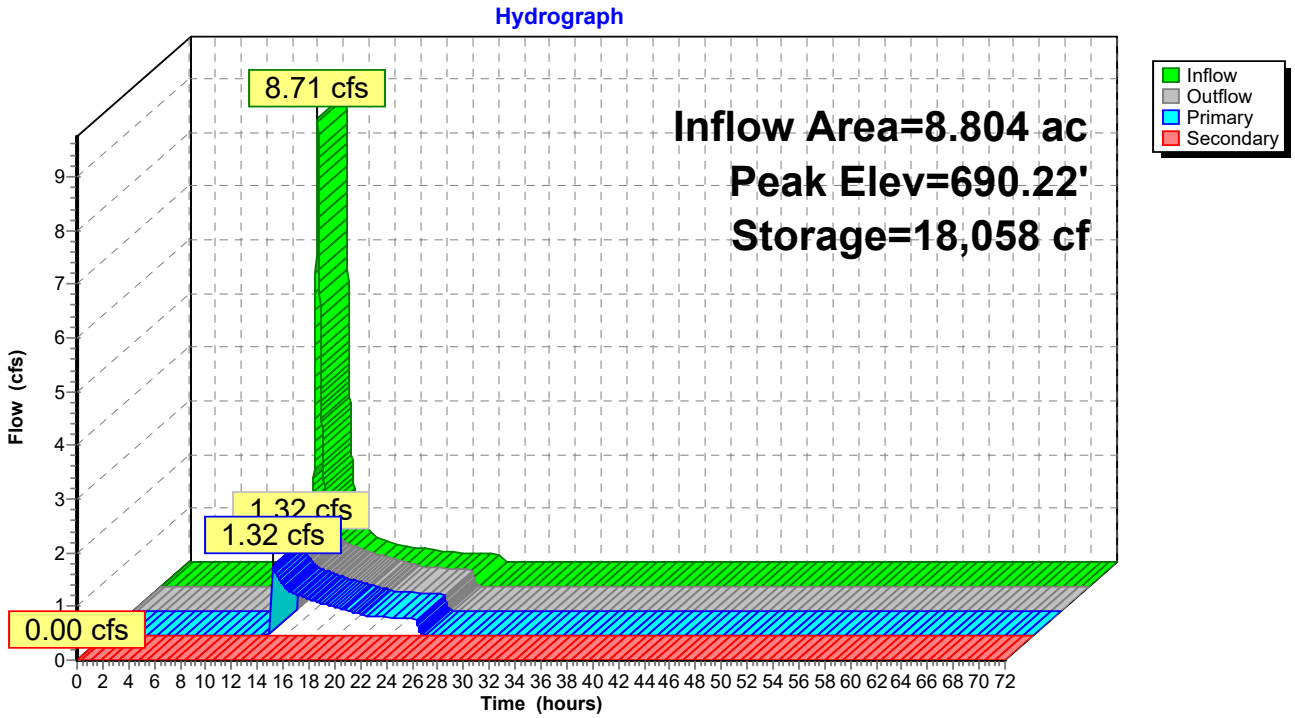
Reach 25R: Swale 3 (Pr. Cond)



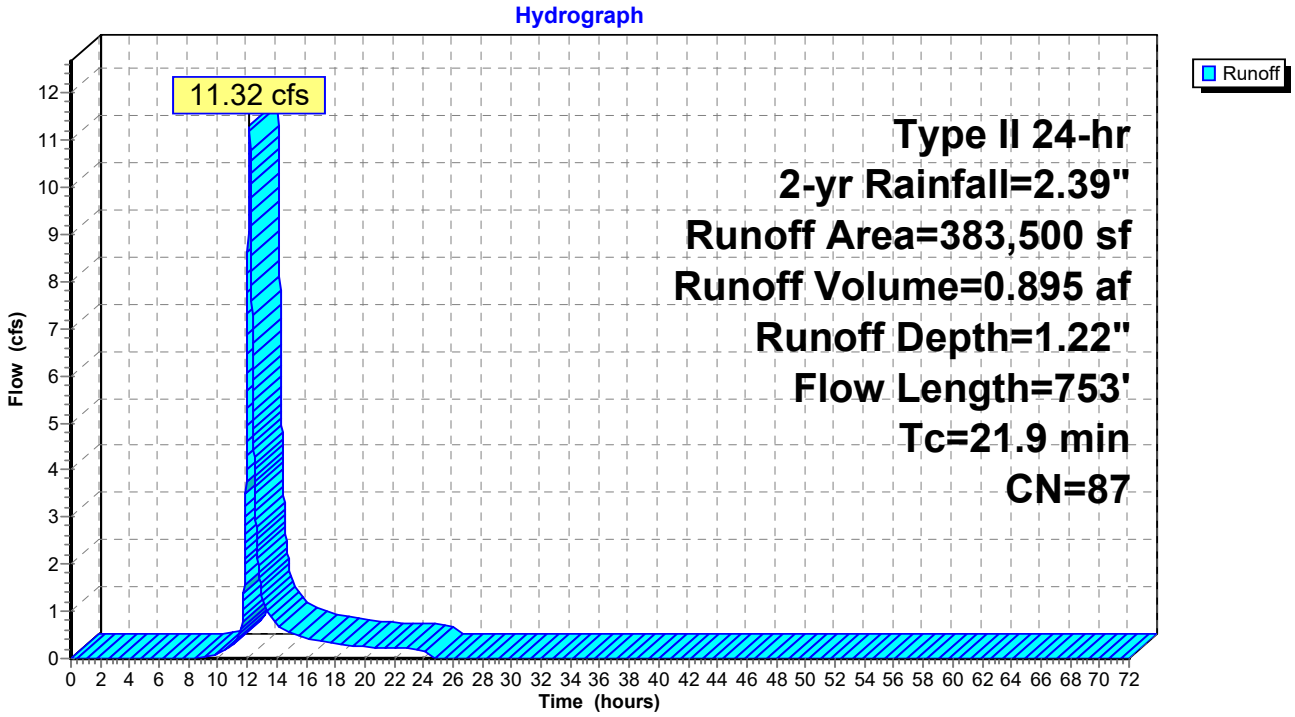
Pond 12P: 200511 Wet Pond



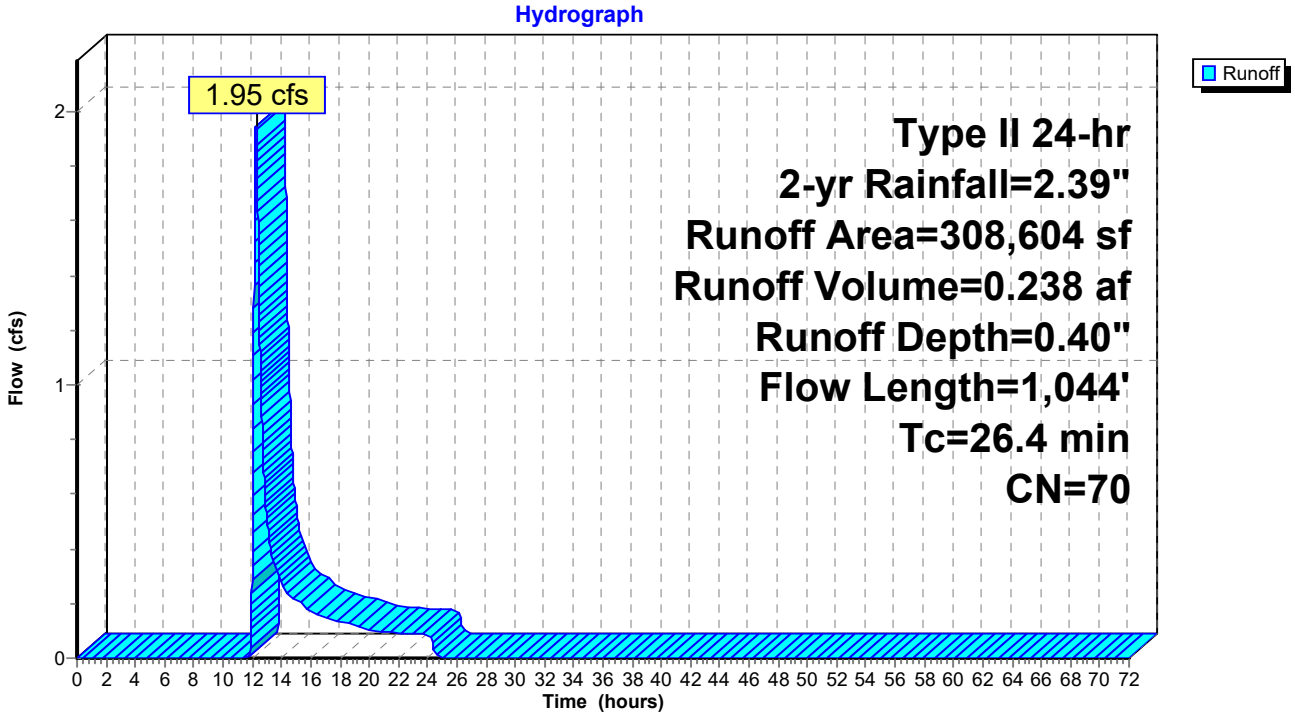
Pond 18P: Sediment Basin



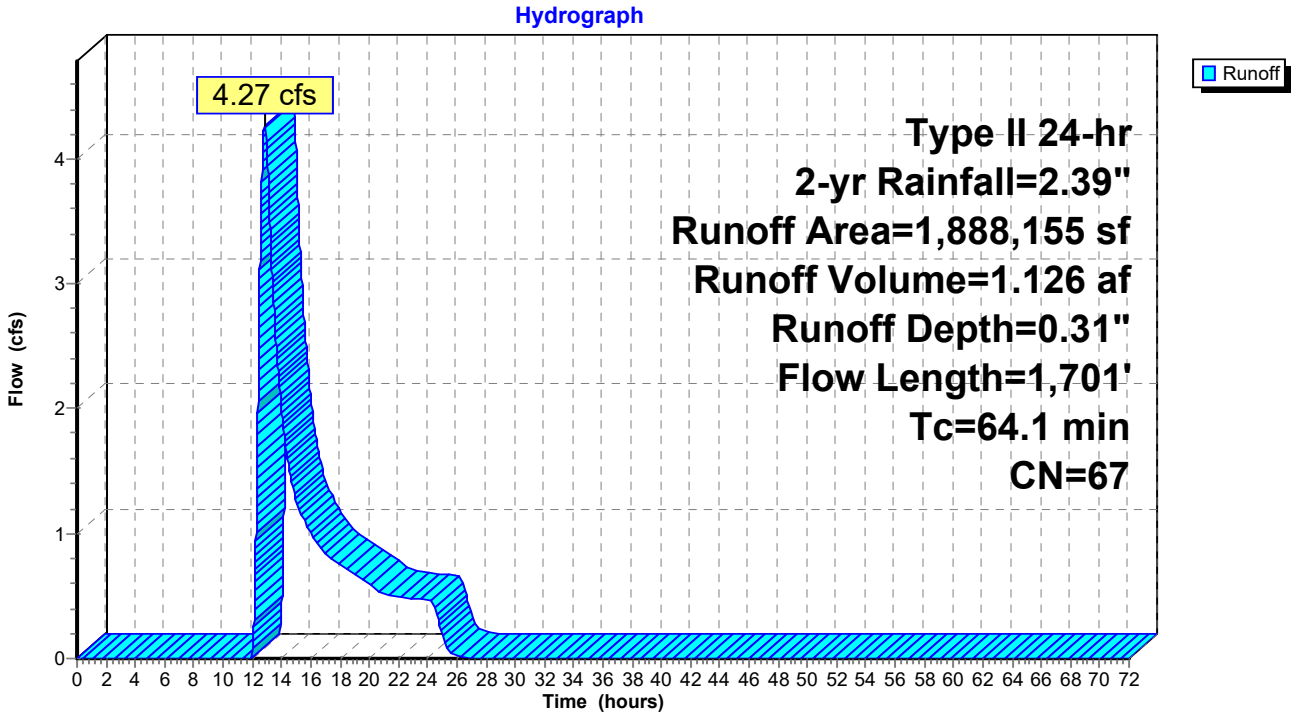
Subcatchment 15S: Stage 2 DA open soils



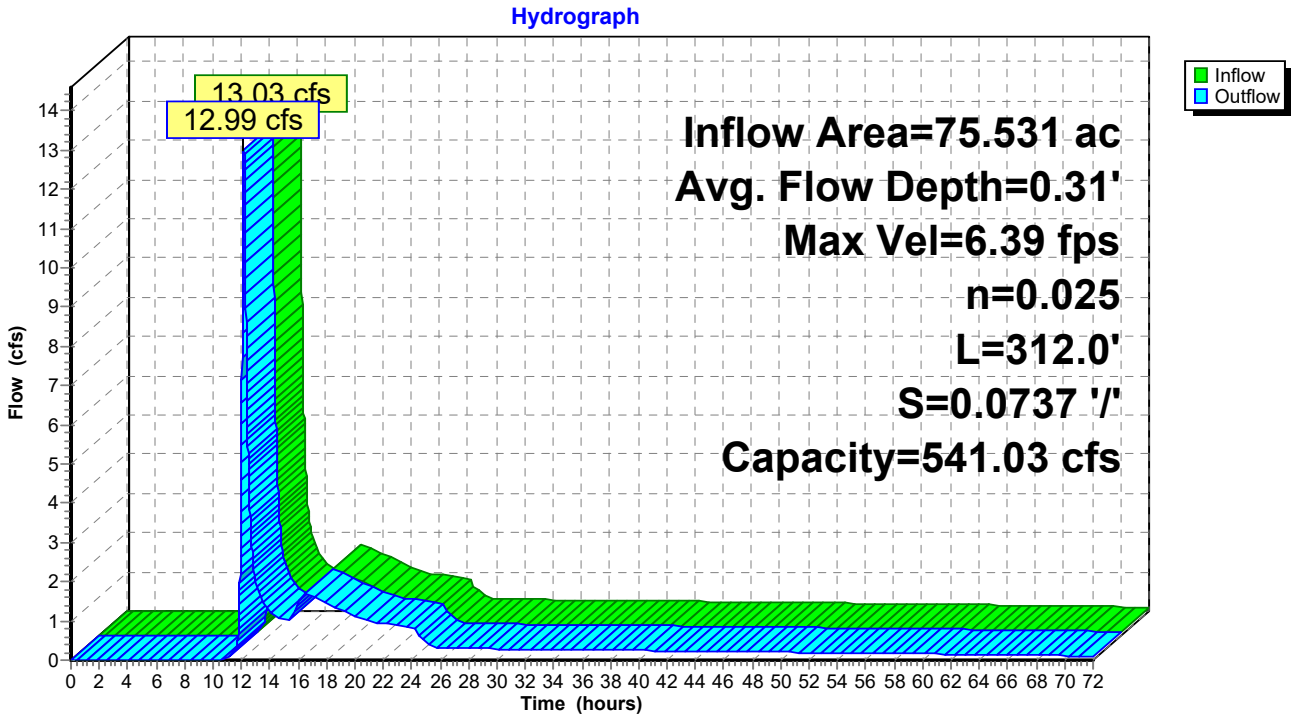
Subcatchment 22S: Stage 3 DA existing



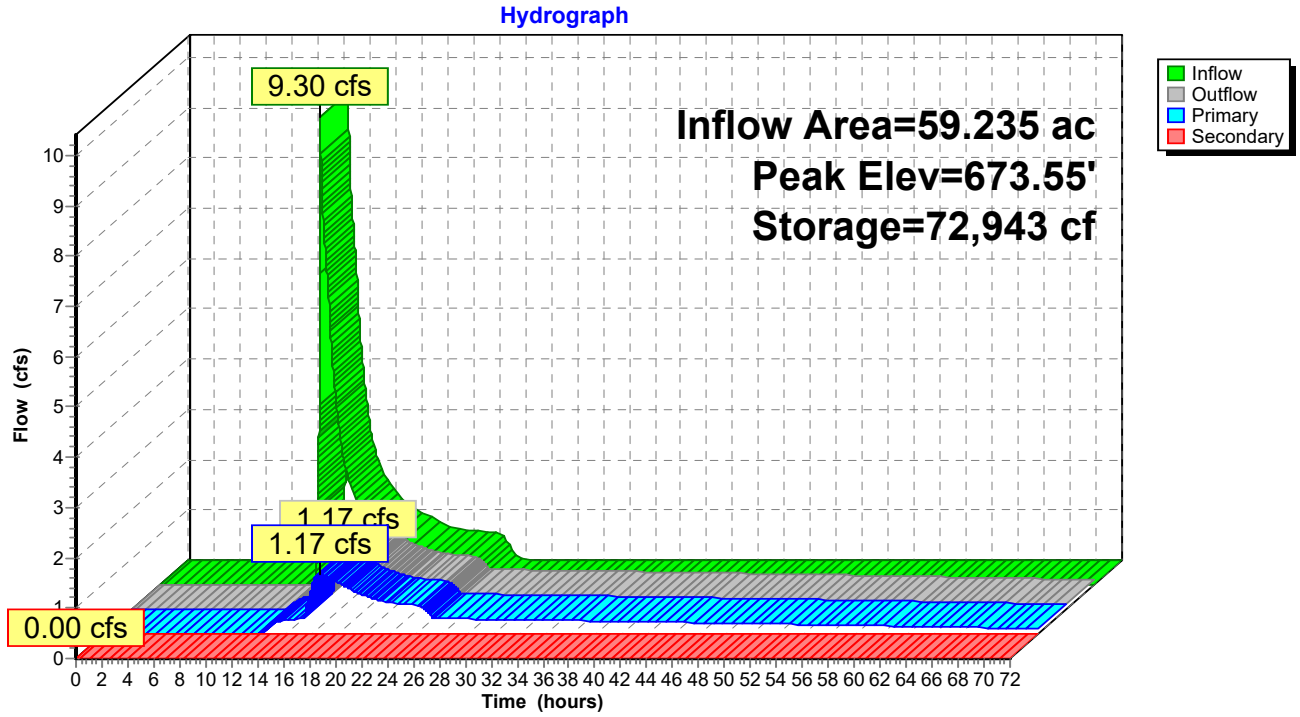
Subcatchment 25S: Stage 1 DA Proposed + Offsite



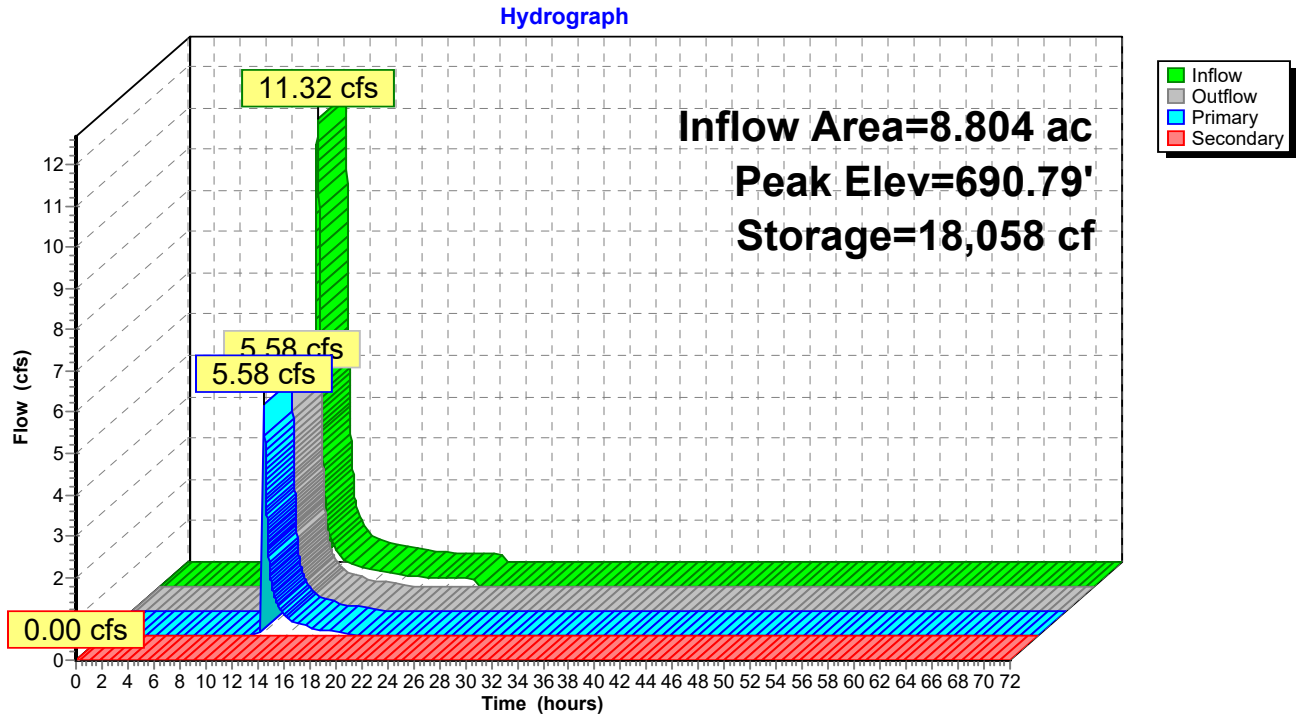
Reach 25R: Swale 3 (Pr. Cond)



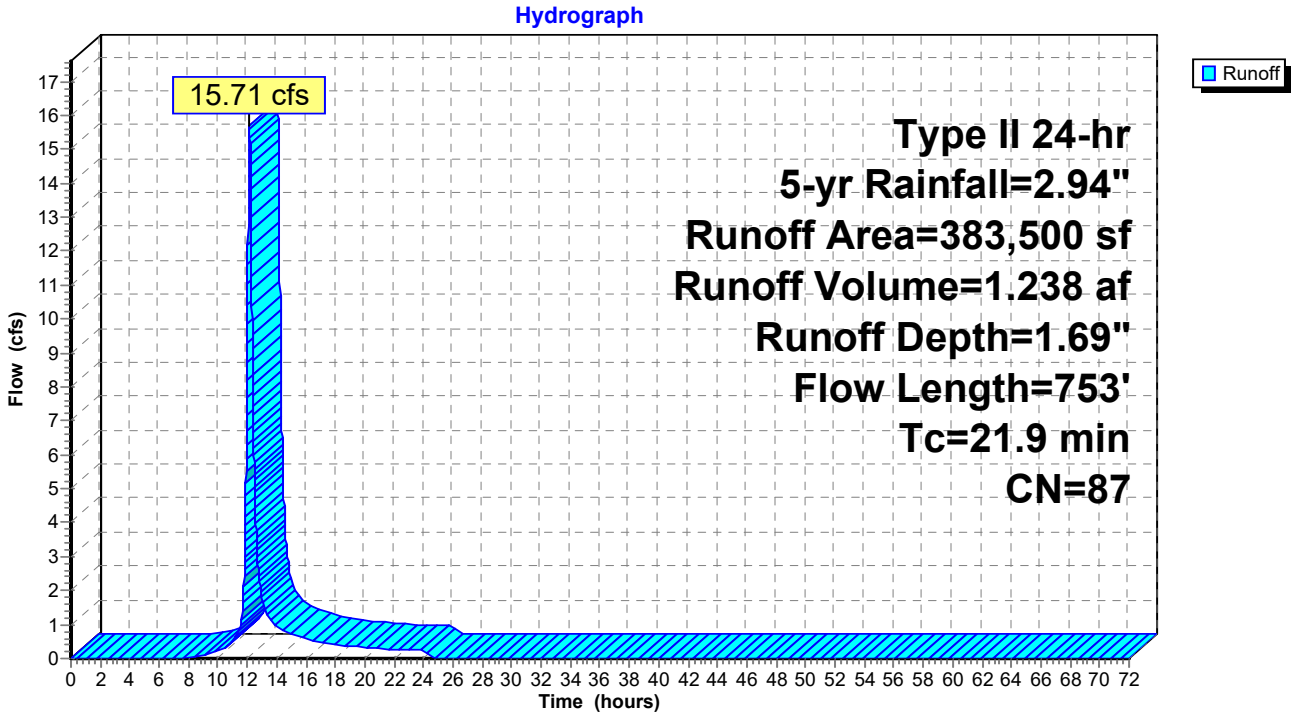
Pond 12P: 200511 Wet Pond



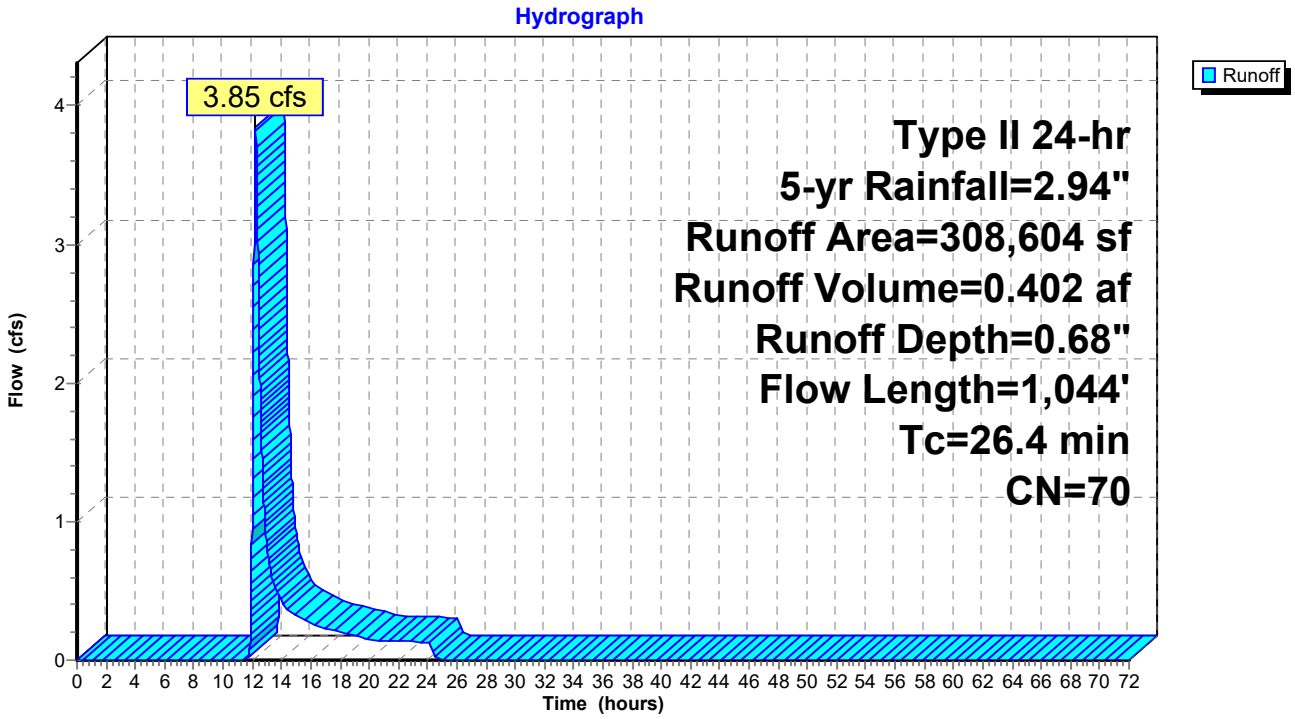
Pond 18P: Sediment Basin



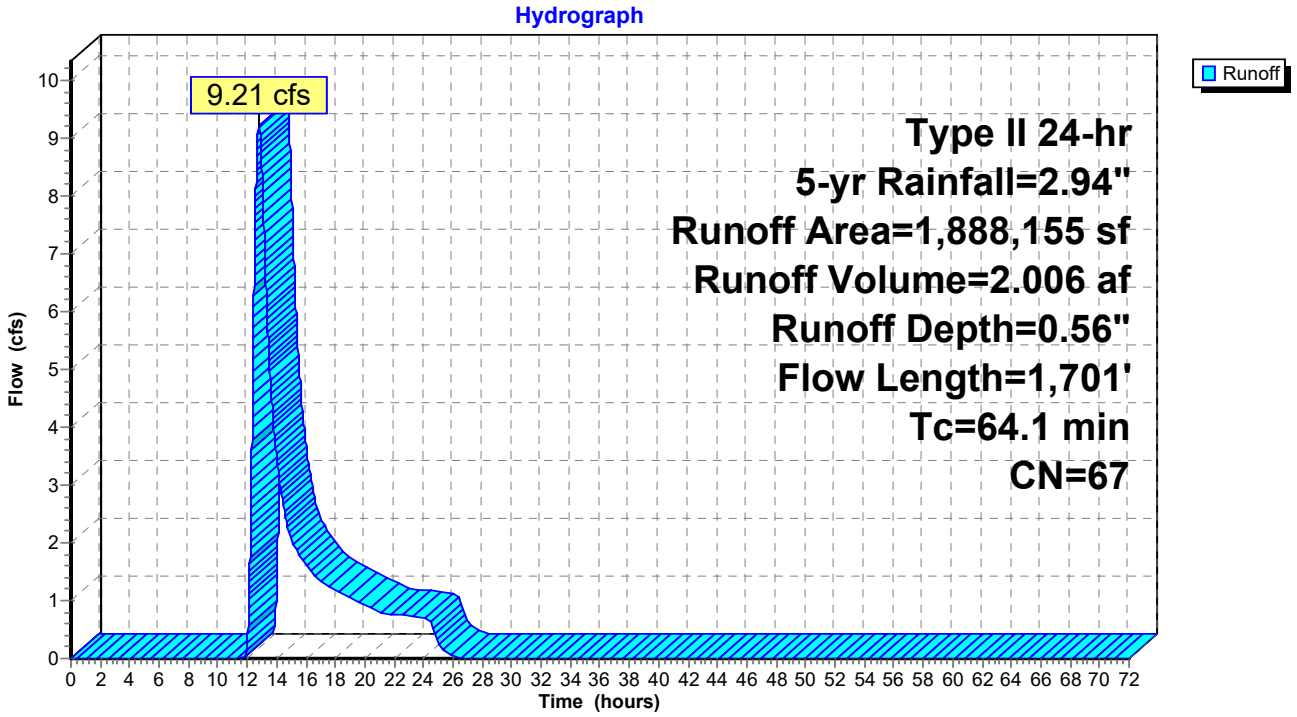
Subcatchment 15S: Stage 2 DA open soils



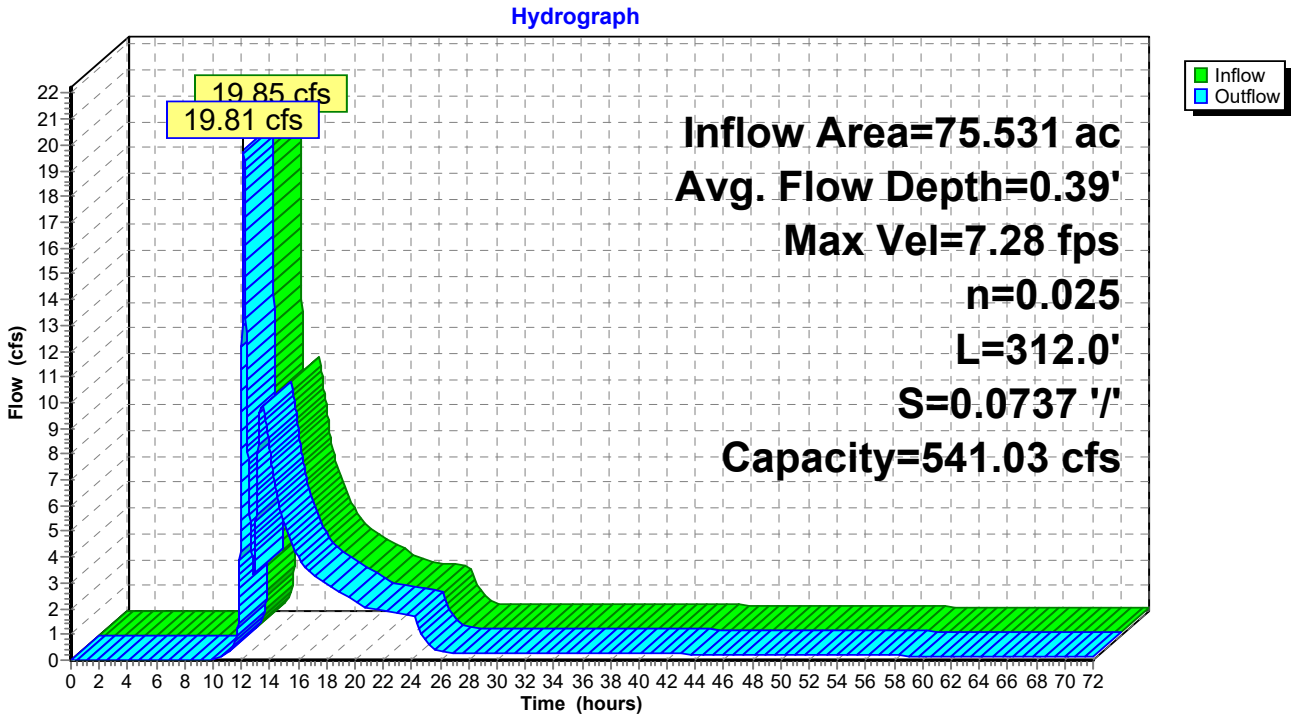
Subcatchment 22S: Stage 3 DA existing



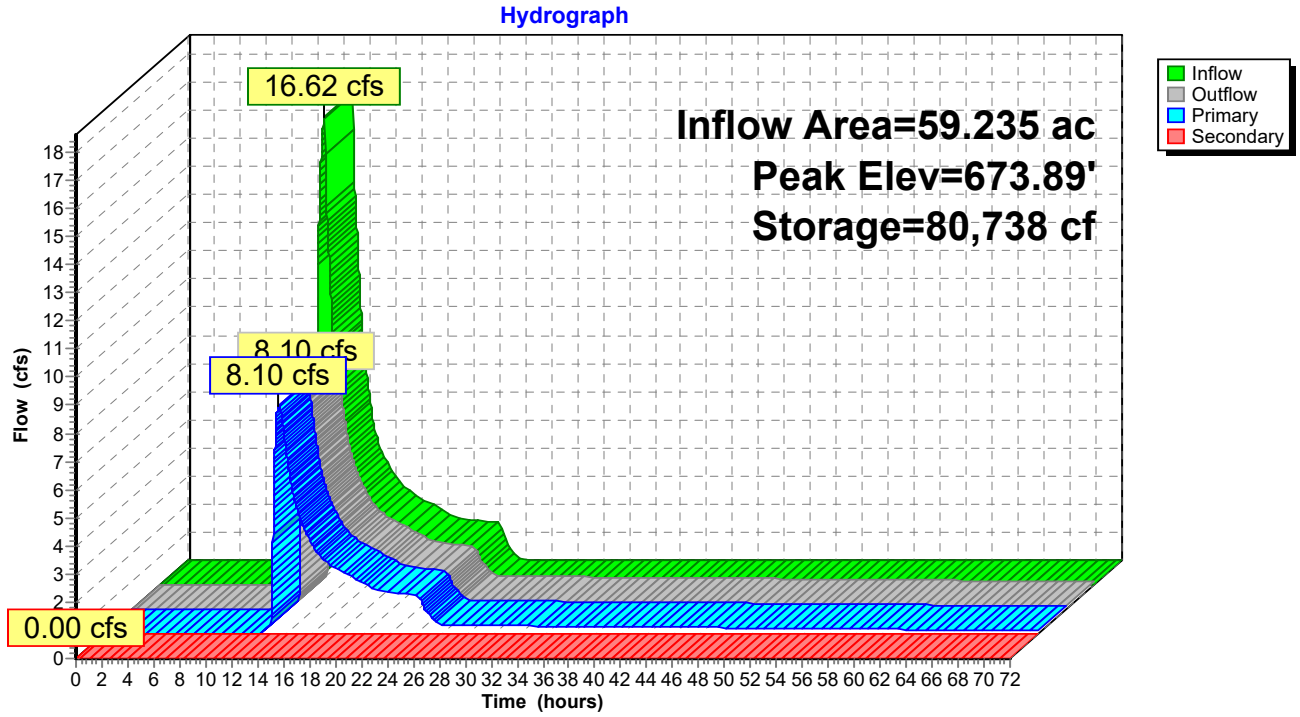
Subcatchment 25S: Stage 1 DA Proposed + Offsite



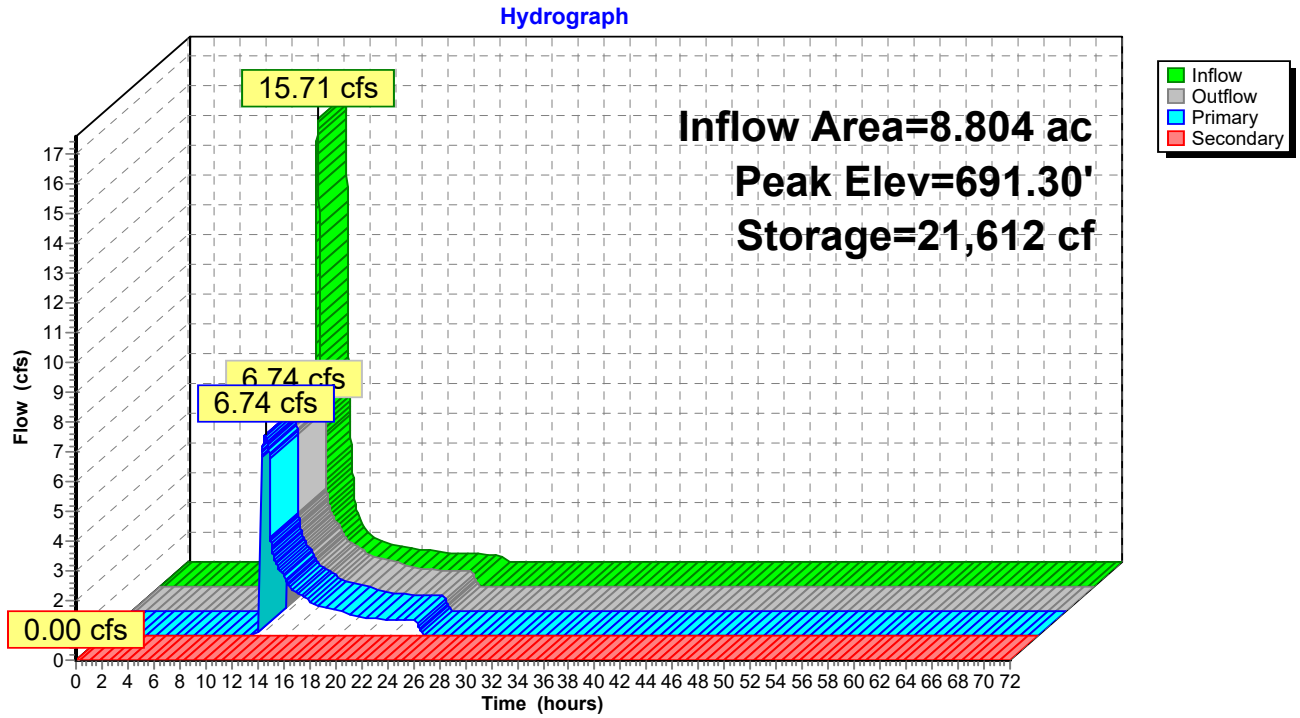
Reach 25R: Swale 3 (Pr. Cond)



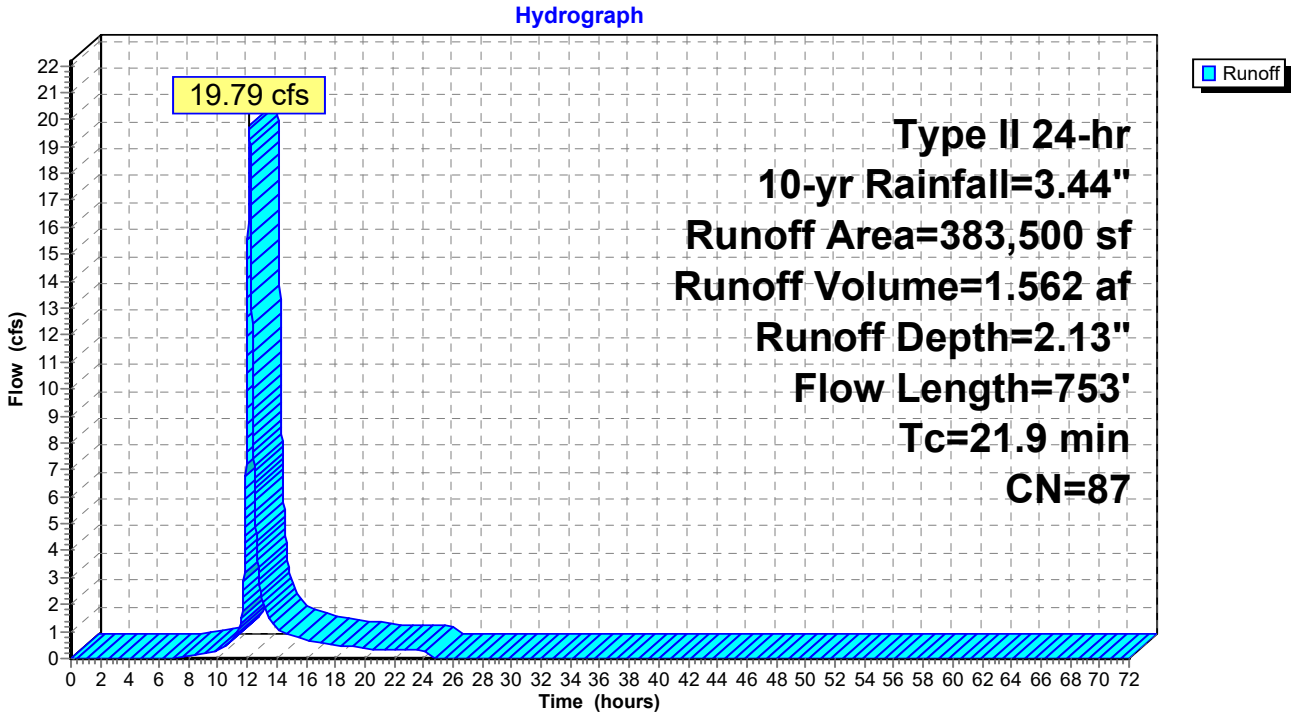
Pond 12P: 200511 Wet Pond



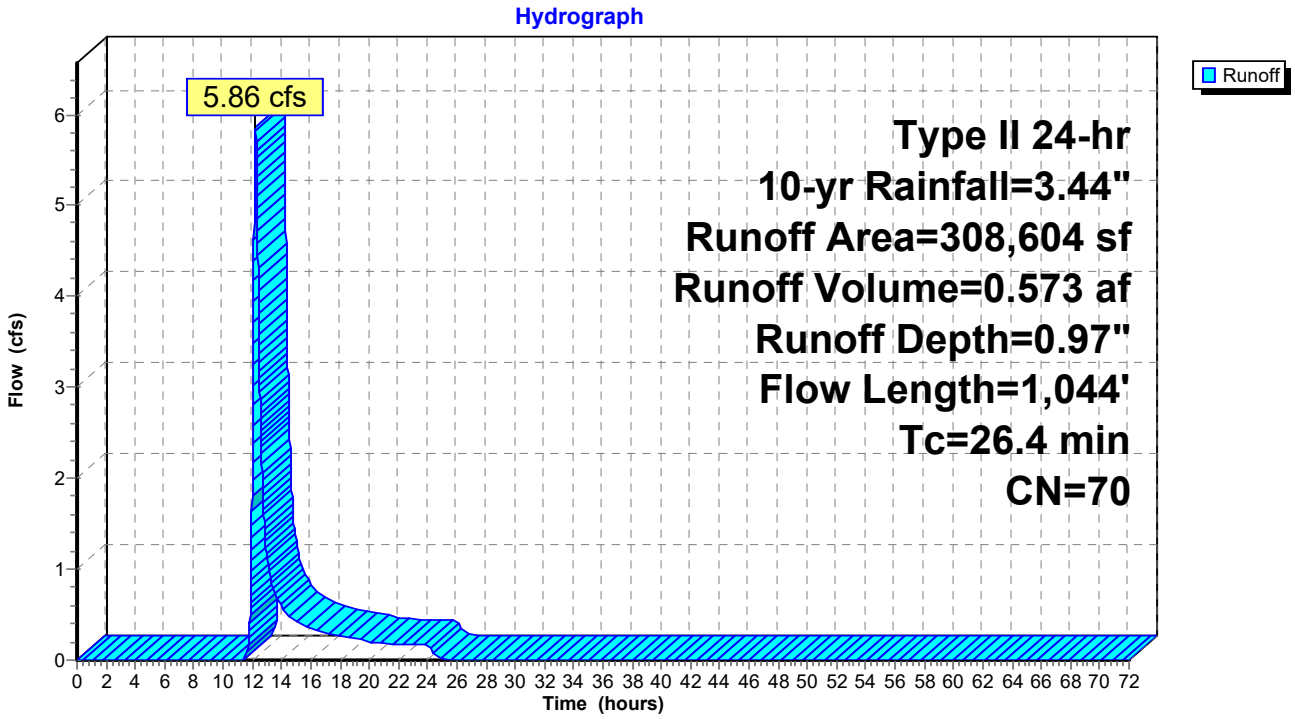
Pond 18P: Sediment Basin



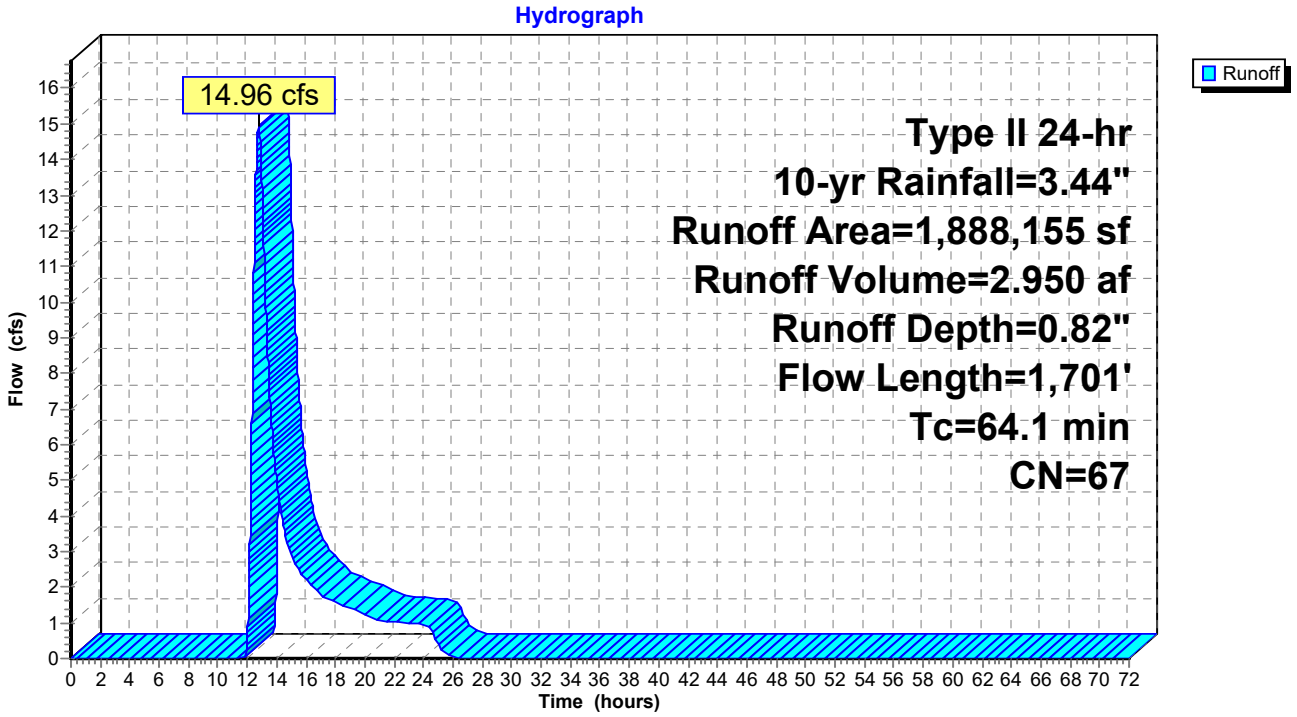
Subcatchment 15S: Stage 2 DA open soils



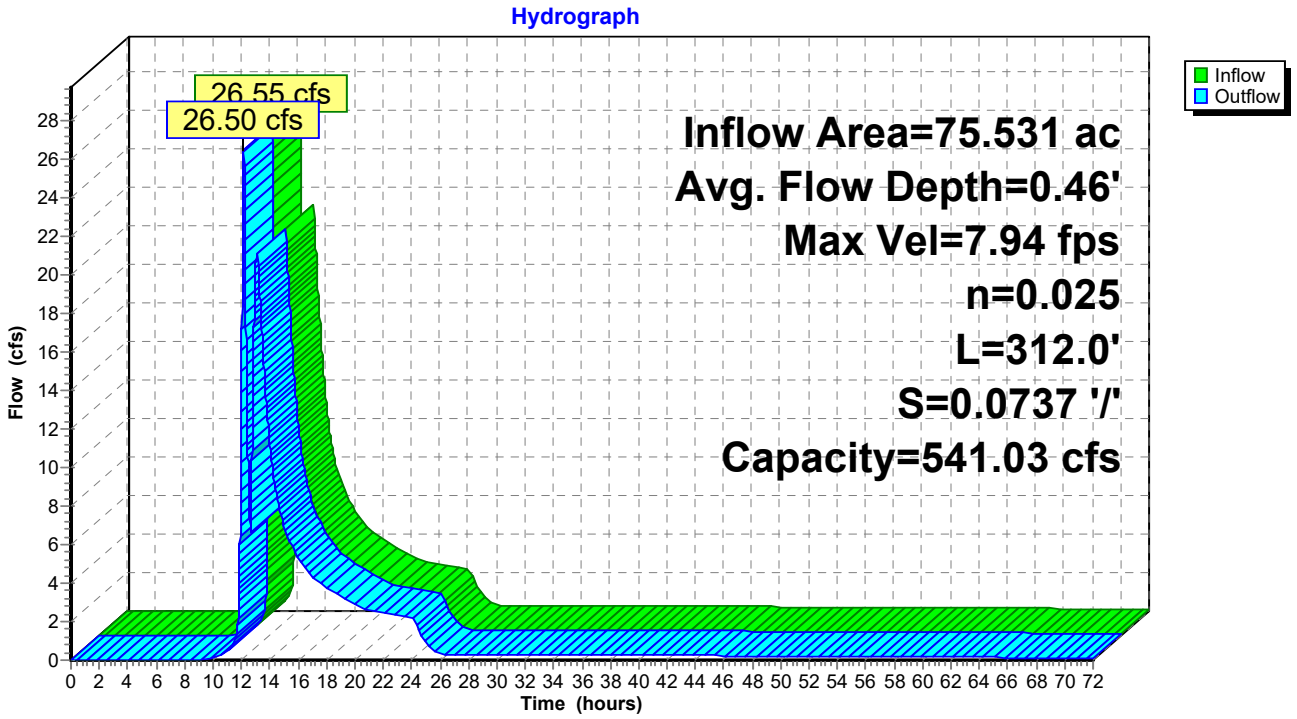
Subcatchment 22S: Stage 3 DA existing



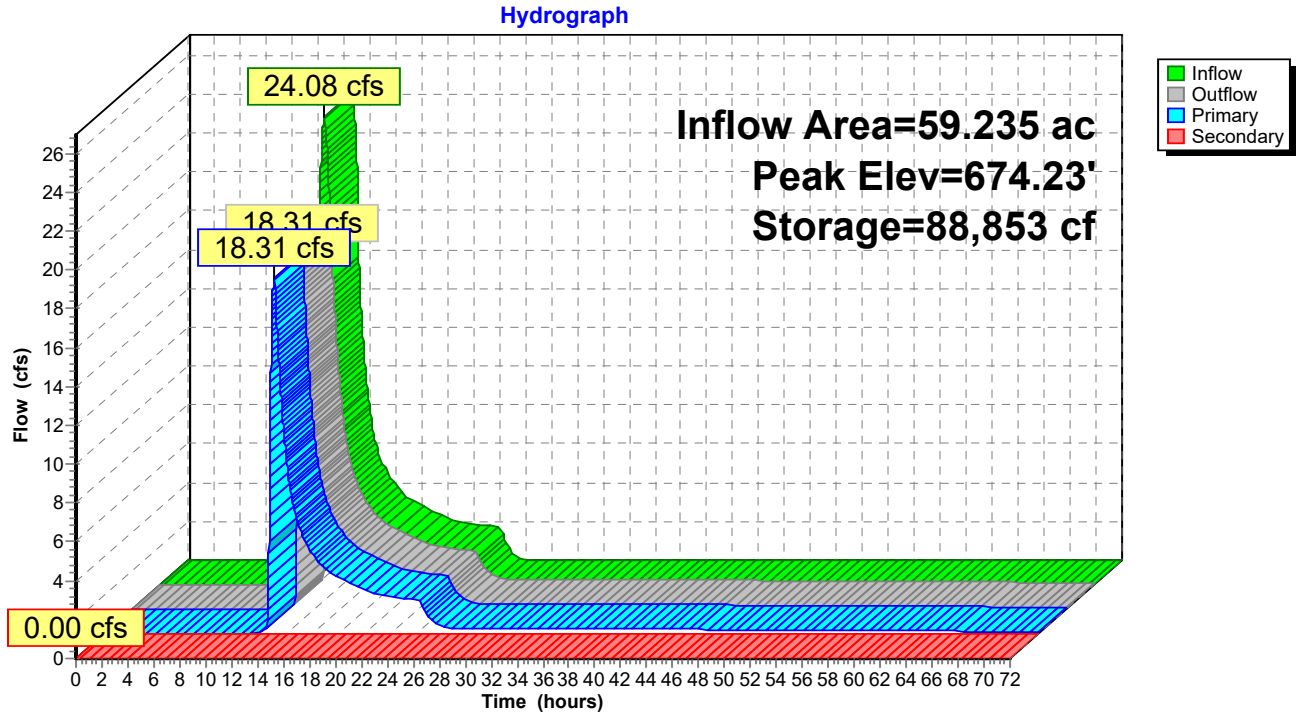
Subcatchment 25S: Stage 1 DA Proposed + Offsite



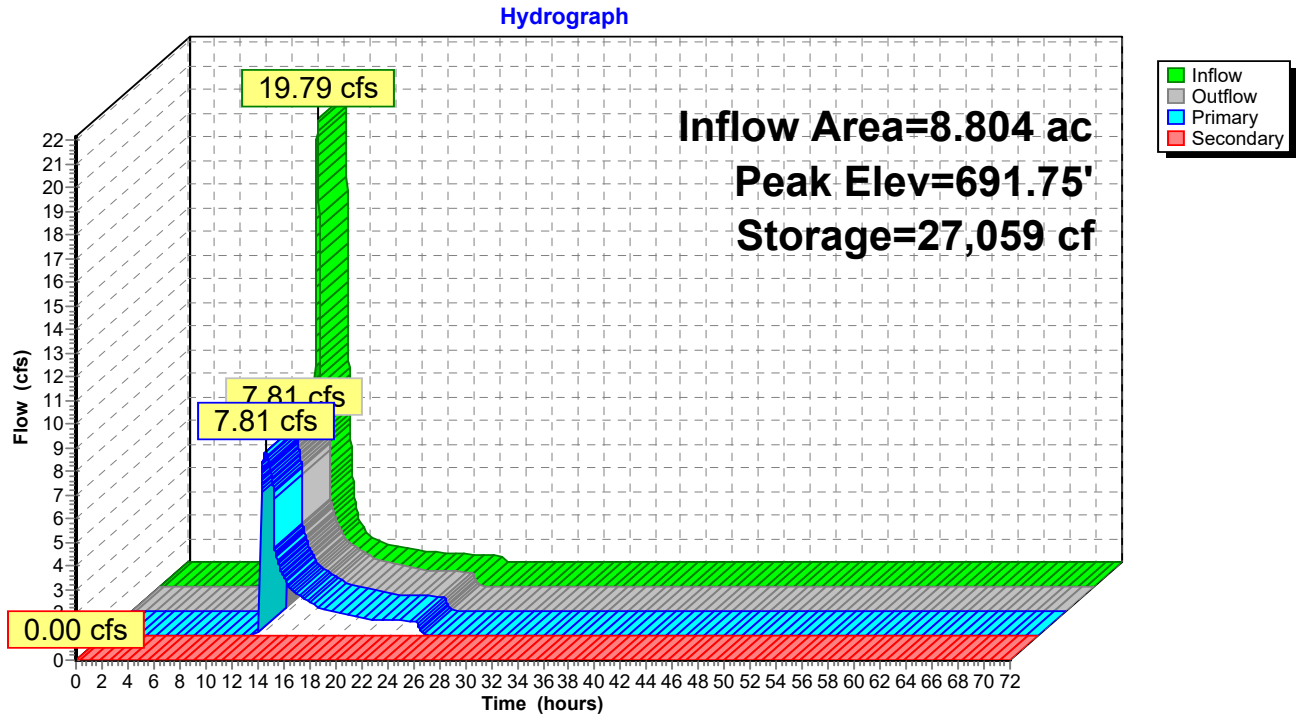
Reach 25R: Swale 3 (Pr. Cond)



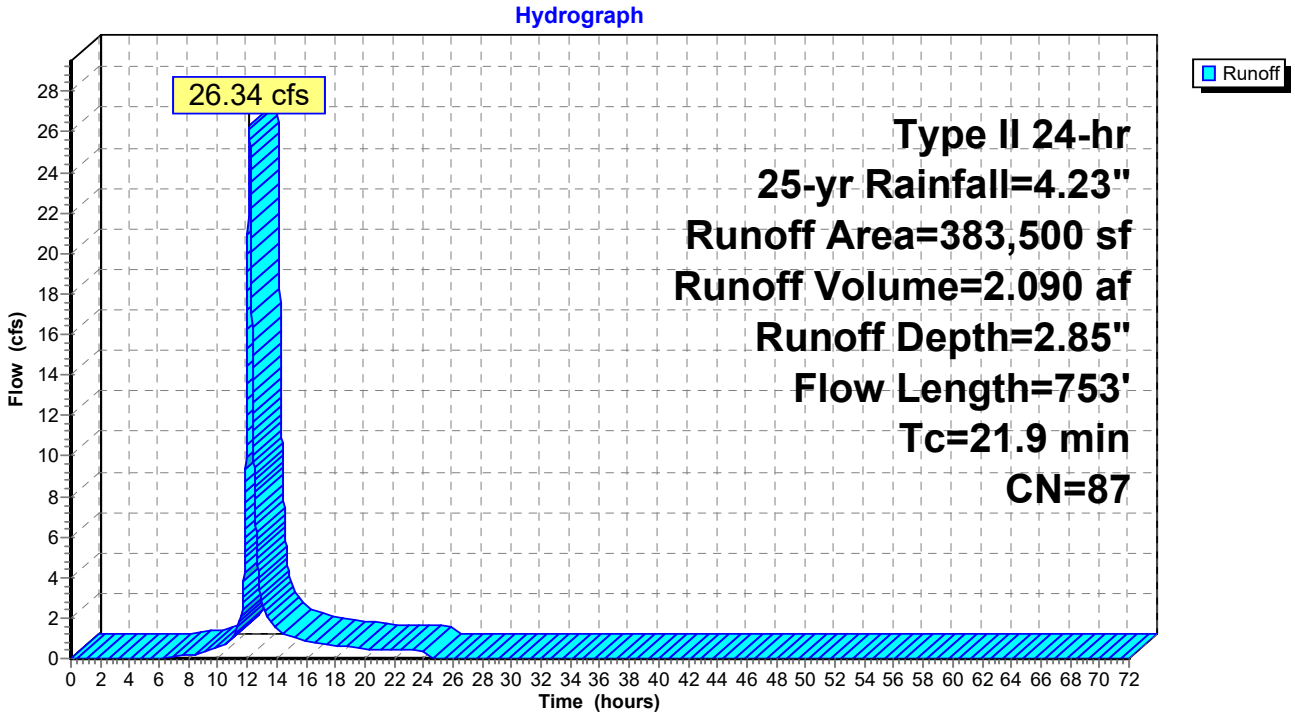
Pond 12P: 200511 Wet Pond



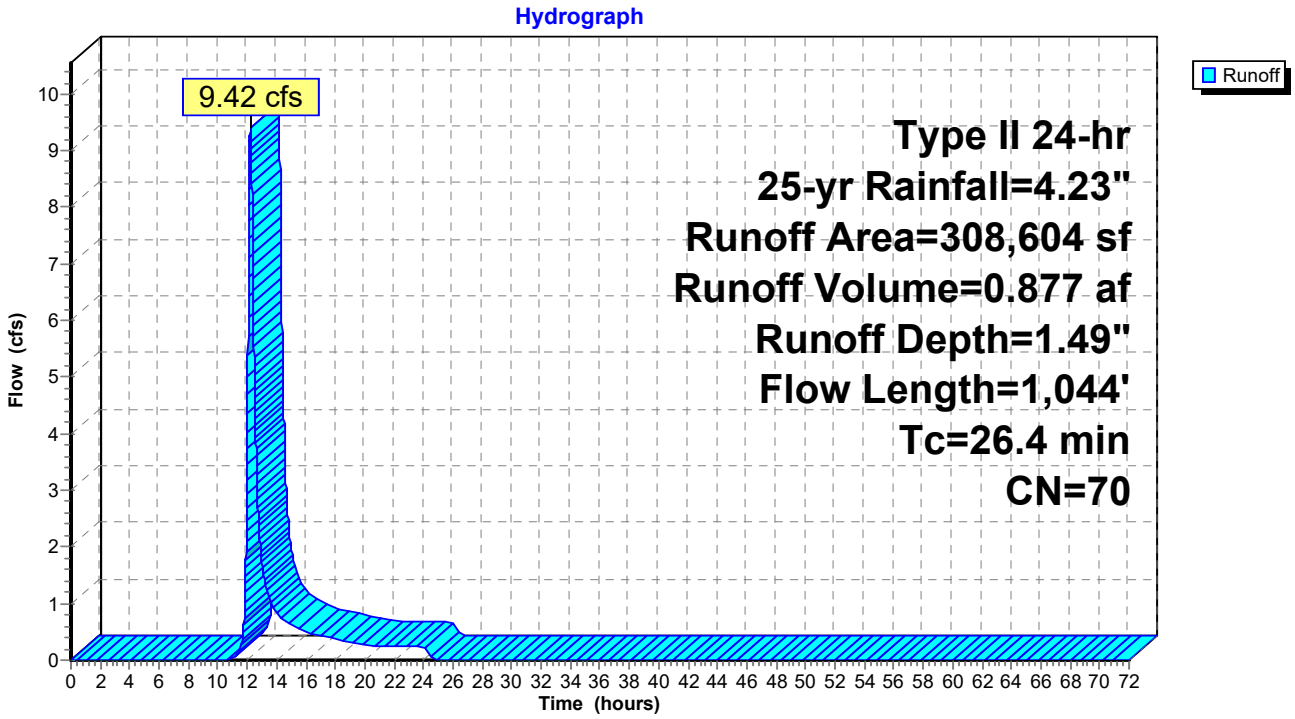
Pond 18P: Sediment Basin



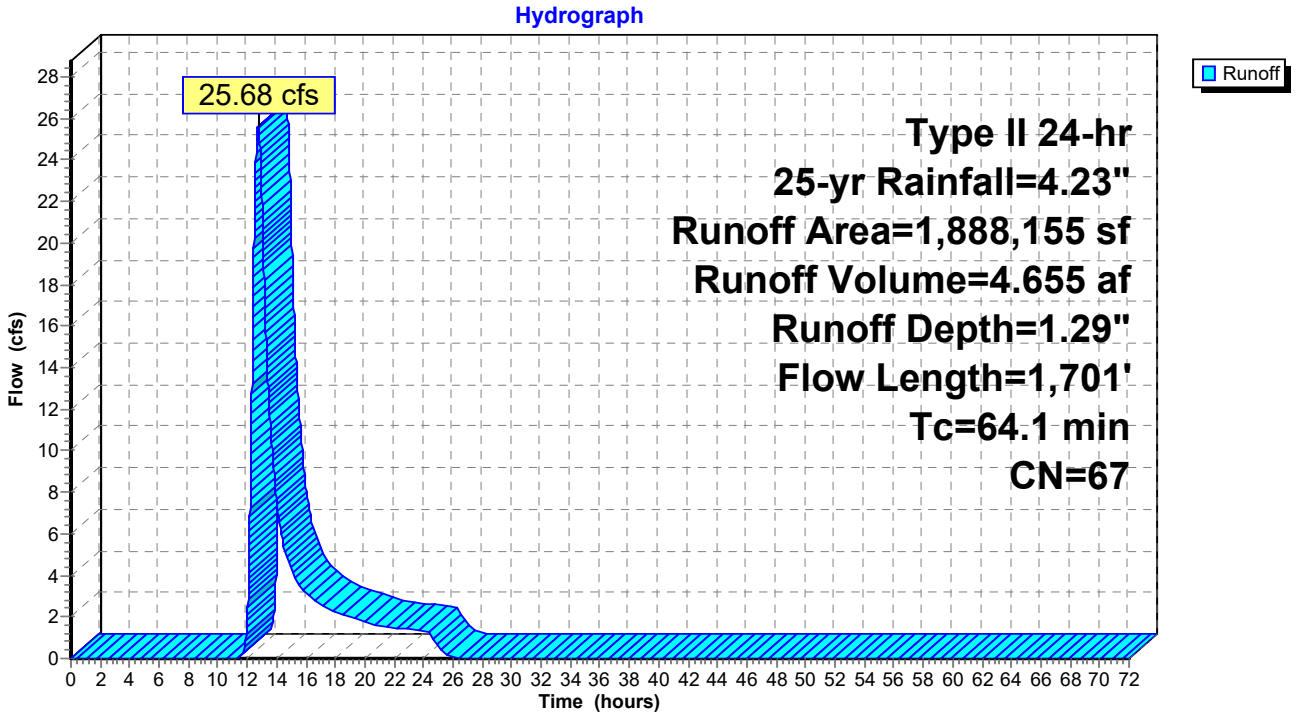
Subcatchment 15S: Stage 2 DA open soils



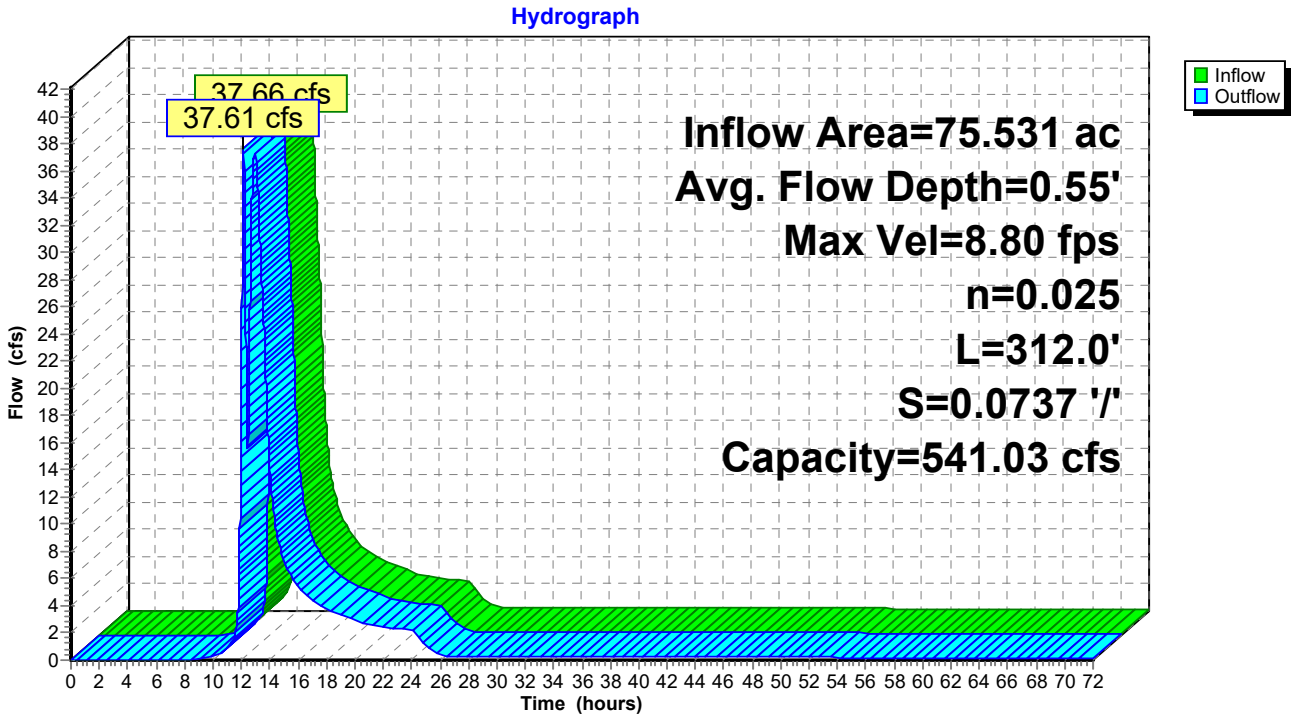
Subcatchment 22S: Stage 3 DA existing



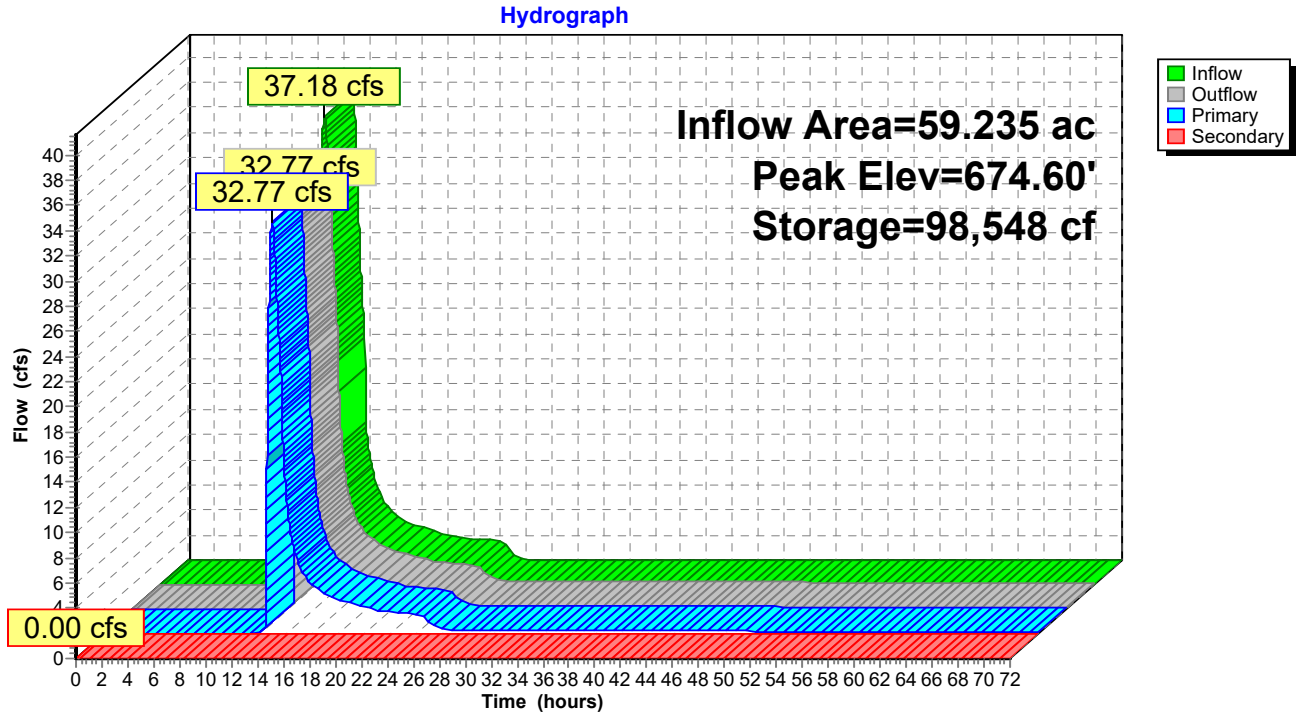
Subcatchment 25S: Stage 1 DA Proposed + Offsite



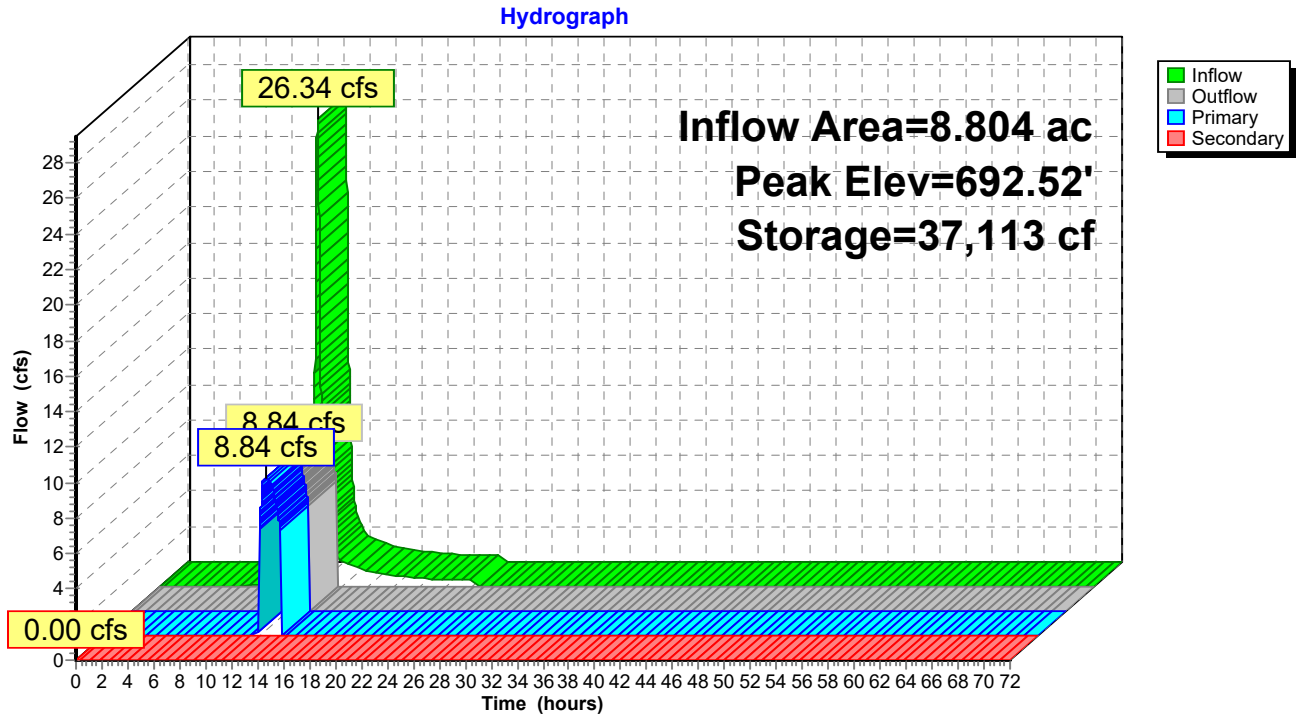
Reach 25R: Swale 3 (Pr. Cond)



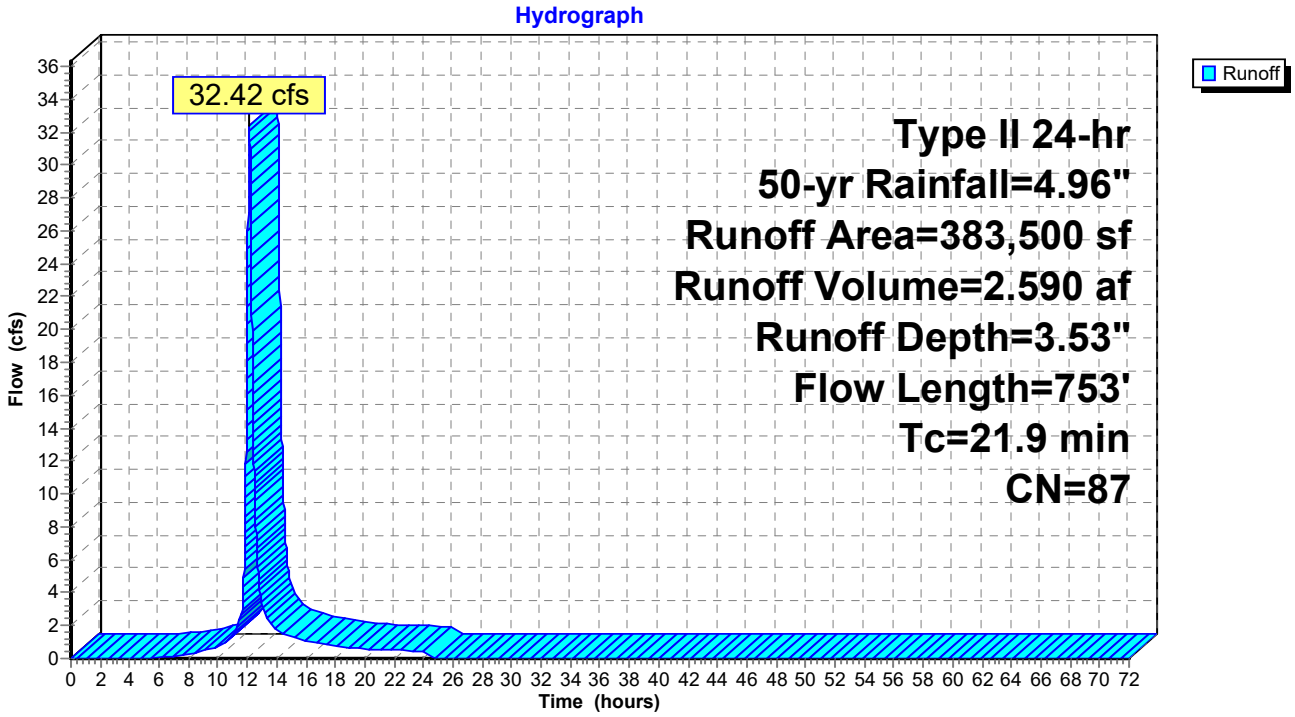
Pond 12P: 200511 Wet Pond



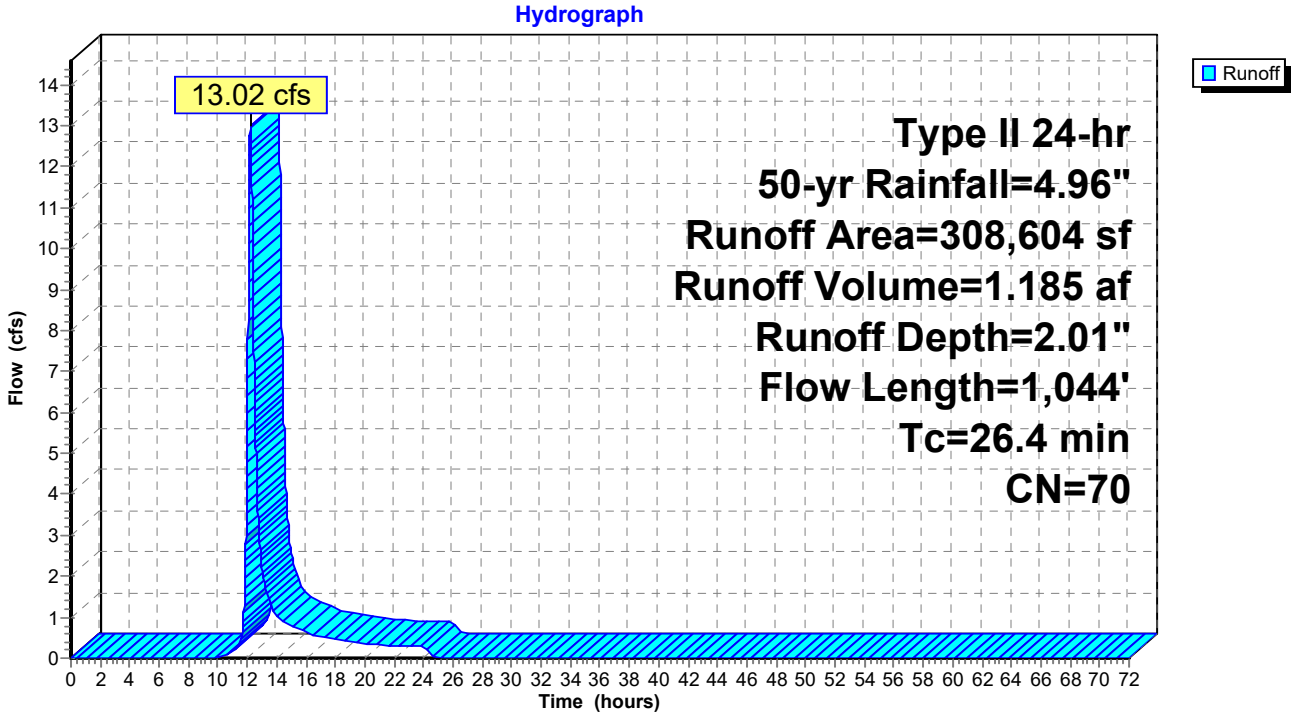
Pond 18P: Sediment Basin



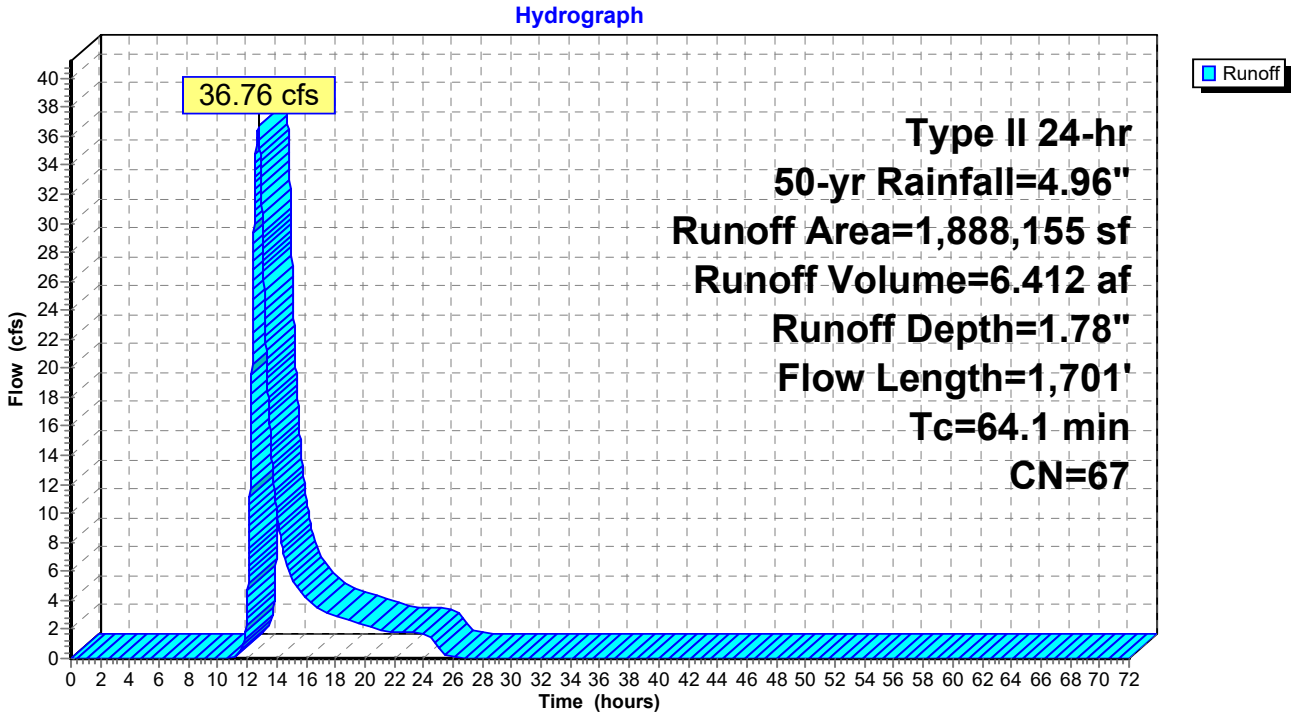
Subcatchment 15S: Stage 2 DA open soils



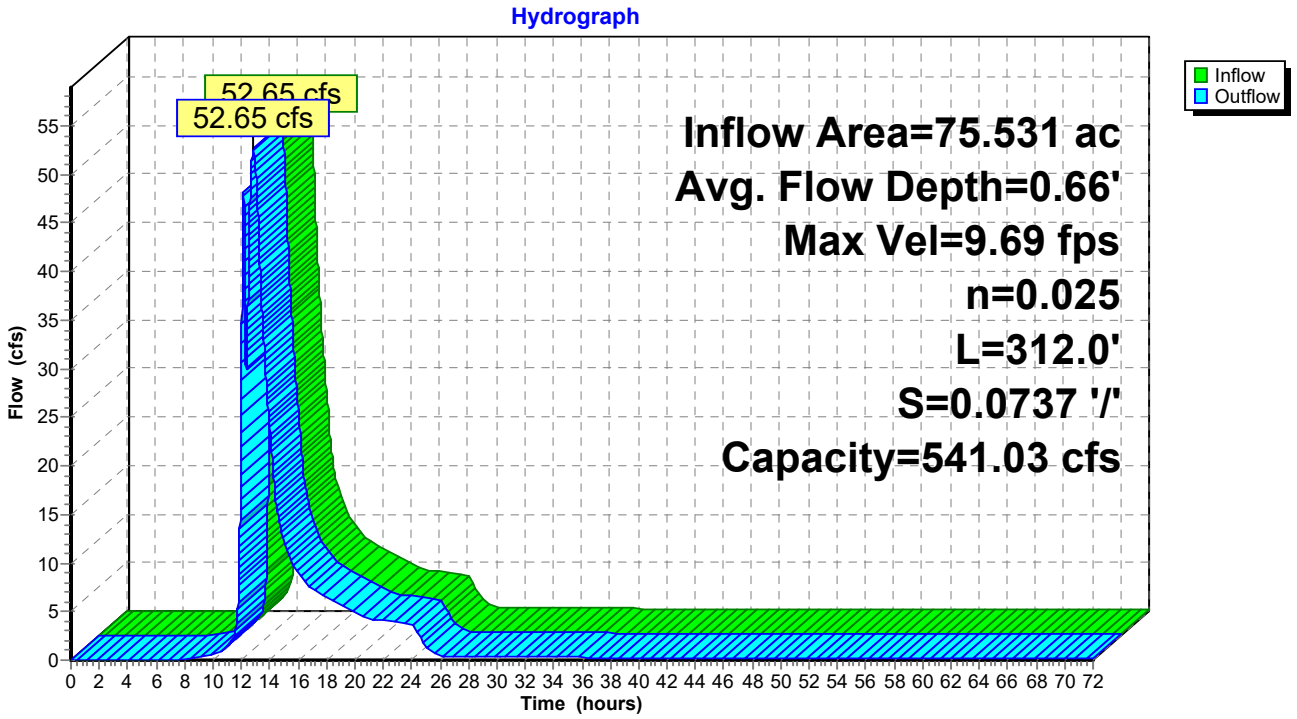
Subcatchment 22S: Stage 3 DA existing



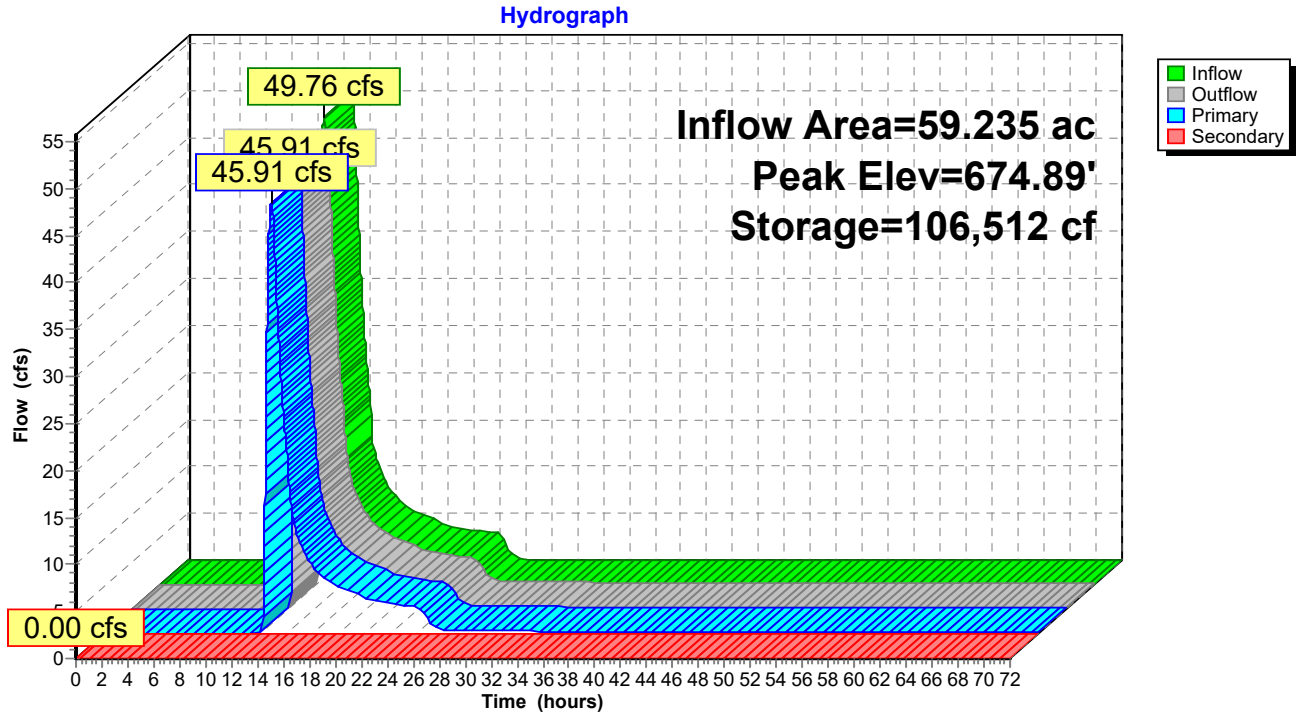
Subcatchment 25S: Stage 1 DA Proposed + Offsite



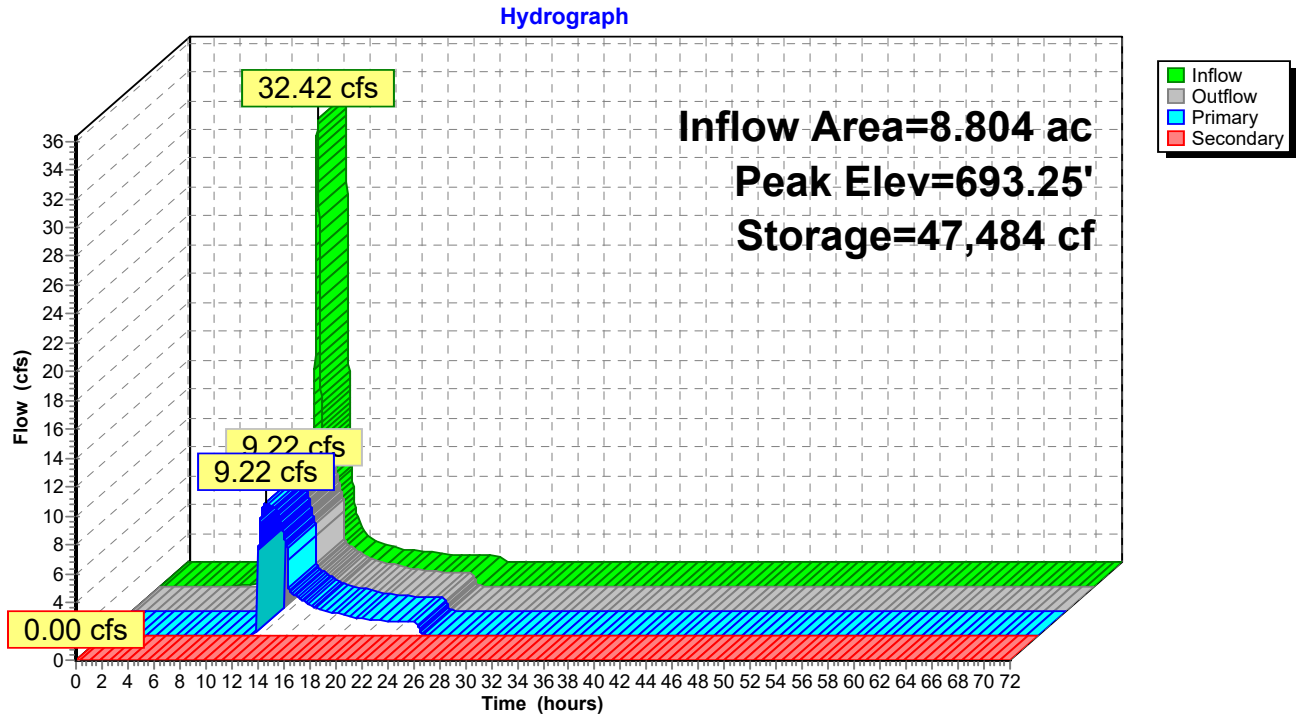
Reach 25R: Swale 3 (Pr. Cond)



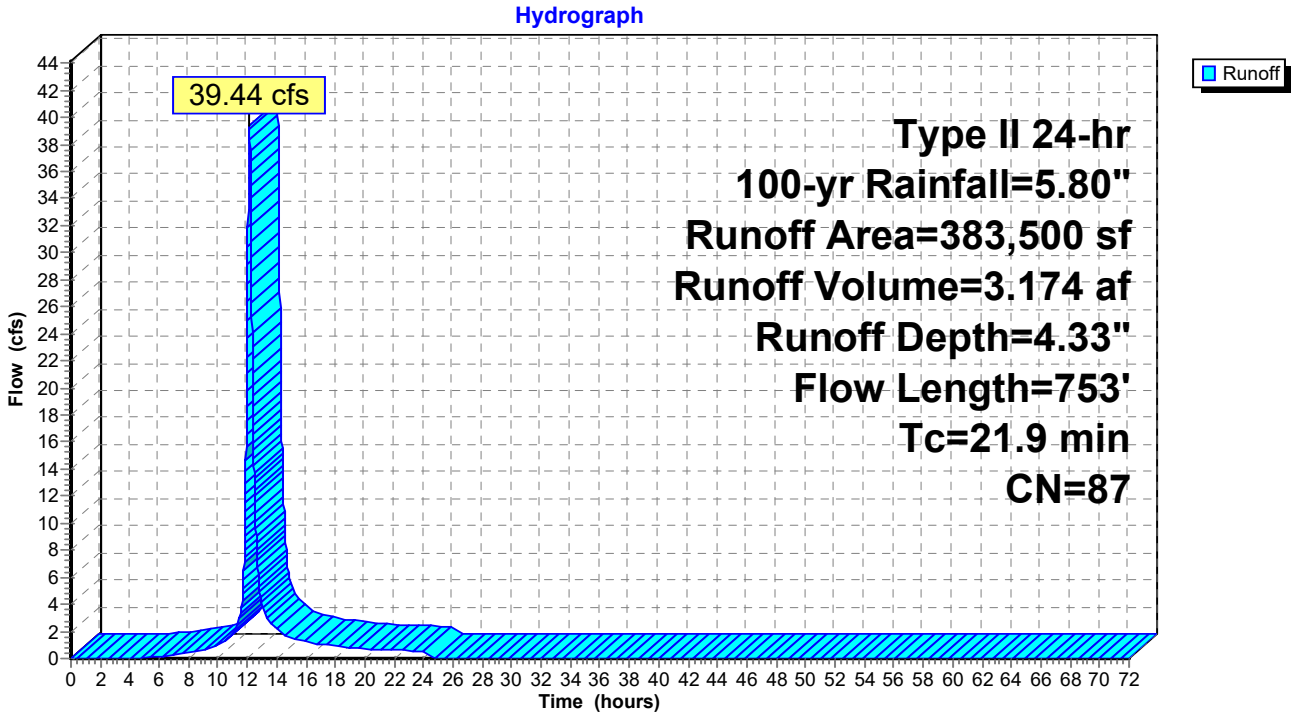
Pond 12P: 200511 Wet Pond



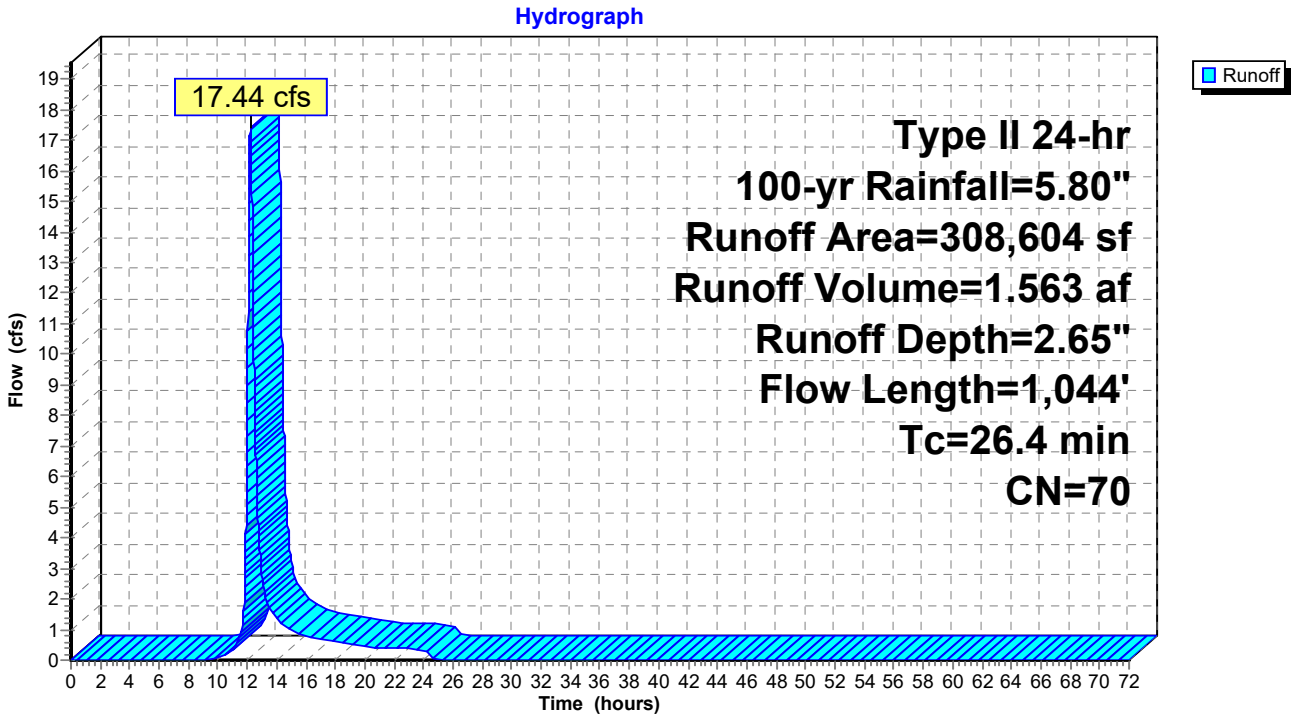
Pond 18P: Sediment Basin



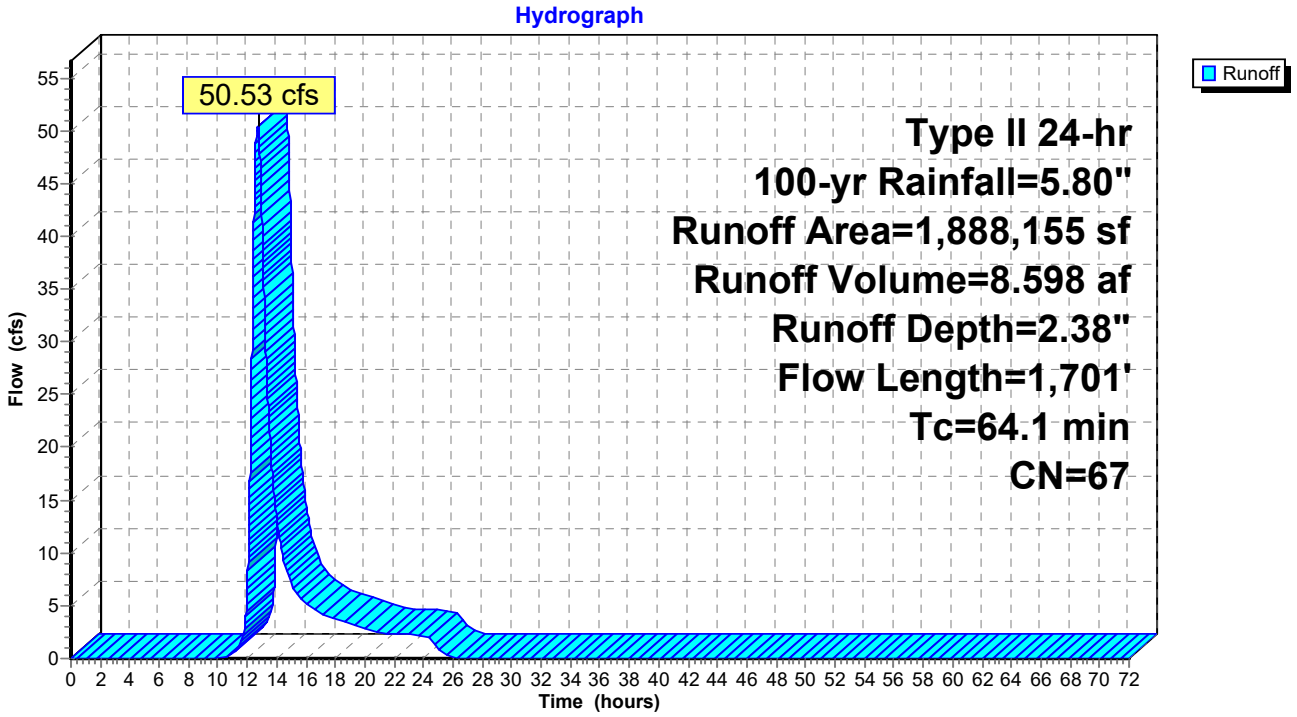
Subcatchment 15S: Stage 2 DA open soils



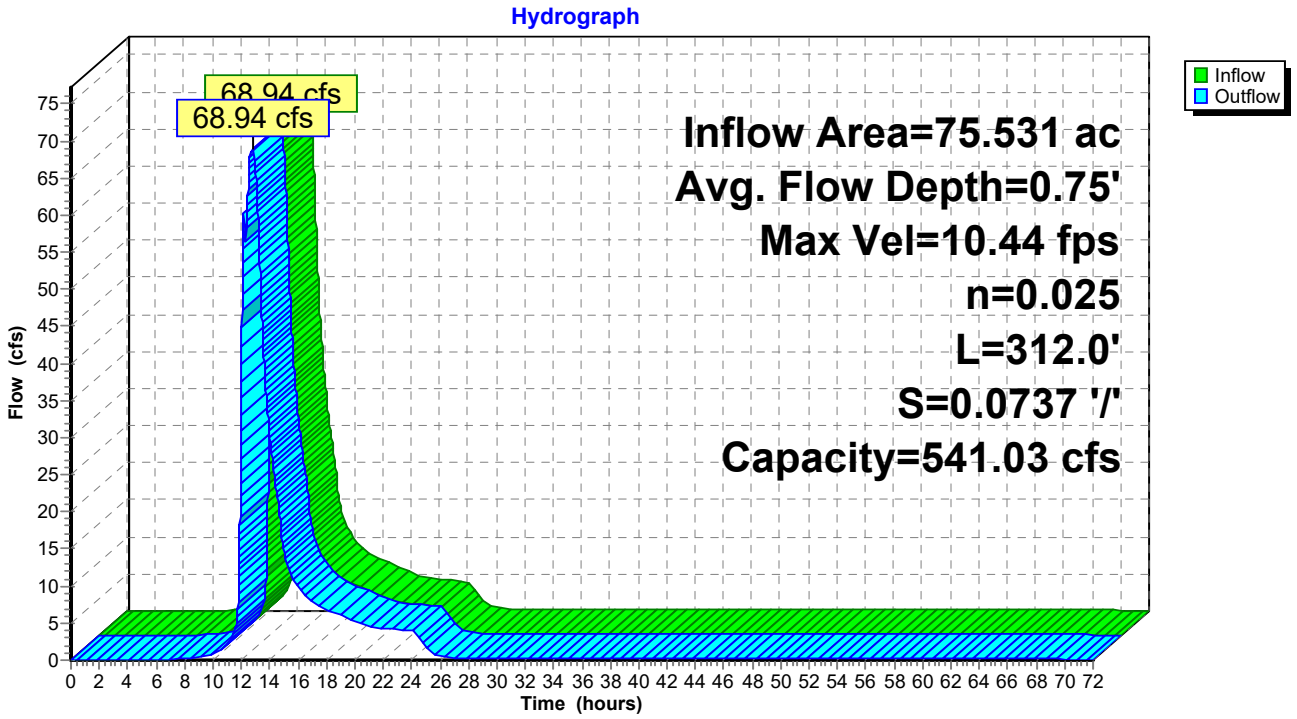
Subcatchment 22S: Stage 3 DA existing



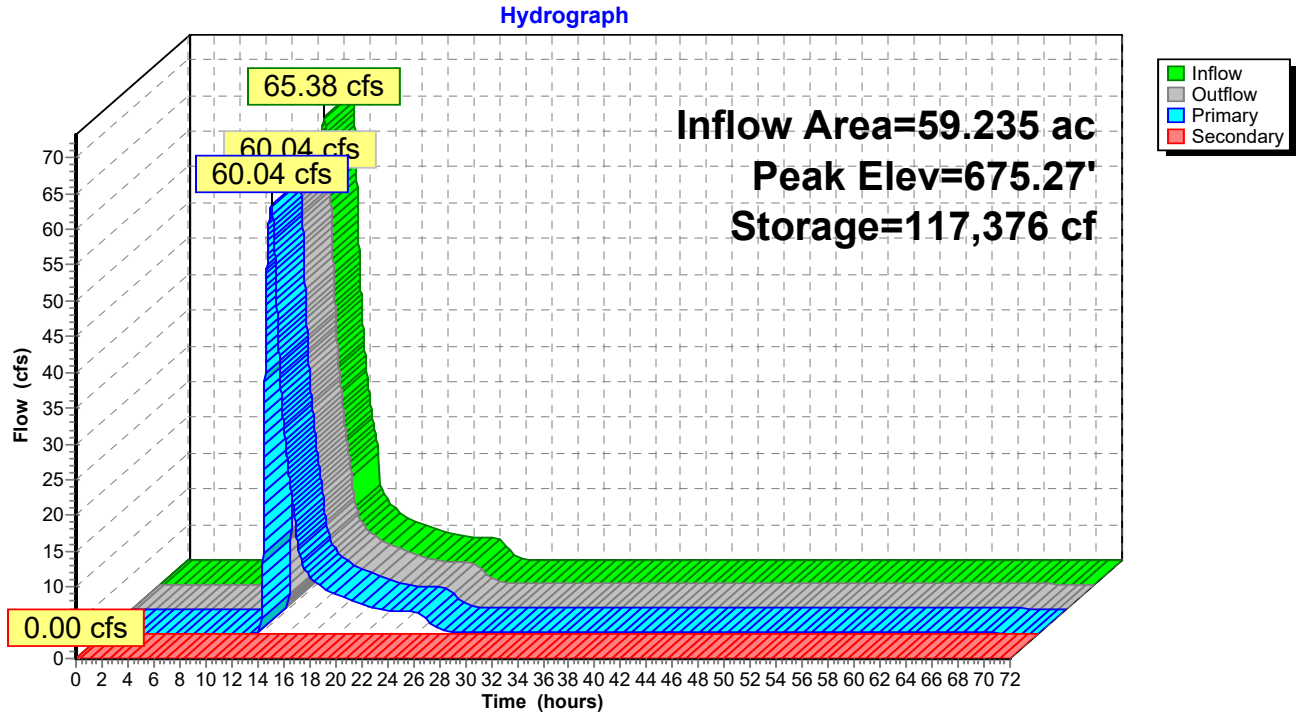
Subcatchment 25S: Stage 1 DA Proposed + Offsite



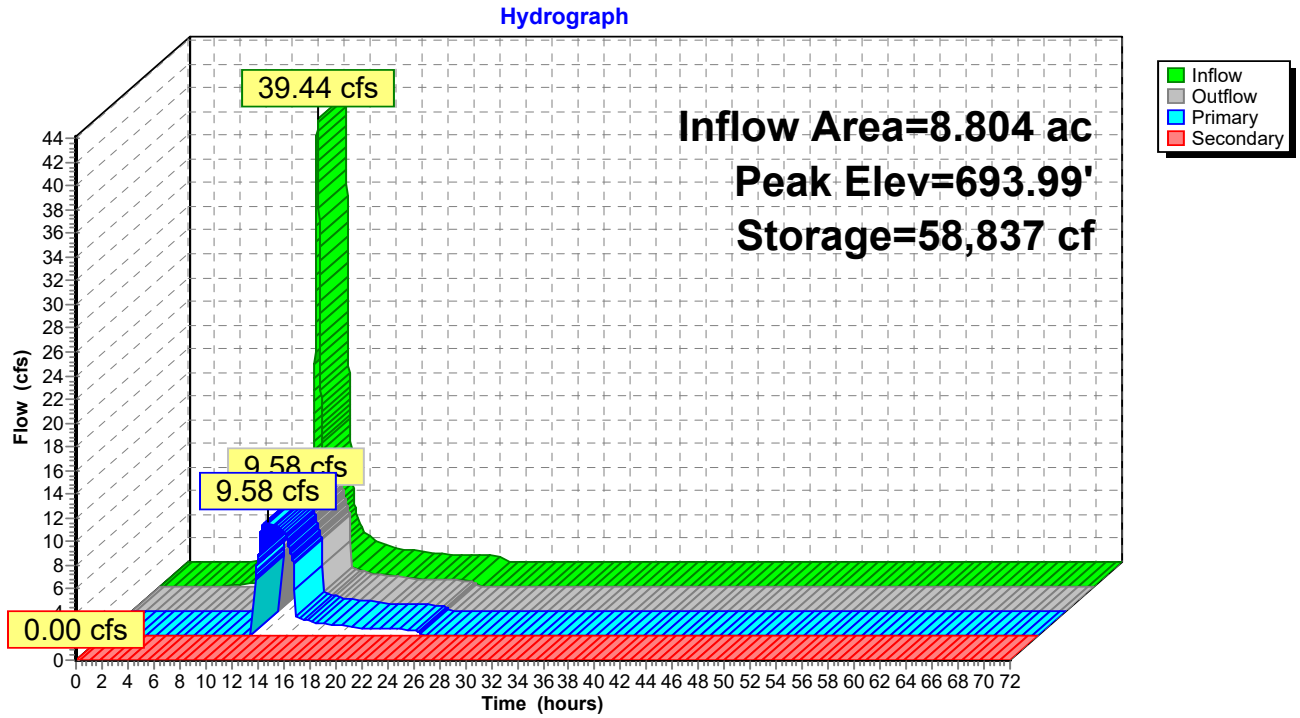
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



Pond 18P: Sediment Basin



TEMPORARY SEDIMENT BASIN DESIGN DATA SHEET

Computed by H. McMillen Date 6-15-20 Checked by RLZ Date _____
Project Hoag Lane Subdivision Basin # 1
Location Stage 3 Total Area draining to basin (≤50 Ac.) 7.295 Acres

BASIN SIZE DESIGN

1. Sediment storage zone volume = 1,000 cu. ft. x number of disturbed acres = 4.16 = 4,160 cu. ft., Top of Zone Elev. 689
2. Dewatering zone volume = 3,600 cu. ft. x number of drainage area acres = 26262 cu. ft., Top of Zone Elev. 694
3. Length to width ratio = 2:1
4. A. Cleanout at 50% of sediment storage zone volume, Elev. 688.26
   B. Distance below top of riser 1.74 feet
5. Minimum surface area is larger of 0.01 $Q_{(10)}$ 0.14 or, 0.015 DA = 0.11 use 0.14 acres

DESIGN OF SPILLWAYS & ELEVATIONS

Runoff

6. $Q_{p(10)}$ = 13.61 cfs (Attach runoff computation sheets)

Pipe Spillway (Q_{ps})

7. Min. pipe spillway cap., Q_{ps} = 0.2 x _____ Drainage Area, acres = _____ cfs
   Note: If there is no emergency spillway, then required $Q_{ps} = Q_{p(10)}$ = _____ cfs.
8. H, head = _____ ft. Barrel length = _____ ft
9. Barrel: Diam. _____ inches; Q_{ps} = (Q) _____ x (cor.fac.) _____ = _____ cfs.
10. Riser: Diam. _____ inches; Length _____ ft.; h = _____ ft. Crest Elev. _____
11. Trash Rack: Diameter = _____ inches; H, height = _____ inches

Design per HydraCAD

Emergency Spillway Design

12. Emergency Spillway Flow, $Q_{es} = Q_p - Q_{ps}$ = _____ - _____ = _____ cfs.
13. Width _____ ft.; H_p _____ ft Crest elevation _____; Design High Water Elev. _____
    Entrance channel slope _____ % ; Top of Dam Elev. _____
    Exit channel slope _____ %

ANTI-SEEP COLLAR/SEEPAGE DIAPHRAGM DESIGN

Collars:

14. y = _____ ft.; z = _____ :1; pipe slope = _____ %, L_s = _____ ft.
    Use _____ collars, _____ - _____ inches square; projection = _____ ft.

→ see 5/27/20 Kerney Geotech report for justification of non-usage

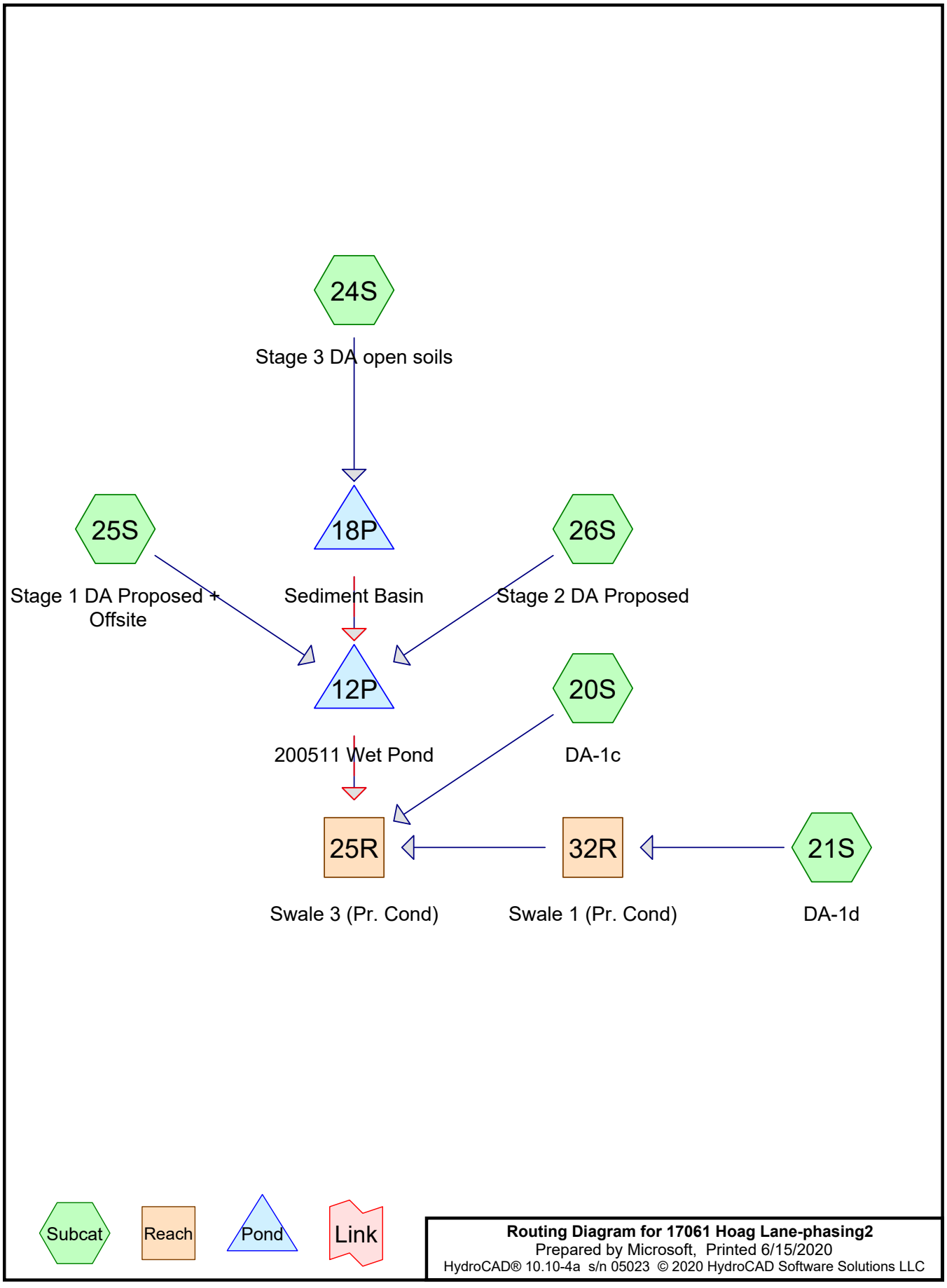
Diaphragms:

_____ width _____ ft. height _____ ft.

DEWATERING ORIFICE SIZING

(Determined from the Dewatering Device Standard)

15. Dewatering orifice diameter = 5.5 inches. Skimmer X or Riser ____ (check one)
16. Design dewatering time 2 days (Min. 2 days required)



Routing Diagram for 17061 Hoag Lane-phasing2
Prepared by Microsoft, Printed 6/15/2020
HydroCAD® 10.10-4a s/n 05023 © 2020 HydroCAD Software Solutions LLC

Summary for Subcatchment 24S: Stage 3 DA open soils

Runoff = 29.21 cfs @ 12.15 hrs, Volume= 2.375 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (ac)	CN	Description
	0.125	55	Woods, Good, HSG B
	2.169	70	Woods, Good, HSG C
	4.160	91	Newly graded area, HSG C
*	0.108	98	Ex House
	0.733	74	>75% Grass cover, Good, HSG C
	7.295	83	Weighted Average
	7.187		98.52% Pervious Area
	0.108		1.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	100	0.0750	0.11		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
3.4	322	0.1000	1.58		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	641	0.0515	2.27		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
22.7	1,063	Total			

Summary for Subcatchment 25S: Stage 1 DA Proposed + Offsite

Runoff = 50.53 cfs @ 12.74 hrs, Volume= 8.598 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

	Area (sf)	CN	Description
	205,473	79	1 acre lots, 20% imp, HSG C
	375,052	65	2 acre lots, 12% imp, HSG B
	609,971	55	Woods, Good, HSG B
	383,981	70	Woods, Good, HSG C
	253,130	79	50-75% Grass cover, Fair, HSG C
*	47,480	98	Proposed Site Impervious
*	13,068	98	Permanent Pool of Wet Pond
	1,888,155	67	Weighted Average
	1,741,506		92.23% Pervious Area
	146,649		7.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
43.3	100	0.0200	0.04		**Sheet Flow,** Woods: Dense underbrush n= 0.800 P2= 2.39"
16.3	1,133	0.0538	1.16		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.5	468	0.0616	1.74		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
64.1	1,701	Total			

Summary for Subcatchment 26S: Stage 2 DA Proposed

Runoff = 25.60 cfs @ 12.19 hrs, Volume= 2.213 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.80"

Area (sf)	CN	Description
43,604	55	Woods, Good, HSG B
65,157	98	Paved parking, HSG C
9,727	70	Woods, Good, HSG C
211,823	79	50-75% Grass cover, Fair, HSG C
330,311	79	Weighted Average
265,154		80.27% Pervious Area
65,157		19.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.0	100	0.0450	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.39"
2.7	234	0.0812	1.42		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.7	641	0.0515	2.27		**Shallow Concentrated Flow,** Nearly Bare & Untilled Kv= 10.0 fps
25.4	975	Total			

Summary for Pond 12P: 200511 Wet Pond

Inflow Area = 58.224 ac, 8.54% Impervious, Inflow Depth = 2.76" for 100-yr event
Inflow = 66.56 cfs @ 12.61 hrs, Volume= 13.404 af
Outflow = 61.29 cfs @ 12.85 hrs, Volume= 13.271 af, Atten= 8%, Lag= 14.4 min
Primary = 61.29 cfs @ 12.85 hrs, Volume= 13.271 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 4
Starting Elev= 671.00' Surf.Area= 13,672 sf Storage= 30,510 cf
Peak Elev= 675.31' @ 12.85 hrs Surf.Area= 30,074 sf Storage= 118,580 cf (88,070 cf above start)

Plug-Flow detention time= 189.8 min calculated for 12.571 af (94% of inflow)
Center-of-Mass det. time= 139.7 min (1,031.6 - 891.9)

Volume	Invert	Avail.Storage	Storage Description
#1	665.00'	159,782 cf	**Pond (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
665.00	622	0	0
666.00	1,412	1,017	1,017
667.00	2,440	1,926	2,943
668.00	4,748	3,594	6,537
669.00	6,541	5,645	12,182
670.00	8,222	7,382	19,563
671.00	13,672	10,947	30,510
672.00	15,804	14,738	45,248
673.00	18,037	16,921	62,169
674.00	24,162	21,100	83,268
675.00	28,220	26,191	109,459
676.00	34,146	31,183	140,642
676.50	42,414	19,140	159,782

Device	Routing	Invert	Outlet Devices
#1	Primary	665.20'	**24.0" Round Outlet Culvert X 2.00** L= 50.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 665.20' / 665.00' S= 0.0040 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Secondary	675.50'	**Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 Width (feet) 15.00 25.00
#3	Device 1	671.00'	**2.0" W x 3.0" H Vert. 2"x3" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	675.45'	**24.0" Horiz. Rims X 2.00** C= 0.600 Limited to weir flow at low heads
#5	Device 1	673.45'	**Rectangular Orifice X 2.00, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.50 1.50 Width (feet) 4.00 4.00 0.00

Primary OutFlow Max=61.30 cfs @ 12.85 hrs HW=675.31' (Free Discharge)
- **1=Outlet Culvert** (Passes 61.30 cfs of 91.33 cfs potential flow)
  - **3=2"x3" Orifice** (Orifice Controls 0.41 cfs @ 9.85 fps)
  - **4=Rims** (Controls 0.00 cfs)
  - **5=Rectangular Orifice** (Orifice Controls 60.89 cfs @ 5.07 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=671.00' (Free Discharge)
- **2=Spillway** (Controls 0.00 cfs)

Summary for Pond 18P: Sediment Basin

Inflow Area =	7.295 ac,	1.48% Impervious,	Inflow Depth =	3.91" for 100-yr event
Inflow =	29.21 cfs @	12.15 hrs,	Volume=	2.375 af
Outflow =	9.04 cfs @	12.53 hrs,	Volume=	2.594 af, Atten= 69%, Lag= 22.4 min
Primary =	9.04 cfs @	12.53 hrs,	Volume=	2.594 af
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 692.90' @ 12.53 hrs Surf.Area= 24,427 sf Storage= 42,510 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 103.3 min (923.2 - 820.0)

Volume	Invert	Avail.Storage	Storage Description
#1	688.00'	18,058 cf	**Sediment Storage Zone (Prismatic)** Listed below (Recalc)
#2	691.00'	57,082 cf	**Dewatering Zone (Prismatic)** Listed below (Recalc)
		75,140 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
688.00	7,846	0	0
689.00	9,013	8,430	8,430
690.00	10,244	9,629	18,058

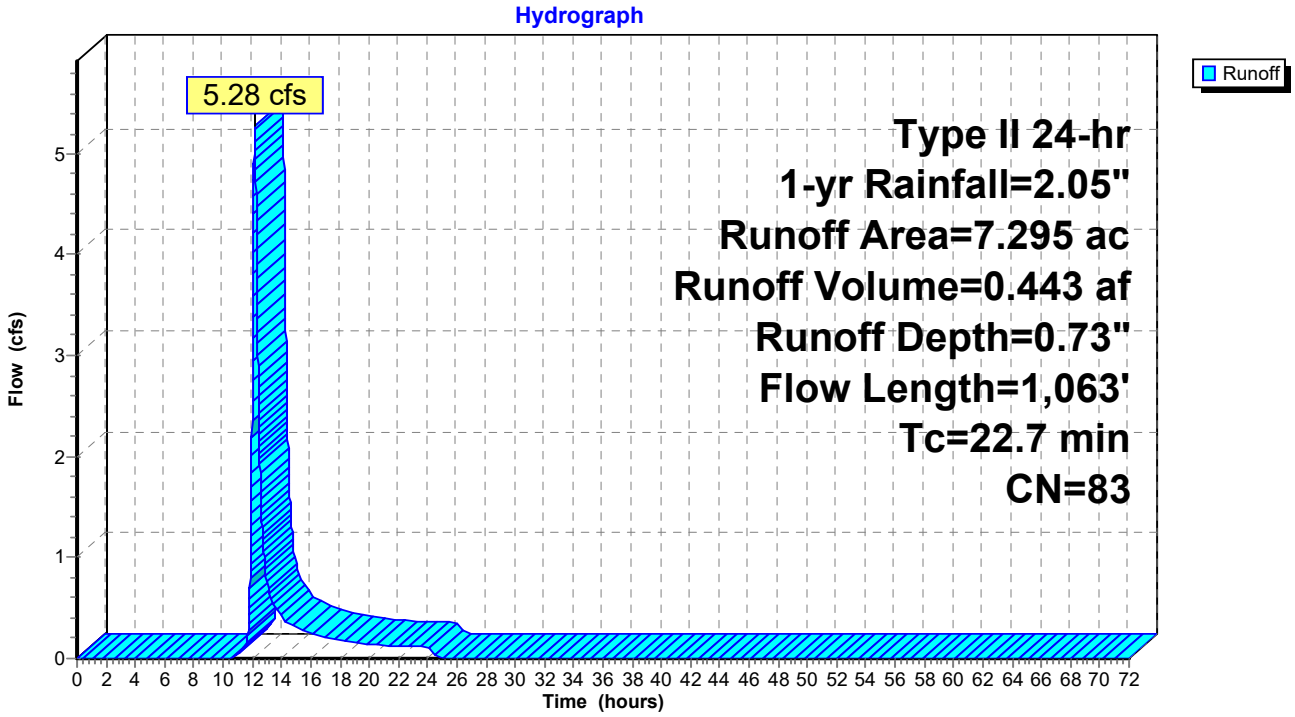
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
691.00	11,539	0	0
692.00	12,898	12,219	12,219
693.00	14,320	13,609	25,828
694.00	15,807	15,064	40,891
695.00	16,575	16,191	57,082

Device	Routing	Invert	Outlet Devices
#1	Primary	684.00'	**12.0" Round Culvert** L= 90.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 684.00' / 683.00' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	690.00'	**15.0" Horiz. Standpipe** C= 0.600 Limited to weir flow at low heads
#3	Secondary	694.00'	**Emergency Spillway, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 1.00 Width (feet) 10.00 15.00

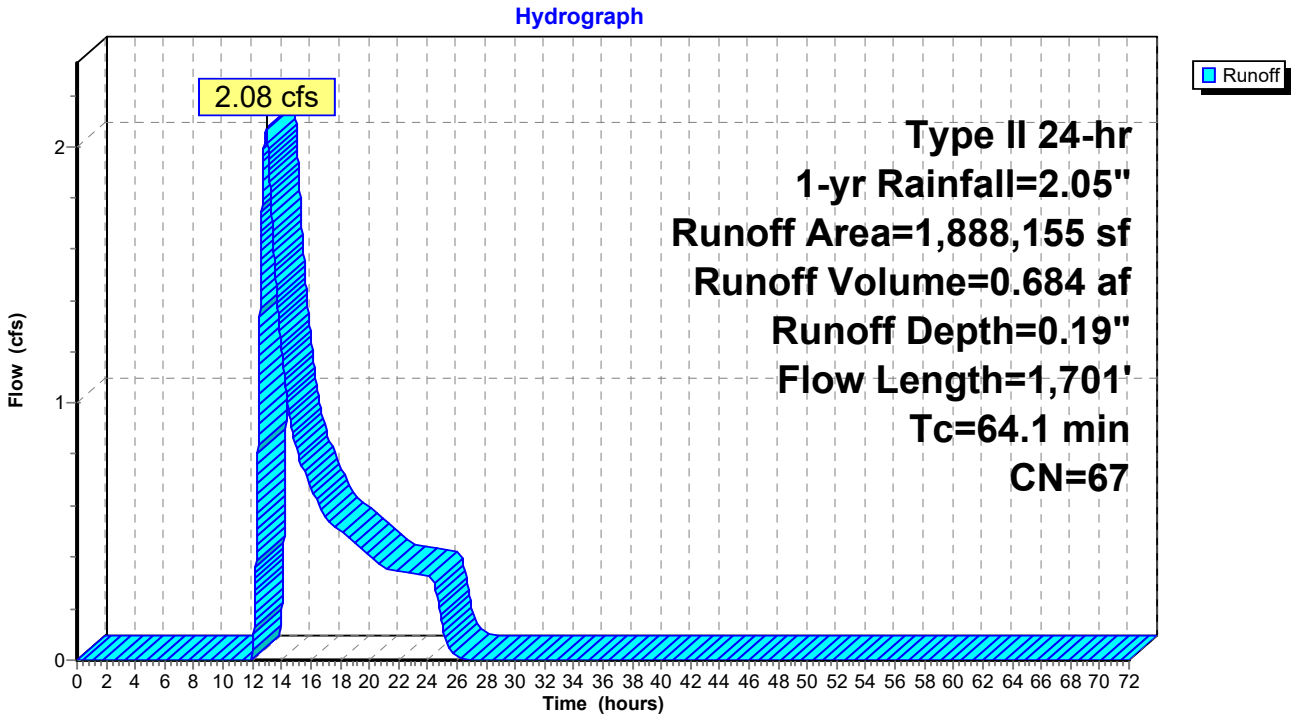
Primary OutFlow Max=9.04 cfs @ 12.53 hrs HW=692.90' (Free Discharge)
└**1=Culvert** (Barrel Controls 9.04 cfs @ 11.51 fps)
└**2=Standpipe** (Passes 9.04 cfs of 10.07 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=688.00' (Free Discharge)
└**3=Emergency Spillway** (Controls 0.00 cfs)

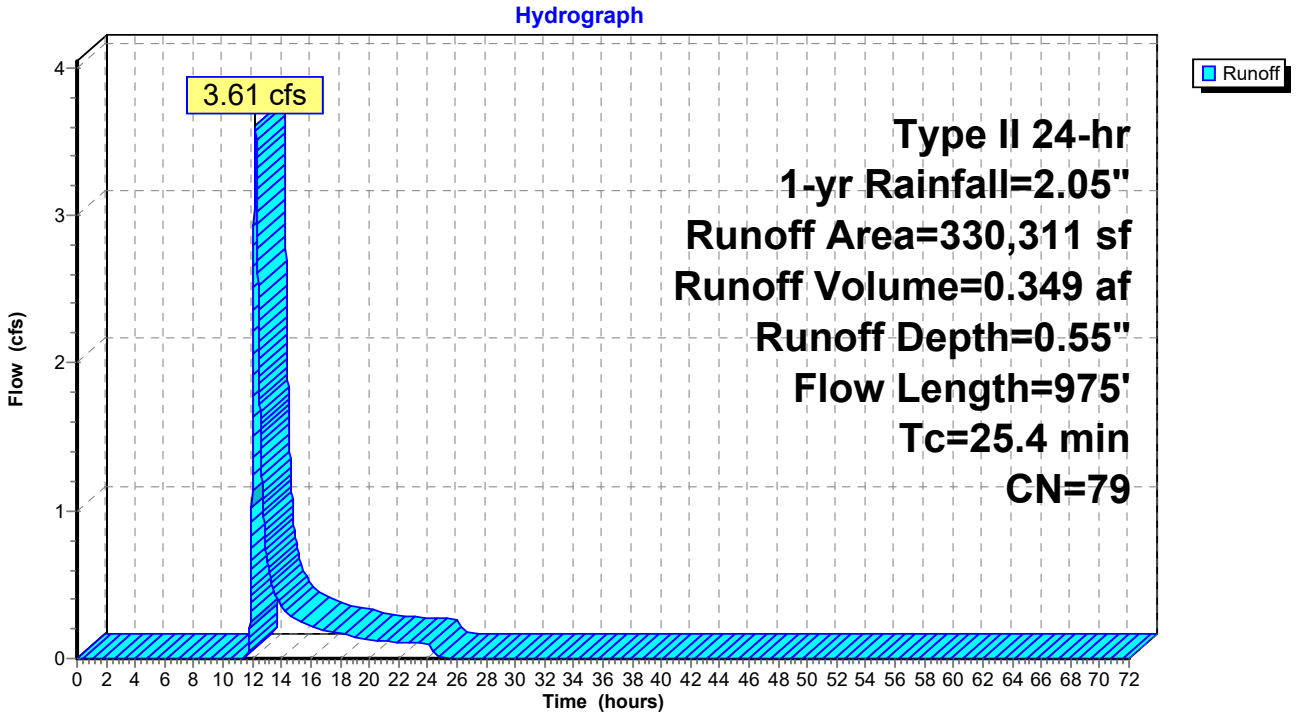
Subcatchment 24S: Stage 3 DA open soils



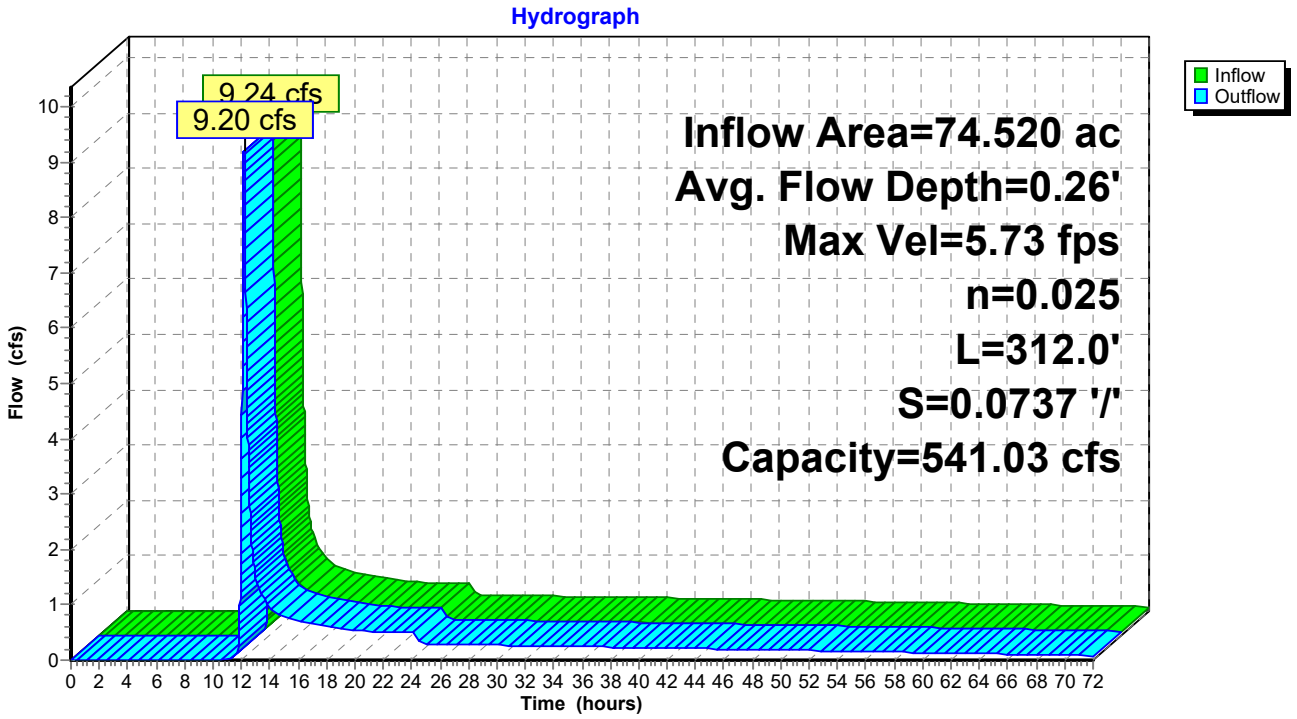
Subcatchment 25S: Stage 1 DA Proposed + Offsite



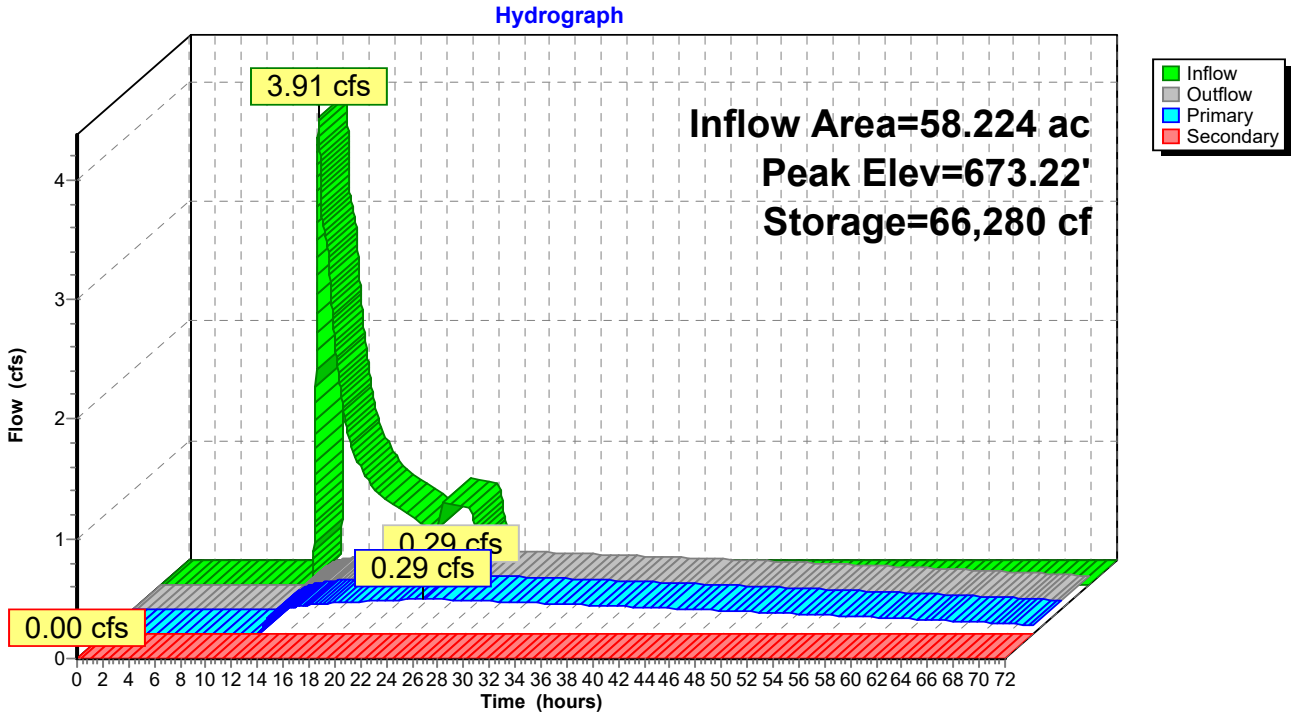
Subcatchment 26S: Stage 2 DA Proposed



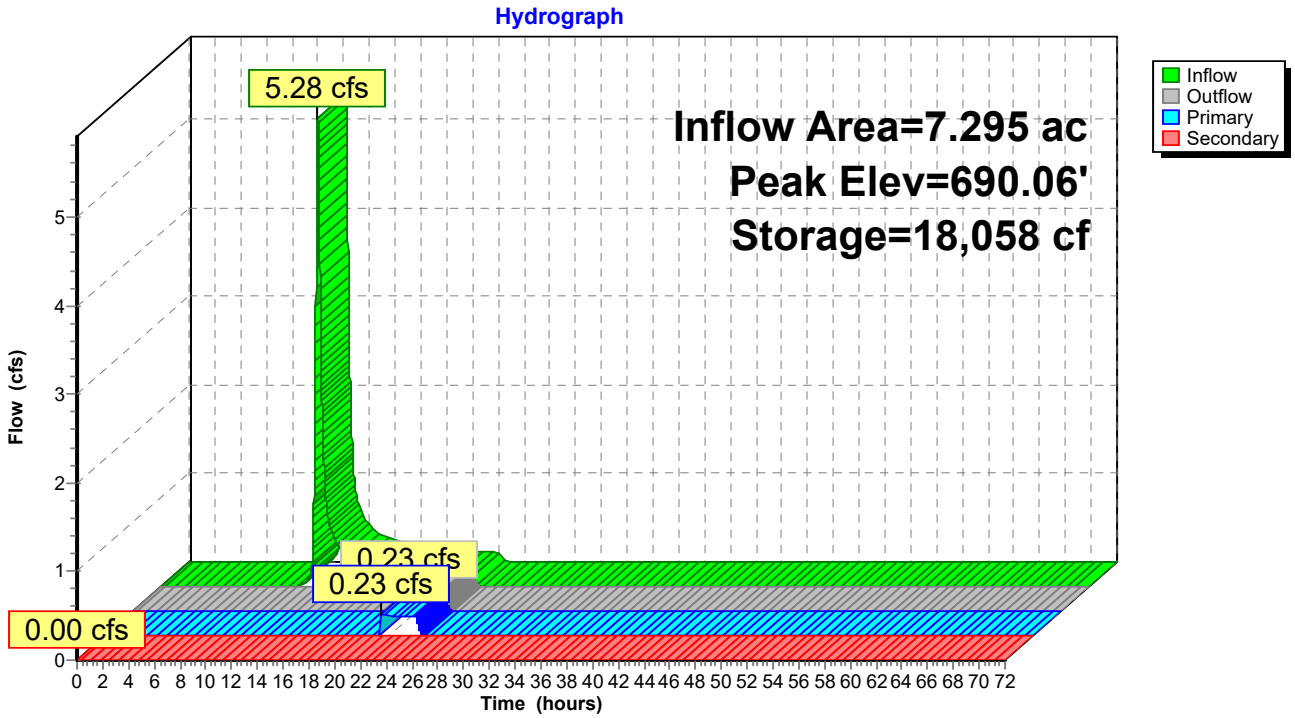
Reach 25R: Swale 3 (Pr. Cond)



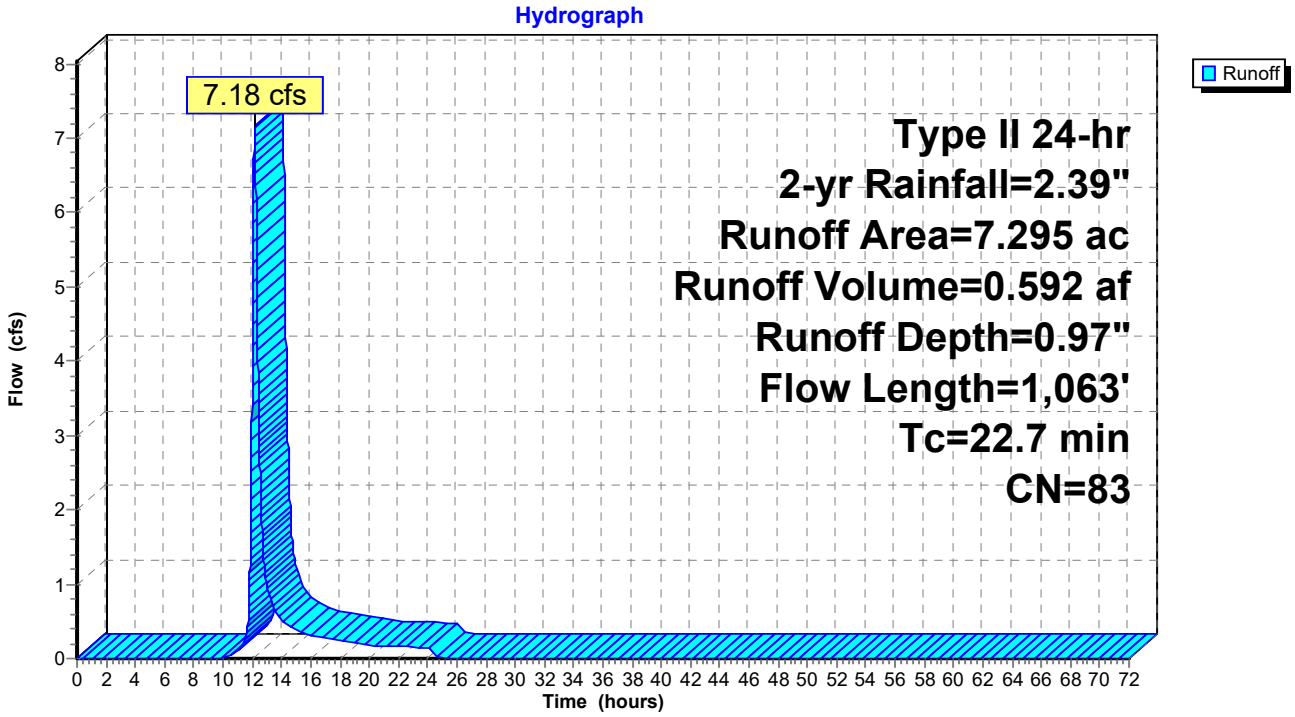
Pond 12P: 200511 Wet Pond



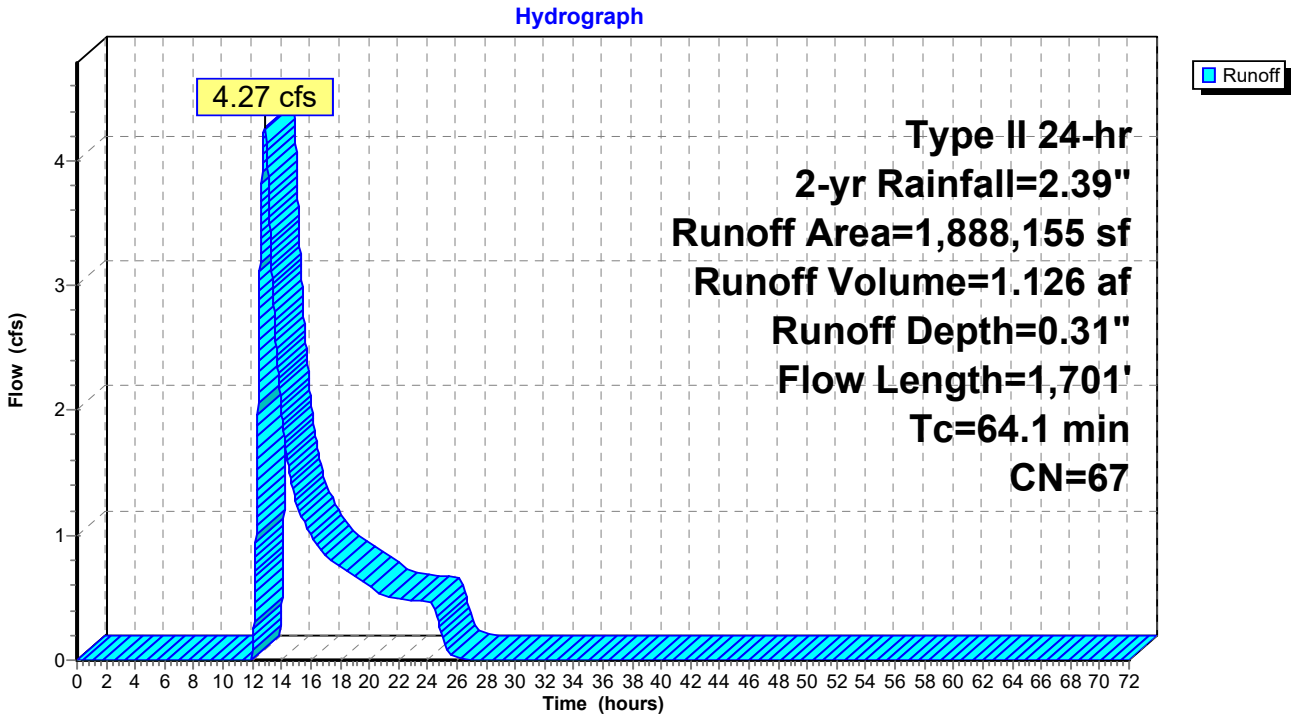
Pond 18P: Sediment Basin



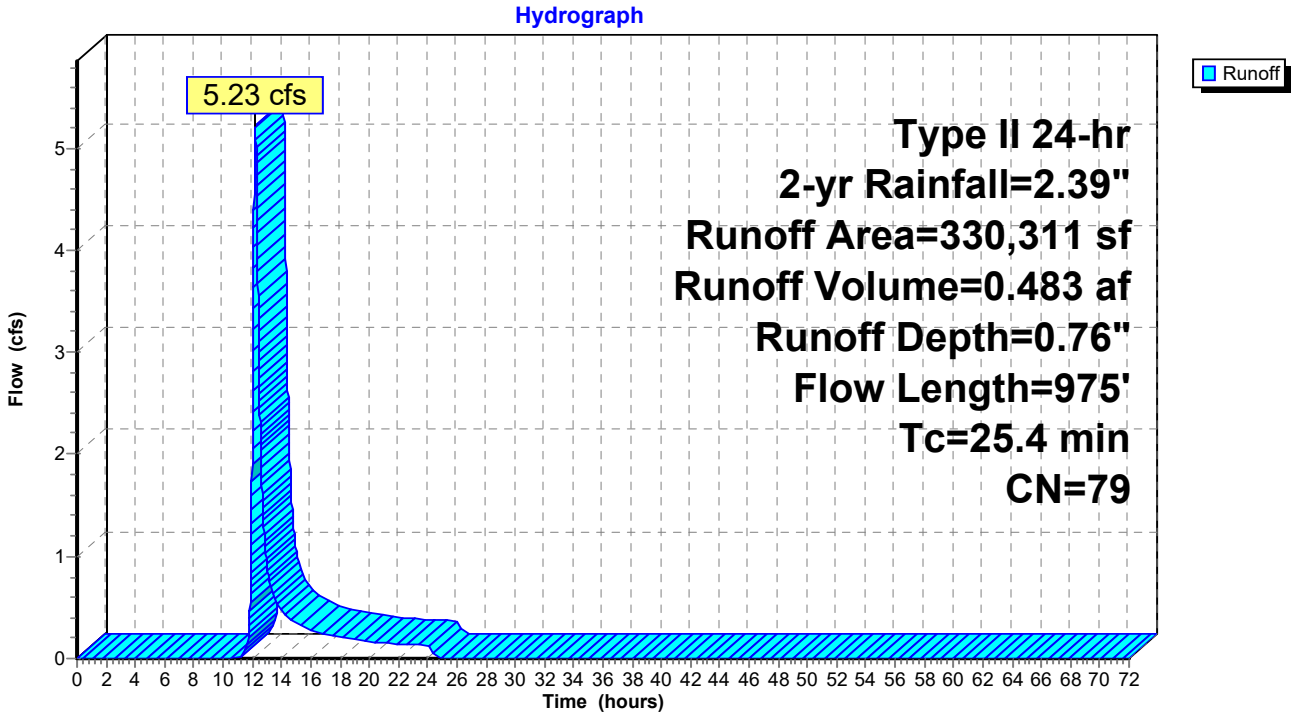
Subcatchment 24S: Stage 3 DA open soils



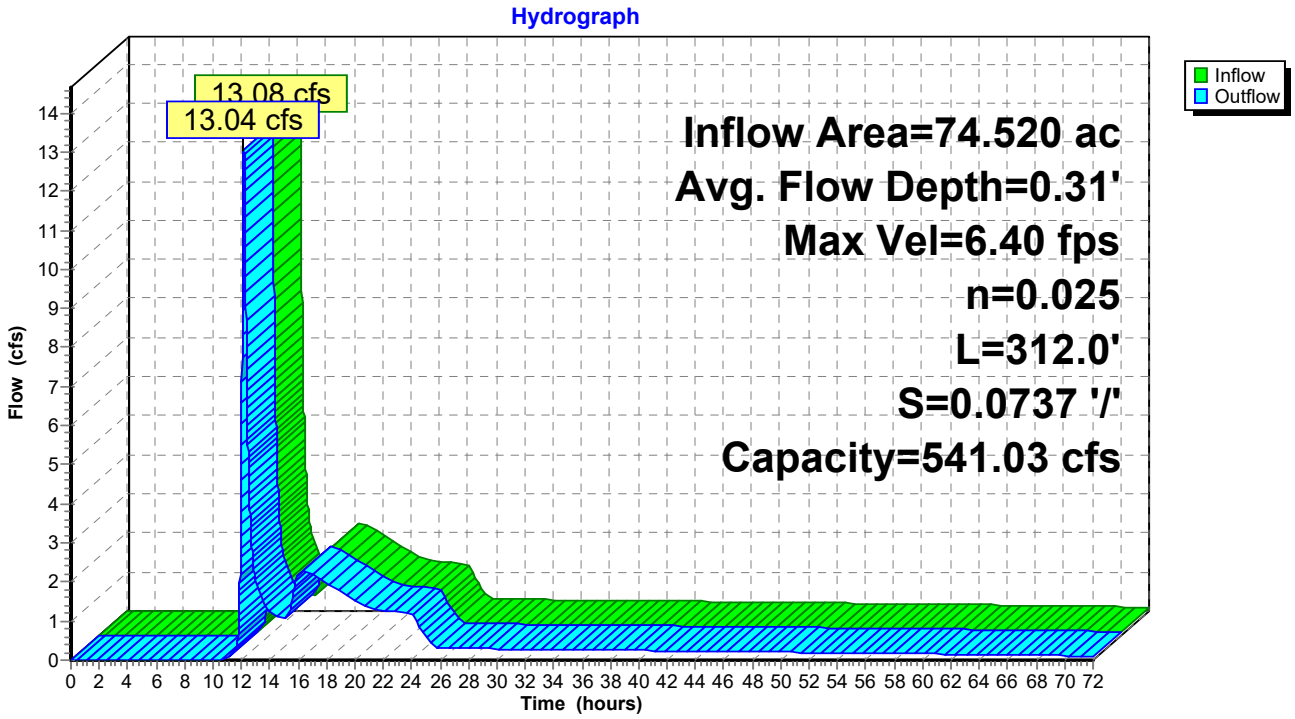
Subcatchment 25S: Stage 1 DA Proposed + Offsite



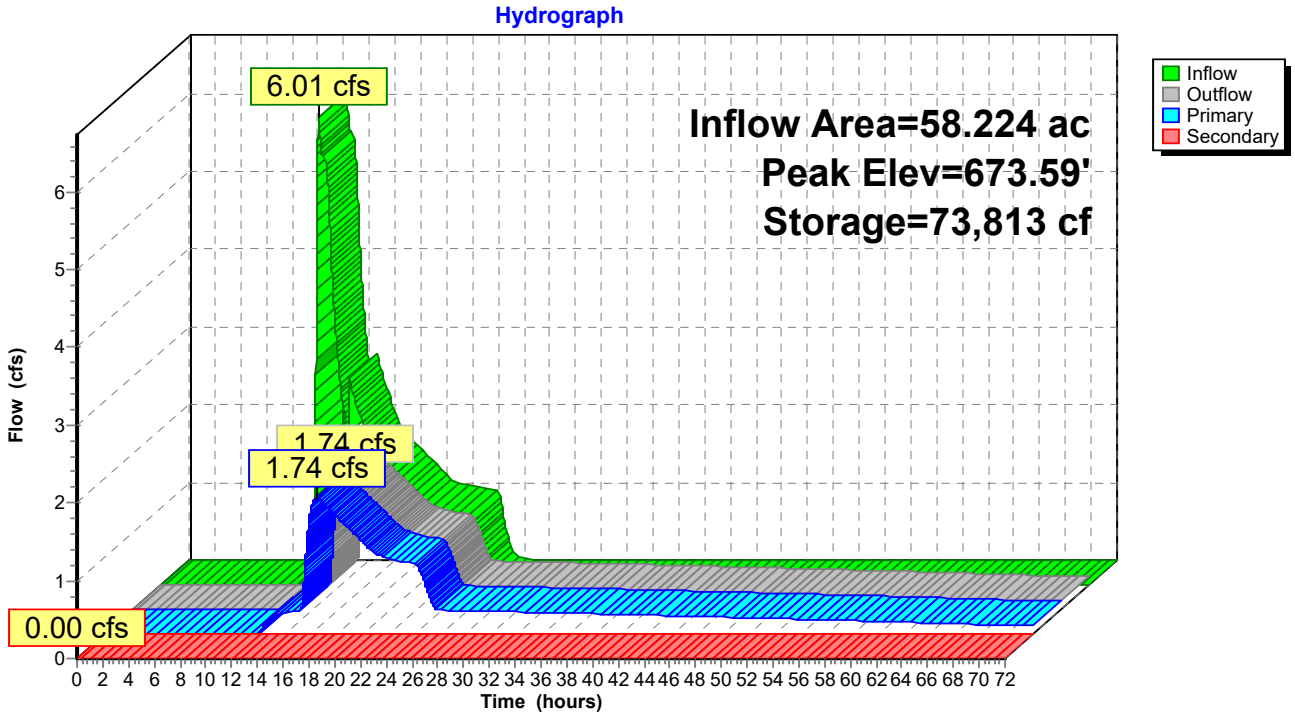
Subcatchment 26S: Stage 2 DA Proposed



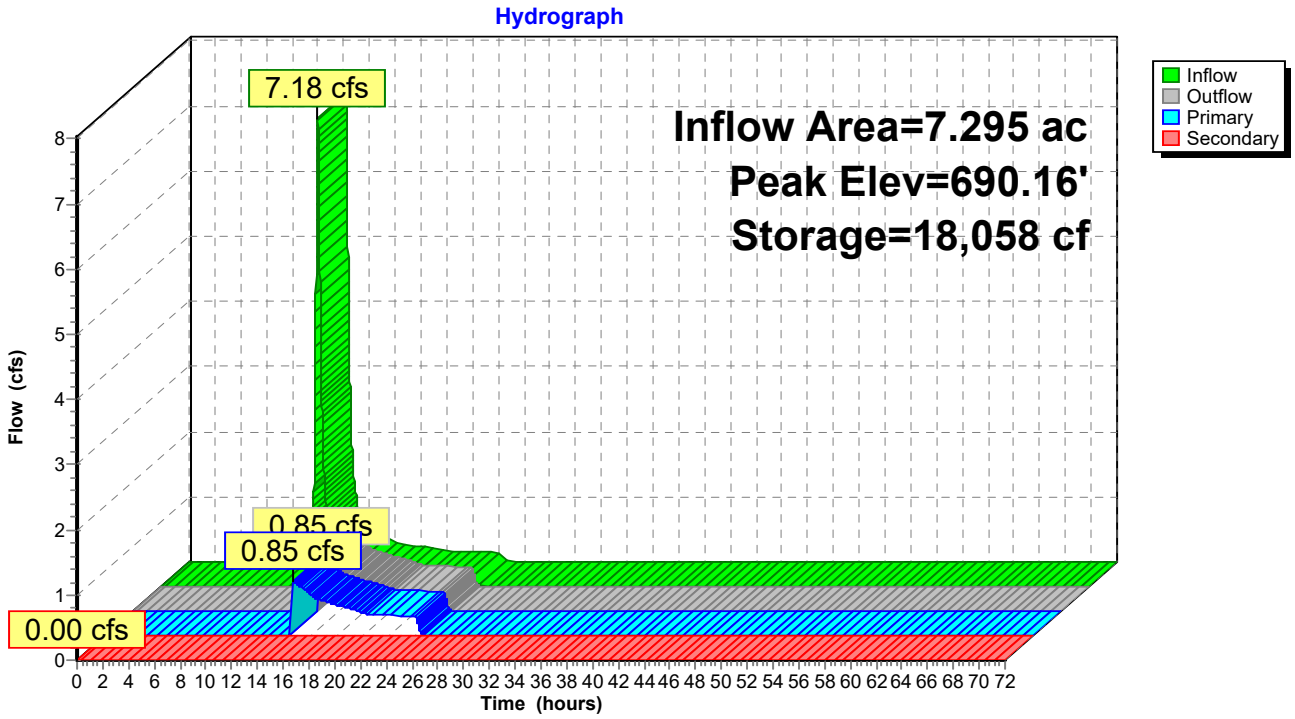
Reach 25R: Swale 3 (Pr. Cond)



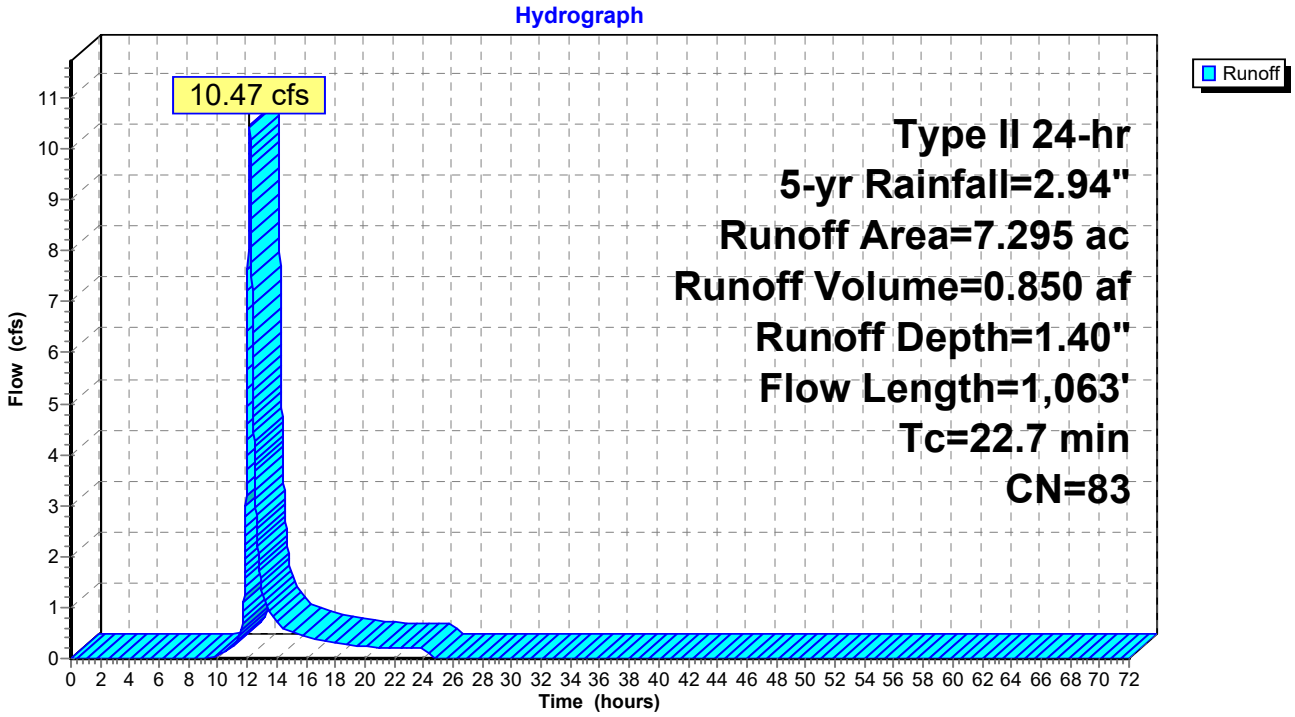
Pond 12P: 200511 Wet Pond



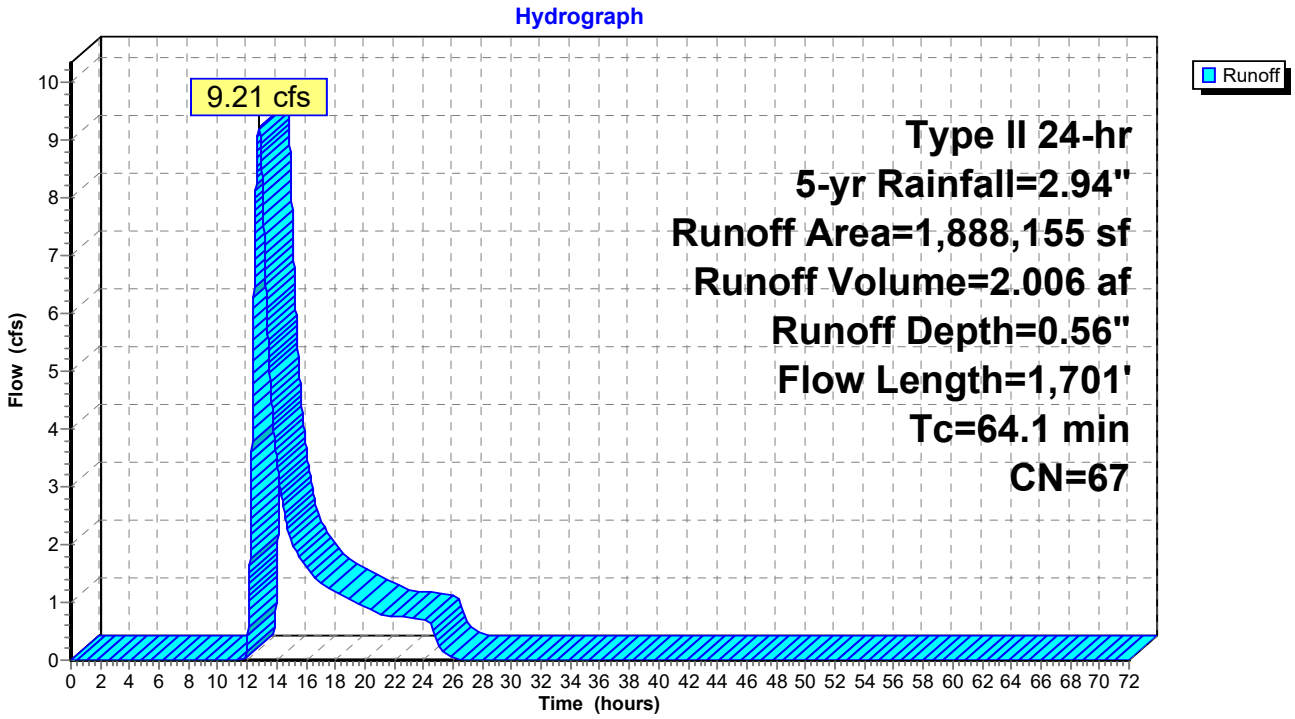
Pond 18P: Sediment Basin



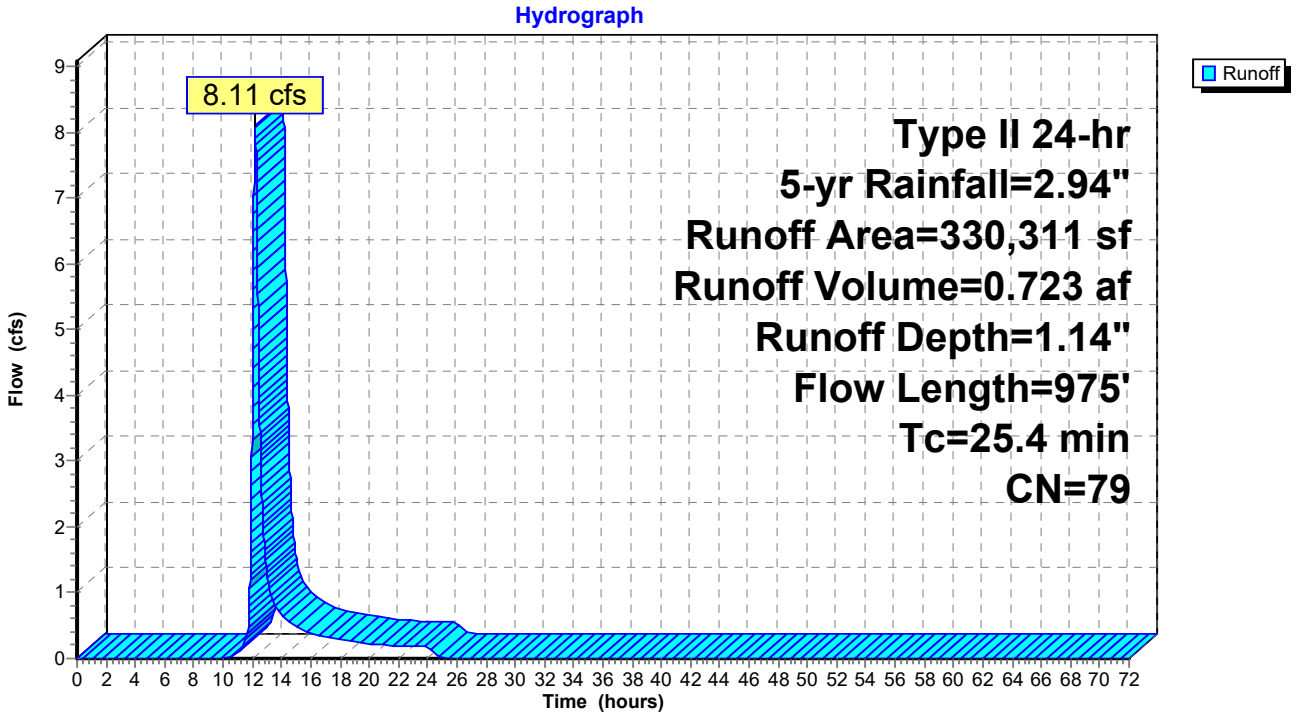
Subcatchment 24S: Stage 3 DA open soils



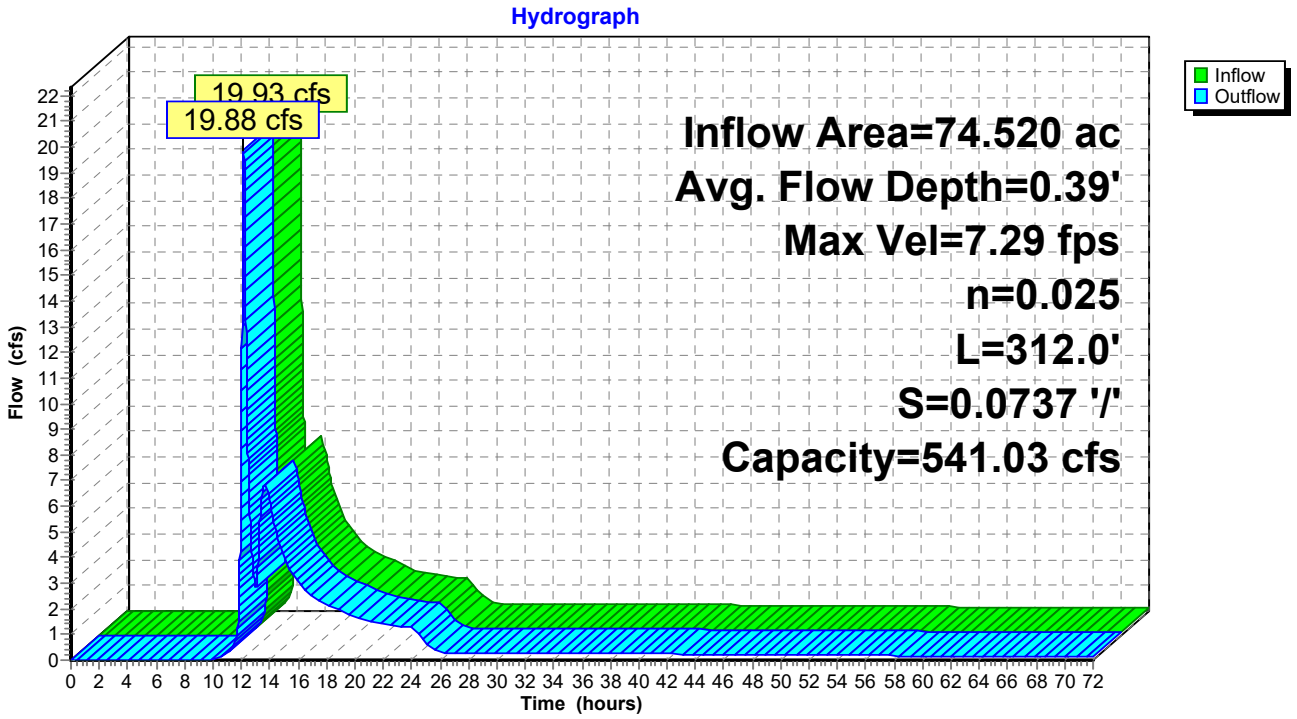
Subcatchment 25S: Stage 1 DA Proposed + Offsite



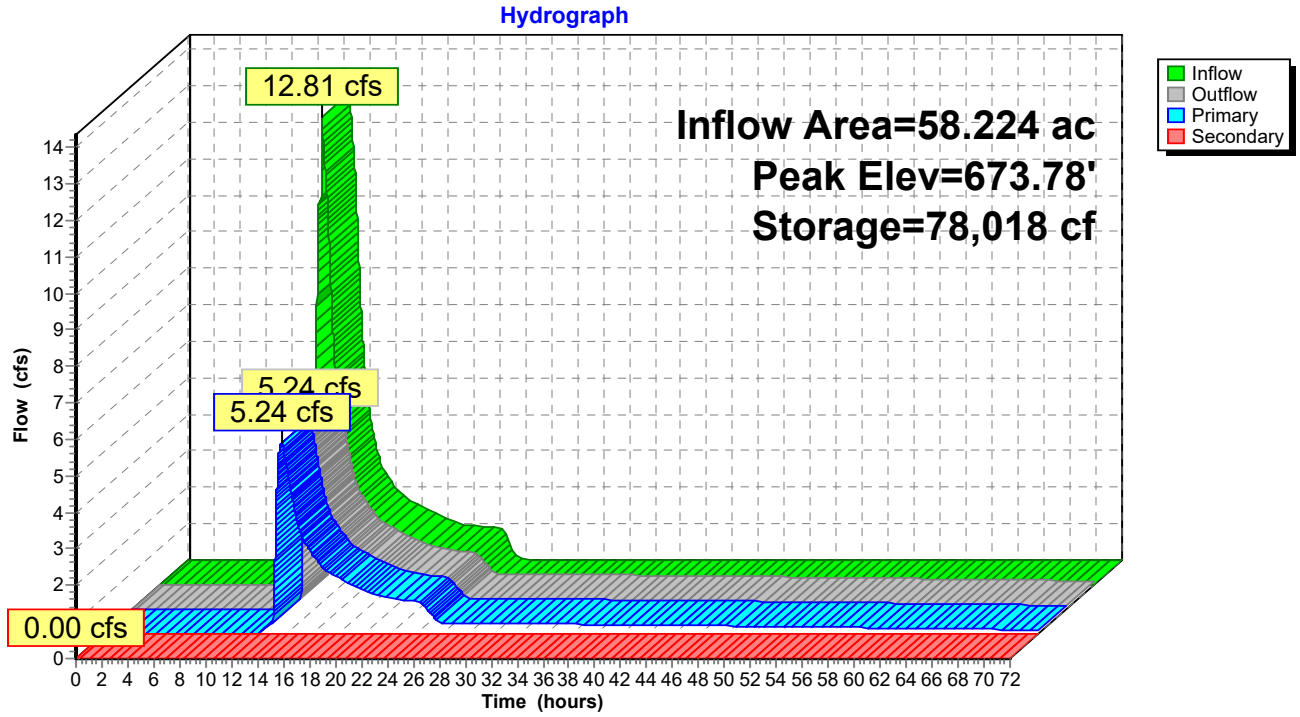
Subcatchment 26S: Stage 2 DA Proposed



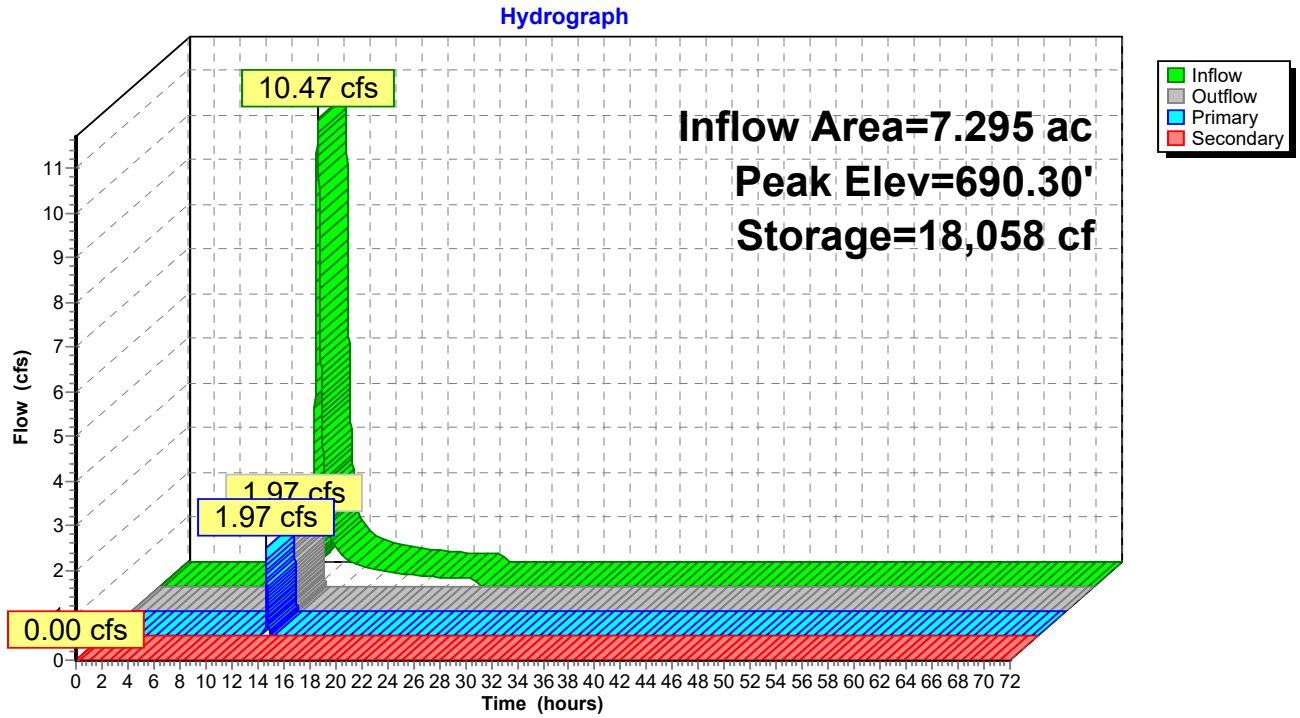
Reach 25R: Swale 3 (Pr. Cond)



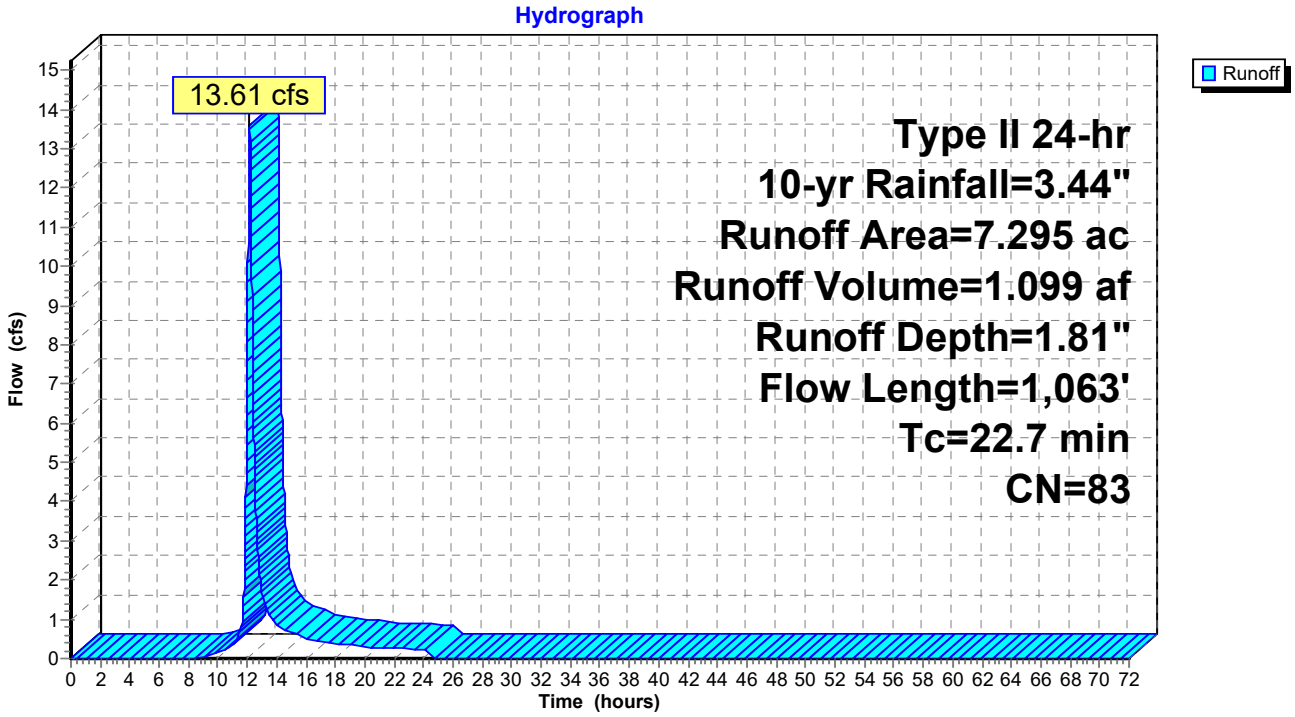
Pond 12P: 200511 Wet Pond



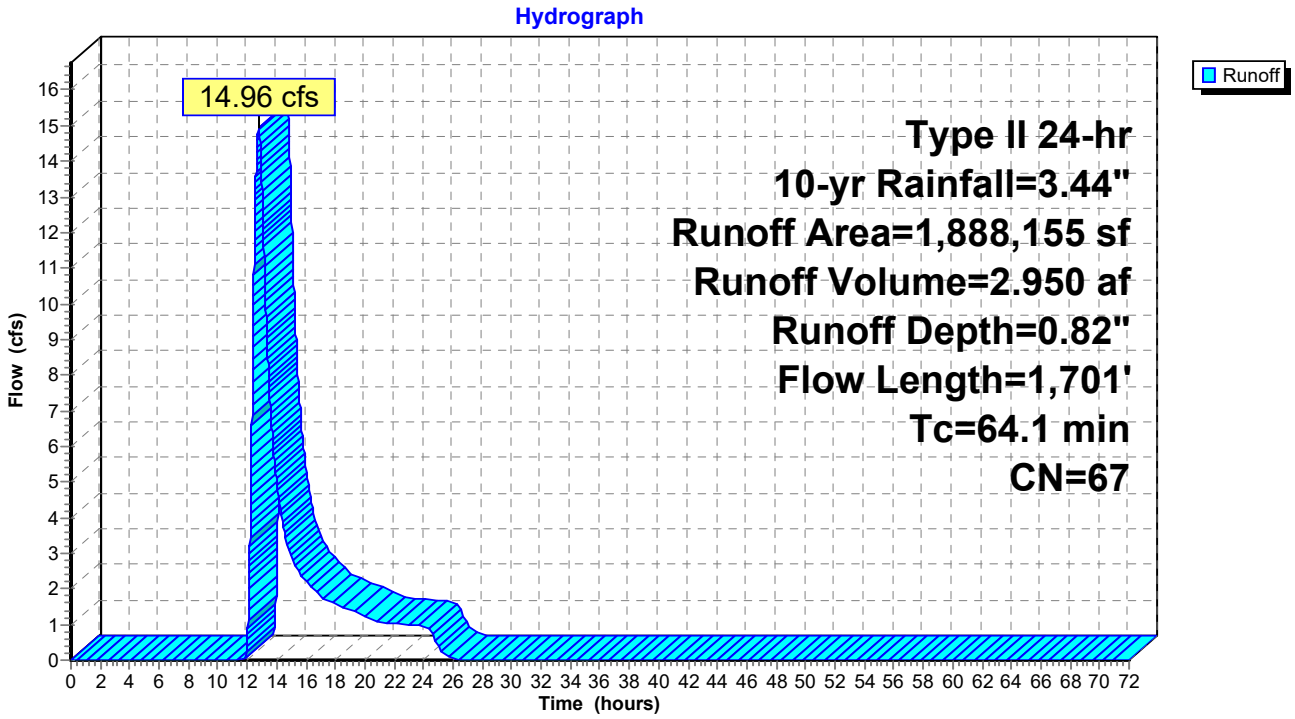
Pond 18P: Sediment Basin



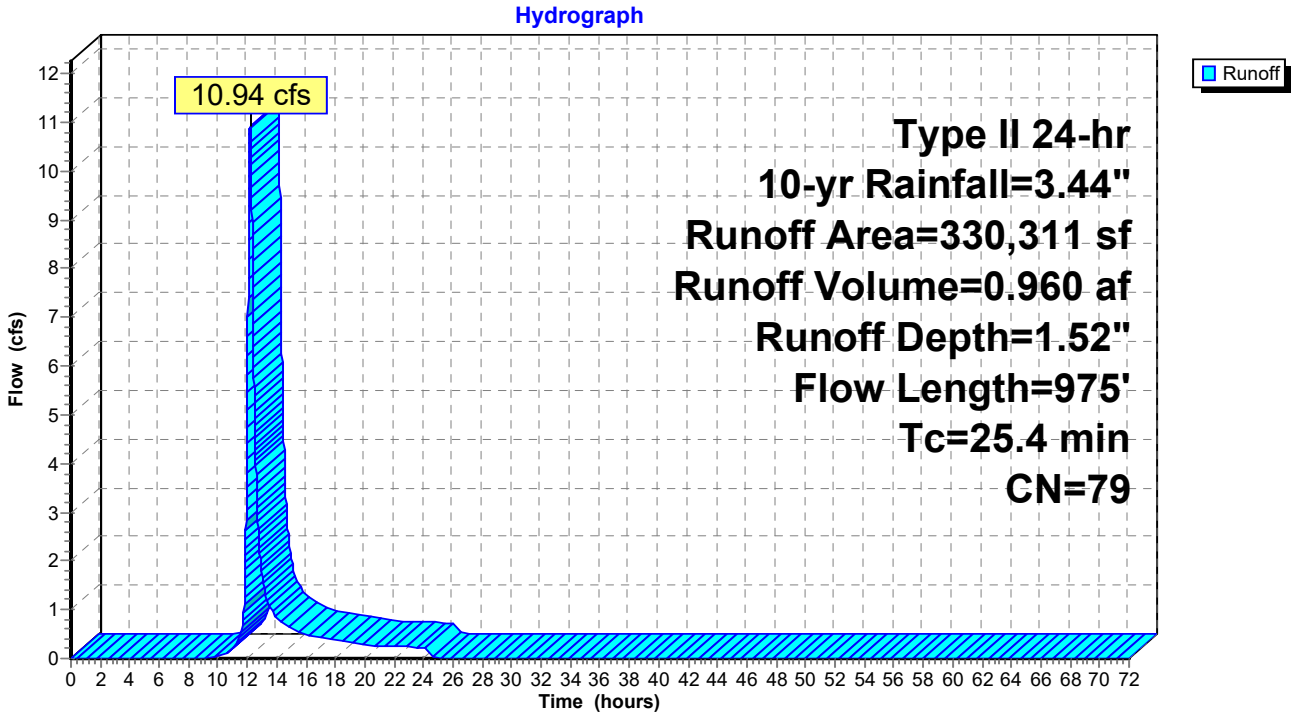
Subcatchment 24S: Stage 3 DA open soils



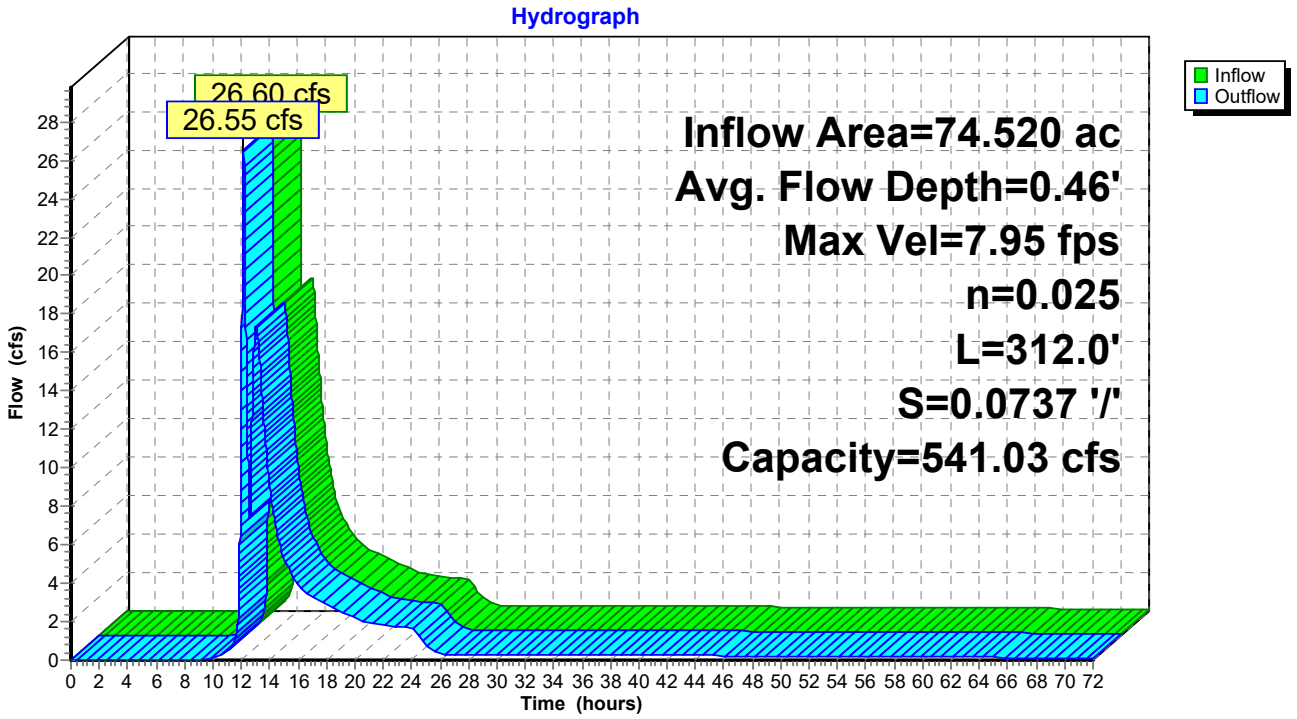
Subcatchment 25S: Stage 1 DA Proposed + Offsite



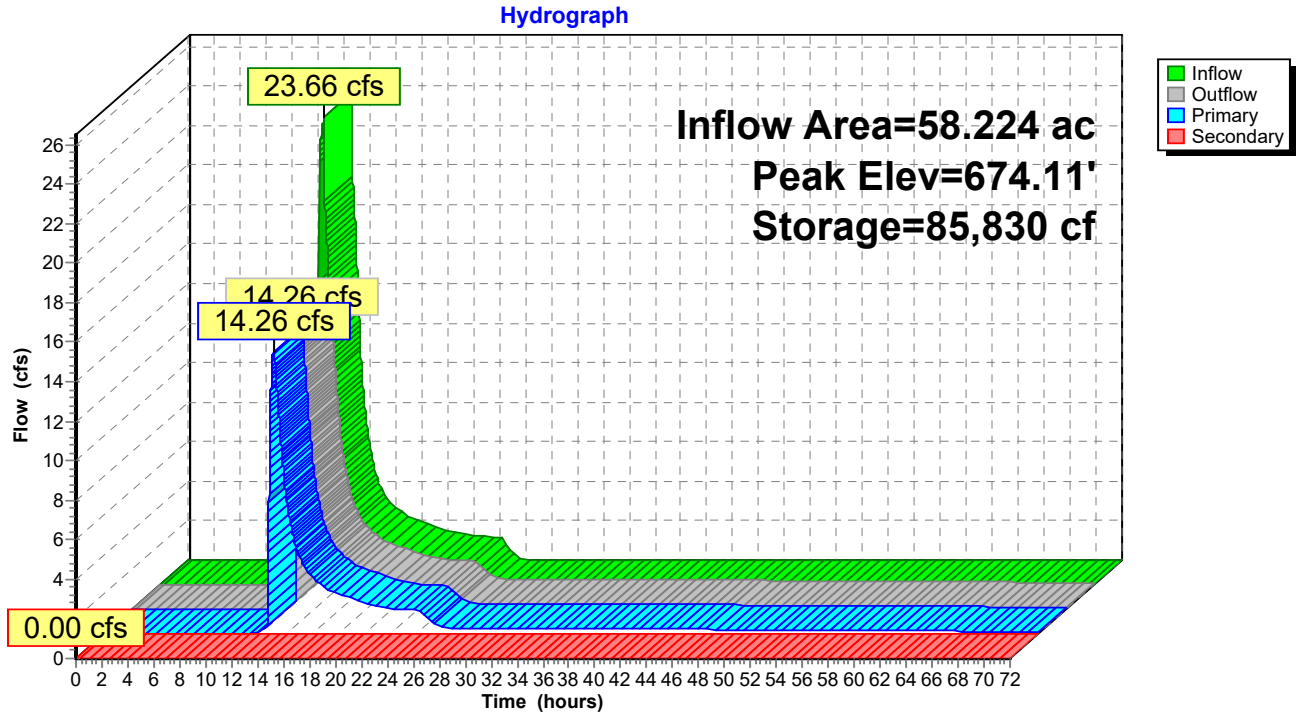
Subcatchment 26S: Stage 2 DA Proposed



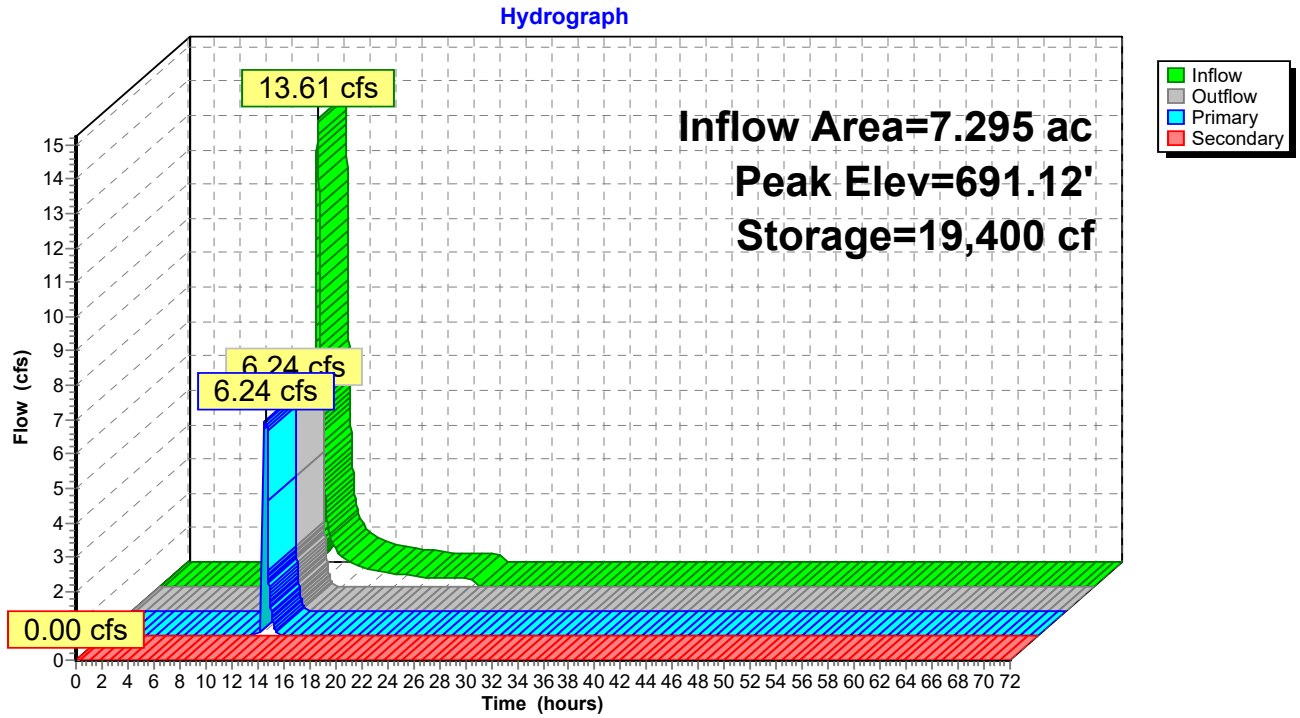
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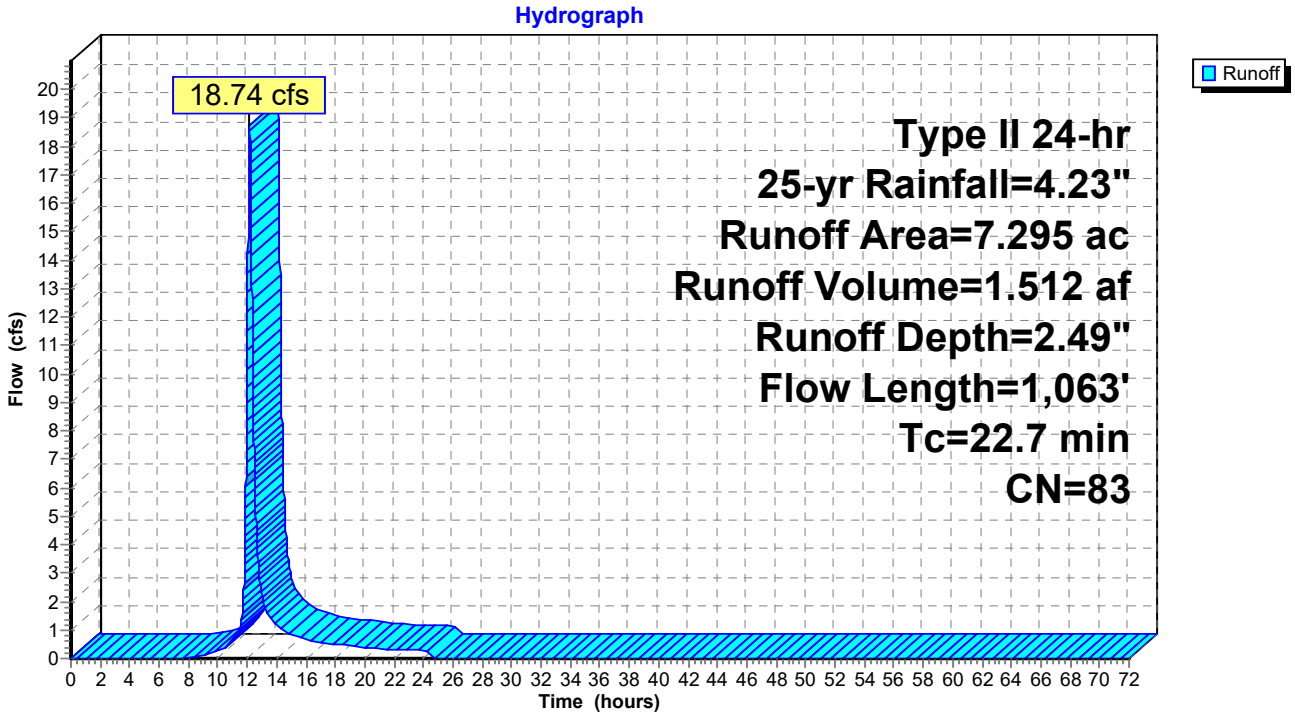
Pond 12P: 200511 Wet Pond



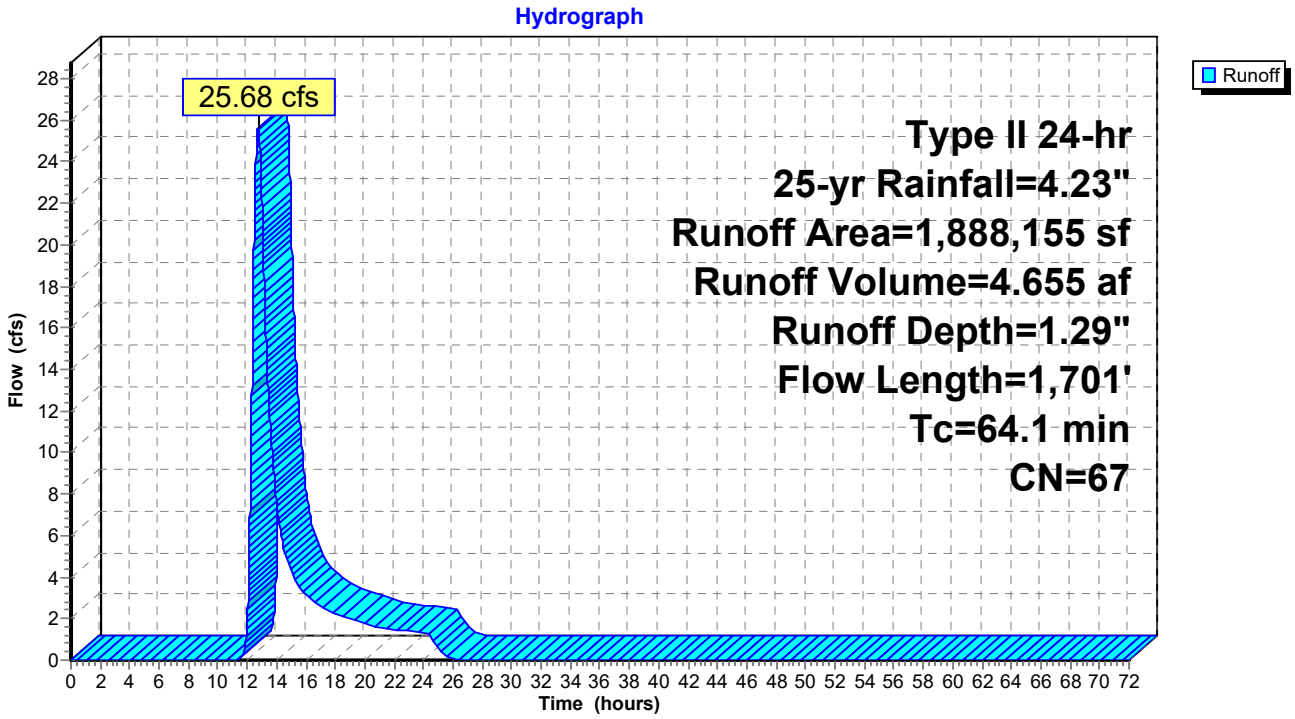
Pond 18P: Sediment Basin



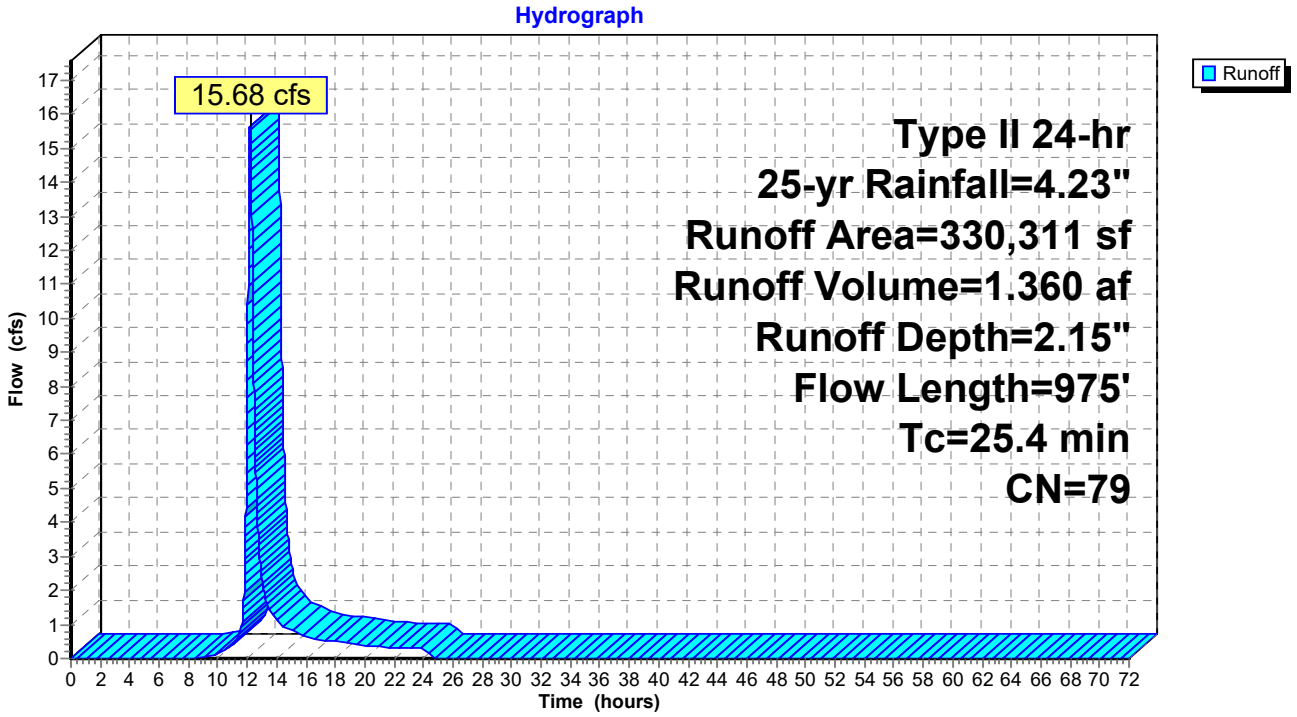
Subcatchment 24S: Stage 3 DA open soils



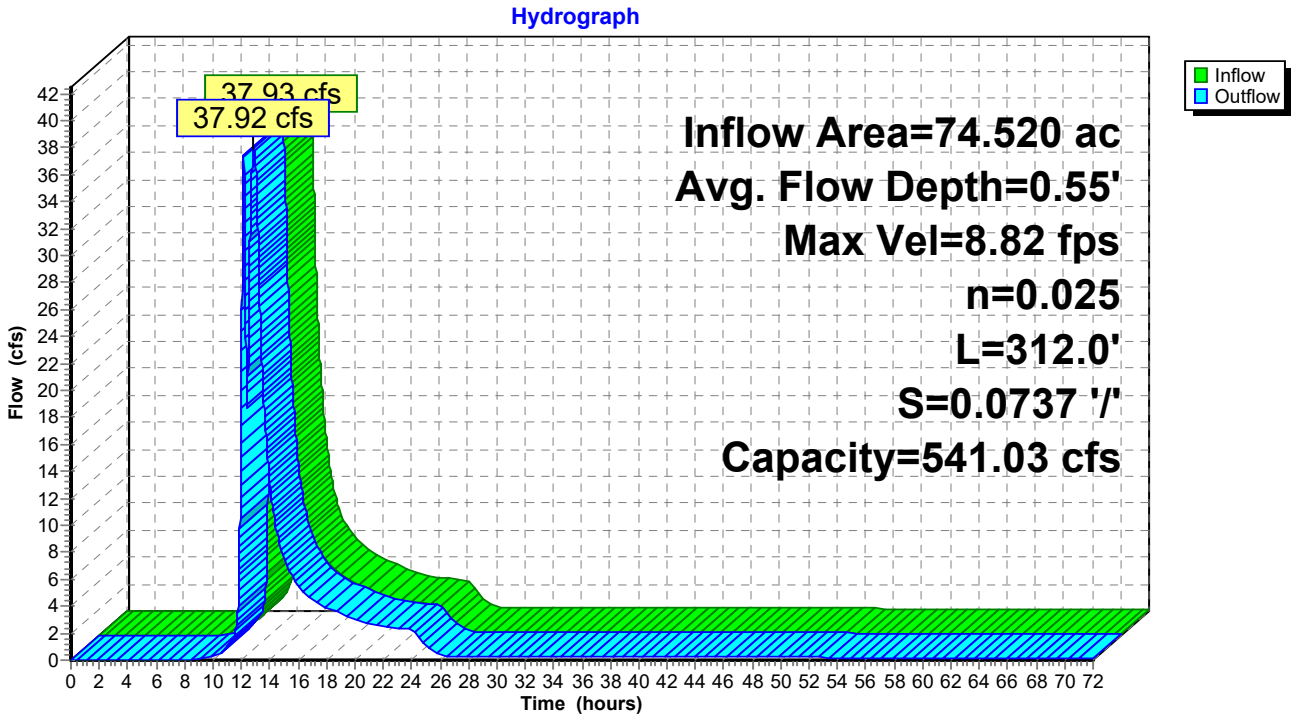
Subcatchment 25S: Stage 1 DA Proposed + Offsite



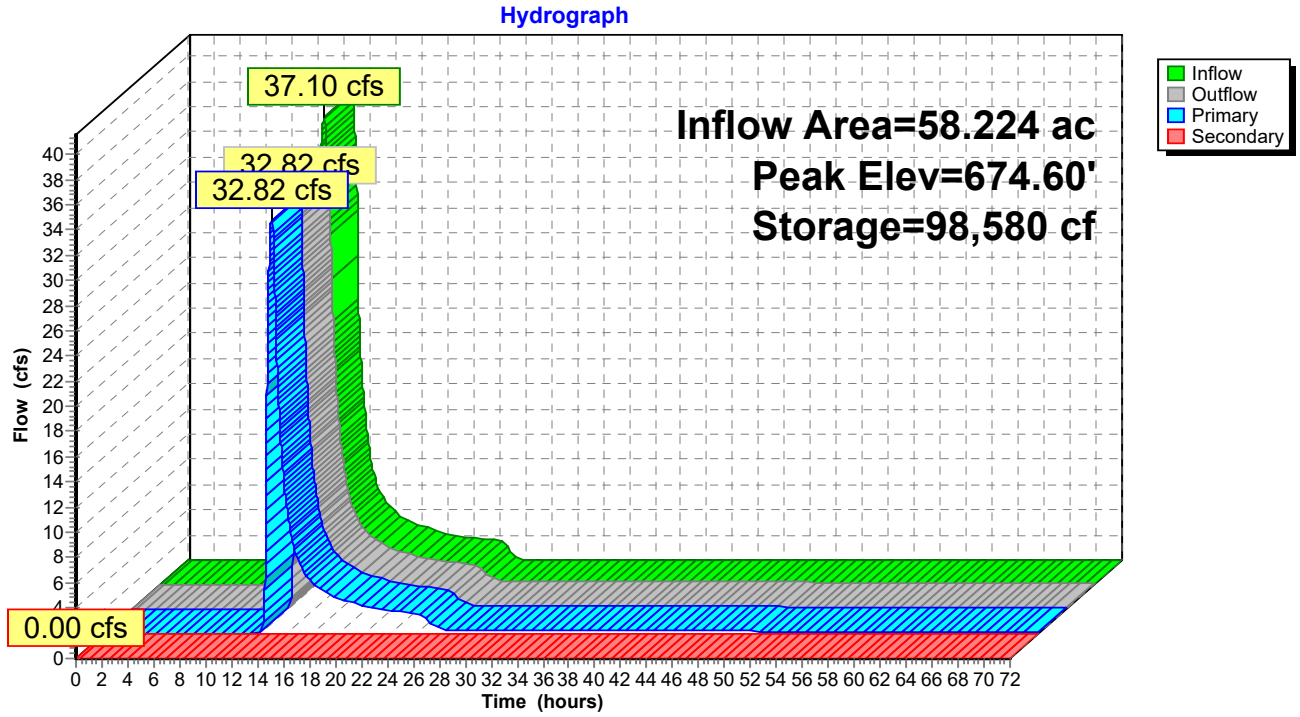
Subcatchment 26S: Stage 2 DA Proposed



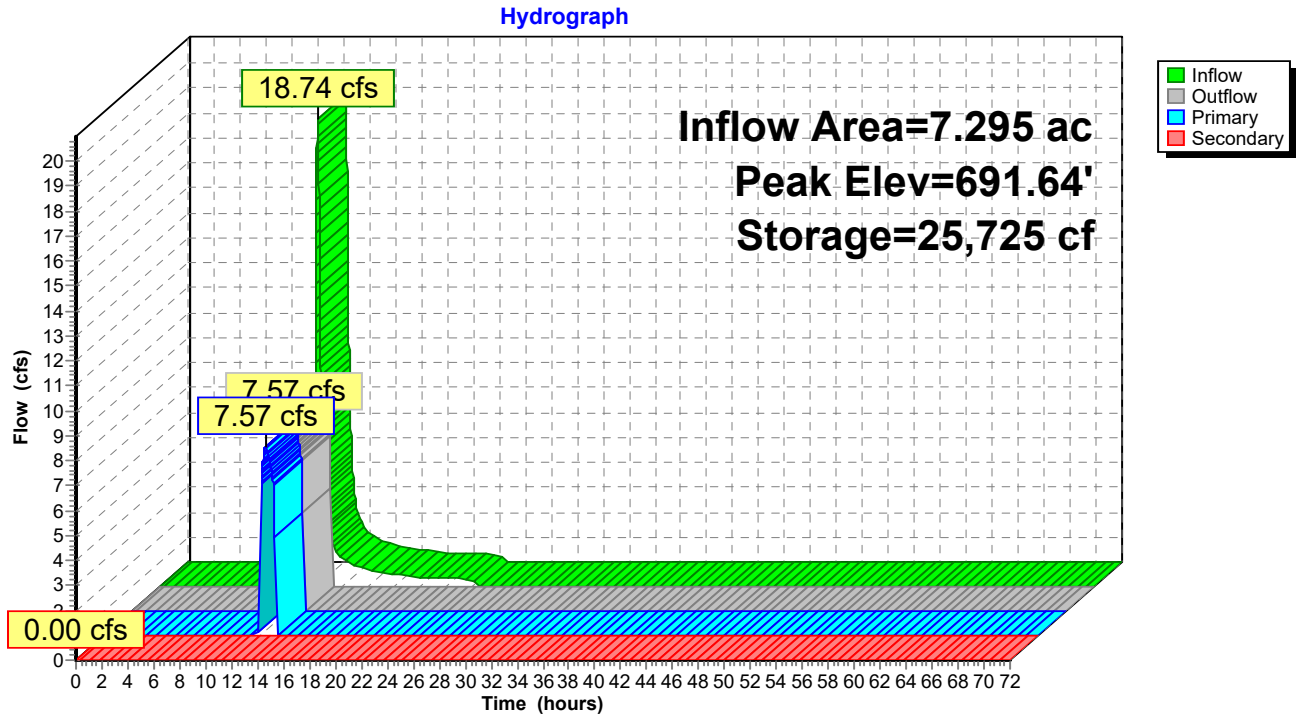
Reach 25R: Swale 3 (Pr. Cond)



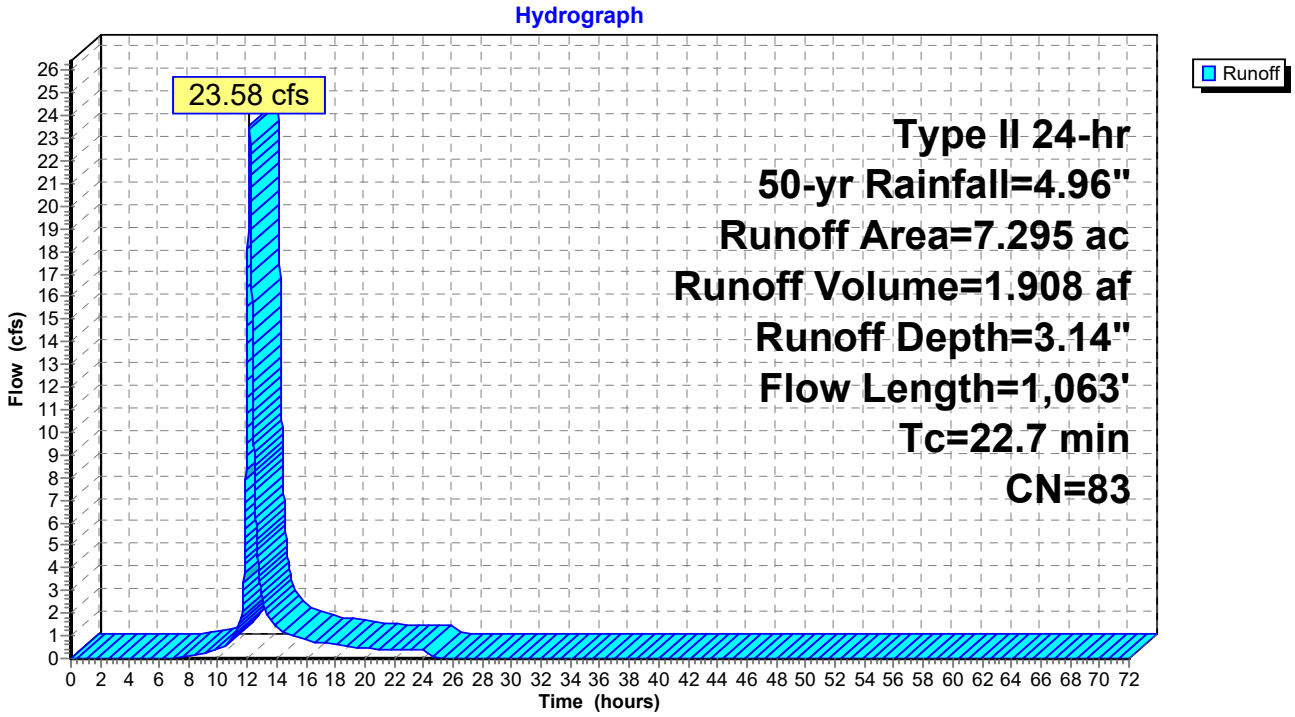
Pond 12P: 200511 Wet Pond



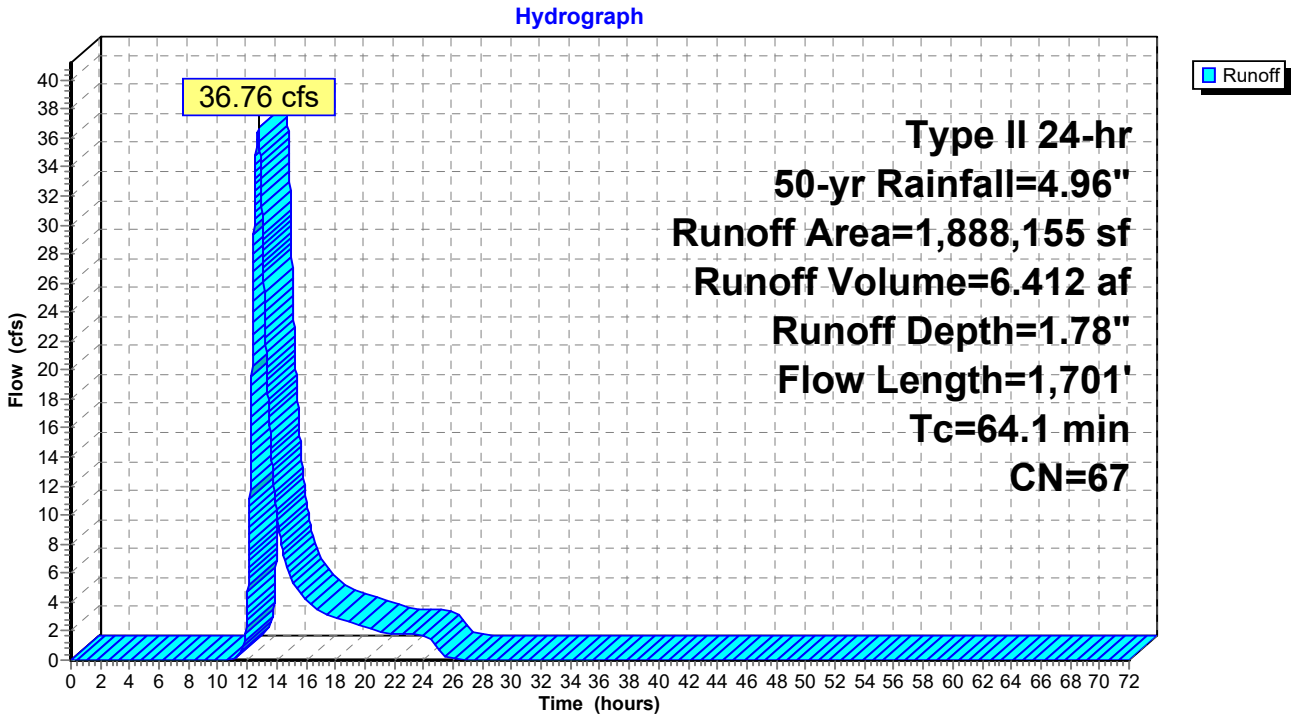
Pond 18P: Sediment Basin



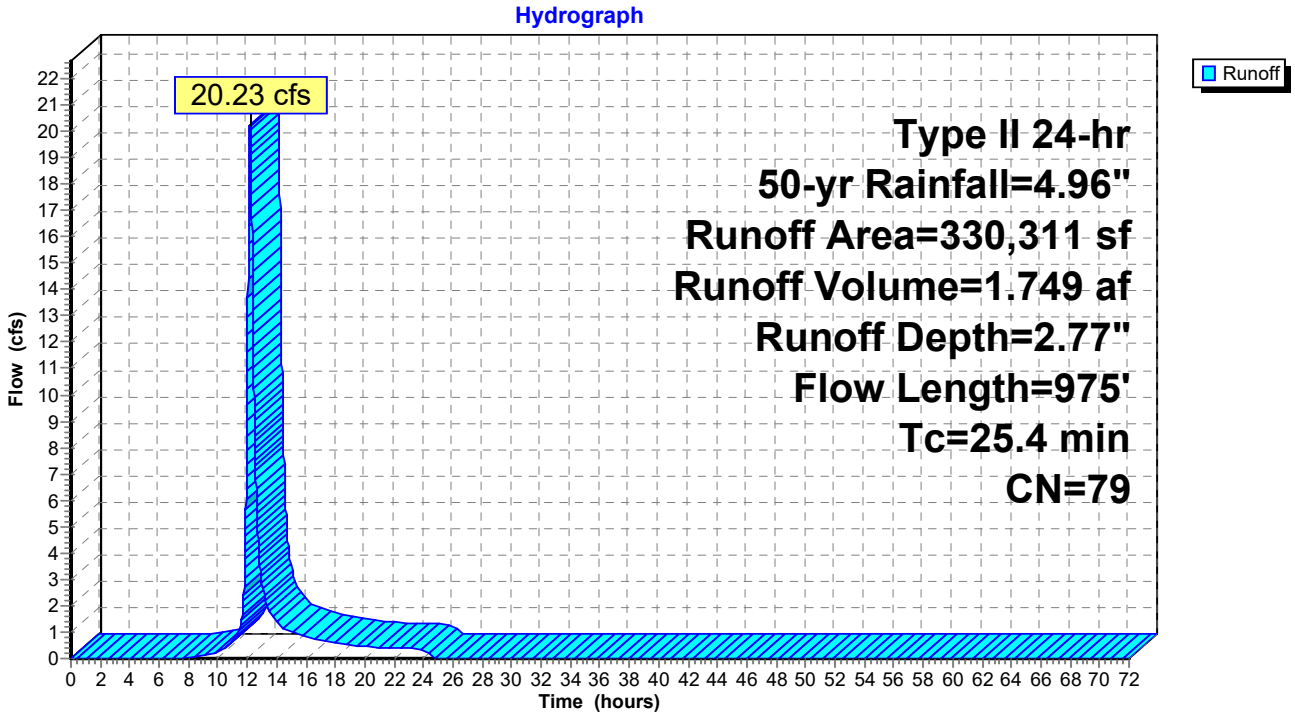
Subcatchment 24S: Stage 3 DA open soils



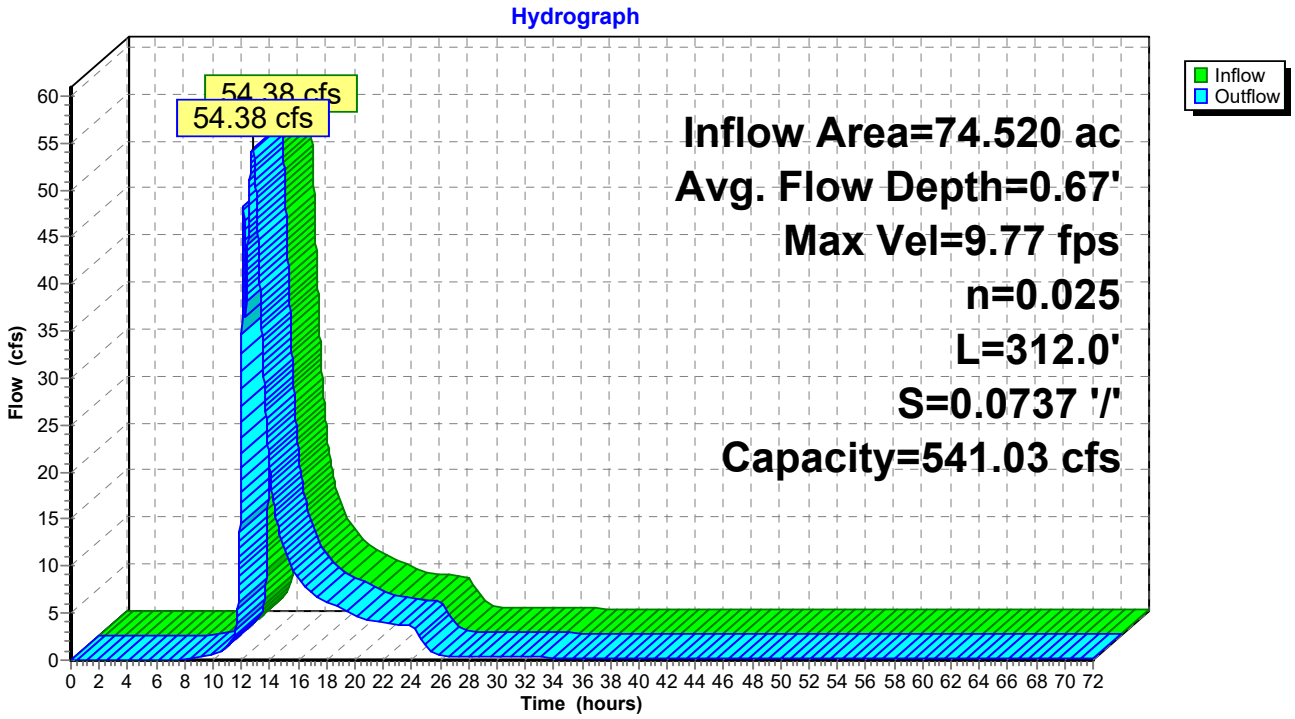
Subcatchment 25S: Stage 1 DA Proposed + Offsite



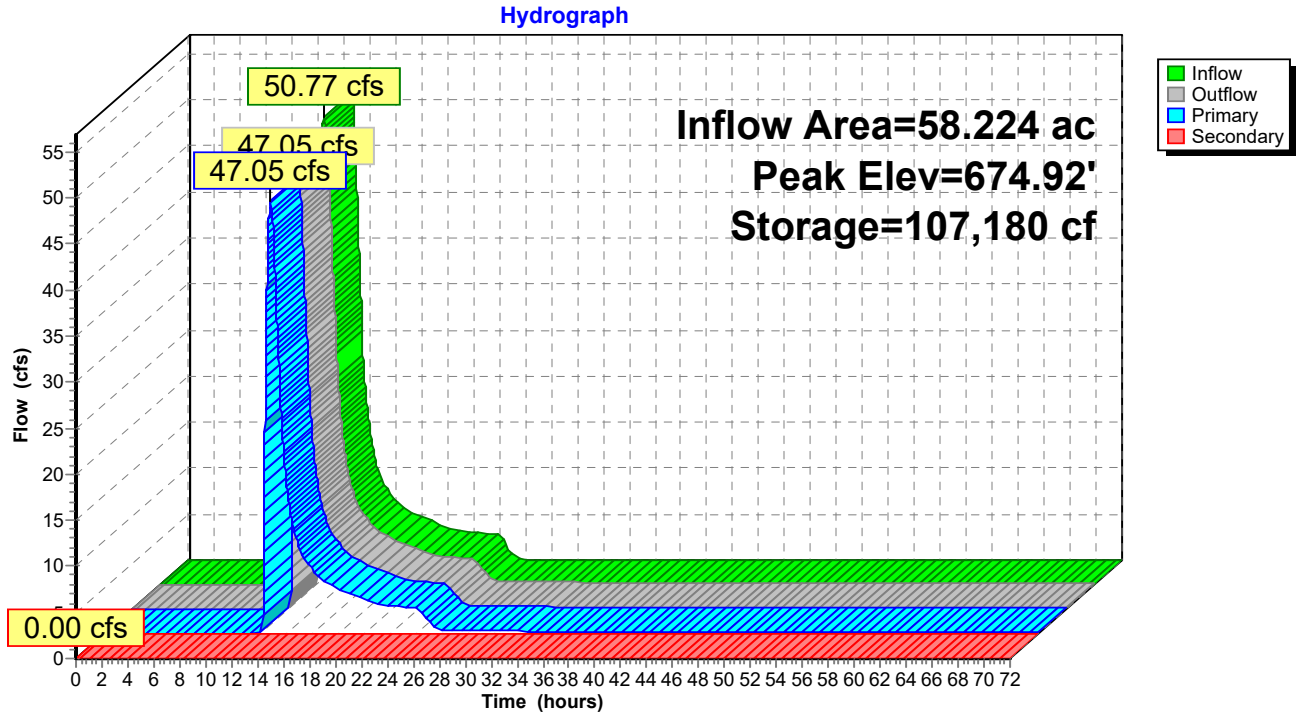
Subcatchment 26S: Stage 2 DA Proposed



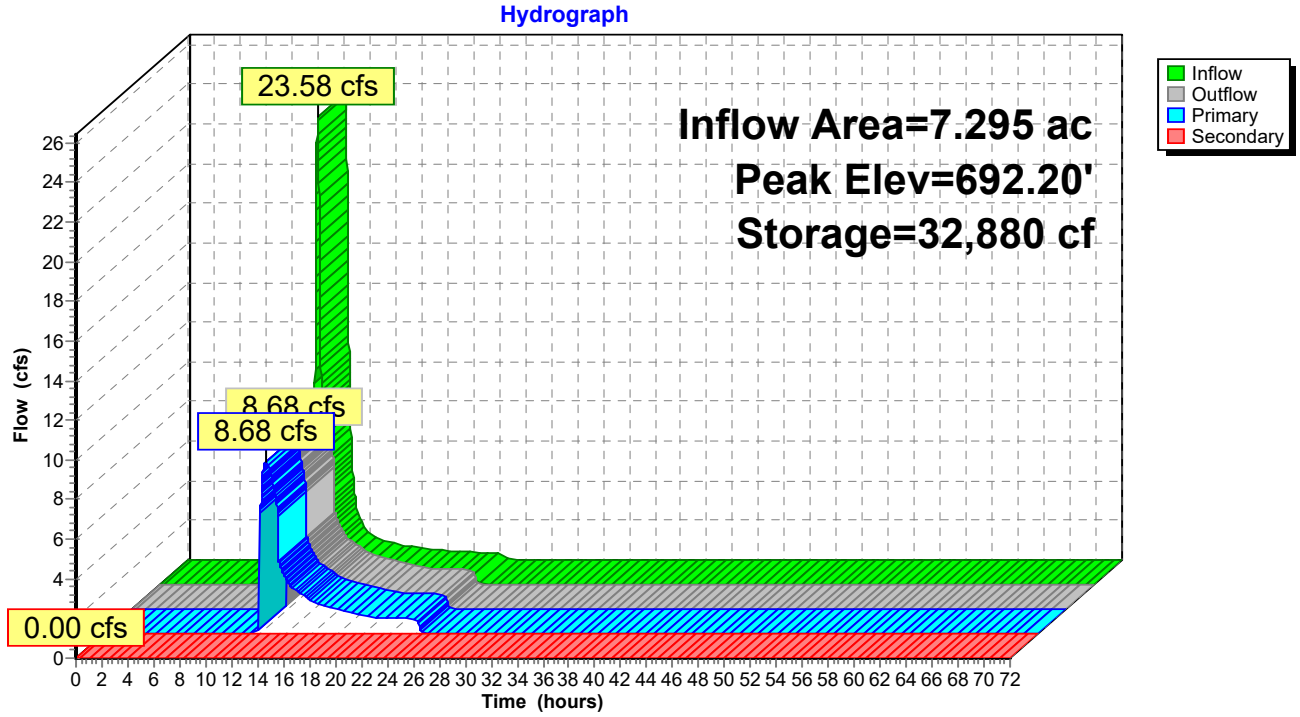
Reach 25R: Swale 3 (Pr. Cond)



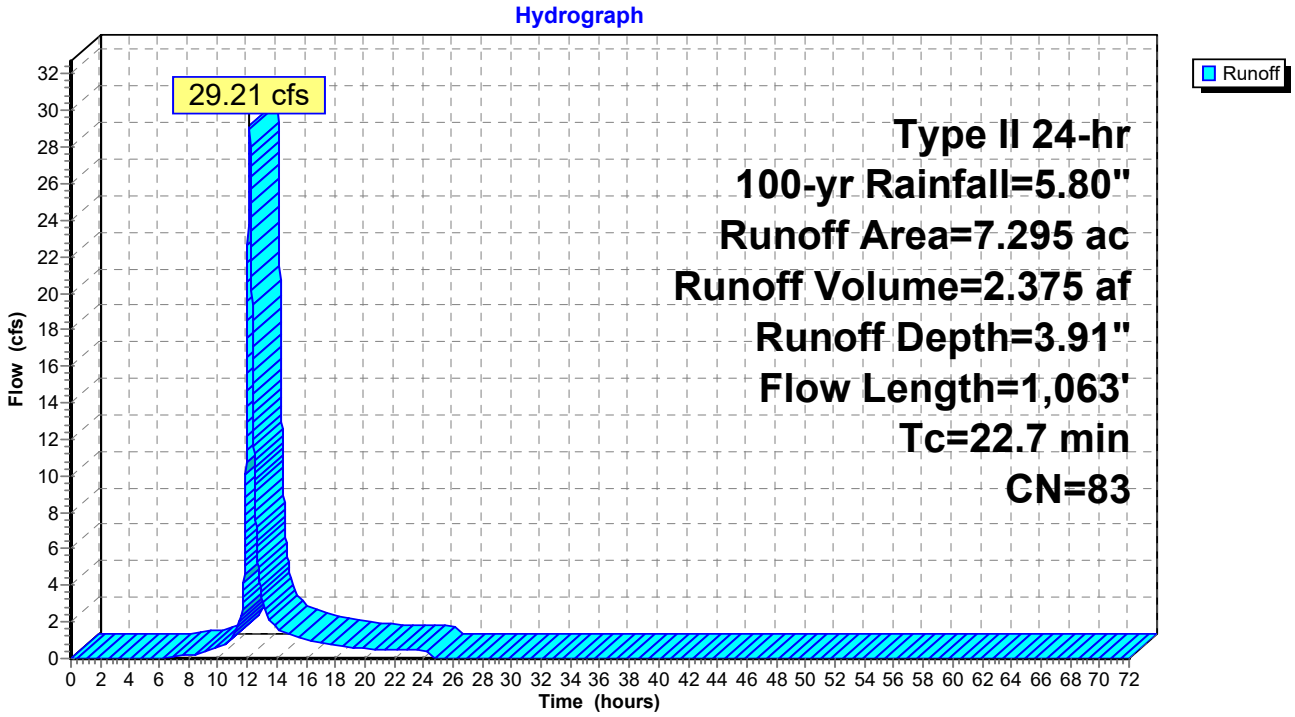
Pond 12P: 200511 Wet Pond



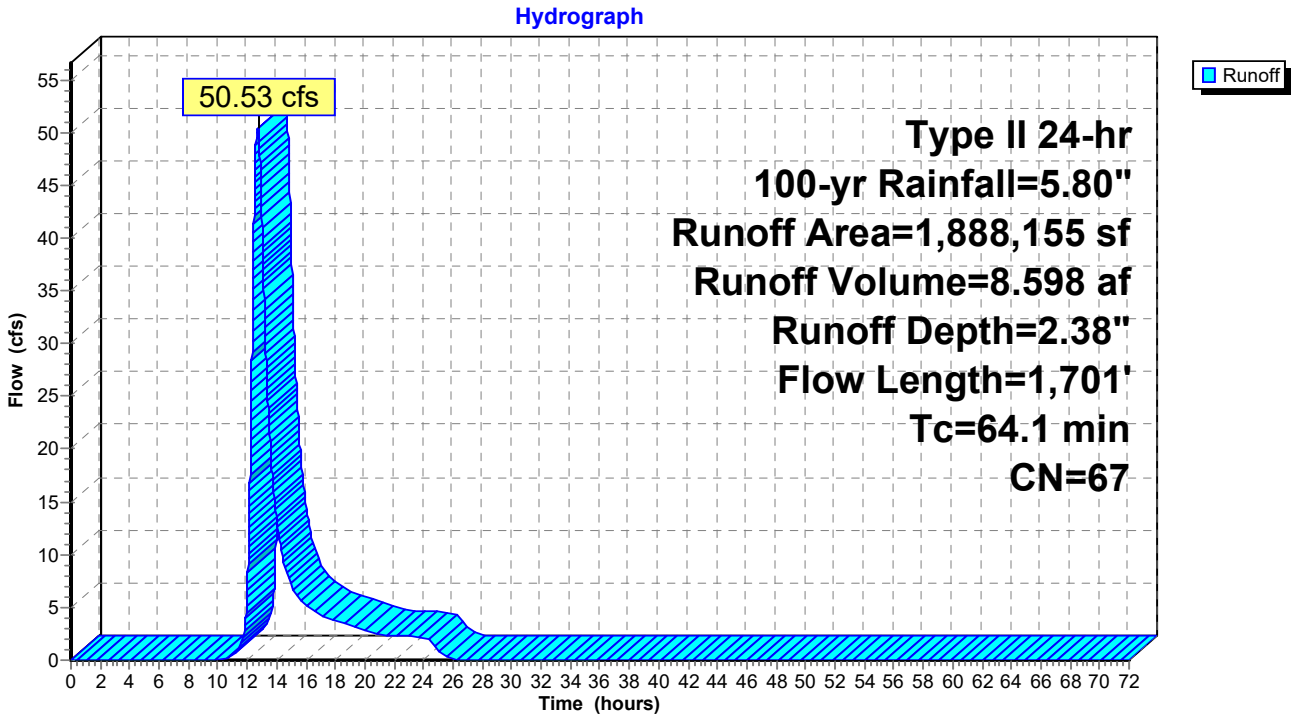
Pond 18P: Sediment Basin



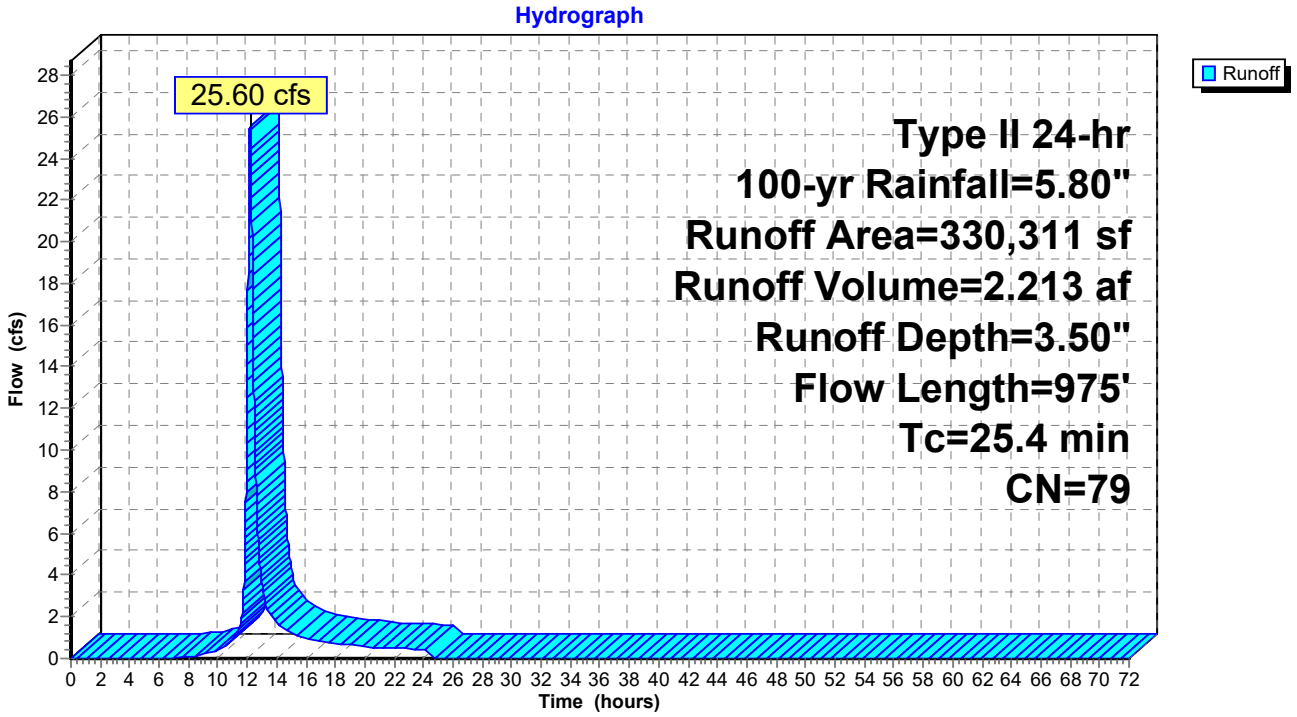
Subcatchment 24S: Stage 3 DA open soils



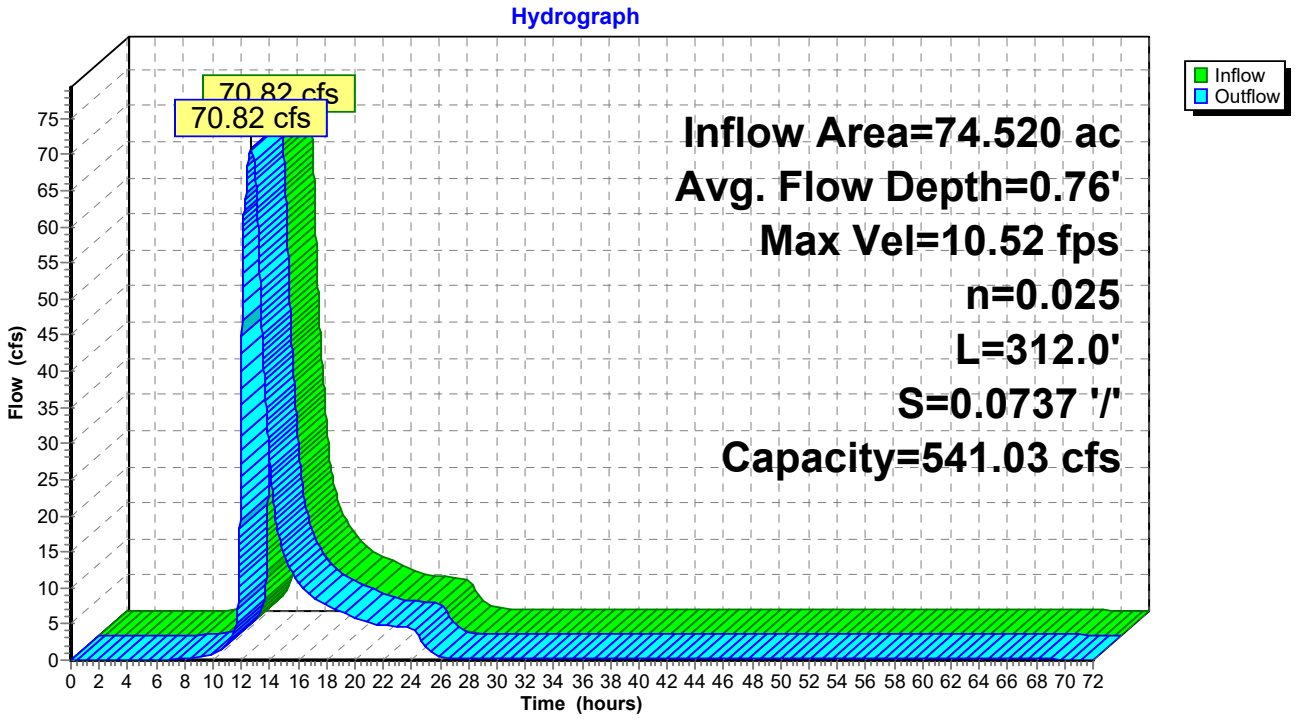
Subcatchment 25S: Stage 1 DA Proposed + Offsite



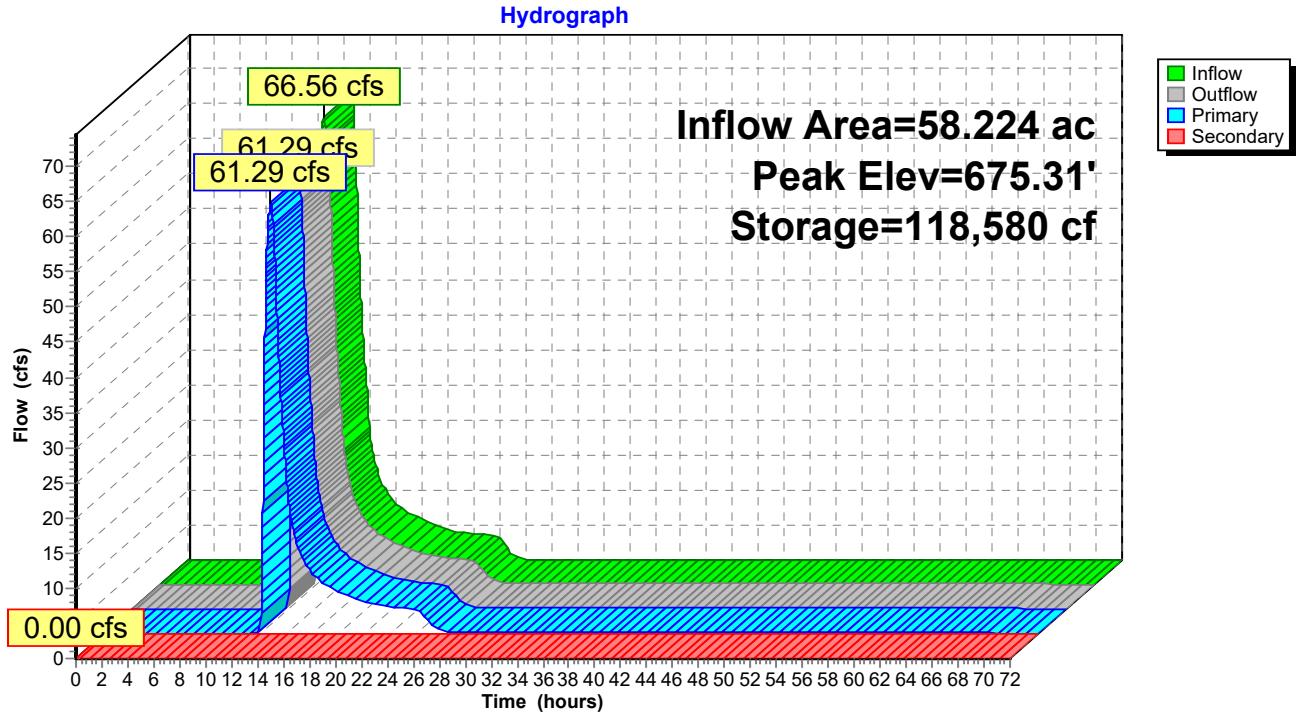
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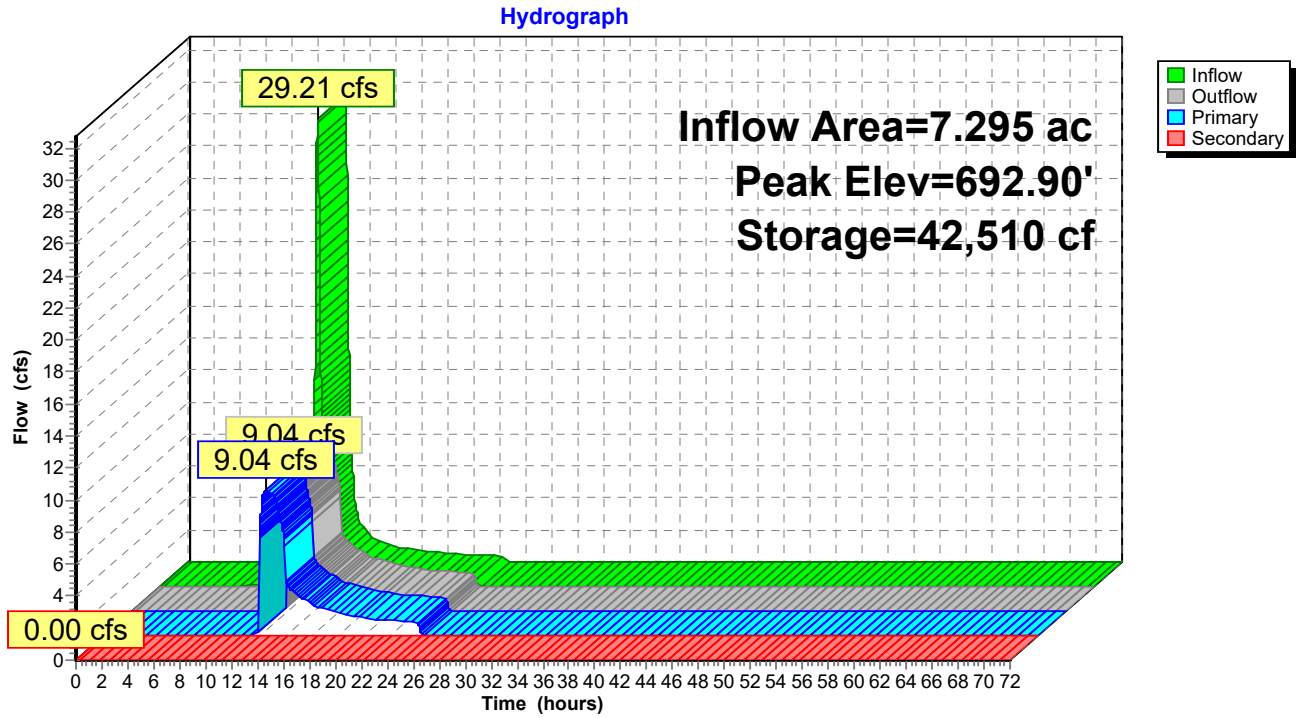
Reach 25R: Swale 3 (Pr. Cond)



Pond 12P: 200511 Wet Pond



Pond 18P: Sediment Basin



APPENDIX U

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

April 6, 2018

Vincent Ryan
Keplinger Freeman Associates
6320 Fly Road, Suite 109
East Syracuse, NY 13057

Re: Hoag Lane Development
County: Onondaga Town/City: Manlius

Dear Mr. Ryan:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

We have no records of rare or state-listed animals or plants, or significant natural communities directly at the project site.

Within 3.5 miles of the project site is a documented winter hibernaculum **Northern long-eared bat** (*Myotis septentrionalis*, state and federally listed as Threatened). These bats may travel five miles from documented locations. The main impact of concern for bats is the cutting or removal of potential roost trees. For information about any permit considerations for your project, contact the Permits staff at the NYSDEC Region 7 Office at dep.r7@dec.ny.gov, 315-426-7438. For information about potential impacts of your project on this species and how to avoid, minimize, or mitigate any impacts, contact the Region 7 Wildlife staff at 607-753-3095 ext. 247.

For most sites, comprehensive field surveys have not been conducted. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other resources may be required to fully assess impacts on biological resources.

For information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, as described above.

Sincerely,

Nicholas Conrad
Information Resources Coordinator
New York Natural Heritage Program

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

APPENDIX V

Helen Caster

From: Rudy Zona <rzona@rzengineering.com>
Sent: Thursday, April 30, 2020 12:17 PM
To: hcaster@rzengineering.com
Subject: FW: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Monday, March 23, 2020 3:53 PM
To: Rudy Zona <rzona@rzengineering.com>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: RE: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy,

I reviewed my response to your email from October 2019. I see now that you had stated the height of the dam as 14.5 feet, while Doug had stated 16 feet. It may be helpful to all to have a conference call to clarify the height of the dam so all parties are on the same page.

Thanks,

Jennifer

From: Rudy Zona <rzona@rzengineering.com>
Sent: Monday, March 23, 2020 1:48 PM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: 200323 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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It appears that the town and the local residents are not clear regarding your previous response to our inquiry. Maybe our office wasn't either apparently. However, it appears the town engineer and residents are using an elevation that is 20 feet away from our work limits and part of an existing wetland area required to be protected, its outside our work

limits by 20' and proposed as an undisturbed area by our project, to be utilized as their toe of slope. *Engineering Definition : Toe of slope means a point or line of slope **in an excavation or cut** where the lower surface changes to horizontal or **meets the exiting ground slope**.* No work is intended anywhere near the elevation the town considers the toe of slope and our tie in to the existing grade is 662.0 outside the protected wetland area per our grading plan previously submitted (and hasn't changed), not 660 as the town has suggested. I understand you're reviewing the project again but maybe it would be more beneficial to meet or conference call with all parties to ensure there is no misinterpretation of your rulings. We do not want to incorrectly interpret your statements either and would like to make sure we're also clear so that if any design adjustments are required we can make them. It's unfortunate the town has brought this up again after 6 months but our developer and our office would like to make sure our design is appropriate. Thank you again for your input on our project.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 2:23 PM
To: 'Ross, Jennifer E (DEC)' <Jennifer.Ross@dec.ny.gov>; 'Everleth, Jennifer A (DEC)' <Jennifer.Everleth@dec.ny.gov>; 'Murakami, Tatsuhiko V (DEC)' <tatsuhiko.murakami@dec.ny.gov>; 'Choe, Trendon P (DEC)' <Trendon.Choe@dec.ny.gov>; 'Delaney, Kevin (DEC)' <kevin.delaney@dec.ny.gov>; 'Scott Freeman' <sf@keplingerfreeman.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Thank you Jenn for your quick response!!! I appreciate the help!

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Friday, October 18, 2019 2:20 PM
To: Rudy Zona <rzona@rzengineering.com>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; Scott Freeman <sf@keplingerfreeman.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy,

You are correct. It appears this structure would fall under the third exemption criteria highlighted below, so no dam safety permit would be necessary.

Please let me know if you have any other questions.

Best,

Jennifer

Jennifer Ross
Assistant Engineer (Environmental), Dam Safety Section
Division of Water, Bureau of Flood Protection and Dam Safety

New York State Department of Environmental Conservation
625 Broadway 4th floor, Albany, NY 12233-3504
P: (518) 402-8148 | F: (518) 402-9029 | jennifer.ross@dec.ny.gov
www.dec.ny.gov |

From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 1:58 PM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>; Everleth, Jennifer A (DEC) <Jennifer.Everleth@dec.ny.gov>; Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>; Delaney, Kevin (DEC) <kevin.delaney@dec.ny.gov>; Scott Freeman <sf@keplingerfreeman.com>
Subject: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Per our conversation this am, we are asking for clarification if dam permitting is required for our proposed Stormwater Management Facility. We have designed the facility as a wet pond with a storage capacity of 3.33 acre feet and a maximum height of 14.5 feet from the top of the embankment to the toe of slope. I have attached our submitted construction drawing which we have shared with the town engineer Doug Miller for his review on behalf of the town. The facility has not been built or approved yet as we are still involved in the review and SEQR process. It is our understanding that you spoke with him yesterday, providing him with guidance that the facility would require dam permitting. We note in our prepared swppp, the following excerpt showing criteria listed as part of the NYSDEC guidance on dam permitting.

Construction, Reconstruction or Repair of Dams and other Impounding Structu

Regulated Activities

A Protection Of Waters Permit is required for:

Constructing, reconstructing, repairing, or modifying dams and water impounding structures that permanently or temporarily impound water as a result of a structure placed overland drainage way or which receive water from an external source such as drainage diversion or pumping of ground water.

Some examples of activities requiring this permit are:

- siting and constructing a new dam or water impounding structure (i.e., concrete, earthen, stone and wooden structures);
- reconstruction or modification (i.e., refacing, anchoring, breaching, or removal of an existing structure);
- repairs or maintenance which may affect the structural integrity or functional capability of a dam or impounding structure.

Exempt Activities

The most common impoundment related activities not needing a Protection of Waters
Permit for a Dam or Other Impoundment Structure are constructing or repairing a dam or structure used for impounding water that satisfies any one of the following criteria:

- maximum height is 6 feet or less (maximum height is measured as the height from the downstream (outside) toe of the dam at its lowest point to the highest point at the
- maximum impounding capacity is one million gallons or less (maximum impounding capacity is measured as the volume of water impounded when the water level is at t
- maximum height is between 6 feet and 15 feet and the maximum impounding capacity is less than 3 million gallons.

Note: The exempt activities listed only represent exemptions for this section of the Protection of Waters Program. Other DEC permits under other sections of the Protection or under other Articles of the Environmental Conservation Law may be required.

Based on this criteria, we believe we fall under the third highlighted bullet point -----designated as exempt from dam permitting. Please review our attached drawing and the colored sketch highlighting key components of our proposal related to the dam permit exempt status we understand we fall under, per our conversation this morning. If you could please verify we meet this exemption and require no dam permit based on our proposal that would help us provide clear guidance to the town and it's engineer on the subject. If we do not fall under an exempt category based on the attached sketch please let me know so that we can modify our design to ensure we are not classified as a dam requiring permitting. Thank you very much for speaking with me this morning and I look forward to your response.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

Helen Caster

From: Rudy Zona <rzona@rzengineering.com>
Sent: Thursday, April 30, 2020 12:17 PM
To: hcaster@rzengineering.com
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Wednesday, March 25, 2020 1:55 PM
To: Rudy Zona <rzona@rzengineering.com>; dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Good afternoon all:

I spoke with Rudy on the phone this afternoon and wanted to summarize our discussion for everyone's records.

I took a look at the drawings and noted that the invert of the outlet pipe is located at an elevation of 664 feet and the top of dam elevation was given as 676.5 feet. So based on my interpretation of the drawings, I had
determined a dam height of 12.5 feet. Rudy added that there is some stone
rip-rap below this pipe down to an elevation of 662 ft, so conservatively
that would put the dam at a height of 14.5 feet. Since the maximum
impoundment and dam height are under 3 million gallons and 15 feet the dam would be exempt from needing a DEC Dam Safety Permit. I have given the exemption below.

NYRCC Part 608.3 Dams
(b) Exceptions.
The requirement of a permit pursuant to subdivision (a) of this section does not apply to the following:
(1) the construction, reconstruction, repair, breach or removal of a dam that has a height less than 15 feet, and a maximum impoundment capacity less than three million gallons;

We also discussed that the normal storage of the impoundment is only 0.59 acre-ft (192,252 gallons), which would likely result in minimal downstream impact during a sunny-day failure. The rainy-day scenario may result in more impacts, but an analysis would need to be performed to show what the impact of the dam failure is in addition to the flooding already occurring downstream during the 100 year storm event.

Although the dam is below DEC permit thresholds, we always do advise that any dam be designed by a Professional Engineer and that our Guidelines for Design of Dams 1989 be followed as best practice. I would also offer to review any other material that may be developed with regard to the design and specifications for the impoundment if that is desired by any party.

Please feel free to contact me if further clarification is needed.

Best,

Jennifer

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Wednesday, March 25, 2020 12:26 PM
To: dougmiller@MILLERENGINEERS.com; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

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Dear Doug,

We have followed up with Ms. Ross and the result of that follow up is a conference call. The DEC has certain terminology and stipulations. We should clarify those as DEC has requested. We hope you as the town engineer will represent your client on the call.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Doug Miller <dougmiller@millerengineers.com>
Sent: Wednesday, March 25, 2020 12:05 PM

To: Rudy Zona <rzona@rzengineering.com>; 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: 'Joe Lupia' <lupia7@yahoo.com>; jennifer.ross@dec.ny.gov
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Dear Rudy

Please feel free to follow up with Ms. Ross on your endeavors. Our last correspondence with NYSDEC indicates that the impoundment you propose requires a dam safety permit application as the toe of slope at the outfall has a contour of 660.0 and an adjacent spot elevation of 559.0 as shown on drawing L-200, attached for reference(a height of approximately 17.5 feet on an inclined slope). Elevations are not in adjacent protected federal wetlands as you have suggested but are depicted at the toe of the impoundment slope. Regardless, the impoundment that you propose is a significant change to the overland flow in this area and impounds 3.33 acre feet or 1,085,084 gallons of water. The impoundment structure you are proposing is depicted on drawings to be placed across an existing overland drainage way, there are residential dwellings and Town owned infrastructure immediately downstream of the proposed impoundment. We are recommending to the Town of Manlius that regardless of classification of your proposed impoundment and for safety of local residents, that the design and construction be completed to minimize any catastrophic failure events in the future. Items that need to be addressed include but are not limited to permeability of materials both (existing and proposed), lining materials and slope stability of the final installation, spillway locations being located only native material with non-erosive velocities, keyways, significant antiseep-collar flow length, greater flow capacity for spillways, greater freeboard from maximum impoundment height, special soil testing for borrow material and placement during construction, soil borings along the length of the embankment to ensure no porous soil layers are beneath the embankment, dam break analysis etc. We trust this clarifies your concern. We do not see a need to conference with NYSDEC at this time. Rather, best engineering practices, DEC guidance and requirements of the Town of Manlius Code dictate that the requirements requested by the Town Engineer on this matter be followed. Thank you.

Doug

Douglas A Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104
315-558-8417

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Monday, March 23, 2020 4:29 PM
To: 'Jamie Sutphen' <jsutphen@bsfattorneys.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: Doug Miller <dougmiller@millerengineers.com>; 'Joe Lupia' <lupia7@yahoo.com>

Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

I just received an email back from Jenn. She has suggested a conference call to clarify the height of the dam and permitting requirements. Please let me know when you all are available.

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI
Principal
RZ Engineering, PLLC
6320 Fly Road, Suite 109
East Syracuse, NY 13057
Ph. (315)432-1089
Fax (315)445-7981

-----Original Message-----
From: Jamie Sutphen <jsutphen@bsfattorneys.com>
Sent: Monday, March 23, 2020 2:59 PM
To: Rudy Zona <rzona@rzengineering.com>; 'Scott Freeman' <sf@keplingerfreeman.com>; vr@keplingerfreeman.com; 'Tom Douglas' <thomasallenhomes@yahoo.com>
Cc: Doug Miller <dougmiller@millerengineers.com>; Joe Lupia <lupia7@yahoo.com>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Here is the DEC response.

Jamie L. Sutphen, Esq.
Baldwin, Sutphen & Frateschi, PLLC
126 N. Salina Street Suite 400
Syracuse, New York 13202
Phone: 315- 477-0100
Cell: 315-345-1666*
Fax: 315-477-5071
jsutphen@bsfattorneys.com

*In accordance with the Executive Order of Governor Cuomo, dated March 20,2020, the physical offices of Baldwin, Sutphen & Frateschi, PLLC are closed. I and many of our staff are equipped remotely and we are committed to deliver legal services to our clients during this time of crisis. Do not hesitate to email or call my cell phone.

This electronic message may contain privileged or confidential information.
If you are not the intended recipient of this e-mail, please delete it from your system and advise the sender.

_____
In accordance with Internal Revenue Service Circular 230, we inform you that any discussion of a federal tax issue contained in this communication (including any attachments) is not intended or written to be used, and it cannot be used, by any recipient for the purpose of (i) avoiding penalties that may be imposed on the recipient under United States federal tax laws, or (ii) promoting, marketing or recommending to another party any tax-related matters addressed herein.

-----Original Message-----
From: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Sent: Friday, March 20, 2020 1:52 PM
To: Doug Miller <dougmiller@millerengineers.com>
Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>
Subject: RE: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Doug,

Regardless of the height and impoundment size, Dam Safety would consider this impoundment a dam. Since the dam is over 15 feet in height the impoundment would need to have a maximum impoundment of less than 1 million gallons to be under Dam Safety Permit thresholds.

Since the dam is 16.5 feet in height and 3.33 acre-feet, it would appear that the dam is just over the permit thresholds. Therefore, I do think this impoundment will require a Dam Safety Permit.

Thank you,

Jennifer

Jennifer Ross
Assistant Engineer, Division of Water
State Cell 518-935-8973

-----Original Message-----
From: Doug Miller <dougmiller@millerengineers.com>
Sent: Friday, March 20, 2020 9:10 AM
To: Ross, Jennifer E (DEC) <Jennifer.Ross@dec.ny.gov>
Cc: Murakami, Tatsuhiko V (DEC) <tatsuhiko.murakami@dec.ny.gov>; Choe, Trendon P (DEC) <Trendon.Choe@dec.ny.gov>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

ATTENTION: This email came from an external source. Do not open attachments or click on links from unknown senders or unexpected emails.

Im not sure this got through yesterday. Looking for some final clarification. Local residents downstream of the proposed impoundment have expressed concern

-----Original Message-----
From: Doug Miller
Sent: Thursday, March 19, 2020 4:04 PM
To: jennifer.ross@dec.ny.gov
Cc: Murakami, Tatsuhiko V (DEC <tatsuhiko.murakami@dec.ny.gov>; Choe, <trendon.choe@dec.ny.gov>

Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Hello Ms Ross

Miller Engineers represents the Town of Manlius NY. We are reviewing construction drawings for a proposed subdivision in the Town. As part of a stormwater plan we have received the attached information. Can you confirm the attached.

Last fall we had spoken to you and you indicated that the impoundment shown on attached L-200 was considered to be a dam by NYSDEC standards. We have your recent correspondence which now indicates that the impoundment is not a dam. At the Northwest corner of the impoundment local residents indicate elevation 660 at the toe of the slope, top of berm 676.5 (Height 16.5 feet) Impoundment volume 3.33 acre feet, we concur with this information.
Developer is looking to mov e forward with this project and the down stream residents of the area have voiced concern over the impoundment and are looking for clarification as to whether this is a dam and if so what if any dam safety precautions should be taken.

Thanks for your assistance
Doug Miller

Douglas A Miller, P.E.
Miller Engineers
Seneca Turnpike; Suite B
Box 311
Manlius, NY 13104
315-558-8417

-----Original Message-----
From: Vincent Ryan <vr@Keplingerfreeman.com>
Sent: Thursday, March 19, 2020 2:21 PM
To: Doug Miller <dougmiller@millerengineers.com>; Jamie Sutphen <jsutphen@bsfattorneys.com>
Subject: FW: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

-----Original Message-----
From: Rudy Zona <rzona@rzengineering.com>
Sent: Friday, October 18, 2019 1:58 PM
To: 'jennifer.ross@dec.ny.gov' <jennifer.ross@dec.ny.gov>; 'jennifer.everleth@dec.ny.gov' <jennifer.everleth@dec.ny.gov>; 'Murakami, Tatsuhiko V (DEC)' <tatsuhiko.murakami@dec.ny.gov>; 'Choe, Trendon P (DEC)'
<Trendon.Choe@dec.ny.gov>; 'kevin.delaney@dec.ny.gov'
<kevin.delaney@dec.ny.gov>; Scott Freeman <sf@Keplingerfreeman.com>

Subject: 191018 Dam permitting requirements Woodland Hills Subdivision Hoag Lane, Town of Manlius, NY

Jenn,

Per our conversation this am, we are asking for clarification if dam permitting is required for our proposed Stormwater Management Facility. We have designed the facility as a wet pond with a storage capacity of 3.33 acre feet and a maximum height of 14.5 feet from the top of the embankment to the toe of slope. I have attached our submitted construction drawing which we have shared with the town engineer Doug Miller for his review on behalf of the town. The facility has not been built or approved yet as we are still involved in the review and SEQR process. It is our understanding that you spoke with him yesterday, providing him with guidance that the facility would require dam permitting. We note in our prepared swppp, the following excerpt showing criteria listed as part of the NYSDEC guidance on dam permitting.

Based on this criteria, we believe we fall under the third highlighted bullet point -----designated as exempt from dam permitting. Please review our attached drawing and the colored sketch highlighting key components of our proposal related to the dam permit exempt status we understand we fall under, per our conversation this morning. If you could please verify we meet this exemption and require no dam permit based on our proposal that would help us provide clear guidance to the town and it's engineer on the subject. If we do not fall under an exempt category based on the attached sketch please let me know so that we can modify our design to ensure we are not classified as a dam requiring permitting. Thank you very much for speaking with me this morning and I look forward to your response.

Rudy

Rudy L. Zona, PE., CPESC, CPSWQ, CESSWI

Principal

RZ Engineering, PLLC

6320 Fly Road, Suite 109

East Syracuse, NY 13057

Ph. (315)432-1089

Fax (315)445-7981

APPENDIX W

June 11, 2020

TO: Doug Miller, PE
MS-4 Representative
Town of Manlius
AND
Val Murakami
NYSDEC Region 7
Syracuse, NY 13204

RE: RZE #17061
5-acre Disturbance Permit
Hoag Lane Subdivision
Hoag Lane
Town of Manlius
Onondaga County, NY 13066

NARRATIVE

Hoag Road Properties, LLC proposes to subdivide a 30.40± acre parcel located on Hoag Lane east of Churchill Lane in the Town of Manlius, Onondaga County, NY. Currently existing on the parcel is one residential structure with a mix of forested areas and overgrown vegetated areas throughout. Development will result in 20 single-family homes of with asphalt roadway. Development will also include removal of the existing residential driveway for a new connection off of Hoag Lane for primary access. Proposed development will include approximately 19.85+/- acres of disturbance (managed in 7 smaller stages), above the 5 acres threshold. Therefore, this project will require permission from the NYSDEC to disturb more than 5 acres. This project will also require permission from the regulated MS4. Proposed site improvements within the project will include grading and excavation, general site landscaping, stormwater facilities, and sanitary structures tied into public sewer. A wetland delineation provided by Environmental Resources. LLC in --- has provided limits of the existing wetland, see enclosed report by Environmental Resources. LLC The proposed construction does not propose any disturbance to the existing wetland limits or associated buffer. The purpose of this narrative is to describe the proposed site plan and the proposed staged construction sequence.

Construction of the proposed site will consist of one phase broken down into seven stages to limit the potential for erosion and sedimentation issues during the construction process. The seven stages have been outlined on the contract drawings L-102 through L-108. We anticipate that several stages will include disturbance exceeding 5 acres, however this time of open soils exceeding 5 acres will be limited and short.

(1.) As provided in drawings L-102 through L-108 of the site plan set, we anticipate the site to include approximately 7 stages. Each stage is a guide for erosion control and may require adjustments and alterations based on project schedule and field conditions.
   a. Stage 1 will generally consist of installing the proposed entrance drive, wet pond, the proposed bypass swale and general grading of lots 11 through 14. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this all stages. The anticipated disturbance of this stage will be approximately 6.4± acres with an anticipated duration of 6 weeks.
   b. Stage 2 will generally consist of maintaining the proposed temporary sediment basin, continuance of the proposed road and general grading of lots 4 through 10 and 18-19. The installed road will

be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 7.8± acres with an anticipated duration of 6 weeks.

c. Stage 3 will generally consist of maintaining the proposed sediment basin, continuance of the proposed road and general grading of lots 15 through 17 and 1 through 3. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 4.1± acres with an anticipated duration of 6 weeks.
d. Stage 4 will generally consist of finishing all rough earthwork in non stabilized areas and filling in the temporary sediment basin. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 1.12± acres with an anticipated duration of 7 weeks.
e. Stage 5 will generally consist of installing all row utilizes including storm, sanitary and water. The installed road will be stabilized with gravel subbase. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.2± acres with an anticipated duration of 2 weeks.
f. Stage 6 will generally consist of installation of final road grade and base except top course which must be installed within 1 year of project completion. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of this stage will be approximately 3.1± acres with an anticipated duration of 2 weeks.
g. Stage 7 will generally consist of individual lot construction on an as needed basis. Each lot will include individual erosion control measures during construction as outlined on drawing 2/L-108. The existing gravel site entrance will be utilized as a construction entrance during this stage. The anticipated disturbance of each lot will differ based on the lot size and has an anticipated duration of 3 weeks.

(2.) Individual erosion and sediment control practices for each stage has been provided on drawings L-102 through L-108 of the site plan set.

Please feel free to contact my office with all questions and/or comments.

Very Truly Yours,

Rudy L. Zona, P.E.

6320 Fly Road Suite 109
East Syracuse, NY 13057
Ph: 315.432.1089
rzona@rzengineering.com

APPENDIX X

ENVIRONMENTAL RESOURCES, LLC
CONSULTING SERVICES

June 13, 2019

Mr. Tom Douglas
7241 Kendall Drive, East
East Syracuse, New York 13057

Subject: Wetland Delineation Results, 5280 Hoag Lane Project Site, Town of Manlius, Onondaga County, New York.

Dear Mr. Douglas:

At your request, Environmental Resources, LLC (ERS) conducted a field wetlands delineation and data collection at the above referenced 30± acre project site on May 31, 2019 to determine the on-site limits of state and/or federal jurisdictional wetlands and streams. The sites jurisdictional water resources were identified by the presence of hydrophytic vegetation, hydric soils, and physical indicators of wetland hydrology in accordance with the methodology described in the *1987 Corps of Engineers Wetland Delineation Manual*, the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Regions,* and the New York State Department of Environmental Conservation *Wetland Delineation Manual.*

RESULTS

As shown on the attached survey map, the results of our investigation and data collection has determined that the study area supports a 745± linear foot (0.24± acres) intermittent stream channel in the west portion of the project site that enters the sites south property line, conveying surface waters northwest before existing the sites west boundary line. This intermittent stream channel has a low profile, and varies in width from 18" to 30" wide.

A second water resource was identified as a 0.10± acre ground water seep wetland that occurs at the west end of the site's north boundary line. This wetland discharges ground water to the surface, which then flows east before converging into the sites intermittent stream channel.

Remaining areas of the site are confirmed to be undulating site uplands that are dominated by upland vegetation, and exhibit no hydric soil characteristics or evidence of wetland hydrology.

REGULATORY GUIDANCE

The result of our investigation has determined that the site does not support New York State Department of Environmental Conservation regulated wetlands or streams.

The sites delineated intermittent stream channel and ground water seep wetland are federal jurisdictional water resources regulated by Section 404 of the *Clean Water Act* under the jurisdiction of the U.S. Army Corps of Engineers (Buffalo District). The discharge of fill material into jurisdictional wetland areas and/or disturbance to stream channels will require a pre-construction notification and permit issuance from USACE.

This determination letter represents the conclusions of Environmental Resources, LLC based on existing site conditions. Feel free to contact me should you have any questions.

Sincerely,
Environmental Resources, LLC

Gene Pellett
Professional Wetlands Scientist

Attachment.

N

W E

S

SHIRAZ LANE

HOAG LANE

ELIZABETH MERRIAM R/O
4054/76
TAX #96-08-30.3

ELIZABETH R. COWAN R/O
5218/29
TAX #104-1-42

LOT 2 - THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11486

LOT 1 - THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11486

29.907± Acres

ROBERT B. WINTER &
JENNIFER C. WINTER R/O
5236/697
TAX #104-1-36

SUSAN BURNS R/O
4105/245
TAX #104-1-37

DAVID BRITTIAN R/O
4745/364
TAX #104-1-38

BARBARA HAINES R/O
3354/248
TAX #104-1-34

SUZANNE M. CLAAR R/O
5151/306
TAX #104-1-33.1

SHANNON R/O
5417/115
TAX #104-1-33.2

WETLANDS

EXISTING FARM ROAD

ROBERT MICHEL R/O
3004/150
TAX #104-1-40.2

ANTHONY APOSTOLAKAS &
ERIN HICKEY R/O
5191/924
TAX #104-1-40.1

CHURCHILL LANE

MICHAEL S. EPPERSTON R/O
4939/168
TAX #104-1-32

HOWARD HOLLANDER &
LINDA HOLLANDER R/O
2938/316
LOT 43
TAX #104-1-15

PAUL MASSA &
ALICE MASSA R/O
4185/239
LOT 42
TAX #104-1-14

KASCHA LAING TRUST R/O
5316/141
LOT 41
TAX #104-1-13

MARY SUE HAMUS R/O
3219/234
TAX #104-1-41

LEWIS TRACT - PART 2A
FILED MAP #4448

0 50 100 150

UTILITY NOTE

This surveyor has not physically located the underground utilities. Underground utility locations may have been determined from visible evidence, available public maps and/or as maps prepared by others and markings established by independent locators or utility companies. There is no guarantee as to the accuracy or completeness of such data, nor is there any guarantee that all utilities are shown. Actual locations of underground utilities in the vicinity of any proposed construction shall be verified prior to commencing excavation, demolition or construction.

WETLAND NOTES:

- WETLANDS WERE DELINEATED BY ENVIRONMENTAL RESOURCES, LLC ON MAY 31, 2019.
- INTERMITTENT STREAM: LENGTH 745 L.F., AREA 0.24± ACRES.
- WETLAND AREA 0.10± ACRES

MAP REVISIONS		
No.	Date	Revision

WETLAND LOCATION MAP

LANDS OF HOAG ROAD PROPERTIES, LLC

TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

SURVEY WAS NOT PERFORMED BY:
SeGUIN LAND SURVEYING, P.L.L.C
Forrest E. SeGuin, L.S.
8187 DYKE ROAD, CHITTENANGO, N.Y. 13037
PHONE (315)283-1842 FAX (315)687-0002

SCALE: 1" = 50'
DATE: 8/11/2019
PROJECT NO. 19-1938
TAX MAP NO. 104-1-39.2
DRAWING NO. 1 OF 1

N

W E

S

SHIRAZ LANE

HOAG LANE

SANITARY MANHOLE
RIM=712.4'
INV=702.4'

10" WATER

4" GAS

CENTERLINE

EDGE OF PAVEMENT 722.2

EDGE OF PAVEMENT

TREE LINE

GRAVEL DRIVE

APPROXIMATE END OF HOAG LANE R.O.W. PER TAX MAP

ROAD BOUNDARY PER MONUMENTS AND RECORDS

N. 86°02'35" E
1319.65'

S 02°50'48" W
15.31'

S 89°45'05" W
233.27'

S 00°04'55" E
465.97'

S 86°57'56" W
1809.96'

N 03°03'05" E
360.76'

N 86°56'40" E
391.99'

N 87°34'01" E
349.01'

ELIZABETH MERRIAM R/O
4054/76
TAX #96-08-30.3

ELIZABETH R. COWAN R/O
5218/29
TAX #104-1-42

LOT 2 – THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11466

LOT 1 – THE STEPHEN ROGERS SUBDIVISION
FILED MAP #11466

HOUSE
#6280

29.907± Acres

ROBERT MICHIEL R/O
3004/150
TAX #104-1-40.2

ANTHONY APOSTOLAKAS &
ERIN HICKEY R/O
5191/924
TAX #104-1-40.1

MARY SUE HANUS R/O
3219/234
TAX #104-1-41

KASCHA LIVING TRUST R/O
5316/141
LOT 41
TAX #104-1-13

PAUL MASSA &
ALICE MASSA R/O
4185/239
LOT 42
TAX #104-1-14

HOWARD HOLLANDER &
LINDA HOLLANDER R/O
2938/316
LOT 43
TAX #104-1-15

MICHAEL S. ESPOSITO R/O
4359/668
TAX #104-1-32

ROAD BOUNDARY PER MONUMENTS AND RECORDS

LEWIS TRACT – PART 2A
FILED MAP #4448

20' DRAINAGE EASEMENT (PER TRACT MAP)

ROBERT B. WINTER &
JENNIFER C. WINTER R/O
5236/697
TAX #104-1-36

SUSAN BURNS R/O
4105/245
TAX #104-1-37

DAVID BRITTIAN R/O
4745/364
TAX #104-1-38

BARBARA HAINES R/O
3354/248
TAX #104-1-34

SUZANNE M. OLIVAR R/O
5157/206
TAX #104-1-33.1

CHURCHILL LANE

SHANAHAN R/O
TAX #104-1-35
TAX #104-1-12

EDGE OF PAVEMENT

EDGE OF GRAVEL

EDGE OF PAVEMENT

BY WAYNE

DITCH

LEGEND

- HYDRANT
- SANITARY MANHOLE
- CATCH BASIN
- ROAD SIGN
- GUY WIRE
- UTILITY POLE
- WATER VALVE
- E — OVERHEAD UTILITIES
- SS — SANITARY SEWER
- STORM SEWER & INVERT
- G — GAS LINE
- W — WATER LINE

0 50 100 150

UTILITY NOTE

This surveyor has not physically located the underground utilities. Underground utility locations may have been determined from visible evidence, available public maps and/ or maps prepared by others and markings established by independent locators or utility companies. There is no guarantee as to the accuracy or completeness of such data, nor is there any guarantee that all utilities are shown. Actual locations of underground utilities in the vicinity of any proposed construction shall be verified prior to commencing excavation, demolition or construction.

REFERENCE DEED

Warranty Deed dated August 3, 2017
Stephen A. Rogers
to
Hoag Road Proprieties, LLC
and recorded in the Onondaga County Clerk's Office as Instrument #2017-29769

Only survey maps with the surveyor's original signature and seal affixed to the current copies of the surveyor's original work and opinion.

Unauthorized alteration or addition to a survey map bearing a licensed land surveyor's seal is a violation of sect. 7209, subsection 2, of the New York State Education Law.

The certification is limited to the persons for whom the survey is prepared, and on their behalf to the title company, governmental agency, and the lending institution listed hereon. Certifications are not transferable to additional institutions or subsequent owners.

The location of underground improvements, structures, and utilities are not covered by this certificate.

I hereby certify that this map was prepared from an actual field topographic survey of the property presented hereon, that all work was performed by me or under my supervision, and that the results of said survey are hereby represented to the best of my belief, professional knowledge and ability.

Forrest L. SeGuin, PLS – N.Y.S. LIC. NO. 050384

REVISED 11/16/2017 TO SHOW MANHOLE DATA AND ADDITIONAL TOPO.

COPYRIGHT ©2017 SeGUIN LAND SURVEYING, PLLC

TOPOGRAPHIC SURVEY MAP

LANDS OF HOAG ROAD PROPERTIES, LLC

TOWN OF MANLIUS
ONONDAGA COUNTY, NEW YORK

SURVEY AND MAP PREPARED BY:
SeGUIN LAND SURVEYING, P.L.L.C
Forrest L. SeGuin, L.S.
6197 DYKE ROAD, CHITTENANGO, N.Y. 13037
PHONE:(315)263-1642 FAX:(315)687-0002

SCALE: 1" = 50'
DATE: 11/6/2017
PROJECT NO. 17167
TAX MAP NO. 104-01-39.2
DWG. HOAG ROAD MAP

2020
CONTRACT DOCUMENTS
WOODLAND HILLS - 21 LOT HOUSING SUBDIVISION
TOWN OF MANLIUS PLANNING BOARD
TOWN OF MANLIUS, ONONDAGA COUNTY, NY

SUPERVISOR
EDMOND J. THEOBALD

DEPUTY SUPERVISOR
COUNCILMAN JOHN R. LOEFFLER

PLANNING BOARD
JOSEPH LUPIA JR. - CHAIRMAN
FRED GILBERT
ANN KELLY
MIKE LEROY
FRANK MENTO
ARNOLD POLTENSON
RICHARD ROSSETTI

PLANNING BOARD CLERK
LISA BEEMAN

HIGHWAY SUPERINTENDENT
ROBERT CUSHING

TOWN ATTORNEY
TIM FRATESCHI, ESQ.

PLANNING BOARD ATTORNEY
JAMIE LYNN SUTPHEN, ESQ.

TOWN ENGINEER
DOUG MILLER, P.E.,



LOCATION PLAN
NOT TO SCALE

LIST OF DRAWINGS-REVISION SET

S-01	SITE SURVEY
L-000	TITLE SHEET
L-100	SITE PREPARATION AND BORING PLAN
L-101	SWPPP PLAN
L-102	CONSTRUCTION STAGING # 1 PLAN
L-103	CONSTRUCTION STAGING # 2 PLAN
L-104	CONSTRUCTION STAGING # 3 PLAN
L-105	CONSTRUCTION STAGING # 4 PLAN
L-106	CONSTRUCTION STAGING # 5 PLAN
L-107	CONSTRUCTION STAGING # 6 PLAN
L-108	CONSTRUCTION STAGING # 7 PLAN
L-200	GRADING and DRAINAGE PLAN
L-201	SHADE SLOPE PLAN
L-202	RIGHT OF WAY & BASEMENT SUMMARY
L-300	UTILITIES PLAN
L-400	LAYOUT PLAN
L-401	PLANTING PLAN
L-500	DETAILS
L-501	DETAILS
L-502	WET POND SECTION AND DETAILS
L-503	EXCAVATION AND BACKFILLING DETAILS
L-504	WALL DETAILS
L-600	ROAD AND SANITARY PROFILES
L-700	CONVENTIONAL SITE PREPARATION PLAN
L-701	CONVENTIONAL SWPPP PLAN
L-702	CONVENTIONAL GRADING AND DRAINAGE PLAN
L-703	CONVENTIONAL SLOPE PERCENTAGE PLAN
L-704	CONVENTIONAL UTILITIES PLAN
L-705	CONVENTIONAL LAYOUT PLAN
L-800	SPECIFICATIONS
L-900	COMMUNITY BASIN STUDY
L-901	ARCHITECTURAL SAMPLES

SPECIFICATIONS

SECTION 31 1000 - SITE DEMOLITION
SECTION 31 1001 - SITE PREPARATION
SECTION 31 1413 - TOPSOIL
SECTION 31 2213 - ROUGH GRADING
SECTION 31 2216 - FINE GRADING
SECTION 31 2301 - SITEWORK EXCAVATION, BACKFILLING & COMPACTING
SECTION 31 2500 - EROSION CONTROL (<5 AC.)
SECTION 31 2501 - EROSION,SEDIMENT & POLLUTION CONTROL (>5 AC.)
SECTION 32 1100 - BASE COURSES
SECTION 32 1216 - ASPHALT PAVEMENT
SECTION 32 9200 - LAWNS
SECTION 32 9300 - PLANTINGS
SECTION 32 9310 - WILDFLOWER SEEDING
SECTION 33 1300 - DISINFECTION
SECTION 33 3100 - SANITARY
SECTION 33 02722 - SANITARY SEWERS
SECTION 33 4000 - STORM DRAINAGE

APPROVED BY AUTHORIZATION
OF THE PLANNING BOARD

JOSEPH LUPIA JR. - CHAIRMAN DATE

SANITARY SEWER SYSTEM
APPROVED BY ONONDAGA COUNTY
DEPARTMENT
OF WATER ENVIRONMENT PROTECTION

COMMISSIONER DATE

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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STATE OF NEW YORK — SCOTT L. ZOSS — 079945 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001473 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
TITLE SHEET

L-000

Printed By:
Date Printed:
Drawing File:

Wednesday, July 1, 2020 9:00:37 AM

DEEP HOLE TEST RESULTS

DH-1 LAT/LONG: N43.0180/ W75.9836 EX. EL.=693.6, FN. EL.=692.1 0'-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH-2 LAT/LONG: N43.0176/ W75.9835 EX. EL.= 688.2, FN EL.= 686.6 0'-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH-3 LAT/LONG: N43.0170/ W75.9849 EX. EL.=676.25, FN. EL.=686.5 0'-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH-4 LAT/LONG: N43.0176/ W75.9829 EX. EL.=703.0, FN. EL.=697.0 0'-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH-5 LAT/LONG: N43.0172/ W75.9804 0'-6" TOPSOIL 6'-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 19, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

PIT* / LAT/LONG	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1 N43.0183/ W75.9831	24" - SANDY LOAM EX. EL.= 710.5, FN. EL.= 708.5	35 MINUTES/INCH
PT-2 N43.0181/ W75.9832	24" - SILT LOAM EX. EL.= 705.0, FN. EL.= 703.0	GREATER THAN 120 MIN/INCH
PT-3 N43.0165/ W75.9851	24" - SANDY SILT LOAM EX. EL.= 685.0, FN. EL.= 683.0	3 MINUTES/INCH
PT-4 N43.0168/ W75.9853	24" - SANDY SILT LOAM EX. EL.= 681.4, FN. EL.= 679.4	21 MINUTES/INCH
PT-5[2] N43.0169, W75.9844	14" - SANDY SILTY CLAY EX. EL.= 678.4, FN. EL.= 664.4	Ø MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 19, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING
2. PT-5 CONDUCTED DECEMBER 16, 2019 BY KENNEY GEOTECHNICAL

INFILTRATION TEST RESULTS

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
OPT-1 N43.0170/ W75.9855	18' - SANDY CLAY EX. EL.= 664.0, FN. EL.= 646.0	Ø MINUTES/INCH
OPT-2 N43.0170/ W75.9853	25.3' - SILT LOAM EX. EL.= 671.3, FN. EL.= 646.0	Ø MINUTES/INCH
OPT-3 N43.0168/ W75.9851	24' - SANDY SILT LOAM EX. EL.= 670.0, FN. EL.= 646.0	Ø MINUTES/INCH

NOTES:
1. CONDUCTED JANUARY 11, 2018 BY A REPRESENTATIVE OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.

BORING TEST RESULTS

B-1 LAT/LONG: N43.0180 / W75.9829 0'-6" TOPSOIL 6'-24' SILTY CLAY 24"-96" SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-2 LAT/LONG: N43.0175 / W75.9830 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-72" SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-3 LAT/LONG: N43.0170 / W75.9839 0'-12" TOPSOIL 12"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-4[2] LAT/LONG: N43.0169 / W75.9843 0'-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-5 LAT/LONG: N43.0166 / W75.9840 0'-24" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-6 LAT/LONG: N43.0169 / W75.9827 0'-6" TOPSOIL 6'-48" SANDY SILTY CLAY 48"-120" SANDY SILT	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED WEATHERED ROCK WITNESSED
B-7 LAT/LONG: N43.0171 / W75.9814 0'-6" TOPSOIL 6'-24' SANDY SILTY CLAY 24"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-8 LAT/LONG: N43.0175 / W75.9823 0'-6" TOPSOIL 6'-24' SANDY SILTY CLAY 24"-72" SANDY SILTY CLAY 72"-120" SANDY SILTY CLAY	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
B-9[2] LAT/LONG: N43.0169 / W75.9843 0'-6" TOPSOIL 24"-96" SANDY SILTY CLAY 96"-114" SANDY SILTY CLAY 114"-168" GLACIAL TILL	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED MAY 16TH, 2019 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC.
2. B-9 WAS CONDUCTED ON DECEMBER 16TH, 2019 PER TOWN ENGINEER REQUEST BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. B-9 IS A REVISION TO B-4.

ADDITIONAL BORING TEST RESULTS

TPS-1 EX. EL.= 676.0, FN. EL.= 666.0 LAT/LONG: N43.0171 / W75.9844 0'-13" TOPSOIL 13"-18" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-2 EX. EL.= 674.0, FN. EL.=664.0 LAT/LONG: N43.0169 / W75.9845 0'-13" TOPSOIL 13"-18" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-3 EX. EL.= 680.0, FN. EL.=670.0 LAT/LONG: N43.0167 / W75.9844 0'-11" TOPSOIL 11"-18" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-4 EX. EL.=681.0, FN. EL.=671.0 LAT/LONG: N43.0169 / W75.9816 0'-11" TOPSOIL 11"-18" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-5 EX. EL.=716.0, FN. EL.=709.0 LAT/LONG: N43.0181 / W75.9829 0'-11" TOPSOIL 11"-71" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-6 EX. EL.=704.0, FN. EL.= 699.0 LAT/LONG: N43.0169 / W75.9826 0'-11" TOPSOIL 11"-36" BROWN SILTY GRAVEL 36"-54" GREY HIGHLY WEATHERED SHALE	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-7 EX. EL.=722.0, FN. EL.=715.0 LAT/LONG: N43.0169 / W75.9816 0'-11" TOPSOIL 11"-71" GLACIAL TILL	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED
TPS-8 EX. EL.=683.0, FN. EL.=680.0 LAT/LONG: N43.0172 / W75.9831 0'-11" TOPSOIL 11"-31" BROWN SANDY SILT	NO GROUNDWATER WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED APRIL 30TH, 2020 BY REPRESENTATIVES OF KENNEY GEOTECHNICAL ENGINEERING SERVICES, PLLC. AND J.K. TOBIN.
2. SEGUIN LAND SURVEYING LOCATED TEST POINTS ON STATE PLANE 83 AND DATUM NAD83.

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

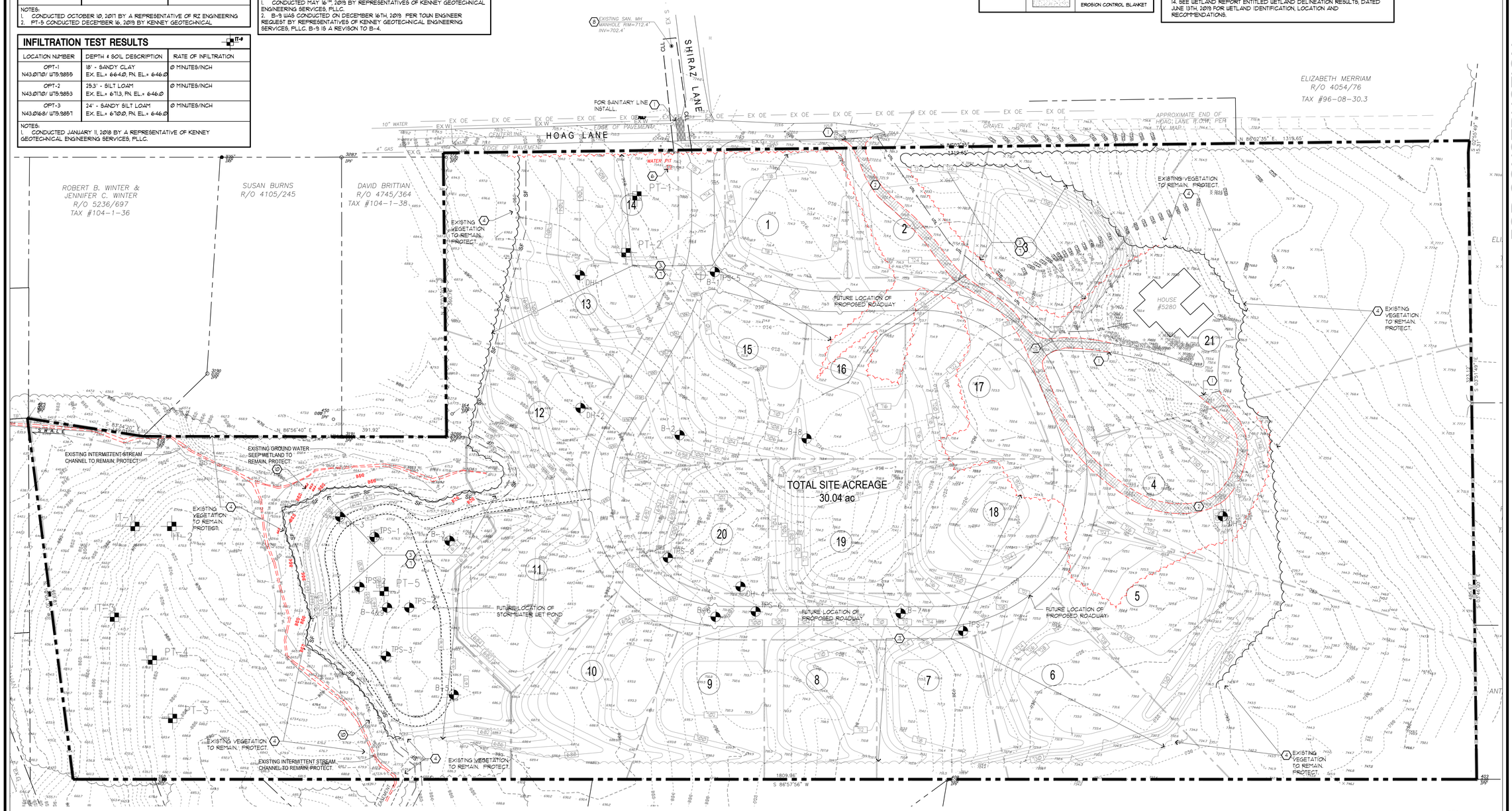
1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL PER STAGED DRAWINGS.
3. EXISTING VEGETATION SHALL BE REMOVED IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS. REMOVED MATERIAL SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. EASEMENTS TO BE SUBMITTED TO TOUN OF MANLIUS AT A LATER DATE. REFER TO LAYOUT PLANS FOR LIMITS OF PROPOSED FOREVER WILD AREAS.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION UPON RECEIPT OF SITE PLAN APPROVAL AND PRIOR TO CONSTRUCTION.
6. DECOMMISSION EXISTING WATER PIT PER OCWA REQUIREMENTS. PROJECT DRAWINGS TO BE SUBMITTED TO OCWA UPON RECEIPT OF SITE PLAN APPROVAL FOR DECOMMISSIONING AND WATER SYSTEM DESIGN. EXISTING WATER LATERAL TO EXISTING HOUSE TO REMAIN UNTIL UTILITIES INSTALLED IN PHASE IV.
7. 4" CALIPER OR LARGER PLANT MATERIAL WAS CUT DOWN AS OF MARCH 2019. APPROVED BY TOUN ON MARCH 7TH, 2019. REMOVAL OCCURRED MARCH 13TH, 2019. THE STUMPS, DOUNED TREES AND BRANCHES SHALL BE CHIPPED AND MIXED ON-SITE WITH THE STRIPPED TOPSOIL PER STAGED DRAWINGS.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. INSTALL ORANGE CONSTRUCTION FENCE (OCF) PER DETAIL 8/L-500 WITHIN 25' OF ALL WETLANDS AS IDENTIFIED IN WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 CONDUCTED BY ENVIROMENTAL RESOURCES, LLC.

LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-1	DEEP HOLE
		FENCE
		UTILITY POLE
W	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
		TREE
	QUANTITY PLANT TYPE	SHRUB
		PLANT KEY
		VEGETATION
	UD	UNDERDRAIN
EX SAN	S	SANITARY PIPE-GRAVITY
	PF	SANITARY PIPE-LOW PRESSURE
E/T	3" LPS	OVERHEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	DI	INLET
	CB MH	CATCH BASIN/MANHOLE
	CO	CLEAN OUT
		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" Ø 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' 18" Ø	OUTLET PROTECTION FOR 8"- 12" PIPE
	X 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES AS REQUIRED FROM PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING TO ALL TOUN OF MANLIUS SPECIFICATIONS.
9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.
13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2020 & MAY 21TH, 2020 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.
14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-100 **SITE PREPARATION PLAN**

SCALE IN FEET 0 50 100 150

Tuesday, June 16, 2020 12:43:46 PM

Printed By:
Date Printed:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK SCOTT L. ZOSS 079515 LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No.	Rev.	Description	Date	No.	Rev.
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14

No.	Description	Date
8	21 LOT SITE PLAN REVISIONS	01/04/19
9	MANLIUS- PLAN SUBMISSION	06/14/19
10	MANLIUS- PLAN SUBMISSION	07/12/19
11	MANLIUS- PLAN SUBMISSION	09/23/19
12	MANLIUS- PLAN SUBMISSION	12/18/19
13	MANLIUS- PLAN SUBMISSION	12/18/19
14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
SITE PREPARATION AND BORING LOCATION PLAN

L-100

EROSION CONTROL NOTES and EROSION CONTROL SEQUENCING

X-SWPPP-EC-NOTES-HOAG

EROSION AND SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION AND UNTIL ALL DISTURBED AREAS ARE STABILIZED, ALL EROSION AND SEDIMENT CONTROL MEASURES, AS SHOWN ON THE SITE PLAN AND AS OTHERWISE REQUIRED, SHALL BE INSTALLED AND MAINTAINED BY THE CONTRACTOR, AND SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL, AND THE SWPPP PREPARED FOR THE PROJECT, PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

2. BARE SOILS SHALL BE MULCHED WITH HAY AT A RATE OF TWO TONS PER ACRE WITHIN 7 DAYS OF EXPOSURE, IF CONSTRUCTION ON AN AREA IS SUSPENDED, THE AREA SHALL BE SEEDED IMMEDIATELY.

3. SITE PREPARATION SHALL INCLUDE:
   A. SEEDBED PREPARATION - SCARIFY IF COMPACTED, REMOVE DEBRIS AND OBSTACLES SUCH AS ROOTS OR STUMPS.
   B. SOIL AMENDMENTS
      1. LIME TO pH 6.0
      2. FERTILIZE WITH 600 LBS OF 5-10-10 OR EQUIVALENT PER ACRE (14 LBS/1000 SQ FT.)
   C. SEED MIXTURES
      1. TEMPORARY SEEDINGS
         a. RYEGRASS (ANNUAL OR PERENNIAL) @ 30 LBS/ACRE (0.7 LBS/1000 SQ FT.)
         b. CERTIFIED "AROOSTOOK" WINTER RYE (CEREAL RYE) @ 100 LBS/ACRE (2.5 LBS/1000 SQ FT.)
      2. PERMANENT SEEDINGS
         a. ROUGH OR OCCASIONALLY MOWED AREAS:

	LBS/ACRE	LBS/1000 SQ FT
EMPIRE BIRDSFOOT TREFOIL OR (COMMON) WHITE CLOVER PLUS	8	0.20
TALL FESCUE PLUS	20	0.45
REDTOP	2	0.05
RYEGRASS (PERENNIAL)	5	0.10

   ADD INOCULANT IMMEDIATELY PRIOR TO SEEDING
   D. METHOD OF SEEDING
   BROADCASTING, DRILLING WITH CULTIPACK TYPE SEEDER OR HYDROSEEDING ARE ACCEPTABLE.

4. DISTURBED AREAS SHALL BE SEEDED AS NOTED ABOVE AND MULCHED WITH CLEAN STRAW AS OUTLINED IN THE NEW YORK STATE GUIDELINES FOR URBAN EROSION AND SEDIMENTATION CONTROL. ON SLOPES GREATER THAN 3:1 SEEDED AREAS SHALL BE STAKED WITH JUTE MESH OR SODDED.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING THE STREET PAVEMENT AREAS CLEAN OF DIRT AND DEBRIS.

6. ACCESS TO DISTURBED AREAS SHALL BE LIMITED TO THE AREAS SHOWN ON THE PLAN. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE AT THE LOCATION SHOWN ON THE PLAN. NO ACCESS IS PERMISSIBLE FROM BEACH ROAD.

7. ANY EXISTING DRAINAGE FACILITIES DISRUPTED BY CONSTRUCTION OR IMPACTED BY INSTALLATION OF EROSION CONTROL MEASURES SHALL BE REPLACED TO MATCH EXISTING CONDITIONS OR BETTER.

8. TEMPORARY EROSION AND SEDIMENTATION CONTROL FACILITIES - AS SEDIMENT ACCUMULATES TO ½ THE DEPTH OF THE STORMWATER BASIN, SEDIMENT SHALL BE REMOVED AS OUTLINED IN THE NYS GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL.

9. DIRECT ACCESS SHALL BE PROVIDED TO ALL BASIN/POND AREAS FOR MAINTENANCE AND REHABILITATION.

10. ALL DESIGN AND MAINTENANCE MEASURES OUTLINED IN THE SWPPP PREPARED FOR THIS PROJECT SHALL BE IMPLEMENTED AND CARRIED OUT BY THE PARTIES DEEMED RESPONSIBLE FOR THOSE DUTIES.

11. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR MEANS & METHODS OF EROSION CONTROL FACILITIES DURING CONSTRUCTION. IT SHOULD BE NOTED THAT FACILITIES ON THIS DRAWING ARE CONSIDERED MINIMUM & ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED AS CONSTRUCTION PROGRESSES. THE PERMITEE & ITS SUBCONTRACTORS ARE RESPONSIBLE FOR ANY ADDITIONAL MEASURES DEEMED NECESSARY BY THE ENGINEER, TOWN OR NYSDEC.

12. PROVIDE EROSION CONTROL MEASURES AS NOTED ON THE PLANS AND AS OTHERWISE REQUIRED TO PREVENT EROSION AND SEDIMENTATION ONTO ADJOINING PROPERTY, STREETS, WATERWAYS, AND ON SITE IMPROVEMENTS BEYOND THE LIMITS OF WORK, COMPLY WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL" AND THE NYSDEC'S "REDUCING THE IMPACTS OF STORMWATER RUNOFF FROM NEW DEVELOPMENT".

13. MAINTENANCE - THE CONTRACTOR SHALL INSPECT ALL DRAINAGE STRUCTURES AND EROSION CONTROLS ON A WEEKLY BASIS AND AFTER ALL STORMS (½" RAINFALL OR GREATER) INCLUDING BUT NOT LIMITED TO THE FOLLOWING: REPLACING DAMAGED OR SILTED IN EROSION CONTROLS, CLEANING OUT STRUCTURES, AND STABILIZING ERODED OR WASHED OUT SLOPED AREAS.

14. CONTRACTOR SHALL MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE, LAWNS HAVE BECOME ESTABLISHED AND ALL SOURCES OF EROSION HAVE BEEN PERMANENTLY STABILIZED.

15. CONTRACTOR SHALL PROVIDE DUST CONTROL IN ACCORDANCE WITH THE LATEST ISSUE OF "NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL."

EROSION CONTROL and CONSTRUCTION STAGING AND SEQUENCE:

THE PROJECT WILL CREATE A TOTAL SITE DISTURBANCE OF APPROXIMATELY 20.81± ACRES AND WILL BE CONSTRUCTED IN APPROXIMATELY SEVEN (7) STAGES, THE SITE DISTURBANCE WILL BE PHASED TO LIMIT THE POTENTIAL FOR EROSION AND SEDIMENTATION ISSUES DURING THE CONSTRUCTION PROCESS. REFER TO SHEETS L-102 THRU L-108 STAGING PLANS FOR DISTURBANCE LIMITS IN EACH STAGE. BELOW IS A LISTING OF THE ANTICIPATED STAGES:

STAGE 1- PROPOSED STORMWATER BASIN & ROUGH GRADING

1. STAGE 1 TO CONSIST OF CONSTRUCTION PROPOSED WET POND AND APPLICABLE PROPOSED STORMWATER CONVEYANCE ONLY.
2. PRIOR TO ANY SITE DISTURBANCE, CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT THE INTERSECTION OF SHIRAZ AND HOAG LANE AS SHOWN ON THE DRAWING.
3. SILT FENCE - INSTALL PERIMETER SILT FENCE AS SHOWN ON PLAN PRIOR TO EARTHWORK. SILT FENCE SHALL BE UTILIZED ONLY AS A TEMPORARY MEASURE. DISTURBED AREAS SHALL BE SEEDED IMMEDIATELY FOLLOWING THE COMPLETION OF ANY EARTHWORK.
4. CLEARING AND GRUBBING - REMOVE ALL TREES, STUMPS AND BRUSH WITHIN STAGE 1 PRIOR TO EARTHWORK.
5. STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN, DOWNED TREES, BRANCHES, STUMPS AND VEGETATION TO BE CHIPPED AND BLENDED WITH STRIPPED TOPSOIL. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
6. EXCAVATE PROPOSED WET POND AND WET SWALES. WET POND AND WET SWALES TO BE USED AS A TEMPORARY SEDIMENT BASIN(S). PROVIDE RIP RAP STONE PROTECTION APRONS AND SPILLWAYS AT OUTLET LOCATIONS AS SHOWN ON THE DRAWING. PINE GRADE, SEED AND MULCH WITHIN SEVEN (7) DAYS OF DISTURBANCE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
7. REFER TO DRAWING L-102 FOR STAGING PLAN.

STAGE 2 - SITE ROUGH GRADING

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-103 FOR STAGING PLAN.

STAGE 3 - SITE ROUGH GRADING (CONT.)

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-104 FOR STAGING PLAN.

STAGE 4 - FINAL ROUGH EARTHWORK

1. PROVIDE ALL DRAINAGE CHANNELS AND INSTALL EROSION CONTROL MEASURES WITHIN DRAINAGEWAYS. INSTALL CHECK DAMS WHERE INDICATED ON THE PLANS.
2. VEGETATE/SOD SWALES, CHANNELS AND BASIN AREAS AS REQUIRED TO STABILIZE.
3. SEE DRAWING L-105 FOR STAGING PLAN.

STAGE 5 - UTILITY INSTALLATION

1. PROVIDE DRAINAGE STRUCTURES AND PIPING, INCLUDING DRAINAGE INLET PROTECTION AS SHOWN ON THE DRAWING.
2. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 6 - ROAD BASE AND KICKUP GUTTERS

1. EXCAVATE AND FILL REST OF SITE AREAS FOR ROADWAY. FINE GRADE, SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE.
2. PLACE ROAD SUBBASE.
3. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE
4. REMOVE TEMPORARY CONSTRUCTION ENTRANCE AFTER ASPHALT BINDER COURSE IS PLACED.
5. CLEAN STORMWATER POND AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
6. FINE GRADE, SEED, AND PLANT STORMWATER POND AS NOTED ON THE PLANTING PLAN AND ON THE DETAILS.
7. INSTALL POND AND SWALE OUTLET PIPE(S) WITH STRUCTURES AND TRENCHING AFTER 80% VEGETATIVE STABILIZATION IS ACHIEVED.
8. SEE DRAWING L-106 FOR STAGING PLAN.

STAGE 7- FINE GRADING AND LOT IMPROVEMENTS

1. CLEAR VEGETATION ON RESIDENTIAL LOTS TO BE CONSTRUCTED, STRIP AND STOCKPILE TOPSOIL IN AREA SHOWN ON PLAN AND / OR AGREED UPON LOCATION WITH OWNER. ENCLOSE TOPSOIL STOCKPILE AREAS WITH SILT FENCE.
2. PREPARE BUILDING PAD AND DRIVEWAY AREA SUBGRADE.
3. FINE GRADE SEED AND MULCH ALL DISTURBED AREAS WITHIN SEVEN (7) DAYS OF DISTURBANCE. AREAS TO RECEIVE ASPHALT PAVEMENT SHOULD BE PAVED WITH AT LEAST THE ASPHALT BINDER COURSE WITHIN SEVEN (7) DAYS OF PLACEMENT OF THE SUBBASE COURSE. MAINTAIN ALL DISTURBED SOIL AREAS AND DRAINAGE FACILITIES UNTIL AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
4. CLEAN STORMWATER BMP'S AND AERATE SOILS AFTER ALL UPSTREAM CONTRIBUTORY DRAINAGE AREAS ARE COMPLETELY STABILIZED AND VEGETATION IS ACHIEVED.
5. SEE DRAWING L-108 DETAIL 2 FOR INDEPENDENT LOT EROSION CONTROL PLANS.
6. SEE DRAWING L-106 FOR STAGING PLAN.

FINAL CLEAN UP & PREVENTATIVE MAINTENANCE

1. REMOVE AND/OR MAINTAIN STOCKPILE AREAS.
2. REMOVE EROSION CONTROL MEASURES FROM STABILIZED AREAS.
3. FINAL CLEAN UP - REMOVE EROSION CONTROL MEASURES AND CLEAN OUT ALL DRAINAGE STRUCTURES, PIPES, POND AND SWALES AFTER LAWN IS WELL ESTABLISHED. OWNER IS RESPONSIBLE FOR MAINTAINING SITE UPON PROJECT CLOSEOUT.
4. CONTRACTOR, ARCHITECT, AND OWNER TO REVIEW SITE FOR COMPLETION. CONTRACTOR TO ADDRESS FINAL COMMENTS ON PUNCH LIST FROM ARCHITECT AND SWPPP INSPECTION REPORTS.

SOIL RESTORATION NOTES

1. ACCORDING TO SECTION 5 OF THE NYS STORMWATER DESIGN MANUAL, SOIL RESTORATION PRACTICES MUST BE APPLIED ACROSS THE SITE IN AREAS OF SOIL DISTURBANCE. SOIL RESTORATION WILL BE COMPLETED IN ACCORDANCE WITH TABLE 4.6 ON PAGE 4.53.

2. SOIL RESTORATION REQUIREMENTS PER TABLE 4.6 OF NYS BLUEBOOK, 2016:

TYPE OF SOIL DISTURBANCE	SOIL RESTORATION REQUIREMENT
NO SOIL DISTURBANCE	RESTORATION NOT PERMITTED
MINIMAL SOIL DISTURBANCE	RESTORATION NOT REQUIRED
AREAS WHERE TOPSOIL IS STRIPPED ONLY - OR CHANGE IN GRADE	HSG A/B - APPLY 6 INCHES OF TOPSOIL HSG C/D - AERATE AND APPLY 6 INCHES OF TOPSOIL
AREAS OF CUT OR FILL (PHASE 1-4)	HSG A/B - AERATE AND APPLY 6 INCHES OF TOPSOIL HSG C/D - APPLY FULL SOIL RESTORATION**
HEAVY TRAFFIC AREAS ON SITE (ESPECIALLY N ZONE 5-7S FEET AROUND BUILDINGS BUT WITHIN A 5 FOOT PERIMETER AROUND FOUNDATION WALLS) (PHASE 7)	APPLY FULL SOIL RESTORATION (DECOMPACTION AND COMPOST ENHANCEMENT)
AREAS WHERE RUNOFF REDUCTION AND/OR INFILTRATION PRACTICES ARE APPLIED	RESTORATION NOT REQUIRED, BUT MAY BE APPLIED TO ENHANCE THE REDUCTION SPECIFIED FOR APPROPRIATE PRACTICES.
TYPE OF SOIL DISTURBANCE	**SOIL RESTORATION REQUIREMENT**
REDEVELOPMENT PROJECTS	SOIL RESTORATION IS REQUIRED ON REDEVELOPMENT PROJECTS IN AREAS WHERE EXISTING IMPERVIOUS AREA WILL BE CONVERTED TO PERVIOUS AREA.

*AERATION INCLUDES THE USE OF MACHINES SUCH AS TRACTOR-DRAWN IMPLEMENTS WITH COULTERS MAKING A NARROW SLIT IN THE SOIL, A ROLLER WITH MANY SPIKES MAKING INDENTATIONS IN THE SOIL, OR PRONGS WHICH FUNCTION LIKE A MINI-SUB-SOILER.

**PER "DEEP RIPPING AND DE-COMPACTION, DEC 2008", SEE APPENDIX I IN SWPPP, DATED 06/8/2020.

3. GENERAL SOIL RESTORATION PRACTICE IMPLEMENTATION:

DURING PERIODS OF RELATIVELY LOW TO MODERATE SUBSOIL MOISTURE, THE DISTURBED SUBSOILS ARE RETURNED TO ROUGH GRADE AND THE FOLLOWING SOIL RESTORATION STEPS APPLIED:

1. APPLY 3 INCHES OF COMPOST OVER SUBSOIL.
2. TILL COMPOST INTO SUBSOIL TO A DEPTH OF AT LEAST 12 INCHES USING A CAT-MOUNTED RIPPER, TRACTOR-MOUNTED DISC, OR TILLER. MIXING, AND CIRCULATING AIR AND COMPOST INTO SUBSOILS.
3. ROCK-PICK UNTIL UPLIFTED STONE/ROCK MATERIALS OF FOUR INCHES AND LARGER SIZE ARE CLEANED OFF THE SITE.
4. APPLY TOPSOIL TO A DEPTH OF 6 INCHES.
5. VEGETATE AS REQUIRED BY APPROVED PLAN.
6. COMPOST SHALL BE AGED, NON-PLANT DERIVED MATERIALS, FREE OF VIABLE WEED SEEDS, HAVE NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING, PASS THROUGH A HALF INCH SCREEN AND HAVE A pH SUITABLE TO GROW DESIRED PLANTS.

FIGURES 5.16 AND 5.17 TO THE BELOW SHOW TWO ATTACHMENTS USED FOR SOIL DECOMPACTION. TILLING (STEP 2 ABOVE) SHOULD NOT BE PERFORMED WITHIN THE DRIP LINE OF ANY EXISTING TREES OR OVER UTILITY INSTALLATION THAT ARE WITHIN 24 INCHES OF THE SURFACE.

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



4. AT THE END OF THE PROJECT AN INSPECTOR SHOULD BE ABLE TO PUSH A 3/8" METAL BAR 12 INCHES INTO THE SOIL JUST WITH BODY WEIGHT.

5. THE CONTRACTOR MUST KEEP THE SITE FREE OF VEHICULAR AND FOOT TRAFFIC OR OTHER WEIGHT LOADS. CONSIDER PEDESTRIAN FOOTPATHS. (SOMETIMES IT MAY BE NECESSARY TO DE-THATCH THE TURF EVERY FEW YEARS)

6. ALL SOIL RESTORATION SHALL BE IN ACCORDANCE WITH NYSDEC REGULATIONS AND THE APPROVED SWPPP FOR THE PROJECT.

STORMWATER POLLUTION PREVENTION PLAN

PROJECT DESCRIPTION PROJECT SCOPE INCLUDES THE SITEWORK NECESSARY TO CONSTRUCT TWENTY (20) PROPOSED RESIDENTIAL HOMES AND ONE (1) EXISTING HOME. SITEWORK INCLUDES THE EXTENSION OF A SANITARY LINE, INSTALLATION OF ALL UTILITIES AND THE CONSTRUCTION OF A WET POND TO MITIGATE THE INCREASE IN STORM RUNOFF.

SPEDES REQUIREMENTS THE PROJECT REQUIRES A NOI (NOTICE OF INTENT) AND SWPPP (STORM WATER MANAGEMENT PREVENTION PLAN) TO COMPLY WITH NYSDEC'S SPEDES GENERAL PERMIT FOR STORM WATER DISCHARGES FROM CONSTRUCTION ACTIVITIES. ELIGIBILITY IS BASED UPON A CONSTRUCTION DISTURBANCE AREA WHICH IS GREATER THAN (1) ACRE. THE PROJECT SITE DISTURBED AREA IS APPROXIMATELY 21 ACRES. RZ ENGINEERING HAS SUBMITTED THE (NOI) NOTICE OF INTENT TO BE AUTHORIZED TO DISCHARGE STORM WATER UNDER THIS PERMIT. THE SWPPP WILL BE SUBMITTED TO THE SITEWORK CONTRACTOR PRIOR TO CONSTRUCTION AND BE AVAILABLE ON THE PROJECT SITE DURING CONSTRUCTION. THE CONTRACTOR WILL ALSO MAINTAIN THE REQUIRED LOG BOOK COMPLETE WITH DOCUMENTATION OF WEEKLY SITE INSPECTIONS. ALSO, A 5 ACRE DISTURBANCE LETTER IS REQUIRED TO SUBMIT ALONG WITH THE NOTICE OF INTENT (NOI).

STORM WATER MANAGEMENT REPORT SUMMARY THE STORM WATER MANAGEMENT REPORT SUBMITTED WILL BE REVISED BY THE TOUN ENGINEER, DOUG MILLER WITH MILLER ENGINEERS. THE STORM IMPROVEMENTS HAVE BEEN DESIGNED IN ACCORDANCE WITH NYSDEC'S PHASE II STORMWATER MANAGEMENT AND STORM WATER DRAINAGE COMPUTATION REQUIREMENTS AND STORMWATER POLLUTION PREVENTION PLAN REQUIREMENTS. STORMWATER MANAGEMENT REPORT WILL BE MADE AVAILABLE IF REQUESTED.

EXISTING PROPERTY DESCRIPTION THE EXISTING PROPERTY CONSISTS OF MAINLY WOODED AREAS WITH ONE EXISTING HOUSE LOCATED AT THE NORTHEAST OF THE PROPERTY. 4" CALIPER VEGETATION HAS BEEN CUT DOWN TO STUMPS AS OF MARCH 2019 WITH TOUN APPROVAL. REMAINING TREES AND VEGETATION UNLESS OTHERWISE IDENTIFIED AS GREEN SPACE WILL BE REMOVED PER STAGING PLANS.

SITE INFORMATION

SOIL TYPE - HYDROLOGIC SOIL TYPE C. REFER TO SWPPP FOR DETAILED SOILS INFORMATION.

RECEIVING WATER BODY - LIMESTONE CREEK

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

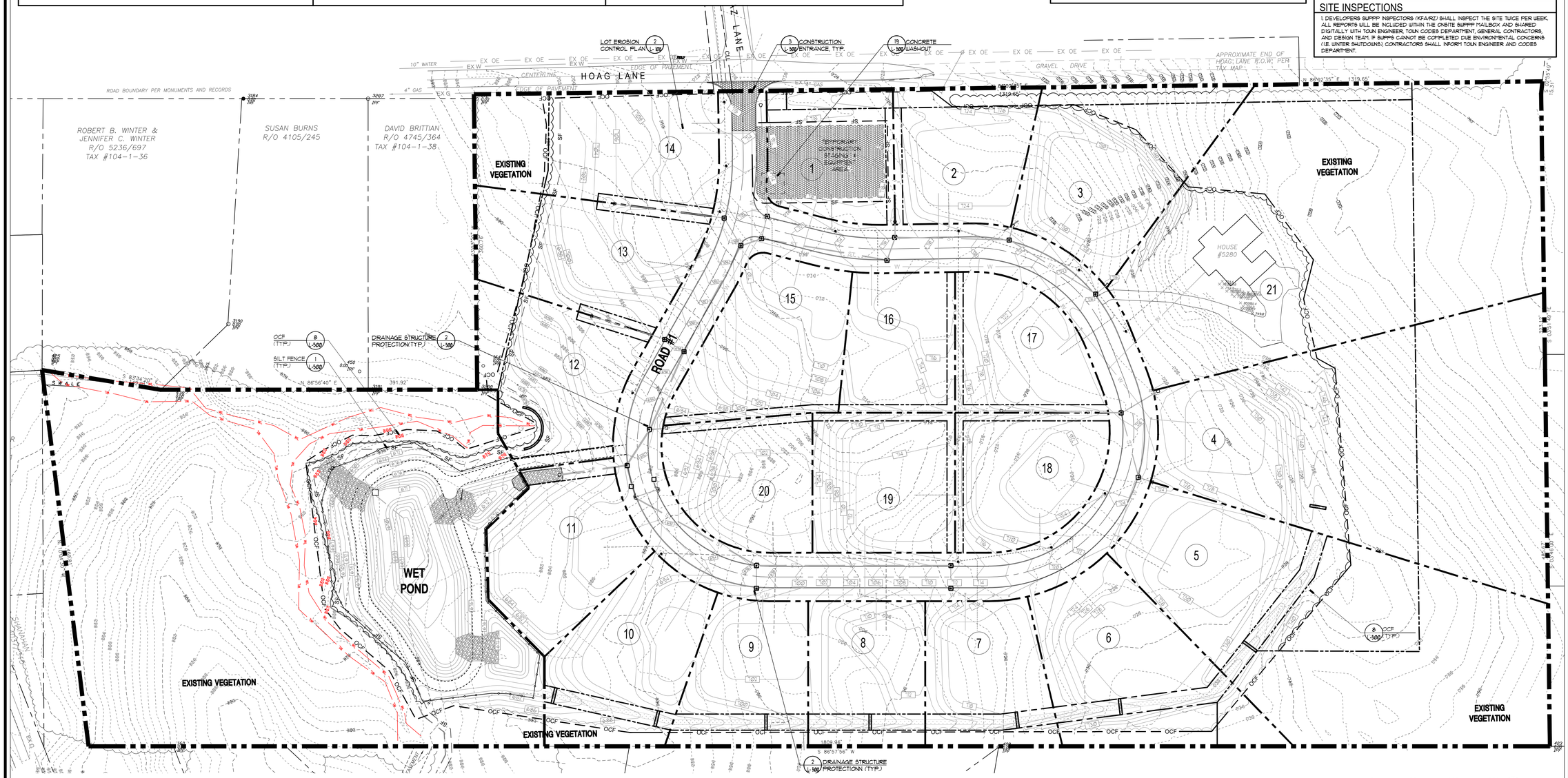
DUST MONITORING PLAN

1. UNIT LOCATION AND DETAIL SHOWN ON PHASING PLANS. SEE DETAIL 8/L-501 FOR SUPPLIER AND MODEL*.

2. REFER TO SUPPP APPENDIX R, DATED 06/15/20 AS PREPARED BY RZ ENGINEERING FOR ADDITIONAL DUST MONITORING PROCEDURES.

SITE INSPECTIONS

1. DEVELOPERS SUPPP INSPECTORS (KFA/RZ) SHALL INSPECT THE SITE TWICE PER WEEK. ALL REPORTS WILL BE INCLUDED WITHIN THE ONSITE SUPPP MAILBOX AND SHARED DIGITALLY WITH TOUN ENGINEER, TOUN CODES DEPARTMENT, GENERAL CONTRACTORS, AND DESIGN TEAM. IF SUPPS CANNOT BE COMPLETED DUE ENVIRONMENTAL CONCERNS (I.E. UNTIER SHUTDOUNS), CONTRACTORS SHALL INFORM TOUN ENGINEER AND CODES DEPARTMENT.



1 L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN

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Tuesday, June 16, 2020 12:46:28 PM

Plotted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK — SCOTT L. ZOSH — 079515 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
EROSION CONTROL AND STORM WATER POLLUTION PREVENTION PLAN

L-101

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOUN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2020 AND 05/21/2020 RESPECTIVELY.

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

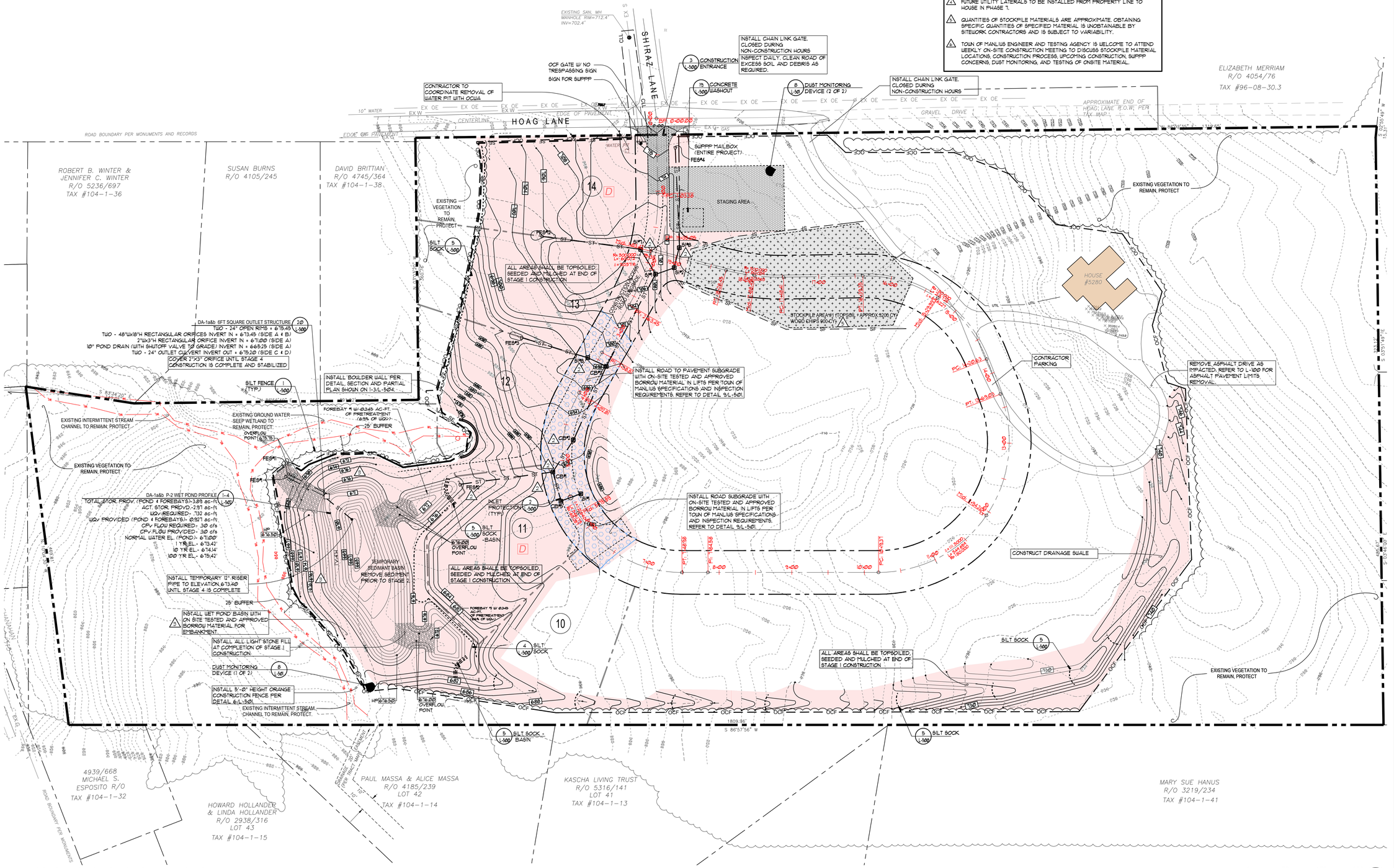
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
STAGE 1	SIX (6) MS.	22.43	6.44	1.17
STAGE 2	SIX (6) MS.	15.40	7.82	6.82
STAGE 3	SIX (6) MS.	13.68	4.16	12.20
STAGE 4	TWO (2) MS.	13.68	1.78	15.79
STAGE 5	TWO (2) MS.	13.68	3.24	14.03
STAGE 6	TWO (2) MS.	13.68	3.13	14.13
STAGE 7	THREE (3) MS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (IE. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. B4E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-102 **CONSTRUCTION STAGING PLAN - STAGE 1**

Monday, June 15, 2020 6:23:46 PM

Posted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK — RUDY L. ZOLLO — 079343 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	08/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	08/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001513 STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37080
Date: DECEMBER | 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 1

L-102

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.

** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOUN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2020 AND 05/21/2020 RESPECTIVELY.

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OOF — OOF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
STAGE 3	SIX (6) MOS.	13.68	4.16	12.20
STAGE 4	TWO (2) MOS.	13.68	1.78	15.79
STAGE 5	TWO (2) MOS.	13.68	3.24	14.03
STAGE 6	TWO (2) MOS.	13.68	3.13	14.13
STAGE 7	THREE (3) MOS.	13.68	PER LOT	PER LOT

NOTES:

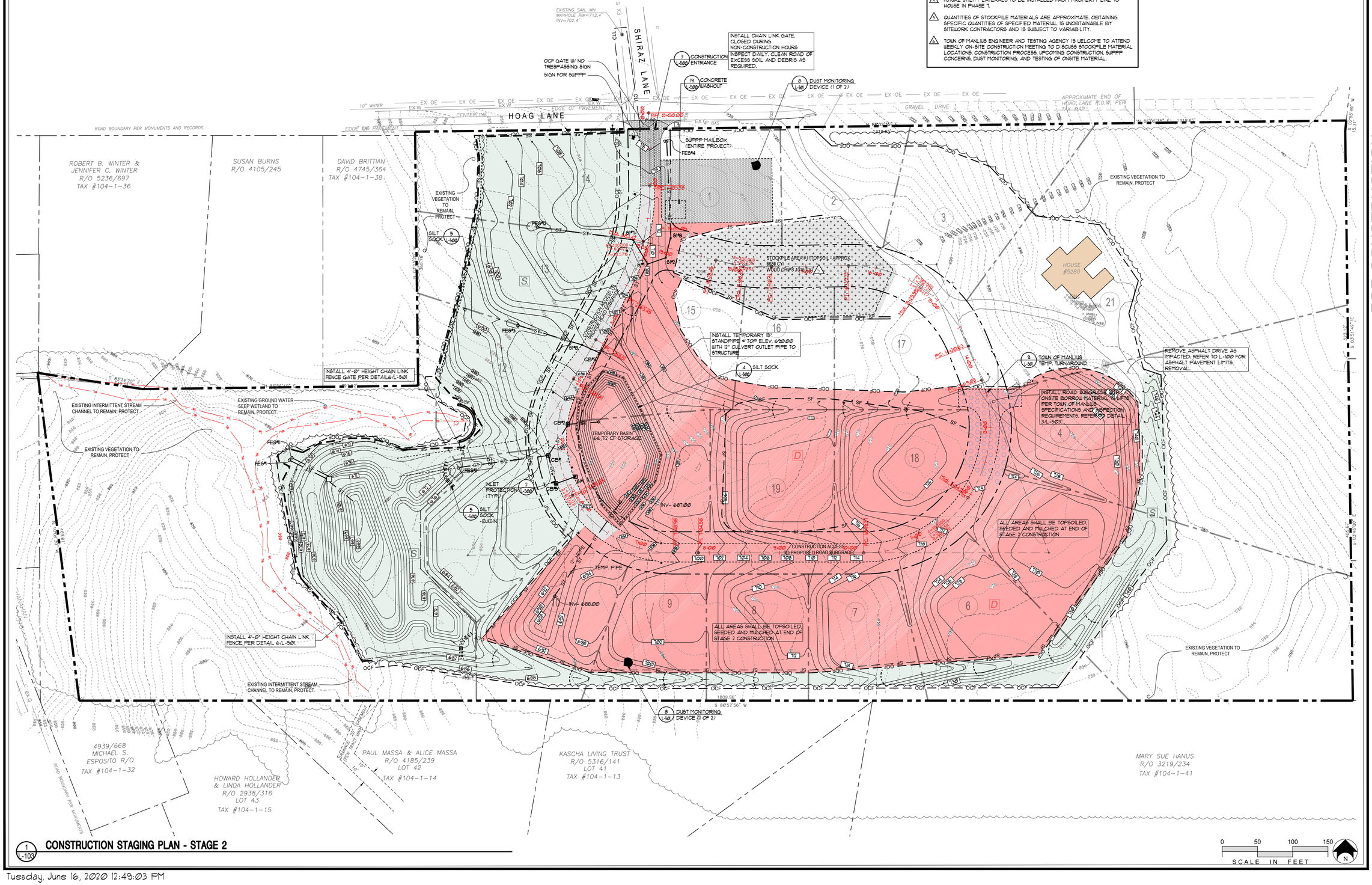
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. B4E

NOTES:

A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-103 **CONSTRUCTION STAGING PLAN - STAGE 2**

KEPLINGER FREEMAN ASSOCIATES
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RZ Engineering, PLLC
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EAST SYRACUSE, NY 13057
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STATE OF NEW YORK — RUDY L. ZOLLO — 079345 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/28/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 2

L-103

Plotted By:
Date Plotted:
Drawing File:

Tuesday, June 16, 2020 12:49:03 PM

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

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3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOUN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2018 AND 05/21/2018 RESPECTIVELY.

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OF — OF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
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CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

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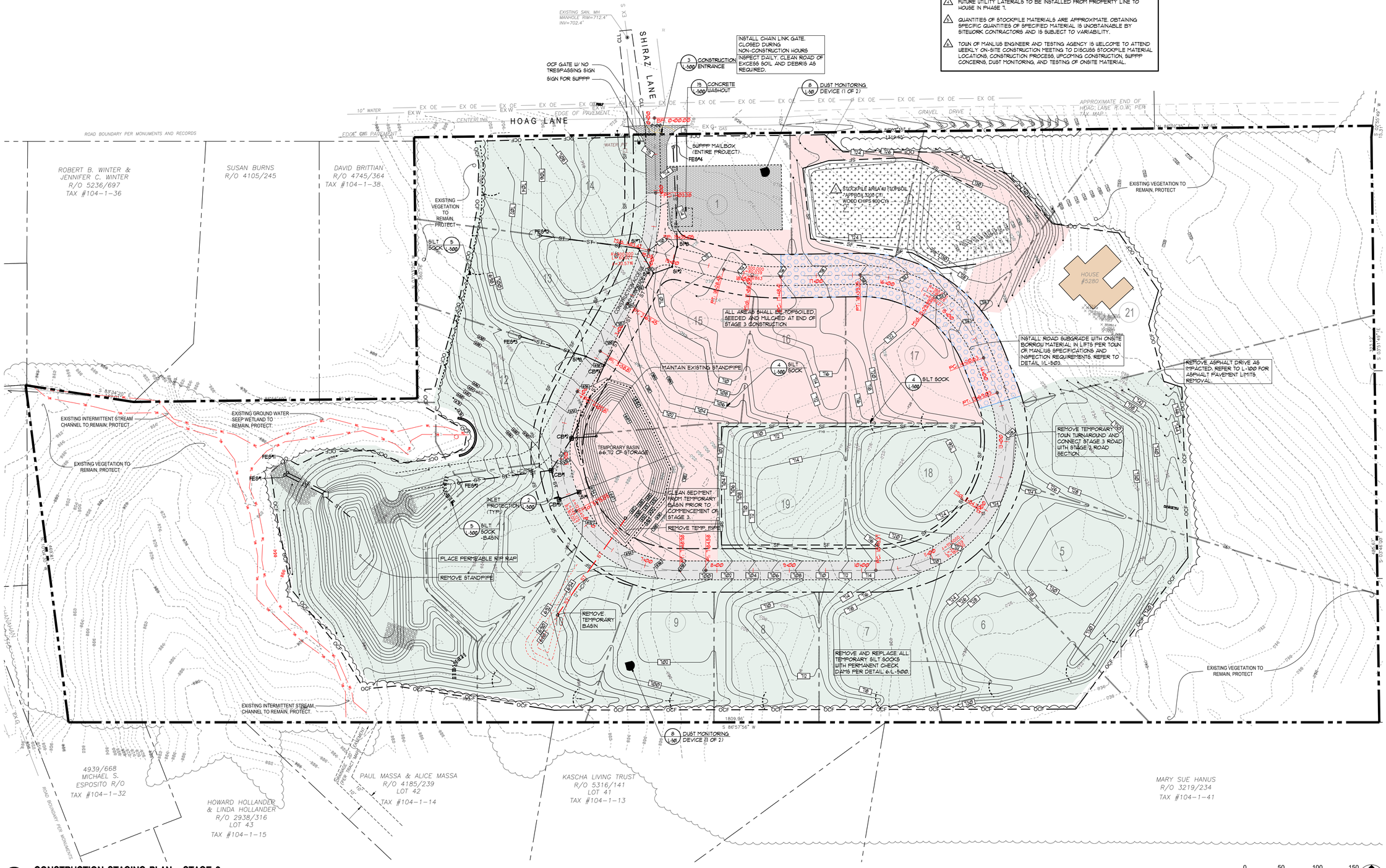
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
STAGE 1	SIX (6) MOS.	22.43	6.44	1.17
STAGE 2	SIX (6) MOS.	15.40	7.82	6.82
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STAGE 7	THREE (3) MOS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
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NOTES:
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- C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
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- F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-104 **CONSTRUCTION STAGING PLAN - STAGE 3**

Tuesday, June 16, 2020 12:50:48 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
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RZ Engineering, PLLC
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STATE OF NEW YORK — RUDY L. ZOLA — 079343 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION					
No.	Rev.	Description	Date	No.	Rev.
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8
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4	4	PUBLIC HEARING-MANLIUS	05/04/18	11	11
5	5	PUBLIC HEARING-MANLIUS	06/01/18	12	12
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13
7	7	MANLIUS-21 HOME LOTS-PL BD	11/20/18	14	14

No.	Description	Date
8	21 LOT SITE PLAN REVISIONS	01/04/19
9	MANLIUS- PLAN SUBMISSION	06/14/19
10	MANLIUS- PLAN SUBMISSION	07/12/19
11	MANLIUS- PLAN SUBMISSION	09/23/19
12	MANLIUS- PLAN SUBMISSION	12/18/19
13	MANLIUS- PLAN SUBMISSION	12/18/19
14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By:	VER
Checked By:	SF
KFA Proj. No.:	37080
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 3

L-104

EARTHWORK FIELD TESTING SUMMARY TABLE

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Construction Stage	Estimated Quantity			
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SWPPP LEGEND

X-HOAG-SWPPP LEGEND

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CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

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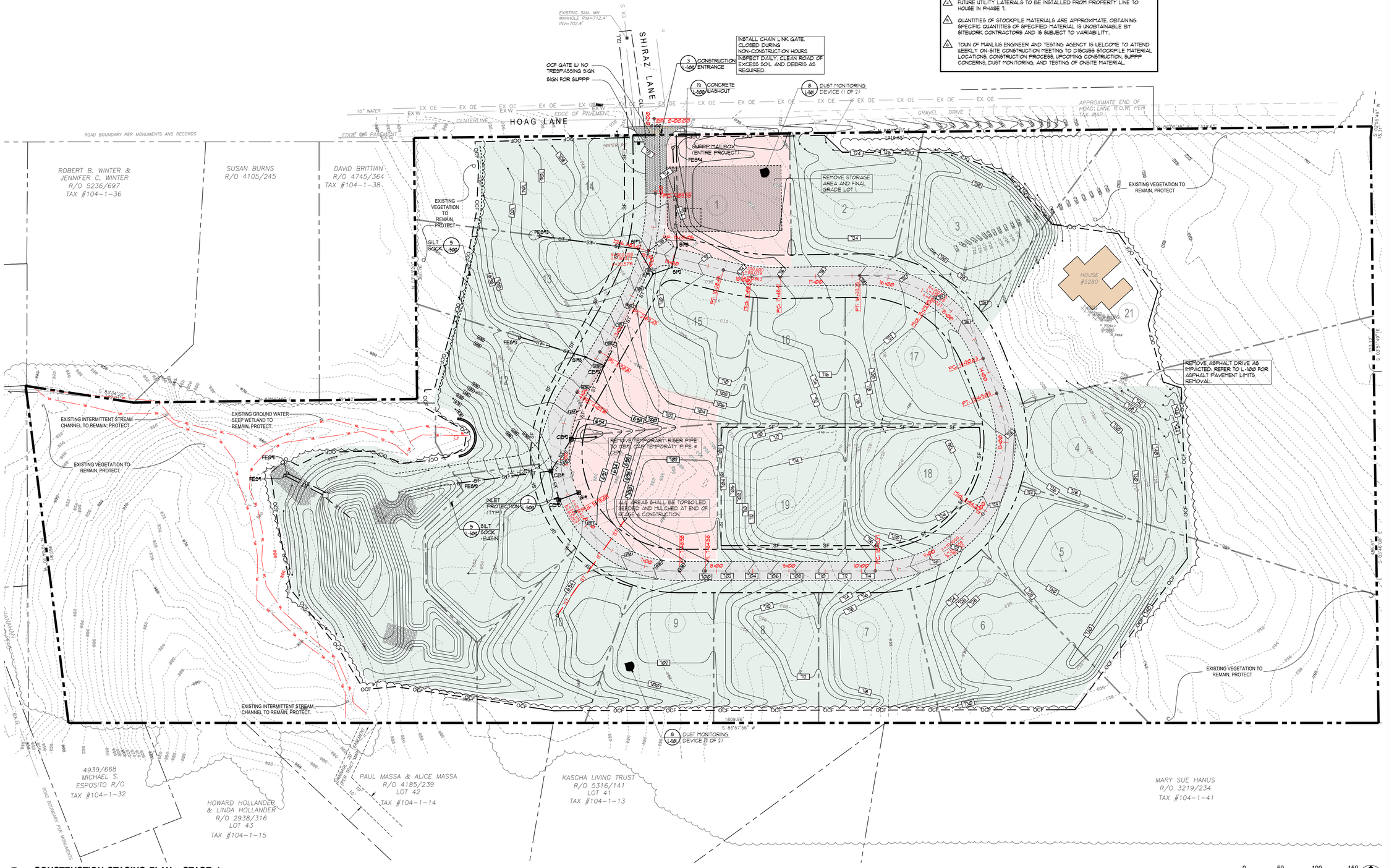
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1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER) SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOWN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION, INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. B4E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-105 **CONSTRUCTION STAGING PLAN - STAGE 4**

Tuesday, June 16, 2020 12:52:16 PM

Posted By:
Date Posted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — RUDY L. ZOLLA — 079345 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△ Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BID	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT M. FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 4

L-105

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
Stage 4	~	~	~	34
Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOUN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 05/18/2020 AND 05/21/2020 RESPECTIVELY.

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.

SWPPP LEGEND

X-HOAG-SWPPP LEGEND

- SF — SILT FENCE
- SEDIMENT TRAP # CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- OCF — ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- S — STABILIZED W/ SEED AREAS
- SS — STABILIZED WORK AREAS
- D — DISTURBED AREAS
- DUST MONITORING DEVICE

CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

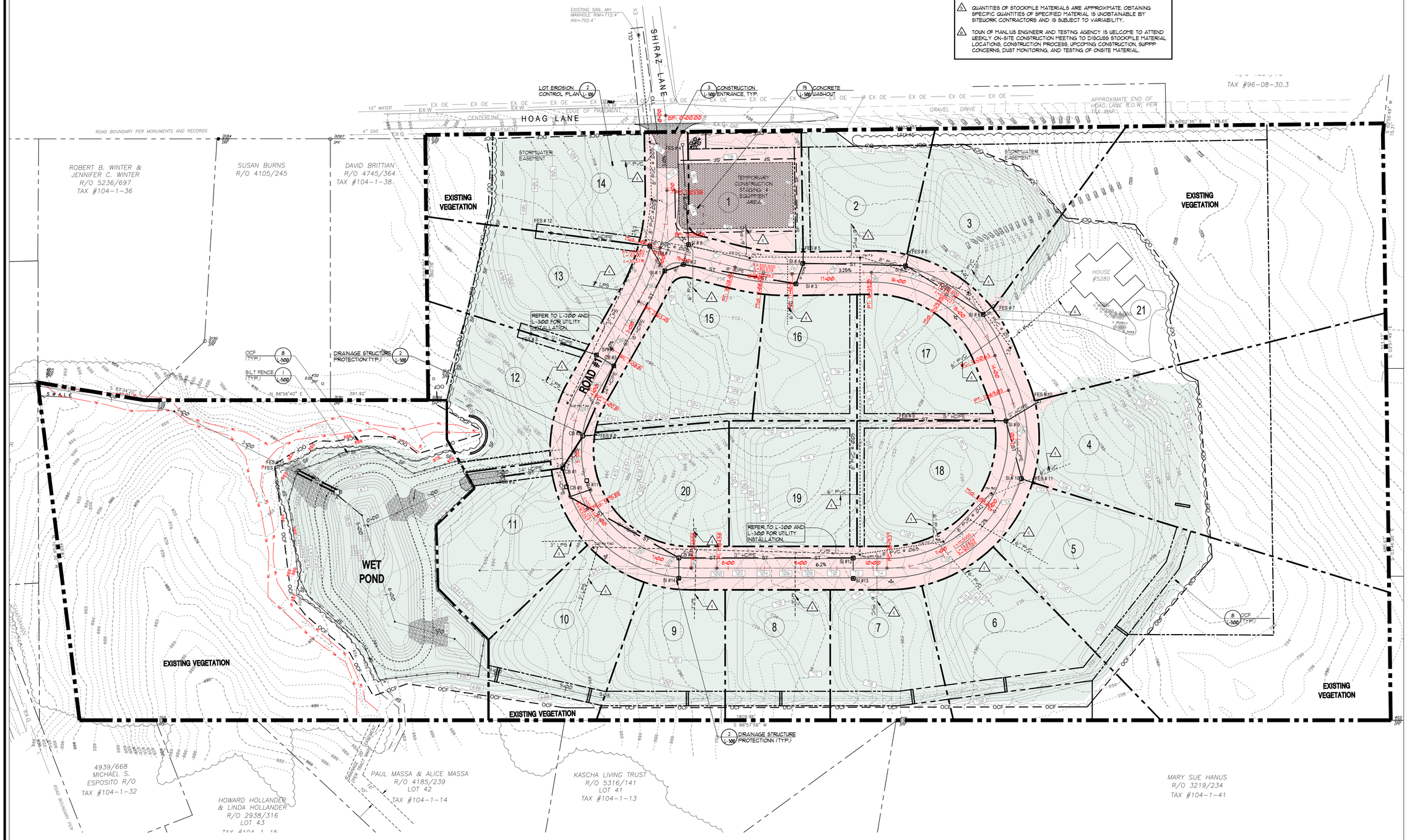
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (I.E. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/27/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 7.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
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6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D4E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
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D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
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F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1/L-106 CONSTRUCTION STAGING PLAN - STAGE 5

SCALE IN FEET: 0 50 100 150

Tuesday, June 16, 2020 12:54:24 PM

Posted By:
Date Posted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — RUDY L. ZOLLA — 079935 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
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3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
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7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 5

L-106

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
Stage 1	1	1	3	272
Stage 2	1	1	3	52
Stage 3	1	1	3	76
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Stage 5	1	1	~	TBD
Stage 6	~	~	~	171
Stage 7	~	~	~	TBD
Total	~	~	~	~

* Based on varied soil conditions encountered during subsurface investigation and granular fill.
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SWPPP LEGEND

X-HOAG-SWPPP LEGEND

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CONSTRUCTION STAGING

X-HOAG-ZONING-REVISED

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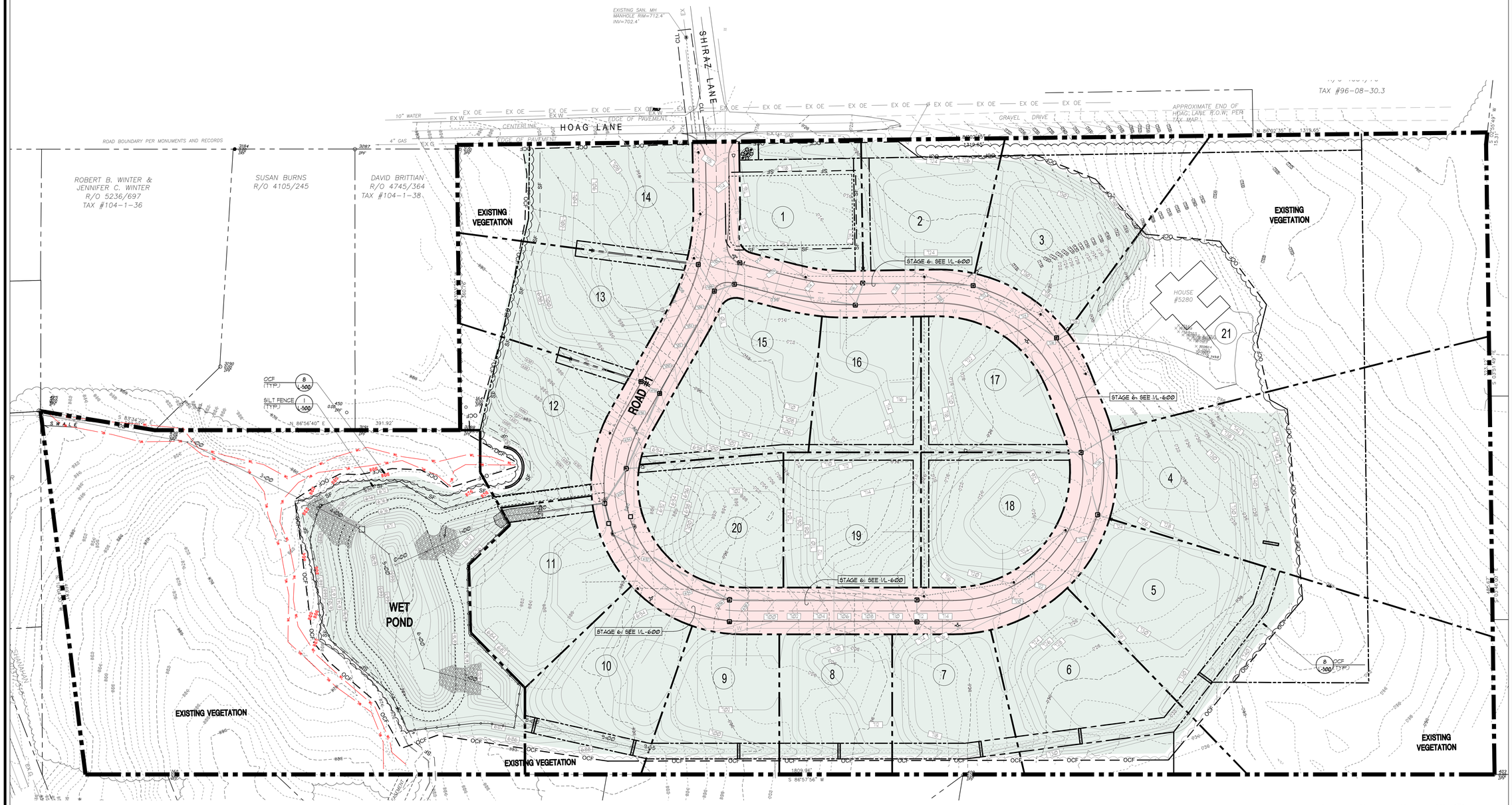
CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.24 (AC.)	-	-
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5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE. OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
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CONSTRUCTION STAGING NOTES

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NOTES:
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- E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
- F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.



1 L-107 CONSTRUCTION STAGING PLAN - STAGES 6

SCALE IN FEET 0 50 100 150

Tuesday, June 16, 2020 12:56:22 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
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RZ Engineering, PLLC
6320 FLY ROAD SUITE 109,
EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — SCOTT L. FREEMAN — 070413 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION							
No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
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6	6	TOWN REV-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

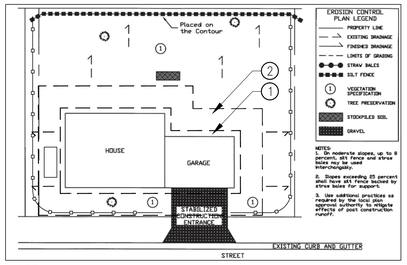
△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 6

L-107



NOTES:
1- FOUNDATION ZONE: Ø-5 FEET FROM EDGE OF BUILDING. DRAINAGE IMPROVEMENTS AROUND FOUNDATION.
2- SOIL RESTORATION ZONE: 5'-25' FEET FROM EDGE OF BUILDING. REFER TO SOIL RESTORATION NOTES ON L-101.
3-POST CONSTRUCTION NOTES TO BE PROVIDED TO HOA/ HOMEOWNERS.

2 / L-108 LOT EROSION CONTROL PLAN
NOT TO SCALE

EARTHWORK FIELD TESTING SUMMARY TABLE

Service	Particle Size Analysis	Modified Proctor	Proofrolling Observation	In-Place Soil Density Testing
Construction Stage	Estimated Quantity			
	tests*	tests*	days**	tests**
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* Based on varied soil conditions encountered during subsurface investigation and granular fill.
** Based on approximate volume of cut and fill for roads, utilities, and embankments

Note: Number of days and tests are subject to change based on construction schedule and changes in project scope. All quantities are estimated based on the staging drawings (L-102 through L-108) and specifications provided.

All laboratory and field testing will be performed under the direction and supervision of a New York State Certified Professional Engineer

SWPPP LEGEND
X-HOAG-SWPPP LEGEND

- SILT FENCE
- SEDIMENT TRAP @ CB/INLET
- SILT SOCK
- CONSTRUCTION ENTRANCE
- ROAD FILL AREA (REFER TO 1-503 FOR DETAILS)
- ORANGE CONSTRUCTION FENCE
- MATERIAL STOCKPILE AREA
- STABILIZED W/ SEED AREAS
- STABILIZED WORK AREAS
- DISTURBED AREAS
- DUST MONITORING DEVICE

EARTHWORK FIELD TESTING NOTICE

1. NO BLASTING SHALL OCCUR ONSITE. NO ROCK REMOVAL OFFSITE TO OCCUR. NO BEDROCK OR RESTRICTIVE LAYERS ENCOUNTERED ON ANY ON-SITE SOIL TESTING/BORINGS.
2. PLACEMENT OF ALL EMBANKMENT FILL, RIGHT OF WAY FILL AND BASEMENT SLAB FILL SHALL BE PERFORMED IN ACCORDANCE WITH REPORT, SPECIFICATIONS, AND TOUN OF MANLIUS APPROVED TESTING AGENCY.
3. SITE CONTRACTOR, DESIGN TEAM, AND TESTING AGENCY TO MEET ON A WEEKLY BASIS TO COORDINATE REQUIRED TESTING.
4. TOUN OF MANLIUS APPROVED TESTING AGENCY SHALL COMPLY WITH KENNEY GEOTECHNICAL REPORTS IDENTIFIED AS EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED 09/18/2020 AND 05/21/2020 RESPECTIVELY.

CONSTRUCTION STAGING
X-HOAG-ZONING-REVISED

DISTURBANCE AREA

- "DISTURBANCE" AREA- ONGOING EARTHWORK AREAS THAT EXHIBIT EXPOSED SOIL PRIOR TO MULCHING AND SEEDING.
- "STABILIZED" AREA- EARTHWORK AREAS THAT HAVE BEEN TOPSOIL, MULCHED, AND SEEDED.

CONSTRUCTION STAGE	DURATION	UNDISTURBED	DISTURBED	STABILIZED
TOTAL SITE	ONE (1) YR.	30.04 (AC.)	-	-
STAGE 1	SIX (6) WKS.	22.43	6.44	1.17
STAGE 2	SIX (6) WKS.	15.40	7.82	6.82
STAGE 3	SIX (6) WKS.	13.68	4.16	12.20
STAGE 4	TWO (2) WKS.	13.68	1.78	15.79
STAGE 5	TWO (2) WKS.	13.68	3.24	14.03
STAGE 6	TWO (2) WKS.	13.68	3.13	14.13
STAGE 7	THREE (3) WKS.	13.68	PER LOT	PER LOT

NOTES:
1. APPROXIMATE DURATION OF EACH STAGE SHOWN ABOVE. ACTUAL STAGE DURATION IS SUBJECT TO ENVIRONMENTAL EVENTS (IE. WEATHER), SITE CONTRACTOR RESPONSE, FIELD CONDITIONS, SCHEDULE AND OTHER CONTRIBUTING ISSUES ASSOCIATED WITH CONSTRUCTION.
2. SEE DRAWING L-200 FOR ALL CATCH BASIN RIMS AND INVERTS PER STORM WATER SCHEDULE.
3. STORMWATER WET POND EMBANKMENT TO BE CONSTRUCTED IN ACCORDANCE WITH KENNEY GEOTECHNICAL REPORT ENTITLED BERM STABILITY EVALUATION, DATED 5/21/20.
4. FUTURE UTILITY LATERALS TO BE INSTALLED FROM PROPERTY LINE TO HOUSE IN PHASE 1.
5. QUANTITIES OF STOCKPILE MATERIALS ARE APPROXIMATE OBTAINING SPECIFIC QUANTITIES OF SPECIFIED MATERIAL IS UNOBTAINABLE BY SITEWORK CONTRACTORS AND IS SUBJECT TO VARIABILITY.
6. TOUN OF MANLIUS ENGINEER AND TESTING AGENCY IS WELCOME TO ATTEND WEEKLY ON-SITE CONSTRUCTION MEETING TO DISCUSS STOCKPILE MATERIAL LOCATIONS, CONSTRUCTION PROCESS, UPCOMING CONSTRUCTION, SWPPP CONCERNS, DUST MONITORING, AND TESTING OF ONSITE MATERIAL.

CONSTRUCTION STAGING NOTES

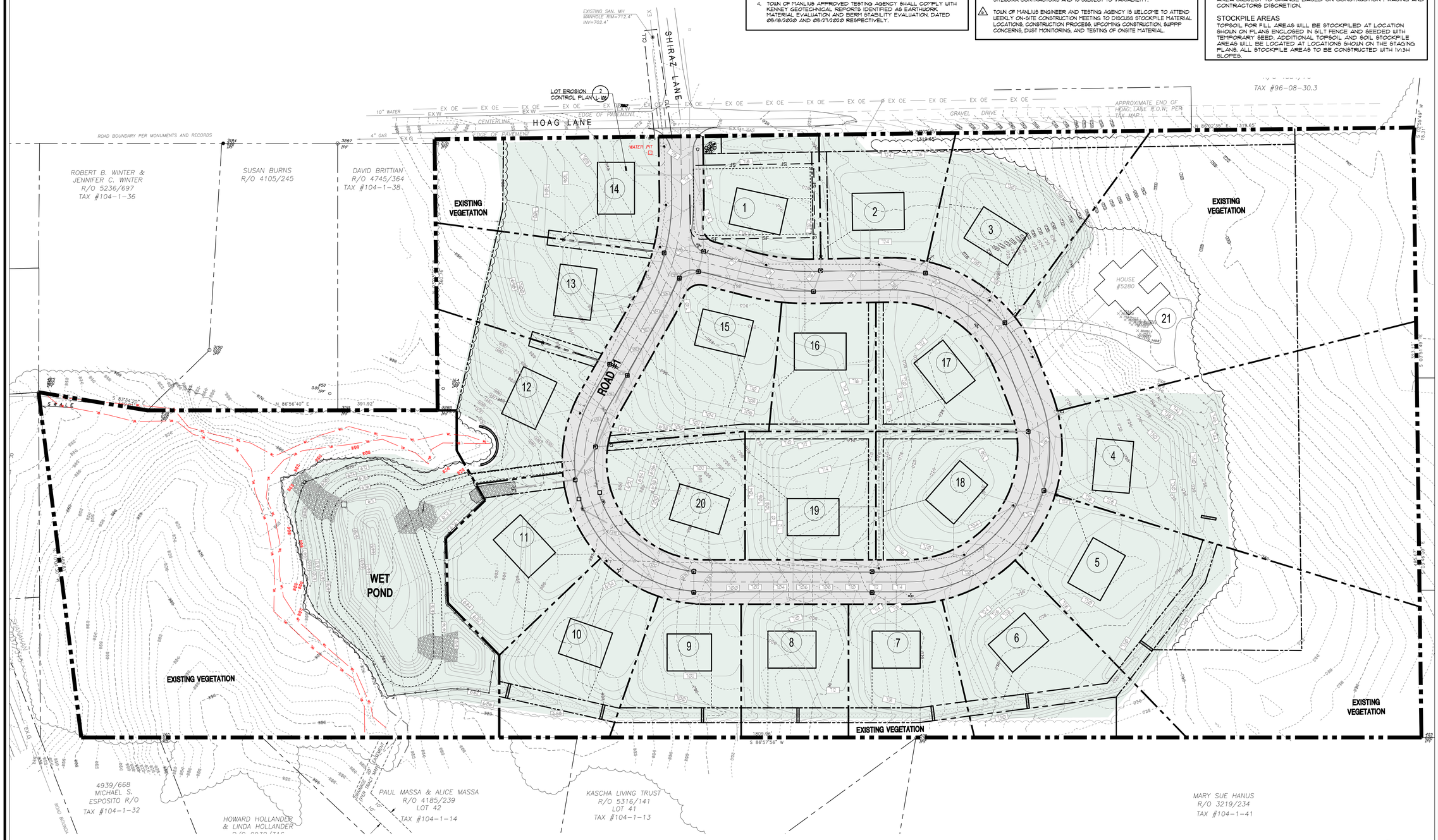
1. STAGE 1- SITE CLEARING AND STORM WATER POND INFRASTRUCTURE INSTALLATION. INSTALL OF EROSION CONTROL AND DUST CONTROL MEASURES. B4C
2. STAGE 2- SITE CLEARING OF SOUTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. INSTALLATION OF TEMPORARY SEDIMENT BASIN. B4C
3. STAGE 3- SITE CLEARING OF NORTHERN PORTION OF SITE. ROUGH EARTHWORK TO CONFORM TO GRADING PLAN INCLUDING BUT NOT LIMITED TO ROADS AND UTILITIES. B4C
4. STAGE 4- FINAL EARTHWORK FOR REMAINING LOTS.
5. STAGE 5- INSTALLATION OF UTILITIES WITHIN ROW OR EASEMENT INCLUDING SANITARY, WATER, STORM, GAS, AND ELECTRIC. WATER , GAS, AND ELECTRIC TO BE INSTALLED BY APPROPRIATE UTILITY AGENCY.
6. STAGE 6- CONSTRUCTION OF ROAD BASE AND KICK UP GUTTERS.
7. STAGE 7- FINE GRADING AND INDIVIDUAL LOT CONNECTIONS AND GRADING. APPROXIMATE 5 HOME CONSTRUCTIONS PER YEAR. D1E

NOTES:
A. REFER TO L-101 EROSION CONTROL AND STORMWATER POLLUTION PREVENTION PLAN FOR ADDITIONAL STAGE INFORMATION.
B. EROSION CONTROL MEASURES TO STAY IN PLACE DURING ENTIRETY OF CONSTRUCTION SEQUENCE.
C. DUST CONTROL INFORMATION CAN BE FOUND IN THE SWPPP APPENDIX R, DATED 06/15/20.
D. FINAL ASPHALT TOP COURSE TO BE INSTALLED AFTER MAJORITY OF HOUSE LOTS CONSTRUCTED.
E. LICENSED SURVEYOR TO PROVIDE INDIVIDUAL LOT CORNERS WITH IRON PIPES/MONUMENTS PER APPROVED PLAT PLAN.
F. DURING STAGES WHERE MORE THAN 5 ACRES WILL BE DISTURBED A 5 ACRE DISTURBANCE LETTER WILL BE SUBMITTED TO NYSDEC.

STAGING,EQUIPMENT STORAGE AREA, BORROW PITS and SPOIL AREAS.

STAGING AND EQUIPMENT STORAGE AREA
INITIAL STAGING AND EQUIPMENT STORAGE AREA FOR PRIMARY CONTRACTOR TO BE LOCATED BY DEVELOPER. AREA SUBJECT TO CHANGE BASED ON CONSTRUCTION PHASING AND CONTRACTORS DISCRETION.

STOCKPILE AREAS
TOPSOIL FOR FILL AREAS WILL BE STOCKPILED AT LOCATION SHOWN ON PLANS ENCLOSED IN SILT FENCE AND SEEDED WITH TEMPORARY SEED. ADDITIONAL TOPSOIL AND SOIL STOCKPILE AREAS WILL BE LOCATED AT LOCATIONS SHOWN ON THE STAGING PLANS. ALL STOCKPILE AREAS TO BE CONSTRUCTED WITH 1V:3H SLOPES.



1 / L-108 CONSTRUCTION STAGING PLAN - STAGE 7

SCALE IN FEET: 0 50 100 150

Tuesday, June 16, 2020 12:58:57 PM

Posted By:
Date Posted:
Drawing File:

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HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
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7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 31080
Date: DECEMBER | 2017
Scale: AS NOTED

Title:
CONSTRUCTION STAGING PLAN - STAGE 7

L-108

STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES # 1	FLARED END SECTION [2]	N/A	-	24"-665.00
DA-1A4B	Ø" DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES # 2	FLARED END SECTION [2]	N/A	-	(E)-24"-676.00
CB # 1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB # 2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-688.75
CB # 3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"-693.00 (NE)-18"-694.00 UD- 696.25	(SW)-24"-693.00
SI # 1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI # 2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI # 3	STORM INLET [4]	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI # 4	STORM INLET [4]	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI # 5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI # 6	STORM INLET [4]	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES # 7	FLARED END SECTION [2]	N/A	-	12"-725.00
FES # 3	FLARED END SECTION [2]	N/A	12" - 691.50	-
FES # 12	FLARED END SECTION [2]	N/A	12" - 704.00	-
SI # 7	STORM INLET [4]	709.75	UD-707.00 12"-703.20	(SE)-12"-703.10
SI # 8	STORM INLET [4]	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES # 4	FLARED END SECTION [2]	N/A	10"-713.00	-
FES # 5	FLARED END SECTION [2]	N/A	12"-715.00	-
FES # 6	FLARED END SECTION [2]	N/A	12"-721.00	-
FES # 8	FLARED END SECTION [2]	N/A	-	15"-689.00
FES # 9	FLARED END SECTION [2]	N/A	-	15"-718.00
SI # 9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI # 10	STORM INLET [4]	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES # 11	FLARED END SECTION [2]	N/A	12" - 722.00	
FES # 10	FLARED END SECTION [2]	N/A	12"- 722.00	-
CB # 5	CATCH BASIN - 4'-0" [3]	691.42	(E)-10"-688.50 (SE)-18"-688.50 UD- 691.50	(N)-24"-688.25
CB # 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI # 12	STORM INLET [4]	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI # 13	STORM INLET [4]	711.75	UD-709.40	(N)-12"-708.50
SI # 11	STORM INLET [4]	691.42	UD-687.50	(W)-10"-686.00
SI # 14	STORM INLET [4]	696.72	UD-694.90	(N)-10"-693.90
SI # 15	STORM INLET [4]	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES # 11	FLARED END SECTION [2]	N/A	24"- 665.00	-

NOTES:
1. INSTALL OUTLET STRUCTURE PER DETAIL 20/L-500.
2. INSTALL FLARED END SECTION PER DETAIL 15/L-500.
3. INSTALL STORM INLET PER DETAIL 13/L-500.
4. INSTALL CATCH BASIN PER DETAIL 11/L-500.
5. INSTALL STORM PIPING TRENCH DETAIL PER DETAIL 12/L-500 & 3/L-503 IN FILL AREAS

GENERAL BUILDING LOT NOTES

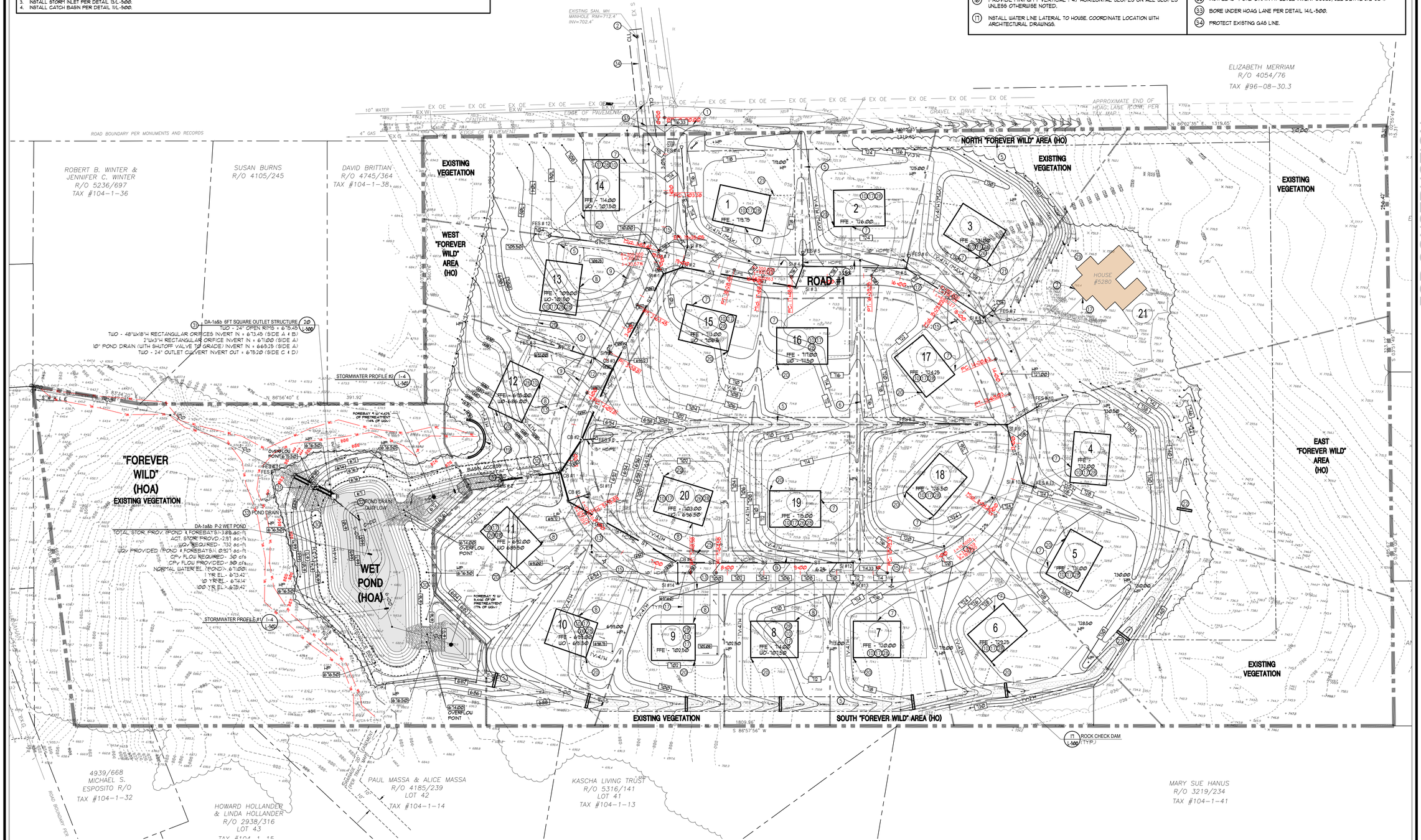
SUMP PUMP DISCHARGES - SUMP PUMP DISCHARGES SHALL BE DIRECTED TO REAR SWALES.

FINISH FLOOR ELEVATIONS - SHOWN ON PLANS REFER TO THE GARAGE ELEVATIONS OF PROPOSED HOUSES.

LOT GRADING - OF INDIVIDUAL LOTS SHALL BE CONSTRUCTED TO DIRECT STORM RUNOFF AWAY FROM THE BUILDING TOWARDS THE ROAD, SIDE YARD AND REAR YARD. YARD ALL AROUND THE DWELLING SHALL SLOPE AT LEAST 6 INCHES IN THE FIRST 10 FEET, AWAY FROM THE DWELLING. FRONT YARDS SHALL HAVE A SLOPE OF AT LEAST 2% AND ALL PORTIONS OF THE REAR AND SIDE YARDS SHALL HAVE A SLOPE OF AT LEAST 1%.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE, SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4:1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT. RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1'V:8'H SLOPE (12.5%.)
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 / L-200 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

0 50 100 150 SCALE IN FEET

Tuesday, June 16, 2020 1:01:11 PM

Plotted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK — RUDY L. ZOLLO — 079345 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
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4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001473 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

CLUSTER GRADING and DRAINAGE PLAN- 21 LOTS

L-200

SHADE RELIEF LEGEND - TOWN OF MANLIUS

§ 127-19: C. FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 25 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES.

HOAG LANE

SHIRAZ LANE

ROBERT B. WINTER & JENNIFER C. WINTER R/O 5236/697 TAX #104-1-36

SUSAN BURNS R/O 4105/245

DAVID BRITTIAN R/O 4745/364 TAX #104-1-38

ELIZABETH MERRIAM R/O 4054/76 TAX #96-08-30.3

HOUSE #5280

4939/668 MICHAEL S. ESPOSITO R/O TAX #104-1-32

HOWARD HOLLANDER & LINDA HOLLANDER R/O 2938/316 LOT 43 TAX #104-1-15

PAUL MASSA & ALICE MASSA R/O 4185/239 LOT 42 TAX #104-1-14

KASCHA LIVING TRUST R/O 5316/141 LOT 41 TAX #104-1-13

MARY SUE HANUS R/O 3219/234 TAX #104-1-41

1 L-201 **25% SHADE RELIEF PLAN**

0 50 100 150 SCALE IN FEET

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STATE OF NEW YORK — SCOTT L. ZOLL — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION						
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2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/28/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/20/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

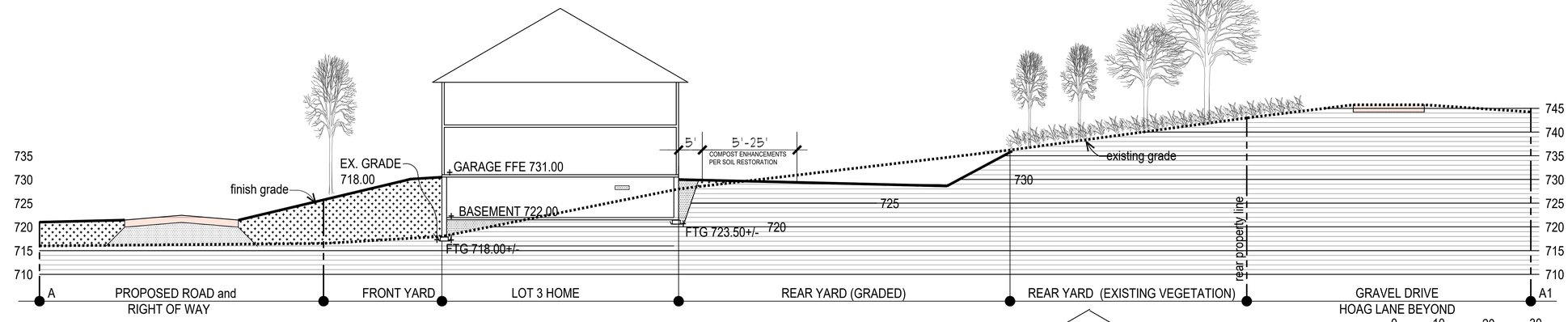
Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
25% SLOPE RELIEF PLAN

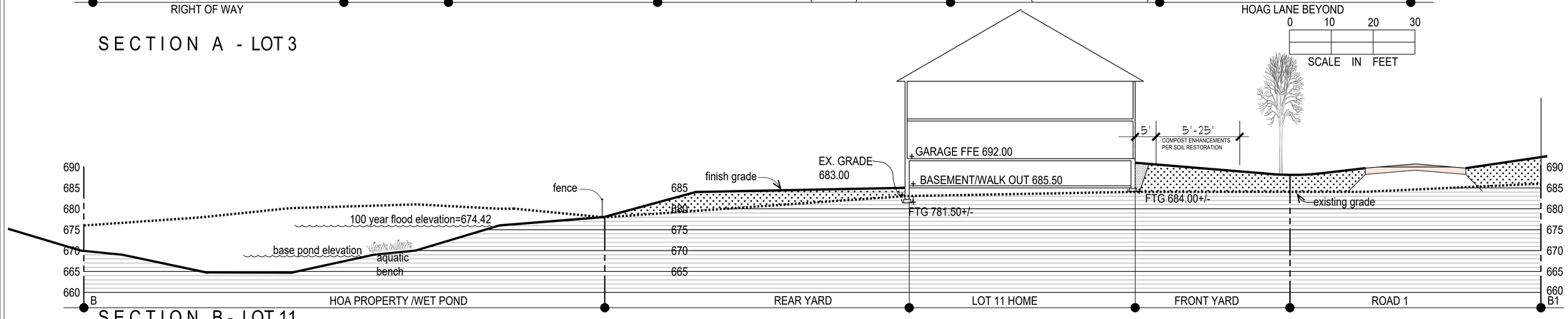
L-201

Plotted By:
Date Plotted:
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Tuesday, June 16, 2020 1:02:05 PM



SECTION A - LOT 3



SECTION B - LOT 11

0 10 20 30

SCALE IN FEET

CUT/FILL BASEMENT SLAB REVIEW

CUT AREAS (basement or walk out concrete slab constructed in areas of cut)

FILL AREAS (basement or walk out concrete slab areas requiring fill)

BUILDING SLABS REQUIRING FILL WILL BE BROUGHT UP TO BASEMENT SLAB ELEVATIONS IN LIFTS PER PROJECT SPECIFICATIONS.

FOOTER DEPTH REVIEW

FFE - FINISH FLOOR ELEVATION - THE FFE'S SHOWN ON PLANS DEPICT THE ELEVATION OF THE GARAGES FOR EACH PROPOSED HOME. THE REMAINDER OF THE FIRST FLOOR HOMES CAN VARY UNIT TO UNIT AND ARE NOT SHOWN ON THE PLAN. THE FOOTINGS FOR ALL UNITS WILL STEP UP FROM THE DEEP FOOTING ELEVATIONS SHOWN.

FOOTING LOCATION DEPTH - EACH LOT INCLUDES ELEVATION OF THE EXISTING GRADE, BASEMENT/WALKOUT ELEVATION AND FOUNDATION FOOTING AT THE DEEPEST FOOTING LOCATION. HOME BUILDER INTENDS TO CONSTRUCT FOOTINGS ON NATIVE SOIL FOR ALL LOTS. 19 OF THE 20 PROPOSED HOME LOTS WILL HAVE FOOTINGS CONSTRUCTED ON EXISTING GRADE WITH FOOTING DEPTHS WHICH DO NOT EXCEED 4'-0". THERE ARE TWO LOTS (#2 AND #3) WHICH REQUIRE FOOTINGS TO BE CONSTRUCTED DEEPER THAN THE TYPICAL 4'-0" DEPTH.

BUILDING FOOTER ELEVATIONS ARE APPROXIMATE. PLAN SHOWS DEEPEST FOOTING FOR EACH LOT AND IN ALL CASES WILL STEP UP WITH EXISTING GRADE BELOW BASEMENT/WALKOUT ELEVATION.

RIGHT OF WAY CUT/FILL DEPTH REVIEW

RIGHT OF WAY CUT/FILL ANALYSIS - THE ENTIRE ROAD LENGTH IS 1924 LINEAR FEET AND INCLUDES (2) SECTIONS OF CUT (ROAD SECTION 1 AND 3) AND (2) SECTIONS OF FILL (ROAD SECTIONS 2 AND 4).

ROAD SECTION #1 (CUT)- TOTAL LENGTH IS 447 LINEAR FEET AND AVERAGES 2.4' DEPTH OF CUT.

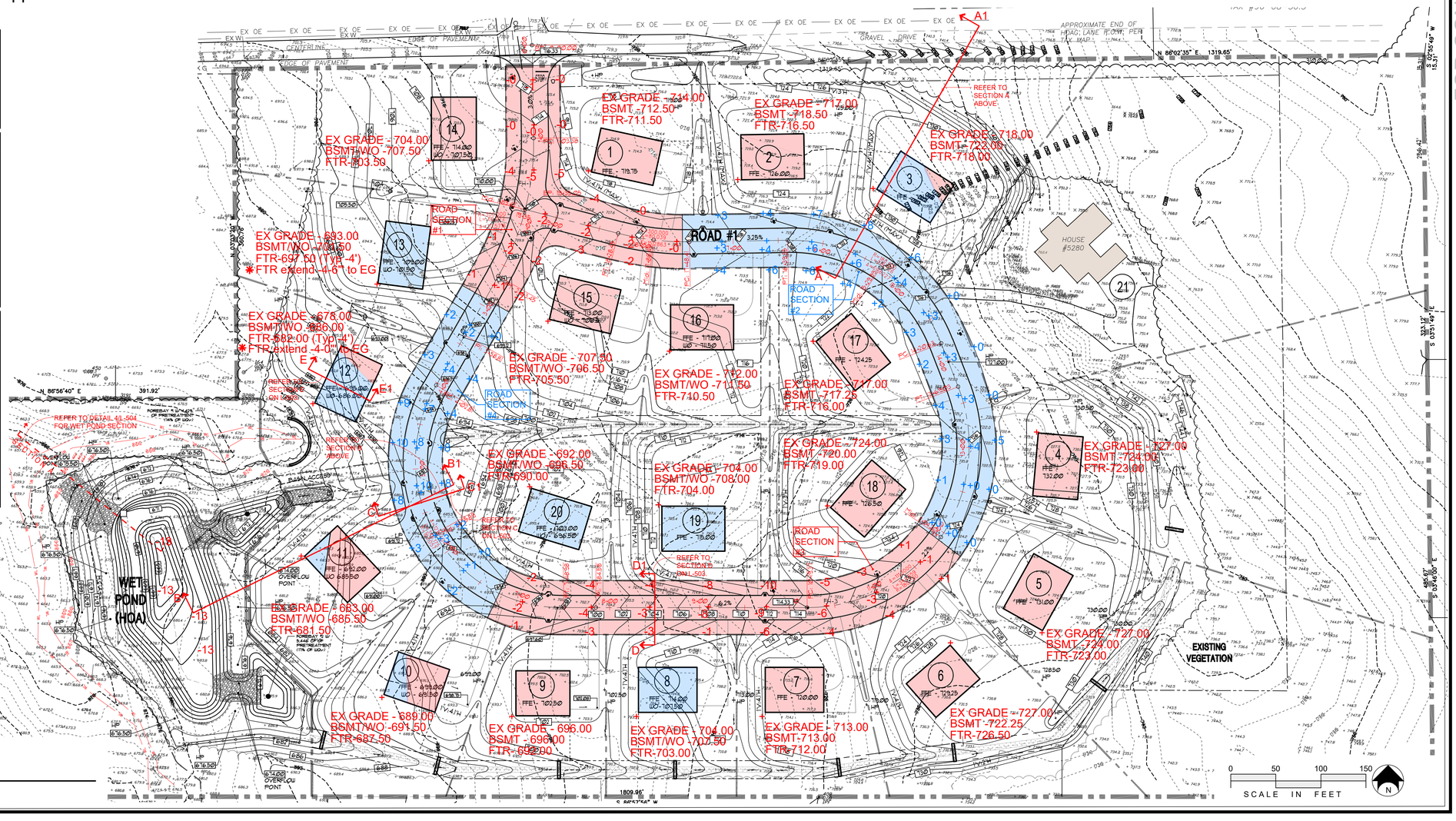
ROAD SECTION #2 (FILL)- TOTAL LENGTH IS 566 LINEAR FEET AND AVERAGES 4.6' DEPTH OF FILL.

ROAD SECTION #3 (CUT)- TOTAL LENGTH IS 515 LINEAR FEET AND AVERAGES 4.5' DEPTH OF CUT.

ROAD SECTION #4 (FILL)- TOTAL LENGTH IS 382 LINEAR FEET AND AVERAGES 4.8' DEPTH OF FILL.

NOTES:
1) THERE IS ONE (1) APPROXIMATE 6000 SF SECTION OF ROAD WHICH EXCEEDS 8' FILL. (STATION 4+30.54 TO 5+30.89).

2) THE TOTAL AVERAGE CUT DEPTH IS 3.6'. THE TOTAL AVERAGE FILL DEPTH IS 4.4'.



1 L-202 CUT/FILL LOT AND ROAD STUDY

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UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
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4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	08/15/20

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 3720
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
RIGHT OF WAY, BASEMENT SLAB and FOOTER SUMMARY

L-202

Posted By:
Date Posted:
Drawing File:

Tuesday, June 16, 2020 1:03:32 PM

HOAG LANE DEVELOPMENT
SEWER SYSTEM TYPE

X-HOAG-SEWER

	SEWER SYSTEM TYPE	LOT NUMBERS
	FORCE MAIN SYSTEM SEWER	8, 9, 10, 11, 12, 13, 20 + (7) TOTAL
	GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 14, 15, 16, 17, 18, 19, 21 + (14)

SANITARY MANHOLE SCHEDULE

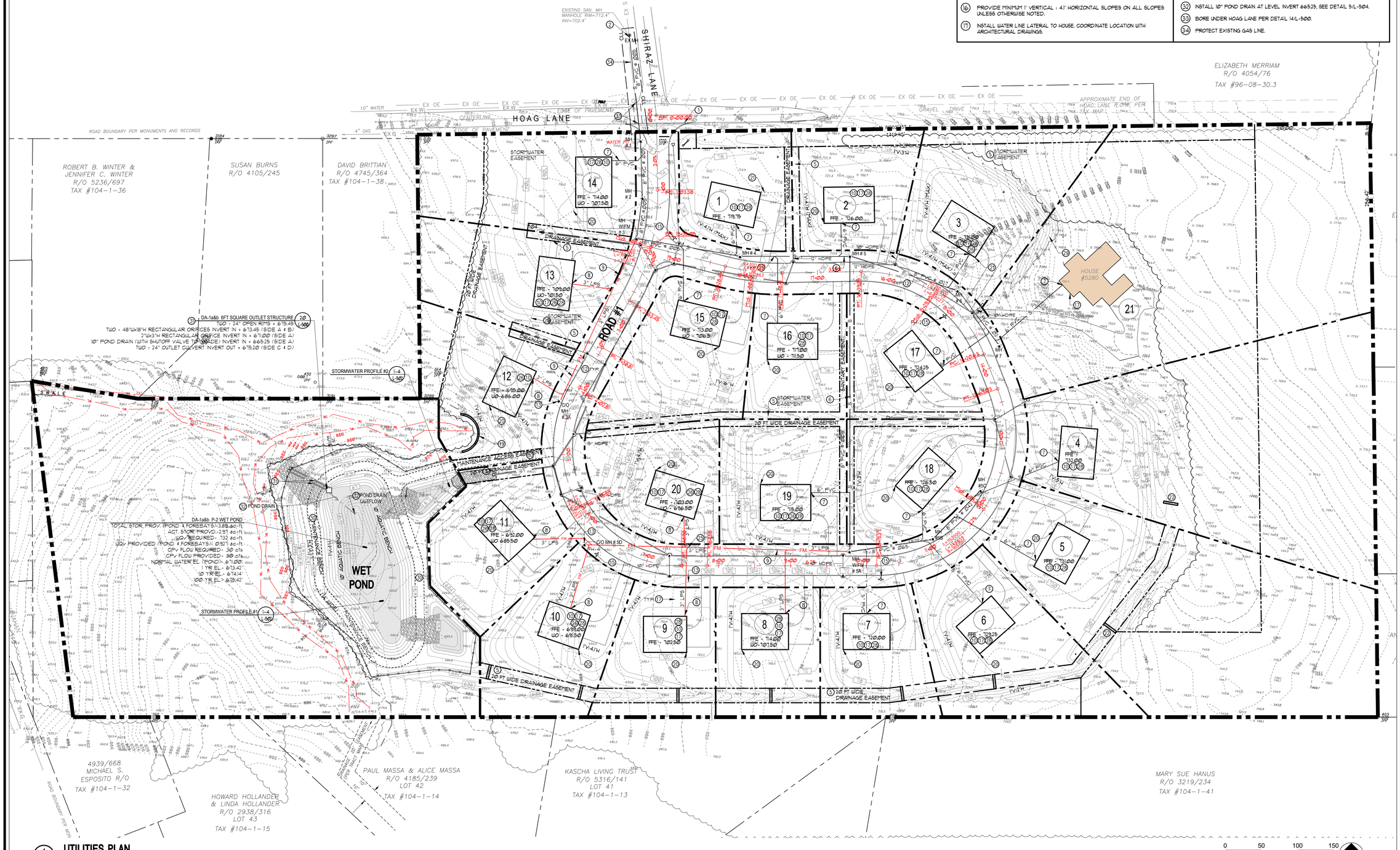
NOTES REFER TO SHEETS L-300

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS	
			IN	OUT
EX MH.	EXISTING	712.40	8" @ 702.50 (S)	702.40 (EX)
MH# 1	MANHOLE[1]	715.20	8" @ 703.30 (S)	8" @ 703.20 (N)
MH# 2	MANHOLE[1]	712.00	8" @ 703.71 (S)	8" @ 703.61 (N)
MH W/FM# 3	MH. W/ FORCED MAIN[2]	708.00	8" @ 704.25 (E) 3" @ 705.15 (S)	8" @ 704.15 (N)
MH# 4	MANHOLE[1]	714.00	8" @ 705.10 (E)	8" @ 705.00 (W)
MH# 5	MANHOLE[1]	720.00	8" @ 705.95 (E) 8" @ 705.95 (S)	8" @ 705.88 (W)
MH# 6	MANHOLE[1]	724.00	8" @ 714.70 (SE)	8" @ 714.60 (NW)
MH# 7	MANHOLE[1]	726.00		8" @ 720.00 (NW)
MH W/FM# 5A	MH. W/ FORCED MAIN[2]	712.00	3" @ 708.80 (W) 8" @ 707.90 (E)	8" @ 707.80 (N)
MH# 5B	MANHOLE[1]	720.20	8" @ 715.20 (E)	8" @ 715.10 (W)
MH# 5C	MANHOLE[1]	723.50		8" @ 715.50 (SW)
C/O MH# 5D	CLEAN OUT MH	692.00		3" @ 684.50 (E)
C/O MH# 3A	CLEAN OUT MH	693.50		3" @ 689.50 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-500.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL: COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501. FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4:1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY/95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT, RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. W'E CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1'V:8'H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



UTILITIES PLAN

L-300

Tuesday, June 16, 2020 11:24:05 AM

Plotted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK — RUDY L. ZOLA — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

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△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
UTILITIES PLAN

L-300



2 L-400 **ENTRANCE MONUMENT SIGN**

SIGN SCHEDULE

X-SIGN-SCHEDULE

KEY	SIGN PLATE		SIGN SIZE MOUNTING HT.	N.Y.S.D.O.T. MULT.C.D. NO. / COMMENTS
A	STOP	STOP SIGN	24" X 24" 7'-0" HT.	SIGN NO. R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X-HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #24.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ••• ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ••• ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE 2§18). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SeGUIN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOS.NY.GOV/LG/PUBLICATIONS/SUBDIVISION%20REVIEW%20IN%20NYS.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

(R3) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 170'- 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS		ACREAGE	SQUARE FEET
TOTAL SITE		30.04	1,324,224.00
"FOREVER WILD" AREA		9.35	408,303.11
(A)	EAST "FOREVER WILD" AREA	3.66	159,767.97
(B)	SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C)	WEST "FOREVER WILD" AREA	.56	24,511.97
(D)	NORTH "FOREVER WILD" AREA	.39	17,218.69
(E)	HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN Ø6/15/2020.

LEGEND NOTES

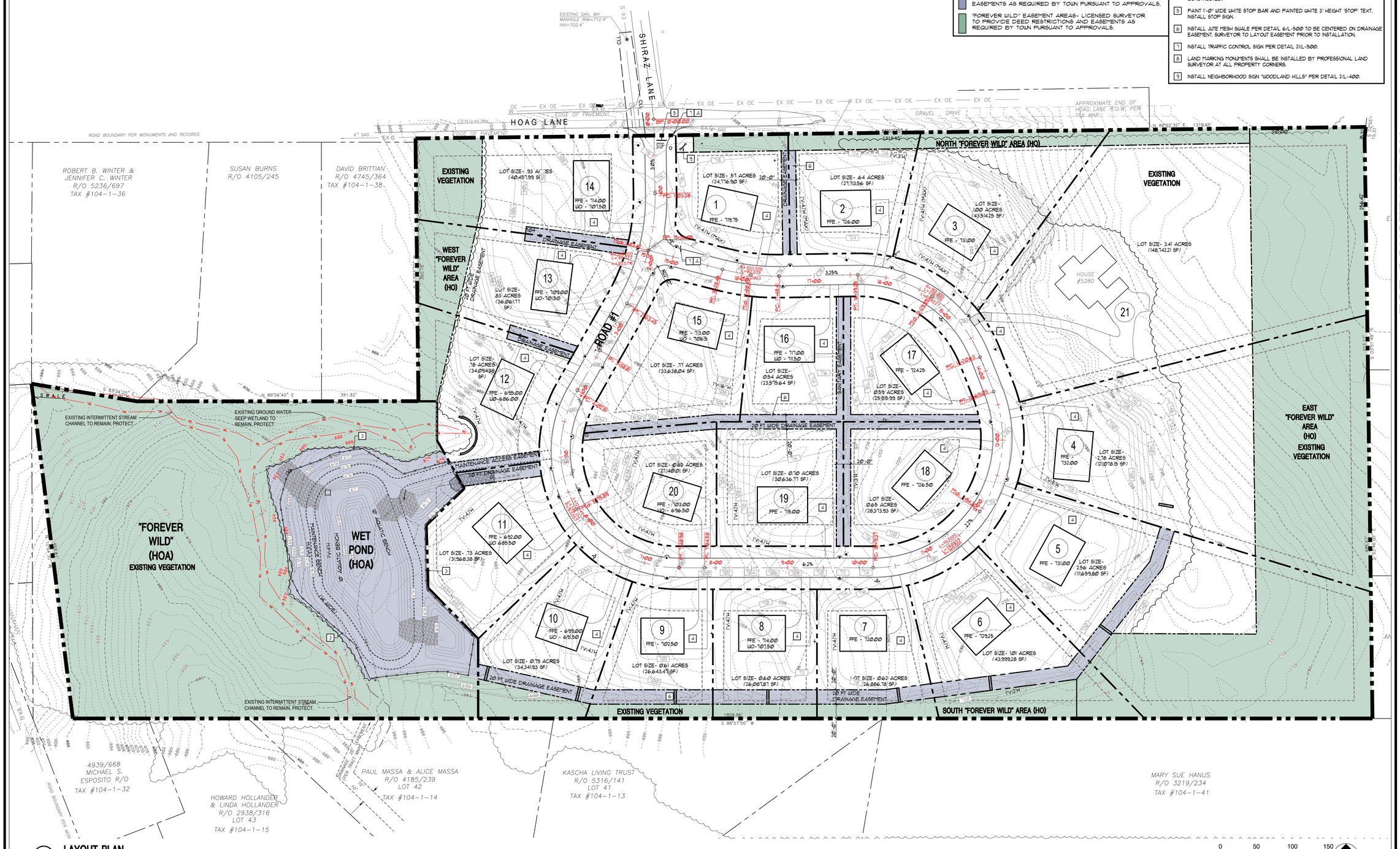
DRAINAGE EASEMENT AREAS - LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND DRAINAGE/ ACCESS EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.

"FOREVER WILD" EASEMENT AREAS- LICENSED SURVEYOR TO PROVIDE DEED RESTRICTIONS AND EASEMENTS AS REQUIRED BY TOWN PURSUANT TO APPROVALS.

LAYOUT NOTES

X-LAYOUT-NOTES

1. DIMENSIONS ARE PARALLEL AND PERPENDICULAR TO THE PROPERTY LINE.
2. NOTE REMOVED.
3. INSTALL NYS POOL COMPLIANT FENCE PER DETAIL 6/L-501 IN PHASE I (L-102).
4. HOMEOWNER TO INSTALL ASPHALT DRIVEWAY PAVEMENT AFTER HOME IS CONSTRUCTED.
5. PAINT 1'-0" WIDE WHITE STOP BAR AND PAINTED WHITE 3' HEIGHT 'STOP' TEXT. INSTALL STOP SIGN.
6. INSTALL JUTE MESH SWALE PER DETAIL 6/L-500 TO BE CENTERED ON DRAINAGE EASEMENT. SURVEYOR TO LAYOUT EASEMENT PRIOR TO INSTALLATION.
7. INSTALL TRAFFIC CONTROL SIGN PER DETAIL 21/L-500.
8. LAND MARKING MONUMENTS SHALL BE INSTALLED BY PROFESSIONAL LAND SURVEYOR AT ALL PROPERTY CORNERS.
9. INSTALL NEIGHBORHOOD SIGN "WOODLAND HILLS" PER DETAIL 2/L-400.



1 L-400 **LAYOUT PLAN**

SCALE IN FEET 0 50 100 150

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STATE OF NEW YORK — REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417

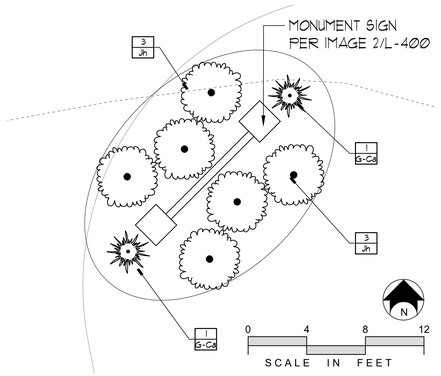
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KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
LAYOUT PLAN

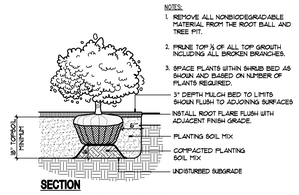
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Date Plotted:
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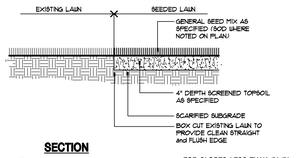


8 L-401 **ENTRANCE PLANTING PARTIAL PLAN**



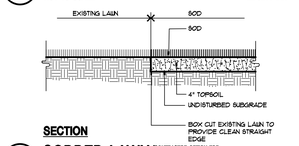
SECTION

4 L-401 **SHRUB PLANTING** NOT TO SCALE 32-9300-02



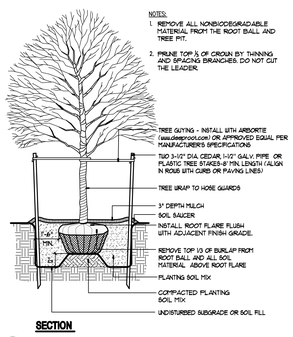
SECTION

5 L-401 **SEEDED LAWN** NOT TO SCALE — FOR SLOPES LESS THAN 1V:4H AS INDICATED ON PLANS 32-9200-01A



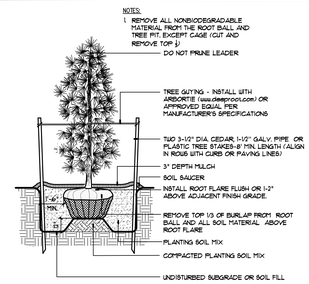
SECTION

6 L-401 **SODDED LAWN** NOT TO SCALE — CONTRACTOR OPTION FOR LATE FALL STABILIZATION 32-9200-01B



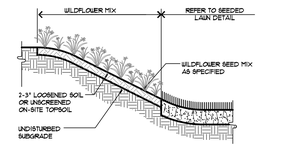
SECTION

3 L-401 **TREE PLANTING** NOT TO SCALE 32-9300-01



SECTION

2 L-401 **EVERGREEN PLANTING** NOT TO SCALE 32-9300-03



SECTION

7 L-401 **WILDFLOWER MIX/SEEDED LAWN** NOT TO SCALE 32-9200-10

PLANT LIST

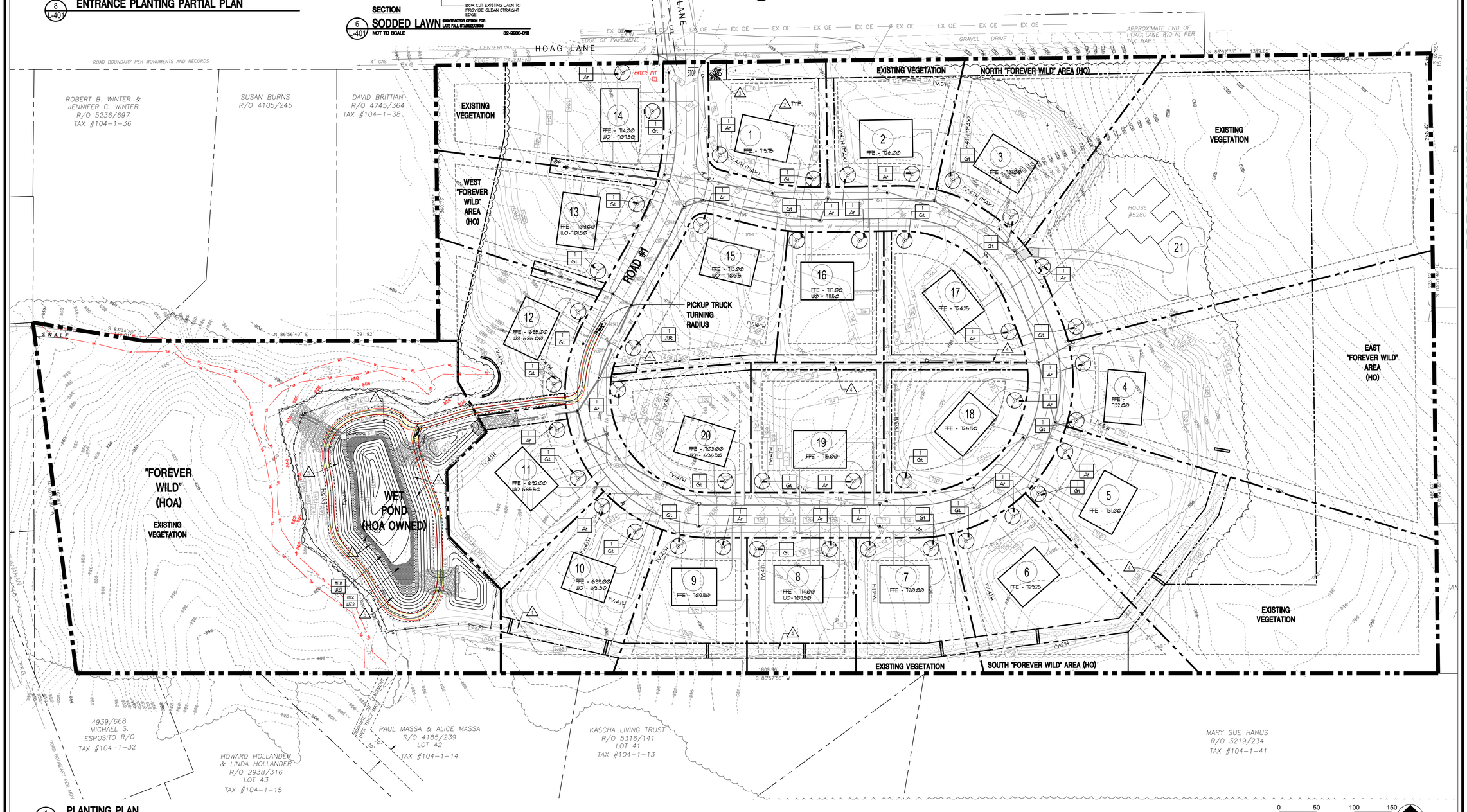
KEY	COMMON NAME	BOTANICAL NAME	CALIPER	HEIGHT	CONDITION
TREES					
Ar	BOWHALL MAPLE	ACER RUBRUM 'BOWHALL'	2"-3" CAL.	6'-8'	B\&B
Bn	RIVER BIRCH	BETULA NIGRA	2"-3" CAL.	8' min.	B\&B (CLUMP)
Gt	STREET KEEPER HONEYLOCUST	GLEDITSIA TRIACANTHOS 'DRAVES'	2"-3" CAL.	6'-8'	-
Ac	SINGLE STEM SERVICEBERRY	AMELANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE'	2"-3" CAL.	6'	B\&B (CLUMP)
EVERGREENS					
Jh	ANDORRA JUNIPER	JUNIPERUS HORIZONTALIS 'YOUNGSTOWN'	-	1'-2'	#3 CONT.
Pa	NORWAY SPRUCE	PICEA ABIES	-	6'-8'	#5 CONT.
Pa	EASTERN WHITE PINE	PINUS STROBUS	-	6'-8'	-
To	EMERALD GREEN ARBORVITAE	THUJA OCCIDENTALIS 'SMARAGD'	-	48"	3 GAL
SHRUBS \& GRASSES					
Cs	'KELSEI' REDTWIG DOGWOOD	CORNIS SERICEA 'KELSEI'	-	-	3 GAL
G-Ca	'KARL FOERSTER' FEATHER REED GRASS	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	-	-	1 GAL

PLANTING KEY NOTES

1. INSTALL UZI AND UZ2 PER PLANT SCHEDULE/(WET POND ONLY)
2. TOWN TO APPROVE LANDSCAPE DESIGN FOR LOTS PRIOR TO CONSTRUCTION.
3. PLANTINGS AT ENTRANCE PER PARTIAL PLAN 8/L-401.
4. INSTALL JUTE MESH PER DETAIL 6/L-500.
5. INSTALL WILDFLOWER/ PERENNIAL RYE MIX PER SPECIFICATION SECTION 32 9310 WITHIN HOA OWNED WET POND AREA

PLANTING SCHEDULE (WET POND ONLY)

KEY	COMMON NAME	BOTANICAL NAME		CALIPER	HEIGHT	CONDITION
(UZ1) WETLAND ZONE 1 PLANTS - 0-6" STANDING WATER						
WCl	LURID SEDGE	CAREX LURIDA	PLUGS	EQUALLY MIXED, 3" O.C.		
WCs	TUSSOCK SEDGE	CAREX STRICTA	PLUGS	EQUALLY MIXED, 3" O.C.		
WCv	FOX SEDGE	CAREX VULPINOIDEA	PLUGS	EQUALLY MIXED, 3" O.C.		
Wiv	BLUEFLAG IRIS	IRIS VERSICOLOR	PLUGS	EQUALLY MIXED, 3" O.C.		
WSc	WOOLGRASS	SCIRPUS CYPERINUS	PLUGS	EQUALLY MIXED, 3" O.C.		
(UZ2) WETLAND ZONE 2 PLANTS - 6-12" STANDING WATER						
WAp	WATER PLANTAIN	ALISMA PLANTAGO-AQUATICA	PLUGS	EQUALLY MIXED, 3" O.C.		
WPv	ARROWLEAF	PELTANDRA VIRGINICA	PLUGS	EQUALLY MIXED, 3" O.C.		
WPc	PICKERAL-WEED	PONTEDERIA CORDATA	PLUGS	EQUALLY MIXED, 3" O.C.		
WSl	COMMON ARROWHEAD	SAGITTARIA LATIFOLIA	PLUGS	EQUALLY MIXED, 3" O.C.		
WLt	LIZARD'S-TAIL	SAURURUS CERNUUS	PLUGS	EQUALLY MIXED, 3" O.C.		
WSt	SOFT-STEM BULRUSH	SCIRPUS TABERNAEMONTANII	PLUGS	EQUALLY MIXED, 3" O.C.		
WSa	AMERICAN BURREED	SPARGANIUM AMERICANUM	PLUGS	EQUALLY MIXED, 3" O.C.		



KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6320 FLY ROAD, SUITE 109 EAST SYRACUSE, NEW YORK 13057
PHONE: (315) 445-7980 FAX: (315) 445-7981

RZ Engineering, PLLC
6320 FLY ROAD SUITE 109, EAST SYRACUSE, NY 13057
PH: 315.432.1089 FAX: 315.445.7981

STATE OF NEW YORK — ROBT L. ZOLIN — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION								
No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT SCOTT LEE FREEMAN 001413 STATE OF NEW YORK

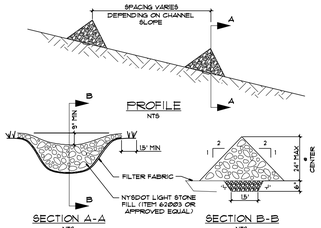
Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
PLANTING PLAN

L-401

Plotted By:
Date Plotted:
Drawing File:

Tuesday, June 16, 2020 1:07:12 PM

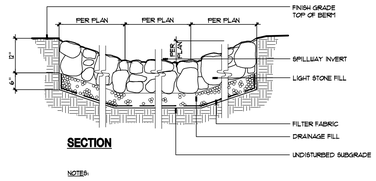


SECTION A-A NTS | SECTION B-B NTS

NOTES:
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 15 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.
7. REFER TO NYS STANDARDS & SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.

SECTION

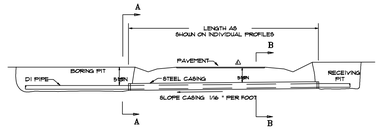
1T L-500 ROCK CHECK DAM
NOT TO SCALE — 31-1001-06



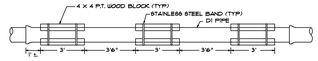
SECTION

NOTES:
1. RIP RAP STONE SHALL BE ANGULAR LIMESTONE and MEET THE FOLLOWING NYSDOT SPECIFICATIONS:
   620203 LIGHT STONE FILL
   620204 MEDIUM STONE FILL
   620205 HEAVY STONE FILL

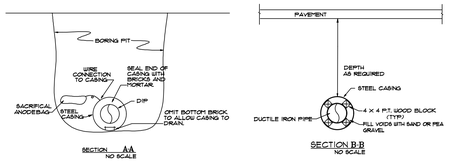
22 L-500 EMERGENCY SPILLWAY
NOT TO SCALE — 33-4000-42B



PROFILE (SHOWN FOR CROSS-SECTION REFERENCE ONLY)
NO SCALE



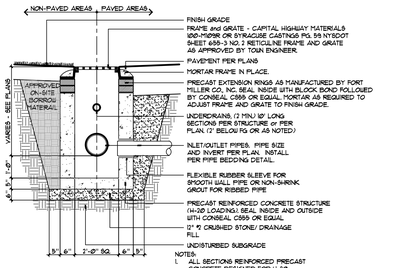
WOOD BLOCKING DETAIL
NO SCALE



	PIPE DATA			
	CARRIER PIPE		CASING PIPE	
NOMINAL SIZE OF PIPE	8"	12"	18"	24" Δ
OUTSIDE DIAMETER PIPE BELL	9.05" 9.05"	13.20" 13.20"	18.75"	24.75
INSIDE DIAMETER	8.39"	12.46"	18"	24"
WALL THICKNESS	Ø.33"	Ø.37"	Ø.375"	Ø.375"
WEIGHT PER FOOT	25 lbs. ±	48 lbs. ±	80 lbs. ±	106 lbs. ±
MATERIAL	DUCTILE IRON		STEEL	
PROCESS OF MANUFACTURE	CENTRIFUGAL CAST		ERW	
SPECIFICATION	ANSI A21.51 AWWA C151		ASTM A-139 GRADE B (NO HISTORIC)	
GRADE OF CLASS	CLASS 52		SCHEDULE 40	
TYPE OF JOINT	MECHANICAL JOINT		WELDED	
TYPE OF COATING	1st - CEMENT LINED 2nd - ASPHALT		NONE	
CATHODIC PROTECTION	NONE		ANODE BAG	
SEAL AT END OF CASING	N/A		BRICK AND MORTAR	
METHOD OF INSTALLATION	N/A		BORE & JACK	

SECTION

14 L-500 BORING BENEATH ROADWAYS
NOT TO SCALE — 33-3913-25



NOTES:
1. ALL SECTIONS REINFORCED PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
2. ADD PRECAST CONCRETE RISER(S) AS REQUIRED.
3. PROVIDE SOLID COVER WHERE INDICATED ON PLANS.

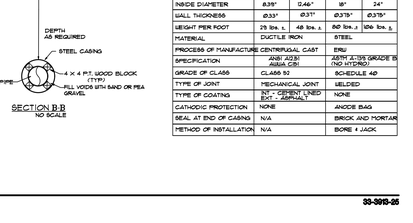
SECTION

13 L-500 STORM INLET (SI)
NOT TO SCALE — 33-4000-01A

SECTION

NOTES:
1. TRENCH DEPTHS, WIDTHS, SHEETING, SHORING, BRACING and CUTBACK SLOPES TO BE DETERMINED BY THE CONTRACTOR and COMPLY WITH O.S.H.A., NEW YORK STATE DEPARTMENT OF LABOR, NEW YORK STATE INDUSTRIAL CODE and ALL OTHER APPLICABLE SAFETY STANDARDS.
2. REFER TO PLAN FOR PAVED and NON PAVED DETAILS.
3. INSTALL TRACER WIRE AROUND WATER LINE. TRACE WIRE SHALL BE #12 AWG COPPER CLAD STEEL, HIGH STRENGTH WITH MINIMUM 450 LB BREAK LOAD WITH MINIMUM 30 MIL. HDPE INSULATION THICKNESS.

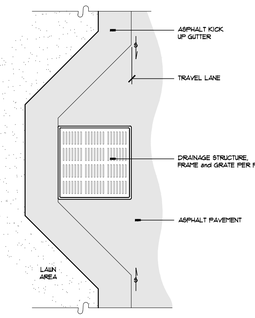
12 L-500 PIPE BEDDING
NOT TO SCALE — FOR STORM SANITARY, AND WATER PIPE — 33-4000-20A



NOTE:
1. ALL SECTIONS REINFORCED PRECAST CONCRETE DESIGNED FOR H-20 LOADING.
2. REFER TO PLAN FOR 4'-0" OR 6'-0" CATCH BASIN.
3. CATCH BASINS SHALL BE 2' BELOW EDGE OF PAVEMENT.

SECTION

11 L-500 CATCH BASIN (CB)
NOT TO SCALE — 33-4000-02

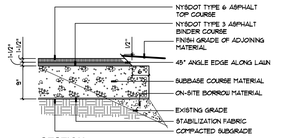


PLAN

10 L-500 ASPHALT APRON @ INLET
NOT TO SCALE — 32-1216-13

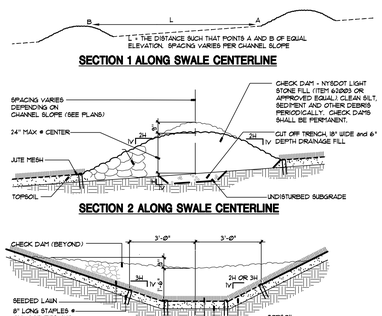
9 L-500 DETAIL OMITTED
NOT TO SCALE

8 L-500 DETAIL OMITTED
NOT TO SCALE



SECTION

7 L-500 ASPHALT PAVEMENT - DRIVEWAY
NOT TO SCALE (BY HOMEOWNER) — 32-1216-01



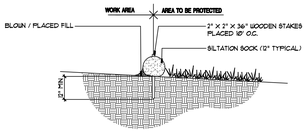
"L" THE DISTANCE SUCH THAT POINTS A AND B OF EQUAL ELEVATION. SPACING VARIES PER CHANNEL SLOPE

SECTION 1 ALONG SWALE CENTERLINE

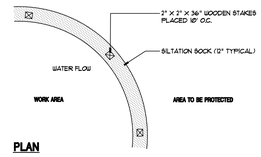
SECTION 2 ALONG SWALE CENTERLINE

SECTION
NOTES
1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSURE THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 15 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONES.
6. MAXIMUM DRAINAGE AREA 2 ACRES.
7. CONTRACTOR MAY UTILIZE ANY APPROPRIATE STORM DRAIN INLET MEASURE WHICH COMPLIES WITH NYS STANDARDS & SPECIFICATIONS FOR EROSION & SEDIMENT CONTROL. REFER TO SUPPRT. SECTION 1 FOR NYS STANDARDS & SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION.
8. AFTER TOPSOIL and FINE GRADING, CONTRACTOR SHALL PLACE 18" x 18" SQUARE OF SOD AROUND STRUCTURE.

6 L-500 JUTE MESH SWALE W/ CHECK DAM
NOT TO SCALE — 31-1001-03B



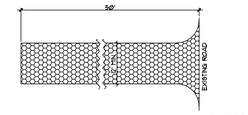
SECTION

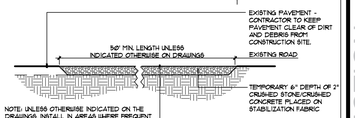


PLAN

NOTES:
1. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
2. FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

4 L-500 SILTATION SOCK SEDIMENT CONTROL
NOT TO SCALE — 31-2600-01



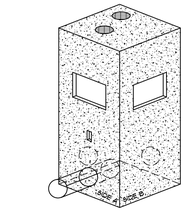


NOTE: UNLESS OTHERWISE INDICATED ON THE DRAWINGS, INSTALL IN AREAS WHERE FREQUENT ON-SITE/OFF-SITE TRAFFIC OCCURS

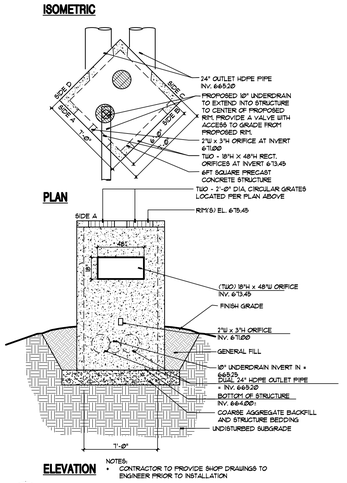
NOTES:
1. WIDTH-TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
2. FILTER CLOTH-WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
3. SURFACE WATER-ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
4. MAINTENANCE-THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
5. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
6. REFER TO SUPPRT. SECTION 1 FOR NYS STANDARDS AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ENTRANCE.

SECTION

3 L-500 CONSTRUCTION ENTRANCE (MUDRACK)
NOT TO SCALE — 31-1001-04



ISOMETRIC

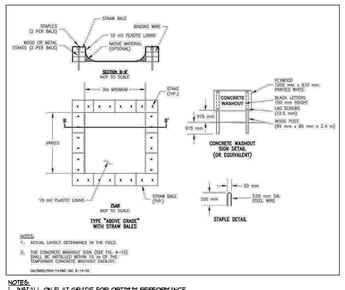


PLAN

ELEVATION

NOTES:
- CONTRACTOR TO PROVIDE SHOP DRAWINGS TO ENGINEER PRIOR TO INSTALLATION

20 L-500 OUTLET STRUCTURE
NOT TO SCALE — 33-4000-80



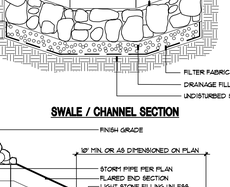
NOTES:
1. INSTALL ON FLAT GRADE FOR OPTIMUM PERFORMANCE.
2. ALL CONCRETE WASHOUT FACILITIES SHALL BE INSPECTED DAILY. DAMAGED OR LEAKING FACILITIES SHALL BE DEACTIVATED, REPAIRED OR REPLACED IMMEDIATELY. EXCESS RAINWATER THAT HAS ACCUMULATED OVER HARDENED CONCRETE SHOULD BE PUMPED TO A STABILIZED AREA SUCH AS GRASS FILTER STRIP.
3. ACCUMULATED HARDENED MATERIAL SHALL BE REMOVED WHEN 75% OF STORAGE CAPACITY OF THE STRUCTURE IS FILLED. ANY EXCESS WASH WATER SHALL BE PUMPED INTO A CONTAINMENT VESSEL AND PROPERLY DISPOSED OF OFF SITE.
4. DISPOSE OF HARDENED MATERIAL OFF SITE IN A CONSTRUCTION/DEMOLITION FILL LANDFILL. ON-SITE DISPOSAL THAT BE ALLOWED IF THIS HAS BEEN APPROVED AND ACCEPTED AS PART OF THE SUPPPR. IN THE CASE, THE MATERIAL SHOULD BE RECYCLED AS SPECIFIED, OR BURIED AND COVERED WITH A MINIMUM OF 2 FEET OF CLEAN COMPACTED EARTHFILL THAT IS PERMANENTLY STABILIZED TO PREVENT EROSION.
5. THE PLASTIC LINER SHALL BE REPLACED WITH EACH CLEANING OF WASHOUT FACILITY.
6. INSPECT THE PROJECT SITE FREQUENTLY TO ENSURE THAT NO CONCRETE DISCHARGES ARE TAKING PLACE IN NON-DESIGNATED AREAS.

19 L-500 CONCRETE WASHOUT
NOT TO SCALE — 31-3001-10

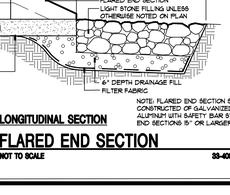
SIGN SCHEDULE — X-SIGN-SCHEDULE

KEY	SIGN PLATE	SIGN SIZE MOUNTING HT.	N.Y.S.D.O.T. M.U.T.C.D. NO. / COMMENTS
A	STOP SIGN	24" X 24" 7'-0" HT.	SIGN NO. R1-1C COLORS: RED BACKGROUND, WHITE TEXT AND BORDER

NOTES:
1. REFER TO TRAFFIC CONTROL SIGN DETAIL FOR INSTALLATION.
2. ALL REGULATORY SIGNS SHALL CONFORM TO THE MOST CURRENT N.Y.S.D.O.T. "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."



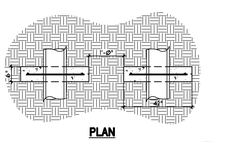
SECTION - PAVED AREAS



SECTION - NON-PAVED AREAS

NOTES:
1. FABRICATE SIGN PANELS OF .080 ALUMINUM.
2. ALL SIGNS SHALL BE FASTENED TO OR MOUNTED ON POST WITH GALVANIZED BOLTS, NUTS AND WASHERS.
3. FOR FURTHER INFORMATION, REFER TO THE LATEST EDITION OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION.
4. COORDINATE SIGN LOCATION TO AVOID UTILITIES.

21 L-500 TRAFFIC CONTROL SIGN
NOT TO SCALE — 32-4000-01



PROFILE

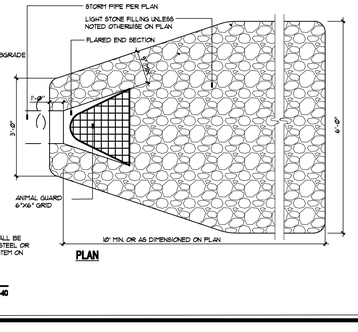
16 L-500 DUAL ANTI SEEP CONCRETE COLLAR
NOT TO SCALE — 33-1216-33a

SWALE / CHANNEL SECTION

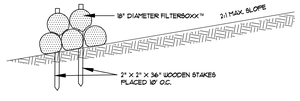
LONGITUDINAL SECTION

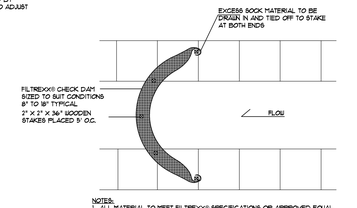
15 L-500 FLARED END SECTION
NOT TO SCALE — 33-4000-40

NOTE: FLARED END SECTION SHALL BE CONSTRUCTED OF GALVANIZED STEEL OR ALUMINUM WITH SAFETY BAR SYSTEM ON END SECTIONS 15" OR LARGER.



PLAN

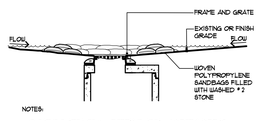




NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS OR APPROVED EQUAL.
2. CHECK DAMS SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM SHALL BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED™ INSTALLER OR APPROVED EQUAL.

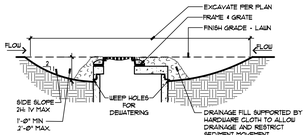
PLAN

5 L-500 CHECK DAM (FILTREXX®)
NOT TO SCALE — 33-4000-01A



NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER SANDBAG PLACEMENT.
2. SANDBAGS TO BE PLACED ON EXISTING GRADE AND STACKED IF NECESSARY TO ELIMINATE DEBRIS FROM ENTERING STRUCTURE.
3. CONTRACTOR SHALL USE A WOVEN POLYPROPYLENE SANDBAG FILLED WITH DRAINAGE FILL (GAMMED ℄ STONE) OR AN APPROVED EQUAL.
4. CONTRACTOR SHALL MAINTAIN, REPAIR and REPLACE DAMAGED OR WORN SANDBAGS.

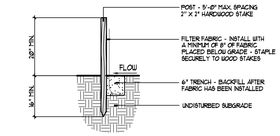
SECTION - PAVED AREAS



NOTES:
1. CLEAR THE AREA OF ALL DEBRIS THAT WILL HINDER EXCAVATION.
2. GRADE APPROACH TO THE INLET UNIFORMLY AROUND THE BASIN.
3. WEEP HOLES SHALL BE PROTECTED BY DRAINAGE FILL (GRAVEL).
4. UPON STABILIZATION OF CONTRIBUTING DRAINAGE AREA, SEAL WEEP HOLES, FILL BASIN WITH STABLE SOIL TO FINAL GRADE, COMPACT IT PROPERLY, AND STABILIZE WITH PERMANENT SEEDING.
5. MAXIMUM DRAINAGE AREA 1 ACRE
6. CONTRACTOR MAY UTILIZE ANY APPROPRIATE STORM DRAIN INLET MEASURE WHICH COMPLIES WITH NYS STANDARDS & SPECIFICATIONS FOR EROSION & SEDIMENT CONTROL. REFER TO SUPPRT. SECTION 1 FOR NYS STANDARDS & SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION.
7. AFTER TOPSOIL and FINE GRADING, CONTRACTOR SHALL PLACE 18" x 18" SQUARE OF SOD AROUND STRUCTURE.

SECTION - UNPAVED AREAS

DRAINAGE STRUCTURE PROTECTION
2 L-500
NOT TO SCALE — 31-1001-02



NOTES:
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES.
2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED 24" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX (6) INCHES AND FOLDED.
4. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE, FENCING SHALL BE INSPECTED MONTHLY, AND FOLLOWING MAJOR RAINFALLS.
5. THE FOLLOWING MATERIALS SHALL BE USED FOR CONSTRUCTION OF THE SILT FENCE:
   POSTS- STEEL EITHER "T" OR "U" TYPE OR 2" HARDWOOD
   FENCE - WOVEN WIRE (14-12 GA, 6" MAX. MESH OPENING
   FILTER CLOTH: FILTER X, MIRAFI 100X, STABILINKA T140N OR APPROVED EQUAL
   PREFABRICATED UNIT: GEOFAB, ENVIROFENCE, OR APPROVED EQUAL.
6. REFER TO NYS STANDARDS & SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROLS FOR ADDITIONAL GUIDANCE.

SECTION

1 L-500 SILT FENCE (SF)
NOT TO SCALE — 31-1001-01

Posted By:
Date Posted:
Drawing File:

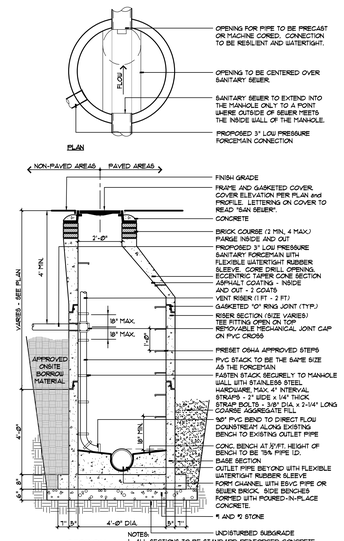
△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

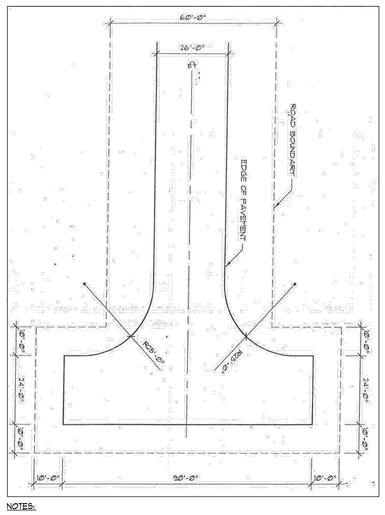
KEPLINGER FREEMAN ASSOCIATES
LANDSCAPE ARCHITECTURE & LAND PLANNING
6120 FLY ROAD, SUITE 101 EAST SYRACUSE, NEW YORK 13057
PHONE:

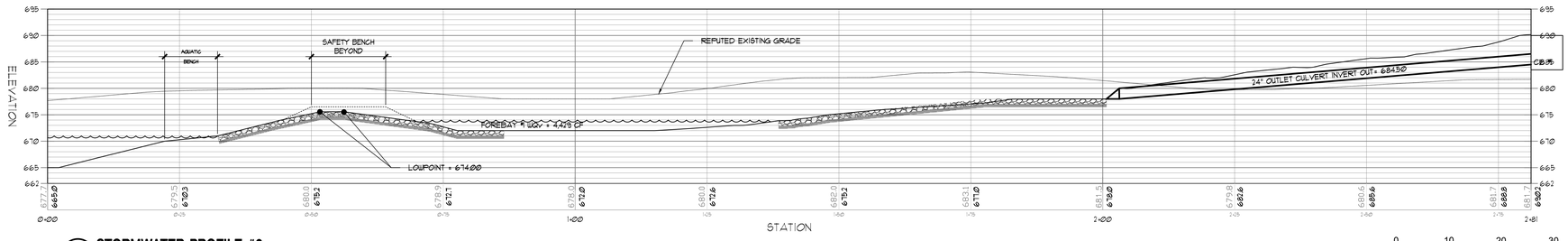


NOTES:
1. ALL SECTIONS TO BE STANDARD REINFORCED CONCRETE.
2. INSTALL NON-SHRINK GROUT IN ALL SECTION JOINTS.
3. FOR SEWERS 8" THROUGH 12" IN DIAMETER.

SANITARY MANHOLE W/ LPS CONNECTION (MH #3 & #5A)

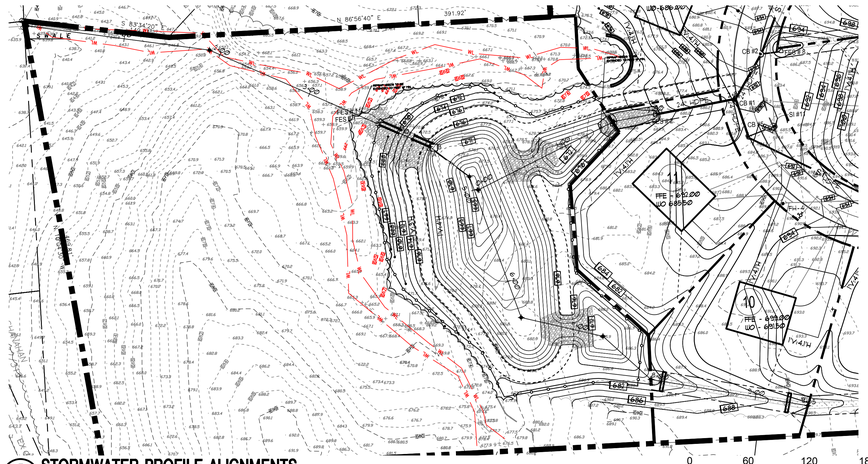
L0 / L-50 — NOT TO SCALE — 33-3913-01B


60'-0"
26'-0"
ROAD BOUNDARY
EDGE OF PAVEMENT
R25'-0"
40'-0" DIA.
10'-0"
10'-0"
10'-0"



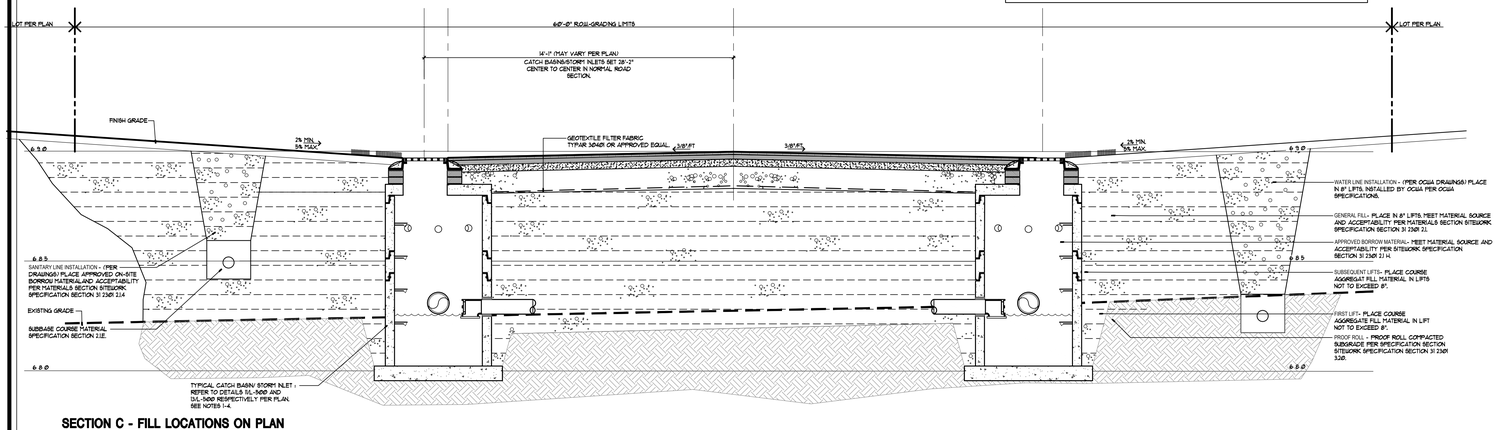
4 L-502 **STORMWATER PROFILE #2**
HORIZONTAL SCALE: 1 : 10
VERTICAL SCALE 1 : 10

0 10 20 30

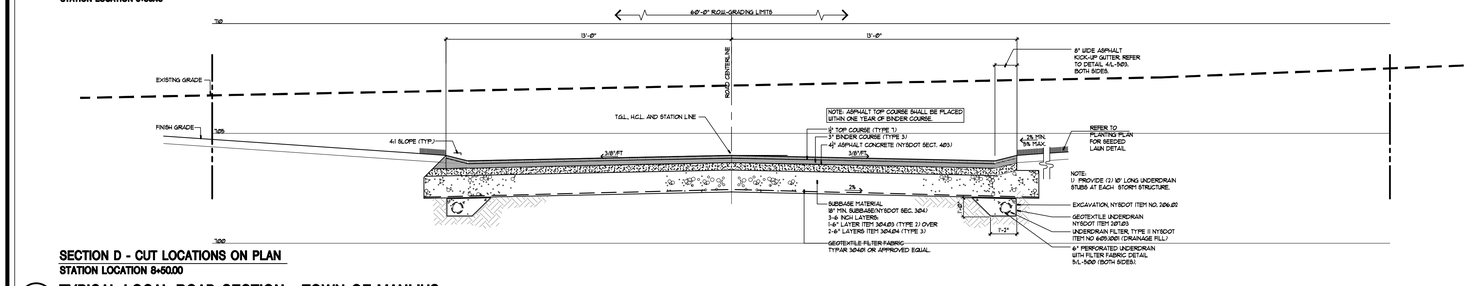

S 83°47'20" E
391.92'
N 8°56'40" E
LOD-699.00'
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WO = 685.50
FFE = 693.00
WO = 685.50
V=4134
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NOTES:
1. CATCH BASIN RIM SHALL BE @3' BELOW EDGE OF PAVEMENT.
2. ALL RISERS FOR CATCH BASIN TO BE PRECAST.
3. EXTENSION RINGS AS MANUFACTURED BY FOR MILLER CO. INC.
4. SEAL INSIDE BLOCK BOND FOLLOWED BY CONSEAL CS55 OR EQUAL.

MATERIALS TESTING, COMPACTION, PROOFROLLING AND SITEWORK SPECIFICATIONS DOCUMENTATION
1 - DEVELOPERS TESTING AGENCY, KENNY GEOTECHNICAL TO SHARE ALL BORROW MATERIAL TESTING AND COMPACTION REPORTS WITH TOWN OF MANLIUS ENGINEER AND CODES OFFICER.
2 - WEEKLY TESTING REPORTS TO BE SHARED WITH DEVELOPER, TOWN ENGINEER, CODES OFFICER AND DESIGN ENGINEER (KRE) AND SUPPP INSPECTOR (KFA) WITHIN SUPPP REPORT. SUPPP REPORT TO BE DISTRIBUTED DIGITALLY THROUGH E-MAIL (DROPBOX) WITH HARD COPIES PROVIDED ON SITE WITHIN SUPPP MAILBOX.
3 - DESIGN TEAM HAS REVISED TOUN OF MANLIUS SPECIFICATIONS WITH TOBIN CONSTRUCTION THE PROJECT CONTRACTOR.

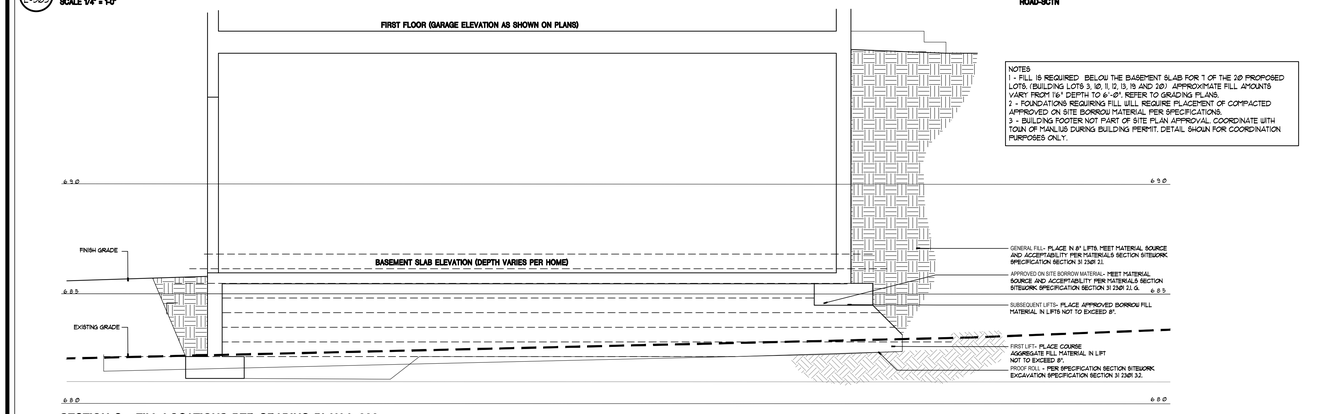


SECTION C - FILL LOCATIONS ON PLAN
STATION LOCATION 5+39.43



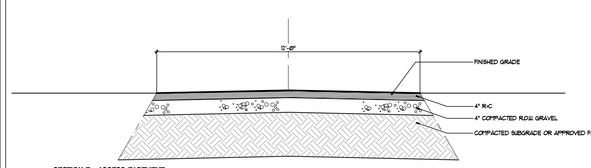
SECTION D - CUT LOCATIONS ON PLAN
STATION LOCATION 8+50.00

1 L-503 TYPICAL LOCAL ROAD SECTION - TOWN OF MANLIUS
SCALE 1/4" = 1'-0"



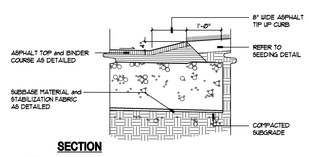
SECTION C - FILL LOCATIONS PER GRADING PLAN L-200
STATION LOCATION 4+50.00

2 L-503 TYPICAL FOUNDATION IN FILL CONDITION
SCALE 1/4" = 1'-0"



SECTION F - ACCESS EASEMENT

3 L-503 BASIN ACCESS ROAD
SCALE 1/4" = 1'-0"



SECTION

4 L-503 ASPHALT KICK-UP GUTTER
NOT TO SCALE 32-1218-11

SECTION 31 2301 – SITEWORK EXCAVATION, BACKFILLING AND COMPACTING

PART 1 GENERAL

1.1 TOWN OF MANLIUS, NY HIGHWAY SPECIFICATIONS - INCLUDED

1.2 EXAMINATION OF EXISTING GRADES

A. EXAMINE GRADES AND NOTIFY ARCHITECT OF DISCREPANCIES, IF ANY, BEFORE PROCEEDING. START OF WORK IMPLIES ACCEPTANCE OF EXISTING GRADES.

1.3 SUBMITTALS

A. **MATERIAL CERTIFICATES** (MC) INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS (LA) BEARING NAME AND LOCATION OF QUARRY: SAMPLE (S) OF MATERIAL REQUIRED (APPROXIMATE VOLUME 1FT³) IN A WATERPROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS:
1. SUBBASE MATERIAL: (MC), (LA) INCLUDING MOISTURE/DENSITY CURVES AND (S)
2. COARSE AGGREGATE FILL: (MC) AND (S)
3. DRAINAGE FILL: (MC), (LA) AND (S).
4. APPROVED ON SITE BORROW MATERIAL.

B. **MANUFACTURERS DATA** (MD) AND PRODUCT SAMPLE (S) REQUIRED FOR THE FOLLOWING MATERIALS:
1. STABILIZATION FABRIC: (MD) AND (S)

1.4 DEFINITIONS

A. **DEVELOPER'S ENGINEER**: REFERS TO THE PROFESSIONAL ENGINEER EMPLOYED BY THE DEVELOPER TO SUPERVISE THE WORK OF THE DEVELOPER AND THEREAFTER CERTIFY TO THE TOWN THAT THE ITEMS OF WORK CONSTRUCTED BY THE DEVELOPER ARE BUILT IN ACCORDANCE WITH THE APPROVED PLANS. AT COMPLETION OF ALL WORK, A COMPLETE SET OF "AS-BUILT" DRAWINGS SHALL BE SUBMITTED TO THE TOWN. THIS SET OF DRAWINGS SHALL BE CERTIFIED AS BEING CORRECT BY THE DEVELOPER'S ENGINEER.

B. **TOWN ENGINEER**: IS THAT PERSON OR FIRM EMPLOYED OR RETAINED BY THE TOWN TO REPRESENT AND/OR ADVISE THE TOWN IN ALL MATTERS OF AN ENGINEERING NATURE.

C. **HIGHWAY SUPERINTENDENT:** REFERS TO THE SUPERINTENDENT OF HIGHWAYS EMPLOYED BY THE TOWN.

D. **DEVELOPER**; IS THAT PERSON, COMPANY OR CORPORATION THAT IS THE OWNER OF THE LANDS AS SHOWN ON THE FINAL APPROVED SUBDIVISION PLAN. THE DEVELOPER WILL BE RESPONSIBLE FOR FULL COMPLIANCE TO THESE SPECIFICATIONS AS WELL AS ANY EXISTING SUBDIVISION AND ZONING REGULATIONS OF THE TOWN OF MANLIUS. THE DEVELOPER WILL REQUIRE ANY CONTRACTOR EMPLOYED BY HIM TO PERFORM THE CONSTRUCTION WORK TO COMPLY WITH THE ABOVE MENTIONED SPECIFICATIONS AND REGULATIONS.

E. **ROADWAY**; IS THAT PORTION OF THE RIGHT-OF-WAY THAT IS DISTURBED FOR PURPOSES OF CONSTRUCTING THE ROAD SECTION INCLUDING PAVEMENT, GUTTER, DITCHES AND BACK SLOPES.

F. **TESTING AGENCY**: REFERS TO TOWN OF MANLIUS APPROVED TESTING AGENCY TO PERFORM ALL SERVICES LISTED WITHIN SPECIFICATION FOR TESTING OF SUBGRADES, ROW FILL PLACEMENT AND FILL/BASIN EMBANKMENT PLACEMENT. INCLUDES TESTING OF APPROVED ON-SITE BORROW MATERIAL.

1.5 PLANS

A. PLANS SHOWING ORGINAL GROUND ELEVATIONS AND FINISHED GRADES, CENTERLINE PROFILES, TYPICAL CROSS-SECTION AND PROPOSED DRAINAGE FACILITIES SHALL BE SUBMITTED TO THE TOWN BOARD AND THE HIGHWAY SUPERINTENDENT BEFORE FINAL APPROVAL CAN BE GIVEN. NO CONSTRUCTION SHALL BE COMMENCED UNTIL SUCH APPROVAL HAS BEEN GIVEN.

1.6 STANDARDS (see Town Subdivision Regulations Chapter 127)

A. **GRADES**; THE ROAD SHALL NOT BE LESS THAN 1.0% NOR MORE THAN 7% FOR MINOR ROADS AND 5% FOR CUL-DE-SACS AND HAMMERHEAD TURN AROUNDS UNLESS OTHERWISE APPROVED BY THE HIGHWAY SUPERINTENDENT. THE ROAD GRADE AT INTERSECTIONS SHALL NOT EXCEED 5% FOR A DISTANCE OF 100 FEET IN ANY DIRECTION FROM THE POINT OF INTERSECTION.

B. **RIGHT-OF-WAY:** THE RIGHT OF WAY DEEDED TO THE TOWN SHALL NOT BE LESS THAN 60 FEET IN WIDTH AND WITH A 60 FOOT RADIUS AT THE CUL-DE-SAC TURN AROUNDS. THE BACK SLOPE FROM THE EDGE OF THE ROADWAY TO THE RIGHT-OF-WAY SHALL NOT EXCEED 5% WHEREVER PRACTICAL AND SHALL BE GRADED TO CONFORM IN GENERAL WITH THE ROAD GRADE.

C. **CURVES**: THE HORIZONTAL CURVE SHALL NOT EXCEED A MINIMUM RADIUS OF 150 FEET ON MINOR STREETS AND CUL-DE-SACS. LONGER RADII ARE REQUIRED FOR MAJOR STREETS AS STATED IN THE SUBDIVISION REGULATIONS.

D. **DRAINAGE**; THE PATTERN OF DRAINAGE SHALL BE INCLUDED IN ALL ROAD PLANS. THIS PLAN TO CLEARLY INDICATE: THE DIRECTION OF FLOW OF ALL SURFACE WATER; 2) THE LOCATION, SIZE, AND TYPE OF DRAINAGE STRUCTURE; AND 3) NOTATION AS TO FINAL POINT OF DISCHARGE OF THE SURFACE WATER. NO STORM DRAINS SHALL BE LESS THAN 12 INCHES IN DIAMETER. DEVELOPERS MUST MAKE SUITABLE ENTRANCES TO PRIVATE DRIVEWAYS, AND DRIVEWAY CULVERTS SHALL BE INSTALLED WHEN DIRECTED BY THE HIGHWAY SUPERINTENDENT. CATCH BASINS SHALL BE INSTALLED ALONG THE GUTTER AT 400 FOOT INTERVALS OR LESS WHEN CONSIDERED NECESSARY BY THE HIGHWAY SUPERINTENDENT AND/OR THE TOWN ENGINEER.
1. STORM SEWERS FOR RESIDENTIAL SUBDIVISIONS SHALL BE DESIGNED BASED A 10 YEAR FREQUENCY AND AS OUTLINED BY CURRENT NYSDEC RULES AND REGULATIONS. SPECIAL STRUCTURES AND FACILITIES SUCH AS DETENTION BASINS MAY BE REQUIRED BY THE TOWN ENGINEER WHEN CONDITIONS WARRANT.
2. FINISH GRADE OF ALL LOT CORNERS MUST BE INDICATED ON THE FINAL PLAN. ROUGH GRADING OF INDIVIDUAL LOTS SHALL BE WITHIN 6" OF THE INDICATED FINISH ELEVATION. BUILDING PERMITS WILL NOT BE ISSUED UNTIL THIS HAS BEEN ACCOMPLISHED.
3. REQUIREMENTS AS MANDATED BY ALL REGULATORY AGENCIES IN ADDITION TO THOSE OF THE TOWN MUST BE COMPLIED WITH. ALL NECESSARY PERMITS MUST BE OBTAINED BY THE DEVELOPER.

E. **UTILITIES**; ALL UTILITIES SHALL BE LOCATED WITHIN THE ROAD RIGHT-OF-WAY OF THE TOWN OF MANLIUS WHEREVER POSSIBLE. EASEMENTS CONTAINING UTILITIES AND DITCHES OUTSIDE THE RIGHT OF WAY MUST BE PROPERLY DESCRIBED AND WILL BE SUBJECT TO APPROVAL BY THE TOWN PLANNING BOARD. ALL UTILITIES, INCLUDING LATERALS, TO BE INSTALLED BEFORE CONSTRUCTION OF THE SUB-BASE COURSE.

F. **HIGHWAY AGREEMENT GUARANTEE:** A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT AGREED UPON WITH THE HIGHWAY SUPERINTENDENT, AS TO THE VALUE OF THE WORK TO BE PERFORMED BY THE DEVELOPER, SHALL BE DEPOSITED WITH THE TOWN CLERK OF THE TOWN OF MANLIUS BEFORE ANY BUILDING PERMIT IS ISSUED, TO INSURE COMPLETION AS TO TIME AND SPECIFICATIONS. THIS DEPOSIT SHALL BE RETURNED AT THE TIME OF SATISFACTORILY COMPLETION OF THE WORK AS INDICATED BY THE HIGHWAY SUPERINTENDENT. A CERTIFIED CHECK, BOND, OR OTHER SECURITY ACCEPTABLE TO THE TOWN IN THE AMOUNT OF 5% FOR THE ROADWAY CONSTRUCTION COST WILL BE OFFERED AS A RETAINER FOR A PERIOD OF ONE YEAR AFTER FINAL ACCEPTANCE OF THE ROAD BY THE HIGHWAY SUPERINTENDENT AS A GUARANTEE AGAINST ANY REPAIRS WITHIN THE PERIOD.

G. **SIGNAGE**; ALL PROPOSED TRAFFIC CONTROL AND STREET IDENTIFICATION SIGNAGE SHALL BE SUBMITTED WITH FINAL ENGINEERING DRAWINGS FOR REVIEW AND APPROVAL BY THE HIGHWAY SUPERINTENDENT AND SHALL BE COMPLETED IN ACCORDANCE WITH THE NEW YORK STATE MANUAL OF UNIFORMTRAFFIC CONTROL DEVICES, LATEST EDITION.

1.7 TIMING

A. INSTALL DRAINAGE SYSTEM PRIOR TO OR CONCURRENT WITH ROAD EXCAVATION TO PREVENT/LIMIT DOWNSTREAM FLOODING AND EROSION/SEDIMENTATION, TO ALLOW TRENCH OR GENERAL FILL SETTLEMENT, AND TO ALLOW INSTALLATION OF SUBBASE MATERIALS FOR CONSTRUCTION.

1.8 GENERAL DEWATERING

A. THE CONTRACTOR SHALL DEWATER ALL EXCAVATIONS WHEN WATER HAS ENTERED THE EXCAVATION OR AT THE DIRECTION OF THE ENGINEER. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT NECESSARY TO COMPLETE THE WORK.

1.9 USAGE OF ELECTRONIC DOCUMENTS FOR MACHINE CONTROL EQUIP.

A. THE CONTRACTOR MAY USE ANY TYPE OF GPS MACHINE CONTROL EQUIPMENT AND SYSTEMS THAT RESULTS IN ACHIEVING THE PROPOSED GRADING REQUIREMENTS. THE CONTRACTOR SHALL CONVERT THE ELECTRONIC DATA PROVIDED BY THE ARCHITECT INTO THE FORMAT REQUIRED BY THEIR SYSTEM.

PART 2 PRODUCTS

2.1 MATERIALS

A. **GENERAL FILL/EXCAVATED SUBSOIL/SOIL FILL**; APPROVED, FREE OF FROST TRASH, STUMPS, TREES, ROOTS, SOD, MUCK, ETC. IF SUITABLE EXCAVATED MATERIAL IS INSUFFICIENT TO MEET FILL REQUIREMENTS, FURNISH ADDITIONAL MATERIAL AT CONTRACTOR'S EXPENSE, SUBJECT TO APPROVAL BY TESTING AGENCY. THOROUGHLY BREAK UP AND CONDITION SOILS FOR LAYERED PLACEMENT AND COMPACTION IN FILL AREAS.

B. **DRAINAGE FILL**; CRUSHED STONE OR WASHED CRUSHED GRAVEL, NYSDOT #1, TABLE 703-4. CLEAN, DURABLE, OF UNIFORM QUALITY THROUGHOUT.

STANDARD ASTM SIEVE SIZE% PASSING BY WEIGHT	
1" (25 MM)	100
1/2" (12.5 MM)	90-100
1/4" (6.3 MM)	0-15

C. **STABILIZATION FABRIC**; GEOTEXILE FILTER FABRIC TYPAR 3401 OR APPROVED EQUAL.

D. **SUBBASE COURSE MATERIAL**; CRUSHED LIMESTONE CONFORMING TO NYSDOT SECTION 304.2.02 SUBBASE COURSE TYPE 2 WELL GRADED FROM COARSE TO FINE TO PRODUCE TIGHTLY BONDED MATERIAL WHEN COMPACTED, AND FREE FROM SOIL, ORGANIC MATERIALS OR OTHER CONTAMINATION.

STANDARD ASTM SIEVE SIZE% PASSING BY WEIGHT	
2" (50 MM)	100
1/4" (6.3 MM)	25-65
NO. 40 (425 MM)	5-40
NO. 200 (075 MM)	0-10

E. **TOPSOIL**; UTILIZE ON-SITE TOPSOIL

F. **OVERSIZED SUBBASE COURSE MATERIAL**; CRUSHED LIMESTONE CONFORMING TO NYSDOT SECTION 304, SUBBASE COURSE, TYPE 1 GRADATION WITH 100% PASSING A 3" SIEVE AND WELL GRADED FROM COARSE TO FINE TO PRODUCE A RIGHTLY BONDED MATERIAL WHEN COMPACTED, AND FREE FROM SOIL, ORGANIC MATERIAL OR OTHER CONTAMINANTS.

G. **APPROVED ON-SITE BORROW MATERIAL** SIEVE ANALYSIS REVIEW PERFORMED BY TESTING AGENCY, TOWN OF MANLIUS SELECTED TESTING AGENCY. REFER TO COMPACTION TESTING REQUIREMENTS SECTION 3.10.

PART 3 EXECUTION

3.1 ROUGH GRADING OF ROADS

A. **GENERAL**; THE DEVELOPER SHALL REMOVE ALL ROCK, EARTH AND OTHER MATERIAL REQUIRED BY THE PLANS FOR THE FULL WIDTH OF THE ROADWAY, HE SHALL DISPOSE OF THIS MATERIAL AS REQUIRED. EARTH EMBANKMENTS SHALL BE CONSTRUCTED TO ESTABLISHED LINES AND GRADES FOR THE FULL WIDTH OF THE ROADWAY AT THE LOCATION SHOWN ON THE PLANS. EMBANKMENT MATERIAL SHALL BE NATURAL SOIL, FREE FROM EXCESSIVE MOISTURE, FROST, STUMPS, TREE ROOTS, SOD, MUCK, MARL, VEGETATION OR OTHER UNSUITABLE MATERIAL.

B. **STRIPPING:** PRIOR TO THE COMMENCEMENT OF EXCAVATION OF FILL, STRIPPING SHALL BE CONDUCTED TO REMOVE ALL TOPSOIL, ROOTS, ORGANIC MATTER, RUBBISH OR OTHER DEBRIS FOR THE FULL WIDTH OF THE PAVEMENT AND ADJACENT DISTURBED LAND.

C. **MATERIALS TO BE USED:** IF THERE IS NOT SUFFICIENT EXCAVATED MATERIAL OF A SUITABLE QUALITY AT THE SITE TO COMPLETE THE EMBANKMENT, SUBGRADES AND BACKFILLING TO THE REQUIRED LINES AND GRADE, THE DEVELOPER SHALL BORROW THE NECCESSARY ADDITIONAL MATERIALS. THE SOURCE AND ACCEPTABILITY OF THE BORROW MATERIAL SHALL BE SUBJECT TO APPROVAL OF THE TOWN ENGINEER OR THE HIGHWAY SUPERINTENDENT. THE DEVELOPER SHALL REQUEST APPROVAL OF THE PROPOSED BORROW AREAS AT LEAST FIVE DAYS BEFORE TAKING ANY MATERIAL FROM SUCH AREAS. ALL TEST PITS, EXPLORATIONS AND LABORATORY TESTS REQUIRED BY THE HIGHWAY SUPERINTENDENT OF TOWN ENGINEER SHALL BE DONE BY THE DEVELOPER AT HIS OWN EXPENSE.
PLACING; IN GENERAL, EMBANKMENT MATERIALS SHALL BE PLACED IN HORIZONTAL LAYERS NOT EXCEEDING EIGHT INCHES IN THICKNESS MEASURED PRIOR TO COMPACTION. STONES, IF ANY, SHALL NOT EXCEED FOUR INCHES IN GREATEST DIMENSION AND SHALL BE WELL DISTRIBUTED THROUGH THE MASS. EACH LAYER OF EMBANKMENT MATERIAL SHALL BE ROUGHLY TAMPERED OR ROLLED TO THE REQUIRED DEGREE OF COMPACTION AT OPTIMUM MOISTURE CONTENT BY SHEEPSFOOT OR PNEUMATIC ROLLERS, MECHANICAL TAMPERS OR VIBRATORS. SUCCESSIVE LAYERS SHALL NOT BE PLACED UNTIL THE LAYER UNDER CONSTRUCTION HAS BEEN THOROUGHLY COMPACTED. TRUCKS OR OTHER HEAVY EQUIPMENT SHALL NOT BE OPERATED OVER PIPELINES UNTIL A MINIMUM OF 18 INCHES OF BACKFILL ABOVE THE CROWN OF THE PIPE HAS BEEN PLACED AND PROPERLY COMPACTED.

D. **COMPACTION CONTROL:** EMBANKMENT SHALL HAVE A MINIMUM DRY DENSITY OF 95 PERCENT OF THE MAXIMUM DRY WEIGHT DENSITY IN POUNDS PER CUBIC FOOT AS DETERMINED BY THE AASHO STANDARD DENSITY TEST OR THE PROCTOR COMPACTION TEST. COMPACTION TESTS SHALL BE PERFORMED ON A DAILY BASIS OR AS MAY BE DEEMED NECESSARY BY THE HIGHWAY SUPERINTENDENT OF THE TOWN ENGINEER. SUCH TESTS SHALL BE PERFORMED BY QUALIFIED LABORATORY PERSONNEL AT THE DEVELOPER'S EXPENSE. WHEN THE TEST RESULTS INDICATE THAT INSUFFICIENT COMPACTION HAS BEEN OBTAINED IN ANY LAYER, THE DEVELOPER SHALL TAKE SUCH ACTION AS THE HIGHWAY SUPERINTENDENT OR THE TOWN ENGINEER MAY DIRECT TO MODIFY OR ALTER THE MOISTURE CONTENT OF THE SOIL, TO PROVIDE ADDITIONAL COMPACTION OR OTHERWISE TO INCREASE THE IN-PLACE SOIL DENSITY.

3.2 PREPARATION OF SUBGRADE

A. THE DEVELOPER SHALL PREPARE THE SUBGRADE TO RECEIVE THE PAVEMENT IN CONFORMITY WITH THE LINES AND GRADES AS SHOWN ON THE PLANS. BEFORE THE SUB-BASE COURSE MATERIAL IS PLACED UPON THE SUBGRADE, IT SHALL BE SHAPED TO LINE AND GRADE AND COMPACTED WITH AN APPROVED SELF-PROPELLED ROLLER WEIGHING NOT LESS THAN 10 TONS. ALL HOLLOWS AND DEPRESSIONS WHICH DEVELOP UNDER ROLLING SHALL BE FILLED WITH ACCEPTABLE GRANULAR MATERIAL SHALL AGAIN BE ROLLED. GRANULAR MATERIALS USED TO FILL DEPRESSIONS SHALL CONSIST OF APPROVED HARD, DURABLE PARTICLES 100% OF WHICH SHALL PASS A 2 INCH SIEVE AND NOT MORE THAN 5% OF WHICH SHALL PASS NO. 200 SIEVE. THIS PROCESS OF SHAPING AND ROLLING AND FILLING SHALL BE REPEATED UNTIL NO DEPRESSIONS DEVELOP. THE SUBGRADE SHALL NOT BE MUDDY OR OTHERWISE UNSATISFACTORY WHEN THE SUB-BASED MATERIAL IS PLACED UPON IT. IF SOFT SPOTS DEVELOP DURING THE ROLLING, THE MATERIAL SHALL BE REMOVED AND REPLACED WITH ACCEPTABLE GRANULAR MATERIAL ABOVE.

3.3 ROAD CONSTRUCTION

A. TOWN OF MANLIUS DETAILS OF ROAD CONSTRUCTION SHALL BE INSTALLED AS SHOWN WITHIN THE CONSTRUCTION DOCUMENTS
1. SD-1 TYPICAL ROAD CROSS SECTION (1/L-503)
2. SD-2 TYPICAL ROAD CROSS SECTION WITH CATCH BASIN LOCATION (1/L-503)
3. SD-3 STANDARD CATCH BASIN (11/L-500)
4. SD-4 TEMPORARY PAVED TURN AROUND AND EASEMENT (9/L-501)

3.4 SPECIAL CONDITIONS

A. ROUGH GRADING MUST BE COMPLETED BEFORE THE CONSTRUCTION OF UTILITIES IS COMMENCED.
B. THE SUBGRADE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE SUB-BASE COURSE IS PLACED.
C. THE SUB-BASE COURSE MUST BE INSPECTED AND APPROVED BY THE HIGHWAY SUPERINTENDENT BEFORE THE BINDER COURSE IS PLACED.
D. THE TOP COURSE OF ASPHALT PAVEMENT SHALL NOT BE PLACED UNTIL PERMISSION IS OBTAINED FROM THE HIGHWAY SUPERINTENDENT.
E. NO CERTIFICATE OF OCCUPANCY FOR HOUSES CONSTRUCTED ON NEW ROADS WILL BE ISSUED UNTIL THE ROAD CONSTRUCTION IS COMPLETED AND NECESSARY APPROVALS OBTAINED. APPROVAL TO BE OBTAINED FROM THE HIGHWAY SUPERINTENDENT. A LETTER OF CERTIFICATION BY THE DEVELOPS ENGINEER WILL BE REQUIRED UNDER CIRCUMSTANCES WHERE THE HIGHWAY SUPERINTENDENT HAS NOT INSPECTED AND APPROVED THE CONSTRUCTION PROCEDURES OUTLINED ABOVE.

3.5 GENERAL

A. BANKS AND SIDES: ANGLE OF RECLINE OR SHEATHING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES.

1. UNCLASSIFIED EXCAVATION

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. CUT TO EXACT ELEVATIONS AND GRADE. IF SOIL BECOMES SATURATED AND LOSES ITS STRUCTURE IN AN AREA, CEASE WORK IN THAT AREA, AFTER ESTABLISHING POSITIVE SURFACE DRAINAGE, UNTIL SURFACE DRIES. WHEN THE AREA HAS STABILIZED, CONTINUE EXCAVATION,TRANSPORT TO FILL AREAS.
C. STOCKPILED SOILS, PILE IN MANNER AND LOCATION THAT WILL NOT IMPEDE THE WORK OF ANY OTHER CONTRACTOR, AS DIRECTED BY STAGED PLANS.

3.6 UNCLASSIFIED EXCAVATION FOR STRUCTURES

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO DEPTH AS SHOWN ON DRAWINGS. TRANSPORT TO FILL AREAS OR REMOVE FROM SITE.
C. EXCESS DEPTH BACKFILL TO PROPER ELEVATIONS WITH APPROVED ON SITE BORROW MATERIAL.
D. CLEARANCE SUFFICIENT FOR FORM WORK TO BE PERFORMED. BANKS AND SIDES - ANGLE OF RECLINE OR SHEETING, SHORING, AND BRACING AS REQUIRED FOR SAFETY AND CONFORMING TO ALL APPLICABLE LAWS, RULES, REGULATIONS AND CODES. REMOVE BEFORE BACKFILLING.
E. REMOVE LOOSE MATERIAL AND DEBRIS FROM EXCAVATION SO ALL FOOTINGS REST ON SOLID, UNDISTURBED SOIL.
F. REMOVE WATER DURING EXCAVATION FOR FOUNDATIONS BY DITCHING OR PUMPING SO THAT NO WATER STANDS.
G. INSURE THAT MOVEMENT OF EQUIPMENT IN THE EXCAVATION DOES NOT CAUSE WORKING AND PUMPING OF THE UNDERLYING SOIL WHICH IS NOT TO BE EXCAVATED. SHOULD THE EQUIPMENT USED CAUSE EXCESSIVE WORKING, USE OTHER METHODS OF EXCAVATION TO MAINTAIN THE DESIGN BEARING CAPACITY OF THE SOIL.

3.7 UNCLASSIFIED TRENCH EXCAVATION

A. INCLUDES ALL EARTH AND MISCELLANEOUS MATERIAL ENCOUNTERED.
B. EXCAVATE TO EXACT DEPTH AND GRADE ALLOWING CLEARANCE FOR PIPE BEDDING AS REQUIRED.
C. TRANSPORT EXCESS TO FILL AREAS OR STOCKPILE AREAS.
D. PUMP AS REQUIRED TO DEWATER EXCAVATION.

3.8 GENERAL FILLING REQUIREMENTS

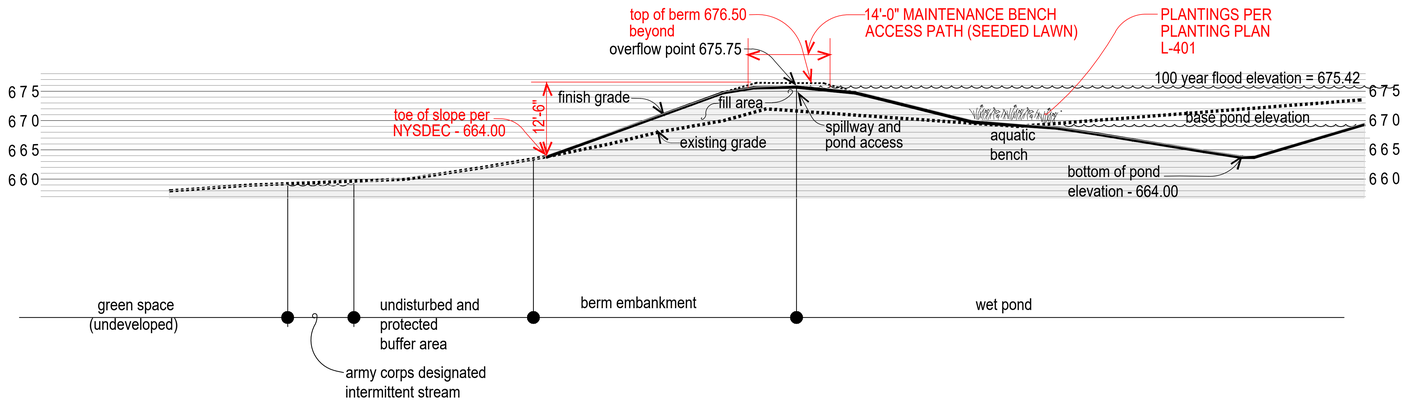
A. THE SUBGRADE TO RECEIVE FILL SHALL BE FIRM AND STABLE AND SHOULD NOT EXHIBIT MUD, ORGANIC MATERIAL, TOPSOIL, STANDING WATER, DEBRIS OR FROZEN MATERIAL WHERE APPLICABLE. SUBGRADE SHOULD BE PROOFROLLED AND REMEDIATED (IF NECESSARY) APPROVED SUBGRADE SHOULD BE IMMEDIATELY PROTECTED BY PLACEMENT OF THE PLANNED FILL.
B. FILL MATERIAL SHALL BE PLACED ON A SATISFACTORY AND APPROVED SUBGRADE IN A MANNER TO MINIMIZE SEGREGATION. THE FILL SHOULD BE PLACED IN NEARLY HORIZONTAL 8" LIFTS COMMENCING AT THE LOWEST FILL AREA ELEVATION AND PROCEEDING WITH EACH LIFT UPWARD AND OUTWARD FROM THE LOWER LIFT. THE MOISTURE CONTENT OF THE MATERIAL SHALL BE ADJUSTED PRIOR TO APPLICATION OF COMPACTION SUCH THAT IT IS WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT. THE FIRST LIFT SHALL BE PLACED TO A LOOSE THICKNESS NOT TO EXCEED 8". THIS FIRST LIFT SHALL THEN BE COMPACTED TO A PLACE DENSITY NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY. UNLESS NOTED OTHERWISE IN THIS SPECIFICATION SECTION.
C. NO SUBSEQUENT LIFT SHALL BE PLACED UNTIL THE UNDERLYING LIFT HAS BEEN ADEQUATELY COMPACTED TO A STABLE AND UNIFORM MASS.

D. TRENCH BACKFILL

1. MATERIALS:
a. UNDER LAWNS AND UNDER PLANTING BEDS: APPROVED EXCAVATED SUBSOIL MATERIAL.
b. UNDER PAVEMENT SECTION: APPROVED ON-SITE BORROW MATERIAL. REFER TO DETAILS ON L-503.
2. PLACE: DO NOT PLACE ON FROZEN GROUND. PLACE IN 6" LAYERS FROM CUSHION SAND OR FILTER MATERIAL TO SUBGRADE. NO BOULDERS OR STONES OVER 4". TAMP EACH 6" LAYER WITH MECHANICAL TAMPER. ADJUST FILL TO SMOOTH SUBGRADE.
3. COMPACTION: UNIFORMLY SPREAD, MOISTEN OR DRY AS REQUIRED, AND THEN COMPACT SO UNIT DRY WEIGHT OF THE COMPACTED MATERIAL MEETS OR EXCEEDS 95% OF THE MAXIMUM MODIFIED PROCTOR DENSITY BASED ON ASTM D 1557 PROCEDURES.

E. FILL AT STRUCTURES

1. MATERIALS:
a. FILL UNDER PAVEMENT SUB



SECTION A - WET POND @ OVERFLOW

HOAG LANE SUBDIVISION

RZ ENGINEERING/KEPLINGER FREEMAN ASSOCIATES

MARCH 26, 2020

0 10 20 30

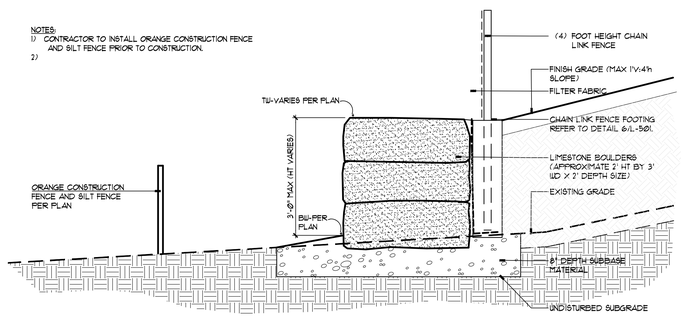
SCALE IN FEET

WET POND PROFILE

SCALE: 1" = 20'

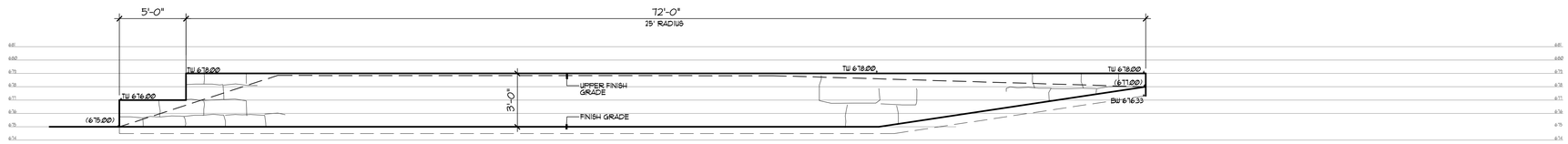
BOULDER WALL - PARTIAL PLAN

SCALE: 1" = 20'



BOULDER RETAINING WALL

SCALE: 1/2"=1'-0"

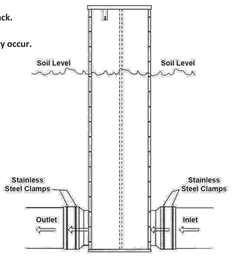


BOULDER RETAINING WALL - SECTION

SCALE: 1/4"=1'-0"

INLINE WATER LEVEL CONTROL STRUCTURE™ INSTALLATION INSTRUCTIONS

Important! **—To minimize seepage, align stoplogs firmly against one side of the stoplog track.**
—Stoplogs must remain in track during structure installation.
—Structures are intended for gravity flow: Low pressure and some seepage may occur.



1.) EXCAVATION AND GRADING

Structure base, inlet pipe, & outlet pipe must be set on compacted soil or fill sand to provide a solid, stable base. This will reduce settling and reduce stress or misalignment of pipe connections.

2.) PIPE CONNECTION

Remove stainless steel clamps from inside structure. Place pipe inside flex couplers and tighten SS clamps.

3.) BACKFILL AND COMPACTION

Level structure vertically before placing backfill. Backfill around control structure by hand in 6" lifts. Hand tamp only - **do not** mechanically compact. **Do not** use a backhoe or blade to place backfill directly against the water control structure.
—Seal on stoplog faces downstream/outlet side of structure.

Excessive compaction may cause structural damage or failure.

- Either the inlet or inline structure may be used for primary or secondary outlet, with larger pipe or emergency spillway as primary.
- Inline structure removes subsurface water.
- On the inline installation, the inlet end of the pipe should be held off the bottom of the impoundment to allow for siltation, and be protected with an inlet guard. The outlet end of the structure should be protected with a rodent guard.
- In a controlled drainage or subsurface irrigation application, the structure nearest the outlet should be installed with a minimum of 20' of non-perforated pipe on the downstream end. Anti-Seep Collars are recommended.

Agri Drain CORPORATION
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www.agridrain.com
info@agridrain.com
— Since 1976 —

Manufactured by: Agri Drain CORPORATION
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Phone: 1-800-232-4742 · Fax: 1-800-282-3353
www.agridrain.com · email: info@agridrain.com

Inline Water Level Control Structure™

- Available in manual or automated.
- Constructed of rugged ½" PVC with lockable plastic lid.
- Stainless steel screws and custom anodized aluminum corner extrusions used for strength and durability.*
- Flexible couplers allow PVC, plastic pipe, or other materials to be easily attached. *(Please specify type of pipe when ordering.)*
- Stoplogs made of PVC in 5" and 7" heights for adjustability. (Maintenance recommended: Remove stoplogs and grease seal with white lithium grease. Ensure there is no debris in the tracks or along the bottom of the structure. Replace stoplogs after greasing.)
- ***Important!*** To minimize seepage, align stoplogs firmly against one side of the stoplog track.
- Stoplogs must remain in track during structure installation.
- Structures are not pressure rated.
- Structures are intended for gravity flow: Low pressure and some seepage may occur.
- 5-year warranty on all standard structures.
- Customized or special orders will carry a 1-year warranty on workmanship and material and are nonreturnable.

**For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*



Call for details on Automated.

US Patent No. 6,715,508 B2
US Patent No. 6,786,234 B2
Canadian Patent No. 2,403,456
Canadian Patent No. 2,466,976

Inline Water Level Control Structure™

Pipe Size	Available Heights	Width	Depth
4"	2' - 12'	8"	10"
6"	2' - 12'	8"	10"
8"	2' - 12'	11⅛"	12"
10"	2' - 12'	14"	16"
12"	2' - 12'	16"	20"
15"	2' - 12'	20"	24"
18"	2' - 12'	24"	28"
24"	3' - 10'	31"	39"

Comes with a handle to install and remove stoplogs.



Stoplog seal ensures a tight fit to prevent leakage.



Rugged injection molded stoplogs used in structures with 4", 6", 8", 10", and 12" pipe sizes.



PVC stoplogs with stainless steel lifting hooks used in structures with 15", 18", and 24" pipe sizes.

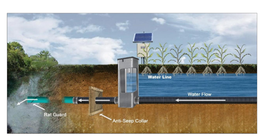


Stoplog Retainer

Hold extra stoplogs up & out of the way!

- Stainless steel retainer hooks to lowest stoplog that you want to hold up within your Inline Water Level Control Structure™
- 10' of 3/16" nylon rope (included) attaches to the retainer and secures to the inner brace bar near the top of the structure.





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Water Level Control Structures

The **Water Level Control Structures** manufactured by *Agri Drain Corp.* are constructed of rugged ½"-thick PVC sheets, connected at the corners by means of specially extruded anodized aluminum profiles sealed with waterproof caulking and secured with stainless steel screws.* The bottom of the structure is sealed with either a ½"- or 1"-thick PVC sheet (dependent upon structure size) and also utilizes waterproof caulking for sealant and stainless steel screws to hold it in place. **For water that is caustic, acid, corrosive, salt, or pH below 5 pH or above 9 pH, please notify us of your requirements to ensure structures are built with compatible hardware. For these applications, Agri Drain recommends stainless steel.*

The stoplogs* are constructed of PVC and utilize a seal that mates against the downstream surface of the extruded aluminum track and the top of the stoplog that it rests upon. The stoplogs are equipped with hooks to facilitate their removal by means of a special handle/hook assembly. ***Important!*** To minimize seepage, align stoplogs firmly against one side of the stoplog track. Stoplogs must remain in track during structure installation.

In order to obtain inch-by-inch water level adjustment capabilities, the stoplogs are built in two heights: 5" and 7" tall. This allows for various combinations and nearly infinite adjustability. An additional, 7"-tall stoplog is specified with a sticker stating "Bottom Board", and this stoplog must be placed in the bottom of the structure. Examples: 7"+7"=14", 5"+5"+5"=15", 5"+5"+7"=17", 5"+7"+7"=19", 5"+5"+5"+5"=20", etc.

The means of connecting to the downstream and upstream pipe is a flexible rubber sewer coupler. It will accommodate corrugated plastic tubing, PVC pipe, corrugated metal pipe or virtually any other conduit material.

The units are available in two different types. The first type (Inlet) is designed to be installed on the upstream end of the conduit so the water must enter the structure before it enters the pipe. The Inlet must be anchored down when installed or it may have the tendency to float. The second type (Inline) is designed to be installed in the pipe line, so the water enters the pipe, then flows into the box, over the stoplogs, then out the downstream side of the structure. The Inline structure is equipped with a lockable plastic lid and is available in manual or automated. Both structures come with a handle to remove, install, or adjust the stoplogs.

The structures are manufactured in various sizes based on diameter of the conduit and engineered to provide a minimum of 30% greater capacity than the conduit it is connected to. They are available in heights to suit the specific installation.

INLINE WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT						
	2'	3'	4'	5'	6'	8'	10'	12'
4"	50U	64U	81U	102U	121T	216T	244T	278T
6"	52U	66U	83U	103U	164T	222T	272T	320T
8"	64U	84U	105U	176T	198T	264T	320T	392T
10"	79U	107U	168T	210T	238T	300T	375T	458T
12"	99U	157T	190T	242T	294T	366T	480T	542T
15"	154T	222T	270T	322T	382T	502T	614T	722T
18"	191T	236T	340T	402T	450T	592T	710T	834T
24"	N/A	348T	454T	524T	600T	766T	946T	N/A

INLET WATER LEVEL CONTROL STRUCTURE™ SHIPPING WEIGHTS

Pipe Size	HEIGHT				
	2'	3'	4'	5'	6'
4"	26U	38U	51U	64U	76U
6"	35U	41U	52U	67U	78U
8"	37U	51U	67U	86U	132T
10"	49U	62U	85U	130T	150T
12"	55U	76U	125T	164T	152T
15"	82U	126T	158T	196T	216T
18"	110T	150T	186T	224T	250T
24"	178T	192T	248T	310T	336T

UPS=U
TRUCK LINE=T

Larger CMP structures also available. Call for details on custom sizes and pricing.

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK · SCOTT L. ZONA · 079943 · LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT · SCOTT LEE FREEMAN · 001473 · STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 31050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

POND & WALL DETAILS

L-504

Printed By:
Date Printed:
Drawing File:

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STORM STRUCTURE SCHEDULE

X-HOAG-STORM-CHART

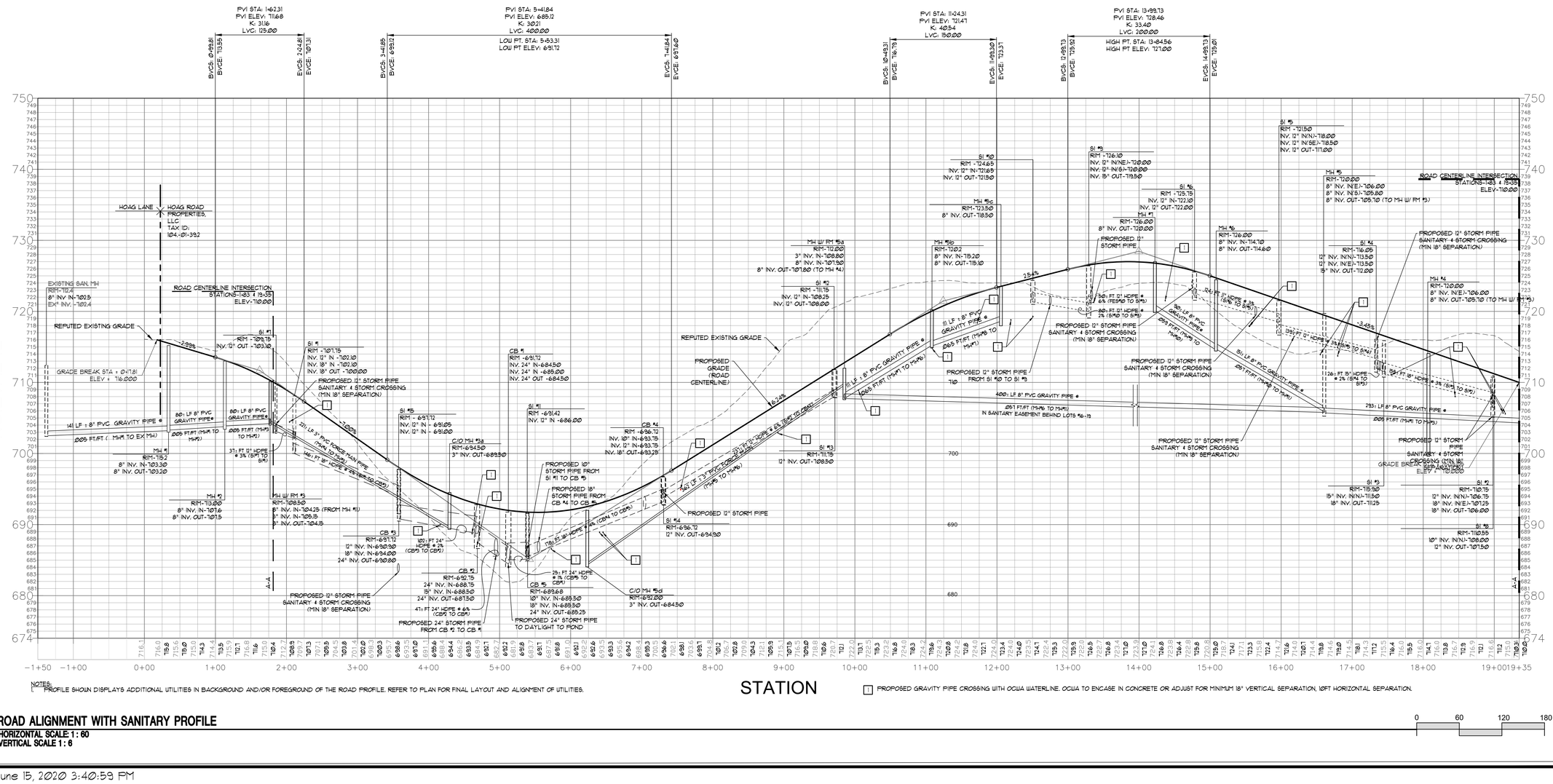
STRUCTURE NUMBER	STRUCTURE TYPE	RIM ELEV.	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
FES * 1	FLARED END SECTION [2]	N/A	-	24"-665.00
DA-1A4B	10' DIA. OUTLET STRUCTURE [1]	675.45	REFER TO DETAIL FOR ORIFICE INFORMATION	665.20
FES * 2	FLARED END SECTION [2]	N/A	-	(E)-24"-676.00
CB * 1	CATCH BASIN - 6'-0" [3]	691.72	(NE)-24"-684.50 (S)-24"- 685.00 UD- 689.20	(W)-24"-684.50
CB * 2	CATCH BASIN - 4'-0" [3]	692.75	(NE)-24"-688.75 (E)-15"-688.50 UD- 691.00	(SW)-24"-687.50
CB * 3	CATCH BASIN - 4'-0" [3]	697.72	(W)-12"-690.50 (NE)-18"-694.00 UD- 696.25	(SW)-24"-690.50
SI * 1	STORM INLET [4]	707.75	(NW)-12"-702.10 (NE)-18"-702.10	(S)-18"-700.00
SI * 2	STORM INLET [4]	710.75	(N)-12"-706.75 (E)-18"-707.25	(SW)-18"-706.00
SI * 3	STORM INLET [4]	715.90	(N)-15"-711.50 UD-714.50	(W)-18"-711.25
SI * 4	STORM INLET [4]	716.05	(N)-12"-713.50 (E)-12"-713.50 UD- 714.50	(S)-15"-712.00
SI * 5	STORM INLET [4]	721.50	(N)-12"-718.00 (SE)-12"-718.50 UD- 718.00	(W)-12"-717.00
SI * 6	STORM INLET [4]	725.75	(NE)-12"-722.10 UD- 722.75	(NW)-12"-722.00
FES * 7	FLARED END SECTION [2]	N/A	-	12"-725.00
FES * 3	FLARED END SECTION [2]	N/A	12" - 691.50	-
FES * 12	FLARED END SECTION [2]	N/A	12" - 704.00	-
SI * 7	STORM INLET [4]	709.75	UD-707.00 12"-703.20 UD-708.91	(SE)-12"-703.10 (S)-12"-707.50
SI * 8	STORM INLET [4]	710.55	(N)-10"-708.00 UD-708.91	(S)-12"-707.50
FES * 4	FLARED END SECTION [2]	N/A	10"-713.00	-
FES * 5	FLARED END SECTION [2]	N/A	12"-715.00	-
FES * 6	FLARED END SECTION [2]	N/A	12"-721.00	-
FES * 8	FLARED END SECTION [2]	N/A	-	15"-688.00
FES * 9	FLARED END SECTION [2]	N/A	-	15"-718.00
SI * 9	STORM INLET [4]	726.10	(NE)-12"-720.00 (S)-12"-720.00 UD- 724.10	(W)-15"-719.50
SI * 10	STORM INLET [4]	724.65	(SE)-12"-721.65 UD-721.65	(N)-12"-721.50
FES * 11	FLARED END SECTION [2]	N/A	12" - 722.00	
FES * 10	FLARED END SECTION [2]	N/A	12"- 722.00	-
CB * 5	CATCH BASIN - 4'-0" [3]	691.42	(E)-10"-685.50 (SE)-18"-685.50 UD- 687.50	(N)-24"-685.25
CB * 4	CATCH BASIN - 4'-0" [3]	696.72	(S)-10"-693.75 (E)-12"-693.75 UD- 694.90	(NW)-18"-693.25
SI * 12	STORM INLET [4]	711.75	(S)-12"-708.25 UD-708.25	(W)-12"-708.00
SI * 13	STORM INLET [4]	711.75	UD-709.40	(N)-12"-708.50
SI * 11	STORM INLET [4]	691.42	UD-687.50	(W)-10"-686.00
SI * 14	STORM INLET [4]	696.72	UD-694.90	(N)-10"-693.90
SI * 15	STORM INLET [4]	697.72	(W) - 691.05 UD-696.00	(E)-12"-691.00
FES * 11	FLARED END SECTION [2]	N/A	-	24"- 665.00

SANITARY MANHOLE SCHEDULE

NOTES REFER TO SHEETS L-300

MANHOLE #	STRUCTURE TYPE	RIM ELEVATION	INVERT ELEVATIONS IN	INVERT ELEVATIONS OUT
Ex MH.	EXISTING	712.40	8" @ 702.50 (S)	702.40 (EX)
MH# 1	MANHOLE[1]	715.20	8" @ 703.30 (S)	8" @ 703.20 (N)
MH# 2	MANHOLE[1]	712.00	8" @ 703.77 (S)	8" @ 703.67 (N)
MH W/FM# 3	MH. W/ FORCED MAIN[2]	708.00	8" @ 704.25 (E) 3" @ 705.15 (S)	8" @ 704.15 (N)
MH# 4	MANHOLE[1]	714.00	8" @ 705.10 (E)	8" @ 705.00 (W)
MH# 5	MANHOLE[1]	720.00	8" @ 705.95 (E) 8" @ 705.95 (S)	8" @ 705.88 (W)
MH# 6	MANHOLE[1]	724.00	8" @ 714.10 (SE)	8" @ 714.60 (NW)
MH# 7	MANHOLE[1]	726.00		8" @ 720.00 (NW)
MH W/FM# 5A	MH. W/ FORCED MAIN[2]	712.00	3" @ 708.80 (W) 8" @ 707.90 (E)	8" @ 707.80 (N)
MH# 5B	MANHOLE[1]	720.20	8" @ 715.20 (E)	8" @ 715.10 (W)
MH# 5C	MANHOLE[1]	723.50		8" @ 718.50 (SW)
C/O MH# 5D	CLEAN OUT MH	692.00		3" @ 684.50 (E)
C/O MH# 3A	CLEAN OUT MH	694.50		3" @ 689.50 (NE)

NOTES:
1) INSTALL SANITARY MANHOLE PER DETAIL 1/L-501.
2) INSTALL SANITARY MANHOLE WITH FORCED MAIN PER DETAIL 10/L-501.



NOTES:
1. PROFILE SHOWN DISPLAYS ADDITIONAL UTILITIES IN BACKGROUND AND/OR FOREGROUND OF THE ROAD PROFILE. REFER TO PLAN FOR FINAL LAYOUT AND ALIGNMENT OF UTILITIES.

[1] PROPOSED GRAVITY PIPE CROSSING WITH OCWA WATERLINE. OCWA TO ENCASE IN CONCRETE OR ADJUST FOR MINIMUM 18" VERTICAL SEPARATION, 10FT HORIZONTAL SEPARATION.

1 L-600 **ROAD ALIGNMENT WITH SANITARY PROFILE**
HORIZONTAL SCALE 1 : 60
VERTICAL SCALE 1 : 6

0 60 120 180

Printed By:
Date Plotted:
Drawing File:

Monday, June 15, 2020 3:40:59 PM

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SCOTT L. ZOSS — STATE OF NEW YORK — 075543 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
No.	Rev.	Description	Date	
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	
3	3	PUBLIC HEARING- MANLIUS	03/29/18	
4	4	PUBLIC HEARING- MANLIUS	04/01/18	
5	5	PUBLIC HEARING- MANLIUS	05/04/18	
6	6	TOWN REV.-22 LOTS-MANLIUS	10/23/18	
7	7	MANLIUS-21 HOME LOTS-PL BD	11/29/18	

	Description	Date
8	21 LOT SITE PLAN REVISIONS	01/04/19
9	MANLIUS- PLAN SUBMISSION	06/14/19
10	MANLIUS- PLAN SUBMISSION	07/12/19
11	MANLIUS- PLAN SUBMISSION	09/23/19
12	MANLIUS- PLAN SUBMISSION	12/18/19
13	MANLIUS- PLAN SUBMISSION	12/18/19
14	MANLIUS- PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEDMAN — 001473 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 3705D
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
ROAD PROFILES

L-600

DEEP HOLE TEST RESULTS

DH -1 0'-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-66" SANDY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -2 0'-12" TOPSOIL 12"-36" GRAVEL LOAM 36"-80" SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -3 0'-12" TOPSOIL 12"-48" GRAVEL LOAM 48"-72" GRAVELLY SILT LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -4 0'-12" TOPSOIL 12"-36" SANDY SILT LOAM 36"-72" SILTY CLAY LOAM	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED
DH -5 0"-6" TOPSOIL 6"-36" SANDY LOAM 36"-66" SANDY SILT LOAM W/ COBBLES	NO GROUNDWATER WITNESSED NO MOTTLING WITNESSED NO BEDROCK WITNESSED

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY REPRESENTATIVES OF RZ ENGINEERING & KEPLINGER FREEMAN ASSOCIATES

PERCOLATION TEST RESULTS

X-PERC TEST DATA

LOCATION NUMBER	DEPTH & SOIL DESCRIPTION	RATE OF INFILTRATION
PT-1	24" - SANDY LOAM	35 MINUTES/INCH
PT-2	24" - SILT LOAM	GREATER THAN 120 MIN/INCH
PT-3	24" - SANDY SILT LOAM	3 MINUTES/INCH
PT-4	24" - SANDY SILT LOAM	21 MINUTES/INCH

NOTES:
1. CONDUCTED OCTOBER 10, 2017 BY A REPRESENTATIVE OF RZ ENGINEERING

LEGEND

X-SITE-LEGEND

EXISTING	PROPOSED	DESCRIPTION
100		CONTOUR
+377.7		SPOT ELEVATION
	HP/LP	HIGH / LOW POINT
	PT-2	PERCOLATION TEST PIT
	B-*	DEEP HOLE
		FENCE
		UTILITY POLE
	W	WATER LINE
		FIRE HYDRANT
EX ST	ST	STORM PIPE
	QUANTITY - PLANT TYPE	TREE SHRUB PLANT KEY VEGETATION
EX SAN	UD	UNDERDRAIN
	S	SANITARY PIPE-GRAVITY
	FM 3" LPS	SANITARY PIPE-LOW PRESSURE
E/T		OVER-HEAD ELECTRIC
E		UNDERGROUND ELECTRIC
T		TELEPHONE
	ST MH	STORM STRUCTURE
	D1	INLET
CB MH		CATCH BASIN/MANHOLE
	CO	CLEAN OUT
S		SANITARY MANHOLE
		ASPHALT PAVEMENT-DRIVEWAY
		ASPHALT PAVEMENT-ROAD
		PEA GRAVEL DIAPHRAGM/STONE SHOULDER
		OUTLET PROTECTION
	6" Ø 3'	OUTLET PROTECTION FOR 6" PIPE OR LESS
	3' Ø	OUTLET PROTECTION FOR 8"- 12" PIPE
	X 3'	OUTLET PROTECTION FOR 15"+ PIPE, DIMENSIONS PER PLANS
		TRAFFIC SIGN
	SF	SILT FENCE
		EROSION CONTROL BLANKET

EXISTING CONDITIONS & REMOVAL/DEMOLITION NOTES

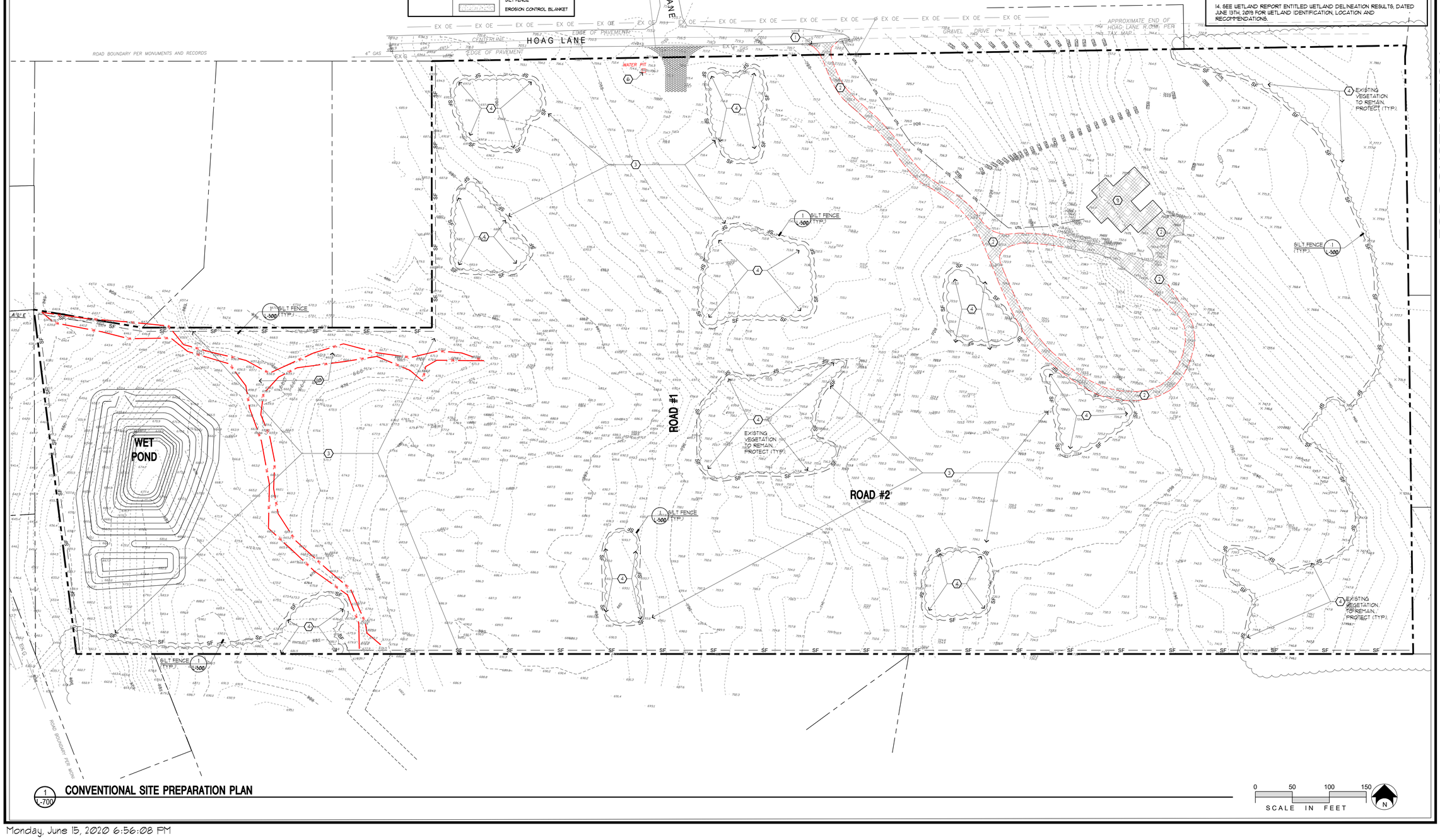
X-SITE-PREP-NOTES

REMOVE EXISTING PAVEMENTS - SEE NOTES 2 BELOW

1. SAWCUT ASPHALT OR CONCRETE PAVEMENT. SAWCUT ASPHALT IN NEAT STRAIGHT LINE AND SAWCUT CONCRETE PAVEMENT AT NEAREST SCORE JOINT.
2. REMOVE EXISTING ASPHALT PAVEMENT IN IT'S ENTIRETY INCLUDING ALL SUB-BASE MATERIAL.
3. REMOVE EXISTING VEGETATION IN IT'S ENTIRETY INCLUDING ROOTS AND STUMPS, AND DISPOSE OF OFF-SITE.
4. VEGETATION TO REMAIN PER HOMEOWNERS ASSOCIATION AGREEMENT. TO BE SUBMITTED AT A LATER DATE.
5. OWNER TO CONTACT ELECTRICAL, GAS, AND WATER DEPARTMENT REGARDING DISCONNECTION PRIOR TO DEMOLITION.
6. DECOMMISSION EXISTING WATER PIT.
7. DEVELOPER TO PROVIDE, REMOVE UNDERBRUSH AND IRRESPECTIVE TREES TO REMAIN. DETAILED NEIGHBORHOOD PARK TO BE DESIGNED AT A LATER DATE.
8. CORE OPENING INTO EXISTING SANITARY MANHOLE FOR PROPOSED 6" SANITARY LINE.
9. REMOVE EXISTING STRUCTURE.
10. REMOVE EXISTING WATERBODY. APPLY FOR ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT.

GENERAL NOTES

1. TOPOGRAPHIC AND UTILITY INFORMATION TAKEN FROM SURVEY ENTITLED TOPOGRAPHIC MAP - LANDS OF HOAG ROAD PROPERTIES, LLC AS PREPARED BY SEGUIN LAND SURVEYING, PLLC, CHITTENANGO, NEW YORK, DATED NOVEMBER 6TH, 2017. OWNER AND ARCHITECT DO NOT CONFIRM THE COMPLETENESS OR ACCURACY OF SUCH INFORMATION. CONTRACTOR IS RESPONSIBLE FOR THOROUGH EXAMINATION AND VERIFICATION OF ALL EXISTING SURFACE AND SUBSURFACE CONDITIONS AFFECTING THE NATURE, SCOPE, COMPLEXITY AND COST OF THE CONTRACT WORK.
2. SAW CUT ONLY FOR PAVING REMOVALS. EXTEND REMOVAL LINES TO INCLUDE ANY ADJOINING BROKEN OR DETERIORATING PAVING. CAREFULLY REMOVE, STOCKPILE AND PROTECT ANY ITEMS NOTED FOR SALVAGE. ALL DEMOLITION RUBBLE, DEBRIS AND EXCESS SOILS TO BE PROMPTLY REMOVED FROM SITE UNLESS OTHERWISE NOTED. STRIP AND STOCKPILE SUFFICIENT EXISTING ORGANIC TOPSOILS FOR RESPREADING AS REQUIRED ON DISTURBED AND REGRADED AREAS TO BE ESTABLISHED IN LAWN AND FOR REPAIR OF DISTURBED EXISTING LAWNS TO REMAIN. STOCKPILE ALL MATERIALS IN APPROVED LOCATIONS WITHOUT INTERFERING WITH OTHER CONTRACTOR WORK, SCHOOL TRAFFIC OR DRAINAGE.
4. ALL FILL/BACKFILL OF EXCAVATIONS AND VOIDS RESULTING FROM REMOVALS AND RELATED WORK UNDER NEW OR REPLACEMENT PAVING AREAS SHALL ONLY BE COARSE AGGREGATE FILL MATERIAL THOROUGHLY COMPACTED.
5. PROTECT ALL FACILITIES AND IMPROVEMENTS ON AND ADJOINING THE PROPERTY WHICH ARE NOT SPECIFICALLY IDENTIFIED FOR REMOVAL. VERIFY LOCATIONS AND DEPTHS OF ALL SUBSURFACE UTILITIES TO REMAIN PRIOR TO ANY ADJACENT REMOVAL AND EXCAVATION WORK.
6. NOTIFY OWNER IMMEDIATELY IF ANY SURFACE OR SUBSURFACE CONFLICTS OR UNKNOWN CONDITIONS ARE ENCOUNTERED IN ORDER TO PERMIT ADJUSTMENT OF WORK IF NECESSARY.
7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS PRIOR TO COMMENCING WORK.
8. CONTRACTOR IS RESPONSIBLE FOR OBTAINING and CONFORMING to ALL TOWN OF MANLIUS SPECIFICATIONS.
9. DIG SAFELY NEW YORK TO BE CONTACTED 72 HOURS PRIOR TO START OF EXCAVATION.
10. REFER TO PLANS L-102 TO L-105 FOR CONSTRUCTION STAGING OF REMOVALS AND INSTALLATION.
11. DUST MONITORING PER STORMWATER POLLUTION PREVENTION PLAN.
12. CONTRACTOR/ DEVELOPER SHALL NOT ALLOW PARKING OF ANY EQUIPMENT WITHIN THE HOAG RD. RIGHT OF WAY. ALL CONSTRUCTION EQUIPMENT, MATERIALS, STAFF VEHICLES, VENDORS, AND DELIVERY TRUCKS SHALL PARK WITHIN STAGING AREA SHOWN ON STAGING PLANS.
13. SEE GEOTECHNICAL REPORTS ENTITLED EARTHWORK MATERIAL EVALUATION AND BERM STABILITY EVALUATION, DATED MAY 18TH, 2010 & MAY 21TH, 2010 RESPECTIVELY, FOR DETAILED GEOTECHNICAL INFORMATION AND SOIL PLACEMENT RECOMMENDATIONS.
14. SEE WETLAND REPORT ENTITLED WETLAND DELINEATION RESULTS, DATED JUNE 13TH, 2019 FOR WETLAND IDENTIFICATION, LOCATION AND RECOMMENDATIONS.



1 L-700 **CONVENTIONAL SITE PREPARATION PLAN**

SCALE IN FEET 0 50 100 150

Monday, June 15, 2020 6:56:08 PM

Plotted By:
Date Plotted:
Drawing File:

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STATE OF NEW YORK — SCOTT L. FOSS — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION														
No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19							
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19							
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19							
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19							
5	5	PUBLIC HEARING- MANLIUS	06/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19							
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19							
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20							

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL SITE PREPARATION PLAN-21 LOT

L-700

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X-HOAG-ZONING-REVISED

1. ZONING

- TAX MAP #104.-01-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE §276). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SAGUN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOS.NY.GOV/LG/PUBLICATIONS/SUBDIVISION%20REVIEW%20NY%20STATE.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-0"
SIDE YARD SETBACK	20'-0"
REAR YARD SETBACK	40'-0"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-0"	100'-0"	100'-0"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-0"	30'-0"	30'-0"
SIDE YARD	20'-0"	15'-0"	15'-0"
REAR YARD	40'-0"	25'-0"	25'-0"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-0" MIN: 150'-0"
LOT AREA: MINIMUM 40,000 SF

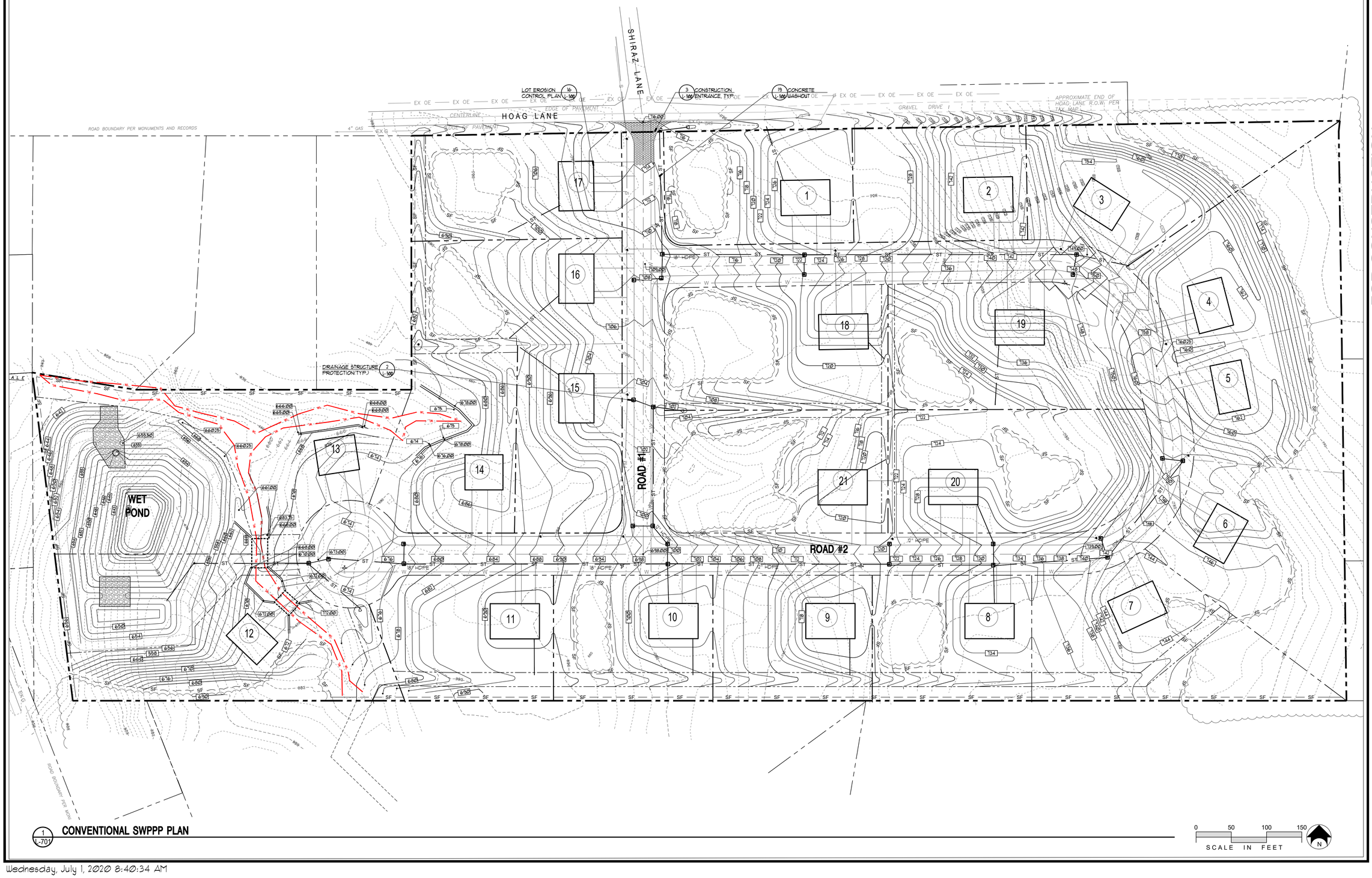
(R3) FRONTAGE: 100'-0" MIN: 100'-0" AVG: 170'- 0"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.04	1,324,224.00
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.66	159,367.97
(B) SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C) WEST "FOREVER WILD" AREA	.56	24,571.97
(D) NORTH "FOREVER WILD" AREA	.39	17,218.69
(E) HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN 06/15/2020.



1 / L-701 **CONVENTIONAL SWPPP PLAN**

0 50 100 150
SCALE IN FEET

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STATE OF NEW YORK — SCOTT L. ZOTA — 070943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
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5	5	PUBLIC HEARING- MANLIUS	08/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

△ Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

REGISTERED LANDSCAPE ARCHITECT — SCOTT M. FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED
Title:

CONVENTIONAL SWPPP PLAN -21 LOT

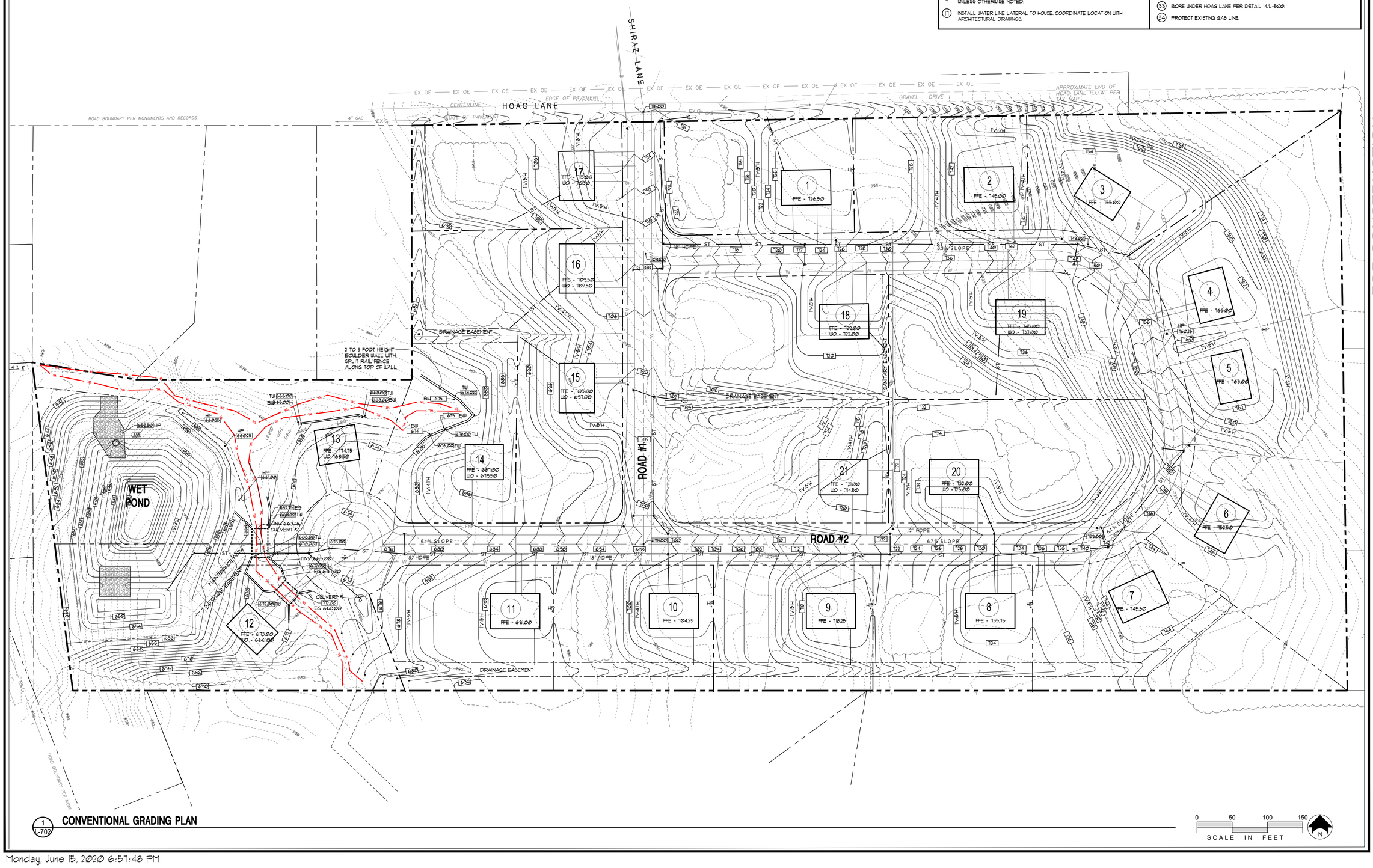
L-701

Plotted By:
Date Plotted:
Drawing File:

Wednesday, July 1, 2020 8:40:34 AM

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.). ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501 FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS). REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4.1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY(95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT, RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL. COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 2Ø/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. WYE CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
26. LOTS 3, 10, 11, 12, 13, 19 AND 20 WILL REQUIRE PLACEMENT OF COMPACTION STONE BELOW THE BASEMENT SLAB PER DETAIL 2/L-503.
27. REFER TO L-102 THRU L-108 FOR GRADING AND DRAINAGE THROUGHOUT CONSTRUCTION SEQUENCE STAGES.
28. HOME BUILDER TO INSTALL ROOF DRAIN AND DIRECT RUNOFF AWAY FROM HOUSE TOWARDS DRAINAGE SWALE OR STORMWATER EASEMENT.
29. HOMEOWNER/ DEVELOPER TO INSTALL PLANT MATERIAL TO STABILIZE PLANTS.
30. MAINTENANCE ACCESS. NYSDEC REQUIRES A 12'-0" WIDTH ACCESSWAY AT 12'-0" WIDE @ 15% MAXIMUM. MAINTENANCE PATH SHOWN IS 12'-0" WIDE AND IS CONSTRUCTED AT A MAXIMUM 1V:8H SLOPE (12.5%).
31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25. SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-702 **CONVENTIONAL GRADING PLAN**

SCALE IN FEET 0 50 100 150

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STATE OF NEW YORK — SCOTT L. ZOSS — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev	Description	Date
	8	21 LOT SITE PLAN REVISIONS	01/04/19
	9	MANLIUS- PLAN SUBMISSION	06/14/19
	10	MANLIUS- PLAN SUBMISSION	07/12/19
	11	MANLIUS- PLAN SUBMISSION	09/23/19
	12	MANLIUS- PLAN SUBMISSION	12/18/19
	13	MANLIUS- PLAN SUBMISSION	12/18/19
	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 000147 — STATE OF NEW YORK

Drawn By:	V.E.R.
Checked By:	S.F.
KFA Proj. No.:	37050
Date:	DECEMBER 1, 2017
Scale:	AS NOTED

Title:
CONVENTIONAL GRADING AND DRAINAGE PLAN -21 LOT

L-702

Plotted By:
Date Plotted:
Drawing File:

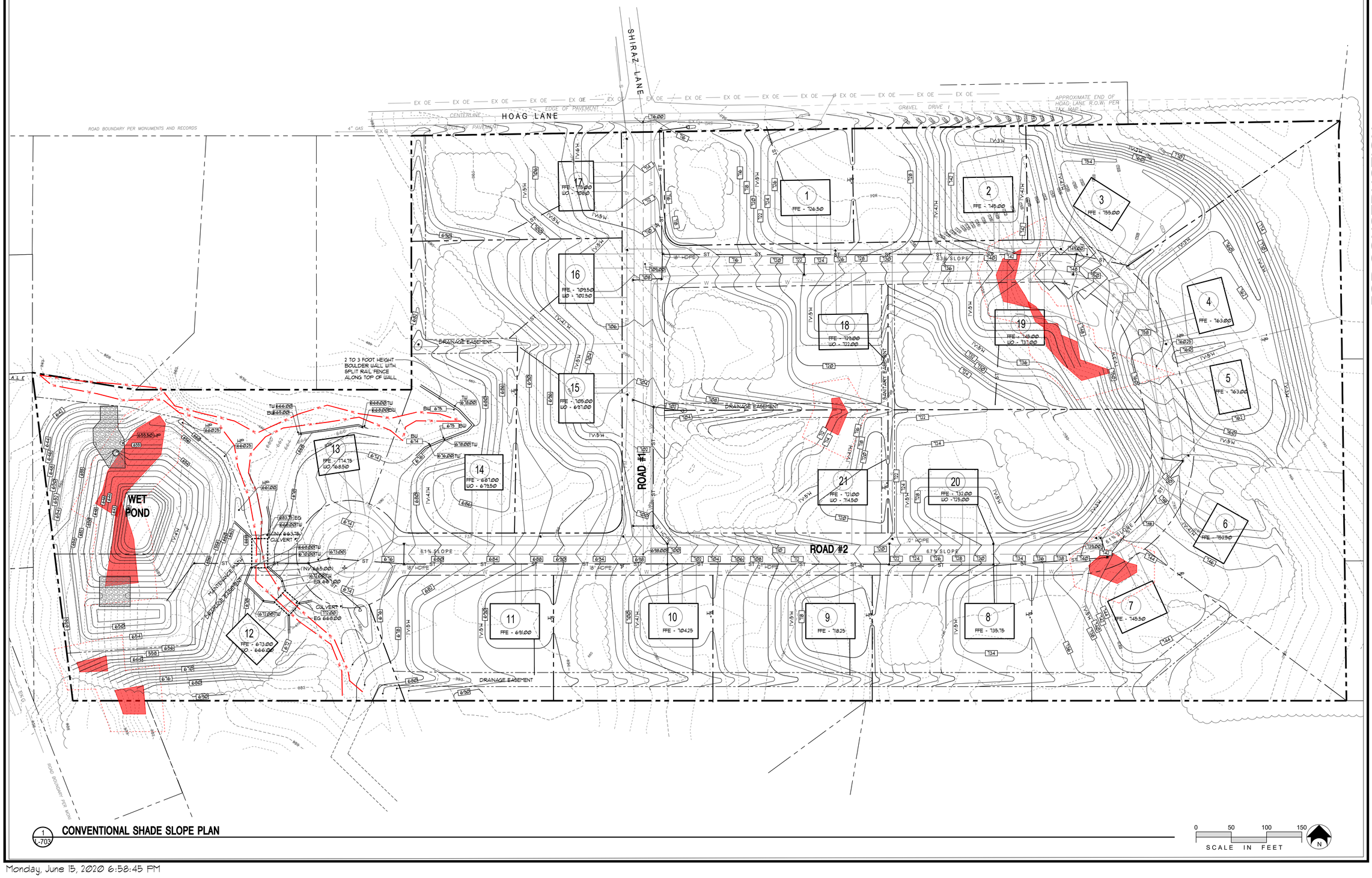
Monday, June 15, 2020 6:57:48 PM

SHADE RELIEF LEGEND - TOWN OF MANLIUS

§ 127-19: C. FOR PURPOSES OF DETERMINING A BUILDABLE LOT IN THE CONTEXT OF A SUBDIVISION APPROVAL, A LOT'S BUILDING ENVELOPE, DEFINED AS THE AREA OF A LOT THAT FALLS WITHIN THE REQUIRED SETBACKS, SHALL INCLUDE AN AREA LARGE ENOUGH TO FIT A REASONABLE BUILDING FOOTPRINT, WHICH IS:

(2) NO CLOSER THAN 25 FEET TO SLOPES OF 25% OR MORE.

= AREAS GREATER THAN OR EQUAL TO 25% SLOPES.



1 L-703 **CONVENTIONAL SHADE SLOPE PLAN**

SCALE IN FEET 0 50 100 150

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STATE OF NEW YORK — SCOTT L. ZOSH — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No. Rev:	Description	Date	No. Rev:	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	8	8	21 LOT SITE PLAN REVISIONS	01/04/19
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18	9	9	MANLIUS- PLAN SUBMISSION	06/14/19
3	3	PUBLIC HEARING- MANLIUS	03/29/18	10	10	MANLIUS- PLAN SUBMISSION	07/12/19
4	4	PUBLIC HEARING- MANLIUS	05/04/18	11	11	MANLIUS- PLAN SUBMISSION	09/23/19
5	5	PUBLIC HEARING- MANLIUS	08/01/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL SHADE SLOPE -21 LOT

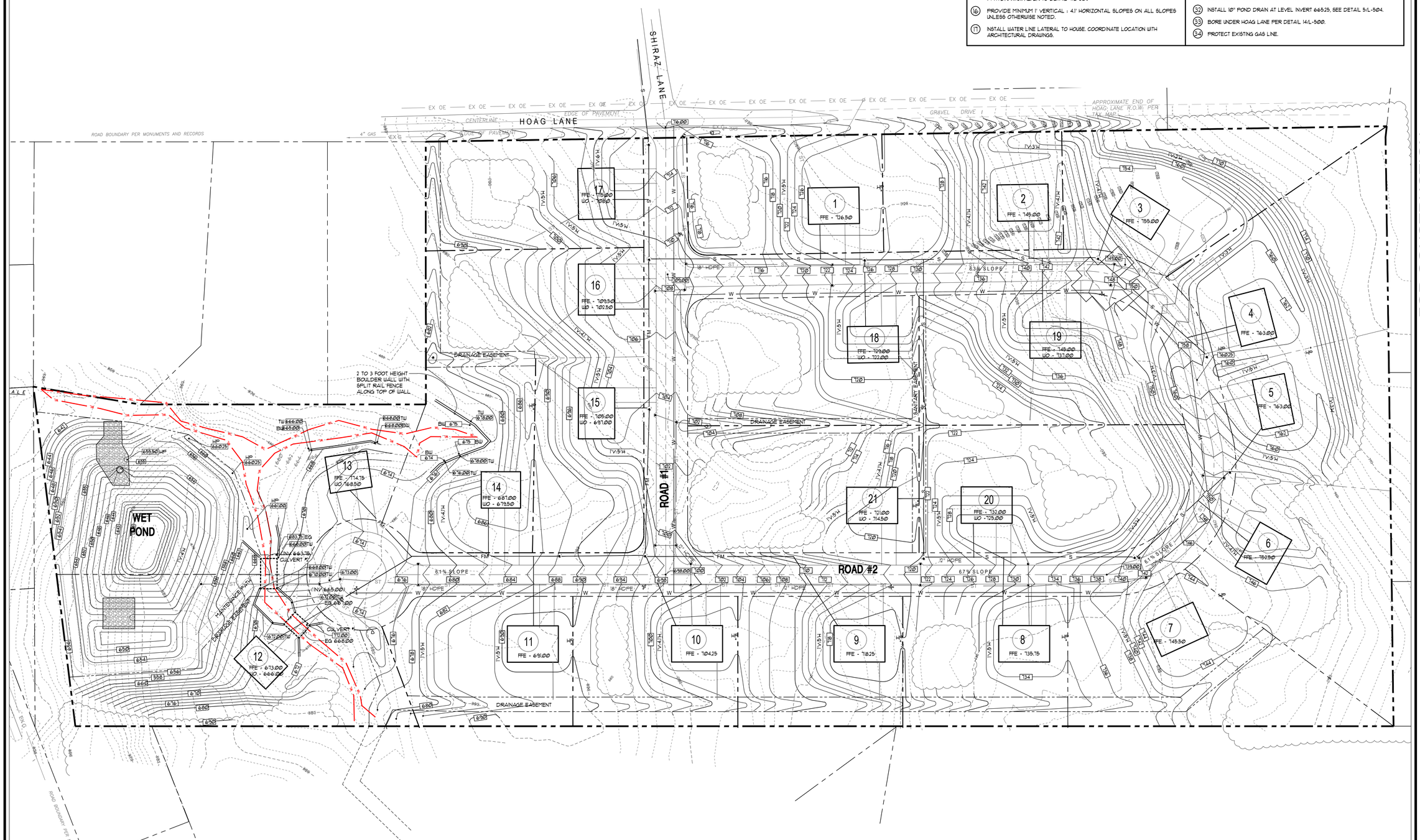
L-703

Plotted By:
Date Plotted:
Drawing File:

HOAG LANE DEVELOPMENT SEWER SYSTEM TYPE (CONVENTIONAL) - HOAG-SEWER	
SEWER SYSTEM TYPE	LOT NUMBERS
FORCE MAIN SYSTEM SEWER	9, 10, 11, 12, 13, 14, 15, 16
GRAVITY SYSTEM SEWER	1, 2, 3, 4, 5, 6, 7, 8, 17, 18, 19, 20, 21

GRADING, DRAINAGE and UTILITIES NOTES

1. MEET EXISTING LINE AND GRADE.
2. CORE OPENING INTO EXISTING SANITARY STRUCTURE WITH WATER TIGHT CONNECTION.
3. PROPOSED GAS LINES NOT SHOWN. FUTURE GAS LINE LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
4. PROPOSED ELECTRIC SERVICE NOT SHOWN. FUTURE ELECTRIC LAYOUT TO BE COORDINATED WITH NATIONAL GRID.
5. SURVEYOR TO PROVIDE EASEMENTS FOR FINAL APPROVAL.
6. BUILDER TO PROVIDE GRAVITY SANITARY SYSTEM OR APPROVED EQUAL. SEE PROFILE 2/L-600 AND DETAILS ON L-501.
7. GRAVITY SANITARY LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS. PROVIDE ONE LATERAL PER LOT. (TYPICAL) MINIMUM SLOPE FOR LATERALS TO BE 2% (¼" PER FT.) ALL LATERALS TO BE OWNED BY HOMEOWNER.
8. E-1 SANITARY SYSTEM LATERAL. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER OR APPROVED EQUAL. ALL LATERALS & PUMPS OWNED BY HOMEOWNER. SEE PROFILE 2/L-600.
9. LOW PRESSURE SANITARY SEWER FORCE MAIN. SEE PROFILE 2/L-600.
10. SANITARY VENT AND TRAP PER DETAIL 5/L-501. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS AND LOW PRESSURE SYSTEM MANUFACTURER AND E-1 MANUFACTURER OR APPROVED EQUAL.
11. NOTE DELETED.
12. SANITARY/WATER LINE CROSSING. REFER TO DETAIL 3/L-501. FOR REQUIRED SEPARATION DISTANCES OR INSTALLATION METHODS.
13. FORCE MAIN CHECKPOINT (NO EXPOSED SEWAGE, ACCESS TO PIPES ONLY)
14. OCWA TO PROVIDE DESIGN & INSTALLATION OF ALL WATER FACILITIES INCLUDING FIRE HYDRANTS, VALVES, LINES AND SIZES.
15. INSTALL FIRE HYDRANT AND VALVE. SHOWN FOR COORDINATION PURPOSES (4 HYDRANTS) REFER TO DETAIL 4/L-501.
16. PROVIDE MINIMUM 1' VERTICAL : 4:1' HORIZONTAL SLOPES ON ALL SLOPES UNLESS OTHERWISE NOTED.
17. INSTALL WATER LINE LATERAL TO HOUSE. COORDINATE LOCATION WITH ARCHITECTURAL DRAWINGS.
18. COMPACTION REQUIREMENTS: 90% STANDARD MAXIMUM PROCTOR DENSITY/95% IN SUBGRADE AREA)
19. INSTALL BOULDER WALL PER DETAIL 1-3/L-504 IN PHASE 1 PER L-102.
20. FOUNDATION DRAIN SHALL DRAIN TO DAYLIGHT WHEN POSSIBLE. SEE NOTE 33 WHEN FOUNDATION DRAIN CAN NOT DAYLIGHT, RODENT SCREEN TO BE INSTALLED. FOUNDATION DRAIN NOT PART OF SITE PLAN APPROVAL COORDINATE WITH TOWN OF MANLIUS DURING BUILDING PERMIT. SHOWN FOR COORDINATION PURPOSES ONLY.
21. WHERE FOUNDATION DRAINS CANNOT BE DAYLIGHTED, THEY SHALL DRAIN TO A SUMP PUMP CROCK AND A SUMP PUMP BE PROVIDED TO DAYLIGHT. RODENT SCREEN TO BE INSTALLED.
22. CONSTRUCT SWALE TO FLOW TOWARDS SWALE ALONG SOUTHERLY PROPERTY LINE. MAINTAIN THROUGHOUT CONSTRUCTION.
23. OUTFLOW STRUCTURE AND PIPE PER DETAIL 20/L-500.
24. CONTRACTOR TO FIELD VERIFY PIPE, INVERT, SLOPE, SIZE AND LOCATION PRIOR TO CONSTRUCTION.
25. W'E CONNECT SANITARY FORCEMAIN SERVICE TO PRIMARY FORCEMAIN. REFER TO SANITARY LATERAL CONNECTION PER DETAIL 6/L-600.
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31. OUTLET STRUCTURE AND POND DRAIN OUTFLOW PIPES SHALL HAVE ANTISEEP COLLARS INSTALLED PER DETAIL 15/L-500.
32. INSTALL 10" POND DRAIN AT LEVEL INVERT 665.25, SEE DETAIL 5/L-504.
33. BORE UNDER HOAG LANE PER DETAIL 14/L-500.
34. PROTECT EXISTING GAS LINE.



1 L-704 **CONVENTIONAL UTILITIES PLAN**

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STATE OF NEW YORK — RUDY L. ZOSS — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

ISSUED AND REVISIONS NOTIFICATION				
No.	Rev.	Description	Date	
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18	
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6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18	
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18	

No.	Rev.	Description	Date
1	8	21 LOT SITE PLAN REVISIONS	01/04/19
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6	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	14	MANLIUS- PLAN SUBMISSION	06/15/20

△- Symbol Indicates Revision Issued

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 000147 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL UTILITIES PLAN -21 LOT

L-704

Plotted By:
Date Plotted:
Drawing File:

Wednesday, July 1, 2020 8:32:18 AM

TOWN OF MANLIUS SUBDIVISION DEVELOPMENT

X:\HOAG\ZONING\REVISED

1. ZONING

- TAX MAP #Ø4.-Ø1-39.2 IS CURRENTLY ZONED RESTRICTED AGRICULTURE (RA) DISTRICTS.
- THE FOLLOWING USES ARE PERMITTED IN RA DISTRICTS:
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-1, ACCORDING TO THE SAME RESTRICTIONS.
  - ANY USE PERMITTED IN RESIDENTIAL DISTRICT R-3, ACCORDING TO THE SAME RESTRICTIONS.
- PARCEL HAS BEEN TREATED AS AN R-3 DISTRICT BECAUSE CLUSTER ZONING IS PERMITTED UNDER NYS SUBDIVISION REVIEW (ARTICLE §278). THIS ALLOWS DEVELOPMENT OF SMALLER LOTS BASED UPON A LOT COUNT DERIVED FROM EXISTING ZONING REQUIREMENTS FOR THE CURRENT ZONE (RA) AND PROVISIONS OF OPEN SPACE. THE LOT COUNT IS SHOWN ON THE NOT TO BUILD PLAN DEVELOPED BY SHIGUN LAND SURVEYING, P.L.L.C. AND A (RA) ZONING DENSITY SITE PLAN PROVIDED BY KFA.
  HTTPS://WWW.DOS.NY.GOV/LG/PUBLICATIONS/SUBDIVISION%20REVIEW%20I%20NY%20.PDF

2. RA BULK REGULATIONS (21 LOT CONVENTIONAL PLAN)

MIN. FRONTAGE	N/A
MIN. LOT AREA	N/A
FRONT YARD SETBACK	40'-Ø"
SIDE YARD SETBACK	20'-Ø"
REAR YARD SETBACK	40'-Ø"

3. PRE CLUSTER & CLUSTER ZONING BULK REGULATIONS

- UTILIZE RESIDENTIAL (R1) DISTRICT ZONING CRITERIA FOR 21 LOT CONVENTIONAL PLAN LOTS.
- UTILIZE RESIDENTIAL (R3) DISTRICT ZONING CRITERIA FOR 21 LOT CLUSTER PLAN WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

ZONING	R1 CONVENTIONAL	CLUSTER 23 LOT	CLUSTER 21 LOT
MIN. FRONTAGE	150'-Ø"	100'-Ø"	100'-Ø"
MIN. LOT AREA	40,000 SF	16,000 SF	16,000 SF
FRONT YARD	40'-Ø"	30'-Ø"	30'-Ø"
SIDE YARD	20'-Ø"	15'-Ø"	15'-Ø"
REAR YARD	40'-Ø"	25'-Ø"	25'-Ø"

4. PRE CLUSTER & CLUSTER ZONING LOT SUMMARY

- CONVENTIONAL 21 LOT PLAN BASED ON RESIDENTIAL R1 ZONING TO DEVELOP A MAXIMUM LOT COUNT.
- CLUSTER PLAN BASED ON RESIDENTIAL R3 DISTRICT 21 LOT LAYOUT WHICH INCLUDES (20) NEW CONSTRUCTION LOTS AND (1) NEWLY FORMED LOT FOR THE EXISTING RESIDENCE.

(R1) FRONTAGE: 150'-Ø" MIN: 150'-Ø"
LOT AREA: MINIMUM 40,000 SF

(R3) FRONTAGE: 100'-Ø" MIN: 100'-Ø" AVG: 110'- Ø"
LOT AREA: MINIMUM 16,000 SF

5. GREEN SPACE

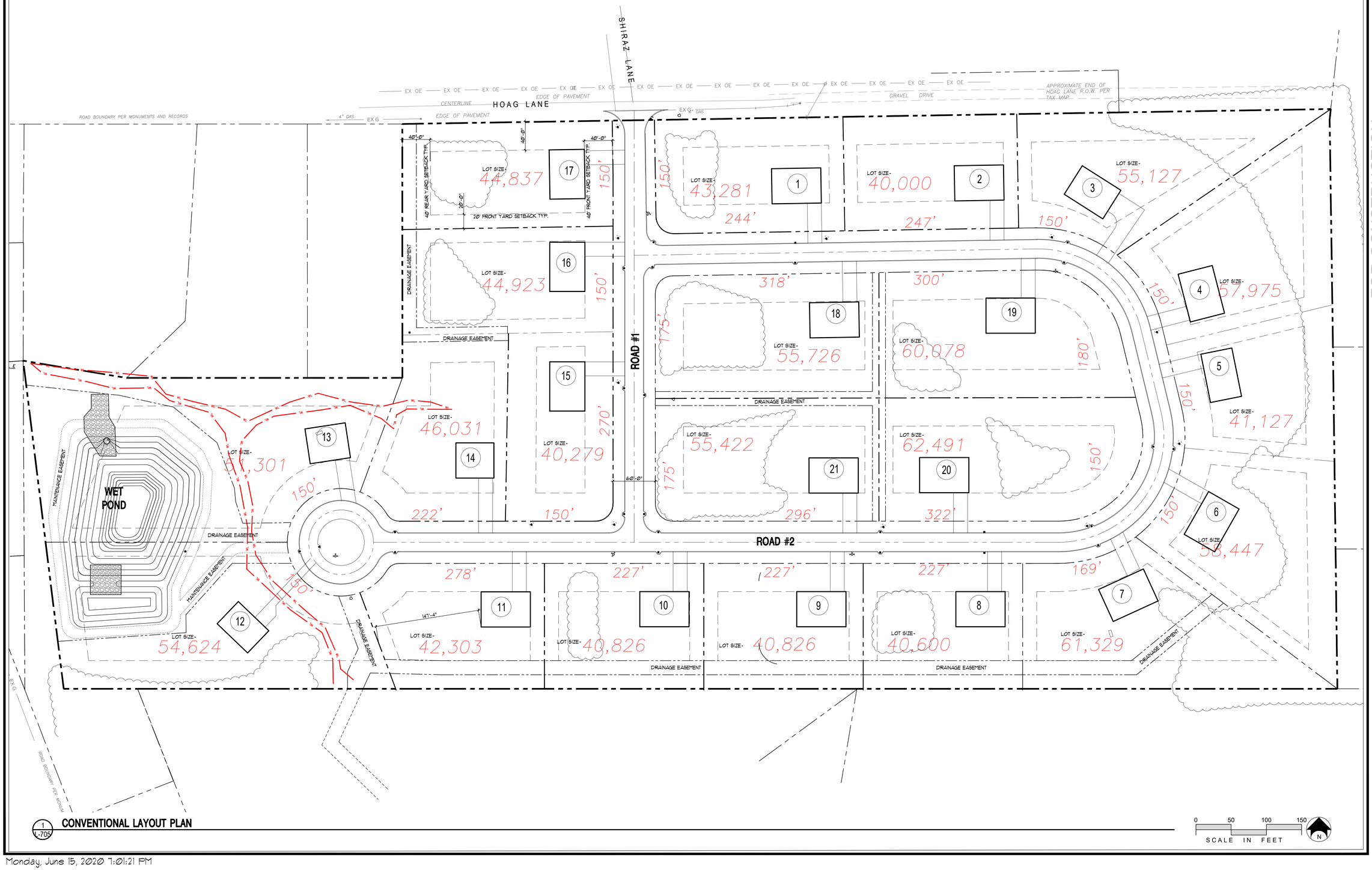
- "FOREVER WILD" AREA- EXISTING VEGETATION TO REMAIN. NO GRADING, OR EARTHWORK PERMITTED WITHIN THESE AREAS. COVENANT TO BE INCLUDED WITHIN LEGAL DESCRIPTION OF LOTS WITH "FOREVER WILD" AREA. REFER TO AREAS A,B,C,D AND E BELOW.

"FOREVER WILD" AREAS	ACREAGE	SQUARE FEET
TOTAL SITE	30.Ø4	1,324,224.ØØ
"FOREVER WILD" AREA	9.35	408,303.11
(A) EAST "FOREVER WILD" AREA	3.66	159,367.97
(B) SOUTH "FOREVER WILD" AREA	.55	24,047.43
(C) WEST "FOREVER WILD" AREA	.56	24,511.97
(D) NORTH "FOREVER WILD" AREA	.39	17,218.69
(E) HOA "FOREVER WILD" AREA	4.19	182,697.05

NOTES:
1. 31% OF THE TOTAL SITE AREA IS "FOREVER WILD" AREA IN THE CLUSTER SITE PLAN Ø6/15/2Ø2Ø.

LEGEND NOTES

- STORMWATER EASEMENT AREAS
- CONSERVATION EASEMENT AREAS



1 L-705 **CONVENTIONAL LAYOUT PLAN**

SCALE IN FEET 0 50 100 150

Monday, June 15, 2020 7:01:21 PM

Plotted By:
Date Plotted:
Drawing File:

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK — SCOTT L. ZOLN — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date	No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	Ø1/12/18	8	8	21 LOT SITE PLAN REVISIONS	Ø1/Ø4/19
2	2	CHECK SET-TOWN OF MANLIUS	Ø1/26/18	9	9	MANLIUS- PLAN SUBMISSION	Ø6/14/19
3	3	PUBLIC HEARING- MANLIUS	Ø3/29/18	10	10	MANLIUS- PLAN SUBMISSION	Ø7/12/19
4	4	PUBLIC HEARING- MANLIUS	Ø5/Ø4/18	11	11	MANLIUS- PLAN SUBMISSION	Ø9/23/19
5	5	PUBLIC HEARING- MANLIUS	Ø6/Ø1/18	12	12	MANLIUS- PLAN SUBMISSION	12/18/19
6	6	TOWN REV.-21 LOTS-MANLIUS	1Ø/23/18	13	13	MANLIUS- PLAN SUBMISSION	12/18/19
7	7	MANLIUS-21 HOME LOTS-PL BD	11/3Ø/18	14	14	MANLIUS- PLAN SUBMISSION	Ø6/15/2Ø

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001417 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
CONVENTIONAL LAYOUT PLAN -21 LOTS

L-705

SECTION 31 1000 – SITE DEMOLITION

PART 3 – EXECUTION

3.1 PERMITS

A. Contractor shall secure all necessary demolition permits including fees and licenses at his own expense.
B. Notify local agencies, such as fire, police, etc., that have jurisdiction.

3. 2 DUST CONTROL

A. Prevent dust and dirt from demolition operations from blowing onto adjacent properties.
B. Contractor shall apply dust surfactant/suppression agent such as Syntech 2002 to control dust as required.
C. Dust monitoring shall occur as noted in SWPPP (Stormwater Pollution Prevention Plan).

3.3 DISCONNECT UTILITY SERVICES

A. Disconnect and remove all existing utilities to structures to be demolished unless otherwise noted. Obtain approval of respective utility owners/vendors before capping, removing or shutting off gas, water, sanitary, storm drainage, electrical, telecommunications or other services.
B. Execute work in accordance with applicable utility owners/vendors regulations and directives.

3.4 DEMOLITION

A. Pavements and Other Structures: Define neat regular lines for cutting, saw cut only, protect edges of installations to remain, extend limits of cutting and removal to sound joints or other limits required to remove all adjoining loose, broken, or deteriorating paving, provide a sound stable edge for adjoining installation of new paving.
B. Storm Drains: Remove existing storm drain system components only after temporary or permanent replacement facilities are in place and operative to collect and channel storm water to required outfalls.
C. Salvage and Stockpile: Carefully remove and protect any existing improvements to be reinstalled as part of the work, including any improvements which may be reinstalled at Contractor's discretion. Contract and arrange use of storage space for salvaging and stockpiling, if any, indicated on drawings, of other existing improvements to be salvaged for future Owner use, stockpile in approved locations on property as determined by Owner.
D. Tree and Vegetation Removal: Clear, grub and remove all existing tree, shrub and other woody vegetation indicated on the drawings or otherwise required to completely clear and prepare the site within the perimeter lines and limits of site excavation and regrading work. Protect all trees not identified for removal. Completely pull, grub and otherwise remove tree stumps/woody root systems and all roots 3" and greater in diameter within 24" of subgrade elevations.
E. Rubble: Concrete, asphalt rubble and other hard-fill type debris from demolition work shall be removed and legally disposed of off-site.
F. General Debris: Plastics, metals, garbage and other general debris shall be removed from the site and properly disposed of.
G. The use of explosives is not permitted for any demolition or removal work.

3.5 REMOVAL

A. Remove from site all debris and all materials not indicated to be salvaged. All removed materials become property of Contractor who shall legally dispose of materials.

END OF SECTION 31 1000

SECTION 31 1001 – SITE PREPARATION

PART 3 – EXECUTION

3.1 GENERAL JOB CONDITIONS

A. Schedule and conduct work in accordance with STAGING PLANS. Do not impede access by emergency vehicles at any time. Maintain free access to all areas shown on plans and drawings; do not intrude onto other site areas more than reasonably necessary for access, staging, storage and other incidental aspects of work.
B. Verify all existing lines, limits, distances, dimensions, elevations, and other conditions affecting work required. Comply with special instructions on drawings. Notify Architect immediately of any conditions encountered which appear to be different than those indicated on drawings, so that such matters may be resolved. Verify any existing underground utility locations and conditions prior to excavation, contact and secure UPPD services as required (1-800-962-7962).
C. Excavate carefully in all locations close to known or likely underground utility lines. In addition to all requirements of the General Conditions and all other public safety regulations and requirements applicable to the work, exercise caution in all sitework access and operations in anticipation that public pedestrian and vehicular traffic and activity will occur in proximity to the work and to access routes to and from the work at all times.
D. Contractor is held to have visited site and to have identified, investigated and measured surface and subsurface conditions and quantities involved in and affecting the work, complexity and cost of the work prior to submission of a bid. Contractor may, for his information, make test excavations during bidding period. Contact Architect for approval prior to any such excavation and repair test holes as directed. Contractor shall use his own judgment in interpreting all surface and subsurface conditions, no responsibility is assumed by Owner or Architect for survey information, lack of survey information, or actual conditions encountered. Any geotechnical evaluation reports with soil test boring and pit logs, descriptions and related data and recommendations on existing subsurface and construction conditions included in the contract documents are made available for the convenience of the Contractor. If included, such reports are not intended as a representation or warranty of the accuracy of such information or the continuity of conditions between any soil boring and test pit locations. It is expressly understood that the Owner and Architect shall not be responsible for interpretations or conclusions drawn from the reports by the Contractor. Claims for extra compensation or inability to perform work in accordance with Contract Documents, or for an extension of time will not be considered for any alleged or actual differences between site surface or subsurface conditions and such information and data, except as may be provided elsewhere in the Contract Documents. Owner may elect alternative methods of accomplishing work in event that variations in sitework conditions or unknown conditions are encountered.
E. Avoid spills and littering of earth, rubble or other debris on Owner or other public streets or other roadways; clean up any spills promptly and regularly.
F. Notify developer in writing of any existing damage to "Items to remain" prior to commencing work.

3.2 LAYOUT, LINES, LEVELS, AND FIELD CHECKS

A. Employ licensed Engineer or Surveyor to stake out all work.
B. Set hubs, offset lines, and grade stakes where spot elevations shown, at breaks in grade, and as otherwise required.
C. Run lines from existing buildings, monuments, and features shown on drawings. Establish base lines. Mark well and protect during construction. Run levels from benchmarks. Verify benchmark elevations. Advise Architect of results before commencing work.
D. Accurately locate all new buildings, roads, paved areas, walks, features, etc. Advise Architect of any discrepancies, prior to commencing work.

3.3 PROTECTION

A. Plank all walks, pavements, and curbs to be crossed by equipment.
B. Protect Persons and Property: provide temporary fencing, barricades, signs, signals, and other measures and devices for protection of persons, property, existing improvements to remain and all traffic and other activities in and adjacent to the site of the work, and other activities in all applicable laws and regulations, at all times during work. When work areas are to be unattended, check that open excavations or other unsafe areas or conditions are adequately barricaded and that signals are operative. Perform work to prevent erosion, flooding, undermining, lateral movement, settlement, or other instability or damage of adjoining areas of the site and adjoining improvements. Make certain that cut or fill embankments slopes are stable during overnight or other periods of work interruption.
C. Protect Utilities: Protect and preserve in operating condition all active surface and subsurface utilities indicated on the drawings or which may otherwise exist or be encountered within or adjacent to the work. Excavate carefully near any known or suspected utility lines. Cooperate with other contractors performing removals or replacements of utilities. Particularly note the instructions on the drawings to verify location and/or depth of certain utility lines. Secure UPPD services to locate utilities. Damage to any utility lines or structures resulting from work shall be repaired by at the expense of the contractor, to the satisfaction of the Owner, Architect, utility company or other authority having jurisdiction. If active utilities are cut, broken, or damaged during work, immediately take all steps necessary to avoid endangering persons or property. Notify Owner, Architect and affected utility company or other jurisdiction to obtain direction and/or assistance in repair of damaged facilities. Remove, plug or cap as required any active and abandoned utilities encountered during construction operations or shown on drawings. If Contractor is required to reroute/replace any portions of existing active utility lines, determine connection points and otherwise plan work in advance to minimize interruption as briefly as possible. Where existing lines are to be abandoned, remove any portions which may interfere with or may be unstable or prone to settle under or along new structures or pavements, refer to drawings. Other portions may be abandoned in place. In event that water, storm sewer, sanitary sewer, or other utility lines are broken, or that springs, ground water, or other sources of water are encountered, take necessary steps to immediately divert water to prevent erosion, undermining or other damage to existing improvements or construction operations. Permanent replacement, reconstruction or other corrective measures are Contractor's responsibility. Methods subject to approval of Architect and other having jurisdiction.
D. Protect Trees: protect all trees and shrubs in and adjoining work areas which are not identified to be removed. Do not store or stockpile earth or other materials or equipment and do not operate heavy equipment more than necessary within the branching limits of trees.

3.4 CLEARING AND GRUBBING

A. Unless otherwise noted on the drawings, remove promptly from site and legally dispose of all trees, logs, stumps, roots, brush, vegetation, rubbish, stones, boulders and other objectionable or perishable materials within grading limits to 1 - 6" below finish grade or to original grade whichever is the greater depth.
B. No burning of any cleared and grubbed material shall be permitted.

END OF SECTION 31 1001

SECTION 31 1413 – TOPSOIL

PART 1 – GENERAL

PART 2 – PRODUCTS

PART 3 – EXECUTION

3.1 TOPSOIL STRIPPING

A. Remove all trees and stumps prior to topsoil stripping. Investigate depth of organic soils in each designated area as the work progresses and strip topsoil accordingly. Depth may vary over the site of the work. Strip full depth of topsoil from removed soils from stream or pond.
B. Stockpile in locations shown on plan where material will not interfere with other work and guard against erosion and sedimentation adjoining work areas or off-site areas.
C. Do not lift and mix subsoil material with topsoil. Remove debris and other foreign material and large stones encountered as work progresses. Ordinary grass sods and small roots, twigs and other woody material will be removed but shall be thoroughly broken up and intermixed with soil during handling operations.
D. All topsoil shall be screened prior to reuse/respreading.

END OF SECTION 31 1413

SECTION 31 2213 – ROUGH GRADING

PART 3 – EXECUTION

3.1 ROUGH GRADING

A. Subgrade: Depth below finished grade as required for topsoil or pavement.
B. Accuracy: Set grade stakes where spot elevation shown, at breaks in grade, along drainage "swales" and as otherwise required to correctly grade the area according to elevations shown on plans.
C. Completion of rough grading: Obtain Architect's approval before spreading topsoil or preparing pavement subgrade.
D. Subgrade rolling: All paved areas. In areas inaccessible to roller, use mechanical tamps. Refer to Section 32 2313, Concrete Excavation, Backfilling and Compacting for compaction requirements.
E. Avoid excessive working of subgrade or use of equipment that causes pumping or weaving.

END OF SECTION 31 2213

SECTION 31 2216 – FINE GRADING

PART 3 – EXECUTION

3.1 SPREAD TOPSOIL

A. Entire unpaved area within contract limits, unless otherwise noted.
B. Spread, compact and regulate topsoil to a minimum of thickness as directed after compaction to smooth draining grades true to elevations shown or indicated on drawings. Generally, all areas shall receive 4" topsoil thickness, plant beds shall receive 18" minimum topsoil thickness. Refer to drawings for verification and any special requirements for use of stripped topsoil.
C. Excess topsoil: Excess topsoil is the property of the owner. Excess topsoil shall remain in the approved topsoil stockpile area.

3.2 FINE GRADE OUTSIDE BUILDING LINES

A. Disk or harrow 4" depth where topsoil has been spread and 4" depth in disturbed areas where no grade changes occur.
B. Remove all stones 1" diameter and larger, roots, rubbish and all other foreign matter.
C. Grade to exact well draining grades indicated. Maximum allowed tolerances:
   1. Unpaved areas - grade surface shall not receive lawn or plantings to a tolerance of plus or minus 0.10'. Swales and ditches to a tolerance of plus or minus 0.05'.
   2. Paved areas-shape subgrade for pavement to a tolerance of plus or minus 0.05'.
   3. Exterior steps and ramps--finished subgrade to a tolerance of plus or minus 0.05'.

END OF SECTION 31 2216

SECTION 31 2301 – SITEWORK EXCAVATION, BACKFILLING AND COMPACTING

REFER TO DRAWING L-503 EXCAVATION, BACKFILLING, AND FILLING DETAILS FOR SECTION 31 2301.

SECTION 31 2500 – EROSION CONTROL

PART 1 GENERAL

1.1 SUMMARY

A. The extent of the erosion, sediment and pollution control is shown on the drawings.
B. Erosion, sediment and pollution control includes, but is not limited to the following:
   1. Erosion, sediment and pollution control measures including silt fence, stone check dams and silt fence dikes.
   2. Slope and swale protection.
   3. Construction entrances.
   4. Permanent and temporary seeding.
   5. Permanent Turf Reinforcement Mats.
C. SPEDES General Permit for Stormwater Discharge is required for sites with disturbance areas which are greater than 1 acre. A SPEDES permit requires the following items to be on site:
   1. Completed Notice of Intent posted on site. Owner to submit by
   2. SWPPP (Storm water Pollution Prevention Plan) Maintenance and inspection log book (prepared by Owners' consultant).
   3. Contract drawings and specifications which include the implementation of Stormwater Management devices (prepared by owners' consultant).
   4. A 5 are disturbance letter with development conditions will be obtained from the NYSDEC after the SPEDES permit has been authorized.
D. Related sections:
   1. Section 31 1413 - Topsoil
   2. Section 31 2213 - Rough Grading
   3. Section 31 2216 - Fine Grading
   4. Section 31 2301 - Sitework Excavating, Backfilling and Compacting
   5. Section 33 4600 - Subdrainage
   6. Section 32 9000 - Lawns and Sod
   7. Section 32 9300 - Plantings

1.2 QUALITY ASSURANCE

A. Conform to requirements of all regulatory authorities having jurisdiction.

1.3 REFERENCES

A. Guidelines for Erosion Control in Urban Areas of New York State.
B. New York State Stormwater Management Design Manual.
C. New York State Department of Environmental Conservation's "SPEDES General Permit for Stormwater Discharges for Construction Activity Permit".

1.4 INSPECTIONS and MAINTENANCE CRITERIA

A. SITE ASSESSMENT INSPECTION (PRECONSTRUCTION INSPECTION)
   1. The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described on the plans (Erosion and Sediment Control Plan) and the DEC's technical standards for erosion and sediment controls as detailed in the "New York Standards and Specifications for Erosion and Sediment Control" have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. For the design of water quality and water quantity controls (post-construction stormwater control practices), the Department's technical standards are detailed in the "New York State Stormwater Management Design Manual."
B. INSPECTION AND MAINTENANCE
   1. Following the commencement of construction, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 1/2" or greater. Site inspections shall be conducted twice a week during times that more than 5 acres of the site have been disturbed. During each inspections, the qualified professional shall record the following information:
      a. On a site map, indicate the extent of all disturbed areas and drainage pathways.
      b. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;
      c. Indicate all disturbed areas that have not undergone active sitework during the previous 14-day period;
      d. Inspect all erosion control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume.
      e. Inspect all erosion and sediment control practices and record all maintenance requirements verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/ mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters (check dams, riser pipes) to pass water.
      f. All deficiencies that are identified with the implementation of the SWPPP.
   2. The Operator shall maintain a record of all inspection reports in a site log book. The site log book shall be maintained on site and be made available to the permitting authority upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.
C. POST CONSTRUCTION INSPECTION
   1. Prior to the Inspector's submittal of the Notice of Termination or the end of permit term, the Operator shall have the qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization.

1.5 SUBMITTALS

A. Material Certificates (MC) and Sample (S) of material required for the following materials:
   1. No. 4 Stone:(MC), (LA) and (S) provide 5 lb. sample
   2. No. 1 Crushed Stone: (See Section 31 2300, Submittals)
   3. Subbase Material: (See Section 31 2300, Submittals)
   4. Select Granular Fill: (See Section 31 2300, Submittals)
B. Shop Drawing, Manufacturers data (MD) and product samples (S) for the following materials as noted below:
   1. Stabilization Fabric for Construction Access Road: (MD)
   2. Silt Fence: (MD)
   3. Erosion Control Fabric: (MD)
   4. Soil Separation Fabric: (MD)
   5. Permanent Turf Reinforcement Mat and anchoring pins: (MD)
C. Certifications (SPEDES Requirement): The Contractor(s) responsible for project sitework shall submit a signed SWPPP certification page.
D. Construction Sequence Scheduling (SPEDES Requirement): The contractor is responsible for the completion of Schedule.
E. Maintenance Plan (SPEDES Requirement): The Owner/Contractor shall submit a Maintenance Plan with the following information: (note that some items may not be applicable to this project)
   1. Name, address and phone number of responsible parties for maintenance.
   2. Description of normal maintenance tasks.
   3. Description of funding source.
   4. Minimum vegetative cover requirements.
   5. Access and safety issues.
   6. Timing and disposal of sediments that will likely be necessary.
   7. Evidence of acquisition of all applicable local and non local permits.
   8. Evidence of acquisition of all necessary legal agreements (e.g., easements, covenants, land trusts).

1.6 NOTICE OF INTENT (SPEDES Requirement)

A. Notice of Intent (NOI): The Contractor shall post a New York State Department of Environmental Conservation completed Notice of Intent (NOI). Coverage under the general permit will begin on the 7 business days after the receipt by the Department. The contractor shall post this permit at the site.
B. Notice of Intent has been filed with the NYSDEC by the owner. SPEDES permits have been obtained for this project. Copies of the permits are available to the Contractor for posting.

1.7 INSPECTIONS AND MAINTENANCE (SPEDES Requirement)

The Contractor shall post the Stormwater Pollution Prevention Plan (SWPPP) and Construction Sequencing Schedule on site and conduct the following activities:

A. Inspections: The Operator shall contract a qualified professional to conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction. Following the commencement of construction, facilities shall be inspected within 24 hours of each rain event where rainfall exceeds 1/2" of rain or greater which ever comes first or as otherwise specified; proceed immediately to repair any failures, washouts, erosion, overflows or other conditions occurring due to rain events to minimize downstream disturbance and sedimentation.
B. Site Log/Certification: The contracted qualified professional must maintain a record of all inspections reports in a site log book. The site log book must be maintained on site and made available to the permitting authority upon request. Prior to starting construction, the Operator must certify in the site log book that the SWPPP was prepared in accordance with the requirements in the SPDES permit and that it meets all federal, state and local erosion and sediment control requirements.
C. Stabilization: The Contractor must initiate stabilization measures as soon as predictable on portions of the site where construction activities have temporarily or permanently ceased.
D. Maintenance: Sediment must be removed from sediment traps or ponds whenever their capacity has been reduced by 50% of the design capacity.

1.8 CERTIFICATIONS

A. Refer to Contractor Certification Form contained in the Storm Water Pollution Prevention Plan for protocol.

1.9 SUPPLEMENTAL DOCUMENTS

A. Storm Water Pollution Prevention Plan for the project will be provided. Refer to attachment at end of this section. (To be added at completion of contract documents.)
B. Stormwater Management System Report for Subdivision: Calculations have been prepared jointly by Keplinger Freeman Associates and RZ Engineering. This report outlines the engineering and design calculations for the increased runoff and stormwater detention facilities required. The stormwater summary is included in the SWPPP Maintenance and Inspection Log Book. Copies of the full stormwater management report are available for a nominal charge.

PART 2 PRODUCTS

2.1 MATERIALS

A. Silt fence:
   1. Fabric - Mirafi 100X or equal.
   2. Support - 14-1/2 gauge galvanized woven wire with maximum 6" mesh opening.
   3. Stakes: Rough sawn hardwood, pointed on one end. Minimum cross sectional area 3 sq. inches.
B. Construction Access Road (Mudrack):
   1. Stabilization Fabric - Refer to Section 31 2300 - Excavation, Backfilling and Compaction.
   2. Stone - No. 4 stone or crushed concrete.
C. No. 4 Stone:

Standard ASTM Sieve Size	% Passing by Weight
4"	100
3"	90 - 100
2"	0 - 15
Passing No. 50	5 - 10
Passing No. 100	2 - 5

D. Erosion Control Fabric:
   1. Material - Mutual Industries or approved equal.
   2. Woven jute (undyed and bio bleached)
E. Permanent Turf Reinforcement Mats:
   1. Material – Pyramat High Performance Turf Reinforcement Mats as manufactured by Propex Geosynthetics (www.propex.com) or approved equal.
   2. Reference Standards – Comply with U.S. EPA Storm Water Fact Sheet, "Turf Reinforcement Mats" (EPA 832-F-99-002) and FHWA FP-03 Specifications Section 713.8.
F. Seeding: Refer to Section 32 9200.

PART 3 EXECUTION

3.1 GENERAL

A. The contractor is responsible for controlling sediment from leaving the project site. A Storm Water Pollution Prevention Plan, erosion control plan and erosion control details have been prepared for this project and shall be followed during construction.
B. Pollutants such as fuels, lubricants, bitumens, raw sewage, chlorine and other harmful materials shall be handled and disposed of by approved methods and shall not be discharged into rivers, streams, impoundments, wetlands, or into natural or man-made channels leading thereto. Wash water or waste from concrete mixing or curing operations shall not be allowed to enter live streams.
C. In case of repeated failures on the part of the Contractor to control pollution/erosion, the right shall be reserved by the Owner's representative to employ outside assistance to provide the necessary corrective measures. Such incurred costs, plus related engineering costs, shall be charged to the Contractor and appropriate deductions made to the Contractor's progress payment.
D. Any fines or fees incurred by the Contractor for failure to implement and maintain erosion control devices shall be paid for by the Contractor.

3.2 INSTALLATION OF EROSION CONTROL FACILITIES

A. Simultaneous with removal work and earthwork, install temporary erosion and sediment control facilities shown on drawings and all other facilities required initially and from time to time throughout the work as determined by the Contractor in accordance with Guidelines for Erosion Control in Urban Areas of New York State to prevent and reduce erosion and sedimentation affecting existing on-site improvements to remain or adjoining property or roadways.
B. To control erosion and sedimentation, initial construction operations shall include, as a minimum:
   1. Silt fencing along all perimeters of work as may be shown on the drawings and other perimeters which could produce erosion and sedimentation affecting adjoining properties, roadways, water bodies, and other improvements and facilities.
   2. Silt fencing around stockpiles of topsoil and other excavated soils.
   3. Installation of Stabilized Construction Entrance (Mud Rack)
C. Temporary sediment traps installed by the Contractor shall be located to provide, as a minimum, 1800 CF of storage capacity for each acre of area being drained or as indicated on plans.
D. Sediment shall be removed from temporary sediment basin and sediment swales and traps and along silt fences and swale and base dikes regularly to maintain stability, flow and storage capacity.
E. Throughout all building and site work, Contractor shall be responsible for erosion and sediment control and for planning, scheduling and phasing work to prevent erosion or sedimentation. Drainage areas should be seeded and stabilized as soon as possible as other work is completed. Temporary seeding with Annual Rye may be considered if final seeding is delayed.
F. All facilities shall be removed as the contributory drainage areas are stabilized and as construction is to be completed. Restore all affected site areas and surfaces.
G. Maintain Best Management Practices (BMP's) per SWPPP.

3.3 SLOPE PROTECTION

A. Protect all disturbed areas during and after earthwork operations as required to prevent gullying, mass wasting and erosion. Stabilize with erosion control fabric. Repair all eroded areas at no expense to the Owner.

3.4 SILT FENCE

A. Construct as detailed truly vertical for entire length. Install all contour 10' from toe of slope when practical.
B. Install where indicated on the drawings and/or as required. Wrap silt fence end posts together for continuous support in bed fabric; 6" minimum.
C. Bury Fabric 6" minimum.
D. Periodically maintain, remove sediment when 50% or greater full.
E. Promptly replace damaged or worn silt fence immediately.

3.5 STABILIZED CONSTRUCTION ENTRANCE

A. Install where indicated on the drawings and/or as required.
B. Construct as detailed from stone or crushed concrete and from site demolition. Maintain at all times and renew when no longer effective. Remove when no longer being used.
C. The pavement adjacent to the entrance shall be swept daily to remove excess mud, dirt or rock tracked from the site.
D. Dump trucks hauling material from the site shall be covered with a tarpaulin.

3.6 INTERCEPTER DIKES & SWALE

A. Install per plan or as otherwise required to direct storm water runoff to temporary sediment traps and detention facilities.
B. Stabilize with erosion control fabric, seed or mulch.
C. Install stone check dams along swale line as detailed at 2' vertical intervals.

3.7 EXCAVATION DEWATERING

A. Install upstream and/or downstream berm as required.
B. Sediment-laden water shall be discharged to silt trapping device.

3.8 STONE CHECK DAM

A. Check Dam where indicated on the plans and as otherwise required by construction staging.
B. Maintain Check Dams during duration of construction.
C. Remove silt when Check Dam.
D. Remove Check Dams after adjoining areas have been stabilized.

3.9 INLET PROTECTION

A. Contractor shall protect inlet, end sections and other outlets using appropriate Best Management Practices. Best Management Practices include Bird and Gravel drop inlet protection, filter fabric inlet protection and excavated drop inlet protection as acceptable control devices.

3.10 TEMPORARY SEDIMENT BASIN

A. Install where noted on plans.
B. Stabilize basin including side slopes.
C. Remove accumulated sediment & debris periodically.

3.11 PERMANENT TURF REINFORCEMENT MATS

A. Install where noted on plans.
B. Install per manufacturers specifications.

END OF SECTION 31 2500

SECTION 31 2500 - EROSION, SEDIMENT AND POLLUTION CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. THE EXTENT OF THE EROSION, SEDIMENT AND POLLUTION CONTROL IS SHOWN ON THE DRAWINGS AND WITHIN SWPPP (STORMWATER POLLUTION PREVENTION PLAN).
B. EROSION, SEDIMENT AND POLLUTION CONTROL INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
   1. EROSION, SEDIMENT AND POLLUTION CONTROL MEASURES INCLUDING SILT FENCE, STONE CHECK DAMS AND SILT FENCE DIKES
   2. SLOPE AND SWALE PROTECTION
   3. CONSTRUCTION ENTRANCES
   4. PERMANENT AND TEMPORARY SEEDING
C. RELATED SECTIONS:
   1. SECTION 31 1413 - TOPSOIL STRIPPING
   2. SECTION 31 2213 - ROUGH GRADING
   3. SECTION 31 2216 - FINE GRADING
   4. SECTION 31 2301 - SITEWORK EXCAVATION, BACKFILLING AND COMPACTING
   5. SECTION 32 9200 - LAWNS AND SOD
   6. SECTION 32 9300 - PLANTINGS
   7. SECTION 33 4000 - STORM DRAINAGE

1.2 QUALITY ASSURANCE

A. CONFORM TO REQUIREMENTS OF ALL REGULATORY AUTHORITIES HAVING JURISDICTION.

1.3 REFERENCES

A. GUIDELINES FOR EROSION CONTROL IN URBAN AREAS OF NEW YORK STATE.
B. NEW YORK STATE STORMWATER MANAGEMENT DESIGN MANUAL
C. NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S "SPEDES GENERAL PERMIT FOR STORMWATER DISCHARGES FOR CONSTRUCTION ACTIVITY PERMIT.

1.4 SUBMITTALS

A. MATERIAL CERTIFICATES (MC) AND SAMPLE (S) OF MATERIAL REQUIRED FOR THE FOLLOWING MATERIALS:
   1. NO. 4 STONE:(MC), (LA) AND (S) PROVIDE 5 LB. SAMPLE
   2. NO. 1 CRUSHED STONE: (See Section 31 2300, Submittals)
   3. SUBBASE MATERIAL: (SEE SECTION 31 2300, SUBMITTALS)
B. SHOP DRAWING, MANUFACTURERS DATA (MD) AND PRODUCT SAMPLE (S) FOR THE FOLLOWING MATERIALS AS NOTED BELOW:
   1. STABILIZATION FABRIC FOR CONSTRUCTION ACCESS ROAD: (MD)
   2. SILT FENCE: (MD)
   3. EROSION CONTROL FABRIC: (MD)
   4. SOIL SEPARATION FABRIC: (MD)
C. CERTIFICATIONS (SPEDES REQUIREMENT): THE CONTRACTOR(S) RESPONSIBLE FOR PROJECT SITEWORK SHALL SUBMIT A SIGNED SWPPP CONTRACTOR CERTIFICATION PAGE.
D. CONSTRUCTION SEQUENCE SCHEDULING (SPEDES REQUIREMENT): THE CONTRACTOR IS RESPONSIBLE FOR THE COMPLETION OF SCHEDULE.
E. MAINTENANCE PLAN (SPEDES REQUIREMENT): THE OWNER/CONTRACTOR SHALL SUBMIT A MAINTENANCE PLAN WITH THE FOLLOWING INFORMATION: (NOTE THAT SOME ITEMS MAY NOT BE APPLICABLE TO THIS PROJECT)
   NAME, ADDRESS AND PHONE NUMBER OF RESPONSIBLE PARTIES FOR MAINTENANCE;
   2. DESCRIPTION OF ANNUAL MAINTENANCE TASKS;
   3. DESCRIPTION OF FUNDING SOURCE;
   4. MINIMUM VEGETATIVE COVER REQUIREMENTS;
   5. ACCESS AND SAFETY ISSUES.
   6. TIMING AND DISPOSAL OF SEDIMENTS THAT WILL LIKELY BE NECESSARY;
   7. EVIDENCE OF ACQUISITION OF ALL APPLICABLE LOCAL AND NON LOCAL PERMITS;
   8. EVIDENCE OF ACQUISITION OF ALL NECESSARY LEGAL AGREEMENTS (E.G., EASEMENTS, COVENANTS, LAND TRUSTS).

PART 2 - PRODUCTS

2.1 MATERIALS

A. SILT FENCE:
   1. FABRIC - MIRAFI 100X OR EQUAL.
   2. SUPPORT - 14.5 GAUGE GALVANIZED WOVEN WIRE WITH MAXIMUM 6" MESH OPENING.
   3. STAKES: ROUGH SAWN HARDWOOD, POINTED ON ONE END. MINIMUM CROSS SECTIONAL AREA
   4. 3 SQ. INCHES.
B. CONSTRUCTION ACCESS ROAD (MUDRACK):
   1. STABILIZATION FABRIC - REFER TO SECTION 31 2301 - EXCAVATION, BACKFILLING AND COMPACTION.
   2. STONE - NO. 4 STONE OR CRUSHED CONCRETE.
C. NO. 4 STONE:

STANDARD ASTM SIEVE SIZE	% PASSING BY WEIGHT
4"	100
3"	90-100
2"	0-15
PASSING NO. 50	5-10
PASSING NO. 100	2-5

D. EROSION CONTROL FABRIC:
   1. MATERIAL - MUTUAL INDUSTRIES OR APPROVED EQUAL.
   2. WOVEN JUTE (UNDYED AND BIO BLEACHED)
E. SEEDING: REFER TO SECTION 32 9200.

PART 3 EXECUTION

3.1 GENERAL

A. THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING SEDIMENT FROM LEAVING THE PROJECT SITE. A STORM WATER POLLUTION PREVENTION PLAN, EROSION CONTROL PLAN AND EROSION CONTROL DETAILS HAVE BEEN PREPARED FOR THIS PROJECT AND SHALL BE FOLLOWED DURING CONSTRUCTION.
B. POLLUTANTS SUCH AS FUELS, LUBRICANTS, BITUMENS, RAW SEWAGE, CHLORINE AND OTHER HARMFUL MATERIALS SHALL BE HANDLED AND DISPOSED OF BY APPROVED METHODS AND SHALL NOT BE DISCHARGED INTO RIVERS, STREAMS, IMPOUNDMENTS, WETLANDS, OR INTO NATURAL OR MAN-MADE CHANNELS LEADING THERETO. WASH WATER OR WASTE FROM CONCRETE MIXING OR CURING OPERATIONS SHALL NOT BE ALLOWED TO ENTER LIVE STREAMS.
C. IN CASE OF REPEATED FAILURES ON THE PART OF THE CONTRACTOR TO CONTROL POLLUTION/EROSION, THE RIGHT SHALL BE RESERVED BY THE OWNER'S REPRESENTATIVE TO EMPLOY OUTSIDE ASSISTANCE TO PROVIDE THE NECESSARY CORRECTIVE MEASURES. SUCH INCURRED COSTS, PLUS RELATED ENGINEERING COSTS, SHALL BE CHARGED TO THE CONTRACTOR AND APPROPRIATE DEDUCTIONS MADE TO THE CONTRACTOR'S PROGRESS PAYMENT.
D. ANY FINES OR FEES INCURRED BY THE CONTRACTOR FOR FAILURE TO IMPLEMENT AND MAINTAIN EROSION CONTROL DEVICES SHALL BE PAID FOR BY THE CONTRACTOR.

3.2 INSTALLATION OF EROSION CONTROL FACILITIES

A. SIMULTANEOUS WITH REMOVAL WORK AND EARTHWORK, INSTALL TEMPORARY EROSION AND SEDIMENT CONTROL FACILITIES SHOWN ON DRAWINGS AND ALL OTHER FACILITIES REQUIRED INITIALLY AND FROM TIME TO TIME THROUGHOUT THE WORK AS DETERMINED BY THE CONTRACTOR IN ACCORDANCE WITH GUIDELINES FOR EROSION CONTROL IN URBAN AREAS OF NEW YORK STATE TO PREVENT AND REDUCE EROSION AND SEDIMENTATION AFFECTING EXISTING ON-SITE IMPROVEMENTS TO REMAIN OR ADJOINING PROPERTY OR ROADWAYS.
B. TO CONTROL EROSION AND SEDIMENTATION, INITIAL CONSTRUCTION OPERATIONS SHALL INCLUDE, AS A MINIMUM:
   1. SILT FENCING ALONG ALL PERIMETERS OF WORK AS MAY BE SHOWN ON THE DRAWINGS AND OTHER PERIMETERS WHICH COULD PRODUCE EROSION AND SEDIMENTATION AFFECTING ADJOINING PROPERTIES, ROADWAYS, WATER BODIES, AND OTHER IMPROVEMENTS AND FACILITIES.
   2. SILT FENCING AROUND STOCKPILES OF TOPSOIL AND OTHER EXCAVATED SOILS.
   3. INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE (MUD RACK)
C. SEDIMENT SHALL BE REMOVED FROM TEMPORARY SEDIMENT BASIN AND SEDIMENT SWALES AND TRAPS AND ALONG SILT FENCES AND STRAW BALE DIKES REGULARLY TO MAINTAIN STABILITY, FLOW AND STORAGE CAPACITY.
D. THROUGHOUT ALL BUILDING AND SITE WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL AND FOR PLANNING, SCHEDULING AND PHASING WORK TO PREVENT EROSION OR SEDIMENTATION. DRAINAGE AREAS SHOULD BE SEEDED AND STABILIZED AS SOON AS POSSIBLE AS OTHER WORK IS COMPLETED. TEMPORARY SEEDING WITH ANNUAL RYE MAY BE CONSIDERED IF FINAL SEEDING IS DELAYED.
E. ALL FACILITIES SHALL BE REMOVED AS THE CONTRIBUTORY DRAINAGE AREAS ARE STABILIZED AND AS CONSTRUCTION IS TO BE COMPLETED. RESTORE ALL AFFECTED SITE AREAS AND SURFACES.
F. MAINTAIN BEST MANAGEMENT PRACTICES (BMPS).

3.3 SLOPE PROTECTION

A. PROTECT ALL DISTURBED AREAS DURING AND AFTER EARTHWORK OPERATIONS AS REQUIRED TO PREVENT GULLYING, MASS WASTING AND EROSION. STABILIZE WITH EROSION CONTROL FABRIC. REPAIR ALL ERODED AREAS AT NO EXPENSE TO THE OWNER.

3.4 SILT FENCE

A. CONSTRUCT AS DETAILED TRULY VERTICAL FOR ENTIRE LENGTH. INSTALL ALL CONTOUR 10' FROM TOE OF SLOPE WHEN PRACTICAL.
B. INSTALL WHERE INDICATED ON THE DRAWINGS AND/OR AS REQUIRED. WRAP SILT FENCE END POSTS TOGETHER FOR CONTINUOUS SUPPORT IN BED FABRIC; 6" MINIMUM.
C. BURY FABRIC 6" MINIMUM.
D. PERIODICALLY MAINTAIN, REMOVE SEDIMENT WHEN 50% OR GREATER FULL.
E. PROMPTLY REPLACE DAMAGED OR WORN SILT FENCE IMMEDIATELY.

3.5 STABILIZED CONSTRUCTION ENTRANCE

A. INSTALL WHERE INDICATED ON THE DRAWINGS AND/OR AS REQUIRED.
B. CONSTRUCT AS DETAILED FROM STONE OR CRUSHED CONCRETE FROM SITE DEMOLITION. MAINTAIN AT ALL TIMES AND RENEW WHEN NO LONGER EFFECTIVE. REMOVE WHEN NO LONGER BEING USED.
C. THE PAVEMENT ADJACENT TO THE ENTRANCE SHALL BE SWEPT DAILY TO REMOVE EXCESS MUD, DIRT OR ROCK TRACKED FROM THE SITE.
D. DUMP TRUCKS HAULING MATERIAL FROM THE SITE SHALL BE COVERED WITH A TARPAULIN.

3.6 INTERCEPTER DIKES & SWALE

A. INSTALL PER PLAN OR AS OTHERWISE REQUIRED TO DIRECT STORM WATER RUNOFF TO TEMPORARY SEDIMENT TRAPS AND DETENTION FACILITIES.
B. STABILIZE WITH ERO

SECTION 33 3100 - SANITARY

1. SANITARY SEWER MAIN SHALL BE 8" DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. SEWER PIPE SHALL BE LAID TRUE TO LINE AND GRADE WITH NO DEVIATION FROM TRUE LINE AND GRADE GREATER THAN 1/4".
2. CONNECTION OF NEW 8" SEWER TO EXISTING MANHOLE SHALL NOT BE COMMENCED BEFORE NOTICE IS GIVEN TO THE TOWN OF ONONDAGA. THE OPENING IN THE MANHOLE WALL FOR THE NEW SEWER SHALL BE "CORE DRILLED" AND BE OF ADEQUATE SIZE SUCH THAT THE PIPE SHALL BE MADE WATER TIGHT WITH "LINKSEAL".
3. SEWER LATERALS SHALL BE 6-INCH DIAMETER, PVC SEWER PIPE, ASTM D 3034, SDR 35 WITH RUBBER RING GASKETED JOINTS. WYE BRANCHES SHALL BE USED FOR ALL LATERAL CONNECTIONS. ALL SEWER LATERALS SHALL BE EXTENDED TO THE SEWER RIGHT-OF-WAY. MINIMUM SLOPE FOR SEWER LATERALS SHALL BE 2% (1/4').
4. THE EXCAVATION SHALL BE A MINIMUM OF 1' EACH SIDE OF THE PIPE AND SHALL BE A MINIMUM OF 6" BELOW THE BOTTOM OF THE PIPE. THE CONTRACTOR SHALL PROVIDE ALL DRAINS, DITCHES, PUMPS, WELLS, WELL POINTS, SUMPS, CUTOFF TRENCHES, SHEETING OR OTHER EQUIPMENT AND STRUCTURES NECESSARY TO CONTROL THE FLOW OF SURFACE WATER OR GROUNDWATER INTO THE EXCAVATION SUCH THAT NO STANDING WATER EXISTS IN THE EXCAVATION AT 6" BELOW THE BOTTOM OF THE PIPE.
5. PIPE BEDDING SHALL BE NO. 1 WASHED STONE AND SHALL EXTEND FROM 6" BELOW THE BOTTOM OF THE PIPE TO 1' ABOVE THE TOP OF THE PIPE. PIPE BEDDING SHALL BE SHAPED AND COMPACTED TO CONFORM THE BARREL OF THE PIPE. THE REMAINDER OF THE BACKFILL SHALL BE COMMON FULL FREE OF ROCKS LARGER THAN 6" IN DIAMETER, FROZEN MATERIAL, ROOTS, STUMPS OR OTHER ORGANIC MATERIAL. COMPACTION OF 95% OF THE STANDARD PROCTOR FOR ALL BACKFILL MATERIALS IS REQUIRED IN AREAS UNDER PROPOSED PAVEMENT.
6. MANHOLES SHALL BE MADE OF PRECAST CONCRETE SECTIONS CONFORMING TO ASTM C 478. THE MANHOLE SECTIONS SHALL BE JOINED WITH AN "O" RING GASKET MEETING ASTM C 443 AND SHALL BE PARGED INSIDE AND OUT WITH NON-SHRINK GROUT. THE TOP SECTION SHALL BE AN "ECCENTRIC TAPER TOP".
7. ALL SANITARY SEWER CONNECTIONS TO MANHOLES SHALL BE MADE WITH FLEXIBLE RUBBER SLEEVES WITH STAINLESS STEEL HARDWARE.
8. THE FLOW CHANNEL IN EACH MANHOLE SHALL BE CAREFULLY SHAPED TO MATCH THE INVERTS AND PIPE SIZES WHICH CONNECT TO THE MANHOLE TO CREATE A SMOOTH AND GRADUAL SLOPE AND CURVATURE SUCH THAT FLOW THROUGH THE MANHOLE IS LAMINAR AND UNINTERRUPTED.
9. MANHOLE FRAMES AND COVERS SHALL BE CAST IRON CONFORMING TO ASTM A-48 CLASS 30 AND HAVE A 24" OPENING. MANHOLE FRAME AND COVER SHALL BE SYRACUSE CASTINGS MODEL NO. 1030 OR EQUAL. MANHOLES SHALL BE PROVIDED WITH STEPS MADE OF STEEL REINFORCED COPOLYMER IN COMPLIANCE WITH ASTM C 478, PARA 11.
10. THE COMPLETED SEWER SHALL BE LAMPED TO VERIFY STRAIGHTNESS, CHECKED FOR DEFLECTION WITH A " GO-NO-GO " MANDREL AND TESTED FOR LEAKAGE BY LOW PRESSURE AIR. THE "GO-NO-GO" TEST SHALL DEMONSTRATE THAT NO DEFLECTION GREATER THAN 5% HAS OCCURRED. THE LOW PRESSURE AIR TEST SHALL BE IN ACCORDANCE WITH UNI-B-5. THE MAXIMUM ALLOWABLE PRESSURE DROP SHALL BE 1.0 PSIG AT A TEST PRESSURE OF 5.0 PSIG OBSERVED FOR 10 MINUTES.
11. CONTRACTOR SHALL CONTACT UFPO 48 HOURS BEFORE THE START OF ANY EXCAVATION AND SHALL NOTIFY THE TOWN ENGINEER 72 HOURS BEFORE COMMENCEMENT OF CONSTRUCTION.
12. ALL SANITARY SEWER STRUCTURES, TEMPORARY STUBBED ENDS AND LATERAL ENDS SHALL BE MARKED WITH 2" X 4" "S EXTENDING 4' ABOVE FINISHED GRADE AND THE TOP 12" OF THE 2" X 4" SHALL BE PAINTED OR SPRAYED RED.

END SECTION 33 3100

SECTION 02722 - SANITARY SEWERS

PART 1 - GENERAL

1.1 QUALITY ASSURANCE

A. ALL WORK SHALL BE IN COMPLIANCE WITH LOCAL REGULATIONS.

1.2 SUBMITTALS

A. PRODUCT DATA
   1. PIPING
   2. MANHOLE STRUCTURE
   3. MANHOLE FRAME AND COVER

PART 2 - PRODUCTS

2.1 SANITARY SEWER PIPING

A. SANITARY SEWER PIPING MAY BE ONE OF THE FOLLOWING AT THE CONTRACTOR'S OPTION UNLESS NOTED OTHERWISE ON THE DRAWINGS:
   4. PVC PIPE AND FITTINGS:
      a. COMPLY WITH ASTM D3034 "TYPE PSM POLYVINYL CHLORIDE (PVC) SEWER PIPE AND FITTINGS" FOR SDR-35 (STANDARD DIMENSION RATIO).
B. UNDERGROUND WARNING TAPES (ELECTRICAL AND SEWAGE)
   1. PROVIDE POLYETHYLENE PLASTIC TAPE, 6" WIDE BY 4 MILS THICK SOLID GREEN IN COLOR WITH CONTINUOUSLY PRINTED CAPTION IN BLACK LETTERS STATING WARNING! SEWER LINE BURIED BELOW... OR YELLOW WITH WARNING! ELECTRICAL LINE BURIED BELOW...

2.2 MANHOLE STRUCTURES

A. GENERAL
   1. THE CONTRACTOR MUST CONSTRUCT MANHOLES OF PRECAST CONCRETE.
B. PROVIDE MATERIALS COMPLYING WITH THE FOLLOWING:
   1. PRECAST SECTIONS: ASTM C 478-79, "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS" (SEE PART 16).
   2. RUBBER GASKETS: ASTM C 443-70, "JOINTS FOR CIRCULAR CONCRETE SEWER AND CULVERT PIPE, USING RUBBER GASKETS".
   3. NONSHRINK GROUT: HIGH STRENGTH, NON-METALLIC, EXPANDING PORTLAND CEMENT GROUT.
   4. CONCRETE: 5 - 8% AIR ENTRAINED, 3,000 PSI, PORTLAND CEMENT CONCRETE.
   5. FRAMES AND COVERS: (BASED ON SYRACUSE CASTINGS #1104B OR APPROVED EQUAL)
      a. FRAMES - ROUND, CAST IRON WITH A CLEAR OPENING MINIMUM 24" IN DIAMETER, HEIGHT MINIMUM 8" AND FLANGE WIDTH MINIMUM 6".
      b. COVERS - ROUND, CAST IRON AND 1-3/8" THICK.
   9. LADDER RUNGS: CAST IRON AND ASPHALT COATED FOR USE IN CONICAL SHAPED CATCH BASINS AND MANHOLES. MINIMUM TENSILE STRENGTH OF 35,000 POUNDS PSI. OR APPROVED EQUAL.
   10. MANHOLES SHALL BE WATERTIGHT AND AN ASPHALTIC SEAL SHALL BE APPLIED TO ALL SURFACES.

PART 3 - EXECUTION

3.1 GENERAL

A. ESTABLISH AND MAINTAIN ALL LINES AND GRADES REQUIRED FOR THE PERFORMANCE OF THE WORK DESCRIBED IN THIS SECTION AND RELATE ALL ELEVATIONS TO DATUM ELEVATION INDICATED ON DRAWINGS.
B. INSTALL ALL PIPING IN ACCORDANCE WITH REFERENCED STANDARDS AND MANUFACTURER'S PRINTED INSTRUCTIONS.
C. LAY PIPING BEGINNING AT LOW POINT OF SYSTEM, TRUE TO GRADES AND ALIGNMENT INDICATED, WITH UNBROKEN CONTINUITY OF INVERT.
D. INSTALL ALL PVC PIPE IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM D 2321, "UNDERGROUND INSTALLATION OF FLEXIBLE THERMOPLASTIC SEWER PIPE".

3.2 PRECAST CONCRETE MANHOLES

A. USE EPOXY BONDING COMPOUND BETWEEN PRECAST SECTIONS AND WHERE MANHOLE STEPS ARE MORTARED INTO MANHOLE WALLS.

3.3 CLEANING OF SYSTEM

A. CLEAN SYSTEM OF ALL DEBRIS DURING AND AFTER CONSTRUCTION. KEEP SYSTEM CLEAN THROUGHOUT ALL PHASES OF CONSTRUCTION.

3.4 INSPECTION OF SYSTEM

A. INSPECT PIPING TO DETERMINE WHETHER LINE DISPLACEMENT OR OTHER DAMAGE HAS OCCURRED.
B. ALL PIPE SHALL BE TESTED FOR PRESSURE AND LEAKAGE IN ACCORDANCE WITH ALL LOCAL, REGIONAL AND STATE STANDARDS. PRESSURE AND LEAKAGE TESTING SHALL BE WITNESSED BY THE ENGINEER AND CERTIFIED TO THE APPROPRIATE MUNICIPALITIES. THE ENGINEER SHALL BE NOTIFIED AT LEAST 48 HRS IN ADVANCE OF ANY TESTING TO BE WITNESSED.
C. MAKE INSPECTIONS AFTER LINES BETWEEN MANHOLES HAVE BEEN INSTALLED AND APPROXIMATELY TWO FEET MINIMUM OF BACKFILL IS IN PLACE, AND AGAIN AT COMPLETION OF PROJECT.
D. IF INSPECTION INDICATES POOR ALIGNMENT, DEBRIS, DISPLACED PIPE, INFILTRATION OR OTHER DEFECTS, CORRECT SUCH DEFECTS TO THE SATISFACTION OF THE ARCHITECT/ENGINEER.
E. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL PROVIDE AT LEAST ONE SET OF AS-BUILTS TO THE OWNER.

3.5 INSTALLATION OF WARNING TAPE

A. INSTALL CONTINUOUS PLASTIC UNDERGROUND WARNING TAPE DURING BACKFILLING OF TRENCHES FOR UNDERGROUND SEPTIC SYSTEM PIPING, STRUCTURES AND ELECTRICAL LINES. LOCATE 6 - 8" BELOW FINISH GRADE, DIRECTLY OVER PIPING AND ELECTRICAL LINES AND OVER EDGES OF UNDERGROUND STRUCTURES.

END OF SECTION 02722 - SANITARY SEWERS

SECTION 33 4000 – STORM DRAINAGE

PART 1 – GENERAL

1.1 SUBMITTALS

A. SUBMIT SHOP DRAWINGS (SD) AND MANUFACTURERS' DATA (MD) FOR THE ITEMS LISTED BELOW AND ANY SPECIAL CONSTRUCTION DETAILS RELATING TO THE STORM DRAINAGE SYSTEM.
   1. DRAINAGE STRUCTURES: ONE (SD) PER CASTING TYPE.
   2. DRAINAGE STRUCTURES AND TRENCH DRAIN: ONE (SD) PER STRUCTURE. INCLUDE RIM AND BOTTOM ELEVATIONS, PIPE INVERTS AND PIPE LOCATIONS.
   3. CASTINGS: ONE (SD) PER TYPE
   4. STORM LINES AND UNDERDRAINS: ONE (PD) PER PIPE MATERIAL TYPE
   5. FILTER FABRIC: (PD)
   6. DETECTABLE WARNING TAPE: (PD)
   7. NON-SHRINK GROUT: (PD)
B. MATERIAL CERTIFICATES (MC) INCLUDING A CERTIFIED LABORATORY SIEVE ANALYSIS (LA) BEARING NAME AND LOCATION OF QUARRY. SAMPLE (S) OF MATERIAL REQUIRED (APPROXIMATE VOLUME 1 CUBIC FOOT) IN A WATERPROOF CONTAINER PERMANENTLY LABELED TO SHOW SOURCE. SUBMIT FOR THE FOLLOWING MATERIALS:
   1. DRAINAGE FILL: (MC), (LA) AND (S)
   2. COARSE AGGREGATE FILL: (SEE SECTION 312301, SUBMITTALS)

PART 2 – PRODUCTS

2.1 MATERIALS

A. CONCRETE: AS SPECIFIED SECTION 32 1313 - SITE CONCRETE. MINIMUM COMPRESSIVE STRENGTH 3,000 PSI AT 28 DAYS.
B. REINFORCING: AS SPECIFIED SECTION 32 1313 - SITE CONCRETE.
C. MASONRY UNITS: COMMON BRICK, ASTM C-62, LATEST EDITION, GRADE SW.
   1. MORTAR: CEMENT-LIME-SAND,1:1:3 MIX.
D. DRAINAGE STRUCTURES, FRAME, GRATES AND COVERS:
   1. DRYWELLS/CATCH BASINS/MANHOLES/INLETS: SIZES, SHAPES, SPECIFIC UNIT, OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL. PRECAST REINFORCED CONCRETE UNITS COMPLYING WITH ASTM C 478 WITH INTEGRAL FLOOR OR POURED-IN-PLACE CONCRETE BASE. "O" RING GASKETS FOR INTERLOCKING UNITS ASTM C443. PROVIDE DUCTILE IRON OR REINFORCED PLASTIC STEPS INTEGRALLY CAST INTO SIDEWALLS WHERE INDICATED. USE ONLY "TRAFFIC DESIGN" COVERS IN PAVING AREAS OR WHERE OTHERWISE INDICATED.
E. FRAMES, GRATES, COVERS:
   1. SIZES, SPECIFIC UNIT, GRATE OR COVER DESIGN OR ANY OTHER SPECIAL REQUIREMENTS AS SHOWN ON DRAWINGS OR EQUAL. ALL UNITS TO BE HEAVY-DUTY SUITABLE FOR H-20 LOADING. SYRACUSE CASTINGS CO. OR NEENAH CO. PRODUCTS SHALL BE QUALITY STANDARD. PROVIDE CASTINGS OF UNIFORM QUALITY, FREE FROM BLOW HOLES, POROSITY, HARD SPOTS, SHRINKAGE DEFECTS, CRACKS, OR OTHER INJURIOUS DEFECTS. GRAY IRON MATERIAL, ASTM A-48 CLASS 30, ALL NON-ROCKING DESIGN WITH MACHINED BEARING SURFACES. PROVIDE TRAPS OR PIPE ELBOW DROPS IF SHOWN ON DRAWINGS.
   2. PIPE TO MH/CB CONNECTORS: KOR-N-SEAL FLEXIBLE EPDM RUBBER CONNECTOR BY NPC INC. OR APPROVED EQUAL.
   3. GRADE ADJUSTMENT: PRECAST CONCRETE RINGS, NYSDOT SECTION 715-13 PREFABRICATED CAST IRON OR STEEL ADJUSTMENT RINGS. NO BRICK ALLOWED.
   4. PROVIDE TRAPS OR PIPE ELBOWS WITHIN STRUCTURE IF SHOWN ON DRAWINGS.
F. STORM LINES:
   1. CAST IRON PIPE (CI): XH ASTM SERVICE WEIGHT, HUB-AND-SPIGOT JOINTS CISPI HSN COMPRESSION TYPE WITH ASTM C-564 NEOPRENE GASKETS.
   2. CORRUGATED ROUND STEEL PIPE (CSP): COMPLY WITH NYSDOT SECTION 707-02. STEEL THICKNESS 16 GAUGE MINIMUM, GALVANIZED HOT-DIPPED BITUMINOUS COATED INSIDE AND OUT, PAVED INVERT OR SMOOTH LINER IF INDICATED ON DRAWINGS; ALL SPECIAL SHAPES, FITTINGS, BRANCHES, REDUCERS AND BAND COUPLERS TO MATCH, SAME MANUFACTURER. USE MAXIMUM AVAILABLE WIDTH COUPLERS FOR PIPE SIZE. PROVIDE PERFORATED PIPE WHERE SHOWN ON DRAWINGS.
   3. CORRUGATED HIGH DENSITY POLYETHYLENE (HDPE): CORRUGATED PERFORATED OR NON-PERFORATED HIGH DENSITY POLYETHYLENE SHALL HAVE SMOOTH INTERIOR AND ANNULAR EXTERIOR CORRUGATIONS. PIPE SIZES 4 - 60" (100 - 1500 MM) SHALL MEET AASHTO M294, TYPE S. PIPE SHALL BE JOINED WITH THE BELL-AND-SPIGOT JOINT MEETING THE REQUIREMENTS OF AASHTO M 252 OR AASHTO M-294. THE JOINT SHALL BE WATERTIGHT ACCORDING TO THE LABORATORY REQUIREMENTS OF ASTM D-3212. 30" (750 MM) THROUGH 42" (1050 MM) PIPE JOINTS SHALL BE WATERTIGHT ACCORDING TO ASTM D-3212 WITH THE EXCEPTION THAT THE JOINT BE TESTED USING 5.0 PSI (34.5 KPA). JOINTS SHALL REMAIN WATERTIGHT WHEN SUBJECTED TO A 1.5 DEGREE AXIAL MISALIGNMENT. GASKETS SHALL BE MADE OF POLYISOPRENE MEETING THE LABORATORY REQUIREMENTS OF ASTM F-477. GASKETS SHALL BE INSTALLED BY THE PIPE MANUFACTURER AND COVERED WITH A REMOVABLE WRAP TO ENSURE THE GASKET IS FREE FROM DEBRIS. A JOINT LUBRICANT SUPPLIED BY THE MANUFACTURER SHALL BE USED ON THE GASKET AND BELL DURING ASSEMBLY.
   4. UNDERDRAIN (UD): ASTM F-405 PERFORATED CORRUGATED POLYETHYLENE TUBING, PIPING AND FITTINGS BY ADVANCED DRAINAGE SYSTEMS, HANCOR, BAUGHMAN TILE CO., OR EQUAL, USE MAXIMUM LENGTH COILS IN EACH RUN, USE INTERNAL COUPLERS TO JOIN COILS. PROVIDE HEAVY- GRADE AASHTO M-294 CULVERT PIPE WHERE INDICATED. USE NON-PERFORATED TUBING WHERE INDICATED.
G. SAND BEDDING (STORM DRAINS): CLEAN COARSE NATURAL SAND FREE OF ORGANIC MATTER.
H. DRAINAGE FILL (UNDERDRAINS): SCREENED GRAVEL, CRUSHED GRAVEL OR CRUSHED STONE CONFORMING WITH NYSDOT SECTION 703.02 SIZE 1 GRADATION.
I. FILTER FABRIC: NON-WOVEN POLYPROPYLENE DRAINAGE FABRIC, MIRAFI 140N, TERRATEX SD OR EQUAL.
J. CLEANOUTS: HEAVY-DUTY COATED CAST IRON BODY, FITTED TOP WITH VANDAL RESISTANT FASTENERS, CLEANOUT PLUG, J.R. SMITH, ZURN OR EQUAL. USE DUCTILE IRON PIPE RISER. COMPLY WITH DRAWINGS.
K. NON-SHRINK GROUT: CRD-C 621, FACTORY PRE-MIXED GROUT. PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE THE FOLLOWING NON-METALLIC GROUTS OR AN APPROVED EQUAL: "SET GROUT" BY MASTER BUILDERS, "SONOGROUT" BY SONNEBORN-REXNORD OR "EUCO-NS" BY EUCLID CHEMICAL CO.
L. DISSIMILAR MATERIAL ADAPTER: DISSIMILAR MATERIAL ADAPTER BY ADVANCED DRAINAGE SYSTEMS OR APPROVED EQUAL.
M. COARSE SAND: WELL-GRADED COARSE SAND GENERALLY COMPLYING WITH NYSDOT SECTION 703.07 CONCRETE SAND SPECIFICATION AND GRADATION.

	SIEVE SIZE	PERCENT PASSING
NO.	4	100
NO.	8	90-100
NO.	16	75-100
NO.	30	50-85
NO.	50	25-60
NO.	100	10-30
NO.	200 (WET)	1-10
		0-3

PART 3 – EXECUTION

3.1 STRUCTURES

A. PRECAST UNITS: BED IN GRAVEL, SET LEVEL AND PLUMB. ALIGN STEPS IN ALL SECTIONS EXACTLY ON A PLUMB AXIS. ON SLOPING SURFACES, ARRANGE FOR OPENING TO BE ON THE DOWNSLOPE SIDE OF THE STRUCTURE SO THAT 12" MINIMUM COVER IS MAINTAINED OVER RISER SECTION WITHOUT BULGING THE PLANE OF THE SLOPE. FINISHED STRUCTURE, INCLUDING ALL JOINTS AND PENETRATIONS, SHALL BE WATERTIGHT.
B. MASONRY EXTENSIONS: CONSTRUCT AS DETAILED. PARGE INSIDE AND OUT.
C. CASTINGS: SECURELY SET IN MORTAR.

3.2 INSTALLATION OF DRAIN LINES

A. ALL PIPE SHALL BE EXAMINED BEFORE LAYING AND NO PIECE SHALL BE INSTALLED WHICH IS FOUND TO BE DEFECTIVE.
B. DRAIN PLACEMENT SHALL COMMENCE AT THE OUTLET AND PROCEED SECTION BY SECTION "UPHILL" UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PLACE SPIGOT ENDS IN DIRECTION OF FLOW.
C. IF ANY DEFECTIVE PIPE IS DISCOVERED AFTER IT HAS BEEN INSTALLED, IT SHALL BE REMOVED AND REPLACED WITH A SOUND PIPE IN A SATISFACTORY MANNER AT NO ADDITIONAL COST TO THE OWNER. ALL PIPE AND FITTINGS SHALL BE THOROUGHLY CLEANED BEFORE INSTALLATION, SHALL BE KEPT CLEAN UNTIL THEY ARE USED IN THE WORK AND WHEN LAID, SHALL CONFORM TO THE LINES AND GRADES REQUIRED. ALL PIPING, FLARED END SECTIONS AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF THE MANUFACTURER, OR AS OTHERWISE PROVIDED HEREIN OR ON THE DRAWINGS.
D. AS SOON AS THE EXCAVATION IS COMPLETE TO NORMAL GRADE OF THE BOTTOM OF THE TRENCH, SAND BEDDING SHALL BE PLACED, COMPACTED AND GRADED TO PROVIDE FIRM, UNIFORM AND CONTINUOUS SUPPORT FOR THE PIPE. THE PIPE SHALL BE LAID ACCURATELY TO THE LINES AND GRADES INDICATED ON THE DRAWINGS. BLOCKING UNDER THE PIPE WILL NOT BE PERMITTED. BEDDING SHALL BE PLACED EVENLY ON EACH SIDE OF THE PIPE TO MID-DIAMETER AND HAND TOOLS SHALL BE USED TO FORCE THE BEDDING WHERE NEEDED TO GIVE FIRM CONTINUOUS SUPPORT FOR THE PIPE. DEPENDING ON FINAL SURFACE MATERIAL, SAND BEDDING OR COARSE AGGREGATE FILL SHALL BE PLACED TO 12" ABOVE THE TOP OF THE PIPE (REFER TO "DRAINS" DETAIL). THE INITIAL 3' OF BACKFILL ABOVE THE BEDDING SHALL BE PLACED IN 1' LAYERS AND CAREFULLY COMPACTED. GENERALLY THE COMPACTION SHALL BE DONE EVENLY ON EACH SIDE OF THE PIPE AND COMPACTION EQUIPMENT SHALL NOT BE OPERATED DIRECTLY OVER THE PIPE UNTIL SUFFICIENT BACKFILL HAS BEEN PLACED TO ENSURE THAT SUCH COMPACTION EQUIPMENT WILL NOT HAVE A DAMAGING EFFECT ON THE PIPE. EQUIPMENT USED IN COMPACTING THE INITIAL 3' OF BACKFILL SHALL BE APPROVED BY THE PIPE MANUFACTURER'S REPRESENTATIVE PRIOR TO USE. REFER TO SECTION 31 2301, SITEWORK EXCAVATION, BACKFILLING AND COMPACTING FOR ADDITIONAL BACKFILLING REQUIREMENTS.
E. ALL PIPE SHALL BE SOUND AND CLEAN BEFORE INSTALLATION. WHEN INSTALLATION IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY WATERTIGHT PLUG OR OTHER APPROVED MEANS. GOOD ALIGNMENT SHALL BE PRESERVED DURING INSTALLATION. THE DEFLECTION AT JOINTS SHALL NOT EXCEED THAT RECOMMENDED BY MANUFACTURER.
F. BEFORE ANY JOINT IS MADE, THE PIPE SHALL BE CHECKED TO ASSURE THAT A CLOSE JOINT WITH THE NEXT ADJOINING PIPE HAS BEEN MAINTAINED AND THAT THE INVERTS ARE MATCHED AND CONFORM TO THE REQUIRED GRADE. THE PIPE SHALL NOT BE DRIVEN DOWN TO GRADE BY STRIKING IT.
G. PRECAUTIONS SHALL BE TAKEN TO PREVENT FLOTATION OF THE PIPE IN THE TRENCH.
H. WHEN MOVEABLE TRENCH BRACING SUCH AS TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE USED TO SUPPORT THE SIDES OF THE TRENCH, CARE SHALL BE TAKEN IN PLACING AND MOVING THE BOXES OR SUPPORTING BRACING TO PREVENT MOVEMENT OF THE PIPE, OR DISTURBANCE OF THE PIPE BEDDING AND THE BACKFILL. TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES SHALL NOT BE ALLOWED TO EXTEND BELOW TOP OF THE PIPE. IF TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES HAVE BEEN INSTALLED BELOW THE TOP OF THE PIPE, THEY SHALL BE MOVED SLOWLY TAKING CARE NOT TO DISTURB PIPE, BEDDING OR BACKFILL. AS TRENCH BOXES, MOVEABLE SHEETING, SHORING OR PLATES ARE MOVED, PIPE BEDDING SHALL BE PLACED TO FILL ANY VOIDS CREATED AND THE BACKFILL SHALL BE RECOMPACTED TO PROVIDE UNIFORM SIDE SUPPORT FOR THE PIPE.
I. THOROUGHLY CLEAN COMPLETED STORM DRAINAGE SYSTEM OF ALL DEBRIS AND SEDIMENT PRIOR TO FINAL ACCEPTANCE.

3.3 COORDINATION

A. COORDINATE LOCATION OF WYES AND VERIFY INVERTS OF LINES AND STRUCTURES WITH PLUMBING CONTRACTOR WHERE APPLICABLE.

3.4 UNDERDRAINAGE/FRENCH DRAIN/LOW FLOW UNDERDRAIN

A. DRAINAGE FILL: PLACE AS DETAILED.
B. PERFORATED LINES: PLACE HOLES DOWN, TRUE TO LINE AND GRADE. PLACE REMAINING DRAINAGE FILL.
C. CONNECT TO NEAREST SUITABLE STORM MANHOLE WHETHER DRAWINGS SHOW ROUTING OR NOT.
D. BACKFILL: PER SECTION 31 2301 SITEWORK EXCAVATION, BACKFILLING AND COMPACTING AND AS DETAILED ON THE DRAWINGS.

3.5 WATERPROOF PIPE CONNECTOR

A. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

END SECTION 33 4000

Posted By:

Date Posted:

Drawing File:

Monday, June 15, 2020 6:21:14 PM

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STATE OF NEW YORK — RUDY L. ZOTA — 079435 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION			
No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18

No.	Rev.	Description	Date
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001413 — STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
SPECIFICATIONS

L-801

TYPICAL DIMENSIONS:
SURFACE AREA: 6,660 ± SF
DIMENSIONS: APPROX. 168' X 60'

MAX EVENT DIMENSIONS:
SURFACE AREA: 22,223 ± SF
DIMENSIONS: APPROX. 254' X 120'

FEATURES:
- SAFETY BENCH
- AQUATIC BENCH
- VEHICULAR ACCESS AROUND POND.
- 14' BERM @ OUTFLOW
- HOA OWNED
- SLOPES DO NOT EXCEED 4 ON 1.
- FENCE AROUND PERIMETER OF POND



7 L-900 **GRADING AND DRAINAGE PLAN- 21 HOUSING LOTS**

0 100 200 300
SCALE IN FEET
(ALL PLANS)



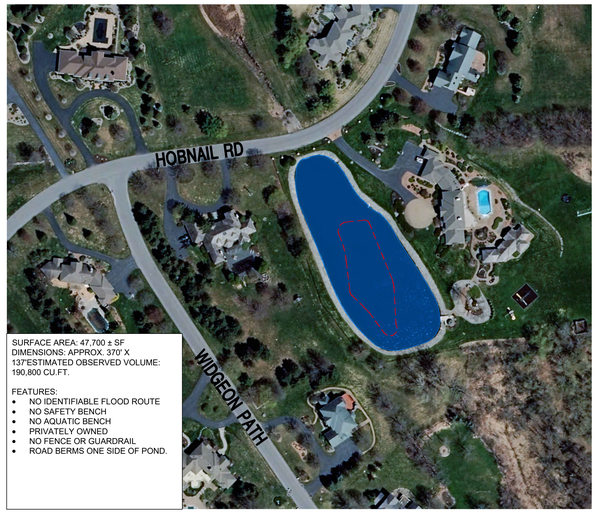
8 L-900 **REPRESENTATIVE PHOTO SAMPLES OF PONDS (0 FENCED)**



SURFACE AREA: 57,300 ± SF
DIMENSIONS: APPROX. 360' X 215'
ESTIMATED OBSERVED VOLUME:
558,400 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO FENCE OR GUARDRAIL
- 8-12' BERM AROUND POND.

1 L-900 **MALLARDS LANDING SUBDIVISION - GADWALL**



SURFACE AREA: 47,700 ± SF
DIMENSIONS: APPROX. 370' X 137'ESTIMATED OBSERVED VOLUME:
190,800 CU.FT.

FEATURES:
- NO IDENTIFIABLE FLOOD ROUTE
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PRIVATELY OWNED
- NO FENCE OR GUARDRAIL
- ROAD BERMS ONE SIDE OF POND.

3 L-900 **MALLARDS LANDING - HOBNAIL**



SURFACE AREA: 9000 ± SF COMBINED
DIMENSIONS: APPROX. 171' X 34' @ LARGEST POND
ESTIMATED OBSERVED VOLUME:
108,000 CU.FT.

FEATURES:
- NO SAFETY BENCH
- AQUATIC BENCH
- NO FENCE
- 12' BERM @ OUTFLOW
- NO DEFINED DISCHARGE POINT
- HOMES DIRECTLY BELOW OUTFLOW.

5 L-900 **MANLIUS FIRE DEPT.**



SURFACE AREA: 74,500 ± SF
DIMENSIONS: APPROX. 530' X 154'
ESTIMATED OBSERVED VOLUME:
298,000 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- NO DEFINED OUTLET
- NO FENCE, HAS GUARDRAIL
- ROAD IS USED AS BERM
- 3-4' BERM @ ROAD
- 30' DEEP

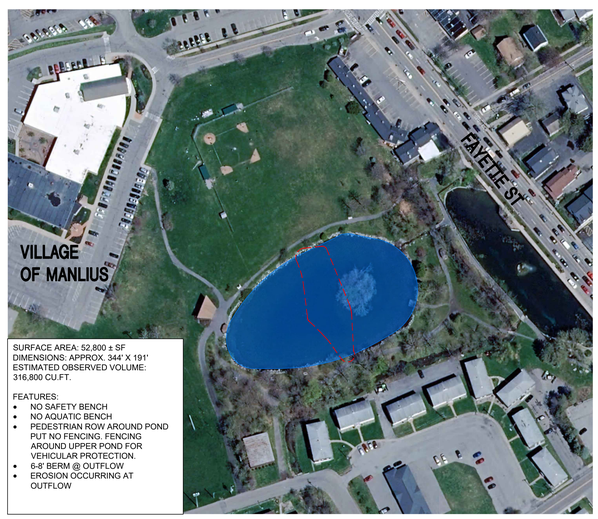
2 L-900 **MALLARDS LANDING SUBDIVISION - AYLESBURY**



SURFACE AREA: TOTAL 34,100 ± SF
DIMENSIONS: APPROX. LARGEST POND 194' X 88'
ESTIMATED OBSERVED VOLUME:
545,600 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- SLOPES BETWEEN 3:1 AND 2:1
- NO DEDICATED VEHICULAR ACCESS
- NO FENCE
- 16' BERM @ LOWEST OUTFLOW. HIGHEST POND HAS 6' BERM.

4 L-900 **MALLARDS LANDING - DECOY RUN**



SURFACE AREA: 52,800 ± SF
DIMENSIONS: APPROX. 344' X 191'
ESTIMATED OBSERVED VOLUME:
316,800 CU.FT.

FEATURES:
- NO SAFETY BENCH
- NO AQUATIC BENCH
- PEDESTRIAN ROW AROUND POND PUT NO FENCING. FENCING AROUND UPPER POND FOR VEHICULAR PROTECTION.
- 6-8' BERM @ OUTFLOW
- EROSION OCCURRING AT OUTFLOW

6 L-900 **SWAN POND**

KEPLINGER FREEMAN ASSOCIATES
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STATE OF NEW YORK
SCOTT L. ZOLN
079435
LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION
HOAG LANE SUBDIVISION
5280 HOAG LANE, MANLIUS, NY

CLIENT:
HOAG ROAD PROPERTIES, LLC

△- Symbol Indicates Revision Issued

ISSUED AND REVISIONS NOTIFICATION

No.	Rev.	Description	Date
1	1	CHECK SET-TOWN OF MANLIUS	01/12/18
2	2	CHECK SET-TOWN OF MANLIUS	01/26/18
3	3	PUBLIC HEARING- MANLIUS	03/29/18
4	4	PUBLIC HEARING- MANLIUS	05/04/18
5	5	PUBLIC HEARING- MANLIUS	06/01/18
6	6	TOWN REV.-21 LOTS-MANLIUS	10/23/18
7	7	MANLIUS-21 HOME LOTS-PL BD	11/30/18
8	8	21 LOT SITE PLAN REVISIONS	01/04/19
9	9	MANLIUS- PLAN SUBMISSION	06/14/19
10	10	MANLIUS- PLAN SUBMISSION	07/12/19
11	11	MANLIUS- PLAN SUBMISSION	09/23/19
12	12	MANLIUS- PLAN SUBMISSION	12/18/19
13	13	MANLIUS- PLAN SUBMISSION	12/18/19
14	14	MANLIUS- PLAN SUBMISSION	06/15/20

REGISTERED LANDSCAPE ARCHITECT
SCOTT LEE FREEMAN
001413
STATE OF NEW YORK

Drawn By: VER
Checked By: SF
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:
WET POND COMPARISONS

L-900

Plotted By:
Date Plotted:
Drawing File:

Tuesday, June 16, 2020 8:37:31 AM











HOMES PICTURED HERE WERE BUILT BY THOMAS ALLEN HOMES THROUGHOUT THE LOCAL COMMUNITY. NEIGHBORHOODS INCLUDE WATERFORD WOODS, HARTSFIELD PLACE, MALLARDS LANDING & BRIAR BROOK

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STATE OF NEW YORK — RUDY L. ZOZA — 079943 — LICENSED PROFESSIONAL ENGINEER

UTILIZED FOR STORMWATER AND SANITARY DESIGN

FOR CONSTRUCTION

HOAG LANE SUBDIVISION

5280 HOAG LANE, MANLIUS, NY

CLIENT:
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REGISTERED LANDSCAPE ARCHITECT — SCOTT LEE FREEMAN — 001473 — STATE OF NEW YORK

Drawn By: V.E.R.
Checked By: S.F.
KFA Proj. No.: 37050
Date: DECEMBER 1, 2017
Scale: AS NOTED

Title:

SAMPLE ARCHITECTURE

L-901

Plotted By:
Date Plotted:
Drawing File:

Tuesday, June 16, 2020 9:06:09 AM