TOWN OF CARMEL

ENVIRONMENTAL CONSERVATION BOARD

60 McAlpin Avenue
Mahopac, New York 10541
Tel. (845) 628-1500 - Ext. 190
www.ci.carmel.ny.us

ENVIRONMENTAL CONSERVATION BOARD AGENDA

JANUARY 4, 2024 – 7:30 P.M.

EXTENSION OF WETLAND PERMIT

APPLICANT	ADDRESS	TAX MAP #	COMMENTS
1. Frey, Scott	345,351&355 Wixon Pond Rd	53.16-1-31,32,33	Construct Single Family Home, Driveway, Septic System & Well

MISCELLANEOUS

2. Minutes – 9/21/23, 12/7/23 & 12/21/23

JOHN KARELL, JR., P.E.
121 CUSHMAN ROAD
PATTERSON, NEW YORK, 12563
845-878-7894 FAX 845 878 4939
jack4911@yahoo.com

December 20, 2023

Town of Carmel ECB
Town Hall
Mahopacc, NY, 10541

Re: **Request for Wetlands Permit Extension**
SSEC Scott Frey
345, 351,355 Wixon Pond Road, Carmel (T) Mahopac
TM # 53.16-1-31,32,33

Gentlemen and Ladies:

It is hereby requested that the attached wetland permit issued on August 18 2022 and expired on August 18, 2023, be extended or renewed. It is noted that NYCDEP has issued their approval for the crossing of the stream by the proposed driveway. Otherwise nothing has changed significantly with respect to this project except that the rain gardens have been somewhat relocated and one additional rain garden added. A copy of the plans approved by the DEP are attached along with the original proposal for rain gardens.

If you have any questions please call me at 845 721 0455.

Very truly yours.

John Karell, Jr., P.E.

Environmental Protection

Rohit T. Aggarwala
Commissioner

Paul V. Rush, P.E.
Deputy Commissioner
Bureau of Water Supply
prush@dep.nyc.gov

465 Columbus Avenue
Valhalla, NY 10595
T: (845) 340-7800
F: (845) 334-7175

December 22, 2023

Daniel C. Collins, P.E.
Project Engineer
Hudson Engineering & Consulting, P.C.
45 Knollwood Road - Suite 201
Elmsford, New York 10523

Via Email: *daniel@hudsonec.com*

Re: Scott Frey Lots 2, 3 & 4 - IRSP
351 Wixon Pond Road
(T) Carmel, (C) Putnam
Tax Map # 53.16-1-31, 32 & 33
West Branch Reservoir Basin
DEP Log #2022-WB-0504-IR.1

Dear Mr. Collins:

This letter is to inform you that your application to engage in the above referenced regulated activity pursuant to the "Rules and Regulations for the Protection from Contamination, Degradation, and Pollution of the New York City Water Supply and its Sources" (Regulations) was *approved* on December 22, 2023.

The Department reserves the right to modify, suspend, or revoke this approval based on the grounds set forth in Section §18-26 of the Regulations.

The activity proposed in your application only applies to the terms of this approval and are subject to the Regulations cited above. Failure to comply with the conditions of the approval may be the cause for suspension of this approval and initiation of an enforcement action. Should modification, suspension or revocation of an approval be necessary, DEP will notify the regulated party, via mail or personal service, prior to modifying, suspending, or revoking the approval. The notice will state the alleged facts or conduct which appear to warrant the intended action and explain the procedures to be followed.

The Regulations provide that an applicant may appeal the imposition of a substantial condition in an approval by filing a petition, in writing, with NYC DEP and with the New York City Office of Administrative Trial and Hearings ("OATH") within thirty (30) days of the date if this determination was mailed.

If you have any questions regarding this approval, or regarding the appeal procedure, please contact Andreea A. Oncioiu at (914)749-5356 or via email at *aoncioiu@dep.nyc.gov*. Thank you.

Sincerely,

Matthew Giannetta

Matthew Giannetta, CPSWQ
Chief
Regulatory & Engineering Programs Division

c: Town of Carmel Planning Board – *rtrombetta@ci.carmel.ny.us*
Town of Carmel Engineer – *rjf@ci.carmel.ny.us*
Dan Shedlo, PE, NYC DEP – *dshedlo@dep.nyc.gov*
Andreea A. Oncioiu, NYC DEP – *aoncioiu@dep.nyc.gov*

New York City
Department of Environmental Protection

INDIVIDUAL RESIDENTIAL STORMWATER PLAN DETERMINATION

Pursuant to the authority granted under:

Article 11 of the New York State Public Health Law.
Rules and Regulations for The Protection from Contamination, Degradation and Pollution of The New York City Water Supply and Its Sources, 15 RCNY Chapter 18, 10 NYCRR Part 128.

New York City Department of Environmental Protection makes the following determinations with respect to the stormwater pollution prevention plan described below:

Name of Project: 351 Wixon Pond Rd – Single Family Residence

Location: Tax Map # 53.16-1-31, 32 & 33
351 Wixon Pond Road
Town of Carmel
Putnam County, New York

Owner: Six Southeast Corp. - Mr. Scott Frey

Address: 351 Wixon Pond Road
Carmel, NY 10541

Drainage Basin: West Branch Reservoir Basin

General Description:

The project proposes the construction of a single-family residence with associated driveway, on an existing 1.24-acre parcel of land. An Individual Residential Stormwater Permit (IRSP) is required for the project pursuant to Section §18-39 (e)(1)(i) of the "Rules and Regulations for the Protection from Contamination, Degradation and Pollution of the New York City Water Supply and Its Sources" (Watershed Regulations) as a portion of the proposed driveway is situated within one hundred (100) feet of a watercourse. The total disturbance is approximately 0.61 acres and the newly proposed impervious surfaces within the 100-feet limiting distance total

approximately two hundred (200) square feet. Stormwater runoff from the proposed driveway and roof areas will be captured and treated by six (6) rain gardens.

The entire 1.24-acres site is situated in the Town of Carmel, Putnam County, New York. The project site is identified as Section 53.16, Block 1, Lots 31, 32 and 33 on the Town of Carmel Tax Maps and is in the Town's residential zoning district.

The Individual Residential Stormwater Permit (IRSP) shall be implemented in accordance with the Individual Residential Stormwater Report for Proposed Single Family Residence, 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated March 24, 2023, last revised October 26, 2023, and set of drawings, dated March 24, 2023, last revised October 26, 2023, prepared by Hudson Engineering & Consulting, PC. (See appendix A).

Date(s) of site inspection:
May 2023

(XX) Approved ( ) Denied

Conditions of Approval:

This approval is granted with the following conditions:

- The regulated activity must be conducted in compliance with the plans as approved, listed in Appendix A, all applicable accepted standards, and all applicable laws, rules, and regulations.

- Any alteration or modification of the IRSP must be approved by DEP prior to implementation; DEP may opt to issue an amended IRSP Determination.

- The applicant must schedule a pre-construction conference prior to the start of construction. Present at the meeting should be the applicant, the design engineer, the general contractor, and DEP staff.

- The applicant must notify DEP at least forty-eight (48) hours prior to the commencement of construction activity so that DEP may schedule compliance inspections.

- All erosion and sediment controls must be properly installed and maintained until the site has been stabilized and the risk of erosion eliminated. Final stabilization is defined in the General Permit as all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of 80% cover for the area has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed.

- At the completion of the project, the applicant is required to submit as-built drawings for all stormwater management, runoff reduction and water quality facilities.

- The stormwater management and water quality facilities must be maintained in accordance with the maintenance schedule included in the IRSP as approved by DEP.

- This approval shall expire and thereafter be null and void unless construction is completed within Two (2) years of the date of issuance or within any extended period of time approved by DEP upon good cause shown.

- In the event that the material submitted is inaccurate or misleading, this approval is not valid, and construction of this project is in violation of DEP regulations.

- Failure to comply with any of the conditions of this approval is a violation of this approval and the *Rules and Regulations for The Protection from Contamination, Degradation and Pollution of The New York City Water Supply and Its Sources*.

- A copy of the approved plans and determination should be maintained for record, and a copy must be available for inspection at the construction site.

- DEP shall be provided access to the project site during the construction phase for monitoring and inspection purposes.

- This approval and all conditions of the approval are binding on the owner of the property where the facility is to be located. Any references to the "applicant" in this approval or in any conditions of this approval shall be deemed to refer to the owner of such property.

- If the applicant sells or otherwise transfers title of **351 Wixon Pond Road, Town of Carmel, Putnam County, NY** before all construction planned for the property is completed and the site is stabilized, the applicant shall require the new owner ("Buyer") to comply with the IRSP approved by the New York City Department of Environmental Protection on December 22, 2023 including, but not limited to, conservation easements, negative covenants, all provisions relating to erosion and sediment control during construction and to all maintenance of the stormwater management facilities once construction is complete. In particular, the applicant shall provide the Buyer with a copy of the IRSP and shall cause the following real covenants and restrictions to be recorded with the deed for **351 Wixon Pond Road, Town of Carmel, Putnam County, NY** with the following provisions:

  (1) Buyer hereby acknowledges, covenants, warrants, and represents that he/she shall install and maintain any and all erosion controls and stormwater management facilities on the premises in accordance with the IRSP, such IRSP being attached hereto as Exhibit __.

(2) Buyer's installation and maintenance of the erosion control and stormwater management facilities shall be for the benefit of the City of New York as well as for the owners of **351 Wixon Pond Road, Town of Carmel, Putnam County, NY.**

(3) Buyer's obligation to install and maintain any and all erosion controls and stormwater management facilities on the premises in accordance with the attached IRSP shall be perpetual, shall run with the land, and shall be binding on Buyer's heirs, successors, and assigns.

(4) Buyer hereby covenants, warrants and represents that any lease, mortgage, subdivision, or other transfer of **351 Wixon Pond Road, Town of Carmel, Putnam County, NY** IRSP, or any interest therein, shall be subject to the restrictive covenants contained herein pertaining to the installation and maintenance of erosion control and stormwater management facilities, and any deed, mortgage, or other instrument of conveyance shall specifically refer to the attached SWPPP and shall specifically state that the interest thereby conveyed is subject to covenants and restrictions contained herein.

- Prior to conveying title to **351 Wixon Pond Road, Town of Carmel, Putnam County, NY**, the applicant shall submit to the New York City Department of Environmental Protection a proposed deed containing the aforementioned real covenants and restrictions.

Date: December 22, 2023

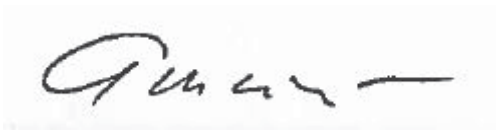
351 Wixon Pond Road, (T) Carmel
Tax Map ID # 53.16-1-31, 32 & 33
West Branch Reservoir Drainage Basin
DEP Log #2022-WB-0504-IR.1

Determination made by:

Matthew Giannetta

Matthew Giannetta, CPSWQ
Chief
Regulatory & Engineering Programs
Division

Recommended for approval by:



Andreea A. Oncioiu
Associate Project Manager III
EOH Project Review Group
Regulatory & Engineering Programs

APPENDIX A

The following documents were prepared by Hudson Engineering & Consulting, P.C., for the property at 351Wixon Pond Road, Town of Carmel, Putnam County, New York:

1. Individual Residential Stormwater Report, for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated March 24, 2023, last revised on October 26, 2023.

2. Drawing C-1 titled "Stormwater Management Plan" prepared for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated March 24, 2023, last revised on October 26, 2023.

3. Drawing C-2 titled "Erosion & Sediment Control Plan" prepared for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated October 26, 2023.

4. Drawing C-3 titled "Details" prepared for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated March 24, 2023, last revised on October 26, 2023.

5. Drawing C-4 titled "Details" prepared for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated March 24, 2023, last revised on October 26, 2023.

6. Drawing C-5 titled "Details" prepared for 351 Wixon Pond Road, Town of Carmel, Putnam County, New York, dated October 26, 2023.

STORMWATER POLLUTION PREVENTION PLAN & DRAINAGE ANALYSIS

Proposed Single Family Residence
351 Wixon Pond Road
Town of Carmel - New York

March 24, 2023
REVISED: May 17, 2023
REVISED: October 26, 2023

Hudson Engineering & Consulting, P.C.
45 Knollwood Road - Suite 201
Elmsford, NY 10523

Table of Contents

9) Stormwater Management Construction Checklists:

a. Construction Site Log Book

b. Monthly Summary of Site Inspection Activities

c. Inspection and Maintenance Checklist

- **Catch Basins, Manholes, and Inlets**
- **Conveyance Systems (Pipes & Ditches)**
- **Vaults, Tanks, and Attenuation Piping**

NYSDEC Notice of Intent

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.37

(Submission #: HPS-J33G-XZ6DX, version 1)

Details

Originally Started By	DANIEL COLLINS
Alternate Identifier	351 Wixon Pond Road
Submission ID	HPS-J33G-XZ6DX
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Six Southeast Corp.

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Frey

Owner/Operator Contact Person First Name
Scott

Owner/Operator Mailing Address
351 Wixon Pond Road

City
Mahopac

State
NY

Zip
10541

Phone
914-804-9028

Email
scottwfrey@yahoo.com

Federal Tax ID
N/A

If the owner/operator is an organization, provide the Federal Tax ID number, or Employer Identification Number (EIN), in the format xx-xxxxxxx. If the owner/operator is an individual and not an organization, enter "Not Applicable" or "N/A" and do not provide the individual's social security number.

Project Location

Project/Site Name
351 Wixon Pond Road

Street Address (Not P.O. Box)
351 Wixon Pond Road

Side of Street
West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Carmel

State
NY

Zip
10541

DEC Region
3

The DEC Region must be provided. Please use the NYSDEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm which DEC Region this site is located in. To view the DEC Regions, click on ﷺOther Useful Reference Layersﷺ on the left side of the map, then click on ﷺDEC Administrative Boundary.ﷺ Zoom out as needed to see the Region boundaries.

For projects that span multiple Regions, please select a primary Region and then provide the additional Regions as a note in Question 39.

County
PUTNAM

Name of Nearest Cross Street
Hillside Drive

Distance to Nearest Cross Street (Feet)
130

Project In Relation to Cross Street
North

Tax Map Numbers Section-Block-Parcel
53.16-1-31, 32 & 33

Tax Map Numbers
NONE PROVIDED

If the project does not have tax map numbers (e.g. linear projects), enter ﷺNot Applicableﷺ or "N/A".

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.408085,-73.74119999999999

Project Details

2. What is the nature of this project?
New Construction

For the purposes of this eNOI, "New Construction" refers to any project that does not involve the disturbance of existing impervious area (i.e. 0 acres). If existing impervious area will be disturbed on the project site, it is considered redevelopment with either increase in impervious area or no increase in impervious area.

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Forest

Post-Development Future Land Use
Single Family Home

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

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4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
1.2

Total Area to be Disturbed (acres)
0.6

Existing Impervious Area to be Disturbed (acres)
0.0

Future Impervious Area Within Disturbed Area (acres)
0.1

5. Do you plan to disturb more than 5 acres of soil at any one time?
No

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
100

C (%)
0

D (%)
0

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
03/01/2024

End Date
04/01/2025

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Unnamed drainage channel onsite

Drainage ditches and storm sewer systems are not considered surface waterbodies. Please identify the surface waterbody that they discharge to. If the nearest surface waterbody is unnamed, provide a description of the waterbody, such as, "Unnamed tributary to Niagara River."

9a. Type of waterbody identified in question 9?
Other Type On Site

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
NONE PROVIDED

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
Yes

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
Yes

Please use the DEC Stormwater Interactive Map (https://gisservices.dec.ny.gov/gis/stormwater/) to confirm if this site is located in one of the watersheds of an AA or AA-S classified water. To view the watershed areas, click on "Permit Related Layers" on the left side of the map, then click on "Class AA AAS Watersheds."

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 D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
No

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

16. What is the name of the municipality/entity that owns the separate storm sewer system?
Town of Carmel

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

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

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)?
No

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
NONE PROVIDED

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Hudson Engineering & Consulting, P.C.

Contact Name (Last, First)
Stein Michael

Mailing Address
45 Knollwood Road, Suite 201

City
Elmsford

State
New York

Zip
10523

Phone
9149090420

Email
michael@hudsonec.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
swpppcert (signed).pdf - 10/26/2023 04:26 PM
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Check Dams
Dust Control
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Mulching
Protecting Vegetation
Seeding
Sodding
Topsoiling

Permanent Structural
Land Grading
Retaining Wall

Other
NONE PROVIDED

Post-Construction Criteria

*** 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.
NONE PROVIDED

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).
NONE PROVIDED

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
NONE PROVIDED

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing 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 the Post-Construction SMP Identification section 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.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
NONE PROVIDED

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

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)] (acre-feet)
NONE PROVIDED

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
NONE PROVIDED

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; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section 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. (acre-feet)
NONE PROVIDED

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 - 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).
NONE PROVIDED

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
NONE PROVIDED

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, 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)
NONE PROVIDED

CPv Provided (acre-feet)
NONE PROVIDED

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
NONE PROVIDED

Post-Development (CFS)
NONE PROVIDED

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
NONE PROVIDED

If Yes, Identify the entity responsible for the long term Operation and Maintenance
NONE PROVIDED

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.
Per Table 1 in Appendix B of the New York State General Permit for Stormwater Discharges, GP-0-20-001, Since this project is located within a watershed identified in Appendix D of GP-0-20-001 and involves disturbances between 5,000-square feet and 1-acre of land, this project requires the preparation of a SWPPP which only includes erosion and sediment control measures.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing 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.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

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.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. 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.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
constnoioocert (signed).pdf - 10/26/2023 04:26 PM
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
10/26/2023 4:26 PM	constnoioocert (signed).pdf	Attachment	DANIEL COLLINS
10/26/2023 4:26 PM	swpppcert (signed).pdf	Attachment	DANIEL COLLINS

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Owner/Operator Certification Form

SPDES General Permit For Stormwater Discharges From Construction Activity (GP-0-20-001)

Project/Site Name: 351 Wixon Pond Road

eNOI Submission Number: HPS-J33G-XZ6DX

eNOI Submitted by: ☐ Owner/Operator ☑ SWPPP Preparer ☐ Other

Certification Statement - Owner/Operator

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.

SCOTT — W — FREY

Owner/Operator First Name | M.I. | Last Name

Scott Frey

Signature

4/1/2023

Date

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

351 Wixon Pond Road, Mahopac, NY 10541

Owner/Operator Information

Owner/Operator (Company Name/Private Owner/Municipality Name)

Mr. Scott Frey

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.

Michael	F.	Stein
First name	MI	Last Name

Signature

Date 10/26/23

Revised: January 2020

Narrative

STORMWATER POLLUTION PREVENTION PLAN
Proposed Single Family Residence
Pond Meadow Road
Town of Cortlandt - New York

INTRODUCTION

This Stormwater Pollution Prevention Plan & Stormwater Analysis presents the proposed Best Management Practices (BMPs) to control erosion, sedimentation, and manage stormwater during the construction of a single-family residence and associated driveway, walkways, and landscaping on a 1.24-acre site located at 351 Wixon Pond Road (SBL: 53.16-1-31, 32 & 33) in the Town of Carmel, Putnam County, New York.

This Plan consists of this narrative and a plan set entitled: "Proposed Single Family Residence, 351 Wixon Pond Road, Town of Carmel, Putnam County - New York", all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last revised March 24, 2023. The design is in accordance with the Town of Carmel and the NYCDEP requirements. The plans have been prepared to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC). Per Table 1 in Appendix B of the New York State General Permit for Stormwater Discharges, GP-0-20-001, since this project is located within a watershed identified in Appendix D of GP-0-20-001 (NYC East of Hudson Watershed) and involves disturbances between 5,000-square feet and 1-acre of land, this requires only the preparation of a SWPPP which includes erosion and sediment control measures. Since portions of the proposed residence and associated site improvements are within 100-feet of a perennial watercourse, the project requires NYCDEP review and approval of an Individual Residential StormwateR Permit (IRSP) under Section 18-39(e)(l)(i) of the *Rules and Regulations for the protection from Contamination, Degradation and Pollution of the New York City Supply and its Sources* (Watershed Regulations). Based on the NYCDEP Applicant's guide to Crossing Piping & Diversion Permits(CPDPs), since this project is being reviewed by the Town of Carmel Building Department, a CPDP from DEP is not be required.

PROJECT DESCRIPTION

Site Description:

As previously mentioned, the property is an approximately 1.24-acre lot located at 351 Wixon Pond Road in the Town of Carmel, New York. The existing site consists entirely of undisturbed woodlands, with an existing locally regulated wetlands and drainage channel located along the southern portion of the site, which flows through the property in a northeasterly direction.

The soil classifications, based upon the USDA Web Soil Survey Mapping, is Charlton Chatfield Complex, 0-15 percent slopes, very rocky, with a hydrologic classification of Type “B". The on-site land cover is classified as Woods-Good.

Receiving Waters:

The existing site is located within the West Branch Reservoir basin. Runoff from the adjacent properties to the south and west of the site currently flows overland in an easterly direction where it enters the existing drainage channel and is subsequently conveyed to the Town’s municipal infrastructure, where it meets with the runoff from the remainder of the offsite watershed and is ultimately conveyed to Long Pond, located to the east of the site. The overflow from Long Pond is then conveyed via an unnamed watercourse which flows in a southeasterly direction towards NYS Route 6, and then bends in an easterly direction, where it subsequently discharges to the West Branch Reservoir. The existing onsite drainage channel, as well as the unnamed offsite watercourse, are both stabilized with cobbles and overgrowth, and have limited bank erosion. Per the FEMA flood maps, no flooding is documented at both the onsite drainage channel, as well as at Long Pond and the unnamed offsite watercourse to the east of the property. Per the NYSDEC Classifications for Surface Waters and Groundwaters, Long Pond and the associated unnamed watercourse are currently classified as Class B and Class B (Troutwaters) water bodies, respectively, suitable for swimming and recreation, and the West Branch reservoir is classified as a Class AA(Troutwaters) water body, which is suitable for a source for drinking water.

Overall Stormwater Design:

The stormwater runoff from the existing site flows overland in a westerly direction where is captured via the aforementioned drainage channel and conveyed to an existing drain inlet located within Wixon Pond road.

This project proposes to disturb approximately 26,770-square feet (0.61-acres) of land located at the center of the site with the remainder of the property being left undisturbed. The project consists of the construction of a new single-family residence located at the center of the site with driveway access from Wixon Pond Road. The proposed driveway is to cross the existing drainage channel via a proposed 18-inch HDPE pipe culvert and subsequently traverse the property in a northwesterly direction to the location of the proposed residence. The proposed culvert has been sized to convey the flows for all storms up to and including the 10-year storm from the offsite tributary area, per the NYCDEP requirements. The runoff from the proposed impervious area onsite consisting of the proposed driveway and roof areas is being conveyed to six (6) separate rain gardens strategically located throughout the site. Each rain garden has been sized to treat the calculated water quality volume from each watershed, as well as bypass the flows of greater intensity. *See water quality calculations and HydroCAD calculations included herein.*

The afore mentioned stormwater mitigation practices have been designed to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC), therefore, there will be no negative impacts to the receiving waters downstream of the site. Furthermore, no industrial activities are proposed as part of this project, as this project is located within a residential zoning district.

METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20 methodologies (HydroCad®) to assist with the drainage analysis and design of the mitigating practice. The "Complex Number" (CN) value determination is based on soil type, vegetation and land use. *See Soil Map & Report contained herein.* The "Time of Concentration" (T_c) is determined by the time wise longest flow path within each watershed. The CN and T_c data is input into the computer model. The project site was modeled for the peak rates of runoff from water quality volume equivalent Type III – 24-hour extreme storm events in the Post- Developed Conditions.

The stormwater management design is based on the NYSDEC "New York State Stormwater Management Design Manual", latest edition and "Controlling Urban Runoff: A practical Manual for Planning and Designing Urban BMP'S", by the Metropolitan Washington Council of Governments. Storm water quality has been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP-0-20-001.

LIST OF PERMITS

The following is a list of permits and approvals required for the project along with the status.

- Town of Carmel Environmental Conservation Board (ECB) – Wetland Permit – Approved (Town of Carmel Environmental Conservation Board declared Lead Agency)
- NYSDEC – SPDES General Permit # GP-0-20-001 – Approval Pending
- NYCDEP – Individual Residential Stormwater Permit – Approval Pending

ENFORCEMENT ACTIONS

There are no enforcement actions against the applicant by the New York City Department of Environmental Protection.

PRE-DESIGN INVESTIGATIVE ANALYSIS

A pre-development investigative analysis was performed at the site. Four (4) deep hole tests were performed, as shown of the plans. The data is summarized below. *See Deep Hole Test Results contained herewith.*

Deep Hole Test #1 was excavated to a depth of 48-inches. The test revealed topsoil and roots to a depth of 6-inches and brown sandy loam to the invert. Ledge rock was encountered at 48-inches. No groundwater or mottling were encountered.

Deep Hole Test #2 was excavated to a depth of 72-inches. The test revealed topsoil and roots to a depth of 12-inches and red sandy loam to the invert. No Ledge rock, groundwater or mottling were encountered.

Deep Hole Test #3 was excavated to a depth of 48-inches. The test revealed topsoil and roots to a depth of 6-inches and brown sandy loam to the invert. Ledge rock was encountered at 48-inches. No groundwater or mottling were encountered.

Deep Hole Test #4 was excavated to a depth of 48-inches. The test revealed topsoil and roots to a depth of 6-inches and brown sandy loam to the invert. Ledge rock was encountered at 48-inches. No groundwater or mottling were encountered.

POST-DEVELOPED CONDITION

The proposed development includes the construction of a single-family residence and associated driveway, walkways and retaining walls. The proposed development results in an increase of approximately 5,638-square feet of impervious surface.

In the Post-Developed Condition, the proposed roof and driveway areas were modeled as four separate watersheds: Watershed 1A, 1B, 1C and 1D. To size the culvert crossing under the proposed driveway, the offsite tributary area was also analyzed as one watershed (Watershed 1).

Watershed 1A-1 contains approximately 3,574-square feet of area which includes 1,595-square feet of impervious area in the form of the uphill portion of the proposed driveway, with the remaining 1,979-square feet of area as pervious coverage in the form of lawn and landscaping. This watershed has a weighted CN value of 78 and a calculated Tc of 2.4 minutes. Runoff from this watershed flows overland across the driveway to a proposed grassed swale, which captures

and conveys the runoff to a proposed 18”x18” drain inlet located at the end of the swale. The flows are then split between two (2) 6-inch PVC pipes, which convey the flows to two (2) separate rain gardens located down gradient of the driveway. Both rain gardens have been sized to treat the entire calculated Water Quality Volume (WQv) from the tributary area. An overflow berm has also been provided to bypass the flows of storms of greater intensity.

Watershed 1A-2 contains approximately 2,310-square feet of area which includes 853-square feet of impervious area in the form of the uphill portion of the proposed driveway, with the remaining 1,113-square feet of area as pervious coverage in the form of lawn and landscaping. This watershed has a weighted CN value of 75 and a direct entry Tc of 1.0 minute. Runoff from this watershed flows overland across the driveway to a proposed grassed swale, which captures and conveys the runoff to a proposed 18”x18” drain inlet located at the end of the swale. The conveyed via a 6-inch PVC pipe to a proposed rain gardens located down gradient of the driveway. The proposed rain garden has been sized to treat the entire calculated Water Quality Volume (WQv) from the tributary area. An overflow berm has also been provided to bypass the flows of storms of greater intensity.

Watershed 1B contains approximately 1,893-square feet of area which includes 795-square feet of impervious area in the form of a portion of the proposed driveway at the entrance to the site, with the remaining 1,098-square feet of area as pervious coverage in the form of lawn and landscaping. This watershed has a weighted CN value of 77 and a calculated Tc of 3.4 minutes. Runoff from this watershed flows overland across the driveway directly to a proposed rain garden located to the north of the driveway. The rain garden has been sized to treat the entire calculated WQv from the tributary area. An overflow berm has also been provided to bypass the flows of storms of greater intensity.

Watershed 1C contains 1,144-square feet of area which includes 800-square feet of impervious area in the form of the western half of the proposed residence, with the remaining 344-square feet of area as pervious coverage in the form of the proposed rain garden. This watershed has a weighted CN value of 87 and a direct entry Tc of 1.0. Runoff from this watershed is captured via a series of roof drain leaders and is conveyed to a proposed rain garden located to the west of the driveway. The rain garden has been sized to treat the entire calculated WQv from the tributary area. An overflow berm has also been provided to bypass the flows of storms of greater intensity.

Watershed 1D contains 1,144-square feet of area which includes 800-square feet of impervious area in the form of the eastern half of the proposed residence, with the remaining 344-square feet of area as pervious coverage in the form of the proposed rain garden. This watershed has a weighted CN value of 98 and a direct entry Tc of 1.0. Runoff from this watershed is captured via a series of roof drain leaders and is conveyed to a proposed rain garden located to the west of the driveway. The rain garden has been sized to treat the entire calculated WQv

from the tributary area. An overflow berm has also been provided to bypass the flows of storms of greater intensity.

Watershed 1 (Offsite) contains approximately 210,132-square feet of area which includes 103,440-square feet of woods, 72,895-square feet of lawn and landscaped area, and 33,797-square feet of impervious area in the form of the existing driveways, walkways and roof areas. This watershed has a weighted CN value of 67 and a calculated Tc of 24.0 minutes. Runoff from this watershed flows overland originates at a highpoint located to the south of the site, between Hillside Drive and Highland Road and flows generally in a northerly direction towards Hillside Drive. From here, the runoff crosses the existing roadway onto 98 Hillside Drive, where it subsequently flows through the site to the existing wetlands located within the southern portion of the 351 Wixon Pond Road property. The existing wetlands then discharge to an existing drainage channel which traverses the property. A proposed 18-inch HDPE pipe culvert is being provided to convey the flows from the existing channel below the proposed driveway, and subsequently in northerly direction along the eastern property boundary, where it discharges to an existing Town drain inlet located within Wixon Pond Road. As required by the NYCDEP, the proposed culvert is capable of conveying the flows for the offsite watered for all storms up to and including the 10-year storm from the offsite tributary area.

WATER QUALITY VOLUME (WQv) & RUNOFF REDUCTION VOLUME (RRV)

The SWPPP for this site has been designed in accordance with the criteria contained in the publication entitled, “New York State Stormwater Management Design Manual”, as prepared by New York State Department of Environmental Conservation [NYSDEC]. This document outlines stringent guidelines for stormwater management of the initial federal EPA stormwater regulations [GP-0-20-001], adopted 2020.

As previously mentioned, the runoff from all impervious areas is to be captured and conveyed to five (5) proposed rain gardens located strategically throughout the site, which have been sized to treat the entire calculated water quality volume (WQv) and runoff reduction volume (RRV) from the site. *Water Quality Volume Calculations have been included at the end of this report.*

NYSDEC DESIGN MANUAL SECTION 3.6 (SIX STEPS):

STEP 1: SITE PLANNING

In order to preserve the existing natural resources, the practices outlined in table 3.1 of the NYSDEC design regulations were incorporated into the design as follows:

- Preservation of Undisturbed Areas: No permanent conservation areas are being proposed as part of this application. The extents of construction

activities have been limited to the maximum extent possible to construct the project.

- Preservation of Buffers: Locally regulated wetlands and adjacent buffer areas currently exist onsite. The extents of construction activities have been limited to the maximum extent possible to construct the project.
- Reduction of Clearing and Grading: The extents of construction activities have been limited to the maximum extent possible to construct the project.
- Locating Development in Less Sensitive Areas: All development has been located to minimize disturbance of sensitive area to the maximum extent possible.
- Open Space Design: See Preservation of Undisturbed Areas.
- Soil Restoration: As required, all disturbed soil areas will be “deep tilled” prior to the establishment of ground cover. Deep tilling restores the absorptive quality of the soil.
- Roadway Reduction: No roadways are being proposed as part of this project.
- Sidewalk Reduction: No sidewalks are being proposed as part of this project.
- Driveway Reduction: The proposed driveway width has been designed to the minimum extent desired for this project.
- Cul-de-sac Reduction: No Cul-de-sacs are being proposed as part of this project.
- Building Footprint Reduction: The building footprint has been limited to the minimum size desirable for the current real estate market.
- Parking Reduction: No additional parking is being provided as part of this project.
- Conservation of Natural Areas: See Preservation of Undisturbed Areas.
- Sheet Flow to riparian buffers or filter strips: No riparian buffers exist on this property. No grass filter strips are proposed as part of this design.
- Vegetated Open Swale: No swales are being proposed as part of this design.
- Tree Planting/Tree Boxes: Not applicable to this project.
- Disconnection of Rooftop Runoff: Not applicable to this project.
- Stream Daylighting for Redevelopment Projects: Not applicable to this project.
- Rain Gardens: Rain gardens are being provided to treat all impervious coverage onsite.
- Green Roof: Not applicable to this project.
- Stormwater Planters: Not applicable to this project.
- Rain tank/Cistern: Water Quality Volume and Runoff Reduction Volume requirements are currently being met onsite via the proposed rain garden. However, rain tanks could be incorporated in the design, if desired.
- Porous Pavement: Permeable pavement is not being proposed as part of this design. Permeable pavement can be provided if desired. However,

the proposed rain gardens have been sized to treat the full WQv from the site.

STEP 2: Determine Water Quality Treatment Volume

The Water Quality Volume (WQv) was calculated for all new impervious areas onsite per Chapter 4 of the NYSDEC Design Manual. The calculated WQv was then utilized in the design of the proposed rain gardens, which were sized to maximize the volume of water being treated onsite. *Water Quality Volume Calculations have been included at the end of this report.*

STEP 3: Apply Runoff Reduction Techniques and Standard SMP's with RRv Capacity to Reduce Total WQv

As previously discussed in the *Post Development* drainage analysis, the runoff from the proposed impervious areas is to be conveyed to five (5) proposed rain gardens, which have been sized been sized to treat and store 100% percent of the water quality volume (WQv) from all new impervious areas on the entire site. The overall volume provided meets the RRV requirements for the project.

STEP 4: Determine the minimum RRV Required

As previously mentioned, the proposed rain garden has been designed to treat 100% of the WQv. Since the overall storage provided for this practice meets the overall required WQv, the RRV requirement has been met.

STEP 5: Apply Standard Stormwater Management Practices to Address Remaining Water Quality Volume

All water quality practices have both been sized to treat the entire water quality volume from the watershed (Refer to HydroCAD calculations at the end of this report).

STEP 6: Apply Volume and Peak Rate Control Practices if Still Needed to Meet Requirements.

Per Table 1 in Appendix B of the New York State General Permit for Stormwater Discharges, GP-0-20-001, Since this project is located within a watershed identified in Appendix D of GP-0-20-001 and involves disturbances between 5,000-square feet and 1-acre of land, this project only requires the preparation of a SWPPP which only includes erosion and sediment control measures. Therefore, this step does not apply.

CONSTRUCTION PHASE

During the construction phase of the project, a sediment and erosion control plan shall be implemented in accordance with the New York State Department of Environmental Conservation's Best Management Practices (BMP). The primary

goals of the sediment and erosion control plan are to prevent the tracking of dirt and mud onto adjacent roads, to prevent mud and silt from entering into existing and proposed drainage facilities, and to protect the receiving waters from contamination during the construction.

During construction, the party responsible for implementing the temporary (during construction) Stormwater Management facilities Maintenance Program will be the owner. The name and contact information will be filed with the town of carmel and the nycdep at the time of the preconstruction meeting.

A New York State Professional Engineer or Certified Professional In Erosion and Sediment Control (P.E. or CPESC) shall 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 shown on the plan have been adequately installed and/or implemented to ensure overall preparedness of the site for construction. Following the commencement of construction, per the NYS DEC SPDES Permit for Stormwater Discharges GP-0-20-001 (PART IV.C.2.E), site inspections shall be conducted by the P.E. or CPESC at least two (2) times every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

During each inspection, the representative shall record the following:

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 approximate degree of sediment accumulation as a percentage of the sediment storage volume;

5. Inspect all erosion and sediment control practices and record all maintenance requirements. 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 the barrier. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

6. All identified deficiencies.

The P.E. or CPESC shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on-site and be made available to the Town of Carmel, the NYSDEC, and the NYCDEP. A summary of the site inspection activities shall be posted on a monthly basis in a publicly accessible location at the site.

The projects anticipated start date is March 2023 and the anticipated completion date is estimated to occur in April 2024.

CONSTRUCTION SEQUENCING

A pre-construction meeting with the appropriate permitting authority shall be scheduled prior to the start of work. All involved parties shall be present, including a representative from NYCDEP, the applicant, the design engineer, the contractor, and the Town of Carmel Engineering Department. The applicant must notify the NYCDEP at least forty-eight (48) hours prior to the commencement of construction activity so that inspections can be scheduled by the NYCDEP.

The following erosion control schedule shall be utilized:

1. Install silt fence in the locations shown on the plans. A double row of silt fence shall be installed adjacent to the entire length of the existing wetlands/drainage channel, as well as down slope of all areas of disturbance directly tributary to the existing wetlands/channel. Remove vegetation as necessary for silt fence installation.

2. Install orange construction fencing around all areas to be used for rain gardens. Fencing shall only be temporarily removed for the installation of each rain garden and shall be reinstalled for the remaining duration of construction activities until completion of construction.

3. Install orange construction fencing around proposed septic field. Construction fencing to remain in place for the duration of construction activities.

4. Install stabilized construction entrance in location shown on the plans. Construction entrance to remain in place for the duration of construction activities, until the driveway can be stabilized with asphalt pavement.

5. Install tree protection on all existing trees to remain immediately adjacent to the limits of disturbance.

6. Install temporary stone check dam in channel down gradient of location of culvert crossing. Location of stone check dam to be relocated along channel as installation of piping progresses from connection point within Wixon Pond Road.

7. Install 18-inch culvert and associated drainage structures starting at connection point to existing drain inlet within Wixon Pond Road, up to and including the proposed stone masonry headwall at driveway crossing. All work to be performed during dry season when channel is empty and/or flow is minimal.

8. Remove all trees within the limits of disturbance. Prevent damage to buildings, pavement, pipes, conduits, poles and other structures above and below ground that are adjoining or included in the contract area. Repair damage resulting from the contractor's negligence. Remove trees where indicated, as follows (removal of existing trees shall be limited to the area of each individual phase of construction. No trees shall be disturbed outside of these areas):

    a. Top and limb all trees before falling, unless otherwise approved by the engineer.

    b. Chip out stumps to a depth of not less than 6 inches below finished grade. Backfill stump holes with topsoil, and seed.

    c. Remove and dispose of all logs, tree trimmings, and debris from property. Leave work area in a neat uncluttered condition.

    d. Restore grades to indicated levels where settlement or damage due to performance of the work has occurred. Correct conditions contributing to settlement or damage.

    e. Restore pavements, walks, curbs, lawns, and other exterior surfaces damaged during performance of the work to match the appearance and performance of existing corresponding surfaces as closely as practicable.

9. Rough grade driveway and location of foundation. All rough grading shall not commence until culvert has been fully installed and existing watercourse has been diverted.

10. Provide construction staging area adjacent to building foundation within proposed driveway outside of wetlands buffer. Staging area to be delineated with orange safety construction fencing.

11. Excavate and construct foundation for new residence.

12. Temporarily remove construction fencing around location of each rain garden. Construct rain gardens and associated piping in the locations shown on the plans. Plug all openings for future connection. Reinstall construction fencing around rain gardens to prevent unnecessary disturbance to areas.

13. Install drain inlets, swales and associated piping adjacent to driveway in the locations shown on the plans and connect to previously installed rain gardens. Provide inlet protection on all newly installed drain inlets. All inlets to the proposed rain garden shall remain plugged until site is 80% stabilized with vegetation.

14. Construct building. Install and connect all roof drain leaders to previously constructed rain gardens as shown on the plans. All inlets to the proposed rain garden shall remain plugged until site is stabilized.

15. Install septic system and well. Septic system to remain surrounded with construction fencing for the duration of construction activities.

16. Install driveway sub-base course and remove stabilized construction entrance.

17. Install 4”-6” topsoil, fine grade, seed the entire project site and install landscape plantings. Spread salt hay over seeded areas. All seeding for final vegetative stabilization shall be applied per the following section entitled 'Erosion and Sediment Control Components - Surface Stabilization'.

18. Clean stormwater conveyance system components, including all catch basins and piping.

19. Unplug all pipe inlets to rain gardens.

20. Install driveway bituminous concrete top course.

21. Remove all temporary soil erosion and sediment control measures after the site is 80% stabilized with vegetation.

* Soil erosion and sediment control maintenance must occur weekly and prior to and after every ½” or greater rainfall event.

EROSION AND SEDIMENT CONTROL COMPONENTS

The primary aim of the soil and sediment control measures is to reduce soil erosion from areas stripped of vegetation during and after construction and to prevent silt from reaching the off-site drainage structures and downstream properties. As outlined in the Construction Sequencing schedule, the Sediment and Erosion Control Components are an integral component of the construction sequencing and will be implemented to control sedimentation and re-establish vegetation as soon as practicable.

Planned erosion and sedimentation control practices during construction include the installation, inspection and maintenance of the inlet protection, soil stockpile areas, diversion swales, sediment traps and silt fencing. General land grading

practices, including land stabilization and construction sequencing are also integrated into the Sediment and Erosion Control Plan. Dust control is not expected to be a problem due to the relatively limited area of exposure, the undisturbed perimeter of trees around the project area and the relatively short time of exposure. Should excessive dust be generated, it will be controlled by sprinkling.

All proposed soil erosion and sediment control practices have been designed in accordance with the following publications:

- New York State standards and Specifications for Urban Erosion and Sediment Control, August 2005
- New York State General Permit for Stormwater Discharges, GP-0-20-001 (General permit).
- "Reducing the Impacts of Stormwater Runoff from New Development", as published by the New York State Department of Environmental Conservation (NYSDEC), second edition, April, 1993.

The proposed soil erosion and sediment control devices include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice have also been outlined below.

- **SILT FENCE**

  Silt fence (geo-textile filter cloth) shall be placed in locations depicted on the approved plans. The purpose of the silt fence is to reduce the velocity of sediment laden stormwater from small drainage areas and to intercept the transported sediment load. In general, silt fence shall be used at the toe of slopes or intermediately within slopes where obvious channel concentration of stormwater is not present.

  <u>Maintenance</u>

  Silt fencing shall be inspected at a minimum of once per week and prior to and within 48 hours following a rain event ½" or greater. Inspections shall include ensuring that the fence material is tightly secured to the woven wire and the wire is secured to the wood posts. In addition, overlapping filter fabric shall be secure and the fabric shall be maintained a minimum of six (6) inches below grade. In the event that any "bulges" develop in the fence, that section of fence shall be replaced within 48 hours with new fence section. Any sediment build-up against the fence shall be removed within 48 hours and deposited on-site a minimum of 100 feet outside of any wetland or watercourse.

- **INLET PROTECTION**

  After driveway catch basins and surface inlets have been installed, these drain inlets will receive stormwater from the driveway, Temporary Diversion Swales and surrounding overland watersheds. In order to protect the receiving waters from sedimentation, the contractor shall install ¾ inch stone aggregate around the perimeter of all catch basins and surface inlets as illustrated on the approved plans. This barrier will allow stormwater to be filtered prior to reaching the basin inlet grate.

  Maintenance

  The stone aggregate shall be inspected weekly prior to and within 48 hours following a rain event ½" or greater. Care shall be taken to ensure that all stone aggregate are properly located and secure and do not become displaced. The stone aggregate shall be inspected for accumulated sediments and any accumulated sediment shall be removed from the device and deposited not less than 100 feet from wetland or watercourse.

- **SEDIEMENT TRAPS**

  Sediment traps shall be constructed in the locations depicted on the approved plans. The purpose of the basin is to intercept sediment-laden runoff and trap the sediment in order to protect drainage ways, properties and rights-of-way below the sediment trap from sedimentation. Sediment traps should be used to artificially break up the natural drainage area into smaller sections where a larger device would be less effective.

  Maintenance

  Sediment traps shall be inspected at a minimum of once per week and prior to and within 48 hours following a rain event ½" or greater. Inspections shall include ensuring that all proposed embankments are structurally sound and stabilized. In addition, all outlets shall be maintained in such a manner that sediment does not leave the trap and that erosion at or below the outlet does not occur. All sediment shall be removed and the trap, and the trap shall be restored to its original dimensions, when sediment has reached ½ of the design depth. The structure shall be removed and the area stabilized only after the attributing drainage area has been properly stabilized.

- **TREE PROTECTION**

  All significant trees to be preserved located within the limits of disturbance and on the perimeter of the disturbance limits shall be protected from harm by erecting a 3' high (minimum) snow fence completely surrounding the tree. Snow fence should extend to the drip-line of the tree to be preserved. Trees

designated to be protected shall be identified during the staking of the limits of disturbance for each construction phase.

Maintenance

The snow fence shall be inspected daily to ensure that the perimeter of the fence remains at the drip-line of the tree to be preserved. Any damaged portions of the fence shall be repaired or replaced within 48 hours. Care shall also be taken to ensure that no construction equipment is driven or parked within the drip-line of the tree to be preserved.

- **SOIL/SHOT ROCK STOCKPILING**

All soil and shot rock stripped from the construction area during grubbing and mass grading shall be stockpiled in locations approved by the City's representative, but in no case shall they be placed within 100' of a wetland or watercourse. The stockpiled soils shall be re-used during finish-grading to provide a suitable growing medium for plant establishment. Soil stockpiles shall be protected from erosion by vegetating the stockpile with rapidly – germinating grass seed or covering the stockpile with tarpaulin and surrounding it with either silt fence.

Maintenance

Sediment controls (silt fence) surrounding the stockpiles shall be inspected according to the recommended maintenance outline above. All stockpiles shall be inspected for signs of erosion or problems with seed establishment weekly and prior to and within 48 hours following a rain event ½" or greater.

- **GENERAL LAND GRADING**

The intent of the Erosion & Sediment Control Plan is to control disturbed areas such that soils are protected from erosion by temporary methods and, ultimately, by permanent vegetation. Where practicable, all cut and fill slopes shall be kept to a maximum slope of 2:1. In the event that a slope must exceed a 2:1 slope, it will be stabilized with stone riprap. On fill slopes, all material will be placed in layers not to exceed 12 inches in depth and adequately compacted. Where practicable, diversion swales shall be constructed on the top of all fill embankments to divert any overland flows away from the fill slopes.

- **SURFACE STABILIZATION**

All disturbed areas will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod), hydromulch, netting or hay. 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 of the General Permit for Stormwater Discharges (GP-015-002) or is located in one of the watersheds listed in Appendix C of GP-015-002, 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. When activities temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures.

All seeded areas will be re-seeded, as necessary, and mulched according to the site plan to maintain a vigorous, dense vegetative cover,

Erosion control barriers (silt fencing) shall be placed around exposed areas during construction. Where exposed areas are immediately uphill from a wetland or watercourse, the erosion control barrier will consist of double rows of silt fencing. Any areas stripped of vegetation during construction will be vegetated and/or mulch, but in no case more than 14 days to prevent erosion of the exposed soils. And topsoil removed during construction will be temporarily stockpiled for future use in grading and landscaping.

As mentioned above, temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used to the satisfaction of the Town Engineer. Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, sod or hydromulch. In site areas where significant erosion potential exists (steep slopes) and where specifically directed by the Town's representative, Curlex Excelsior erosion control blankets (manufactured by American Excelsior, or approved equal) shall be installed. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish-grade and to remain undisturbed.

Temporary Stabilization (May 1st through October 31st planting season)

The following seeding application should be used depending on the time of year.

- Spring/summer or early fall, seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb/1000 sq. ft. or use 1 lb/1000 sq. ft.).

- Late fall or early winter, seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs/1000 sq. ft.).

Permanent Stabilization (May 1st through October 31st planting season)

1. Provide minimum of four (4) inches topsoil for all new lawn areas. Top dress all existing disturbed lawn areas with two (2) inches of topsoil.

2. Seed the area new england roadside matrix upland seed mix (https://newp.com/data/2018/08/roadside-upland-8132018-no-percent.pdf) applied at the manufacturer's suggested rate of 1250 sq ft/lb.

3. Fine rake, roll and water to a depth of one inch all seeded areas.

4. Apply air-dried hay or straw mulch to provide 90% coverage of surface (approximately 90 lbs. per 1,000 sf). Use small grain straw where mulch is maintained for more than three months

5. Contractor shall provide, at his own expense, protection against trespassing and other damage to lawn areas.

- **DEWATERING**

  Prevent surface water and subsurface or ground water from flowing into excavations and trenches. Pump out any accumulated water.

  Do not allow water to accumulate in excavations or trenches. Remove water from all excavations immediately to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Furnish and maintain pumps, sumps, suction and discharge piping systems, and other system components necessary to convey the water away from the Site.

  Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.
  Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION

General:

Adequate measures shall be taken to minimize contaminant particles arising from the discharge of solid materials, including building materials, grading operations, and the reclamation and placement of pavement, during project construction, including but not limited to:

- Building materials, garbage, and debris shall be cleaned up daily and deposited into dumpsters, which will be periodically removed from the site and appropriately disposed of. All dumpsters and containers left on-site shall be covered and surrounded with silt fence in order to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Dump trucks hauling material from the construction site will be covered with a tarpaulin.

- The paved street adjacent to the site entrance will be swept daily to remove excess mud, dirt, or rock tracked from the site.

- Petroleum products will be stored in tightly sealed containers that are clearly labeled.

- All vehicles on site will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.

- All spills will be cleaned up immediately upon discovery. Spills large enough to reach the storm system will be reported to the National Response Center at 1-800-424-8802.

- Materials and equipment necessary for spill cleanup will be kept in the temporary material storage trailer onsite. Equipment will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, saw dust, and plastic and metal trash containers.

- All paint containers and curing compounds will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm system, but will be properly disposed according to the manufacturer’s instructions.

- Sanitary waste will be collected from portable units a minimum of two times a week to avoid overfilling. All sanitary waste units shall be surrounded by silt fence to prevent contaminants from leaving the site. Silt fencing shall be inspected on a weekly basis.

- Any asphalt substances used on-site will be applied according to the manufacturer's recommendation.

- Fertilizers will be stored in a covered shed and partially used bags will be transferred to a sealable bin to avoid spills and will be applied only in the minimum amounts recommended by the manufacturer and worked into the soil to limit exposure to stormwater.

- No disturbed area shall be left un-stabilized for longer than 14 days during the growing season.

- When erosion is likely to be a problem, grubbing operations shall be scheduled and performed such that grading operations and permanent erosion control features can follow within 24 hours thereafter.

- As work progresses, patch seeding shall be done as required on areas previously treated to maintain or establish protective cover.

- Drainage pipes and swales/ditches shall generally be constructed in a sequence from outlet to inlet in order to stabilize outlet areas and ditches before water is directed to the new installation or any portion thereof, unless conditions unique to the location warrant an alternative method.

Spill Control & Spill Response:

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures, and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as booms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill, a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The Contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.

- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.

- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water, action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil sheen will also be identified and removed or repaired as necessary to prevent further releases.
- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to the contacts listed below.
- Personnel with primary responsibility for spill response and clean up will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

Spill Control Notification:

- A reportable spill is a quantity of five (5) gallons or more or any spill of oil which: (1) violates water quality standards, (2) produces a "sheen" on a surface water, or (3) causes a sludge or emulsion. This spill must be reported immediately to the agencies listed below.

- Any spill of oil or hazardous substance to waters of the state must be reported immediately by telephone to the following agencies:

  - 911 – Police, Fire and EMS
  - Town of Carmel Engineering Department
    60 McAlpin Avenue
    Mahopac, NY 10541
    Phone: (845) 628-1500
  - Mahopac Volunteer Fire Department
    741 US-6
    Manhopac, NY 10541
    Phone: (845) 628-3160
  - NYS Department of Environmental Conservation (NYSDEC)
    Spill Reporting Hotline
    (1800) 457–7362

- National Response Center: (1800) 424-8802
- Local Emergency Planning Committee (LEPC)
  Westchester County Office of Emergency Management
  200 Bradhurst Avenue
  Hawthorne, NY 10532
  (914) 864–5450
- Westchester County Department of Health (WCDOH)
  Spill Reporting Hotline
  (914) 813-5000
- U.S. Environmental Protection Agency (USEPA)
  EPCRA Information Hotline
  (1800) 535–0202
- U.S. Department of Labor and Occupational Safety and Health Administration (OSHA)
  Tarrytown, NY
  (914) 524–7510

STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

The following maintenance plan has been developed to maintain the proper function of all drainage and erosion and sediment control facilities:

- Erosion & Sediment Control Maintenance:

  During the construction of the project, the site erosion and sediment control measures as well as basin embankments and outlet structures will be inspected by the project superintendent once a week and/or within 24 hours following a rainstorm ½" or greater. Any repairs required shall be performed in a timely manner. All sediment removal and/or repairs will be followed within 24 hours by re-vegetation. Remove sediment and correct erosion by re-seed eroded areas and gullies within 7 days.

- General Stormwater Facilities Maintenance (Storm Sewer, Catch Basins/Drain Inlets, Manholes, Pre-treatment Device and Subsurface Infiltration System)

  All stormwater facilities shall be inspected immediately after completion of construction, and then monthly for the first three (3) months following the completion of the Project. Within the first three (3) months, inspections shall immediately be performed following a large storm event (i.e. producing 1/2" (one-half inch) of rain or greater. Thereafter, these facilities shall be inspected as described as follows. Upon inspection, facilities shall be immediately maintained and/or cleaned as may be required. Any site areas

exhibiting soil erosion of any kind shall be immediately restored and stabilized with vegetation, mulch or stone, depending on the area to be stabilized.

Upon each inspection, all visible debris including, but not limited to, twigs, leaf and forest litter shall be removed from the swales, overflow discharge points and frames and grates of drainage structures.

- Sumps − Catch Basin/Drain Inlets and Drain Manholes

  All catch basin/drain inlets and drain manholes with sumps have been designed to trap sediment prior to its transport to the infiltration practice and, ultimately, downstream. These sumps will require periodic inspection and maintenance to ensure that adequate depth is maintained within the sumps.

  All sumps shall be inspected once per month for the first three (3) months (after drainage system has been put into service). Thereafter, all sumps shall be inspected every four (4) months. The Owner, or their duly authorized representative, shall take measurements of the sump depth.

  If sediment has accumulated to 1/2 (one-half) the depth of the sump, all sediment shall be removed from the sump. Sediments can be removed with hand-labor or with a vacuum truck.

  The use of road salt shall be minimized for maintenance of roadway and driveway areas.

- Rain Gardens:

  Rain gardens should be treated as a component of the landscaping, with routine maintenance specified through a legally binding maintenance agreement. Routine maintenance may include the occasional replacement of plants, mulching, weeding, and thinning to maintain the desired appearance. Specific attention should be paid to the following:

  - Weeding and watering are essential the first year and can be minimized with the use of a weed-free mulch layer.
  - Keep plants pruned. Cut off old flower heads after a plant is done blooming.
  - Keep the garden weeded, especially in the first couple of years while the native plants are establishing their root systems.
  - Once the rain garden has matured, the garden area shall be kept free of bare areas except where steppingstones are located.

- Inspect for sediment accumulations or heavy organic matter where runoff enters the garden and remove as necessary.

- The top few inches of planting soil should be removed and replaced when water ponds for more than 48 hours.

- If the garden overflow device is an earthen berm or lip, check for erosion and repair as soon as possible. If erosion continues, a harder armoring of stone may be necessary.

- If the garden overflow device is a pipe or drain inlet, make sure the device is free of debris and remains unclogged.

- Make sure all appropriate elevations have been maintained, no settlement has occurred, and no low spots have been created.

CONCLUSION:

The stormwater management plan proposed meets and exceeds all the requirements set forth by the Town of Carmel, NYSDEC and the NYCDEP. Design modification requirements that may occur during the approval process will be performed and submitted for review.

Extreme
Precipitation Tables

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Metadata for Point

Smoothing	Yes
State	
Location	
Latitude	41.408 degrees North
Longitude	73.741 degrees West
Elevation	210 feet
Date/Time	Fri Mar 31 2023 08:12:27 GMT-0400 (Eastern Daylight Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.34	0.52	0.64	0.84	1.05	1.30	**1yr**	0.91	1.23	1.49	1.83	2.24	2.74	3.08	**1yr**	2.42	2.96	3.43	4.12	4.75	**1yr**
2yr	0.39	0.60	0.75	0.99	1.24	1.55	**2yr**	1.07	1.45	1.78	2.19	2.69	3.30	3.70	**2yr**	2.92	3.56	4.09	4.83	5.49	**2yr**
5yr	0.46	0.71	0.89	1.19	1.53	1.93	**5yr**	1.32	1.78	2.23	2.76	3.39	4.15	4.69	**5yr**	3.67	4.51	5.22	6.04	6.80	**5yr**
10yr	0.51	0.80	1.02	1.38	1.79	2.28	**10yr**	1.55	2.08	2.64	3.28	4.03	4.93	5.61	**10yr**	4.36	5.40	6.27	7.16	8.01	**10yr**
25yr	0.59	0.94	1.20	1.66	2.21	2.85	**25yr**	1.91	2.56	3.32	4.14	5.09	6.19	7.12	**25yr**	5.48	6.85	8.00	8.96	9.94	**25yr**
50yr	0.67	1.08	1.38	1.94	2.61	3.38	**50yr**	2.25	2.99	3.95	4.92	6.05	7.37	8.53	**50yr**	6.52	8.20	9.63	10.63	11.71	**50yr**
100yr	0.76	1.23	1.59	2.25	3.07	4.02	**100yr**	2.65	3.50	4.70	5.87	7.22	8.77	10.22	**100yr**	7.76	9.83	11.59	12.60	13.81	**100yr**
200yr	0.86	1.41	1.83	2.62	3.62	4.77	**200yr**	3.13	4.11	5.60	7.01	8.61	10.45	12.26	**200yr**	9.25	11.79	13.96	14.95	16.28	**200yr**
500yr	1.03	1.70	2.22	3.23	4.52	6.00	**500yr**	3.90	5.07	7.05	8.85	10.88	13.18	15.59	**500yr**	11.67	14.99	17.86	18.75	20.25	**500yr**

Lower Confidence Limits

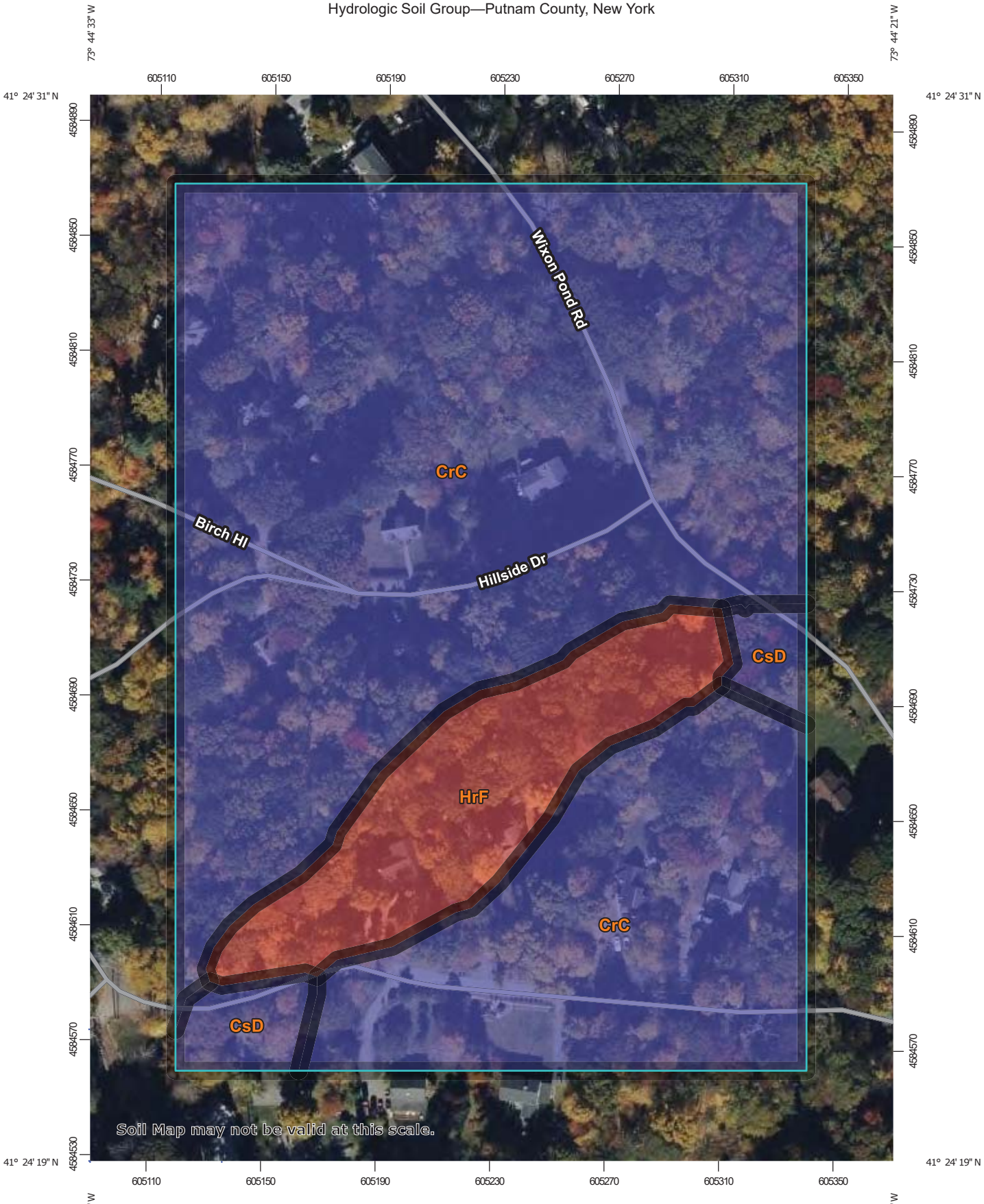
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.38	0.46	0.62	0.76	1.02	**1yr**	0.66	1.00	1.28	1.61	2.06	2.47	2.80	**1yr**	2.19	2.69	3.22	3.85	4.32	**1yr**
2yr	0.38	0.59	0.72	0.98	1.21	1.44	**2yr**	1.04	1.40	1.64	2.07	2.62	3.24	3.63	**2yr**	2.86	3.49	4.01	4.73	5.39	**2yr**
5yr	0.42	0.65	0.81	1.11	1.42	1.68	**5yr**	1.22	1.65	1.91	2.43	3.05	3.93	4.45	**5yr**	3.48	4.28	4.89	5.69	6.42	**5yr**
10yr	0.47	0.72	0.89	1.24	1.60	1.88	**10yr**	1.38	1.84	2.14	2.72	3.42	4.48	5.16	**10yr**	3.97	4.97	5.67	6.54	7.27	**10yr**
25yr	0.52	0.80	0.99	1.42	1.86	2.18	**25yr**	1.61	2.13	2.45	3.17	3.98	5.38	6.31	**25yr**	4.76	6.07	7.01	7.86	8.58	**25yr**
50yr	0.57	0.87	1.09	1.57	2.11	2.44	**50yr**	1.82	2.38	2.73	3.57	4.46	6.18	7.34	**50yr**	5.47	7.06	8.14	9.05	9.72	**50yr**
100yr	0.63	0.96	1.20	1.73	2.37	2.74	**100yr**	2.05	2.67	3.04	4.00	5.01	7.11	8.57	**100yr**	6.29	8.24	9.50	10.43	10.99	**100yr**
200yr	0.70	1.05	1.33	1.92	2.68	3.07	**200yr**	2.32	3.00	3.39	4.49	5.61	8.20	10.04	**200yr**	7.25	9.65	11.08	12.01	12.46	**200yr**
500yr	0.80	1.19	1.53	2.22	3.16	3.59	**500yr**	2.73	3.51	3.94	5.25	6.54	9.92	12.37	**500yr**	8.78	11.90	13.59	14.48	14.69	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.38	0.58	0.71	0.96	1.17	1.40	**1yr**	1.01	1.37	1.58	2.02	2.50	2.93	3.29	**1yr**	2.59	3.16	3.66	4.37	5.10	**1yr**
2yr	0.41	0.63	0.78	1.05	1.30	1.54	**2yr**	1.12	1.51	1.78	2.23	2.81	3.40	3.80	**2yr**	3.01	3.66	4.21	4.95	5.70	**2yr**
5yr	0.49	0.76	0.94	1.29	1.64	1.95	**5yr**	1.41	1.91	2.23	2.91	3.67	4.36	4.98	**5yr**	3.86	4.78	5.52	6.40	7.21	**5yr**
10yr	0.58	0.89	1.10	1.54	1.99	2.34	**10yr**	1.72	2.29	2.67	3.56	4.51	5.35	6.12	**10yr**	4.74	5.88	6.81	7.78	8.69	**10yr**
25yr	0.72	1.10	1.36	1.95	2.56	3.00	**25yr**	2.21	2.94	3.43	4.69	5.94	6.96	8.04	**25yr**	6.16	7.73	8.86	10.08	11.18	**25yr**
50yr	0.85	1.29	1.61	2.32	3.12	3.64	**50yr**	2.69	3.56	4.15	5.78	7.31	8.51	9.88	**50yr**	7.53	9.50	10.89	12.27	13.52	**50yr**
100yr	1.02	1.53	1.92	2.78	3.81	4.40	**100yr**	3.29	4.30	5.02	7.14	9.00	10.39	12.14	**100yr**	9.20	11.67	13.41	14.94	16.35	**100yr**
200yr	1.21	1.82	2.30	3.33	4.65	5.30	**200yr**	4.01	5.18	6.07	8.78	11.07	12.69	14.91	**200yr**	11.23	14.34	16.50	18.18	19.79	**200yr**
500yr	1.53	2.28	2.94	4.27	6.07	6.81	**500yr**	5.24	6.66	7.82	11.62	14.60	16.52	19.57	**500yr**	14.62	18.82	21.74	23.60	25.50	**500yr**

Powered by ACIS
Northeast Regional Climate Center

Soils Maps &
Soils Data



Map Scale: 1:1,810 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

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 1:12,000.

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: Putnam County, New York
Survey Area Data: Version 19, Sep 10, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

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
CrC	Charlton-Chatfield complex, 0 to 15 percent slopes, very rocky	B	14.2	83.9%
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	B	0.6	3.5%
HrF	Hollis-Rock outcrop complex, 35 to 60 percent slopes	D	2.1	12.5%
Totals for Area of Interest			**16.9**	**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

Deep Test Hole Results

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 351 Wixon Pond Road

TOWN/VILLAGE: Carmel

DATE: 5/11/2023 TIME: 11:00am

WEATHER: M. Sunny TEMP. 70° F

WITNESSED BY: Daniel Collins

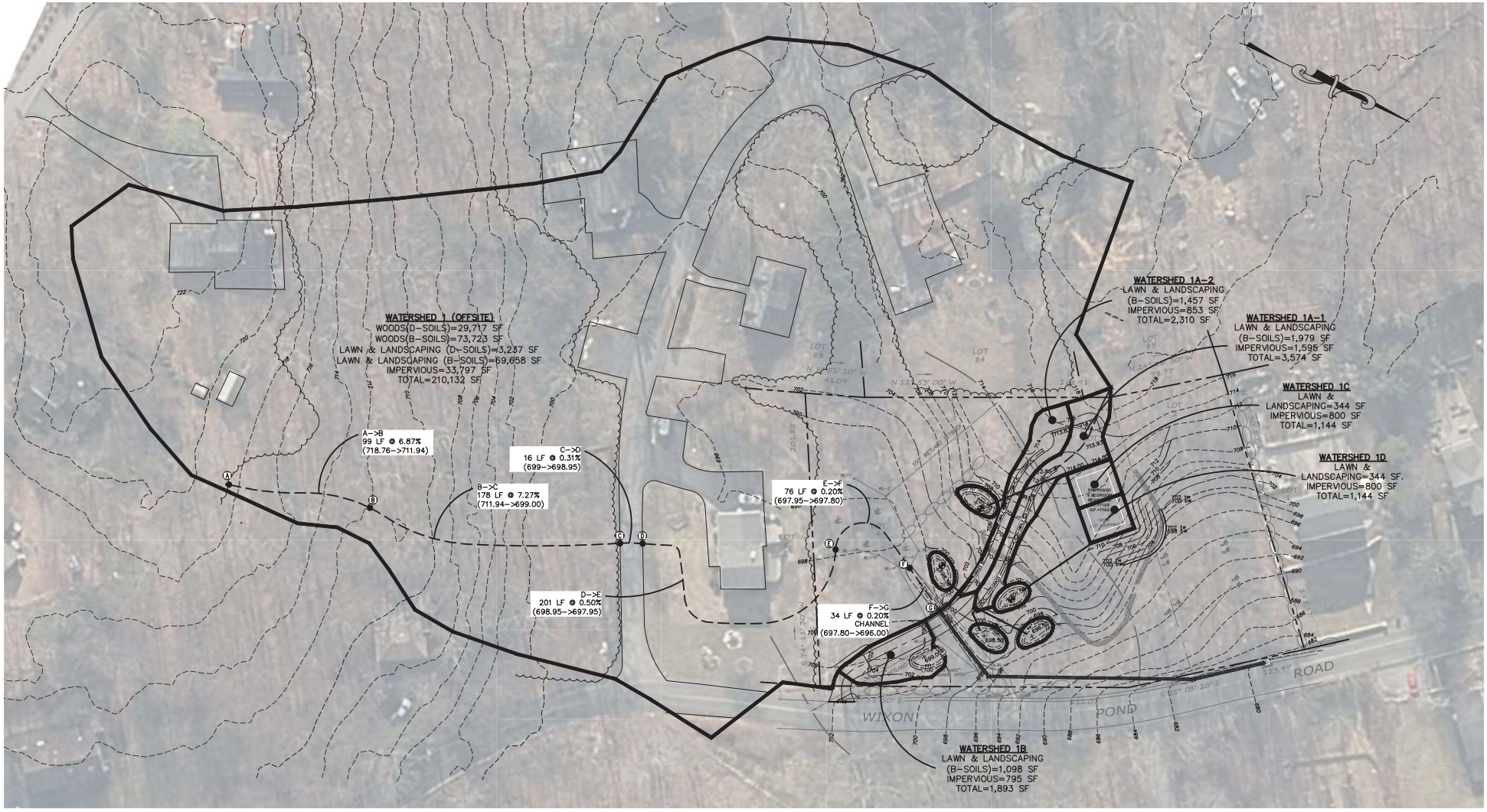
DEEP TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

DEPTH	HOLE NO. 1	HOLE NO. 2	HOLE NO. 3	HOLE NO. 4
G.L.	0 – 6" Topsoil	0 – 12" Topsoil	0 – 6" Topsoil	0 – 6" Topsoil
6"				
12"	6 – 48"		6 – 48"	6 – 48"
18"	Brown Sandy		Brown Sandy	Brown Sandy
24"	Loam		Loam	Loam
30"		12 – 72"		
36"		Red Sandy		
42"		Loam		
48"	Ledge @ 48"		Ledge @ 48"	Ledge @ 48"
54"				
60"				
66"				
72"		No GW		
78"		No Ledge		
84"				
90"				
96"				
102"				
108"				

- *Indicate level at which Ground Water (GW), Mottling and/or Ledge Rock is encountered.*
- *Indicate level for which water level rises after being encountered.*

EXCAVATION PERFORMED BY: Scott Frey

Watershed Maps



EXISTING INFORMATION SHOWN HEREON TAKEN FROM A TOPOGRAPHIC SURVEY PREPARED BY DAVID ODELL, DATED NOVEMBER 29, 2021. DATUM NAVD 1988 WETLAND FLAGS LOCATED ON APRIL 10, 2022.

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)

1 inch = 30 ft.

CONTRACTOR SHALL CONTACT DESIGN ENGINEER TO SCHEDULE A SITE INSPECTION PRIOR TO BACKFILLING INFILTRATION/ATTENUATION SYSTEM(S). ALL CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND VISIBLE AT TIME OF INSPECTION. SHOULD THE CONTRACTOR BACKFILL PRIOR TO INSPECTION, THE CONTRACTOR SHALL EXPOSE THE SYSTEM AT THEIR OWN EXPENSE.

No.	Description	Date
1	REVISED PER DEPT TEST RESULTS	5/10/23

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
TOWN OF CARMEL
PUTNAM COUNTY – NEW YORK

WATERSHED MAP – PROPOSED

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0430
F: 914-960-2086

Date: 3/24/23 Sheet
Scale: 1" = 30' 1
Designed By: D.C. 1
Checked By: M.S.
Sheet No.
WS-P

Water Quality Calculations

WATER QUALITY CALCULATION
WATERSHED WS-1A-1

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 1,595 -square feet

A_i = 0.0366 -acres

A_t = Tributary Area = 3,896 -square feet

A_t = 0.0894 -acres

I = % Impervious = 40.94%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.418 **(0.20 minimum)**

R_v= 0.418

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.00468 \text{ acre-feet} = 203.79 \text{ cubic feet}$$

WATER QUALITY CALCULATION
WATERSHED WS-1A-2

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 853 -square feet

A_i = 0.0196 -acres

A_t = Tributary Area = 2,167 -square feet

A_t = 0.0497 -acres

I = % Impervious = 39.36%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.404 **(0.20 minimum)**

R_v= 0.404

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.00251 \text{ acre-feet} = 109.51 \text{ cubic feet}$$

WATER QUALITY CALCULATION
WATERSHED WS-1B

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 795 -square feet

A_i = 0.0183 -acres

A_t = Tributary Area = 1,893 -square feet

A_t = 0.0435 -acres

I = % Impervious = 42.00%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.428 **(0.20 minimum)**

R_v= 0.428

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.00232 \text{ acre-feet} = 101.27 \text{ cubic feet}$$

WATER QUALITY CALCULATION
WATERSHED WS-1C

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 800 -square feet

A_i = 0.0184 -acres

A_t = Tributary Area = 1,144 -square feet

A_t = 0.0263 -acres

I = % Impervious = 69.93%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.679 **(0.20 minimum)**

R_v= 0.679

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.00223 \text{ acre-feet} = 97.15 \text{ cubic feet}$$

WATER QUALITY CALCULATION
WATERSHED WS-1D

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 800 -square feet

A_i = 0.0184 -acres

A_t = Tributary Area = 1,144 -square feet

A_t = 0.0263 -acres

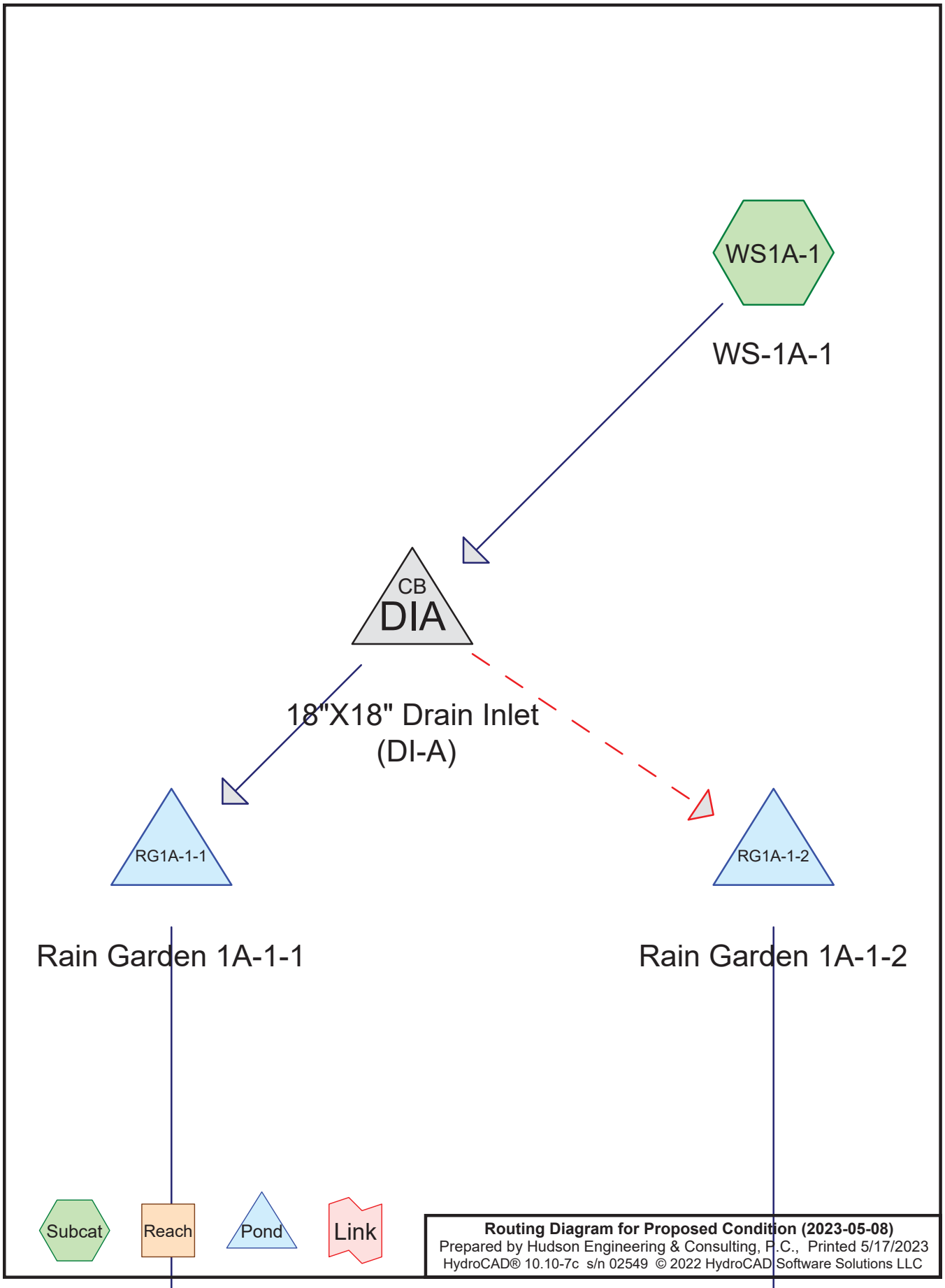
I = % Impervious = 69.93%

R_v= 0.05+0.009(I); where I = Percent Impervious written as a percent

R_v= 0.679 **(0.20 minimum)**

R_v= 0.679

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.00223 \text{ acre-feet} = 97.15 \text{ cubic feet}$$


WS1A-1
WS-1A-1
CB
DIA
18"X18" Drain Inlet
(DI-A)
RG1A-1-1
RG1A-1-2
Rain Garden 1A-1-1
Rain Garden 1A-1-2
Subcat
Reach
Pond
Link
Routing Diagram for Proposed Condition (2023-05-08)
Prepared by Hudson Engineering & Consulting, P.C., Printed 5/17/2023
HydroCAD® 10.10-7c s/n 02549 © 2022 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WS1A-WQv	Type III 24-hr		Default	24.00	1	2.39	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,291	61	>75% Grass cover, Good, HSG B (WS1A-1)
1,595	98	Paved parking, HSG D (WS1A-1)
344	61	Rain Garden 1A-1-1 (WS1A-1)
344	61	Rain Garden 1A-1-2 (WS1A-1)
3,574	**78**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,291	HSG B	WS1A-1
0	HSG C	
1,595	HSG D	WS1A-1
688	Other	WS1A-1
3,574		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	1,291	0	0	0	1,291	>75% Grass cover, Good	
0	0	0	1,595	0	1,595	Paved parking	
0	0	0	0	344	344	Rain Garden 1A-1-1	
0	0	0	0	344	344	Rain Garden 1A-1-2	
0	**1,291**	**0**	**1,595**	**688**	**3,574**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS1A-1: WS-1A-1 Runoff Area=3,574 sf 44.63% Impervious Runoff Depth=0.72"
Flow Length=181' Tc=2.4 min CN=78 Runoff=0.07 cfs 214 cf

Pond DIA: 18"X18" Drain Inlet (DI-A) Peak Elev=698.72' Inflow=0.07 cfs 214 cf
Primary=0.04 cfs 58 cf Secondary=0.04 cfs 156 cf Outflow=0.07 cfs 214 cf

Pond RG1A-1-1: Rain Garden 1A-1-1 Peak Elev=698.64' Storage=58 cf Inflow=0.04 cfs 58 cf
Outflow=0.00 cfs 0 cf

Pond RG1A-1-2: Rain Garden 1A-1-2 Peak Elev=697.00' Storage=122 cf Inflow=0.04 cfs 156 cf
Outflow=0.00 cfs 34 cf

Total Runoff Area = 3,574 sf Runoff Volume = 214 cf Average Runoff Depth = 0.72"
55.37% Pervious = 1,979 sf 44.63% Impervious = 1,595 sf

Summary for Subcatchment WS1A-1: WS-1A-1

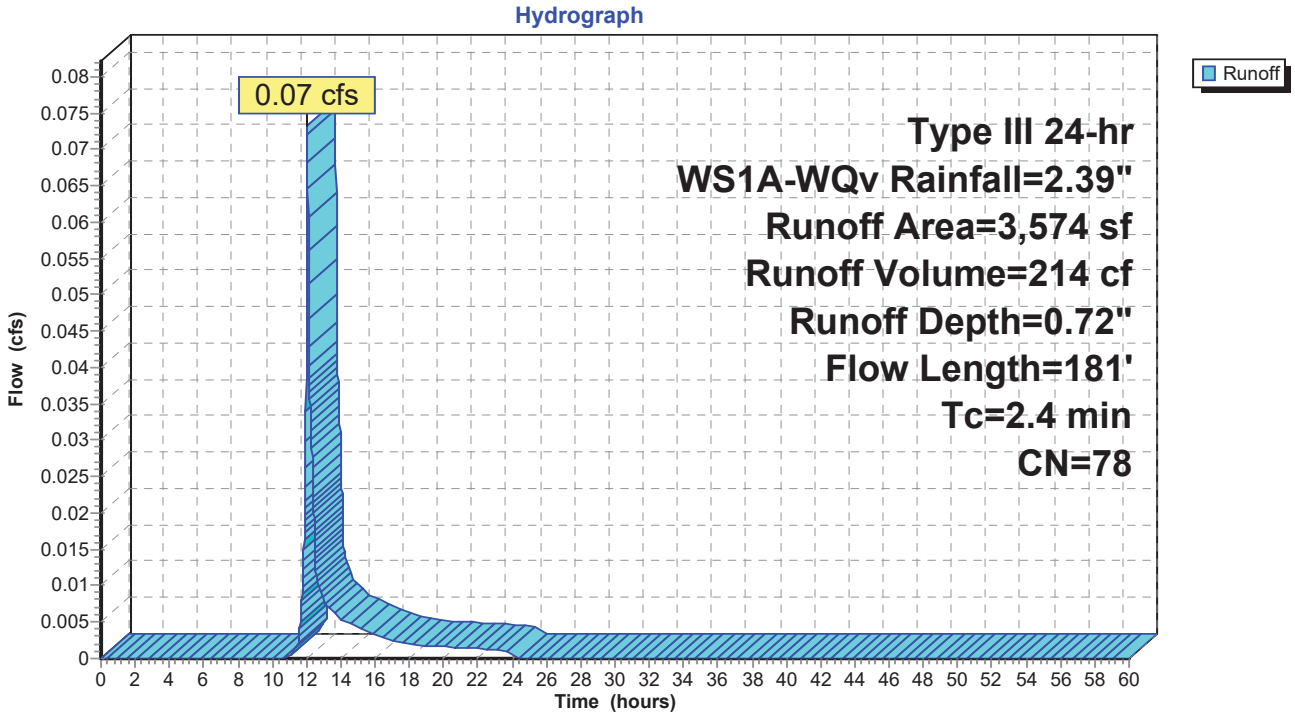
Runoff = 0.07 cfs @ 12.04 hrs, Volume= 214 cf, Depth= 0.72"
Routed to Pond DIA : 18"X18" Drain Inlet (DI-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WS1A-WQv Rainfall=2.39"

	Area (sf)	CN	Description
	1,291	61	>75% Grass cover, Good, HSG B
*	1,595	98	Paved parking, HSG D
*	344	61	Rain Garden 1A-1-1
*	344	61	Rain Garden 1A-1-2
	3,574	78	Weighted Average
	1,979		55.37% Pervious Area
	1,595		44.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.2326	0.24		**Sheet Flow, A->B** Grass: Dense n= 0.240 P2= 3.30"
0.6	46	0.0283	1.37		**Sheet Flow, B->C** Smooth surfaces n= 0.011 P2= 3.30"
0.2	112	0.1125	7.64	7.64	**Parabolic Channel, C->D** W=3.00' D=0.50' Area=1.0 sf Perim=3.2' n= 0.030 Earth, grassed & winding
2.4	181	Total			

Subcatchment WS1A-1: WS-1A-1



Summary for Pond DIA: 18"X18" Drain Inlet (DI-A)

Inflow Area = 3,574 sf, 44.63% Impervious, Inflow Depth = 0.72" for WS1A-WQv event
Inflow = 0.07 cfs @ 12.04 hrs, Volume= 214 cf
Outflow = 0.07 cfs @ 12.04 hrs, Volume= 214 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.04 hrs, Volume= 58 cf
Routed to Pond RG1A-1-1 : Rain Garden 1A-1-1
Secondary = 0.04 cfs @ 12.04 hrs, Volume= 156 cf
Routed to Pond RG1A-1-2 : Rain Garden 1A-1-2

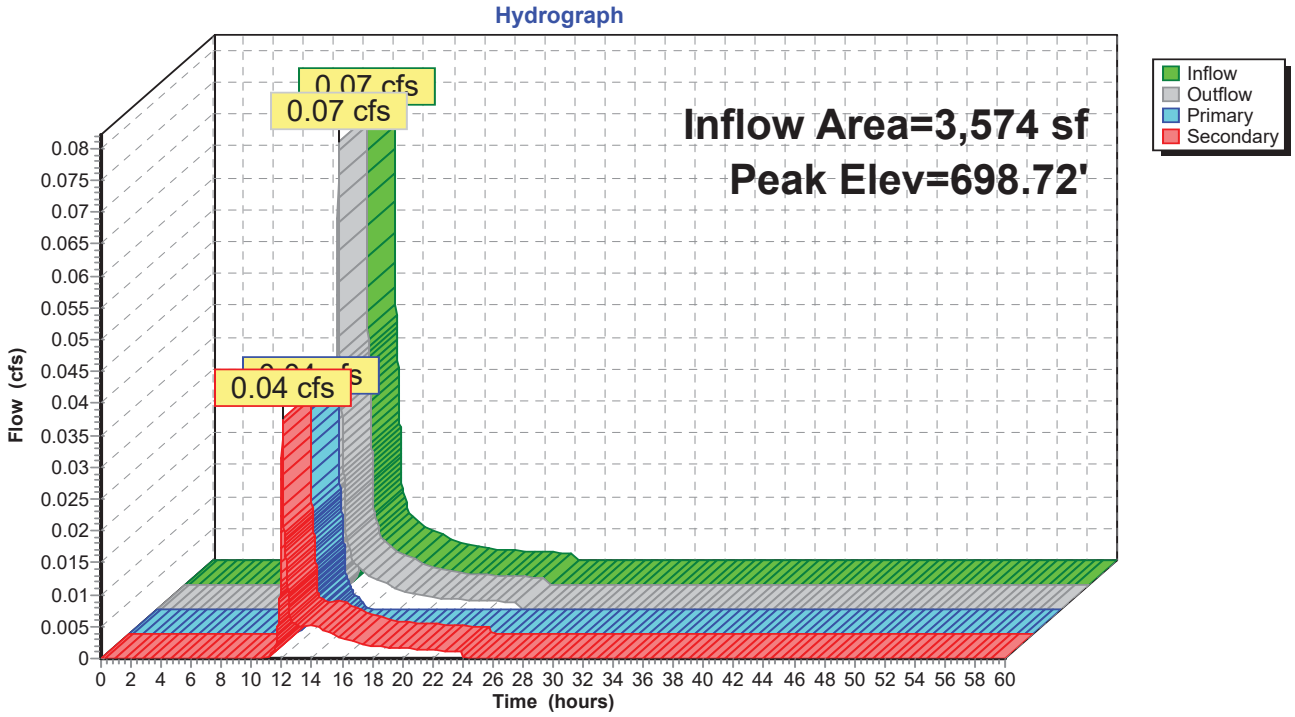
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 698.72' @ 12.04 hrs
Flood Elev= 700.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	698.59'	**6.0" Round 6" PVC (RG-#1A-1)** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 698.50' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	698.59'	**6.0" Round 6" PVC (RG-#1A-2)** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 696.50' S= 0.0597 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.04 cfs @ 12.04 hrs HW=698.72' TW=697.68' (Dynamic Tailwater)
↑—**1=6" PVC (RG-#1A-1)** (Barrel Controls 0.04 cfs @ 1.38 fps)

Secondary OutFlow Max=0.04 cfs @ 12.04 hrs HW=698.72' TW=695.72' (Dynamic Tailwater)
↑—**2=6" PVC (RG-#1A-2)** (Inlet Controls 0.04 cfs @ 0.96 fps)

Pond DIA: 18"X18" Drain Inlet (DI-A)



Summary for Pond RG1A-1-1: Rain Garden 1A-1-1

Inflow Area = 3,574 sf, 44.63% Impervious, Inflow Depth = 0.19" for WS1A-WQv event
Inflow = 0.04 cfs @ 12.04 hrs, Volume= 58 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DI-2 : 24"X24" Drain Inlet (DI-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 698.64' @ 16.24 hrs Surf.Area= 278 sf Storage= 58 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	697.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	698.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

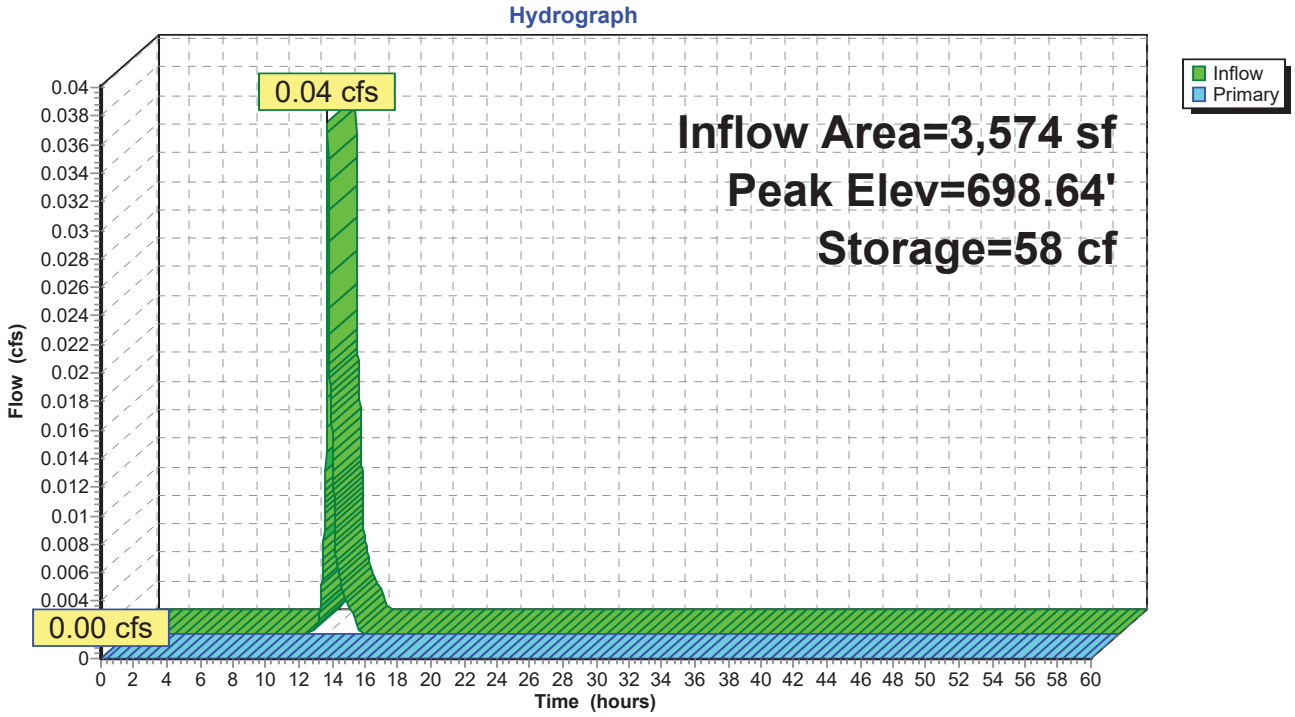
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.00	129	0	0
698.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.50	129	0	0
699.00	204	83	83
699.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	699.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=697.00' TW=693.45' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1A-1-1: Rain Garden 1A-1-1



Summary for Pond RG1A-1-2: Rain Garden 1A-1-2

Inflow = 0.04 cfs @ 12.04 hrs, Volume= 156 cf
Outflow = 0.00 cfs @ 17.84 hrs, Volume= 34 cf, Atten= 95%, Lag= 347.6 min
Primary = 0.00 cfs @ 17.84 hrs, Volume= 34 cf
Routed to Pond DI-1 : 24"X24" Drain Inlet (DI-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 697.00' @ 17.84 hrs Surf.Area= 333 sf Storage= 122 cf

Plug-Flow detention time= 516.1 min calculated for 34 cf (22% of inflow)
Center-of-Mass det. time= 325.2 min (1,235.2 - 910.0)

Volume	Invert	Avail.Storage	Storage Description
#1	695.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	696.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

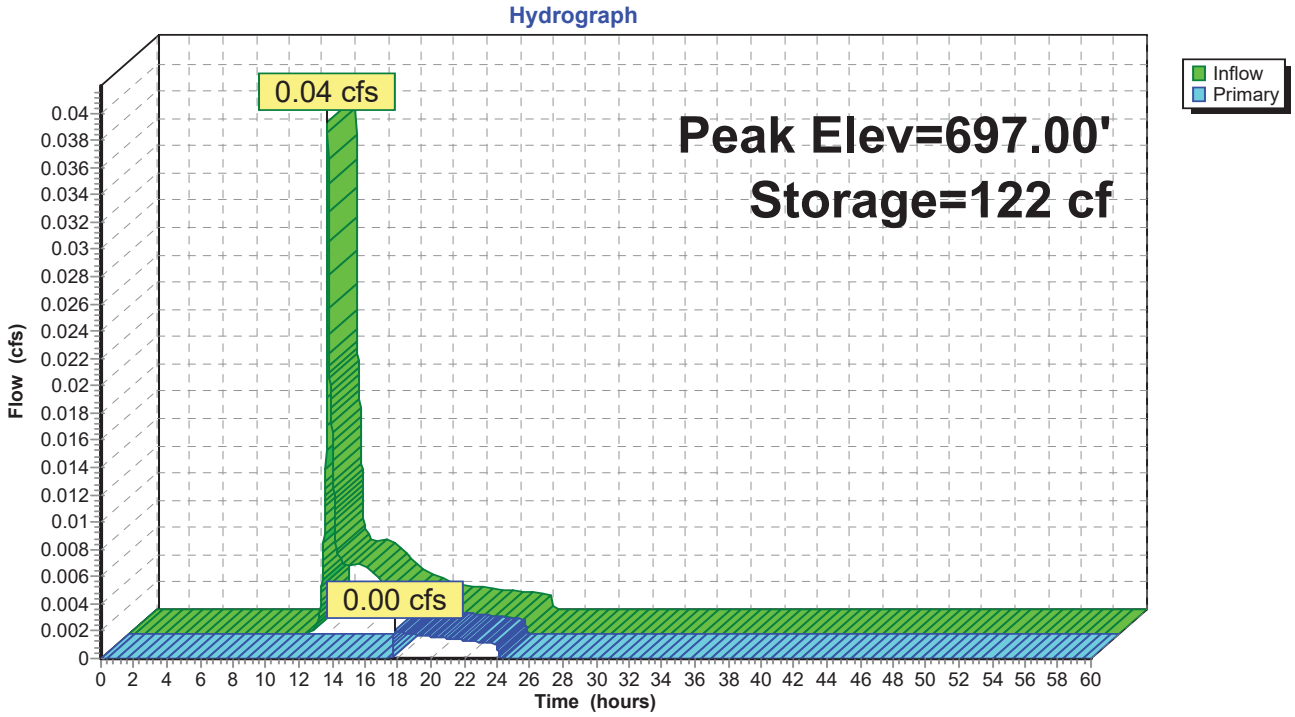
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
695.00	129	0	0
696.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
696.50	129	0	0
697.00	204	83	83
697.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	697.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 17.84 hrs HW=697.00' TW=678.34' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Weir Controls 0.00 cfs @ 0.10 fps)

Pond RG1A-1-2: Rain Garden 1A-1-2



Events for Subcatchment WS1A-1: WS-1A-1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
WS1A-WQv	**2.39**	**0.07**	**214**	**0.72**

Events for Pond DIA: 18"X18" Drain Inlet (DI-A)

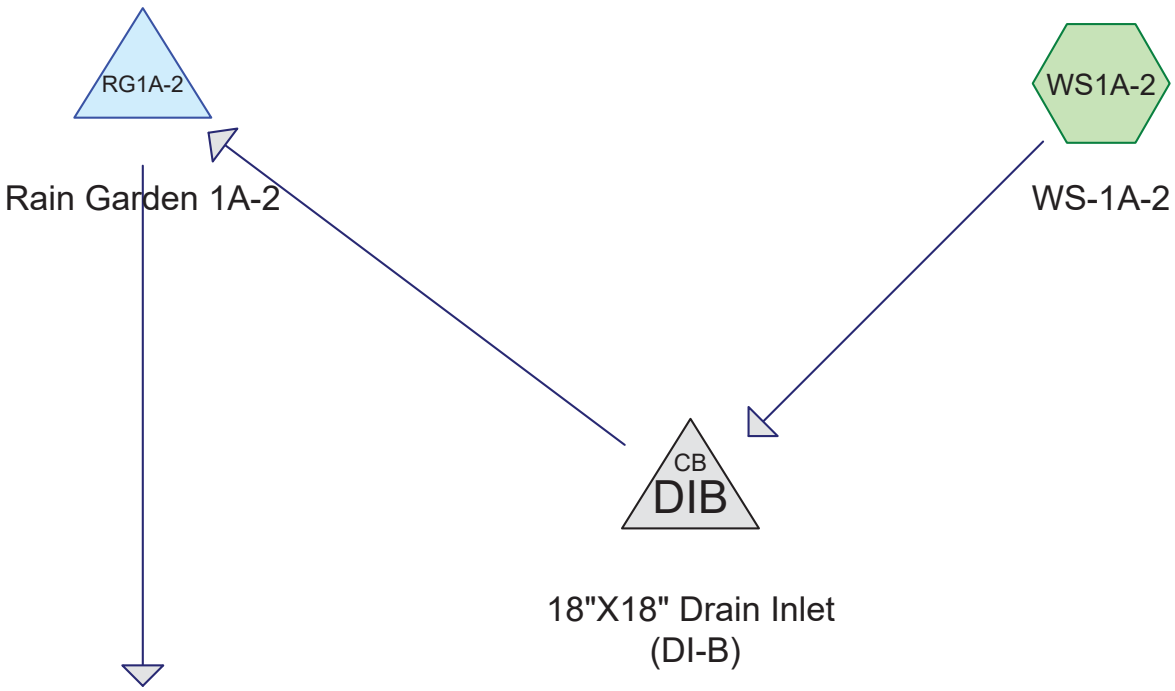
Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1A-WQv	**0.07**	**0.07**	**0.04**	**0.04**	**698.72**	**0**

Events for Pond RG1A-1-1: Rain Garden 1A-1-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1A-WQv	**0.04**	**0.00**	**698.64**	**58**

Events for Pond RG1A-1-2: Rain Garden 1A-1-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1A-WQv	**0.04**	**0.00**	**697.00**	**122**



Subcat Reach Pond Link

Routing Diagram for Proposed Condition (2023-05-08)
Prepared by Hudson Engineering & Consulting, P.C., Printed 5/17/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WS1A2-WQv	Type III 24-hr		Default	24.00	1	2.39	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,113	61	>75% Grass cover, Good, HSG B (WS1A-2)
853	98	Paved parking, HSG D (WS1A-2)
344	61	Rain Garden 1A-2-1 (WS1A-2)
2,310	**75**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,113	HSG B	WS1A-2
0	HSG C	
853	HSG D	WS1A-2
344	Other	WS1A-2
2,310		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	1,113	0	0	0	1,113	>75% Grass cover, Good	
0	0	0	853	0	853	Paved parking	
0	0	0	0	344	344	Rain Garden 1A-2-1	
0	**1,113**	**0**	**853**	**344**	**2,310**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS1A-2: WS-1A-2 Runoff Area=2,310 sf 36.93% Impervious Runoff Depth=0.59"
Tc=1.0 min CN=75 Runoff=0.04 cfs 113 cf

Pond DIB: 18"X18" Drain Inlet (DI-B) Peak Elev=699.00' Inflow=0.04 cfs 113 cf
6.0" Round Culvert n=0.010 L=17.0' S=0.0053 '/' Outflow=0.04 cfs 113 cf

Pond RG1A-2: Rain Garden 1A-2 Peak Elev=698.96' Storage=113 cf Inflow=0.04 cfs 113 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 2,310 sf Runoff Volume = 113 cf Average Runoff Depth = 0.59"
63.07% Pervious = 1,457 sf 36.93% Impervious = 853 sf

Summary for Subcatchment WS1A-2: WS-1A-2

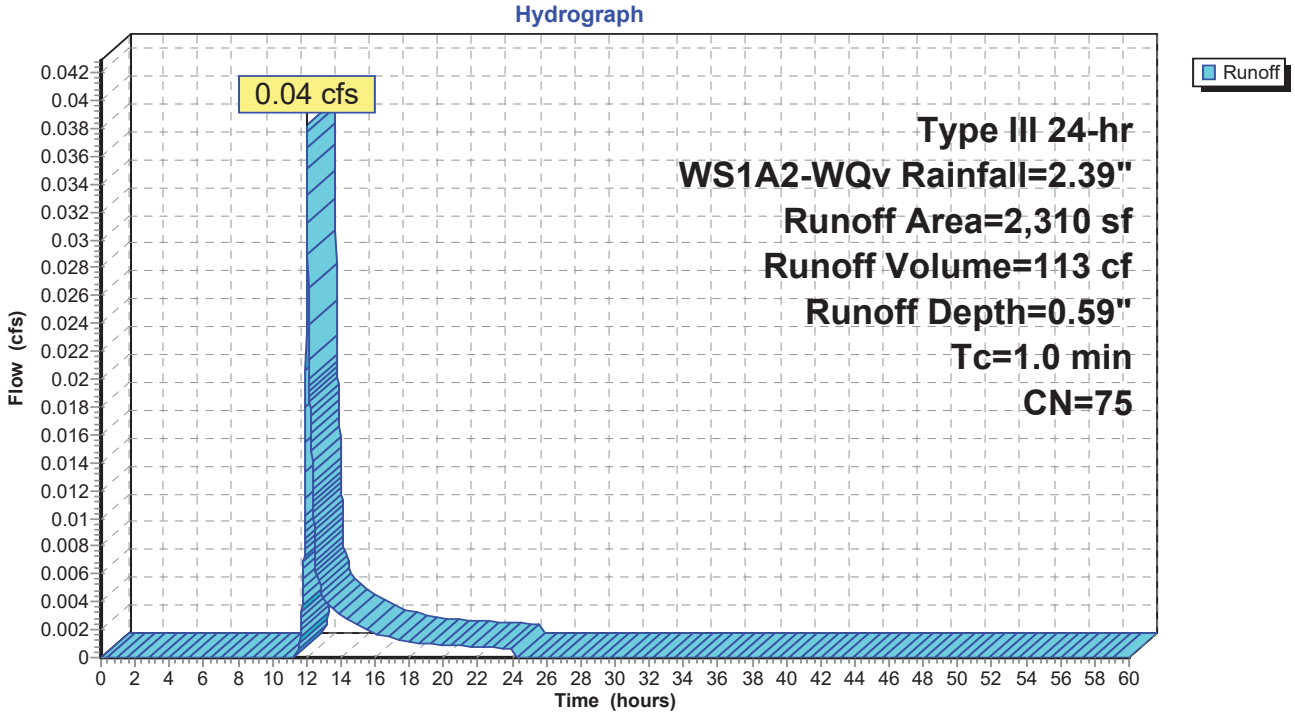
Runoff = 0.04 cfs @ 12.02 hrs, Volume= 113 cf, Depth= 0.59"
Routed to Pond DIB : 18"X18" Drain Inlet (DI-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WS1A2-WQv Rainfall=2.39"

	Area (sf)	CN	Description
	1,113	61	>75% Grass cover, Good, HSG B
*	853	98	Paved parking, HSG D
*	344	61	Rain Garden 1A-2-1
	2,310	75	Weighted Average
	1,457		63.07% Pervious Area
	853		36.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1A-2: WS-1A-2



Summary for Pond DIB: 18"X18" Drain Inlet (DI-B)

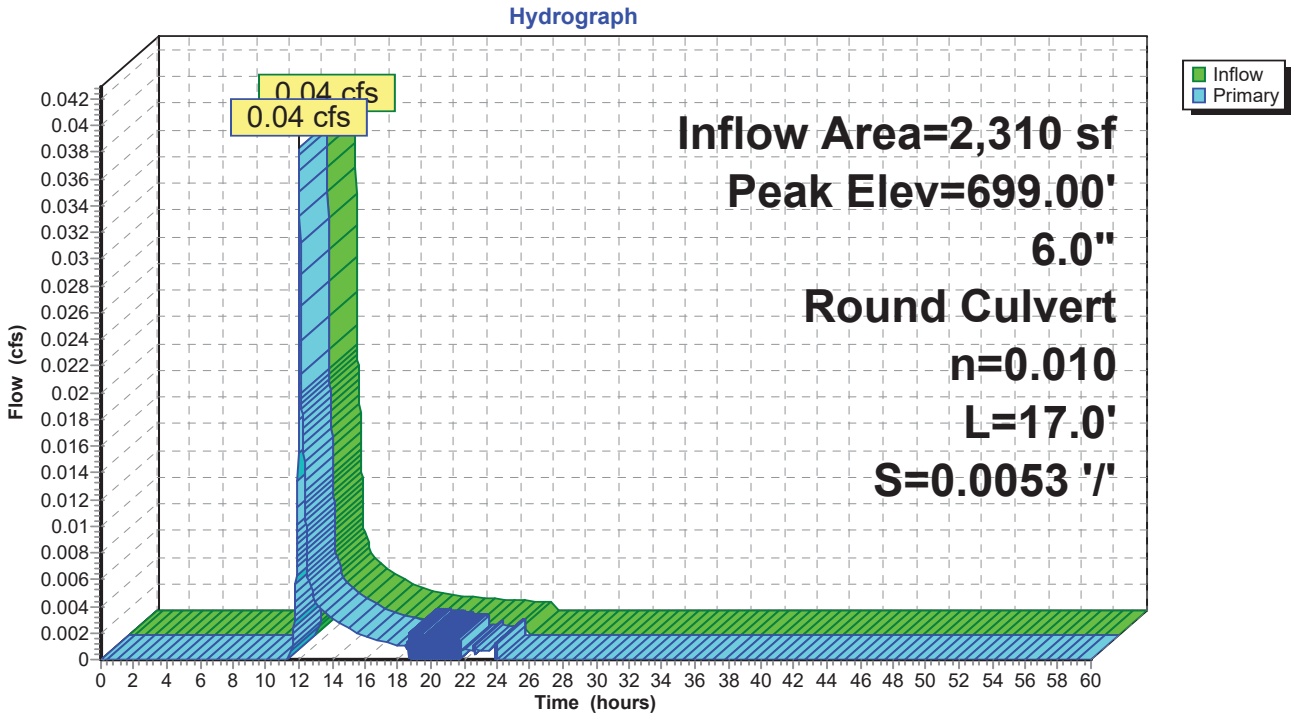
Inflow Area = 2,310 sf, 36.93% Impervious, Inflow Depth = 0.59" for WS1A2-WQv event
Inflow = 0.04 cfs @ 12.02 hrs, Volume= 113 cf
Outflow = 0.04 cfs @ 12.02 hrs, Volume= 113 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 12.02 hrs, Volume= 113 cf
Routed to Pond RG1A-2 : Rain Garden 1A-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 699.00' @ 24.00 hrs
Flood Elev= 700.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	698.59'	**6.0" Round 6" PVC (RG-#1A-1)** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 698.50' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.04 cfs @ 12.02 hrs HW=698.72' TW=697.58' (Dynamic Tailwater)
↑—**1=6" PVC (RG-#1A-1)** (Barrel Controls 0.04 cfs @ 1.40 fps)

Pond DIB: 18"X18" Drain Inlet (DI-B)



Summary for Pond RG1A-2: Rain Garden 1A-2

Inflow Area = 2,310 sf, 36.93% Impervious, Inflow Depth = 0.59" for WS1A2-WQv event
Inflow = 0.04 cfs @ 12.02 hrs, Volume= 113 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach HW : 18" HDPE Culvert (Headwall)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 698.96' @ 24.07 hrs Surf.Area= 326 sf Storage= 113 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	697.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	698.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

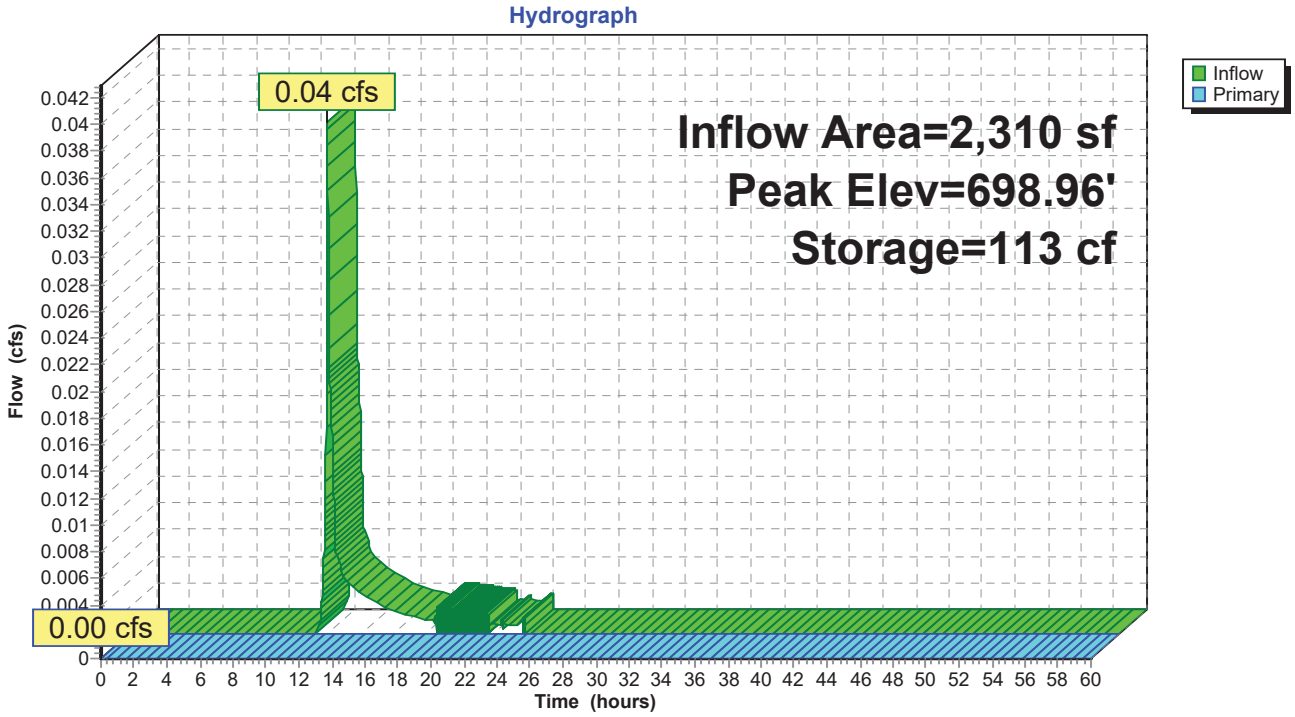
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.00	129	0	0
698.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.50	129	0	0
699.00	204	83	83
699.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	699.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=697.00' TW=696.00' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1A-2: Rain Garden 1A-2



Events for Subcatchment WS1A-2: WS-1A-2

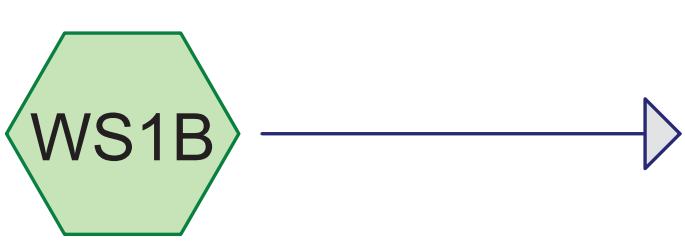
Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
WS1A2-WQv	**2.39**	**0.04**	**113**	**0.59**

Events for Pond DIB: 18"X18" Drain Inlet (DI-B)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1A2-WQv	**0.04**	**0.04**	**699.00**	**0**

Events for Pond RG1A-2: Rain Garden 1A-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1A2-WQv	**0.04**	**0.00**	**698.96**	**113**



WS-1B

Rain Garden 1B

Subcat Reach Pond Link

Routing Diagram for Proposed Condition (2023-05-08)
Prepared by Hudson Engineering & Consulting, P.C., Printed 5/17/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WS1B-WQv	Type III 24-hr		Default	24.00	1	2.35	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,098	61	>75% Grass cover, Good, HSG B (WS1B)
795	98	Paved parking, HSG D (WS1B)
1,893	**77**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
1,098	HSG B	WS1B
0	HSG C	
795	HSG D	WS1B
0	Other	
1,893		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	1,098	0	0	0	1,098	>75% Grass cover, Good	
0	0	0	795	0	795	Paved parking	
0	**1,098**	**0**	**795**	**0**	**1,893**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS1B: WS-1B Runoff Area=1,893 sf 42.00% Impervious Runoff Depth=0.65"
Flow Length=39' Slope=0.1026 '/' Tc=3.4 min CN=77 Runoff=0.03 cfs 102 cf

Pond RG1B: Rain Garden 1B Peak Elev=699.32' Storage=102 cf Inflow=0.03 cfs 102 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 1,893 sf Runoff Volume = 102 cf Average Runoff Depth = 0.65"
58.00% Pervious = 1,098 sf 42.00% Impervious = 795 sf

Summary for Subcatchment WS1B: WS-1B

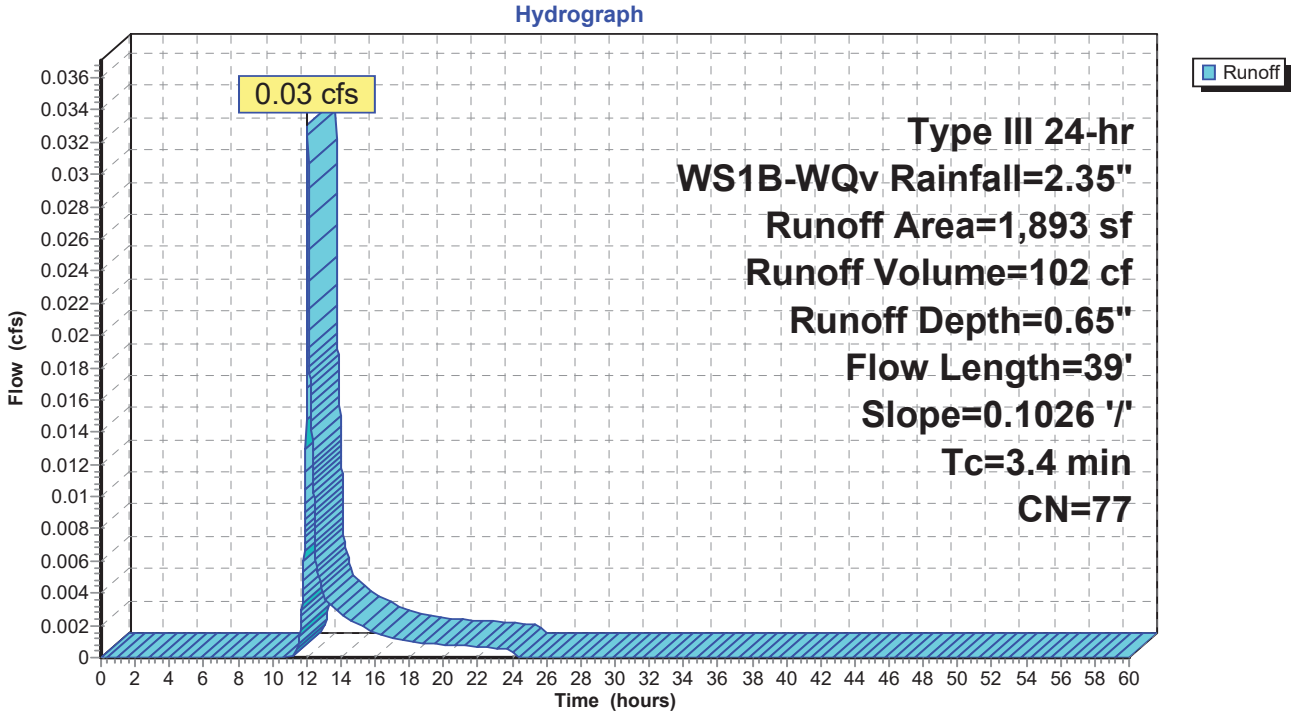
Runoff = 0.03 cfs @ 12.06 hrs, Volume= 102 cf, Depth= 0.65"
Routed to Pond RG1B : Rain Garden 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WS1B-WQv Rainfall=2.35"

	Area (sf)	CN	Description
	1,098	61	>75% Grass cover, Good, HSG B
*	795	98	Paved parking, HSG D
	1,893	77	Weighted Average
	1,098		58.00% Pervious Area
	795		42.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	39	0.1026	0.19		**Sheet Flow, A->B** Grass: Dense n= 0.240 P2= 3.30"

Subcatchment WS1B: WS-1B



Summary for Pond RG1B: Rain Garden 1B

Inflow Area = 1,893 sf, 42.00% Impervious, Inflow Depth = 0.65" for WS1B-WQv event
Inflow = 0.03 cfs @ 12.06 hrs, Volume= 102 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DI-2 : 24"X24" Drain Inlet (DI-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 699.32' @ 24.20 hrs Surf.Area= 355 sf Storage= 102 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	697.50'	46 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 228 cf Overall x 20.0% Voids
#2	699.00'	236 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		281 cf	Total Available Storage

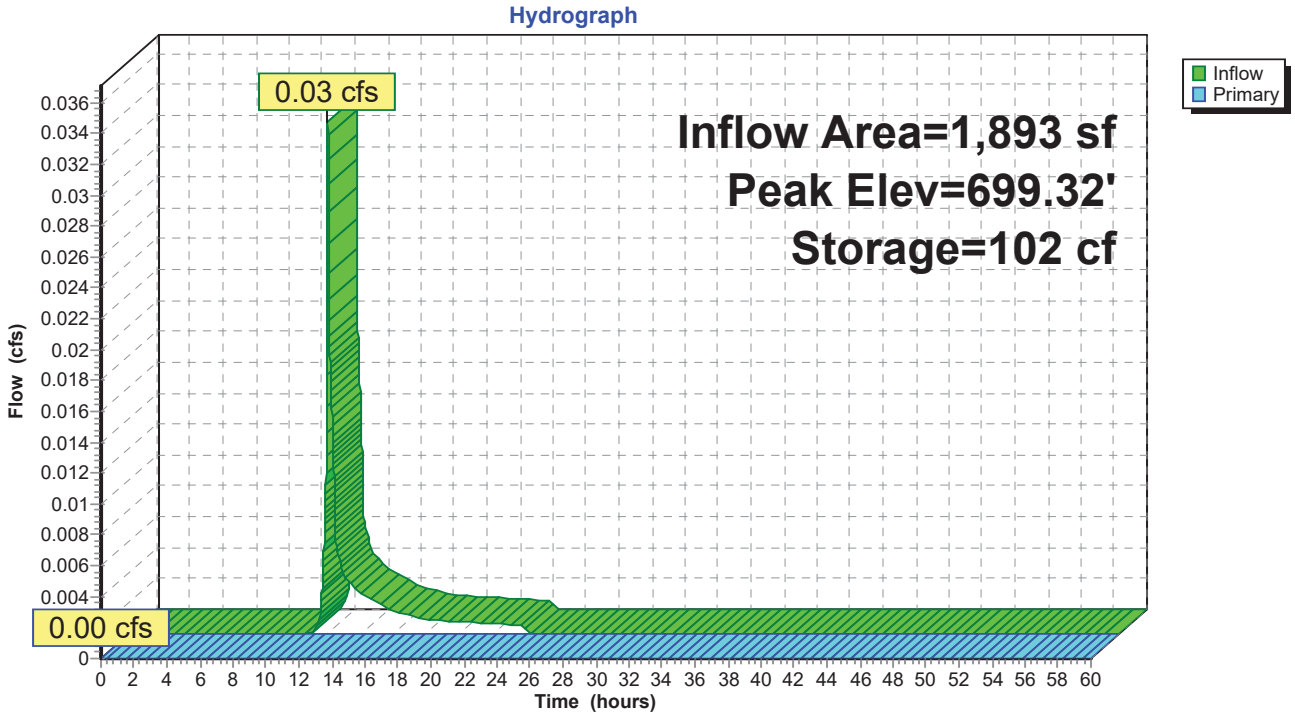
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.50	152	0	0
699.00	152	228	228

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
699.00	152	0	0
699.50	232	96	96
700.00	326	140	236

Device	Routing	Invert	Outlet Devices
#1	Primary	699.50'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=697.50' TW=693.45' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1B: Rain Garden 1B

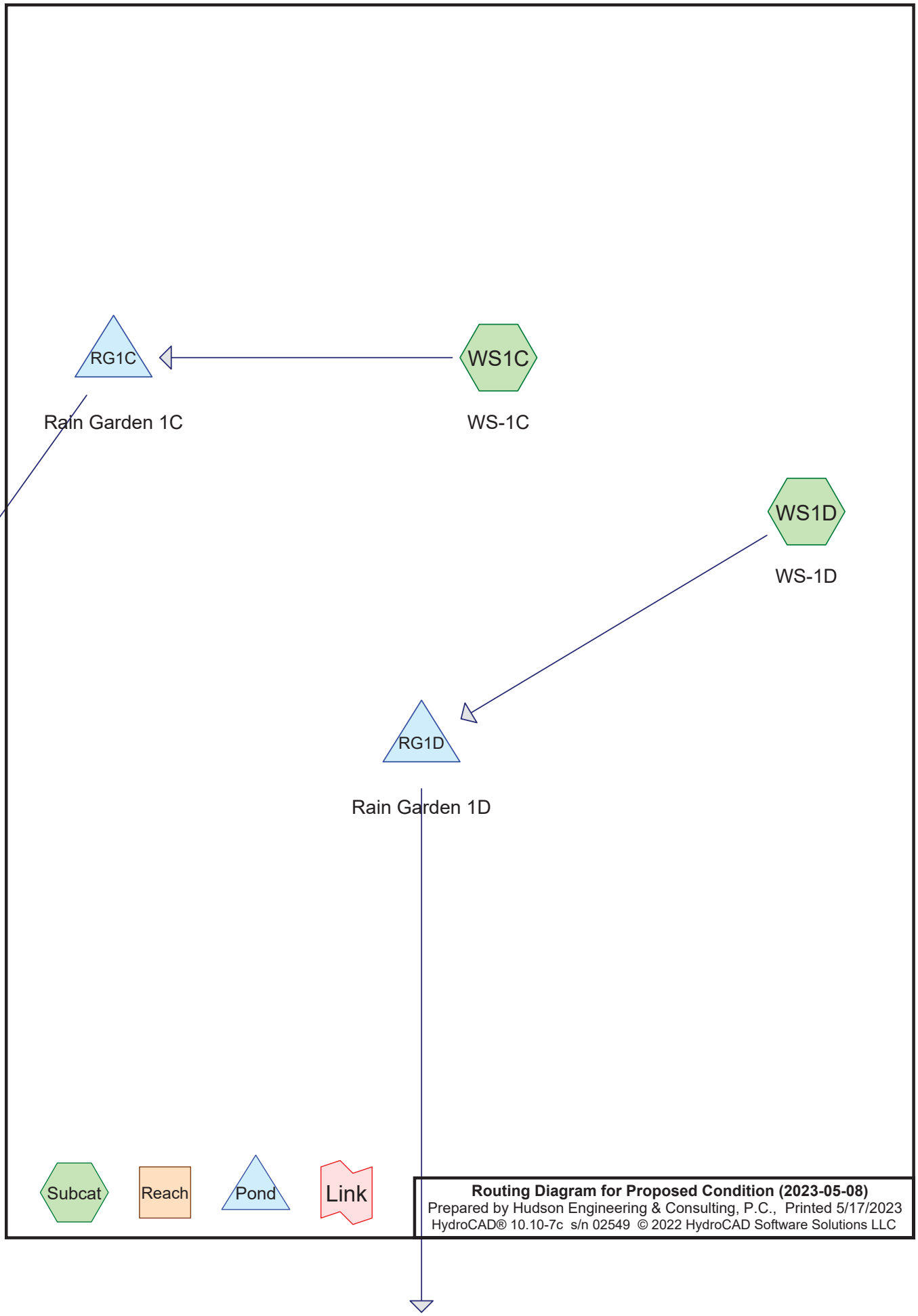


Events for Subcatchment WS1B: WS-1B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
WS1B-WQv	**2.35**	**0.03**	**102**	**0.65**

Events for Pond RG1B: Rain Garden 1B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1B-WQv	**0.03**	**0.00**	**699.32**	**102**


RG1C
Rain Garden 1C
WS1C
WS-1C
WS1D
WS-1D
RG1D
Rain Garden 1D
Subcat
Reach
Pond
Link
Routing Diagram for Proposed Condition (2023-05-08)
Prepared by Hudson Engineering & Consulting, P.C., Printed 5/17/2023
HydroCAD® 10.10-7c s/n 02549 © 2022 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	WS1C/D-WQv	Type III 24-hr		Default	24.00	1	2.15	2

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
344	61	>75% Grass cover, Good, HSG B (WS1C)
344	61	Rain Garden (WS1D)
1,600	98	Roof (WS1C, WS1D)
2,288	**87**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
344	HSG B	WS1C
0	HSG C	
0	HSG D	
1,944	Other	WS1C, WS1D
2,288		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	344	0	0	0	344	>75% Grass cover, Good	
0	0	0	0	344	344	Rain Garden	
0	0	0	0	1,600	1,600	Roof	
0	**344**	**0**	**0**	**1,944**	**2,288**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS1C: WS-1C Runoff Area=1,144 sf 69.93% Impervious Runoff Depth=1.02"
Tc=1.0 min CN=87 Runoff=0.04 cfs 98 cf

Subcatchment WS1D: WS-1D Runoff Area=1,144 sf 69.93% Impervious Runoff Depth=1.02"
Tc=1.0 min CN=87 Runoff=0.04 cfs 98 cf

Pond RG1C: Rain Garden 1C Peak Elev=705.88' Storage=98 cf Inflow=0.04 cfs 98 cf
Outflow=0.00 cfs 0 cf

Pond RG1D: Rain Garden 1D Peak Elev=704.88' Storage=98 cf Inflow=0.04 cfs 98 cf
Outflow=0.00 cfs 0 cf

Total Runoff Area = 2,288 sf Runoff Volume = 195 cf Average Runoff Depth = 1.02"
30.07% Pervious = 688 sf 69.93% Impervious = 1,600 sf

Summary for Subcatchment WS1C: WS-1C

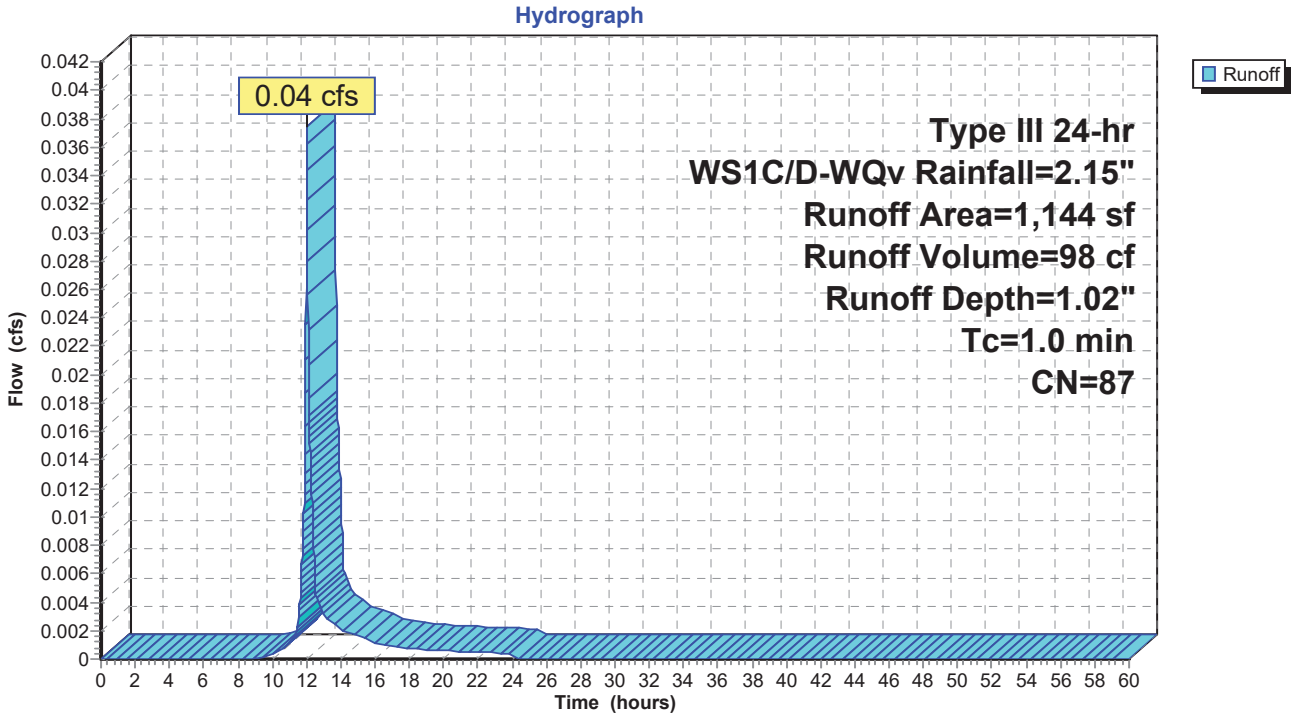
Runoff = 0.04 cfs @ 12.02 hrs, Volume= 98 cf, Depth= 1.02"
Routed to Pond RG1C : Rain Garden 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WS1C/D-WQv Rainfall=2.15"

	Area (sf)	CN	Description
*	800	98	Roof
	344	61	>75% Grass cover, Good, HSG B
	1,144	87	Weighted Average
	344		30.07% Pervious Area
	800		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1C: WS-1C



Summary for Subcatchment WS1D: WS-1D

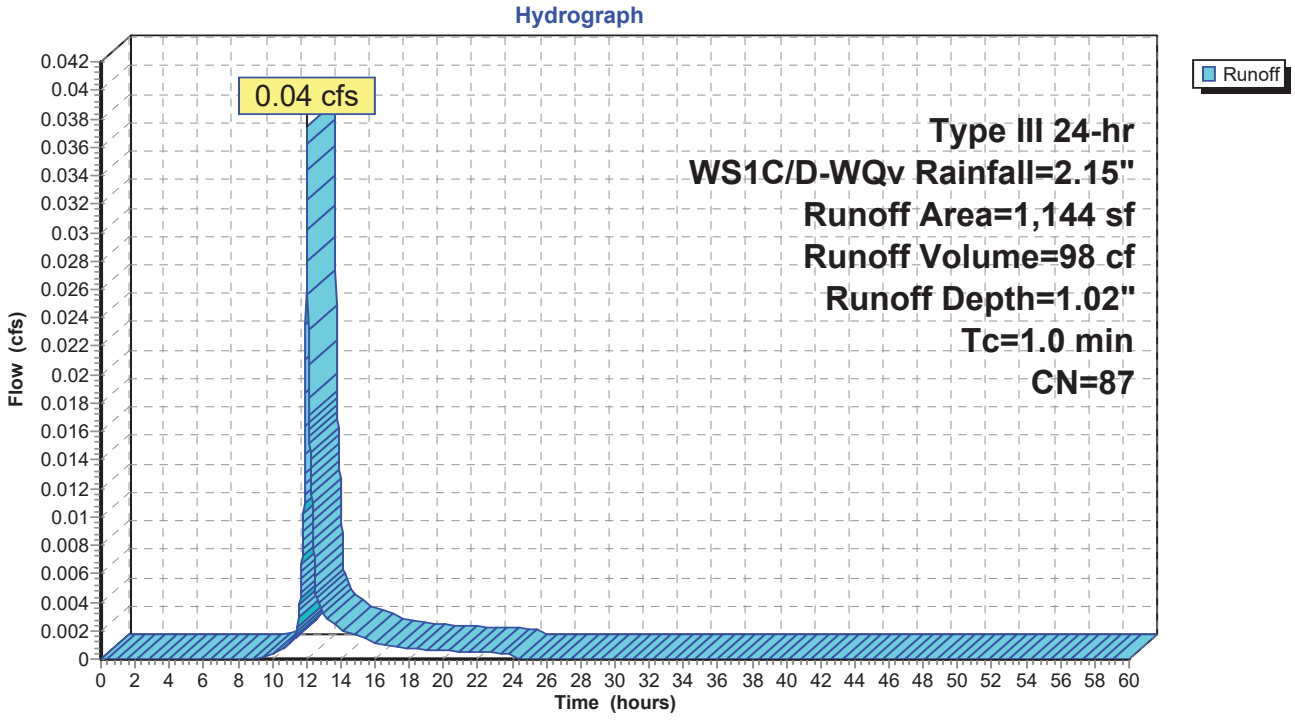
Runoff = 0.04 cfs @ 12.02 hrs, Volume= 98 cf, Depth= 1.02"
Routed to Pond RG1D : Rain Garden 1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WS1C/D-WQv Rainfall=2.15"

	Area (sf)	CN	Description
*	800	98	Roof
*	344	61	Rain Garden
	1,144	87	Weighted Average
	344		30.07% Pervious Area
	800		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1D: WS-1D



Summary for Pond RG1C: Rain Garden 1C

Inflow Area = 1,144 sf, 69.93% Impervious, Inflow Depth = 1.02" for WS1C/D-WQv event
Inflow = 0.04 cfs @ 12.02 hrs, Volume= 98 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach HW : 18" HDPE Culvert (Headwall)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 705.88' @ 24.07 hrs Surf.Area= 314 sf Storage= 98 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	704.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	705.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

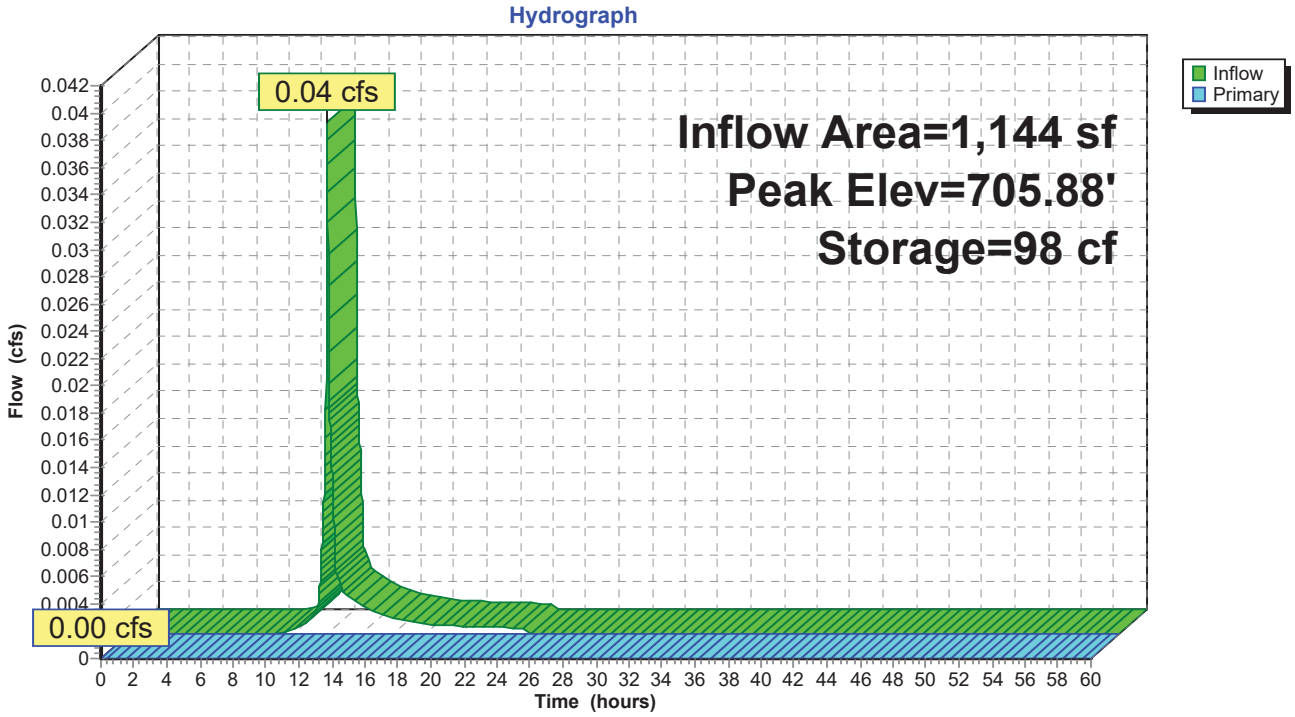
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.00	129	0	0
705.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.50	129	0	0
706.00	204	83	83
706.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	706.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=704.00' TW=696.00' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1C: Rain Garden 1C



Summary for Pond RG1D: Rain Garden 1D

Inflow Area = 1,144 sf, 69.93% Impervious, Inflow Depth = 1.02" for WS1C/D-WQv event
Inflow = 0.04 cfs @ 12.02 hrs, Volume= 98 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DI-1 : 24"X24" Drain Inlet (DI-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 704.88' @ 24.07 hrs Surf.Area= 314 sf Storage= 98 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	703.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	704.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

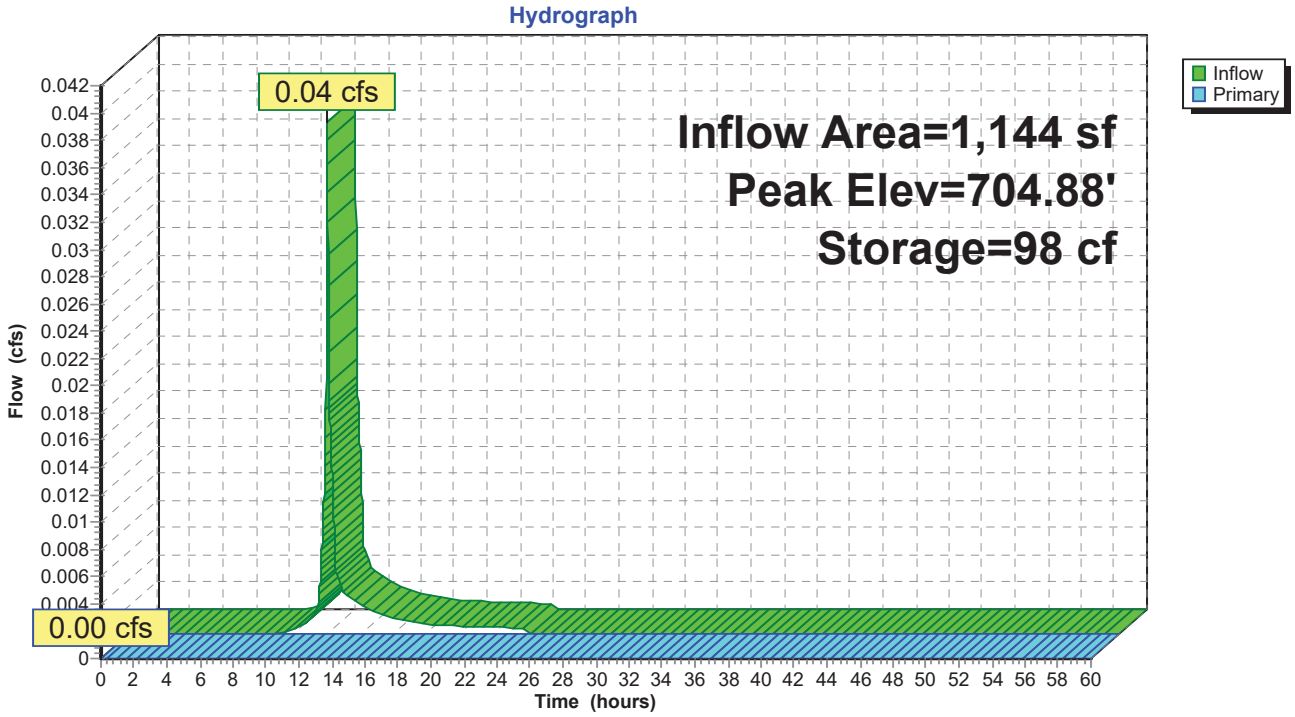
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
703.00	129	0	0
704.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.50	129	0	0
705.00	204	83	83
705.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	705.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=703.00' TW=678.20' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1D: Rain Garden 1D



Events for Subcatchment WS1C: WS-1C

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
WS1C/D-WQv	**2.15**	**0.04**	**98**	**1.02**

Events for Subcatchment WS1D: WS-1D

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
WS1C/D-WQv	**2.15**	**0.04**	**98**	**1.02**

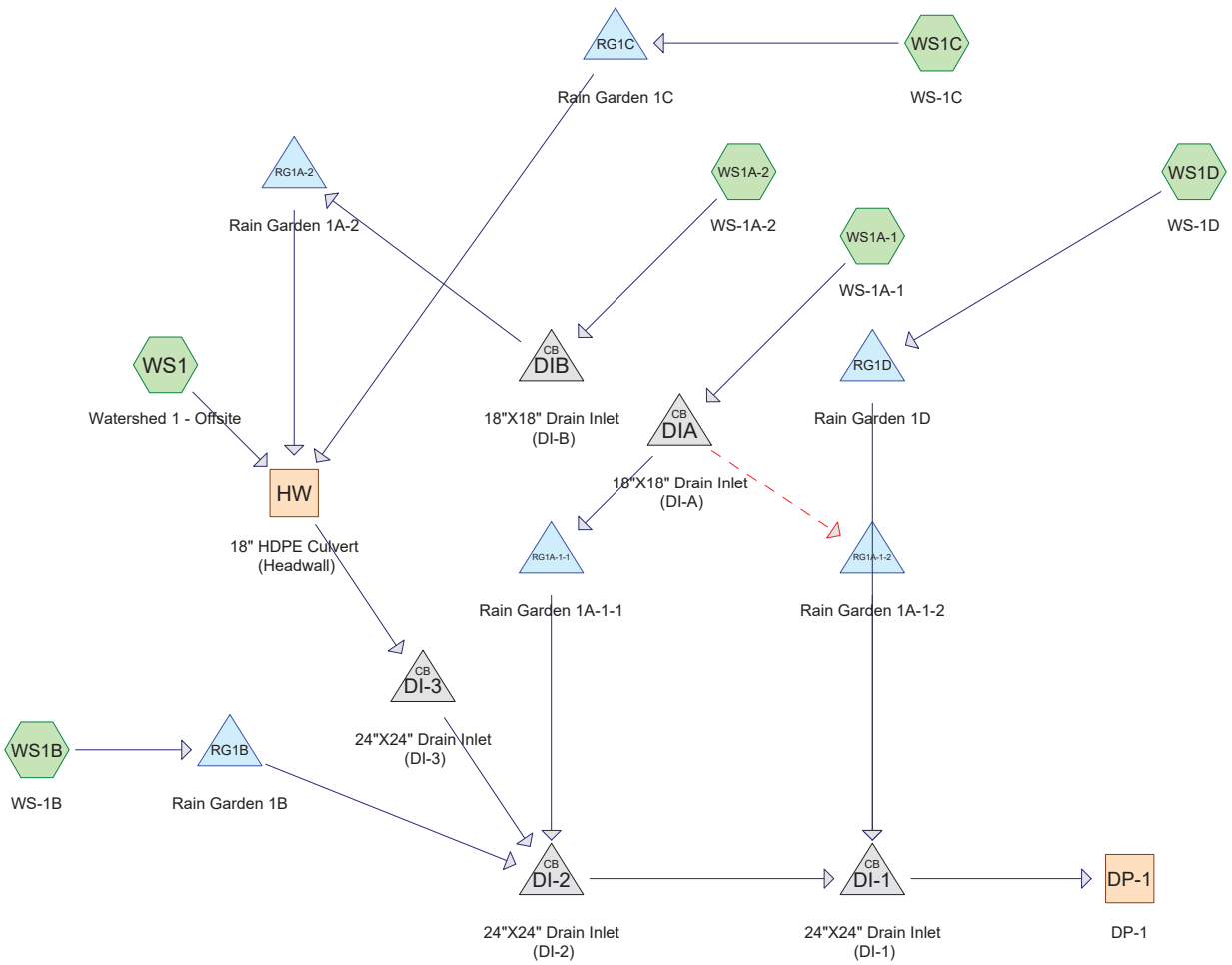
Events for Pond RG1C: Rain Garden 1C

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1C/D-WQv	**0.04**	**0.00**	**705.88**	**98**

Events for Pond RG1D: Rain Garden 1D

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
WS1C/D-WQv	**0.04**	**0.00**	**704.88**	**98**

Culvert Sizing Analysis
10-year Storm



Subcat Reach Pond Link

Routing Diagram for Proposed Condition (2023-05-08)
Prepared by Hudson Engineering & Consulting, P.C., Printed 5/17/2023
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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	10-Year	Type III 24-hr		Default	24.00	1	5.09	2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
73,504	61	>75% Grass cover, Good, HSG B (WS1, WS1A-1, WS1A-2, WS1B, WS1C)
3,237	80	>75% Grass cover, Good, HSG D (WS1)
33,797	98	Impervious (WS1)
3,243	98	Paved parking, HSG D (WS1A-1, WS1A-2, WS1B)
344	61	Rain Garden (WS1D)
344	61	Rain Garden 1A-1-1 (WS1A-1)
344	61	Rain Garden 1A-1-2 (WS1A-1)
344	61	Rain Garden 1A-2-1 (WS1A-2)
1,600	98	Roof (WS1C, WS1D)
73,723	55	Woods, Good, HSG B (WS1)
29,717	77	Woods, Good, HSG D (WS1)
220,197	**68**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
147,227	HSG B	WS1, WS1A-1, WS1A-2, WS1B, WS1C
0	HSG C	
36,197	HSG D	WS1, WS1A-1, WS1A-2, WS1B
36,773	Other	WS1, WS1A-1, WS1A-2, WS1C, WS1D
220,197		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Sub Num
0	73,504	0	3,237	0	76,741	>75% Grass cover, Good	
0	0	0	0	33,797	33,797	Impervious	
0	0	0	3,243	0	3,243	Paved parking	
0	0	0	0	344	344	Rain Garden	
0	0	0	0	344	344	Rain Garden 1A-1-1	
0	0	0	0	344	344	Rain Garden 1A-1-2	
0	0	0	0	344	344	Rain Garden 1A-2-1	
0	0	0	0	1,600	1,600	Roof	
0	73,723	0	29,717	0	103,440	Woods, Good	
0	**147,227**	**0**	**36,197**	**36,773**	**220,197**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.01 hrs, 6001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment WS1: Watershed 1 - Offsite Runoff Area=210,132 sf 16.08% Impervious Runoff Depth=1.87"
Flow Length=604' Tc=24.0 min CN=67 Runoff=6.35 cfs 32,675 cf

Subcatchment WS1A-1: WS-1A-1 Runoff Area=3,574 sf 44.63% Impervious Runoff Depth=2.79"
Flow Length=181' Tc=2.4 min CN=78 Runoff=0.31 cfs 830 cf

Subcatchment WS1A-2: WS-1A-2 Runoff Area=2,310 sf 36.93% Impervious Runoff Depth=2.52"
Tc=1.0 min CN=75 Runoff=0.19 cfs 486 cf

Subcatchment WS1B: WS-1B Runoff Area=1,893 sf 42.00% Impervious Runoff Depth=2.70"
Flow Length=39' Slope=0.1026 '/' Tc=3.4 min CN=77 Runoff=0.15 cfs 426 cf

Subcatchment WS1C: WS-1C Runoff Area=1,144 sf 69.93% Impervious Runoff Depth=3.65"
Tc=1.0 min CN=87 Runoff=0.13 cfs 348 cf

Subcatchment WS1D: WS-1D Runoff Area=1,144 sf 69.93% Impervious Runoff Depth=3.65"
Tc=1.0 min CN=87 Runoff=0.13 cfs 348 cf

Reach DP-1: DP-1 Inflow=6.61 cfs 34,372 cf
Outflow=6.61 cfs 34,372 cf

Reach HW: 18" HDPE Culvert Avg. Flow Depth=0.55' Max Vel=11.10 fps Inflow=6.44 cfs 33,265 cf
18.0" Round Pipe n=0.013 L=19.3' S=0.0472 '/' Capacity=22.81 cfs Outflow=6.44 cfs 33,265 cf

Pond DI-1: 24"X24" Drain Inlet (DI-1) Peak Elev=679.92' Inflow=6.61 cfs 34,372 cf
18.0" Round Culvert n=0.013 L=50.0' S=0.0374 '/' Outflow=6.61 cfs 34,372 cf

Pond DI-2: 24"X24" Drain Inlet (DI-2) Peak Elev=695.13' Inflow=6.49 cfs 33,549 cf
18.0" Round Culvert n=0.013 L=138.9' S=0.1098 '/' Outflow=6.49 cfs 33,549 cf

Pond DI-3: 24"X24" Drain Inlet (DI-3) Peak Elev=696.76' Inflow=6.44 cfs 33,265 cf
18.0" Round Culvert n=0.013 L=35.8' S=0.0458 '/' Outflow=6.44 cfs 33,265 cf

Pond DIA: 18"X18" Drain Inlet (DI-A) Peak Elev=698.94' Inflow=0.31 cfs 830 cf
Primary=0.10 cfs 112 cf Secondary=0.24 cfs 718 cf Outflow=0.31 cfs 830 cf

Pond DIB: 18"X18" Drain Inlet (DI-B) Peak Elev=699.08' Inflow=0.19 cfs 486 cf
6.0" Round Culvert n=0.010 L=17.0' S=0.0053 '/' Outflow=0.19 cfs 486 cf

Pond RG1A-1-1: Rain Garden 1A-1-1 Peak Elev=698.95' Storage=112 cf Inflow=0.10 cfs 112 cf
Outflow=0.00 cfs 0 cf

Pond RG1A-1-2: Rain Garden 1A-1-2 Peak Elev=697.03' Storage=129 cf Inflow=0.24 cfs 718 cf
Outflow=0.24 cfs 597 cf

Pond RG1A-2: Rain Garden 1A-2 Peak Elev=699.03' Storage=128 cf Inflow=0.19 cfs 486 cf
Outflow=0.18 cfs 364 cf

Pond RG1B: Rain Garden 1B Peak Elev=699.52' Storage=146 cf Inflow=0.15 cfs 426 cf
Outflow=0.11 cfs 284 cf

Pond RG1C: Rain Garden 1C Peak Elev=706.02' Storage=126 cf Inflow=0.13 cfs 348 cf
Outflow=0.13 cfs 226 cf

Pond RG1D: Rain Garden 1D Peak Elev=705.02' Storage=126 cf Inflow=0.13 cfs 348 cf
Outflow=0.13 cfs 226 cf

Total Runoff Area = 220,197 sf Runoff Volume = 35,113 cf Average Runoff Depth = 1.91"
82.45% Pervious = 181,557 sf 17.55% Impervious = 38,640 sf

Summary for Subcatchment WS1: Watershed 1 - Offsite

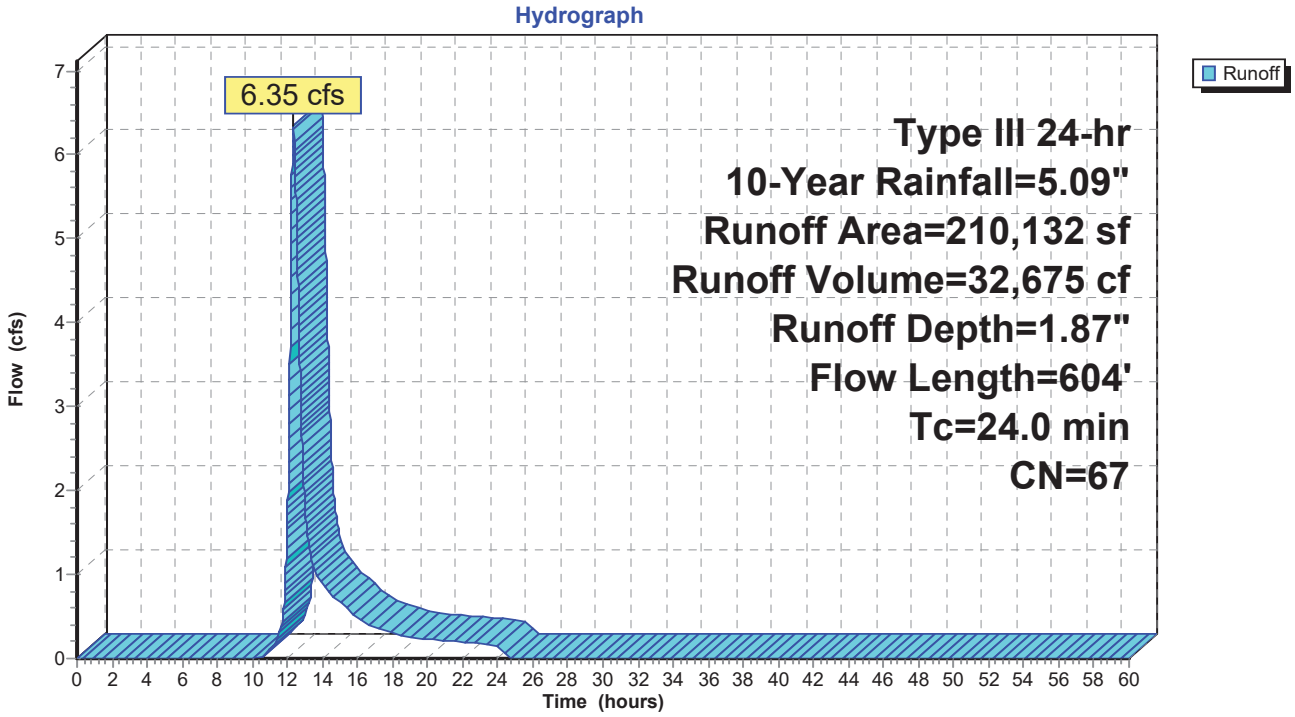
Runoff = 6.35 cfs @ 12.35 hrs, Volume= 32,675 cf, Depth= 1.87"
Routed to Reach HW : 18" HDPE Culvert (Headwall)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
	29,717	77	Woods, Good, HSG D
	73,723	55	Woods, Good, HSG B
	3,237	80	>75% Grass cover, Good, HSG D
	69,658	61	>75% Grass cover, Good, HSG B
*	33,797	98	Impervious
	210,132	67	Weighted Average
	176,335		83.92% Pervious Area
	33,797		16.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.8	99	0.0687	0.13		**Sheet Flow, A->B** Woods: Light underbrush n= 0.400 P2= 3.30"
2.2	178	0.0727	1.35		**Shallow Concentrated Flow, B->C** Woodland Kv= 5.0 fps
0.2	16	0.0031	1.13		**Shallow Concentrated Flow, C->D** Paved Kv= 20.3 fps
6.8	201	0.0050	0.49		**Shallow Concentrated Flow, D->E** Short Grass Pasture Kv= 7.0 fps
1.9	76	0.0020	0.67		**Shallow Concentrated Flow, E->F** Grassed Waterway Kv= 15.0 fps
0.1	34	0.0529	9.23	86.15	**Parabolic Channel, F->G** W=7.00' D=2.00' Area=9.3 sf Perim=8.3' n= 0.040 Earth, cobble bottom, clean sides
24.0	604	Total			

Subcatchment WS1: Watershed 1 - Offsite



Summary for Subcatchment WS1A-1: WS-1A-1

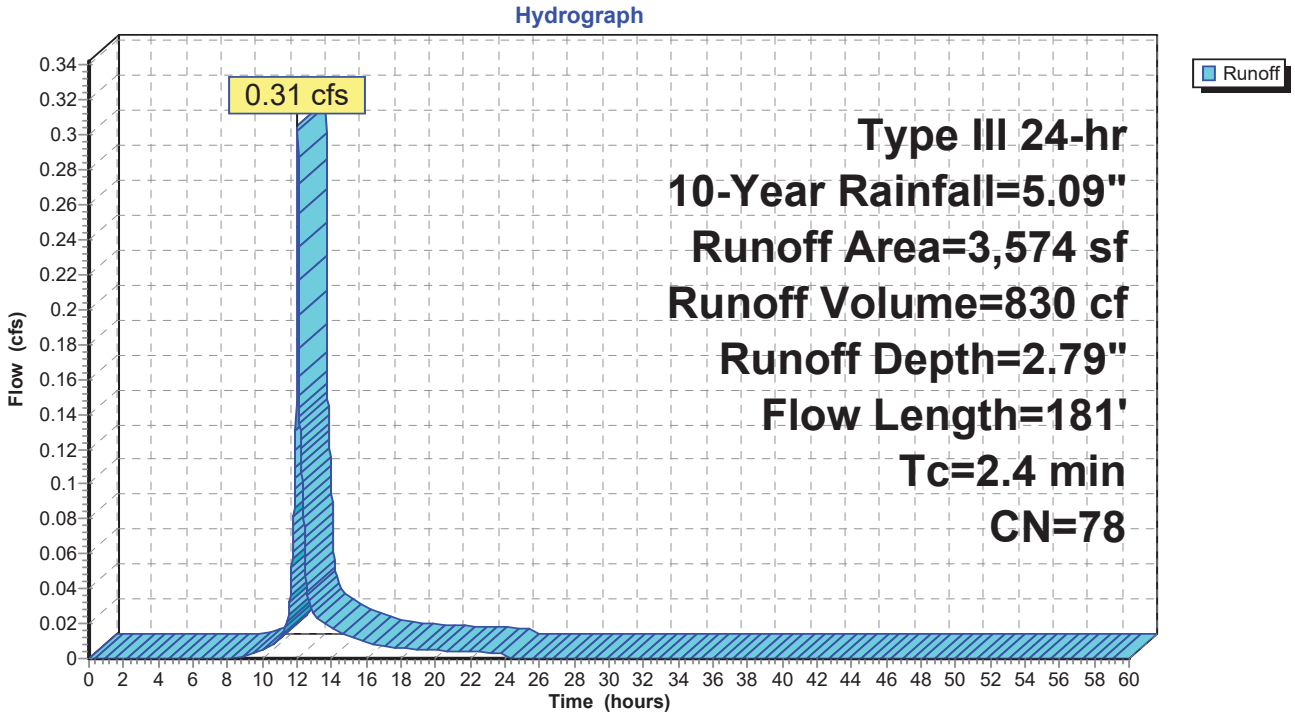
Runoff = 0.31 cfs @ 12.04 hrs, Volume= 830 cf, Depth= 2.79"
Routed to Pond DIA : 18"X18" Drain Inlet (DI-A)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
	1,291	61	>75% Grass cover, Good, HSG B
*	1,595	98	Paved parking, HSG D
*	344	61	Rain Garden 1A-1-1
*	344	61	Rain Garden 1A-1-2
	3,574	78	Weighted Average
	1,979		55.37% Pervious Area
	1,595		44.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	23	0.2326	0.24		**Sheet Flow, A->B** Grass: Dense n= 0.240 P2= 3.30"
0.6	46	0.0283	1.37		**Sheet Flow, B->C** Smooth surfaces n= 0.011 P2= 3.30"
0.2	112	0.1125	7.64	7.64	**Parabolic Channel, C->D** W=3.00' D=0.50' Area=1.0 sf Perim=3.2' n= 0.030 Earth, grassed & winding
2.4	181	Total			

Subcatchment WS1A-1: WS-1A-1



Summary for Subcatchment WS1A-2: WS-1A-2

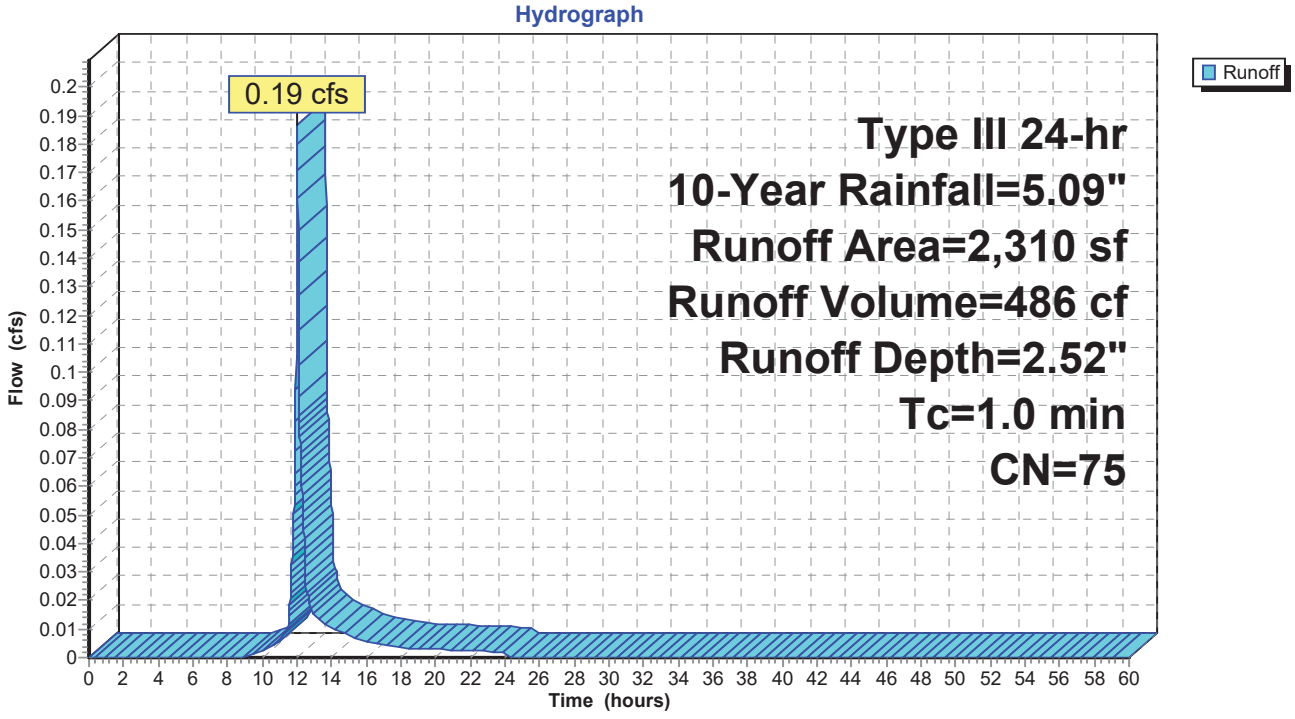
Runoff = 0.19 cfs @ 12.02 hrs, Volume= 486 cf, Depth= 2.52"
Routed to Pond DIB : 18"X18" Drain Inlet (DI-B)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
	1,113	61	>75% Grass cover, Good, HSG B
*	853	98	Paved parking, HSG D
*	344	61	Rain Garden 1A-2-1
	2,310	75	Weighted Average
	1,457		63.07% Pervious Area
	853		36.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1A-2: WS-1A-2



Summary for Subcatchment WS1B: WS-1B

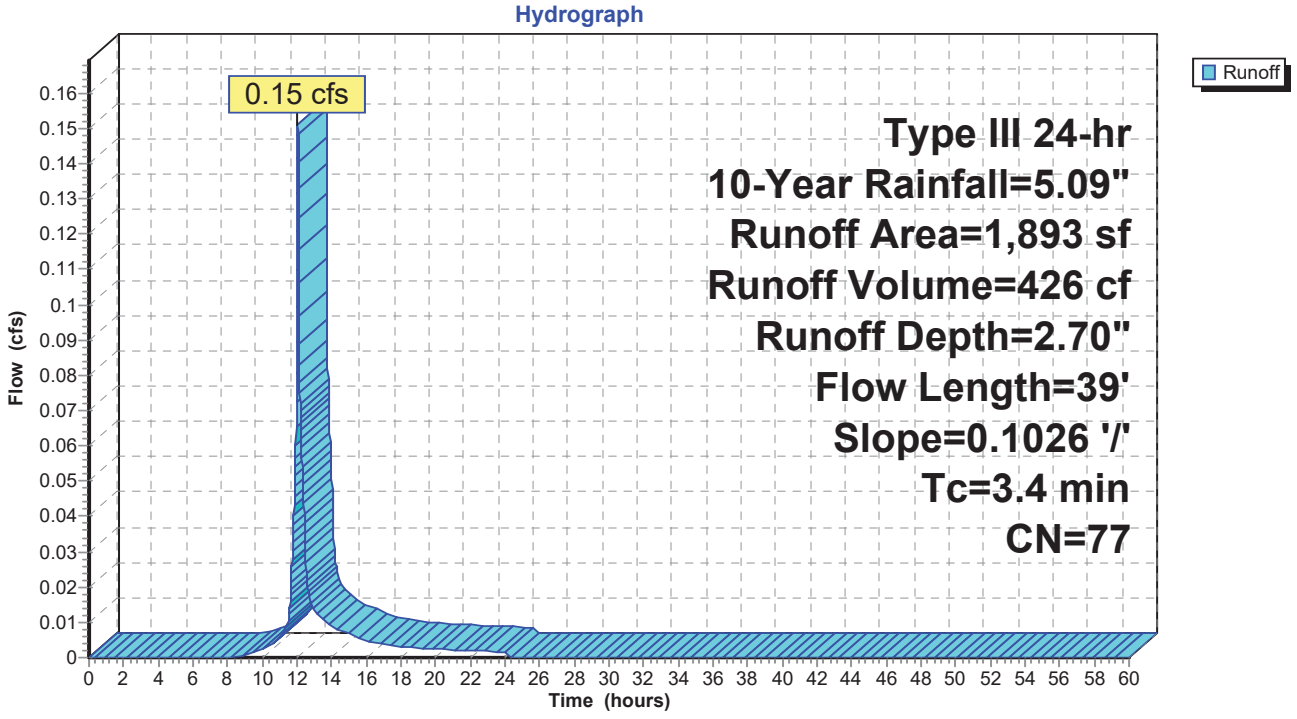
Runoff = 0.15 cfs @ 12.05 hrs, Volume= 426 cf, Depth= 2.70"
Routed to Pond RG1B : Rain Garden 1B

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
	1,098	61	>75% Grass cover, Good, HSG B
*	795	98	Paved parking, HSG D
	1,893	77	Weighted Average
	1,098		58.00% Pervious Area
	795		42.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	39	0.1026	0.19		**Sheet Flow, A->B** Grass: Dense n= 0.240 P2= 3.30"

Subcatchment WS1B: WS-1B



Summary for Subcatchment WS1C: WS-1C

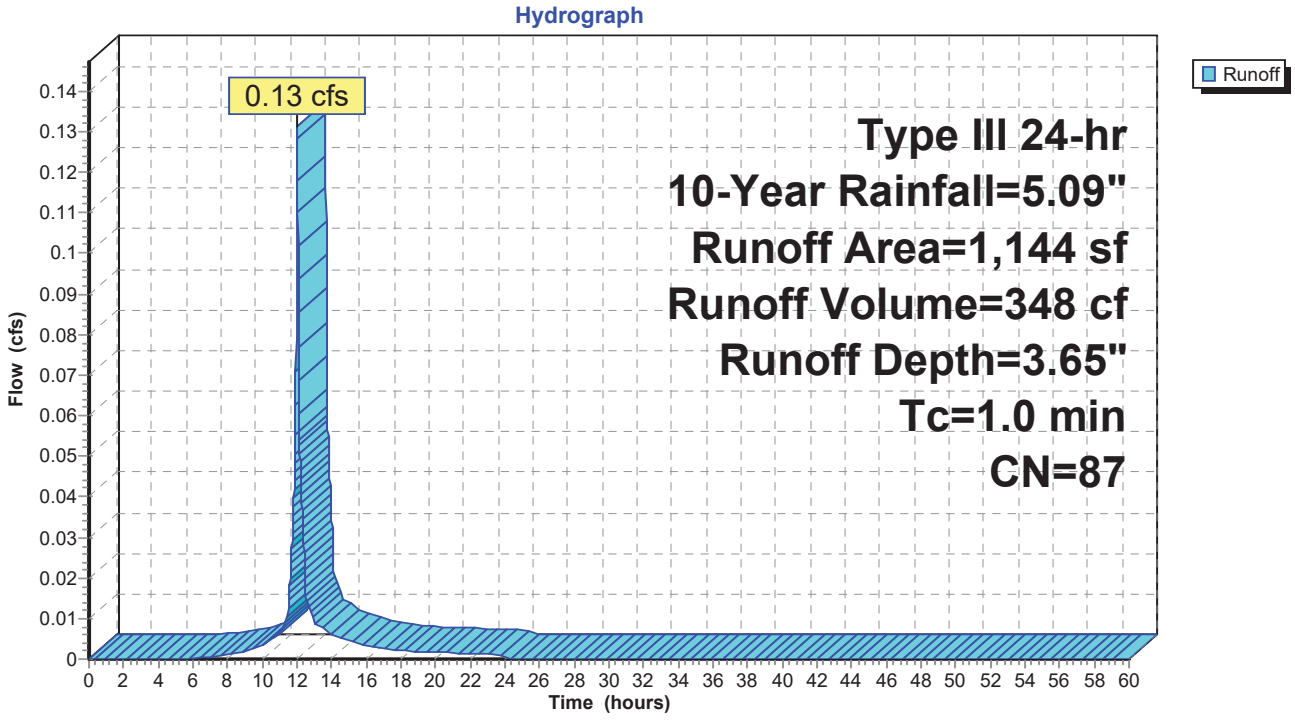
Runoff = 0.13 cfs @ 12.02 hrs, Volume= 348 cf, Depth= 3.65"
Routed to Pond RG1C : Rain Garden 1C

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
*	800	98	Roof
	344	61	>75% Grass cover, Good, HSG B
	1,144	87	Weighted Average
	344		30.07% Pervious Area
	800		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1C: WS-1C



Summary for Subcatchment WS1D: WS-1D

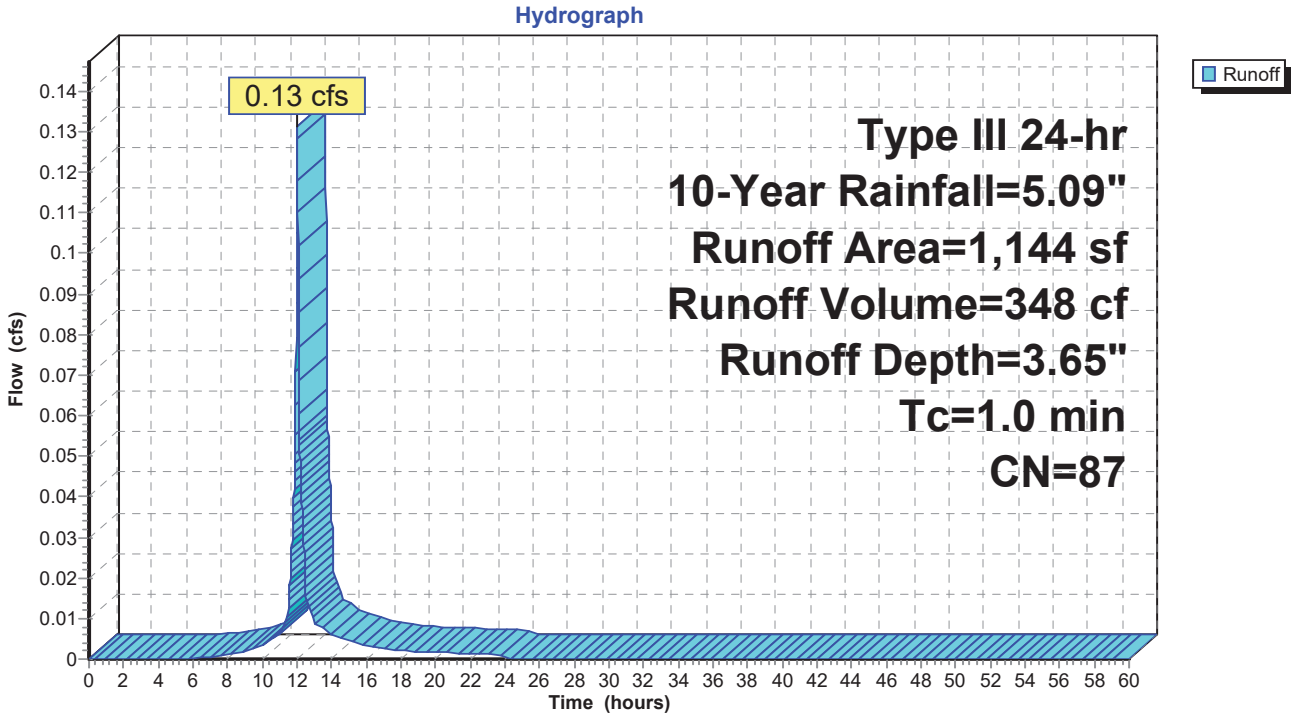
Runoff = 0.13 cfs @ 12.02 hrs, Volume= 348 cf, Depth= 3.65"
Routed to Pond RG1D : Rain Garden 1D

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.09"

	Area (sf)	CN	Description
*	800	98	Roof
*	344	61	Rain Garden
	1,144	87	Weighted Average
	344		30.07% Pervious Area
	800		69.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0					**Direct Entry,**

Subcatchment WS1D: WS-1D

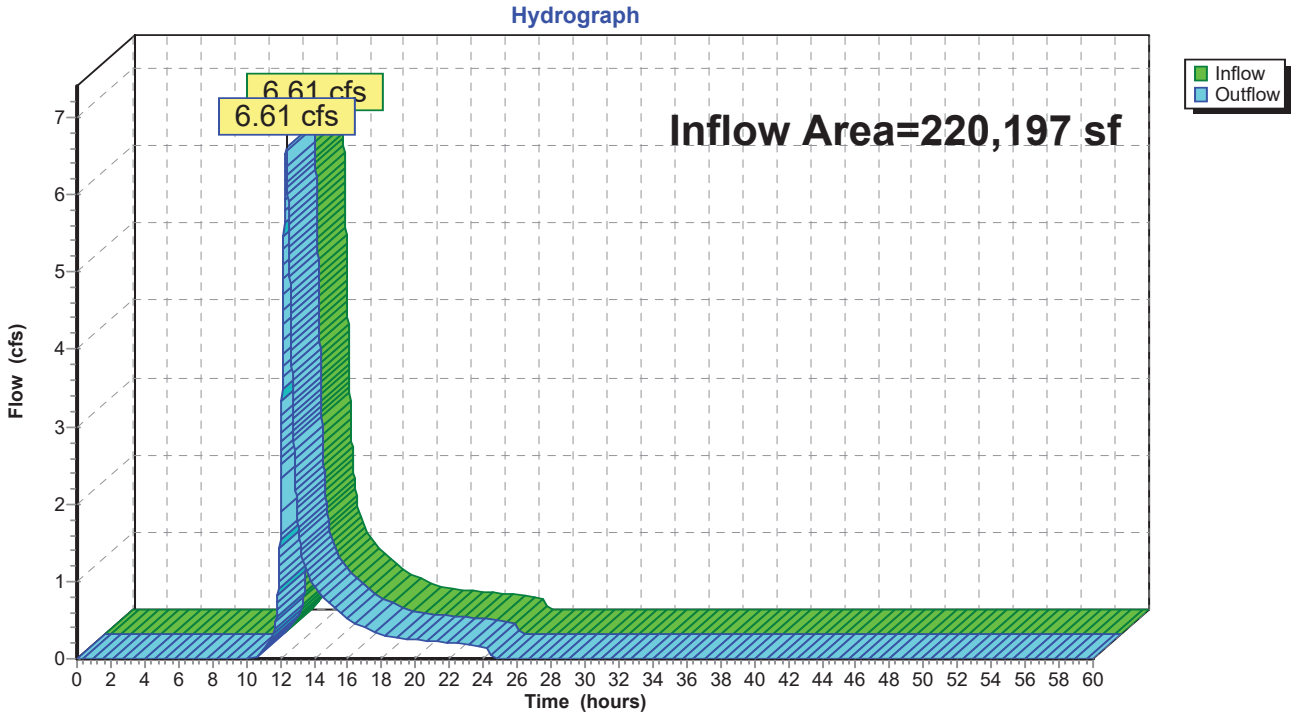


Summary for Reach DP-1: DP-1

Inflow Area = 220,197 sf, 17.55% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 6.61 cfs @ 12.35 hrs, Volume= 34,372 cf
Outflow = 6.61 cfs @ 12.35 hrs, Volume= 34,372 cf, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Reach DP-1: DP-1



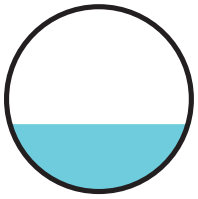
Summary for Reach HW: 18" HDPE Culvert (Headwall)

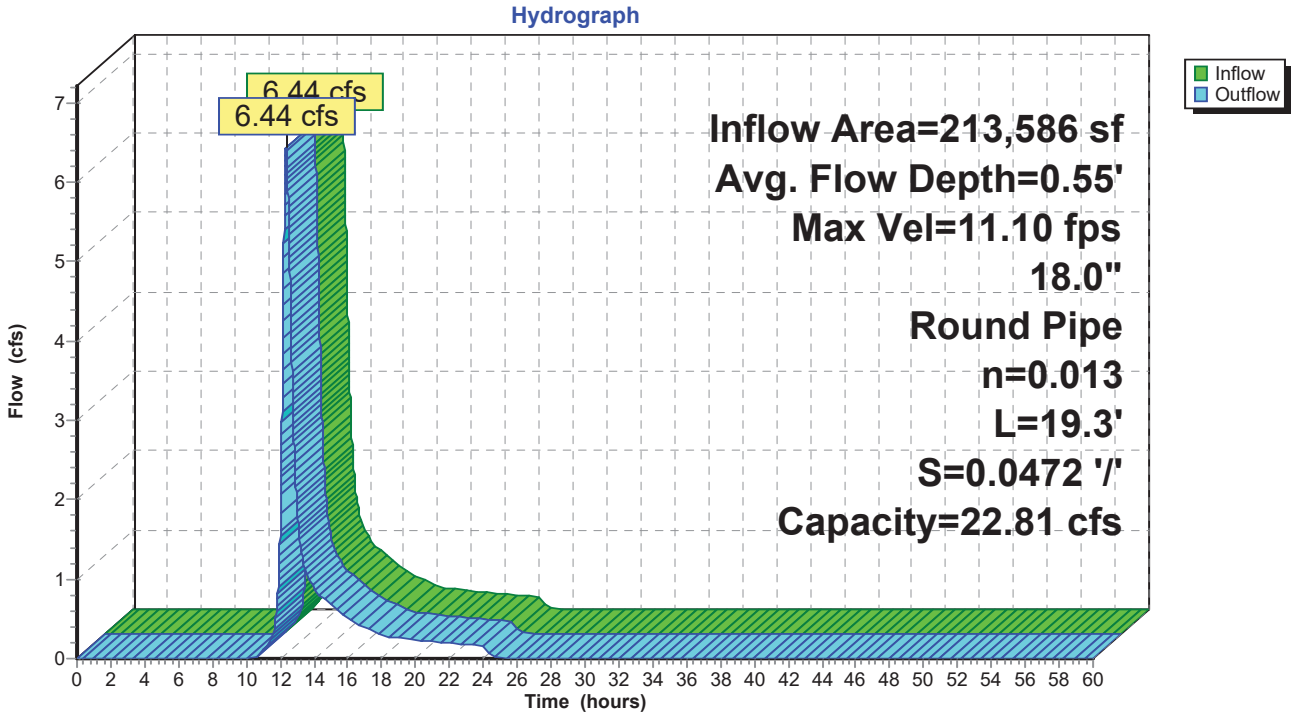
Inflow Area = 213,586 sf, 16.60% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 6.44 cfs @ 12.35 hrs, Volume= 33,265 cf
Outflow = 6.44 cfs @ 12.35 hrs, Volume= 33,265 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond DI-3 : 24"X24" Drain Inlet (DI-3)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 11.10 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 4.73 fps, Avg. Travel Time= 0.1 min

Peak Storage= 11 cf @ 12.35 hrs
Average Depth at Peak Storage= 0.55' , Surface Width= 1.44'
Defined Flood Depth= 2.00' Flow Area= 1.9 sf, Capacity= -9.09 cfs
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 22.81 cfs

18.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 19.3' Slope= 0.0472 '/'
Inlet Invert= 696.00', Outlet Invert= 695.09'





Summary for Pond DI-1: 24"X24" Drain Inlet (DI-1)

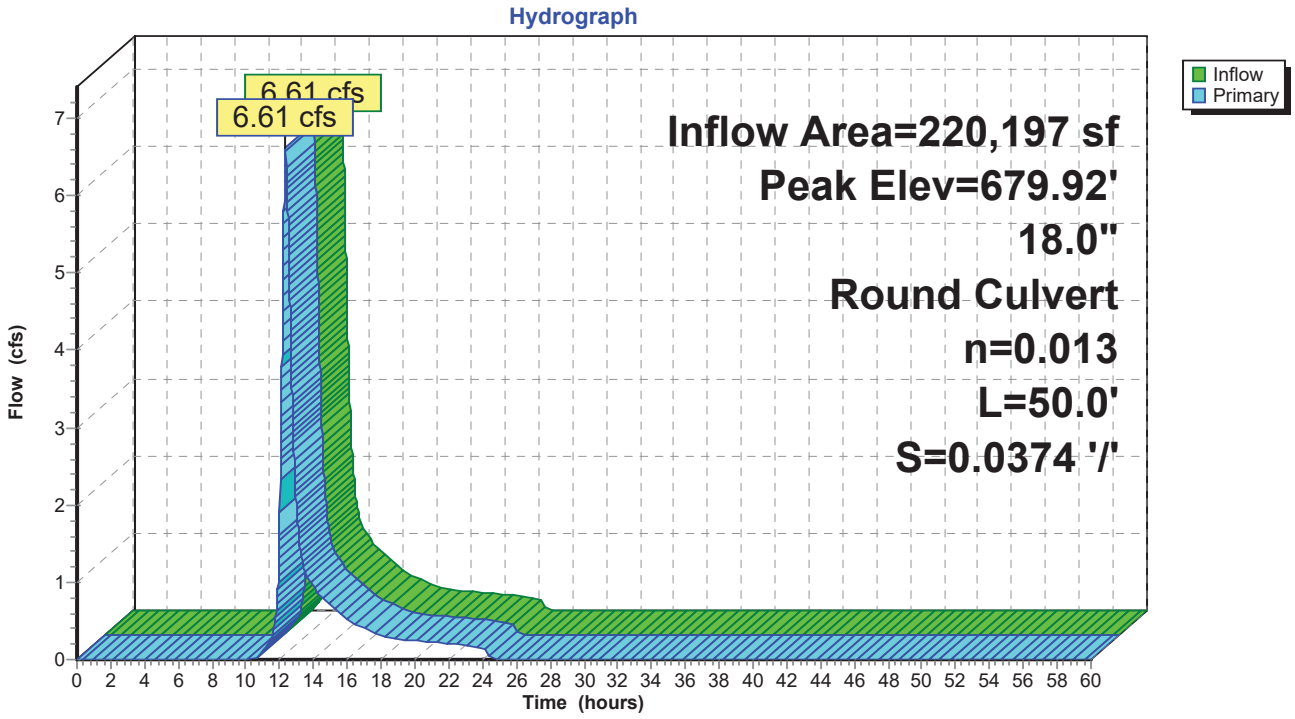
Inflow Area = 220,197 sf, 17.55% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 6.61 cfs @ 12.35 hrs, Volume= 34,372 cf
Outflow = 6.61 cfs @ 12.35 hrs, Volume= 34,372 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.61 cfs @ 12.35 hrs, Volume= 34,372 cf
Routed to Reach DP-1 : DP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 679.92' @ 12.35 hrs
Flood Elev= 681.55'

Device	Routing	Invert	Outlet Devices
#1	Primary	678.20'	**18.0" Round 18" HDPE** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 678.20' / 676.33' S= 0.0374 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.61 cfs @ 12.35 hrs HW=679.92' TW=0.00' (Dynamic Tailwater)
1=18" HDPE (Inlet Controls 6.61 cfs @ 3.74 fps)

Pond DI-1: 24"X24" Drain Inlet (DI-1)



Summary for Pond DI-2: 24"X24" Drain Inlet (DI-2)

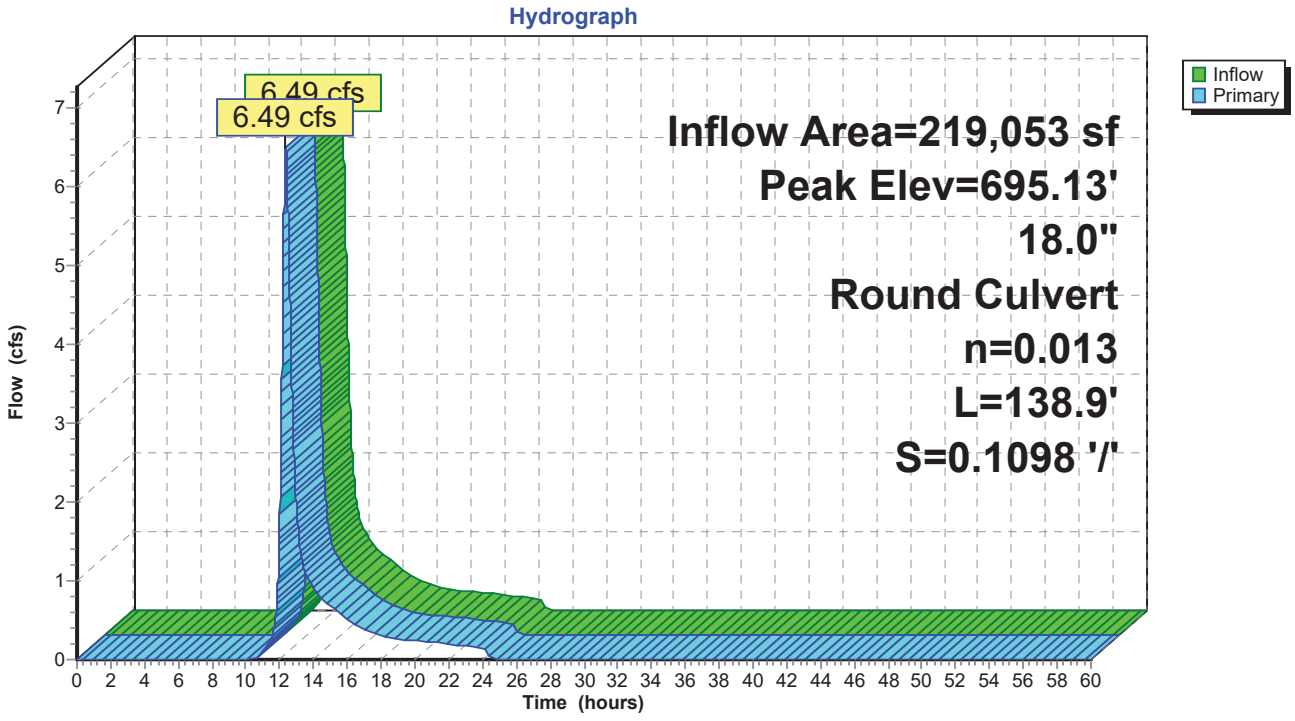
Inflow Area = 219,053 sf, 17.27% Impervious, Inflow Depth = 1.84" for 10-Year event
Inflow = 6.49 cfs @ 12.35 hrs, Volume= 33,549 cf
Outflow = 6.49 cfs @ 12.35 hrs, Volume= 33,549 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.49 cfs @ 12.35 hrs, Volume= 33,549 cf
Routed to Pond DI-1 : 24"X24" Drain Inlet (DI-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 695.13' @ 12.35 hrs
Flood Elev= 696.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	693.45'	**18.0" Round 18" HDPE** L= 138.9' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 693.45' / 678.20' S= 0.1098 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.49 cfs @ 12.35 hrs HW=695.13' TW=679.92' (Dynamic Tailwater)
↑—**1=18" HDPE** (Inlet Controls 6.49 cfs @ 3.67 fps)

Pond DI-2: 24"X24" Drain Inlet (DI-2)



Summary for Pond DI-3: 24"X24" Drain Inlet (DI-3)

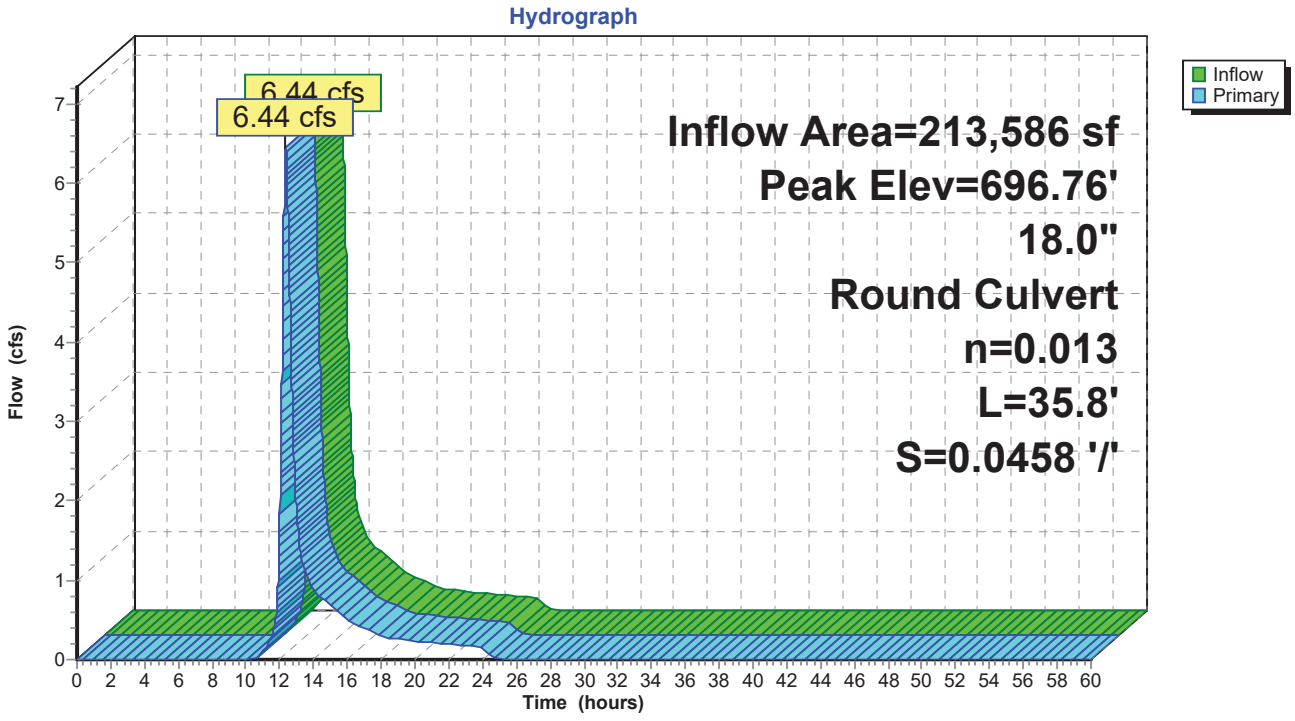
Inflow Area = 213,586 sf, 16.60% Impervious, Inflow Depth = 1.87" for 10-Year event
Inflow = 6.44 cfs @ 12.35 hrs, Volume= 33,265 cf
Outflow = 6.44 cfs @ 12.35 hrs, Volume= 33,265 cf, Atten= 0%, Lag= 0.0 min
Primary = 6.44 cfs @ 12.35 hrs, Volume= 33,265 cf
Routed to Pond DI-2 : 24"X24" Drain Inlet (DI-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 696.76' @ 12.35 hrs
Flood Elev= 699.32'

Device	Routing	Invert	Outlet Devices
#1	Primary	695.09'	**18.0" Round 18" HDPE** L= 35.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 695.09' / 693.45' S= 0.0458 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.44 cfs @ 12.35 hrs HW=696.76' TW=695.13' (Dynamic Tailwater)
↑—**1=18" HDPE** (Inlet Controls 6.44 cfs @ 3.64 fps)

Pond DI-3: 24"X24" Drain Inlet (DI-3)



Summary for Pond DIA: 18"X18" Drain Inlet (DI-A)

Inflow Area = 3,574 sf, 44.63% Impervious, Inflow Depth = 2.79" for 10-Year event
Inflow = 0.31 cfs @ 12.04 hrs, Volume= 830 cf
Outflow = 0.31 cfs @ 12.04 hrs, Volume= 830 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.10 cfs @ 12.02 hrs, Volume= 112 cf
Routed to Pond RG1A-1-1 : Rain Garden 1A-1-1
Secondary = 0.24 cfs @ 12.08 hrs, Volume= 718 cf
Routed to Pond RG1A-1-2 : Rain Garden 1A-1-2

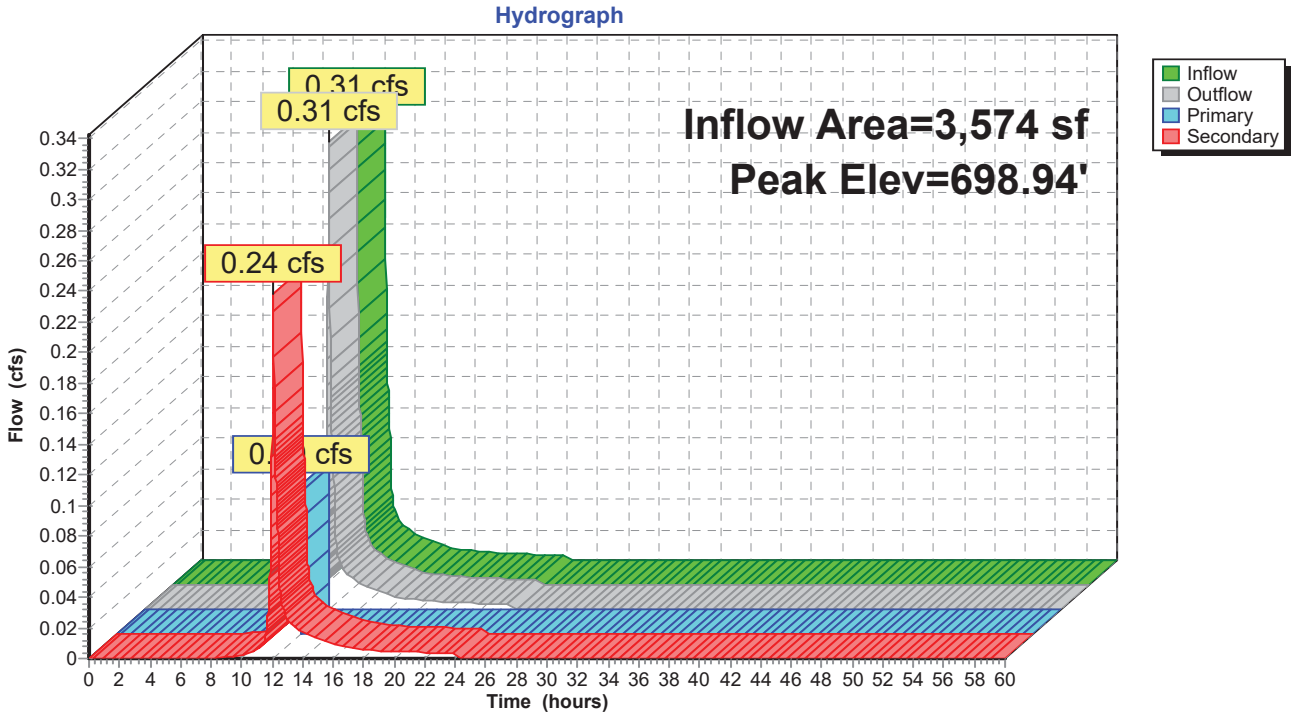
Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 698.94' @ 12.08 hrs
Flood Elev= 700.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	698.59'	**6.0" Round 6" PVC (RG-#1A-1)** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 698.50' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#2	Secondary	698.59'	**6.0" Round 6" PVC (RG-#1A-2)** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 696.50' S= 0.0597 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.08 cfs @ 12.02 hrs HW=698.91' TW=698.88' (Dynamic Tailwater)
↑—**1=6" PVC (RG-#1A-1)** (Outlet Controls 0.08 cfs @ 0.82 fps)

Secondary OutFlow Max=0.24 cfs @ 12.08 hrs HW=698.94' TW=697.03' (Dynamic Tailwater)
↑—**2=6" PVC (RG-#1A-2)** (Inlet Controls 0.24 cfs @ 1.60 fps)

Pond DIA: 18"X18" Drain Inlet (DI-A)



Summary for Pond DIB: 18"X18" Drain Inlet (DI-B)

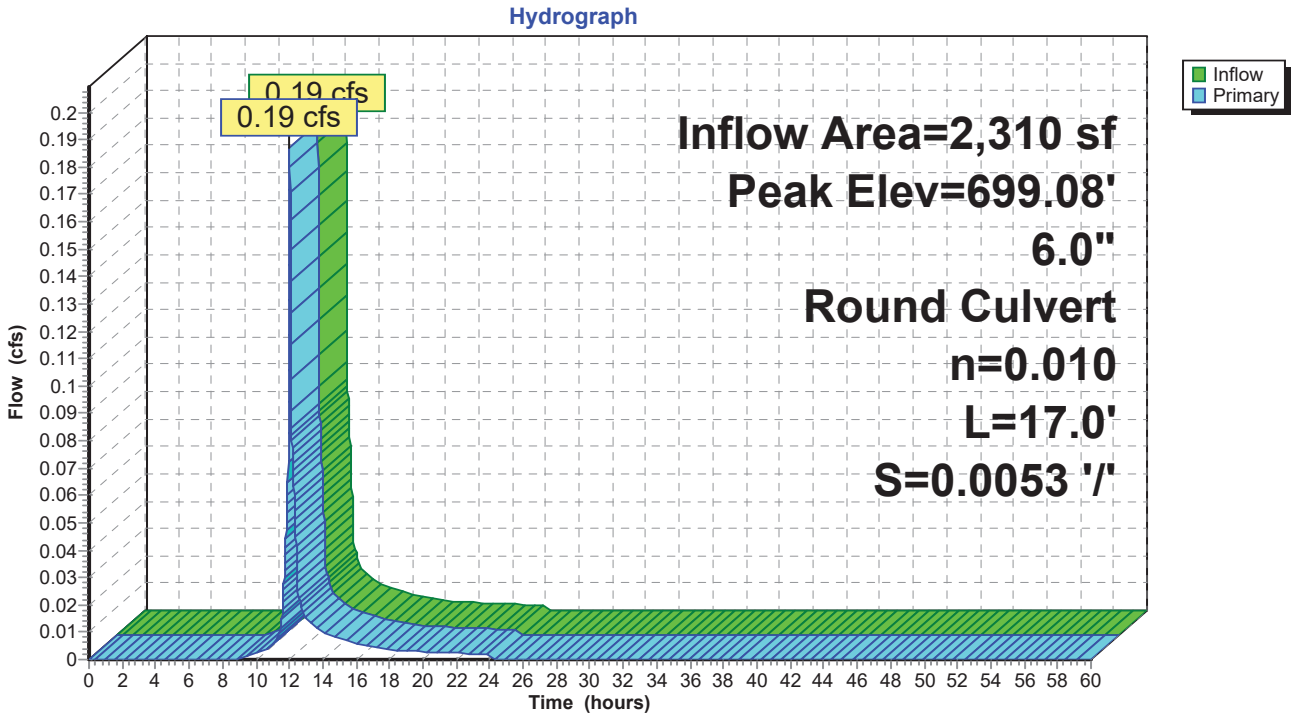
Inflow Area = 2,310 sf, 36.93% Impervious, Inflow Depth = 2.52" for 10-Year event
Inflow = 0.19 cfs @ 12.02 hrs, Volume= 486 cf
Outflow = 0.19 cfs @ 12.02 hrs, Volume= 486 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 12.02 hrs, Volume= 486 cf
Routed to Pond RG1A-2 : Rain Garden 1A-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 699.08' @ 12.03 hrs
Flood Elev= 700.30'

Device	Routing	Invert	Outlet Devices
#1	Primary	698.59'	**6.0" Round 6" PVC (RG-#1A-1)** L= 17.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 698.59' / 698.50' S= 0.0053 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.17 cfs @ 12.02 hrs HW=699.07' TW=699.02' (Dynamic Tailwater)
↑—**1=6" PVC (RG-#1A-1)** (Inlet Controls 0.17 cfs @ 0.85 fps)

Pond DIB: 18"X18" Drain Inlet (DI-B)



Summary for Pond RG1A-1-1: Rain Garden 1A-1-1

Inflow Area = 3,574 sf, 44.63% Impervious, Inflow Depth = 0.38" for 10-Year event
Inflow = 0.10 cfs @ 12.02 hrs, Volume= 112 cf
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Pond DI-2 : 24"X24" Drain Inlet (DI-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 698.95' @ 12.10 hrs Surf.Area= 326 sf Storage= 112 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	697.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	698.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

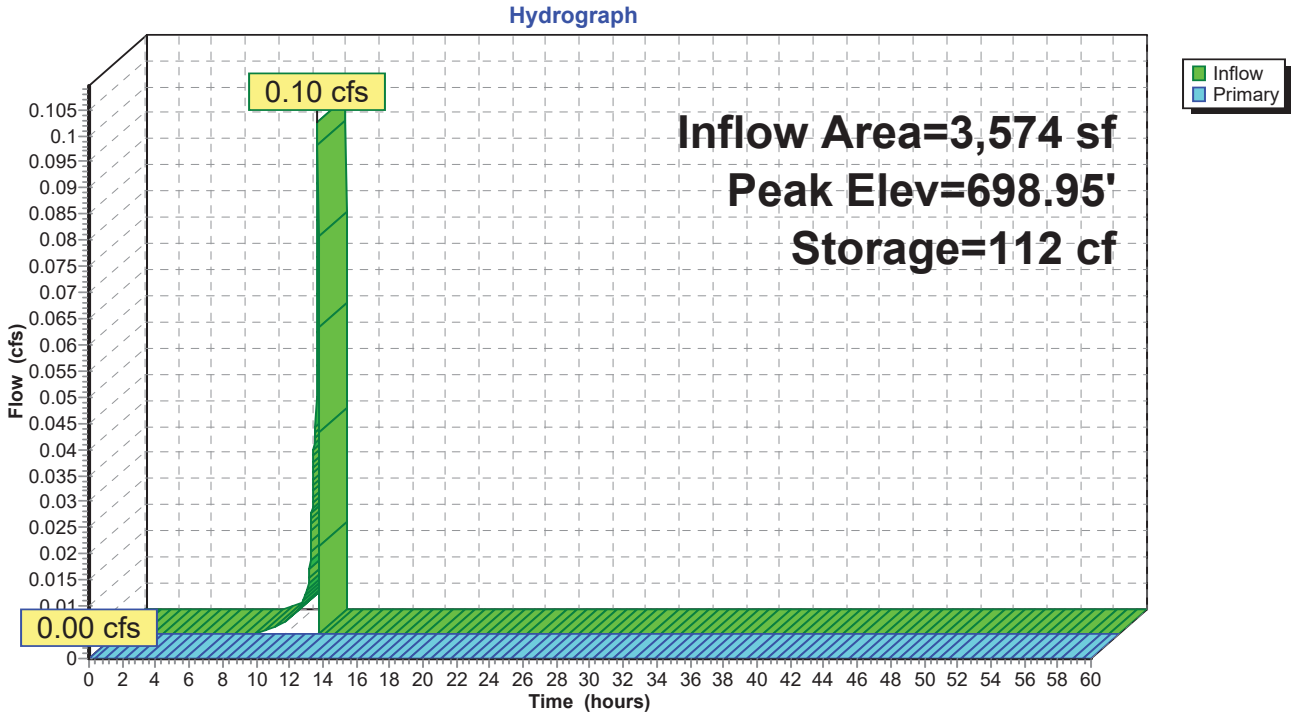
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.00	129	0	0
698.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.50	129	0	0
699.00	204	83	83
699.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	699.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=697.00' TW=693.45' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Controls 0.00 cfs)

Pond RG1A-1-1: Rain Garden 1A-1-1



Summary for Pond RG1A-1-2: Rain Garden 1A-1-2

Inflow = 0.24 cfs @ 12.08 hrs, Volume= 718 cf
Outflow = 0.24 cfs @ 12.09 hrs, Volume= 597 cf, Atten= 0%, Lag= 0.2 min
Primary = 0.24 cfs @ 12.09 hrs, Volume= 597 cf
Routed to Pond DI-1 : 24"X24" Drain Inlet (DI-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 697.03' @ 12.09 hrs Surf.Area= 341 sf Storage= 129 cf

Plug-Flow detention time= 104.4 min calculated for 596 cf (83% of inflow)
Center-of-Mass det. time= 32.6 min (876.1 - 843.6)

Volume	Invert	Avail.Storage	Storage Description
#1	695.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	696.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

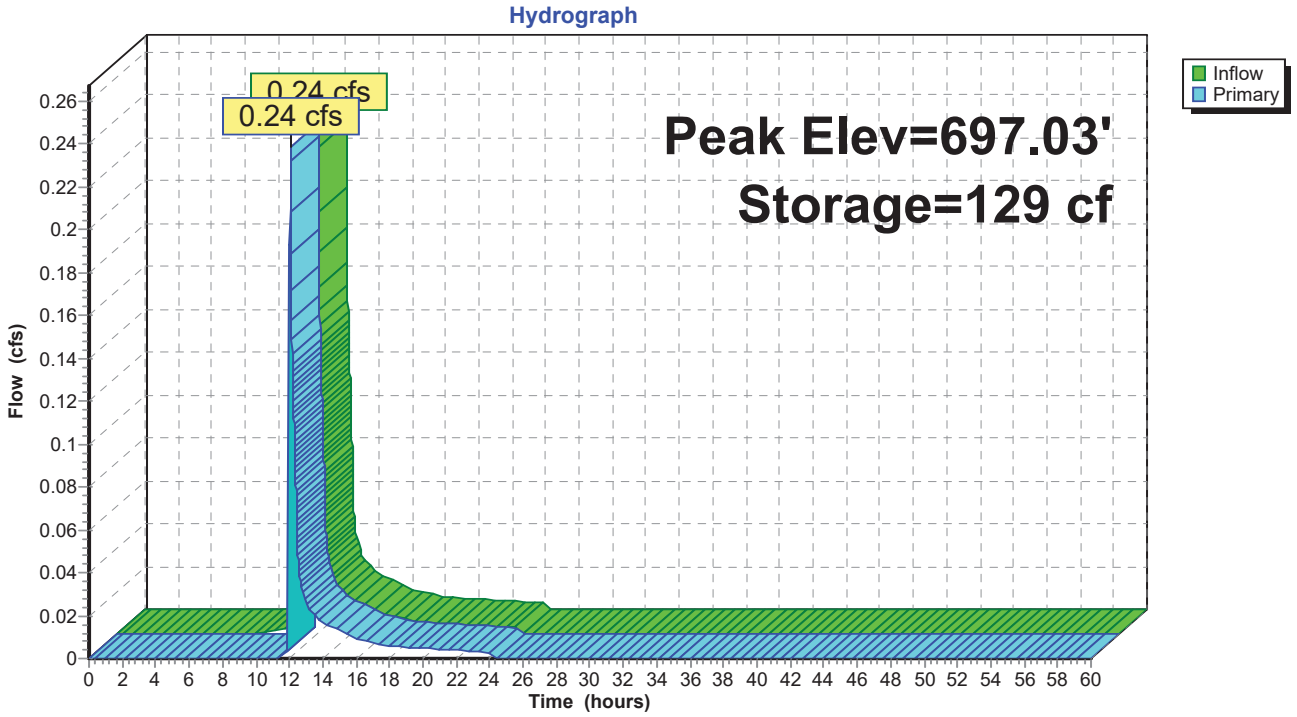
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
695.00	129	0	0
696.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
696.50	129	0	0
697.00	204	83	83
697.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	697.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.24 cfs @ 12.09 hrs HW=697.03' TW=679.15' (Dynamic Tailwater)
1=Overflow Berm (Weir Controls 0.24 cfs @ 0.49 fps)

Pond RG1A-1-2: Rain Garden 1A-1-2



Summary for Pond RG1A-2: Rain Garden 1A-2

Inflow Area = 2,310 sf, 36.93% Impervious, Inflow Depth = 2.52" for 10-Year event
Inflow = 0.19 cfs @ 12.02 hrs, Volume= 486 cf
Outflow = 0.18 cfs @ 12.03 hrs, Volume= 364 cf, Atten= 2%, Lag= 0.8 min
Primary = 0.18 cfs @ 12.03 hrs, Volume= 364 cf
Routed to Reach HW : 18" HDPE Culvert (Headwall)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 699.03' @ 12.03 hrs Surf.Area= 340 sf Storage= 128 cf

Plug-Flow detention time= 136.4 min calculated for 364 cf (75% of inflow)
Center-of-Mass det. time= 46.8 min (876.2 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	697.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	698.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

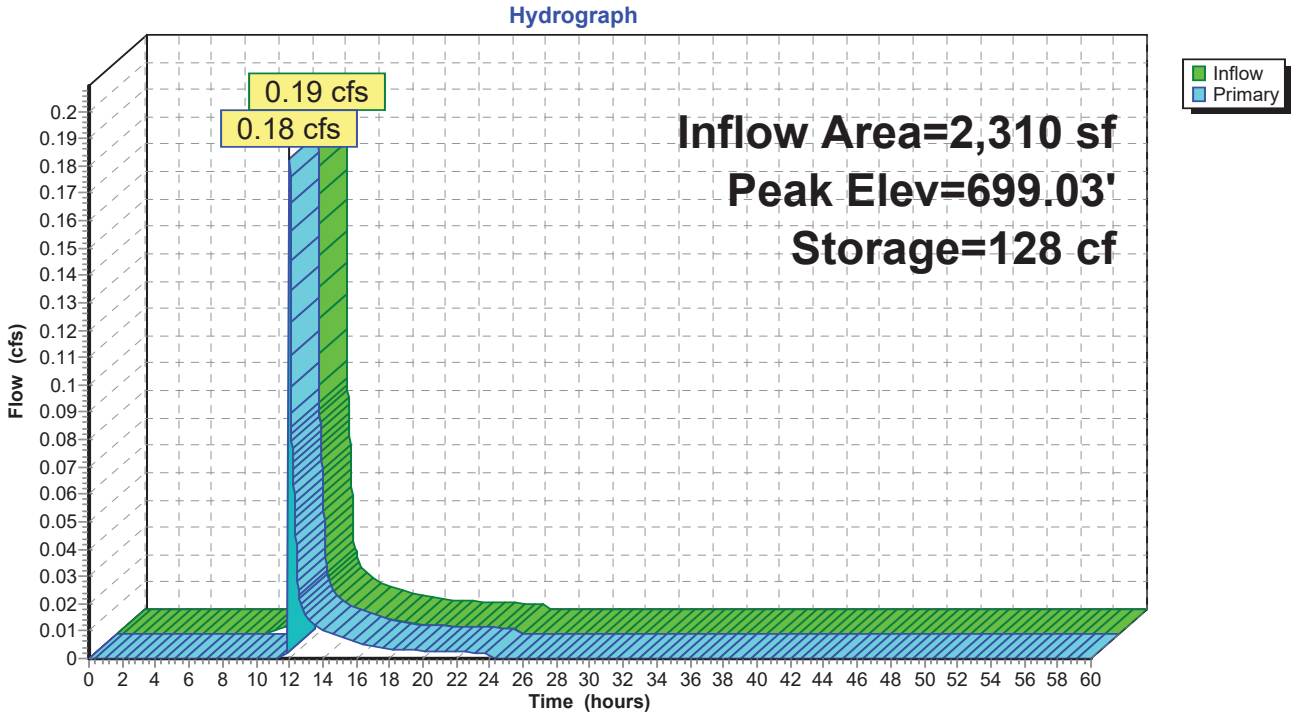
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.00	129	0	0
698.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.50	129	0	0
699.00	204	83	83
699.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	699.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.18 cfs @ 12.03 hrs HW=699.03' TW=696.31' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Weir Controls 0.18 cfs @ 0.44 fps)

Pond RG1A-2: Rain Garden 1A-2



Summary for Pond RG1B: Rain Garden 1B

Inflow Area = 1,893 sf, 42.00% Impervious, Inflow Depth = 2.70" for 10-Year event
Inflow = 0.15 cfs @ 12.05 hrs, Volume= 426 cf
Outflow = 0.11 cfs @ 12.12 hrs, Volume= 284 cf, Atten= 27%, Lag= 4.0 min
Primary = 0.11 cfs @ 12.12 hrs, Volume= 284 cf
Routed to Pond DI-2 : 24"X24" Drain Inlet (DI-2)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 699.52' @ 12.12 hrs Surf.Area= 388 sf Storage= 146 cf

Plug-Flow detention time= 167.2 min calculated for 284 cf (67% of inflow)
Center-of-Mass det. time= 65.5 min (892.0 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	697.50'	46 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 228 cf Overall x 20.0% Voids
#2	699.00'	236 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		281 cf	Total Available Storage

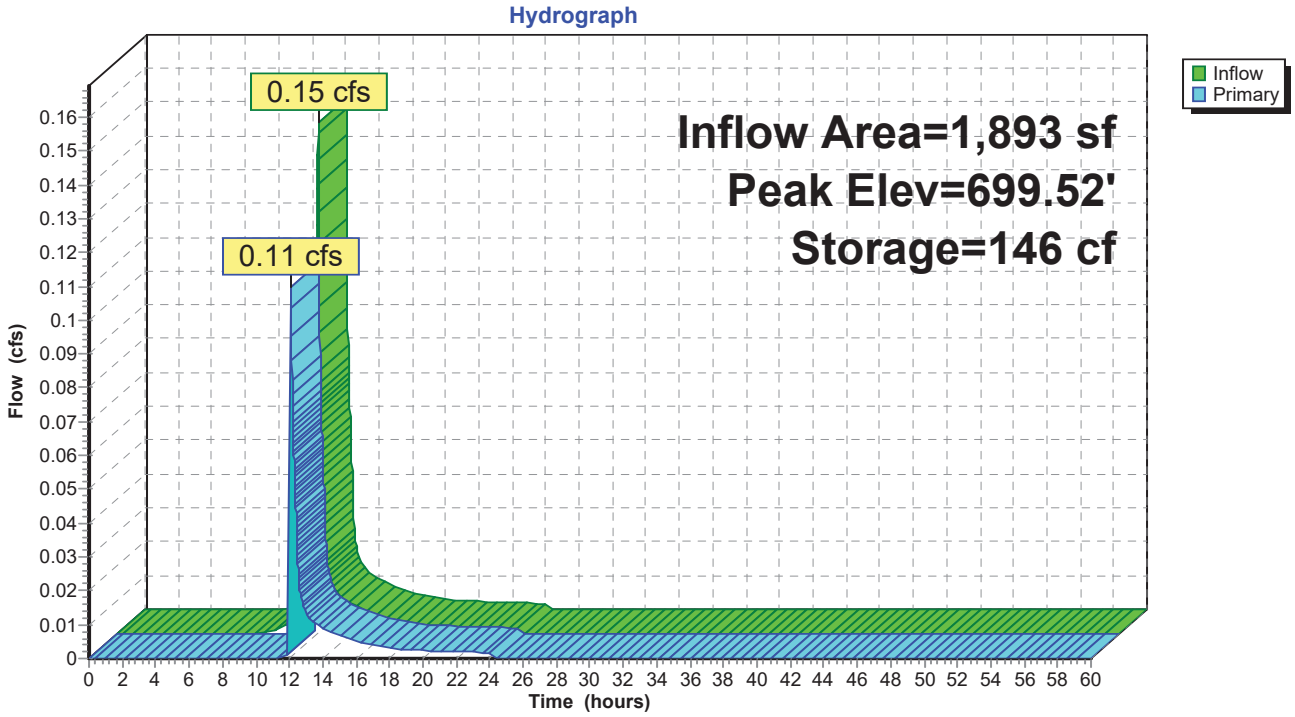
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
697.50	152	0	0
699.00	152	228	228

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
699.00	152	0	0
699.50	232	96	96
700.00	326	140	236

Device	Routing	Invert	Outlet Devices
#1	Primary	699.50'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.11 cfs @ 12.12 hrs HW=699.52' TW=694.45' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Weir Controls 0.11 cfs @ 0.37 fps)

Pond RG1B: Rain Garden 1B



Summary for Pond RG1C: Rain Garden 1C

Inflow Area = 1,144 sf, 69.93% Impervious, Inflow Depth = 3.65" for 10-Year event
Inflow = 0.13 cfs @ 12.02 hrs, Volume= 348 cf
Outflow = 0.13 cfs @ 12.03 hrs, Volume= 226 cf, Atten= 3%, Lag= 0.9 min
Primary = 0.13 cfs @ 12.03 hrs, Volume= 226 cf
Routed to Reach HW : 18" HDPE Culvert (Headwall)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 706.02' @ 12.03 hrs Surf.Area= 338 sf Storage= 126 cf

Plug-Flow detention time= 170.3 min calculated for 226 cf (65% of inflow)
Center-of-Mass det. time= 71.5 min (867.4 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	704.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	705.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

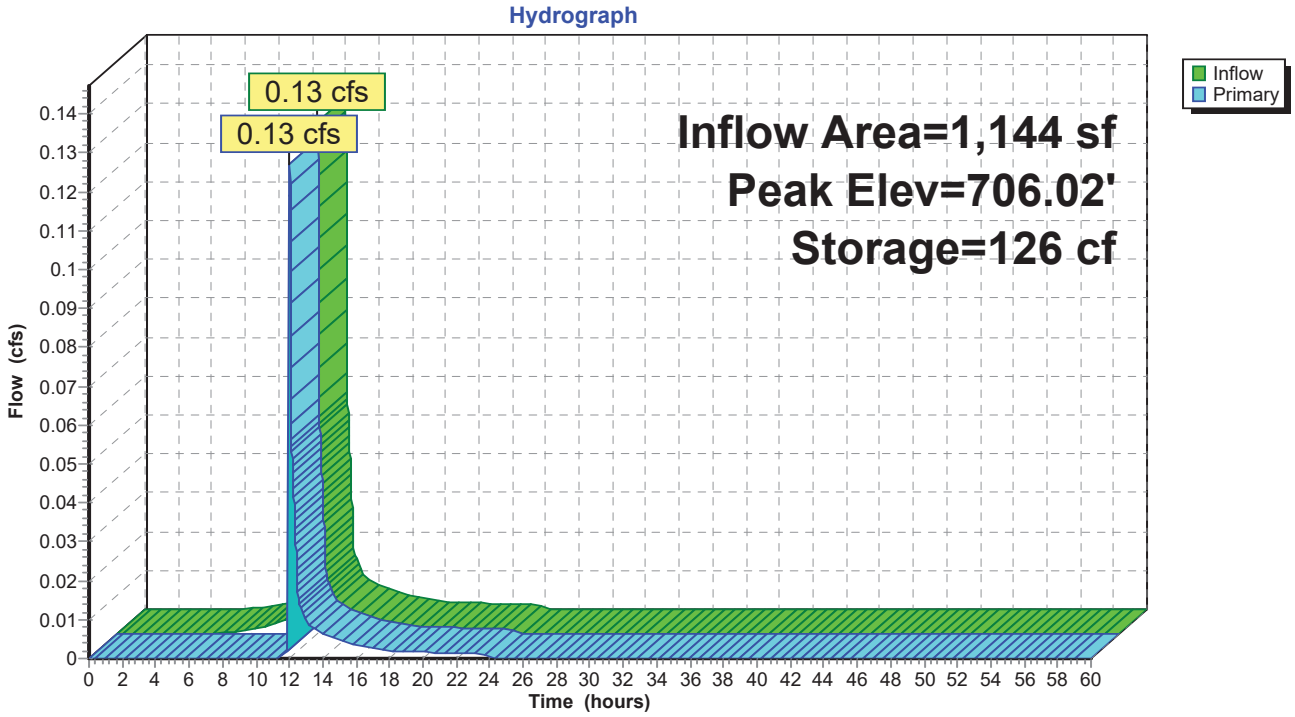
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.00	129	0	0
705.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
705.50	129	0	0
706.00	204	83	83
706.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	706.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.13 cfs @ 12.03 hrs HW=706.02' TW=696.31' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Weir Controls 0.13 cfs @ 0.39 fps)

Pond RG1C: Rain Garden 1C



Summary for Pond RG1D: Rain Garden 1D

Inflow Area = 1,144 sf, 69.93% Impervious, Inflow Depth = 3.65" for 10-Year event
Inflow = 0.13 cfs @ 12.02 hrs, Volume= 348 cf
Outflow = 0.13 cfs @ 12.03 hrs, Volume= 226 cf, Atten= 3%, Lag= 0.9 min
Primary = 0.13 cfs @ 12.03 hrs, Volume= 226 cf
Routed to Pond DI-1 : 24"X24" Drain Inlet (DI-1)

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 705.02' @ 12.03 hrs Surf.Area= 338 sf Storage= 126 cf

Plug-Flow detention time= 170.3 min calculated for 226 cf (65% of inflow)
Center-of-Mass det. time= 71.5 min (867.4 - 795.9)

Volume	Invert	Avail.Storage	Storage Description
#1	703.00'	39 cf	**Bioretention Soil (Prismatic)**Listed below (Recalc) 194 cf Overall x 20.0% Voids
#2	704.50'	216 cf	**Rain Garden (Prismatic)**Listed below (Recalc)
		254 cf	Total Available Storage

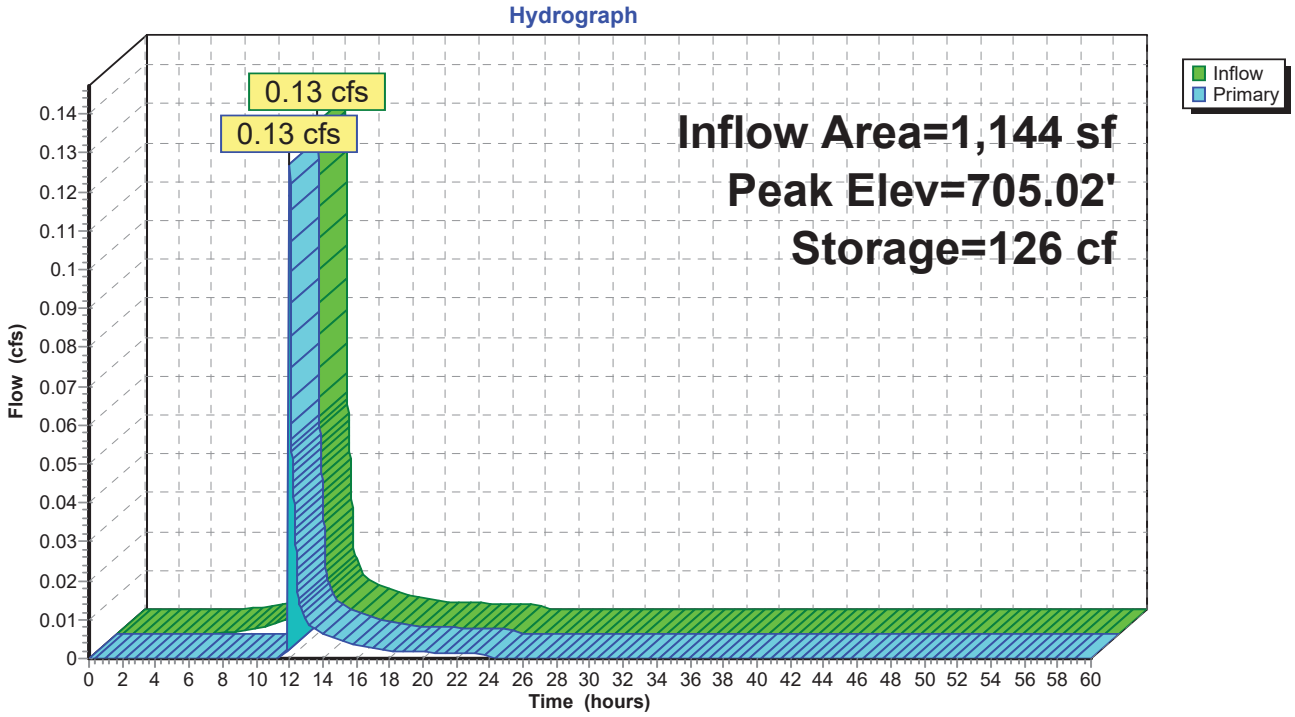
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
703.00	129	0	0
704.50	129	194	194

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
704.50	129	0	0
705.00	204	83	83
705.50	326	133	216

Device	Routing	Invert	Outlet Devices
#1	Primary	705.00'	**15.0' long x 1.0' breadth Overflow Berm** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.13 cfs @ 12.03 hrs HW=705.02' TW=679.04' (Dynamic Tailwater)
↑—**1=Overflow Berm** (Weir Controls 0.13 cfs @ 0.39 fps)

Pond RG1D: Rain Garden 1D



Events for Subcatchment WS1: Watershed 1 - Offsite

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**6.35**	**32,675**	**1.87**

Events for Subcatchment WS1A-1: WS-1A-1

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**0.31**	**830**	**2.79**

Events for Subcatchment WS1A-2: WS-1A-2

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**0.19**	**486**	**2.52**

Events for Subcatchment WS1B: WS-1B

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**0.15**	**426**	**2.70**

Events for Subcatchment WS1C: WS-1C

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**0.13**	**348**	**3.65**

Events for Subcatchment WS1D: WS-1D

Event	Rainfall (inches)	Runoff (cfs)	Volume (cubic-feet)	Depth (inches)
10-Year	**5.09**	**0.13**	**348**	**3.65**

Events for Reach DP-1: DP-1

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**6.61**	**6.61**	**0.00**	**0**

Events for Reach HW: 18" HDPE Culvert (Headwall)

Event	Inflow (cfs)	Outflow (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**6.44**	**6.44**	**696.55**	**11**

Events for Pond DI-1: 24"X24" Drain Inlet (DI-1)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**6.61**	**6.61**	**679.92**	**0**

Events for Pond DI-2: 24"X24" Drain Inlet (DI-2)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**6.49**	**6.49**	**695.13**	**0**

Events for Pond DI-3: 24"X24" Drain Inlet (DI-3)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**6.44**	**6.44**	**696.76**	**0**

Events for Pond DIA: 18"X18" Drain Inlet (DI-A)

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.31**	**0.31**	**0.10**	**0.24**	**698.94**	**0**

Events for Pond DIB: 18"X18" Drain Inlet (DI-B)

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.19**	**0.19**	**699.08**	**0**

Events for Pond RG1A-1-1: Rain Garden 1A-1-1

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.10**	**0.00**	**698.95**	**112**

Events for Pond RG1A-1-2: Rain Garden 1A-1-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.24**	**0.24**	**697.03**	**129**

Events for Pond RG1A-2: Rain Garden 1A-2

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.19**	**0.18**	**699.03**	**128**

Events for Pond RG1B: Rain Garden 1B

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.15**	**0.11**	**699.52**	**146**

Events for Pond RG1C: Rain Garden 1C

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.13**	**0.13**	**706.02**	**126**

Events for Pond RG1D: Rain Garden 1D

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
10-Year	**0.13**	**0.13**	**705.02**	**126**

Rain Garden
Planting Schedule

BOTANICAL NAME	COMMON NAME	INUNDATION TOLERANCE
TREES & SHRUBS		
LINDERA BENZOIN	COMMON SPICE BUSH	YES
SAMBUCUS CANADENSIS	ELDERBERRY	YES
PYRUS ARBUTIFOLIA	RED CHOKE BERRY	YES
AMELANCHIER CANADENSIS	SHADOWBUSH, SERVICEBERRY	YES
CORNUS AMOMUIM	SILKY DOGWOOD	YES
ALNUS RUGOSA	SPECKLED ALDER	YES
ROSA PALUSTRIC	SWAMP ROSE	IRREGULAR, SEASONAL, OR REGULARLY SATURATED
ILEX VERTICILLATA	WINTERBERRY	YES
HERBACEOUS PLANTS		
PELTANDRA VIRGINICA	ARROW ARUM	UP TO 1'
SAFFITARIA LATIFOLIA	ARROWHEAD, DUCK POTATO	UP TO 1'
ANDROPOGON GERARDI	BIG BLUESTEM	IRREGULAR OR SEASONAL INNUNDATION
ANDROPOGON GLOMERATUS	BUSHY BEARDGRASS	UP TO 1'
LOBELIA CARDINALIS	CARDINAL FLOWER	SOME TOLERATES SATURATION UP TO 100% OF SEASON
TYPHA SP.	CATTAIL	UP TO 1'
GLYCERIA STRIATA	FOWL MANNAGRASS	IRREGULAR OR SEASONAL INUDATION
SPARGANIUM EURYCARPUM	GIANT BURREED	REGULAR TO PERMANENTLY INUDATED UP TO 1'
HIBISCUS MOSCHEUTOS	MARSH HIBISCUS	UP TO 3"
PONTEDERIA CORDATA	PICKERELWEED	UP TO 1'
AGROSTIS ALBA	REDTOP	UP TO 25% OF THE SEASON
LEERSIA ORYZOIDES	RICE CUTGRASS	UP TO 3"
CAREX SPP.	SEDGES	UP TO 3"
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	REGULAR TO IRREGULAR INUNDATION
SCIRPUS VALIDUS	SOFT-STEM BULRUSH	UP TO 1'
POLYGONUM SPP.	SMARTWEED	UP TO 1'
JUNCUS EFFUSUS	SOFT RUSH	UP TO 3"
PANICUM VIRGATUM	SWITCH GRASS	UP TO 3"
ACORUS CALAMUS	SWEET FLAG	UP TO 3"
SCIRPUS CYPERINUS	WOOL GRASS	IRREGULARLY TO SEASONALLY INUNDATED
-	ERNST CONSERVATION SEED ERNST 128	SEASONALLY FLOODED

RAIN GARDEN PLANTING LIST

Stormwater Management Construction Checklists

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

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 professional[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.

When construction starts, 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 0.5 inches or greater (Construction Duration Inspections). 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. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional 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 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

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. Operators Certification

"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. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. 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 Entrance

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. Perimeter 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.

CONSTRUCTION DURATION INSPECTIONS **Page 1 of _____**

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.

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:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"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."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity
Permit Number GP-02-01
Monthly Summary of Site Inspection Activities

Name of Permitted Facility:		**Permit Identification #:**	
Location:		**Today's Date:**	**Reporting Month:**
Name and Telephone Number of Site Inspector:	**Name and Telephone Number of Site Inspector:**		

Permit Reference; Part III.D.3.b (page 15):

"The operator shall post at the site, in a publicly-accessible location, a summary of the site inspection activities on a monthly basis."

Date of Inspection	Type of Inspection and 24 hr Rainfall	Name of Qualified Professional conducting Site Inspections	Major items of concern related to compliance of the SWPPP with all conditions of the general permit	Date Corrected

Owner/Operator Certification:

"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."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative

Date

Duly authorized representatives of the Permittee (Owner/Operator) must have written authorization, submitted to DEC, to sign any permit documents.

Inspection and Maintenance Checklist
Catch Basins, Manholes, and Inlets

Date: _____

Type of Inspection: Storm ☐ Weekly ☐ Monthly ☐ Annual ☐

Site: _____ Inspector(s): _____

Description or location of Project: _____

Defect	Conditions when Maintenance is Needed	Maintenance (1 or 2)*	Comments
General			
Trash and Debris	Trash and debris which are located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%.		
	Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe.		
	Trash or debris in any inlet or outlet pipe blocking more then 1/3 of its height.		
	Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane).		
Sediment	Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe.		
Structure Damage to Frame and/or Top Slab	Top slab has holes larger than 2 square inches or cracks wider then ¼ inch.		
	Frame not sitting flush on top slab, i.e., separation of more than ¾ inch of the frame from the top slab. Frame not securely attached.		

*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.

Defect	Conditions when Maintenance is Needed	Maintenance (1 or 2)*	Comments
Fractures or Cracks in Basin Walls/Bottom	Maintenance person judges that structure is unsound.		
	Grout fillet has separated or cracked wider then ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks.		
Settlement/Misalignment	If failure of basin has created a safety, function, or design problem.		
Vegetation	Vegetation growing across and blocking more than 10% of the basin opening.		
	Vegetation growing in inlet/outlet pipe joints that is more than 6 inches tall and less than 6 inches apart.		
Contamination and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants.		
Catch Basin Cover			
Cover Not in Place	Cover is missing or only partially in place. Any open catch basin requires maintenance.		
Locking Mechanism Not Working	Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than ½ inch of thread.		
Cover Difficult to Remove	One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance).		
Ladder			
Ladder Rungs Unsafe	Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges.		
Metal Grates (If Applicable)			
Grate opening Unsafe	Grate with opening wider than 7/8 inch.		
Trash and Debris	Trash and debris that is blocking more than 20% of grate surface inletting capacity.		
Damaged or Missing	Grate missing or broken member(s) of the grate.		

*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.

Inspection and Maintenance Checklist
Conveyance Systems (Pipes & Ditches)

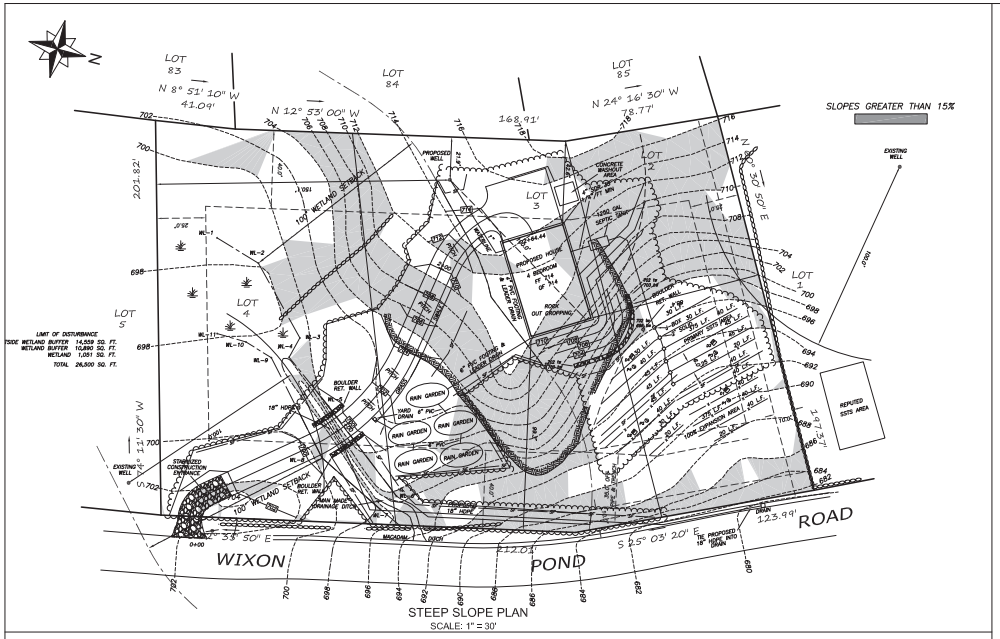
Date: _____

Type of Inspection: Storm ☐ Weekly ☐ Monthly ☐ Annual ☐

Site: _____ Inspector(s): _____

Defect	Conditions When Maintenance is Needed	Maintenance (1 or 2)*	Comments
Pipes			
Sediment & Debris	Accumulated Sediment that exceeds 20% of the diameter of the pipe.		
Vegetation	Vegetation that reduces free movement of water through pipes		
Damaged Pipe	Protective coating is damaged; rust is causing more than 50% deterioration to any part of pipe.		
	Any dent that decreases the cross section area of pipe by more than 20% or puncture that impacts performance.		
Open Ditches			
Trash and Debris	Trash and debris > 5 cf/1000 sf (one standard size garbage can) Visual evidence of dumping		
Sediment	Accumulated sediment that exceeds 20% of the design depth.		
Vegetation	Vegetation that reduces free movement of water through ditches.		
Erosion Damage to Slopes and Channel Bottom	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.		
Rock Lining Out of Place or Missing (If Applicable)	Maintenance person can see native soil beneath the rock lining.		

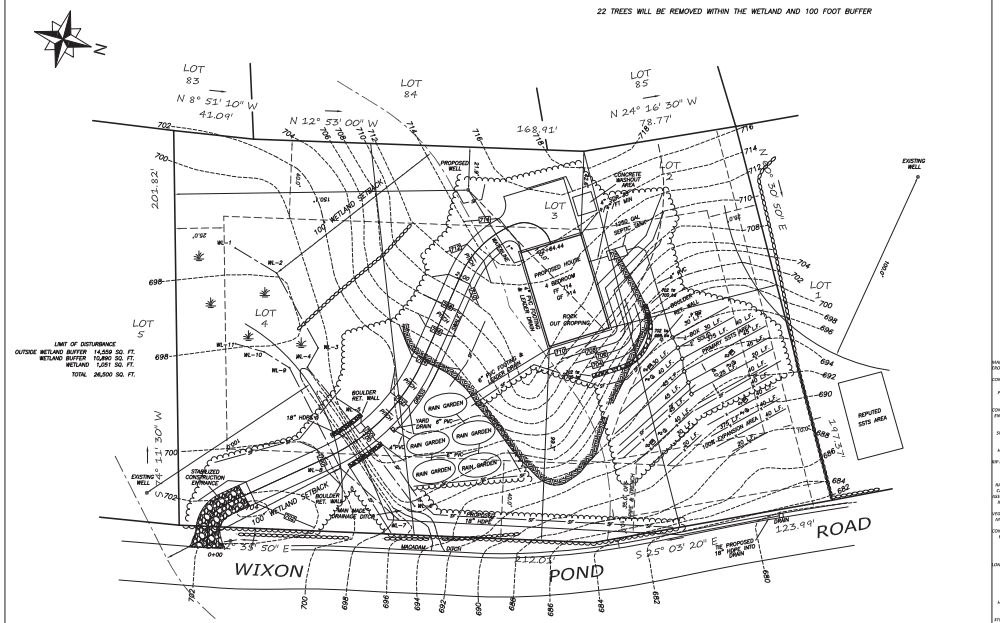
*Maintenance: Enter 1 if maintenance is needed. Enter 2 if maintenance was preformed same day.



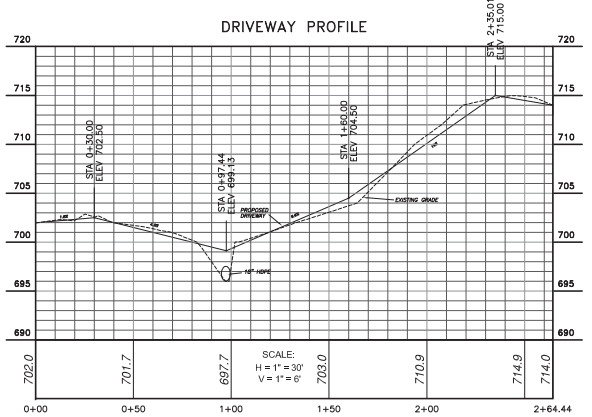
STEEP SLOPE PLAN
SCALE: 1" = 30'

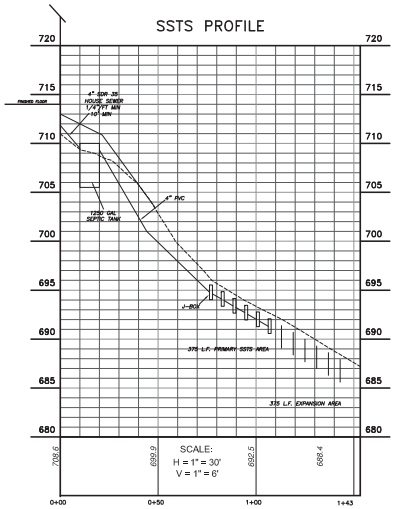
NOTES:
PROPOSED DRIVEWAY AREA WILL BE USED FOR CONSTRUCTION ACCESS

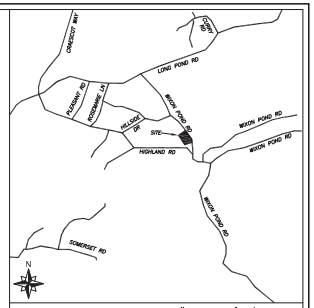
22 TREES WILL BE REMOVED WITHIN THE WETLAND AND 100 FOOT BUFFER



SITE PLAN
SCALE: 1" = 30'







ZONING SCHEDULE

RESIDENTIAL	REQUIRED	PROVIDED
MIN. LOT AREA (SF)	120,000	54,014
MIN. LOT WIDTH (FT)	200	290
MIN. LOT DEPTH (FT)	200	201.82
MIN. YARD DIMENSIONS (FT)		
FRONT	40	99
SIDE	25	88
REAR	40	43
MAX. BUILDING HEIGHT (FT)	35	<35
MIN. FRONTAGE (FT)	100	335
MAX. LOT COVERAGE (%)	15	<1

NOTES -FREY WIXON POND:

OWNER: SIX SOUTHEAST CORP. (SSEC)

1. SITE ADDRESS: Wixon Pond Road, Carmel (T)
2. WATERSHED: New York City, West Branch Reservior
3. All pipes connecting to all tankage and boxes shall be cut flush with the inside wall of the tank or box.
4. Prior to any excavation all underground utilities must be located. Call 1-800-962-7962.
5. Slope primary and expansion area: 15 %.
6. Construction Start Date: September 1, 2022
   Finish Date: September 1, 2023
7. Soil characteristics: see below
8. Soil percolation rate: 11-15 minutes per inch
9. Design based upon 4 bedrooms, 600 gpd
10. Proposed Septic Tank Size:1250 gallons
11. Proposed absorption trenches: 375 linear feet primary and expansion areas
12. Fill -none Curtain Drain - none
13. Soils - Charlton - Chatfield complex (CrC) 0-15%, rocky, Hydrologic Soil Group B
14. Area of disturbance -22,123 square feet, 0.51 acres
15. Map datum - NAVD 88 (North American Vertical Datum 1988)
16. Property 1.24 acres
17. Topographic survey by David Odell April 29, 2021
18. No existing or proposed wells within 100 feet of the proposed SSTS area, 200 feet if in direct line of drainage.

SOIL TESTING

DEEP HOLES

D1 12" topsoil, 12"-7 ' brown sandy loam, no rock or water
D2 same as D1, except cobbles at 5 feet
D3 same as D1
D4 12" topsoil, 1-3 ft red brown sand and silt loam, 3-7 ft brown sandy loam.

DEEPS INSPECTED September 30, 2021

HOLES

P1	15 minutes per inch	P3	30 minutes per inch
P2	10	P4	70
P3A	15	P3B	9

P1, P2, P3, P4 PRESOAK 9/28/2021 PERC 11/16/2021
P3A, P3B PRESOAK 9/28/2021 PERC 11/17/2021

SEPTIC SYSTEM DESIGN

4 bedrooms, 150 GPD/BEDROOM, DAILY FLOW 600 GALLONS
Perc Rate 11-15 minutes per Inch, Application Rate 0.8 GPD/SF
REQUIRED AREA: 600 DIVIDED BY 0.8 = 750 SQUARE FEET
REQUIRED TRENCH LENGTH: REQUIRED AREA (750) DIVIDED BY TRENCH WIDTH (2 FT) = 375 LINEAL FEET

Town of Carmel ECB Notes and requirements

1. Silt fence shall be provided with wire backing.
2. Construction equipment shall not be fueled within the wetland buffer.
3. A Biote 32 gallon spill kit K-32-0 shall be provided on site to consist of the following:
   - 50 pads, heavy weight
   - 8 socks, 3" x 48"
   - 2 bags ultrasorb, granular 5# ea
   - 4 temporary disposal bags, 4 mil
   - 4 plastic zip tie, 12"
   - 2 pair nitrile gloves
   - 2 pair safety goggles
   - 1 instruction sheet
4. No equipment shall be stored within the wetland buffer unless it is provided under the equipment.
5. No equipment is to enter delineated wetland area.
6. Wetlands were flagged by Ted Kozlowski, July 2019
7. Concrete washout area
8. Tree plan/permit
9. Mitigation
10. 2 pipes f/g/roof

MAINTENANCE SCHEDULE
EROSION AND SEDIMENT CONTROL PRACTICES

CONSTRUCTION OVERT THROUGH STABILIZATION - CONTRACTOR'S RESPONSIBILITY

PRACTICE	CONDITION	MAINTENANCE REQUIRED	INSPECTION FREQUENCY	REMEDIATION REQUIRED WITHIN
CONSTRUCTION ENTRANCE	SEDIMENT IN STONE OFF SITE TRACKING OF SEDIMENT	EXPLOSION OR REMOVE STONE CLEAN ROADWAY	DAILY DAILY	48 HOURS 24 HOURS
SILT FENCE	SEDIMENT ACCUMULATION DAMAGED OR FALLEN	WHEN SED. DEPTH 6" REPAIR, REPLACE	DAILY DAILY	24 HOURS 24 HOURS
HDPE PIPE	DRAINAGE OR CLOGGED	REPAIR, REPLACE	WEEKLY	48 HOURS
RIP RAP OUTLET	RIP RAP FAILURE, SOIL EROSION SEDIMENT CLOGGING CHANNEL BLOCKAGE	REPAIR REPLACE	WEEKLY	48 HOURS
RAIN GARDENS CURTAIN DRAINS ASSOCIATED PIPING INFILTRATORS	DAMAGED STRUCTURES SILT ACCUMULATION	REPAIR REPLACE REMOVE SILT	WEEKLY	48 HOURS
VEGETATION - SEED UNLOAD AREAS	DAMAGED AREAS	RESEED AND MULCH	WEEKLY	48 HOURS
CONSTRUCTION FENCING	DAMAGED FALLEN	REPAIR REPLACE	WEEKLY	48 HOURS

LONG TERM (AFTER STABILIZATION) - RESPONSIBILITY OWNER

PRACTICE	CONDITION	MAINTENANCE REQUIRED	INSPECTION FREQUENCY	REMEDIATION REQUIRED WITHIN
HDPE PIPE	CLOGGING OR DAMAGE	REPAIR REMOVE CLOG	ANNUALLY	ONE WEEK
RIP RAP STRUCTURES RAIN GARDENS	INVASIVE SPECIES SEDIMENT ACCUMULATION	REMOVE INVASIVE SPECIES REMOVE SEDIMENT	TWICE A YEAR EARLY SUMMER LATE FALL	ONE WEEK
VEGETATION	DAMAGED LAWN	RESEED MULCH	ANNUALLY	ONE WEEK

SOILS:
CrC : CHARLTON CHATFIELD 8-15% HYDRO GROUP B
ENTIRE LOT

THIS ENGINEER HAS VERIFIED THAT NO WELLS EXIST WITHIN 200 FEET OF THE PROPOSED SEPTIC SYSTEM AND NO SEPTIC SYSTEMS EXIST WITHIN 200 FEET OF THE PROPOSED WELL, EXCEPT AS SHOWN ON THESE PLANS.

PREMISES BEING LOTS 2, 3 & 4 OF FILED MAP No. 116-E
TOPOGRAPHIC SURVEY PREPARED BY DAVID ODELL, DATED NOVEMBER 29, 2021. DATUM NAVD 1988
WETLAND FLAGS LOCATED ON APRIL 19, 2022
ALTERATION OF THIS DRAWING EXCEPT BY A LICENSED P.E. OR ARCHITECT OR LICENSED LAND SURVEYOR IS ILLEGAL. ANY ALTERATION BY A P.E. OR ARCHITECT OR SURVEYOR MUST BE INDICATED AND BEAR HIS SEAL SIGNATURE AND DATE OF ALTERATION.

No.	DATE	COMMENTS
3	JULY 25, 2022	COMMENTS
2	JULY 5, 2022	COMMENTS
1	JUNE 20, 2022	COMMENTS
No.	DATE	

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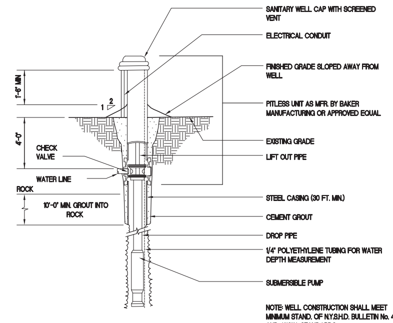
STATE OF NEW YORK JOHN KARELL JR. 098407 LICENSED PROFESSIONAL ENGINEER

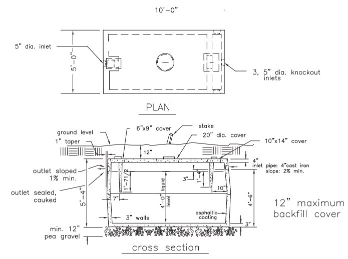
OWNER:	SCALE:	LATEST REVISION:
SIX SOUTHEAST CORP. (SSEC) WIXON POND ROAD CARMEL (T)	1" = 30'	
	DATED: FEBRUARY 1, 2022	SHEET No.
SITE PLAN	TAX MAP: 53.16-1-31, 32, 33	S-1



NOTE: WELL CONSTRUCTION SHALL MEET MINIMUM STAND. OF N.Y.S.H.D. BULLETIN No. 42 AND AWWA STANDARDS.

TYPICAL WELL DETAIL

N.T.S.



SEPTIC TANK DETAIL 1250 GAL.

N.T.S.

NOTES:
IF THE DIMENSIONS OF THE SEPTIC TANK CHANGE, THE SEPTIC TANK INSTALLED MUST BE A DUAL COMPARTMENT SEPTIC TANK.

MIN. FILL COVER IS 6" – 12" MAX. FILL COVER IS 24" AND IF FILL COVER IS GREATER THAN 24" MANHOLE RISERS TO GRADE MUST BE INSTALLED

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. ALL SOIL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE STALLED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT AND SEDIMENT CONTROL, 2016, AS REVISED.

2. ANY DISTURBED AREA THAT WILL BE LEFT UNDISTURBED AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL BE SEED AND MULCHED WITHIN 7 DAYS OF THE LAST DISTURBANCE WITH TEMPORARY SEEDING.

A) IF THE SEASON PREVENTS THE ESTABLISHMENT OF TEMPORARY COVER, THE DISTURBED AREAS SHALL BE MULCHED WITH STRAW OR EQUIVALENT MATERIAL. THE SEEDING SHALL BE DONE IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, 2016 AS FOLLOWS:

Species (% by weight)	lbs/1,000 sq ft	lbs/acre
65% Kentucky bluegrass blend	2.0-2.6	85-114
20% perennial ryegrass	0.6-0.8	26-35
14% fine fescue	0.4-0.6	19-26
Total	3.0-4.0	130-175
Or 100% tall fescue, turf-type fine leaf	3.4-4.6	150-200

B) MULCH: OLD HAY OR SMALL GRAIN STRAW APPLIED AT A RATE OF NINETY (90) POUNDS PER ONE THOUSAND SQUARE FT. OR TWO TONS PER ACRE. TO BE APPLIED AND ANCHORED ACCORDING TO THE NEW YORK GUIDELINES. WOOD FIBER HYDROMULEN OR OTHER SPRAYABLE PRODUCTS APPROVED FOR EROSION CONTROL (NYLON WEB OR MESH) MAY BE USED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

C) IN AREAS OF SLOPES STEEPER THAN ONE ON TWO, JUTE MATTING SHALL BE USED TO STABILIZED SEEDED AND / OR PLANTED AREAS. JUTE MATTING SHALL BE INSTALLED AND ANCHORED IN ACCORDANCE WITH THE NEW YORK GUIDELINES.

3. ANY GRADED AREAS NOT SUBJECT TO FURTHER DISTURBANCE OR CONSTRUCTION TRAFFIC SHALL, WITHIN SEVEN (7) DAYS AFTER FINAL GRADING, RECEIVE PERMANENT VEGETATIVE COVER IN COMBINATION WITH A SUITABLE MULCH AS FOLLOWS;

A) STEEP SLOPES OR EROSION SLOPES GREATER THAN 2:1 (H:V) SHALL BE PROVIDED WITH EROSION CONTROL MATTING AS SHOWN IN THE DETAIL SHEET.

4. SLOPES STEEPER THAN ONE ON THREE SHALL BE STABILIZED IMMEDIATELY AFTER GRADING

5. PAVED ROADWAYS SHALL BE KEPT CLEAR AT ALL TIMES.

6. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORM WATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL PRACTICES. EXCEPT FOR MINOR PERIMETER EMBANKMENT AREAS, ALL GRADED AREAS SHALL BE DIRECTED THROUGH ONE OF THE SEDIMENTS BARRIERS. DIVERSION SWALES MAY BE USED TO DIRECT DRAINAGE RUNOFF UNTIL PERMANENT STORM DRAINAGE SYSTEM IS IN PLACED.

7. DUST SHALL BE CONTROLLED BY SPRINKLING OR OTHER APPROVED METHODS.

8. STOCKPILES SHALL NOT BE LOCATED WITHIN FIFTY FEET (50') OF ROAD WAYS OR DRAINAGE FACILITIES. THE BASE OF ALL STOCKPILES SHALL BE PROTECTED BY A SILT FENCE, HAY BALES BARRIERS OR A COMBINATION OF BOTH.

9. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AND MAINTAINED BY THE CONTRACTOR ON A DAILY BASIS TO ENSURE THAT TEMPORARY AND PERMANENT DITCHES, PIPES AND STRUCTURES ARE CLEAR OF DEBRIS, THAT EMBANKMENTS AND BERMS ARE NOT BREACHED, AND THAT ALL BARRIERS ARE INTACT,

10. MANDATORY STORMWATER INSPECTIONS SHALL BE PERFORMED WEEKLY AND WITHIN 24 HOURS OF ANY PRECIPITATION EVENT PRODUCING MORE THAN 1/2" OF PRECIPITATION OVER AND 24 HOUR PERIOD. INSPECTIONS ARE PERFORMED BY A LICENSED CERTIFIED PROFESSIONAL.

11. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED ON THE SITE UNTIL FINAL STABILIZATION OF THE SITE IS ACHIEVED. FINAL STABILIZATION IS DEFINED AS 80% DENSITY OF VEGETATION. UPON CERTIFICATION OF FINAL ACCEPTANCE, THE OWNER WILL ASSUME RESPONSIBILITY FOR THE CONTINUED MAINTENANCE OR PERMANENT SOIL EROSION AND SEDIMENTATION CONTROL MEASURES.

12. ALL DRAINAGE OUTLETS AND INLETS SHALL BE LINED WITH RIP-RAP AS SPECIFIED ON THE PLANS AND/OR PER ENGINEER.

13. THE PROPERTY OWNER IS ULTIMATELY RESPONSIBLE FOR IMPLEMENTATION OF ALL EROSION AND SEDIMENT CONTROL MEASURES, HOWEVER ON A DAY TO DAY BASIS THE CONTRACTOR SHALL BE REPONSIBLE FOR MAINTAINING THE EROSION AND SEDIMENT CONTROL MEASURES.

Construction Notes for Subsurface Sewage Treatment Systems & Well Water Supplies Serving Single-Family Residences

The following notes shall be provided on all plans for individual SSTS and well water supplies

Basic Required Notes

1. All trees within 10 feet of the proposed subsurface sewage treatment system (SSTS) shall be removed

2. SSTS to be inspected by the Licensed Design Professional and the Putnam County Health Department after construction and prior to backfill

3. The SSTS area shall be staked and roped off so that no trucks, machinery, building materials, nor excavated earth shall be allowed in the SSTS area.

4. All erosion control measures shall be installed prior to the start of any construction and must be maintained until construction is complete and stabilization has occurred.

5. Construction of SSTS to be in accordance with these plans, any revision thereto, and the rules and regulations of the permit issuing governmental agency

6. The well is to be a drilled well, constructed in accordance with New York State Health Department 10 NYCRR appendix 5B, standards for water wells, pump tested for a minimum of 6 hours and have a minimum safe yield of 5 gpm. Yields less than 5 gpm will be immediately reported to the Putnam County Department of Health.

7. The SSTS design shown hereon does not provide for installation of a garbage grinder. Such installation requires additional design and the approval of the Putnam County Department of Health

8. Putnam County Health Department approval is based on the location of the SSTS, well, building, setbacks, and driveways as shown on the approved drawing. Modifications are to have prior Putnam County Health Department approval. Unauthorized modifications made to this drawing after the date of Putnam County Health Department approval voids said approval.

9. All stonewalls in and within 10 feet of the SSTS area shall be removed to their entire depth and the resulting void replaced with similar on site soil.

10. Cut or fill is not permitted in the SSTS area, except if so specified on this plan.

11. After backfilling the system, the SSTS area shall be covered with a minimum of 6 inches of top soil, seeded and mulched.

12. Occupancy of this structure will not be permitted until the Construction Compliance Application has been received and approved by the Putnam County Health Department and forwarded to the Building Inspector of the respective municipality as part of the Certificate of Occupancy application.

13. This plan is approved for sewage treatment and/or water supply only, and all other required permits and/or approvals are the responsibility of the permitee.

14. The Putnam County Health Department approval expires two (2) years from the date on the approval stamp and is required to be renewed on or before the expiration date. The approval is revocable for cause or may be amended or modified when considered necessary by the Department

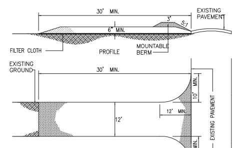
15. A copy of the house plans submitted to the building inspector of the local municipality, when filing for a building permit, must be submitted to the Putnam County Health Department to verify bedroom count.

16. The house, well and SSTS shall be survey located and staked by a NYS Licensed Land Surveyor prior to construction.

17. For all SSTS's which are subject to Joint Review and approval with NYCDEP the Design Professional is to notify PCHD and NYCDEP at least 24 hours prior to the commencement of the SSTS construction.

18. Datum based on NAVD 88.

19. Property outside FEMA 100 year wetland.

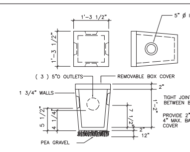


CONSTRUCTION SPECIFICATIONS:

1. STONE SIZE – USE 2" STONE OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – NOT LESS THAN 30 FEET.
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – TWELVE (12) FEET MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS AND EGRESS OCCUR.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. "MIRAFI" 700X, OR APPROVED EQUAL.
6. 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.
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 TRACED ONTO PUBLIC RIGHTS– OF–WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN 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.

STABILIZED CONSTRUCTION ENTRANCE

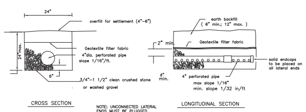
N.T.S.



NOTE: FIRST TWO FEET OF PIPE FROM J.B SHALL BE SOLID PIPE TO THE PERFORATED PIPE IN THE TRENCH

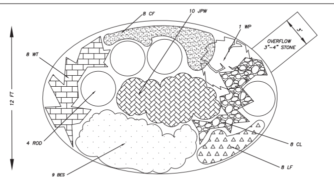
JUNCTION BOX DETAIL

N.T.S.



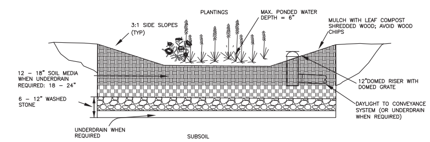
TYPICAL ABSORPTION TRENCH DETAIL

N.T.S. PIPE TO BE: HDPE SDR 38 ASTM 5810



TYPICAL RAIN GARDEN PLANT LIST

QNTY	KEY	BOTANICAL/COMMON NAME	SIZE	ROOT
4	ROD	CORNUS SERICEA (RED–OSIER DOGWOOD)	2 GAL	CONT.
1	WH	HAMAMELIS VIRGINIANA (COMMON WITCHHAZEL)	2'–3' HT.	B&B
8	LF	ATHYRIUM FLIX–FERMINA (LADY FERN)	1 GAL	CONT.
8	WT	CHELONE GLORBRA (WHITE TURTLEHEAD)	1 GAL	CONT.
10	JPW	EUPATORIUM MACULATUM (JOE–PYE WEED)	1 GAL	CONT.
8	CF	OSMUND CINNAMOMEA (CINNAMON FERN)	1 GAL	CONT.
9	BES	RUDBECKIA HIRTA (BLACK–EYED SUSAN)	1 GAL	CONT.
8	CL	VERNONIA NOVEBORGCENSIS (COMMON IRONWEED)	1 GAL	CONT.



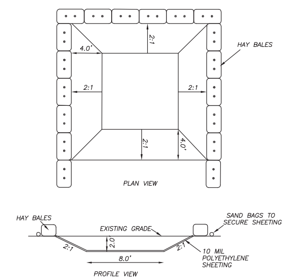
PROFILE OF TYPICAL RAIN GARDEN

NTS

RAIN GARDEN MAINTENANCE

WEEDING MUST BE PREFORMED FOR THE FIRST FEW YEARS. REMOVE WEEDS, INCLUDING THE ROOTS BY HAND. AFTER EACH GROWING SEASON,THE STEMS AND SEEDHEADS CAN BE LEFT FOR WINTER INTEREST, WILDLIFE COVER AND BIRD FOOD. IN THE SPRING CUT ALL TATTERED PLANTS BACK. HAND CUT THE LARGEST PLANTS. USE A STRING TRIMMER TO MOW THE PLANTING BACK TO A HEIGHT OF SIX OR EIGHT INCHES. DEAD PLANT MATERIAL CAN BE REMOVED WITH A STRING TRIMMER OR WEED WHACKER AND COMPOSTED OR DISPOSED OF AS APPROPRIATE.

INVASIVE SPECIES OF PLANTS SUCH AS BITTERSWEET VINE, MULTIFLORA ROSE, HONESUCKLE AND JAPANESE BARBERRY. THESE PLANTS SHOULD BE REMOVED BY VINE SEVERING, MOWING OR USE OF HERBICIDES, (ROUNDUP) WHERE APPROPRIATE AND ACCORDING TO LABEL REQUIREMENTS.



CONCRETE WASHOUT AREA

1. CONCRETE WASHOUT AREA TO BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. CONCRETE WASHOUT AREA TO BE ENTIRELY SELF CONTAINED.

2. HAY BALES SHALL BE PROVIDED AROUND THE PERIMETER OF CONCRETE WASHOUT AREA FOR CONTAINMENT.

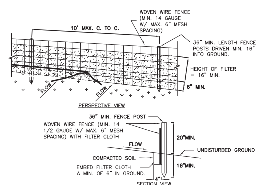
3. WASHOUT AREA SHALL BE LINED WITH PLASTIC SHEETING NO THINNER THAN 1 MILS. SHEETING SHALL HAVE NO HOLES OR TEARS AND SHALL BE ANCHORED BY SAND BAGS ON ALL SIDES EXCEPT ACCESS SIDE. PLASTIC LINING TO BE REPLACED WITH EACH CLEANING.

4. SIGNS SHALL BE PROVIDED AT THE CONSTRUCTION ENTRANCE AND CONCRETE AREAS INDICATING LOCATION OF WASHOUT AREA.

5. WASHOUT AREA TO BE ENCLOSED IN CONSTRUCTION FENCE.

6. WASHOUT AREAS TO BE INSPECTED DAILY TO ENSURE LINER IS INTACT AND ADEQUATE CAPACITY IS AVAILABLE AT ALL TIMES. WASHOUT AREAS SHALL BE INSPECTED IMMEDIATELY AFTER HEAVIER RAINS. DAMAGE OR LEAKING WASHOUT AREAS TO BE DEACTIVATED AND REPAIRED IMMEDIATELY.

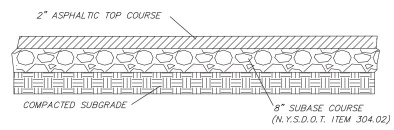
7. CONCRETE WASTE SHALL BE REMOVED AND DISPOSED OF ONCE IT REACHES THREE–QUARTERS OF THE WASHOUT AREA'S HEIGHT. ALL WASTE SHALL BE DISPOSED OF IN A MER CONSISTENT WITH APPLICABLE LAWS, REGULATIONS AND GUIDELINES OF MUNICIPALITY



CONSTRUCTION SPECIFICATIONS

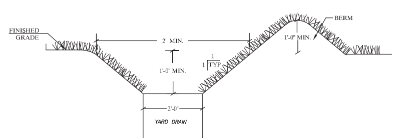
1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
2. FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 6" MAXIMUM MESH OPENING.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT.
4. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
5. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.

SILT FENCE



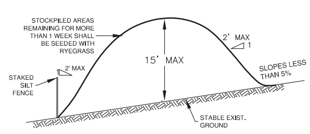
DRIVEWAY SECTION DETAIL

(NTS)



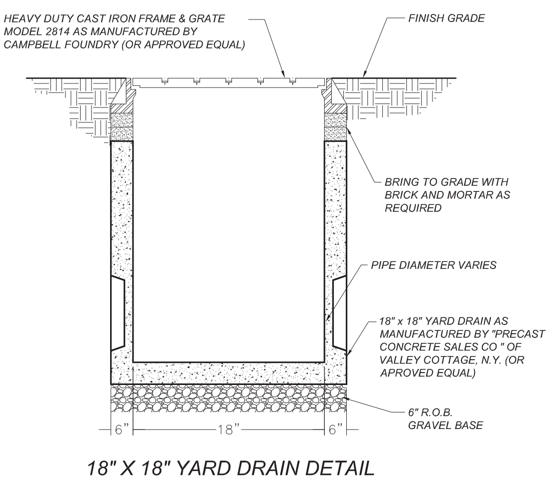
GRASS SWALE WITH YARD DRAIN DETAIL

NTS



TYPICAL SOIL STOCKPILE DETAIL

N. T. S.



18" X 18" YARD DRAIN DETAIL

(N.T.S.)

ALTERATION OF THIS DRAWING EXCEPT BY A LICENSED P.E. OR ARCHITECT OR LICENSED LAND SURVEYOR IS ILLEGAL. ANY ALTERATION BY A P.E. OR ARCHITECT OR SURVEYOR MUST BE INDICATED AND BEAR HIS SEAL SIGNATURE AND DATE OF ALTERATION.

No.	DATE	
3	JULY 25, 2022	COMMENTS
2	JULY 5, 2022	COMMENTS
1	JUNE 20, 2022	COMMENTS

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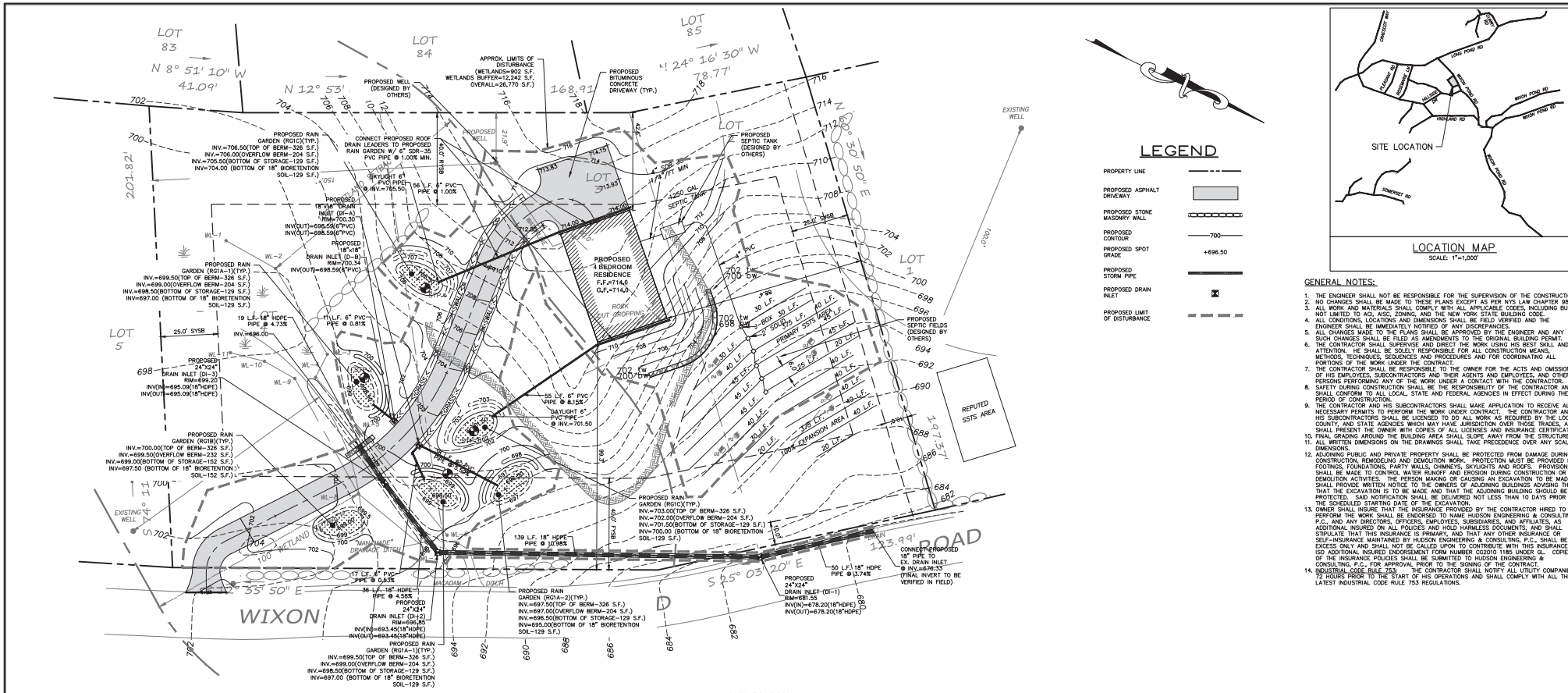
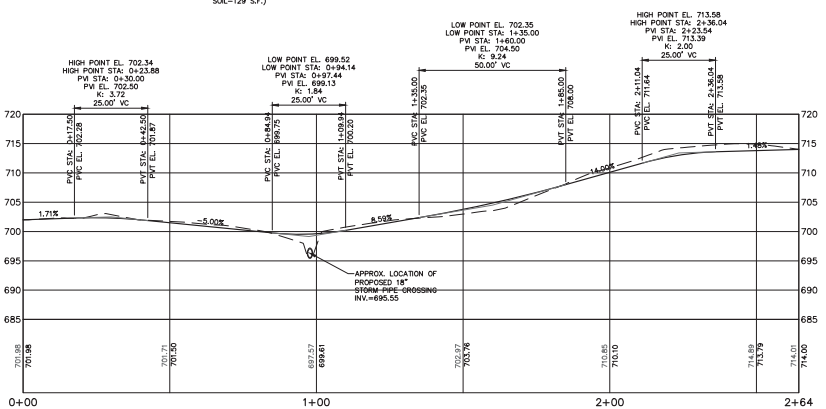
OWNER: SIX SOUTHEAST CORP. (SSEC) WIXON POND ROAD CARMEL (T)	SCALE: 1" = 20'	LATEST REVISION:
	DATED: FEBRUARY 1, 2022	SHEET No.
DETAILS	TAX MAP: 53.16-1-31, 32, 33	D-1





DRIVEWAY PROFILE
(STA. 0+00 TO STA. 2+64)
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE: 1" = 10'

LEGEND

- PROPERTY LINE
- PROPOSED ASPHALT DRIVEWAY
- PROPOSED STONE MASONRY WALL
- PROPOSED CONTOUR — 700
- PROPOSED SPOT GRADE +696.50
- PROPOSED STORM PIPE
- PROPOSED DRAIN INLET
- PROPOSED LIMIT OF DISTURBANCE

LOCATION MAP
SCALE: 1"=1,000'

GENERAL NOTES:

1. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR THE SUPERVISION OF THE CONSTRUCTION.
2. NO CHANGES SHALL BE MADE TO THESE PLANS EXCEPT AS PER NYS LAW CHAPTER 987.
3. ALL WORK AND MATERIALS SHALL COMPLY WITH ALL APPLICABLE CODES, INCLUDING BUT NOT LIMITED TO ACI, AISC, ZONING, AND THE NEW YORK STATE BUILDING CODE.
4. ALL CONDITIONS, LOCATIONS AND DIMENSIONS SHALL BE FIELD VERIFIED AND THE ENGINEER SHALL BE IMMEDIATELY NOTIFIED OF ANY DISCREPANCIES.
5. ALL CHANGES MADE TO THE PLANS SHALL BE APPROVED BY THE ENGINEER AND ANY SUCH CHANGES SHALL BE FILED AS AMENDMENTS TO THE ORIGINAL BUILDING PERMIT.
6. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING HIS BEST SKILL AND ATTENTION. HE SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
7. THE CONTRACTOR SHALL BE RESPONSIBLE TO THE OWNER FOR THE ACTS AND OMISSIONS OF HIS EMPLOYEES, SUBCONTRACTORS AND THEIR AGENTS AND EMPLOYEES, AND OTHER PERSONS PERFORMING ANY OF THE WORK UNDER A CONTACT WITH THE CONTRACTOR.
8. SAFETY DURING CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL CONFORM TO ALL LOCAL, STATE AND FEDERAL AGENCIES IN EFFECT DURING THE PERIOD OF CONSTRUCTION.
9. THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL MAKE APPLICATION TO RECEIVE ALL NECESSARY PERMITS TO PERFORM THE WORK UNDER CONTRACT. THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL BE LICENSED TO DO ALL WORK AS REQUIRED BY THE LOCAL, COUNTY, AND STATE AGENCIES WHICH MAY HAVE JURISDICTION OVER THOSE TRADES, AND SHALL PRESENT THE OWNER WITH COPIES OF ALL LICENSES AND INSURANCE CERTIFICATES.
10. FINAL GRADING AROUND THE BUILDING AREA SHALL SLOPE AWAY FROM THE STRUCTURE.
11. ALL WRITTEN DIMENSIONS ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER ANY SCALED DIMENSIONS.
12. ADJOINING PUBLIC AND PRIVATE PROPERTY SHALL BE PROTECTED FROM DAMAGE DURING CONSTRUCTION, REMODELING AND DEMOLITION WORK. PROTECTION MUST BE PROVIDED FOR FOOTINGS, FOUNDATIONS, PARTY WALLS, CHIMNEYS, SKYLIGHTS AND ROOFS. PROVISIONS SHALL BE MADE TO CONTROL WATER RUNOFF AND EROSION DURING CONSTRUCTION OR DEMOLITION ACTIVITIES. THE PERSON MAKING OR CAUSING AN EXCAVATION TO BE MADE SHALL PROVIDE WRITTEN NOTICE TO THE OWNERS OF ADJOINING BUILDINGS ADVISING THEM THAT THE EXCAVATION IS TO BE MADE AND THAT THE ADJOINING BUILDING SHOULD BE PROTECTED. SAID NOTIFICATION SHALL BE DELIVERED NOT LESS THAN 10 DAYS PRIOR TO THE SCHEDULED STARTING DATE OF THE EXCAVATION.
13. OWNER SHALL INSURE THAT THE INSURANCE PROVIDED BY THE CONTRACTOR HIRED TO PERFORM THE WORK SHALL BE ENDORSED TO NAME HUDSON ENGINEERING & CONSULTING, P.C., AND ANY DIRECTORS, OFFICERS, EMPLOYEES, SUBSIDIARIES, AND AFFILIATES, AS ADDITIONAL INSURED ON ALL POLICIES AND HOLD HARMLESS DOCUMENTS, AND SHALL STIPULATE THAT THIS INSURANCE IS PRIMARY, AND THAT ANY OTHER INSURANCE OR SELF-INSURANCE MAINTAINED BY HUDSON ENGINEERING & CONSULTING, P.C., SHALL BE EXCESS ONLY AND SHALL NOT BE CALLED UPON TO CONTRIBUTE WITH THIS INSURANCE. ISO ADDITIONAL INSURED ENDORSEMENT FORM NUMBER CG2010 1185 UNDER GL. COPIES OF THE INSURANCE POLICIES SHALL BE SUBMITTED TO HUDSON ENGINEERING & CONSULTING, P.C., FOR APPROVAL PRIOR TO THE SIGNING OF THE CONTRACT.
14. INDUSTRIAL CODE RULE 753: THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES 72 HOURS PRIOR TO THE START OF HIS OPERATIONS AND SHALL COMPLY WITH ALL THE LATEST INDUSTRIAL CODE RULE 753 REGULATIONS.

EXISTING INFORMATION SHOWN HEREON TAKEN FROM A TOPOGRAPHIC SURVEY PREPARED BY DAVID ODELL, DATED NOVEMBER 29, 2021. DATUM NAVD 1988 WETLAND FLAGS LOCATED ON APRIL 10, 2022. PROPOSED SEPTIC AND WELL DESIGN PREPARED BY JOHN KARELL, JR, P.E.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

No.	Revisions	Date
1.	REVISED PER NYSDOT COMMENTS	10/19/23
2.	REVISED PER SEPT 2021 RESULTS	5/10/23

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:
PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
TOWN OF CARMEL
PUTNAM COUNTY – NEW YORK

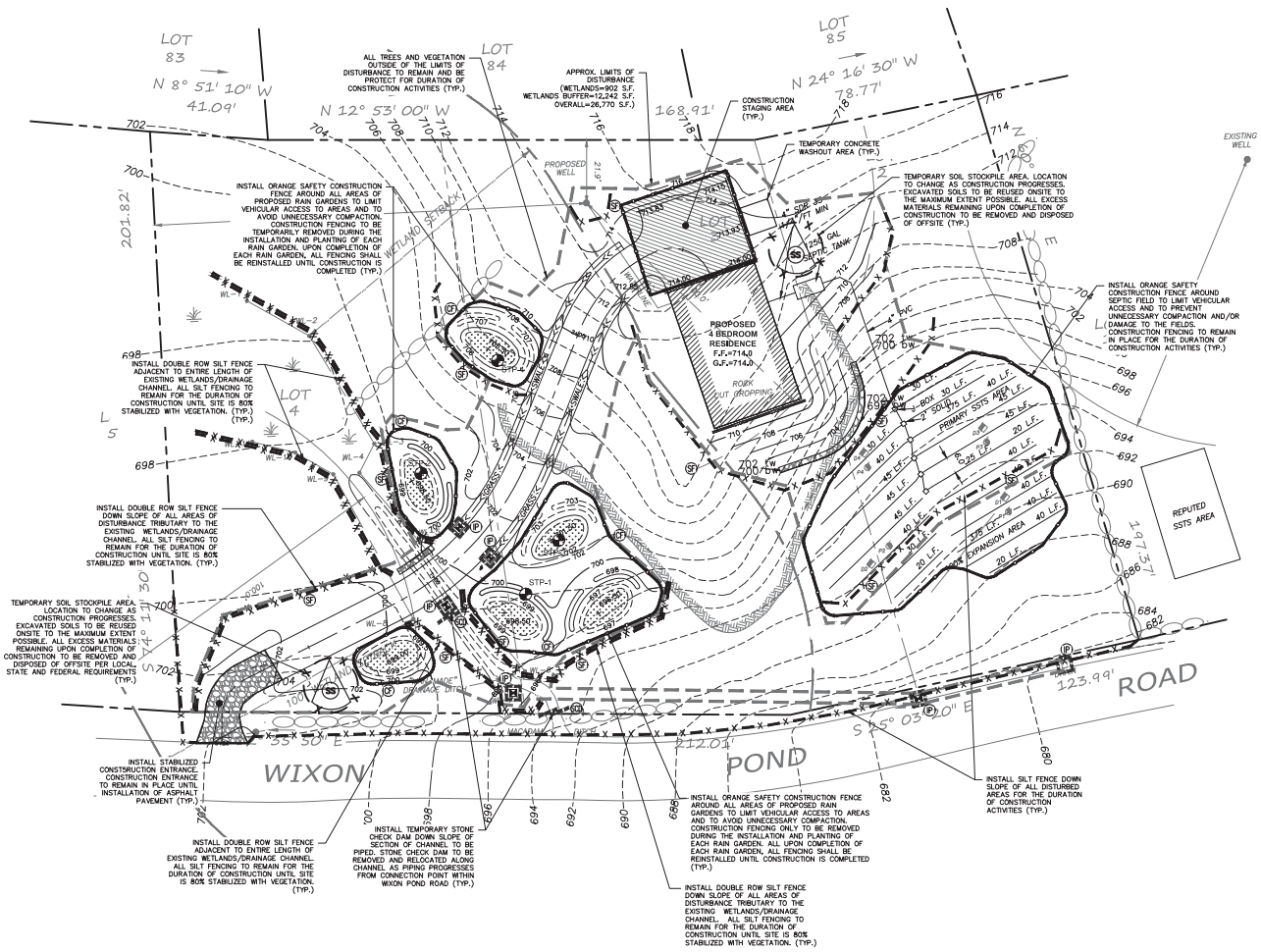
STORMWATER MANAGEMENT PLAN

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-580-0188

STATE OF NEW YORK — JOHN KARELL JR. — LICENSED PROFESSIONAL ENGINEER

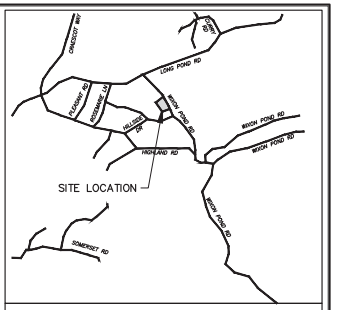
Date: 3/24/23 Sheet
Scale: 1" = 20' 1
Designed By: D.C. 5
Checked By: M.S.
Sheet No.
C-1

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.



LEGEND

- PROPERTY LINE
- PROPOSED CONTOUR — 700
- PROPOSED SPOT GRADE — +698.50
- PROPOSED DRAIN INLET
- TEMPORARY INLET PROTECTION — IP
- TEMPORARY SILT FENCE — SF
- TEMPORARY CONSTRUCTION FENCE — CF
- TEMPORARY SOIL STOCKPILE AREA — SS
- TEMPORARY STONE CHECK DAM — SCD
- STABILIZED CONSTRUCTION ENTRANCE
- PROPOSED LIMIT OF DISTURBANCE



LOCATION MAP
SCALE: 1"=1,000'

INSTALLATION & MAINTENANCE OF EROSION CONTROL:

CONSTRUCTION SCHEDULE
NOTIFY APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 5 DAYS PRIOR TO START.

EROSION CONTROL MEASURES
INSTALL ALL EROSION CONTROL MEASURES PRIOR TO START OF CONSTRUCTION. CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY
MAINTENANCE (TO BE PERFORMED DURING ALL PHASES OF CONSTRUCTION)

AFTER ANY RAIN CAUSING RUNOFF, CONTRACTOR TO INSPECT HAYBALES, ETC. AND REMOVE ANY EXCESSIVE SEDIMENT AND INSPECT STOCKPILES AND CORRECT ANY PROBLEMS WITH SEED ESTABLISHMENT.
INSPECTIONS SHALL BE DOCUMENTED IN WRITING AND SUBMITTED TO THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION.

INSPECTION BY MUNICIPALITY – FINAL GRADING
REMOVE UNNEEDED SUBGRADE FROM SITE.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY – LANDSCAPING

SPREAD TOPSOIL EVENLY OVER AREAS TO BE SEEDED. HAND RAKE LEVEL. BROADCAST 1.25 LB. BAG OF JONATHAN GREEN "FASTGROW" MIX OR EQUAL OVER AREA TO BE SEEDED. APPLY STRAW MULCH AND WATER WITHIN 2 DAYS OF COMPLETION OF TOPSOILING. CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY – FINAL LANDSCAPING

GRASS ESTABLISHED.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

INSPECTION BY MUNICIPALITY – FINAL INSPECTION

ALL EROSION CONTROL MEASURES REMOVED AND GRASS ESTABLISHED.
CALL FOR INSPECTION FROM THE APPROPRIATE MUNICIPAL AGENCY HAVING JURISDICTION AT LEAST 2 DAYS PRIOR TO FINISH.

EXISTING INFORMATION SHOWN HEREON TAKEN FROM A TOPOGRAPHIC SURVEY PREPARED BY DAVID ODELL, DATED NOVEMBER 29, 2021. DATUM NAVD 1988 WETLAND FLAGS LOCATED ON APRIL 10, 2022. PROPOSED SEPTIC AND WELL DESIGN PREPARED BY JOHN KARELL, JR, P.E.

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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No.	Description	Date
	Revisions	

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

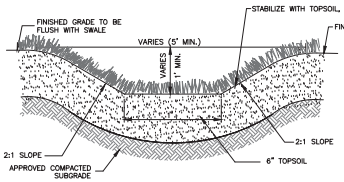
PROJECT:
PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
TOWN OF CARMEL
PUTNAM COUNTY – NEW YORK

EROSION & SEDIMENT CONTROL PLAN

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T: 914-909-0420
F: 914-580-0018

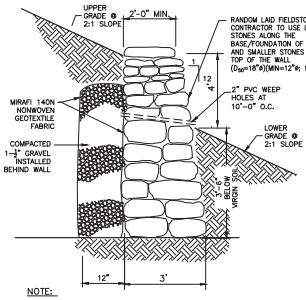
STATE OF NEW YORK – JOHN KARELL, JR. – LICENSED PROFESSIONAL ENGINEER

Date: 10/26/23
Scale: 1" = 20'
Designed By: D.C.
Checked By: M.S.
Sheet No. C-2
Sheet 2 of 5



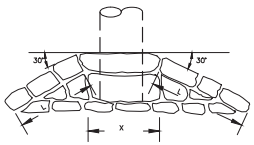
NOTES:
1. FOR SWALE SLOPES EXCEEDING 8%, JUTE MESH SHALL BE UTILIZED TO STABILIZE THE SWALE BASE.
2. AREA ADJACENT TO SWALE TO BE BROUGHT TO FINISHED GRADE IMMEDIATELY AS REQUIRED, TOPSOILED, SEEDED AND MAINTAINED FOR EROSION CONTROL.

GRASS LINED SWALE



NOTE:
1. THE FIELDSTONE WALLS DESIGN SHOULD ONLY BE USED FOR VERTICAL GRADE SEPARATIONS OF 4 FEET OR LESS ON SITE.
2. MINIMUM WEIGHT OF STONE SHALL BE 50 LBS; MAXIMUM WEIGHT OF STONE SHALL BE 400 LBS.
3. ALL WORK REGARDING THE FOOTING/FOUNDATION FOR ALL SITE RELATED RETAINING WALLS SHALL REMAIN ACCESSIBLE AND EXPOSED UNTIL INSPECTED BY THE BUILDING/ENGINEERING DIVISION AND SHALL BE NOTIFIED AT LEAST 48 HOURS IN ADVANCE TO SCHEDULE A FOOTING/FOUNDATION INSPECTION. CONTACT TERRY L. ROWE – CIVIL ENGINEERING TECHNICIAN AT 914-238-1429.
4. THE RETAINING WALL AS SHOWN HEREON, HAS BEEN DESIGNED TO MEET AND/OR EXCEED THE MINIMUM FACTORS OF SAFETY FOR SLIDING, OVERTURNING AND SETTLEMENT.
5. AT COMPLETION, THE APPLICANT'S ENGINEER SHALL SUBMIT A "CERTIFICATE OF CONSTRUCTION COMPLIANCE" AND "AS-BUILT SECTION" CERTIFYING THAT THE RETAINING WALL AS CONSTRUCTED MEETS ALL FACTORS OF SAFETY FOR SLIDING, OVERTURNING AND SETTLEMENT IN ACCORDANCE TO THE APPROVED PLANS ON FILE WITH THE BUILDING AND ENGINEERING DIVISION.

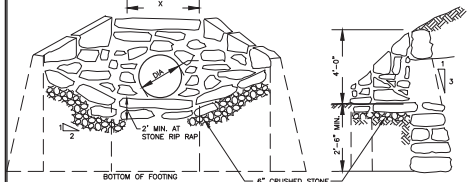
STONE RETAINING WALL



PLAN

TABLE FOR HEADWALL

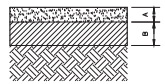
PIPE SIZE	X	Y
15"	27"	3' – 5"
18"	30"	3' – 5"
21"	33"	3' – 8"
24"	36"	4' – 0"
30"	42"	4' – 7"
36"	48"	5' – 2"



ELEVATION SECTION

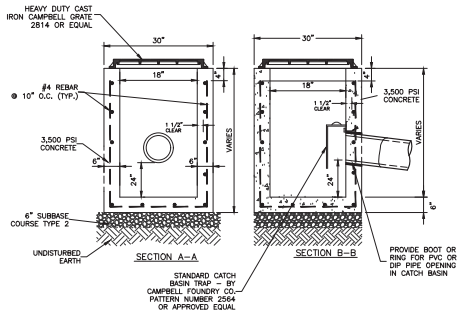
MASONRY STONE HEADWALL

NOTES
WALLS OF SELECTED REGULAR FIELD STONES AND USED CUT STONE ROUGH SHARPED TO FIT
MORTAR STONES IN PLACE AND RAKE JOINTS – BACK 1/2".
2" PVC SCREENED WEEP PIPES TO BE PLACED AS DIRECTED BY THE ENGINEER.



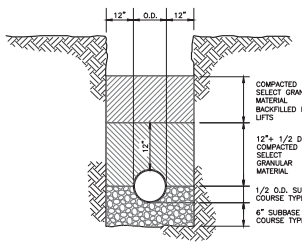
A– 3" TOP COURSE– N.Y.S.D.O.T. ITEM, 403.178202, TYPE 6 F2
B– 6" SUBBASE COURSE– N.Y.S.D.O.T. ITEM, 304.12, TYPE 2

DRIVEWAY PAVEMENT SECTION

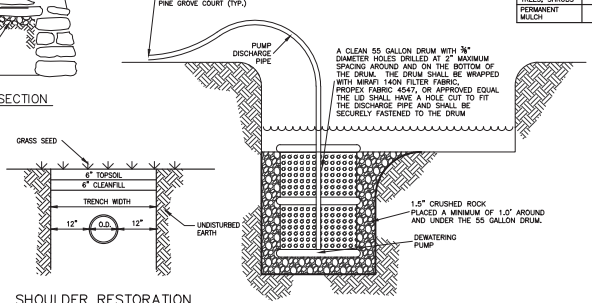


PRECAST DRAIN INLET (1.5'X1.5')

NOTES:
1. CONCRETE – 3,500 PSI MINIMUM STRENGTH @ 28 DAYS
2. STEEL REINFORCEMENT – ASTM A–615, # 4 REBAR, GRADE 60
3. COVER TO STEEL – 1 ¾" MINIMUM
4. DESIGN LOADING – AASHTO H520–44
5. EARTH COVER – 0 TO 5 FEET
6. CONSTRUCTION JOINT – LAPPED



TRENCH BEDDING



SHOULDER RESTORATION (N.T.S.)

TYPICAL DEWATERING SUMP

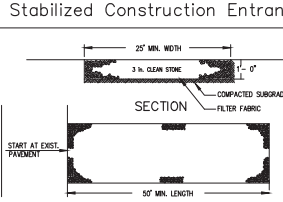
SCHEDULE OF TEMPORARY EROSION CONTROL MEASURES:

MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
SOIL/STOCKPILE AREAS	ALL	ALL SOIL AND SHOT ROCK STRIPPED FROM THE CONSTRUCTION AREA DURING GRUBBING AND MASS GRADING SHALL BE STOCKPILED IN LOCATIONS SHOWN ON THE PLANS, BUT IN NO CASE SHALL THEY BE PLACED WITHIN 100' OF A WETLAND OR WATERCOURSE. THE STOCKPILED SOILS SHALL BE RE–USED DURING FINISH–GRADING TO PROVIDE A SUITABLE GROWING MEDIUM FOR PLANT ESTABLISHMENT. SOIL STOCKPILES SHALL BE PROTECTED FROM EROSION BY VEGETATING THE STOCKPILE WITH RAPIDLY –GERMINATING GRASS SEED (DURING THE MAY 1ST – OCTOBER 30TH) PLANTING SEASON OR COVERING THE STOCKPILE WITH TARPAULIN THE REMAINDER OF THE YEAR. INSTALL SILT FENCE AROUND TOE OF SLOPE.
SILT FENCE	ALL	SILT FENCE (GEO–TEXTILE FILTER CLOTH) SHALL BE PLACED IN LOCATIONS DEPICTED ON THE APPROVED PLANS. THE PURPOSE OF THE SILT FENCE IS TO REDUCE THE VELOCITY OF SEDIMENT LADEN STORMWATER FROM SMALL DRAINAGE AREAS AND TO INTERCEPT THE TRANSPORTED SEDIMENT LOAD. IN GENERAL, SILT FENCE SHALL BE USED AT THE TOE OF SLOPES OR INTERMEDIATELY WITHIN SLOPES WHERE OBVIOUS CHANNEL CONCENTRATION OF STORMWATER IS NOT PRESENT. SILT FENCING SHALL BE INSPECTED AT A MINIMUM OF ONCE PER WEEK AND PRIOR TO AND WITHIN 24 HOURS FOLLOWING A RAIN EVENT ½" OR GREATER. INSPECTIONS SHALL INCLUDE ENSURING THAT THE FENCE MATERIAL IS TIGHTLY SECURED TO THE WOVEN WIRE AND THE WIRE IS SECURED TO THE WOOD POSTS. IN ADDITION, OVERLAPPING FILTER FABRIC SHALL BE SECURED AND THE FABRIC SHALL BE MAINTAINED A MINIMUM OF SIX (6) INCHES BELOW GRADE. IN THE EVENT THAT ANY 'BULGES' DEVELOP IN THE FENCE, THAT SECTION OF FENCE SHALL BE REPLACED WITHIN 24 HOURS WITH NEW FENCE SECTION. ANY SEDIMENT BUILD–UP AGAINST THE FENCE SHALL BE REMOVED WITHIN 24 HOURS AND DEPOSITED ON–SITE A MINIMUM OF 100 FEET OUTSIDE OF ANY WETLAND OR WATERCOURSE.
INLET PROTECTION (STONE & BLOCK DROP INLET PROTECTION)	ALL	IN ORDER TO PROTECT THE RECEIVING WATERS FROM SEDIMENTATION, THE CONTRACTOR SHALL INSTALL STONE AND BLOCK INLET PROTECTION FOR ALL EXISTING AND PROPOSED INLETS AS SHOWN ON THE PLANS. ONCE INSTALLED, ½ INCH STONE AGGREGATE SHALL BE INSTALLED AROUND THE PERIMETER OF ALL CATCH BASINS AND SURFACE INLETS AS ILLUSTRATED ON THE APPROVED PLANS. THIS BARRIER WILL ALLOW STORMWATER TO BE FILTERED PRIOR TO REACHING THE BASIN INLET GRATE. THE STONE AGGREGATE SHALL BE INSPECTED WEEKLY PRIOR TO AND WITHIN 24 HOURS FOLLOWING A RAIN EVENT ½ OR GREATER. CARE SHALL BE TAKEN TO ENSURE THAT ALL STONE AGGREGATE IS PROPERLY LOCATED AND SECURE AND DO NOT BECOME DISPLACED. THE STONE AGGREGATE SHALL BE INSPECTED FOR ACCUMULATED SEDIMENTS AND ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE DEVICE AND DEPOSITED NOT LESS THAN 100 FEET FROM WETLAND OR WATERCOURSE.
INLET PROTECTION (SILTSACK)	ALL	IN ORDER TO PROVIDE ADDITIONAL PROTECTION FOR THE RECEIVING WATERS FROM SEDIMENTATION AND TURBIDITY, THE CONTRACTOR SHALL INSTALL A SILTSACK SEDIMENT CAPTURE DEVICE ON ALL EXISTING AND PROPOSED INLETS AS SHOWN ON THE PLANS. THIS DEVICE SHOULD BE INSTALLED IN ADDITION TO THE STONE & BLOCK DROP INLET PROTECTION. THIS BARRIER WILL PROVIDE ADDITIONAL FILTERING OF THE STORMWATER RUNOFF PRIOR TO BEING DISCHARGED FROM THE CATCH BASIN. WHEN THE RESTRAINT CORD IS NO LONGER VISIBLE, THE SILTSACK IS FULL AND SHOULD BE EMPTIED. TO REMOVE SILTSACK, TAKE TWO PIECES OF 1 DIAMETER REBAR AND PLACE THROUGH THE LIFTING LOOPS ON EACH SIDE OF THE SACK TO FACILITATE THE LIFTING OF SILTSACK. TO EMPTY SILTSACK, PLACE UNIT WHERE THE CONTENTS WILL BE COLLECTED. PLACE THE REBAR THROUGH THE LIFT STRAPS (CONNECTED TO THE BOTTOM OF THE SACK) AND LIFT. THIS WILL LIFT SILTSACK FROM THE BOTTOM AND EMPTY THE CONTENTS. CLEAN OUT AND RINSE. RETURN SILTSACK TO ITS ORIGINAL SHAPE AND PLACE BACK IN THE BASIN. ONCE THE CONSTRUCTION CYCLE IS COMPLETE, REMOVE SILTSACK FROM THE BASIN AND CLEAN. SILTSACK SHOULD BE STORED OUT OF SUNLIGHT UNTIL NEXT USE. ANY ACCUMULATED SEDIMENT SHALL BE REMOVED FROM THE DEVICE AND DEPOSITED NOT LESS THAN 100 FEET FROM WETLAND OR WATERCOURSE.
DUST CONTROL	ALL	DURING DRY WEATHER, FOR AREAS OF EXPOSED SOIL WHERE IT IS NOT FEASIBLE TO ESTABLISH TEMPORARY GROUND COVER DUE TO CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL WET AREAS WITH WATER AT LEAST TWICE A DAY IN ORDER TO CONTROL DUST. THE MOISTENING OF SUCH AREAS MAY BE INCREASED TO FOUR TIMES A DAY DURING PERIODS OF LITTLE RAIN AS DETERMINED BY THE ENGINEER AND/OR THE CONTRACTOR.
TEMPORARY SEEDING	ALL	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 OF GP–020–001, OR IS LOCATED IN ONE OF THE WATERSHEDS LISTED IN APPENDIX C OF GP–020–001, 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. WHEN ACTIVITIES TEMPORARILY CEASE DURING CONSTRUCTION, SOIL STOCKPILES AND EXPOSED SOIL SHOULD BE STABILIZED BY SEED, MULCH OR OTHER APPROPRIATE MEASURES.
	SPRING/SUMMER/ EARLY FALL	SEED THE AREA WITH WITH RYEGRASS (ANNUAL OR PERENNIAL) AT 30 LBS. PER ACRE (APPROXIMATELY 0.7 LB/1000 SQ. FT. OR USE 1 LB/1000 SQ. FT.).
	LATE FALL/ EARLY WINTER	SEED THE AREA WITH CERTIFIED 'AROOSTOOK' WINTER RYE (CEREAL RYE) AT 100 LBS. PER ACRE (2.5 LBS/1000 SQ. FT.)
MULCH	APRIL 1 – NOVEMBER 30	ON ALL AREAS OF EXPOSED SOIL WHICH WILL NOT BE DISTURBED AGAIN WITHIN 7 DAYS, APPLY AT A RATE OF 1.5 TO 2.0 TONS PER ACRE.
WINTER MULCH	DECEMBER 1 – MARCH 31	ON ALL AREAS OF EXPOSED SOIL WHICH WILL NOT BE DISTURBED AGAIN WITHIN 7 DAYS, APPLY AT A RATE OF 3.0 TO 4.0 TONS PER ACRE.. EROSION CONTROL BLANKET MAY BE USED AS A SUBSTITUTE FOR WINTER MULCH.
INSPECTIONS	UNTIL SITE IS PERMANENTLY STABILIZED	ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED BY THE CONTRACTOR IMMEDIATELY AFTER EACH RAINFALL EVENT AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE BY THE CONTRACTOR. SEDIMENT DEPOSITS SHALL BE REMOVED BY THE CONTRACTOR WHEN THEY REACH APPROXIMATELY ONE–THIRD THE HEIGHT OF THE SILT FENCE. SEDIMENTS SHALL BE DISPOSED OF IN A MANNER THAT DOES NOT RESULT IN ADDITIONAL EROSION OR POLLUTION.

SCHEDULE OF PERMANENT EROSION CONTROL MEASURES:

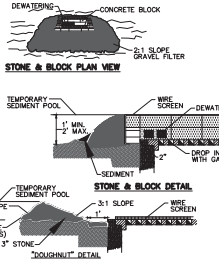
MEASURE	DATES FOR USE	TIMING, ACTIVITY, AND LOCATION
RIP RAP PROTECTION	ALL	INSTALL RIP RAP IMMEDIATELY FOLLOWING CULVERT INSTALLATION OR FINAL CHANNEL GRADING AT LOCATIONS SHOWN ON PLANS.
PAVEMENT – BASE COURSE/ FINAL COURSE	WHEN OUTSIDE AMBIENT TEMP. IS ABOVE 40°F	INSTALL ONLY IN AREAS SHOWN ON THE PLAN, SHORTLY AFTER PAVEMENT BASE IS BROUGHT TO FINAL GRADE. INSTALL NEAR COMPLETION OF PROJECT.
PERMANENT SEEDING	APRIL 15 TO SEPT. 15	ON FINAL GRADE AREAS, WITHIN 10 DAYS OF FINAL GRADE PREPARATION, PREPARE TOPSOIL, FOLLOWED WITH SEEDING AND MULCH APPLICATION. PERMANENT VEGETATION MUST BE SEEDED OR SODDED ON ALL EXPOSED AREAS. MULCH MUST BE USED AS NECESSARY FOR PROTECTION, UNTIL SEEDING IS ESTABLISHED. SEED THE AREA NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX (HTTPS://NEWP.COM/DATA/2018/08/ROADSIDE–UPLAND–8132018–NO–PERCENT.PDF) APPLIED AT THE MANUFACTURER'S SUGGESTED RATE OF 1250 SQ FT/LB.
DORMANT SEEDING	SEPT. 16 TO APRIL 15	ON FINAL GRADE AREAS, WITH PREPARED TOPSOIL, APPLY SEED AT DOUBLE THE SPECIFIED RATE, ON BARE SOIL, AND FOLLOW WITH AN APPLICATION OF WINTER MULCH. SEED THE AREA NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX (HTTPS://NEWP.COM/DATA/2018/08/ROADSIDE–UPLAND–8132018–NO–PERCENT.PDF) APPLIED AT THE MANUFACTURER'S SUGGESTED RATE OF 1250 SQ FT/LB.
GROUND COVER, TREES, SHRUBS	APRIL 15 TO NOV. 1	INSTALL WITH FINAL LANDSCAPING.
PERMANENT MULCH	ALL	INSTALL WITH FINAL LANDSCAPING.

Stabilized Construction Entrance



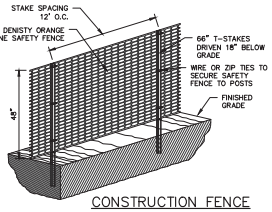
INSTALLATION NOTES:
1. STONE SIZE – USE 3" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – AS REQUIRED, BUT NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY.
3. THICKNESS – NOT LESS THAN SIX (6) INCHES.
4. WIDTH – 25 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCUR.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE. FILTER CLOTH WILL NOT BE REQUIRED ON A SINGLE FAMILY RESIDENCE LOT.
6. 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.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT 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.
8. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE 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.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

Stone & Block Drop Inlet Protection

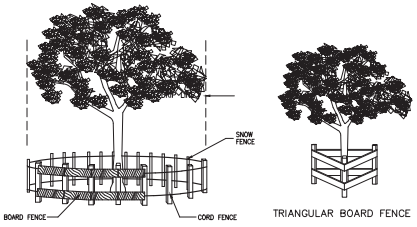


CONSTRUCTION SPECIFICATION

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. HARDWARECLOTH OR ½" 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 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.

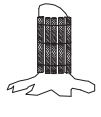


CONSTRUCTION FENCE



CORRECT METHODS OF TREE FENCING

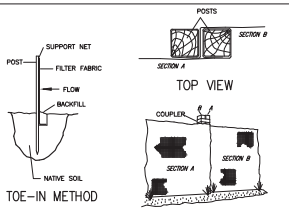
TRIANGULAR BOARD FENCE



CORRECT TRUNK ARMORING

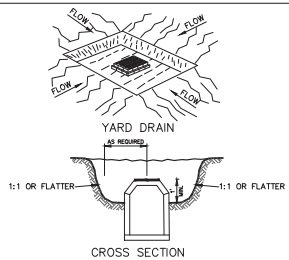
FENCING AND ARMORING

Silt Fence



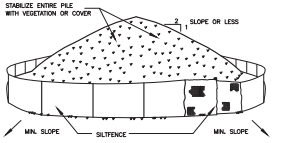
INSTALLATION NOTES:
1. EXCAVATE A 4 INCH * 4 INCH TRENCH ALONG THE LOWER PERIMETER OF THE SITE.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM)WALL OF THE TRENCH (NET SIDE AWAY FROM DIRECTION OF FLOW).
3. DRIVE THE POST INTO THE GROUND UNTIL THE NETTING IS APPROXIMATELY 2 INCHES FROM THE TRENCH BOTTOM.
4. LAY THE TOE–IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL STEEPER SLOPES REQUIRE AN INTERCEPT TRENCH.
5. JOIN SECTIONS AS SHOWN ABOVE.

Catch Basin Sediment Trap (ST–III)



CONSTRUCTION SPECIFICATIONS:
1. SEDIMENT SHALL BE REMOVED AND THE TRAP RESTORED TO ITS ORIGINAL DIMENSIONS WHEN THE SEDIMENT HAS ACCUMULATED TO 1/2 THE DESIGN DEPTH OF THE TRAP. REMOVED SEDIMENT SHALL BE DEPOSITED IN A SUITABLE AREA AND STABILIZED.
2. THE VOLUME OF SEDIMENT STORAGE SHALL BE 3600 CUBIC FEET PER ACRE OF CONTRIBUTORY DRAINAGE.
3. THE STRUCTURE SHALL BE INSPECTED AFTER EACH RAIN AND REPAIRS MADE AS NEEDED.
4. CONSTRUCTION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND SEDIMENT ARE CONTROLLED.
5. THE SEDIMENT TRAP SHALL BE REMOVED AND THE AREA STABILIZED WHEN THE CONSTRUCTED DRAINAGE AREA HAS BEEN PROPERLY STABILIZED.
6. ALL CUT SLOPES SHALL BE 1:1 OR FLATTER. MAXIMUM DRAINAGE AREA = 3–ACRES.

Soil Stockpiling



INSTALLATION NOTES

INSTALLATION NOTES:
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. SOILS OR FILL TO BE STOCKPILED ON SITE DURING CUTTING AND FILLING ACTIVITIES SHOULD BE LOCATED ON LEVEL PORTIONS OF THE SITE WITH A MINIMUM SLOPE OF 2% TO PROVIDE GOOD TEMPORARY DRAINAGE SWALES.
3. MAXIMUM SLOPE OF STOCKPILE SHALL BE 2:1.
4. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAWBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
5. STOCKPILES REMAINING IN PLACE FOR MORE THAN A WEEK SHOULD BE SEEDED AND MULCHED OR COVERED WITH GEOTEXTILE FABRIC SURROUNDED BY SILT FENCE.
6. SEE SPECIFICATIONS (THIS MANUAL) FOR INSTALLATION OF SILT FENCE.

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No.	Revisions	Date
1.	REVISED PER NYSDEP COMMENTS	10/31/22
2.	REVISED PER DEP TEST RESULTS	5/15/23

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEER'S SEAL & SIGNATURE

PROJECT:
PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
TOWN OF CARMEL
PUTNAM COUNTY – NEW YORK

DETAILS

HEC
HUDSON ENGINEERING & CONSULTING, P.C.
45 Knollwood Road – Suite 201
Elmsford, New York 10523
T 914-909-0420
F 914-580-0988

Date: 3/24/23 Sheet
Scale: N.T.S. 3
Designed By: D.C. 5
Checked By: M.S.
Sheet No.
C-3

CONSTRUCTION PHASE:

DURING THE CONSTRUCTION PHASE OF THE PROJECT, A SEDIMENT AND EROSION CONTROL PLAN SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION'S BEST MANAGEMENT PRACTICES (BMP). THE PRIMARY GOALS OF THE SEDIMENT AND EROSION CONTROL PLAN ARE TO PREVENT THE TRACKING OF DIRT AND MUD ONTO ADJACENT ROADS, TO PREVENT MUD AND SILT FROM ENTERING INTO EXISTING AND PROPOSED DRAINAGE FACILITIES, AND TO PROTECT THE RECEIVING WATERS FROM CONTAMINATION DURING THE CONSTRUCTION.

DURING CONSTRUCTION, THE PARTY RESPONSIBLE FOR IMPLEMENTING THE TEMPORARY (DURING CONSTRUCTION) AND PERMANENT STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM WILL BE THE CONTRACTOR. THE NAME AND CONTACT INFORMATION ARE AS FOLLOWS:

- SCOTT FREY
  351 WIXON POND ROAD
  MAHOPAC, NY 10541
  PHONE: (914) 804-9028
  EMAIL: scottwfrey@yahoo.com

A NEW YORK STATE PROFESSIONAL ENGINEER OR CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (P.E. OR CPESC) SHALL 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 SHOWN ON THE PLAN HAVE BEEN ADEQUATELY INSTALLED AND/OR IMPLEMENTED TO ENSURE OVERALL PREPAREDNESS OF THE SITE FOR CONSTRUCTION. FOLLOWING THE COMMENCEMENT OF CONSTRUCTION, PER THE NYS DEC SPDES PERMIT FOR STORMWATER DISCHARGES GP-0-20-001 (PART IV.C.2.E), SITE INSPECTIONS SHALL BE CONDUCTED BY THE P.E. OR CPESC AT LEAST TWO (2) TIMES EVERY SEVEN (7) CALENDAR DAYS. THE TWO (2) INSPECTIONS SHALL BE SEPARATED BY A MINIMUM OF TWO (2) FULL CALENDAR DAYS.

DURING EACH INSPECTION, THE REPRESENTATIVE SHALL RECORD THE FOLLOWING:

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 APPROXIMATE DEGREE OF SEDIMENT ACCUMULATION AS A PERCENTAGE OF THE SEDIMENT STORAGE VOLUME;
5. INSPECT ALL EROSION AND SEDIMENT CONTROL PRACTICES AND RECORD ALL MAINTENANCE REQUIREMENTS. 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 THE BARRIER. RECORD THE DEPTH OF SEDIMENT WITHIN CONTAINMENT STRUCTURES AND ANY EROSION NEAR OUTLET AND OVERFLOW STRUCTURES.
6. ALL IDENTIFIED DEFICIENCIES.

THE P.E. OR CPESC SHALL MAINTAIN A RECORD OF ALL INSPECTION REPORTS IN A SITE LOGBOOK. THE SITE LOGBOOK SHALL BE MAINTAINED ON-SITE AND BE MADE AVAILABLE TO THE TOWN OF CARMEL, THE NYSDEC AND THE NYCDEP. A SUMMARY OF THE SITE INSPECTION ACTIVITIES SHALL BE POSTED ON A MONTHLY BASIS IN A PUBLICLY ACCESSIBLE LOCATION AT THE SITE.

THE PROJECTS ANTICIPATED START DATE IS JUNE 2023 AND THE ANTICIPATED COMPLETION DATE IS ESTIMATED TO OCCUR IN APRIL 2024.

CONSTRUCTION SEQUENCING

A PRE-CONSTRUCTION MEETING WITH THE APPROPRIATE PERMITTING AUTHORITY SHALL BE SCHEDULED PRIOR TO THE START OF WORK. ALL INVOLVED PARTIES SHALL BE PRESENT, INCLUDING A REPRESENTATIVE FROM NYCDEP, THE APPLICANT, THE DESIGN ENGINEER, THE CONTRACTOR, AND THE TOWN OF CARMEL ENGINEERING DEPARTMENT. THE APPLICANT MUST NOTIFY THE NYCDEP AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITY SO THAT INSPECTIONS CAN BE SCHEDULED BY THE NYCDEP.

THE FOLLOWING EROSION CONTROL SCHEDULE SHALL BE UTILIZED:

1. INSTALL SILT FENCE IN THE LOCATIONS SHOWN ON THE PLANS. A DOUBLE ROW OF SILT FENCE SHALL BE INSTALLED ADJACENT TO THE ENTIRE LENGTH OF THE EXISTING WETLANDS/DRAINAGE CHANNEL, AS WELL AS DOWN SLOPE OF ALL AREAS OF DISTURBANCE DIRECTLY TRIBUTARY TO THE EXISTING WETLANDS/CHANNEL. REMOVE VEGETATION AS NECESSARY FOR SILT FENCE INSTALLATION.
2. INSTALL ORANGE CONSTRUCTION FENCING AROUND ALL AREAS TO BE USED FOR RAIN GARDENS. FENCING SHALL ONLY BE TEMPORARILY REMOVED FOR THE INSTALLATION OF EACH RAIN GARDEN AND SHALL BE REINSTALLED FOR THE REMAINING DURATION OF CONSTRUCTION ACTIVITIES UNTIL COMPLETION OF CONSTRUCTION.
3. INSTALL ORANGE CONSTRUCTION FENCING AROUND PROPOSED SEPTIC FIELD. CONSTRUCTION FENCING TO REMAIN IN PLACE FOR THE DURATION OF CONSTRUCTION ACTIVITIES.
4. INSTALL STABILIZED CONSTRUCTION ENTRANCE IN LOCATION SHOWN ON THE PLANS. CONSTRUCTION ENTRANCE TO REMAIN IN PLACE FOR THE DURATION OF CONSTRUCTION ACTIVITIES, UNTIL THE DRIVEWAY CAN BE STABILIZED WITH ASPHALT PAVEMENT.
5. INSTALL TREE PROTECTION ON ALL EXISTING TREES TO REMAIN IMMEDIATELY ADJACENT TO THE LIMITS OF DISTURBANCE.
6. INSTALL TEMPORARY STONE CHECK DAM IN CHANNEL DOWN GRADIENT OF LOCATION OF CULVERT CROSSING. LOCATION OF STONE CHECK DAM TO BE RELOCATED ALONG CHANNEL AS INSTALLATION OF PIPING PROGRESSES FROM CONNECTION POINT WITHIN WIXON POND ROAD.
7. INSTALL 18-INCH CULVERT AND ASSOCIATED DRAINAGE STRUCTURES STARTING AT CONNECTION POINT TO EXISTING DRAIN INLET WITHIN WIXON POND ROAD, UP TO AND INCLUDING THE PROPOSED STONE MASONRY HEADWALL AT DRIVEWAY CROSSING. ALL WORK TO BE PERFORMED DURING DRY SEASON WHEN CHANNEL IS EMPTY AND/OR FLOW IS MINIMAL.
8. REMOVE ALL TREES WITHIN THE LIMITS OF DISTURBANCE. PREVENT DAMAGE TO BUILDINGS, PAVEMENT, PIPES, CONDUITS, POLES AND OTHER STRUCTURES ABOVE AND BELOW GROUND THAT ARE ADJOINING OR INCLUDED IN THE CONTRACT AREA. REPAIR DAMAGE RESULTING FROM THE CONTRACTOR'S NEGLIGENCE. REMOVE TREES WHERE INDICATED, AS FOLLOWS (REMOVAL OF EXISTING TREES SHALL BE LIMITED TO THE AREA OF EACH INDIVIDUAL PHASE OF CONSTRUCTION. NO TREES SHALL BE DISTURBED OUTSIDE OF THESE AREAS):
   a. TOP AND LIMB ALL TREES BEFORE FALLING, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
   b. CHIP OUT STUMPS TO A DEPTH OF NOT LESS THAN 6 INCHES BELOW FINISHED GRADE. BACKFILL STUMP HOLES WITH TOPSOIL, AND SEED.
   c. REMOVE AND DISPOSE OF ALL LOGS, TREE TRIMMINGS, AND DEBRIS FROM PROPERTY. LEAVE WORK AREA IN A NEAT UNCLUTTERED CONDITION.
   d. RESTORE GRADES TO INDICATED LEVELS WHERE SETTLEMENT OR DAMAGE DUE TO PERFORMANCE OF THE WORK HAS OCCURRED. CORRECT CONDITIONS CONTRIBUTING TO SETTLEMENT OR DAMAGE.
   e. RESTORE PAVEMENTS, WALKS, CURBS, LAWNS, AND OTHER EXTERIOR SURFACES DAMAGED DURING PERFORMANCE OF THE WORK TO MATCH THE APPEARANCE AND PERFORMANCE OF EXISTING CORRESPONDING SURFACES AS CLOSELY AS PRACTICABLE.
9. ROUGH GRADE DRIVEWAY AND LOCATION OF FOUNDATION. ALL ROUGH GRADING SHALL NOT COMMENCE UNTIL CULVERT HAS BEEN FULLY INSTALLED AND EXISTING WATERCOURSE HAS BEEN DIVERTED.
10. PROVIDE CONSTRUCTION STAGING AREA ADJACENT TO BUILDING FOUNDATION WITHIN PROPOSED DRIVEWAY OUTSIDE OF WETLANDS BUFFER. STAGING AREA TO BE DELINEATED WITH ORANGE SAFETY CONSTRUCTION FENCING.
11. EXCAVATE AND CONSTRUCT FOUNDATION FOR NEW RESIDENCE.
12. TEMPORARILY REMOVE CONSTRUCTION FENCING AROUND LOCATION OF EACH RAIN GARDEN. CONSTRUCT RAIN GARDENS AND ASSOCIATED PIPING IN THE LOCATIONS SHOWN ON THE PLANS. PLUG ALL OPENINGS FOR FUTURE CONNECTION. REINSTALL CONSTRUCTION FENCING AROUND RAIN GARDENS TO PREVENT UNNECESSARY DISTURBANCE TO AREAS.
13. INSTALL DRAIN INLETS, SWALES AND ASSOCIATED PIPING ADJACENT TO DRIVEWAY IN THE LOCATIONS SHOWN ON THE PLANS AND CONNECT TO PREVIOUSLY INSTALLED RAIN GARDENS. PROVIDE INLET PROTECTION ON ALL NEWLY INSTALLED DRAIN INLETS. ALL INLETS TO THE PROPOSED RAIN GARDEN SHALL REMAIN PLUGGED UNTIL SITE IS 80% STABILIZED WITH VEGETATION.
14. CONSTRUCT BUILDING. INSTALL AND CONNECT ALL ROOF DRAIN LEADERS TO PREVIOUSLY CONSTRUCTED RAIN GARDENS AS SHOWN ON THE PLANS. ALL INLETS TO THE PROPOSED RAIN GARDEN SHALL REMAIN PLUGGED UNTIL SITE IS STABILIZED.
15. INSTALL SEPTIC SYSTEM AND WELL. SEPTIC SYSTEM TO REMAIN SURROUNDED WITH CONSTRUCTION FENCING FOR THE DURATION OF CONSTRUCTION ACTIVITIES.
16. INSTALL DRIVEWAY SUB-BASE COURSE AND REMOVE STABILIZED CONSTRUCTION ENTRANCE.
17. INSTALL 4"-6" TOPSOIL, FINE GRADE, SEED THE ENTIRE PROJECT SITE AND INSTALL LANDSCAPE PLANTINGS. SPREAD SALT HAY OVER SEEDED AREAS. ALL SEEDING FOR FINAL VEGETATIVE STABILIZATION SHALL BE APPLIED AS FOLLOWS:

    TEMPORARY STABILIZATION (MAY 1ST THROUGH OCTOBER 31ST PLANTING SEASON)

    THE FOLLOWING SEEDING APPLICATION SHOULD BE USED DEPENDING ON THE TIME OF YEAR.

    - SPRING/SUMMER OR EARLY FALL, SEED THE AREA WITH RYEGRASS (ANNUAL OR PERENNIAL) AT 30 LBS. PER ACRE (APPROXIMATELY 0.7 LB/1000 SQ. FT. OR USE 1 LB/1000 SQ. FT.).
    - LATE FALL OR EARLY WINTER, SEED CERTIFIED 'AROOSTOOK' WINTER RYE (CEREAL RYE) AT 100 LBS. PER ACRE (2.5 LBS/1000 SQ. FT.).

    PERMANENT STABILIZATION (MAY 1ST THROUGH OCTOBER 31ST PLANTING SEASON)

    - PROVIDE MINIMUM OF FOUR (4) INCHES TOPSOIL FOR ALL NEW LAWN AREAS. TOP DRESS ALL EXISTING DISTURBED LAWN AREAS WITH TWO (2) INCHES OF TOPSOIL.
    - SEED THE AREA NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX (HTTPS://NEWP.COM/DATA/2018/08/ROADSIDE-UPLAND-8132018-NO-PERCENT.PDF) APPLIED AT THE MANUFACTURER'S SUGGESTED RATE OF 1250 SQ FT/LB.
    - FINE RAKE, ROLL AND WATER TO A DEPTH OF ONE INCH ALL SEEDED AREAS.
    - APPLY AIR-DRIED HAY OR STRAW MULCH TO PROVIDE 90% COVERAGE OF SURFACE (APPROXIMATELY 90 LBS. PER 1,000 SF). USE SMALL GRAIN STRAW WHERE MULCH IS MAINTAINED FOR MORE THAN THREE MONTHS

      CONTRACTOR SHALL PROVIDE, AT HIS OWN EXPENSE, PROTECTION AGAINST TRESPASSING AND OTHER DAMAGE TO LAWN AREAS.
18. CLEAN STORMWATER CONVEYANCE SYSTEM COMPONENTS, INCLUDING ALL CATCH BASINS AND PIPING.
19. UNPLUG ALL PIPE INLETS TO RAIN GARDENS.
20. INSTALL DRIVEWAY BITUMINOUS CONCRETE TOP COURSE.
21. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES AFTER THE SITE IS 80% STABILIZED WITH VEGETATION.

*SOIL EROSION AND SEDIMENT CONTROL MAINTENANCE MUST OCCUR EVERY TWO WEEKS AND PRIOR TO AND AFTER EVERY ½" OR GREATER RAINFALL EVENT.

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CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION:

GENERAL:

ADEQUATE MEASURES SHALL BE TAKEN TO MINIMIZE CONTAMINANT PARTICLES ARISING FROM THE DISCHARGE OF SOLID MATERIALS, INCLUDING BUILDING MATERIALS, GRADING OPERATIONS, AND THE RECLAMATION AND PLACEMENT OF PAVEMENT, DURING PROJECT CONSTRUCTION, INCLUDING BUT NOT LIMITED TO:

- BUILDING MATERIALS, GARBAGE, AND DEBRIS SHALL BE CLEANED UP DAILY AND DEPOSITED INTO DUMPSTERS, WHICH WILL BE PERIODICALLY REMOVED FROM THE SITE AND APPROPRIATELY DISPOSED OF. ALL DUMPSTERS AND CONTAINERS LEFT ON-SITE SHALL BE COVERED AND SURROUNDED WITH SILT FENCE IN ORDER TO PREVENT CONTAMINANTS FROM LEAVING THE SITE. SILT FENCING SHALL BE INSPECTED ON A WEEKLY BASIS.
- DUMP TRUCKS HAULING MATERIAL FROM THE CONSTRUCTION SITE WILL BE COVERED WITH A TARPAULIN.
- THE PAVED STREET ADJACENT TO THE SITE ENTRANCE WILL BE SWEPT DAILY TO REMOVE EXCESS MUD, DIRT, OR ROCK TRACKED FROM THE SITE.
- PETROLEUM PRODUCTS WILL BE STORED IN TIGHTLY SEALED CONTAINERS THAT ARE CLEARLY LABELED.
- ALL VEHICLES ON SITE WILL BE MONITORED FOR LEAKS AND RECEIVE REGULAR PREVENTIVE MAINTENANCE TO REDUCE THE CHANCE OF LEAKAGE.
- ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. SPILLS LARGE ENOUGH TO REACH THE STORM SYSTEM WILL BE REPORTED TO THE NATIONAL RESPONSE CENTER AT 1-800-424-8802.
- MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP WILL BE KEPT IN THE TEMPORARY MATERIAL STORAGE TRAILER ONSITE. EQUIPMENT WILL INCLUDE, BUT NOT BE LIMITED TO, BROOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAW DUST, AND PLASTIC AND METAL TRASH CONTAINERS.
- ALL PAINT CONTAINERS AND CURING COMPOUNDS WILL BE TIGHTLY SEALED AND STORED WHEN NOT REQUIRED FOR USE. EXCESS PAINT WILL NOT BE DISCHARGED TO THE STORM SYSTEM, BUT WILL BE PROPERLY DISPOSED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
- SANITARY WASTE WILL BE COLLECTED FROM PORTABLE UNITS A MINIMUM OF TWO TIMES A WEEK TO AVOID OVERFILLING. ALL SANITARY WASTE UNITS SHALL BE SURROUNDED BY SILT FENCE TO PREVENT CONTAMINANTS FROM LEAVING THE SITE. SILT FENCING SHALL BE INSPECTED ON A WEEKLY BASIS.
- ANY ASPHALT SUBSTANCES USED ON-SITE WILL BE APPLIED ACCORDING TO THE MANUFACTURER'S RECOMMENDATION.
- FERTILIZERS WILL BE STORED IN A COVERED SHED AND PARTIALLY USED BAGS WILL BE TRANSFERRED TO A SEALABLE BIN TO AVOID SPILLS AND WILL BE APPLIED ONLY IN THE MINIMUM AMOUNTS RECOMMENDED BY THE MANUFACTURER AND WORKED INTO THE SOIL TO LIMIT EXPOSURE TO STORMWATER.
- NO DISTURBED AREA SHALL BE LEFT UN-STABILIZED FOR LONGER THAN 14 DAYS DURING THE GROWING SEASON.
- WHEN EROSION IS LIKELY TO BE A PROBLEM, GRUBBING OPERATIONS SHALL BE SCHEDULED AND PERFORMED SUCH THAT GRADING OPERATIONS AND PERMANENT EROSION CONTROL FEATURES CAN FOLLOW WITHIN 24 HOURS THEREAFTER.
- AS WORK PROGRESSES, PATCH SEEDING SHALL BE DONE AS REQUIRED ON AREAS PREVIOUSLY TREATED TO MAINTAIN OR ESTABLISH PROTECTIVE COVER.
- DRAINAGE PIPES AND SWALES/DITCHES SHALL GENERALLY BE CONSTRUCTED IN A SEQUENCE FROM OUTLET TO INLET IN ORDER TO STABILIZE OUTLET AREAS AND DITCHES BEFORE WATER IS DIRECTED TO THE NEW INSTALLATION OR ANY PORTION THEREOF, UNLESS CONDITIONS UNIQUE TO THE LOCATION WARRANT AN ALTERNATIVE METHOD.

SPILL CONTROL & SPILL RESPONSE:

- FOR ALL HAZARDOUS MATERIALS STORED ON SITE, THE MANUFACTURER'S RECOMMENDED METHODS FOR SPILL CLEAN UP WILL BE CLEARLY POSTED. SITE PERSONNEL WILL BE MADE AWARE OF THE PROCEDURES, AND THE LOCATIONS OF THE INFORMATION AND CLEANUP SUPPLIES.
- APPROPRIATE CLEANUP MATERIALS AND EQUIPMENT WILL BE MAINTAINED BY THE CONTRACTOR IN THE MATERIALS STORAGE AREA ON-SITE. AS APPROPRIATE, EQUIPMENT AND MATERIALS MAY INCLUDE ITEMS SUCH AS BOOMS, DUST PANS, MOPS, RAGS, GLOVES, GOGGLES, KITTY LITTER, SAND, SAWDUST, AND PLASTIC AND METAL TRASH CONTAINERS SPECIFICALLY FOR CLEAN UP PURPOSES.
- ALL SPILLS WILL BE CLEANED IMMEDIATELY AFTER DISCOVERY AND THE MATERIALS DISPOSED OF PROPERLY.
- THE SPILL AREA WILL BE KEPT WELL VENTILATED AND PERSONNEL WILL WEAR APPROPRIATE PROTECTIVE CLOTHING TO PREVENT INJURY FROM CONTACT WITH A HAZARDOUS SUBSTANCE.
- AFTER A SPILL, A REPORT WILL BE PREPARED DESCRIBING THE SPILL, WHAT CAUSED IT, AND THE CLEANUP MEASURES TAKEN. THE SPILL PREVENTION PLAN WILL BE ADJUSTED TO INCLUDE MEASURES TO PREVENT THIS TYPE OF SPILL FROM REOCCURRING, AS WELL AS CLEAN UP INSTRUCTIONS IN THE EVENT OF REOCCURRENCES.
- THE CONTRACTOR'S SITE SUPERINTENDENT, RESPONSIBLE FOR DAY-TO-DAY OPERATIONS, WILL BE THE SPILL PREVENTION AND CLEANUP COORDINATOR. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT THE SITE SUPERINTENDENT HAS HAD APPROPRIATE TRAINING FOR HAZARDOUS MATERIALS HANDLING, SPILL MANAGEMENT, AND CLEANUP.
- THE CONTRACTOR'S SITE SUPERINTENDENT WILL BE NOTIFIED IMMEDIATELY WHEN A SPILL OR THE THREAT OF A SPILL IS OBSERVED. THE SUPERINTENDENT WILL ASSESS THE SITUATION AND DETERMINE THE APPROPRIATE RESPONSE.
- IF SPILLS REPRESENT AN IMMINENT THREAT OF ESCAPING EROSION AND SEDIMENT CONTROLS AND ENTERING RECEIVING WATERS, PERSONNEL WILL BE DIRECTED TO RESPOND IMMEDIATELY TO CONTAIN THE RELEASE AND NOTIFY THE SUPERINTENDENT AFTER THE SITUATION HAS BEEN STABILIZED.
- SPILL KITS CONTAINING APPROPRIATE MATERIALS AND EQUIPMENT FOR SPILL RESPONSE AND CLEANUP WILL BE MAINTAINED BY THE CONTRACTOR AT THE SITE.
- IF OIL SHEEN IS OBSERVED ON SURFACE WATER, ACTION WILL BE TAKEN IMMEDIATELY TO REMOVE THE MATERIAL CAUSING THE SHEEN. THE CONTRACTOR WILL USE APPROPRIATE MATERIALS TO CONTAIN AND ABSORB THE SPILL. THE SOURCE OF THE OIL SHEEN WILL ALSO BE IDENTIFIED AND REMOVED OR REPAIRED AS NECESSARY TO PREVENT FURTHER RELEASES.
- IF A SPILL OCCURS THE SUPERINTENDENT OR THE SUPERINTENDENT'S DESIGNEE WILL BE RESPONSIBLE FOR COMPLETING THE SPILL REPORTING FORM AND FOR REPORTING THE SPILL TO THE CONTACTS LISTED BELOW.
- PERSONNEL WITH PRIMARY RESPONSIBILITY FOR SPILL RESPONSE AND CLEAN UP WILL RECEIVE TRAINING BY THE CONTRACTOR'S SITE SUPERINTENDENT OR DESIGNEE. THE TRAINING MUST INCLUDE IDENTIFYING THE LOCATION OF THE SPILL KITS AND OTHER SPILL RESPONSE EQUIPMENT AND THE USE OF SPILL RESPONSE MATERIALS.
- SPILL RESPONSE EQUIPMENT WILL BE INSPECTED AND MAINTAINED AS NECESSARY TO REPLACE ANY MATERIALS USED IN SPILL RESPONSE ACTIVITIES.

SPILL CONTROL NOTIFICATION:

- A REPORTABLE SPILL IS A QUANTITY OF FIVE (5) GALLONS OR MORE OR ANY SPILL OF OIL WHICH: (1) VIOLATES WATER QUALITY STANDARDS, (2) PRODUCES A "SHEEN" ON A SURFACE WATER, OR (3) CAUSES A SLUDGE OR EMULSION. THIS SPILL MUST BE REPORTED IMMEDIATELY TO THE AGENCIES LISTED BELOW.
- ANY SPILL OF OIL OR HAZARDOUS SUBSTANCE TO WATERS OF THE STATE MUST BE REPORTED IMMEDIATELY BY TELEPHONE TO THE FOLLOWING AGENCIES:

- 911 – POLICE, FIRE AND EMS
- CARMEL ENGINEERING DEPARTMENT
  60 MCALPIN AVE
  CARMEL, NY 10541
  PHONE: (845) 628-1500
- MAHOPAC VOLUNTEER FIRE DEPARTMENT
  741 US-6
  MAHOPAC, NY 10541
  PHONE: (845) 628-3160
- NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC)
  SPILL REPORTING HOTLINE
  (1800) 457-7362
- NATIONAL RESPONSE CENTER: (1800) 424-8802
- LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)
  WESTCHESTER COUNTY OFFICE OF EMERGENCY MANAGEMENT
  200 BRADHURST AVENUE
  HAWTHORNE, NY 10532
  (914) 864-5450
- WESTCHESTER COUNTY DEPARTMENT OF HEALTH (WCDOH)
  SPILL REPORTING HOTLINE
  (914) 813-5000
- U.S. ENVIRONMENTAL PROTECTION AGENCY (USEPA)
  EPCRA INFORMATION HOTLINE
  (1800) 535-0202
- U.S. DEPARTMENT OF LABOR AND OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)
  TARRYTOWN, NY
  (914) 524-7510

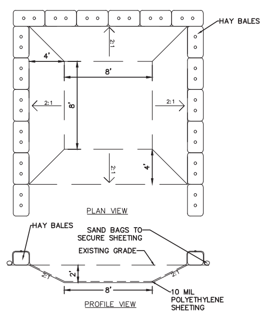
TOWN OF CARMEL ECB NOTES AND REQUIREMENTS

1. SILT FENCE SHALL BE PROVIDED WITH WIRE BACKING.
2. CONSTRUCTION EQUIPMENT SHALL NOT BE FUELED WITHIN THE WETLAND BUFFER.
3. A BRUTE 32 GALLON SPILL KIT K-32-0 SHALL BE PROVIDED ON SITE TO CONSIST OF THE FOLLOWING:
   - 50 PADS, HEAVY WEIGHT
   - 8 SOCKS, 3" X 48"
   - 2 BAGS ULTRASORB, GRANULAR 5# EA
   - 4 TEMPORARY DISPOSAL BAGS, 4 MIL
   - 4 PLASTIC SIP TIE, 12"
   - 2 PAIR NITRILE GLOVES
   - 2 PAIR SAFETY GOGGLES
   - 1 INSTRUCTION SHEET
4. NO EQUIPMENT SHALL BE STORED WITHIN THE WETLAND BUFFER UNLESS 6 MIL POLYETHYLENE SHEETING IS PROVIDED UNDER THE EQUIPMENT.
5. NO EQUIPMENT IS TO ENTER DELINEATED WETLAND AREA.
6. WETLANDS WERE FLAGGED BY TED KOZLOWSKI, JULY 2019
7. CONCRETE WASHOUT AREA
8. TREE PLAN/PERMIT
9. MITIGATION
10. 2 PIPES FTG/ROOF

STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

MEASURE	DATES FOR INSPECTION	TIMING, ACTIVITY, AND LOCATION
GENERAL MAINTENANCE (STORM SEWER, CATCH BASINS/ DRAIN INLETS, MANHOLES, PRE-TREATMENT DEVICE AND INFILTRATION BASIN)	ALL	ALL STORMWATER FACILITIES SHALL BE INSPECTED IMMEDIATELY AFTER COMPLETION OF CONSTRUCTION, AND THEN MONTHLY FOR THE FIRST THREE (3) MONTHS FOLLOWING THE COMPLETION OF THE PROJECT. WITHIN THE FIRST THREE (3) MONTHS, INSPECTIONS SHALL IMMEDIATELY BE PERFORMED FOLLOWING A LARGE STORM EVENT (I.E. PRODUCING 1/2" (ONE-HALF INCH) OF RAIN OR GREATER. THEREAFTER, THESE FACILITIES SHALL BE INSPECTED AS DESCRIBED AS FOLLOWS. UPON INSPECTION, FACILITIES SHALL BE IMMEDIATELY MAINTAINED AND/OR CLEANED AS MAY BE REQUIRED. ANY SITE AREAS EXHIBITING SOIL EROSION OF ANY KIND SHALL BE IMMEDIATELY RESTORED AND STABILIZED WITH VEGETATION, MULCH OR STONE, DEPENDING ON THE AREA TO BE STABILIZED. UPON EACH INSPECTION, ALL VISIBLE DEBRIS INCLUDING, BUT NOT LIMITED TO, TWIGS, LEAF AND FOREST LITTER SHALL BE REMOVED FROM THE BASIN, OVERFLOW DISCHARGE POINTS AND FRAMES AND GRATES OF DRAINAGE STRUCTURES.
SUMPS – CATCH BASIN/DRAIN INLETS AND DRAIN MANHOLES	UPON COMPLETION OF CONSTRUCTION: –ONCE A MONTH FOR THE FIRST THREE (3) MONTHS AFTER FIRST THREE (3) MONTHS: –EVERY FOUR (4) MONTHS THEREAFTER	ALL CATCH BASIN/DRAIN INLETS AND DRAIN MANHOLES WITH SUMPS HAVE BEEN DESIGNED TO TRAP SEDIMENT PRIOR TO ITS TRANSPORT TO THE INFILTRATION PRACTICE AND, ULTIMATELY, DOWNSTREAM. THESE SUMPS WILL REQUIRE PERIODIC INSPECTION AND MAINTENANCE TO ENSURE THAT ADEQUATE DEPTH IS MAINTAINED WITHIN THE SUMPS. THE OWNER, OR THEIR DULY AUTHORIZED REPRESENTATIVE, SHALL TAKE MEASUREMENTS OF THE SUMP DEPTH. IF SEDIMENT HAS ACCUMULATED TO 1/2 (ONE-HALF) THE DEPTH OF THE SUMP, ALL SEDIMENT SHALL BE REMOVED FROM THE SUMP. SEDIMENTS CAN BE REMOVED WITH HAND-LABOR OR WITH A VACUUM TRUCK. THE USE OF ROAD SALT SHALL BE MINIMIZED FOR MAINTENANCE OF ROADWAY AND DRIVEWAY AREAS.
RAIN GARDENS	UPON COMPLETION OF CONSTRUCTION: –ROUTINELY AS A COMPONENT OF THE PROPOSED LANDSCAPING	ROUTINE MAINTENANCE MAY INCLUDE THE OCCASIONAL REPLACEMENT OF PLANTS, MULCHING, WEEDING AND THINNING TO MAINTAIN THE DESIRED APPEARANCE. SPECIFIC ATTENTION SHOULD BE PAID TO THE FOLLOWING: – WEEDING AND WATERING ARE ESSENTIAL THE FIRST YEAR, AND CAN BE MINIMIZED WITH THE USE OF A WEED-FREE MULCH LAYER. – KEEP PLANTS PRUNED. CUT OFF OLD FLOWER HEADS AFTER A PLANT IS DONE BLOOMING. – KEEP THE GARDEN WEEDED, ESPECIALLY IN THE FIRST COUPLE OF YEARS WHILE THE NATIVE PLANTS ARE ESTABLISHING THEIR ROOT SYSTEMS. – ONCE THE RAIN GARDEN HAS MATURED, THE GARDEN AREA SHALL BE KEPT FREE OF BARE AREAS EXCEPT WHERE STEPPING STONES ARE LOCATED. – INSPECT FOR SEDIMENT ACCUMULATIONS OR HEAVY ORGANIC MATTER WHERE RUNOFF ENTERS THE GARDEN AND REMOVE AS NECESSARY. – THE TOP FEW INCHES OF PLANTING SOIL SHOULD BE REMOVED AND REPLACED WHEN WATER PONDS FOR MORE THAN 48 HOURS. – IF THE GARDEN OVERFLOW DEVICE IS AN EARTHEN BERM OR LIP, CHECK FOR EROSION AND REPAIR AS SOON AS POSSIBLE. IF EROSION CONTINUES, A HARDER ARMORING OF STONE MAY BE NECESSARY. – IF THE GARDEN OVERFLOW DEVICE IS A PIPE OR DRAIN INLET, MAKE SURE THE DEVICE IS FREE OF DEBRIS AND REMAINS UNCLOGGED. – MAKE SURE ALL APPROPRIATE ELEVATIONS HAVE BEEN MAINTAINED, NO SETTLEMENT HAS OCCURRED AND NO LOW SPOTS HAVE BEEN CREATED.

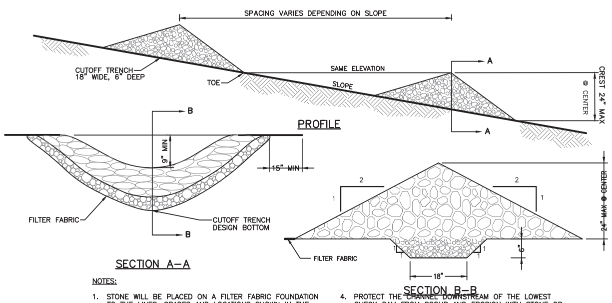
- DURING CONSTRUCTION, THE PARTY RESPONSIBLE FOR IMPLEMENTING THE TEMPORARY (DURING CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM WILL BE THE CONTRACTOR. THE NAME AND CONTACT INFORMATION WILL BE FILED WITH THE TOWN OF CORTLANDT AT THE TIME OF THE PRE-CONSTRUCTION MEETING. THE PERMANENT MAINTENANCE PROGRAM FOR ALL NEW STORMWATER MANAGEMENT FACILITIES WILL BE MANAGED BY THE HOMEOWNER UPON COMPLETION OF CONSTRUCTION AND ACCEPTANCE OF THE IMPROVEMENTS.



NOTES:

1. CONCRETE WASHOUT AREA TO BE INSTALLED PRIOR TO CONCRETE PLACEMENT ON SITE. CONCRETE WASHOUT AREA TO BE ENTIRELY SELF CONTAINED
2. HAY BALES SHALL BE PROVIDED AROUND THE PERIMETER OF CONCRETE WASHOUT AREA FOR CONTAINMENT.
3. WASHOUT AREA SHALL BE LINED WITH PLASTIC SHEETING NO THINNER THAN 10 MILS. SHEETING SHALL HAVE NO HOLES OR TEARS AND SHALL BE ANCHORED BY SAND BAGS ON ALL SIDES EXCEPT ACCESS SIDE. PLASTIC LINING TO BE REPLACED WITH EACH CLEANING
4. SIGNS SHALL BE PROVIDED AT THE CONSTRUCTION ENTRANCE AND CONCRETE AREAS INDICATING LOCATION OF WASHOUT AREA.
5. WASHOUT AREA TO BE ENCLOSED IN CONSTRUCTION FENCE.
6. WASHOUT AREAS TO BE INSPECTED DAILY TO ENSURE LINER IS INTACT AND ADEQUATE CAPACITY IS AVAILABLE AT ALL TIMES. WASHOUT AREAS SHALL BE INSPECTED IMMEDIATELY AFTER HEAVIER RAINS. DAMAGED OR LEAKING WASHOUT AREAS TO BE DEACTIVATED AND REPAIRED IMMEDIATELY.
7. CONCRETE WASTE SHALL BE REMOVED AND DISPOSED OF ONCE IT REACHES THREE-QUARTERS OF THE WASHOUT AREA'S HEIGHT. ALL WASTE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH APPLICABLE LAWS, REGULATIONS, AND GUIDELINES OF MUNICIPALITY.

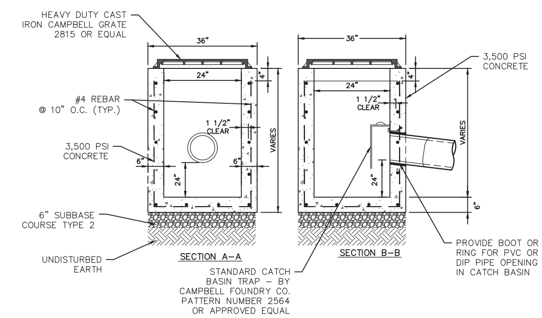
CONCRETE WASHOUT AREA



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 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.

STONE CHECK DAM



24"X24" PRECAST DRAIN INLET

NOTES:
1. CONCRETE – 3,500 PSI MINIMUM STRENGTH @ 28 DAYS
2. STEEL REINFORCEMENT – ASTM A-615, # 4 REBAR, GRADE 60
3. COVER TO STEEL – 1 ½" MINIMUM
4. DESIGN LOADING – AASHTO HS20-44
5. EARTH COVER – 0 TO 5 FEET
6. CONSTRUCTION JOINT – LAPPED

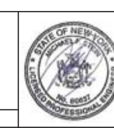
No.	Description	Date
1.	REVISED PER DEEP TEST RESULTS	5/15/23
2.	REVISED PER NYCDEP COMMENTS	10/26/23

Revisions

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
TOWN OF CARMEL
PUTNAM COUNTY – NEW YORK



DETAILS

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Date: 3/24/23
Scale: N.T.S.
Designed By: D.C.
Checked By: M.S.
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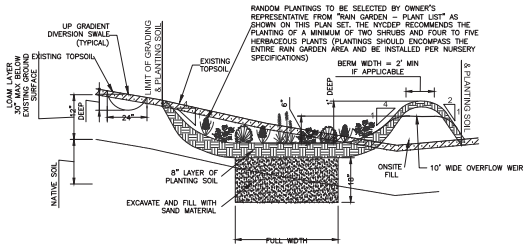
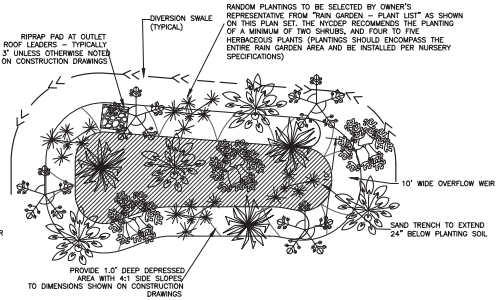


RAIN GARDEN – CROSS SECTION



RAIN GARDEN – PLAN VIEW

RG1A–1–1 DIMENSIONS:
BIORETENTION SOIL ELEV 697.00 – 129 SQ. FT.
BOTTOM ELEV. 698.50 – 129 SQ. FT.
STORAGE ELEV. 699.00 – 204 SQ. FT.

RG1A–2–2 DIMENSIONS:
BIORETENTION SOIL ELEV 695.00 – 129 SQ. FT.
BOTTOM ELEV. 696.50 – 129 SQ. FT.
STORAGE ELEV. 697.00 – 204 SQ. FT.

RG1A–2 DIMENSIONS:
BIORETENTION SOIL ELEV 697.00 – 129 SQ. FT.
BOTTOM ELEV. 698.50 – 129 SQ. FT.
STORAGE ELEV. 699.00 – 204 SQ. FT.

RG1B DIMENSIONS:
BIORETENTION SOIL ELEV 697.50 – 152 SQ. FT.
BOTTOM ELEV. 699.00 – 152 SQ. FT.
STORAGE ELEV. 699.50 – 232 SQ. FT.

RG1C DIMENSIONS:
BIORETENTION SOIL ELEV 704.00 – 129 SQ. FT.
BOTTOM ELEV. 705.50 – 129 SQ. FT.
STORAGE ELEV. 706.00 – 204 SQ. FT.

RG1D DIMENSIONS:
BIORETENTION SOIL ELEV 703.00 – 129 SQ. FT.
BOTTOM ELEV. 704.50 – 129 SQ. FT.
STORAGE ELEV. 705.00 – 204 SQ. FT.

BOTANICAL NAME	COMMON NAME	INUNDATION TOLERANCE
	TREES & SHRUBS	
LINDERA BENZOIN	COMMON SPICE BUSH	YES
SAMBUCUS CANADENSIS	ELDERBERRY	YES
PYRUS ARBUTIFOLIA	RED CHOKE BERRY	YES
AMELANCHIER CANADENSIS	SHADOWBUSH, SERVICEBERRY	YES
CORNUS AMOMUUM	SILKY DOGWOOD	YES
ALNUS RUGOSA	SPECKLED ALDER	YES
ROSA PALUSTRIC	SWAMP ROSE	IRREGULAR, SEASONAL OR REGULARLY SATURATED
ILEX VERTICILLATA	WINTERBERRY	YES
	HERBACEOUS PLANTS	
PELTANDRA VIRGINICA	ARROW ARUM	UP TO 1'
SAFFITARIA LATIFOLIA	ARROWHEAD, DUCK POTATO	UP TO 1'
ANDROPOGON GERARDI	BIG BLUESTEM	IRREGULAR OR SEASONAL INNUNDATION
ANDROPOGON GLOMERATUS	BUSHY BEARDGRASS	UP TO 1'
LOBELIA CARDINALIS	CARDINAL FLOWER	SOME TOLERATES SATURATION UP TO 100% OF SEASON
TYPHA SP.	CATTAIL	UP TO 1'
GLYCERIA STRIATA	FOWL MANNAGRASS	IRREGULAR OR SEASONAL INUDATION
SPARGANIUM EURYCARPUM	GIANT BURREED	REGULAR TO PERMANENTLY INUDATED UP TO 1'
HIBISCUS MOSCHEUTOS	MARSH HIBISCUS	UP TO 3'
PONTEDERIA CORDATA	PICKERELWEED	UP TO 1'
AGROSTIS ALBA	REDTOP	UP TO 25% OF THE SEASON
LEERSIA ORYZOIDES	RICE CUTGRASS	UP TO 3'
CAREX SPP.	SEDGES	UP TO 3'
DESCHAMPSIA CAESPITOSA	TUFTED HAIRGRASS	REGULAR TO IRREGULAR INUNDATION
SCIRPUS VALIDUS	SOFT-STEM BULRUSH	UP TO 1'
POLYGONUM SPP.	SMARTWEED	UP TO 1'
JUNCUS EFFUSUS	SOFT RUSH	UP TO 3'
PANICUM VIRGATUM	SWITCH GRASS	UP TO 3'
ACORUS CALAMUS	SWEET FLAG	UP TO 3'
SCIRPUS CYPERINUS	WOOL GRASS	IRREGULARLY TO SEASONALLY INUNDATED
-	ERNST CONSERVATION SEED ERNST 126	SEASONALLY FLOODED

RAIN GARDEN PLANTING LIST

ANY ALTERATIONS OR REVISIONS OF THESE PLANS, UNLESS DONE BY OR UNDER THE DIRECTION OF THE NYS LICENSED AND REGISTERED ENGINEER THAT PREPARED THEM, IS A VIOLATION OF THE NYS EDUCATION LAW.

No. | Description | Date
Revisions
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PROJECT:
PROPOSED
SINGLE FAMILY RESIDENCE
351 WIXON POND ROAD
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PUTNAM COUNTY – NEW YORK

DETAILS

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