

STORMWATER POLLUTION
PREVENTION PLAN (SWPPP)

FOR
D'ONOFRIO RESIDENCE
2 HILLCREST DRIVE – LOT 59.2

PREPARED FOR:

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TOWN OF OSSINING
WESTCHESTER COUNTY, NEW YORK

MARCH, 2024

SUBMITTED TO:

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PROJECT NO. OSDONOFRIO100

**THIS REPORT, IN CONJUNCTION WITH THE PROJECT PLANS,
IS CONSIDERED THE COMPLETE STORMWATER POLLUTION PREVENTION PLAN**

SWPPP PREPARER CERTIFICATION

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the NYSDEC SPDES General Permit, GP-0-20-001, for Stormwater Discharges from Construction Activity. 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 or administrative proceedings.



NYS LICENSE No. 058736

NAME: JOHN KELLARD, P.E.

DATE: MARCH, 2024

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1.0 EXECUTIVE SUMMARY

This Stormwater Pollution Prevention Plan (SWPPP) and accompanying project plans have been prepared for the construction activities associated with the proposed activities required for the development of the D'Onofrio Residence in the Town of Ossining, Westchester County, New York (See Site Location Map – Figure 1). The subject property is located at 2 Hillcrest Drive in the Town of Ossining, Westchester County, New York. The project site consists of one (1) lot identified as Tax Map Number 90.19/2/59.2 on the Town of Ossining Tax Maps. The property is approximately ± 1.3 acres in size and located in the Residential (R-30) Zoning District.

Throughout the construction process, strict adherence to the erosion control plans and specifications will be maintained to ensure that all sediment is contained within the site in a controlled manner and that the untimely or unnecessary removal of existing vegetation is prevented. It is anticipated that the project will occur over a period of approximately 12 months, commencing in Spring 2024.

The project site lies within the Pocantico and Saw Mill River Basin. Development of the site will involve disturbance to a total of ± 0.80 acres ($\pm 33,890$ s.f.). The project has been designed in accordance with Chapter 168 – Stormwater Management and Erosion and Sediment Control of the Code the Town of Ossining. This report and associated plans have been prepared in accordance with New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit GP-0-20-001 for Stormwater Discharges from Construction Activity and follows the guidelines set forth by the Town of Ossining. Based on the requirements of the NYSDEC SPDES General Permit GP-0-20-001 and the Town Code Chapter 168, the SWPPP needs only to include erosion and sediment control parameters since the proposed project will disturb more than 5,000 s.f., but less than one (1) acre.

No known enforcement actions have been commenced against the applicant for any alleged violations of law related to existing conditions or to the activity proposed.

At the time of this writing, it is understood that the following permits/approvals are required to implement the project:

TABLE 1-1: PROJECT PERMITS AND APPROVALS

AGENCY	PERMIT/APPROVAL	STATUS
Town of Ossining Planning Board	Stormwater Management and Sediment and Erosion Control Permit	Pending
Town of Ossining Building Department	Building Permit	Pending
Town of Ossining Engineering Department	Stormwater Pollution Prevention Plan	Pending
Westchester County Health Department	Septic Approval	Pending

2.0 EXISTING SITE CONDITIONS

2.1 SITE DESCRIPTION

The subject property is located at 2 Hillcrest Drive in the Town of Ossining and consists of ± 1.3 acres of land; NYS Route 100 is located immediately to the east. The ± 1.3 acre project site is presently undeveloped and consists of invasive shrubs and vines through woodland areas throughout. The terrain can be described as moderately sloping with gentler slopes within the vicinity of the proposed developed areas.

The topography varies and slopes away from the residence to the south and east, with a steeper band of slopes (in excess of 35%) located immediately east of the residence; gentler slopes are located to the rear (south) of the proposed residence. The developed portion of the property adjacent to the residence will be lawn, with pine, hemlock, maple and oak trees flanking the easterly and westerly perimeters; open woodlands are located in the northeastern portion of the property.

2.2 SOILS

The United States Department of Agriculture (USDA) Natural Resource Conservation Service Web Soil Survey has been reviewed. The delineation of the soil boundaries for the study area are shown on Figure 2 – Soils Map and the Existing Condition Hydrology Plan and Proposed Condition Hydrology Plan, Figures 3 and 4 respectively. Refer to Appendix C for the soil survey map and test data sheets.

This office conducted soil testing on March 22, 2017 to investigate the existing soil conditions and their suitability for the stormwater mitigation practices proposed. Soil testing was performed via deep test holes and percolation test holes, excavated within the vicinity of the proposed stormwater management practices, to determine the infiltration rates and verify the depth to any restrictive layers. The soil test results were generally silty sands over gray silty loam. Bedrock ranged from 5.5 feet to 9 feet below grade. Results of the field testing were used for the design of the stormwater management practices.

The surficial soil conditions and the soil data is summarized in Table 2-1 below.

TABLE 2-1: ON-SITE SOIL DISTRIBUTION

MAP SYMBOL	SOIL NAME	HYDROLOGIC SOIL GROUP	ON-SITE ACREAGE	PERCENT OF SITE
Cu	Chatfield-Hollis complex	B	± 0.4	± 28.9
Cs	Chatfield-Charlton complex	B	± 0.9	± 71.1
	TOTAL		± 1.3 acres	100%

Source: USDA Soil Conservation Service Soil Survey for Putnam and Westchester Counties, New York

The Soil Conservation Service defines the hydrologic soil groups as follows:

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

3.0 PROPOSED SITE CONDITIONS

The project site will be developed into a single-family home, including an asphalt driveway, individual septic system and stormwater improvements. The stormwater runoff generated by the driveway will be collected in a series of drain inlets. The collection system will be conveyed by 12" & 15" diameter HDPE pipes. The roof runoff will be collected into the roof leader system. Both the driveway and roof runoff will be collected and pretreated in a deep sump drain inlet equipped with a hooded outlet, and conveyed to an infiltration system consisting of Cultec 330XL infiltration chambers. These chambers were selected based on the deep and percolation soil testing that was performed by this office. The system will be sized to mitigate the increase in stormwater runoff generated by the 25-year design storm from the increase in impervious cover. Storms greater than the 25-year event will overflow to a protected outlet.

The collection system was also modeled in HydroCad. As shown, it is capable of safely conveying the 25-year storm event. The infiltration system also has the ability to treat the Water Quality Volume (WQv). The WQv for this project location is defined as the 90th percentile rainfall event. The supporting calculation to determine the WQv of 0.0190 a.f. can be found in Appendix B. As shown in Appendix B, the system can completely store and treat 0.026 a.f. without taking credit for infiltration. This is greater than 100% of the WQv.

Based on the level of stormwater treatment proposed, there are no negative impacts anticipated for any downstream properties or wetlands.

As described above, the proposed development will result in a change to various land cover types, which will ultimately increase the total impervious cover for the drainage areas analyzed. Table 3-1: Land Cover Summary, below, identifies the various land covers and hydrologic soil groups under existing and proposed conditions for each watershed area. The increased impervious surface will increase peak rates of runoff, which will be mitigated, as discussed further in this Report.

As shown in the following sections of this report, the stormwater quality and quantity mitigation control measures for the proposed development have been designed in accordance with local regulations, as well as the NYSDEC Design Standards. Additionally, an erosion and sediment control plan has been prepared in accordance with the New York State Standards and Specifications for Erosion and Sediment Control to protect the existing project site, downgradient properties, waterbodies and drainage features during construction activities and in the post development condition.

TABLE 3-1: LAND COVER SUMMARY

DESIGN LINE 1					
LAND COVER DESCRIPTION	EXISTING CONDITION				
	LAND AREA BY HYDROLOGIC SOIL GROUP (SF)				
	A	B	C	D	TOTAL
WOODED	0	45,778	0	0	45,778
TOTAL	0	45,778	0	0	45,778
LAND COVER DESCRIPTION	PROPOSED CONDITION				
	LAND AREA BY HYDROLOGIC SOIL GROUP (SF)				
	A	B	C	D	TOTAL
LAWN	0	20,411	0	0	20,411
WOODED	0	18,659	0	0	18,659
IMPERVIOUS (BUILDING, DRIVES, WALKS, ETC.)	0	6,708	0	0	6,708
TOTAL	0	45,778	0	0	45,778

4.0 STORMWATER MANAGEMENT PLAN

The proposed stormwater management system for the development has been designed to meet the applicable requirements of Local, City, and State stormwater ordinances and guidelines including, but not limited to:

- Chapter 168 – Stormwater Management and Erosion Control of the Town of Ossining Code;
- New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-20-001.

The subject development proposes the disturbance of greater than 5,000 s.f., but less than one (1) acre. As such, coverage under the General Permit is required for erosion and sediment control only. However, post-construction stormwater management controls are required and will be provided for compliance with local regulations. In order to meet the requirements, set forth by Chapter 168, post-construction stormwater management controls have been designed to provide the Water Quality Volume (WQv) as well as to mitigate peak rate attenuation of the 25-year, 24-hour design storm event.

4.1 STORMWATER MANAGEMENT OBJECTIVES

The goals of this Stormwater Management Plan are to:

- Reduce or eliminate erosion and sediment loading to downgradient properties and wetlands/water bodies during construction;
- Control the impact of stormwater runoff on the water quality of receiving waters;
- Control the volume and peak rate of runoff during and post-construction; and
- Maintain stormwater controls both during and after construction.

These goals will be achieved through site planning and implementing Best Management Practices (BMPs) for stormwater quality and quantity controls. Monitoring of temporary erosion controls throughout construction and pre- and post-construction monitoring, inspection and maintenance of BMPs will be conducted to ensure optimal performance of stormwater quality and quantity practices needed to meet these objectives.

The stormwater management system proposed to treat the stormwater runoff associated with the proposed development consists of an underground infiltration system.

4.1.1 DETERMINE WATER QUALITY TREATMENT VOLUME (WQv)

Drainage areas have been delineated on the existing and proposed condition hydrology plans to illustrate the contributing drainage area to the design point and to the stormwater management practices. Based

on these drainage areas, the ground cover (including impervious surfaces) was determined, as well as the time of concentration flow paths. From this information, the water quality volume was calculated. The water quality volume is considered to be equivalent to the 90% design storm or “first flush”. The water quality volume calculations for the drainage areas have been provided in Appendix B.

4.2 HYDROLOGIC ANALYSIS

The methodology, requirements and guidelines used in the analysis and the preparation of the stormwater management plan for the project include:

- Computer software entitled, “Hydrocad Version 10.0”, developed by Hydrocad Software Solutions, LLC. This program is based on USDA Soil Conservation Service (SCS) Technical Release 20 (TR-20).
- New York State Stormwater Management Design Manual (latest edition), including Chapter 10 Enhanced Phosphorus Removal Standards.
- New York State Standards and Specifications for Erosion and Sediment Control, (latest edition).
- Town of Ossining Code Chapter 168, “Stormwater Management and Erosion and Sediment Control”

The study area consists of an overall watershed that encompasses approximately ±0.46 acres and contains the proposed development portion of the site. The overall watershed was broken down into smaller watersheds, or subcatchments to allow for analysis of runoff conditions at several design points throughout the study area to compare the effects of the proposed development. The analysis considered existing drainage patterns, soil types, ground cover, and topography. The time of concentrations for each of the subcatchments were calculated. If any of the calculated time of concentrations for any of the subcatchments were less than the required TR-55 minimum time of concentration of five (5) minutes, then the TR-55 minimum time of concentration was used.

Stormwater management computations were based upon the Soil Conservation Service (SCS), TR-20 and TR-55 methodologies and recommendations included in the “New York Standards and Specifications for Erosion and Sediment Control”. Pre- and post-development rates of stormwater have been computed for 25-year storm event using Type III, 24-hour rainfall events. The computer software entitled “Hydrocad Version 10.0” by Hydrocad Software Solutions, LLC has been utilized to determine the runoff rates and detention requirements.

The precipitation values for the 25-year design storms were obtained from the latest Northeast Regional Climate Data Center extreme precipitation tables. The values provided are for the 24-hour design storms in the Town of Ossining.

TABLE 4-1: PRECIPITATION VALUES

DESIGN STORM (YEAR)	24-HOUR RAINFALL (INCHES)
25	6.49

Source: Northeast Regional Climate Data Center

4.2.1 PRE-DEVELOPMENT CONDITION

The existing conditions consist of one (1) drainage area and a design line to analyze the existing conditions for the area of the project site in which development is proposed. These drainage areas are illustrated on Figure 3 – Existing Hydrology Plan and include the entire area of proposed disturbance and off-site contributing drainage areas as required to calculate peak discharge rates at the design points/lines.

DRAINAGE AREA #1 (DA-1):

DA-1 totals 1.112 acres and consists of a majority of woodland and invasive shrubs and vines. DA-1 includes Hydrologic Soil Group (HSG) B soils. Flows to this design line will be analyzed for the pre/post construction comparison.

4.2.2 POST-DEVELOPMENT CONDITIONS

Under the post development condition, the vacant lot will have a new single-family house, septic, and underground stormwater infiltration system. The undisturbed portions of the property will remain as woodland. Drainage improvements are proposed to capture and treat the stormwater associated with the proposed development. Underground infiltration system is proposed to collect/treat the stormwater generated by the proposed development. The project drainage collection system will consist of a network of drain pipes, drain inlets and protected outfalls.

As illustrated on Figure 4 – Proposed Hydrology Plan, the subject property has been divided into six (6) drainage areas in the developed condition and the design lines remain unchanged from the existing condition. The six (6) drainage areas are described below:

DRAINAGE AREA #1 (DA-1):

Drainage Area #1 (DA-1) totals ± 0.03 acres and consists of a portion of the lot's proposed asphalt driveway and grass that are HSG B. DA-1P-1 drains to Design Point, DP-1 treated. The driveway is collected in drain inlets and is piped to the Infiltration System.

Drainage Area #2 (DA-2) totals ± 0.06 acre and consists of a portion of the lot's driveway and the area uphill of the driveway. The driveway is collected in drain inlets and is piped to the Infiltration System.

Drainage Area #3 (DA-3) totals ± 0.02 acre and consists of a portion of the lot's driveway. The driveway is collected in drain inlets and is piped to the Infiltration System.

Drainage Area #4 (DA-4) totals ± 0.03 acre and consists of a portion of the lot's driveway. The driveway is collected in drain inlets and is piped to the Infiltration System.

Drainage Area #5 (DA-5) totals ± 0.32 acre and consists of a portion of the lot's residence and the area uphill of the residence and driveway. The roof runoff is collected in a drain inlet and is piped to the Infiltration System.

Drainage Area #6 (DA-6) totals ± 0.65 acre and consists of lawn and woods downhill of the residence and driveway. The area sheet flows to the eastern property line towards Design Line #1 which will be untreated.

As in the pre-development conditions, the stormwater discharge to Design Point, DP-1 will continue to sheet flow into the on-site wetland. The infiltration systems are sized to fully infiltrate the smaller storm event, while the larger storm events will bypass the system and contribute to Design Point, DP-1.

4.3 WATER QUALITY VOLUME, WQv

Stormwater runoff from developed land is recognized as a significant contributor of pollution that can adversely affect the quality of the receiving waters. Treatment of stormwater runoff is important, since most runoff related water quality contaminants are transported during the initial stages of storm events. This treatment volume is known as the Water Quality Volume (WQv).

The stormwater management practices have been designed in accordance with the Performance Criteria (Chapter 4) of the Design Manual. As outlined in Chapter 4, the WQv is the runoff volume produced during the 90% storm. The proposed BMPs have been designed to treat the WQv in accordance with the Design Manual. As permitted by Chapter 9 of the Design Manual, the portions of the existing impervious surfaces being redeveloped with impervious surfaces will only require 25% of the WQv to be treated. See Appendix B for the WQv calculations for the subcatchments.

The proposed development has been designed to meet NYSDEC requirements which include the capture and temporary storage of the water quality volume (WQv). The water quality volume is defined as the estimated 1-year, 24-hour, post-construction runoff volume. The stormwater practices have been designed to capture the estimated runoff volume resulting from the 1-year, 24-hour storm over the post-development watershed. Pre-treatment has been provided in the form of deep sumps that will be used to treat stormwater before discharging to the proposed infiltration practices. The pre-treatment facilities have been sized based on the water quality volume calculations and soil percolation test results.

**TABLE 4-2: SUMMARY OF HYDROLOGIC ANALYSIS
PEAK DISCHARGE RATE AND HYDROLOGIC RUNOFF VOLUME**

PEAK DISCHARGE RATE SUMMARY	
DESIGN LINE 1	
WATERSHED CONDITION	PEAK DISCHARGE RATES BY STORM RETURN FREQUENCY (cfs)
	STORM RETURN FREQUENCY (year)
	25
EXISTING CONDITION	2.08
PROPOSED CONDITION	1.52
NET CHANGE (%)	-0.56%

HYDROLOGIC RUNOFF VOLUME SUMMARY	
DESIGN LINE 1	
WATERSHED CONDITION	RUNOFF VOLUMES BY STORM RETURN FREQUENCY (ac-ft)
	STORM FREQUENCY (year)
	25
EXISTING CONDITION	0.208
PROPOSED CONDITION	0.114
NET CHANGE (%)	-0.09%

5.0 EROSION AND SEDIMENT CONTROL PLAN

1. The contractor must have an employee carry a current NYSDEC issued trained individual card and be present on site at all times during soil disturbing activities.
2. Contractor shall be responsible for proper installation and maintenance of all soil erosion and sediment control practices.
3. All work shall be performed in accordance with the approved Stormwater Pollution Prevention Plan (SWPPP), if applicable, and/or with the soil erosion and sediment control requirements specified by the NYSDEC standards and specifications for erosion and sediment control requirements specified by the NYSDEC standards and specifications for erosion and sediment control (latest edition), and Town of Ossining standards for erosion and sediment control.
4. In the event of conflict between these specification requirements and pollution control laws, rules, regulations or permit conditions by other Federal or State or Local government agencies, the more restrictive laws, rules or regulations shall apply.
5. The temporary sediment and erosion control practices are to be installed prior to any soil disturbances, and maintained until permanent protection is established.
6. The temporary control provisions shall be coordinated with the permanent erosion and sediment control features, as specified, to ensure effective and continuous soil erosion and sediment control throughout the construction and post construction period.
7. Soil erosion and sediment control measures shall be inspected and maintained by the contractor during the life of the project, including winter shutdown, etc. Such inspection and maintenance shall continue until after the permanent stabilization measures are in place and the temporary control measures are ordered to be removed by the Engineer.
8. Timely maintenance of sediment control practices is the responsibility of the contractor. All practices shall be maintained in good working order at all times. The sediment level in all practices shall be closely monitored and sediment removed promptly when maximum levels are reached or as ordered by the engineer. All sediment control practices shall be inspected by the end of each work day, prior to every weekend, before and after each rainfall of 0.5 inch or greater within a 12 hour period, or as directed by the Engineer in order to ensure proper operation.
9. Where erosion control materials have been used on final grade that have been permanently seeded, the contractor shall care for the areas until acceptance of the contract or acceptance of the turf, whichever is later. Where necessary, such care may include, but is not limited to, providing warning signs or barricades for protection against traffic. Any surfaces that have settled, become gullied, or otherwise damaged shall be repaired at no additional expense to the owner to reestablish the grade and soil conditions that existed prior to placing erosion control materials.

10. Dust control must be provided as directed by the engineer or Town Engineer.
11. The contractor shall keep the roadways clear of soil and debris and is responsible for any street cleaning necessary during the course of the project.
12. If inspections by the engineer or the Town Inspector find deficiencies by the contractor to comply, the contractor is responsible for correcting such deficiencies outlined in any inspection report, as issued by the Engineer or MS4 within 24 hours of receipt or notification.
13. If directed, the contractor shall provide to the Engineer, weekly copies of a report for his inspection, findings and actions taken.
14. Appropriate soil erosion and sediment control measures to be used are specific to the particular site.

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

- New York Standards and Specifications for Erosion and Sediment Control, latest edition
- Ossining Town Code Chapter 168, "Stormwater Management and Erosion and Sediment Control"

The primary aim of the soil erosion and sediment control plan is to reduce soil erosion from areas stripped of vegetation during construction and to prevent silt from reaching the drainage structures, infiltration systems, wetland systems, watercourses, waterbodies and downstream properties. The infiltration systems will not be put into service until the contributing drainage areas to the system have been stabilized. As outlined in the construction sequencing notes below and on the Erosion and Sediment Control Plan, the Erosion and Sediment Control Plan is an integral component of the construction phasing and project sequencing and will be implemented to control sediment and re-establish vegetation as soon as practicable. The plan will be implemented prior to the commencement of any earthmoving activities and will be maintained through the duration of the project.

5.1 SUGGESTED CONSTRUCTION SEQUENCE AND PHASING

Outlined below is a brief listing of the suggested construction sequencing for the project.

Prior to any interior site activity, the owner, contractor, owner's engineer and Town Engineer shall hold a pre-construction meeting.

Final stabilization, as defined by the NYSDEC SPDES General Permit GP-0-20-001, is the establishment of a uniform perennial vegetative cover with a density of eighty (80) percent over the pervious surface once all soil disturbance activities have ceased. Cover can be vegetative (e.g., grass, trees, seed and mulch, shrubs or turf) or non-vegetative (e.g., geotextiles, rip-rap or gabions, pavement, roofs, etc.).

The applicant shall notify the Town of Ossining enforcement official at least 48 hours before any of the following as required by the Stormwater Management Officer:

- Start of construction.
- Installation of sediment and erosion control measures.
- Completion of site clearing.
- Installation of constructed stormwater improvements.
- Completion of rough grading.
- Completion of final grading.
- Close of the construction season.
- Completion of final landscaping.
- Successful establishment of landscaping in public areas.

General Construction Sequencing

- Owner/operator to obtain all necessary permits/approvals.
- Owner/operator to conduct a pre-construction meeting.
- Install stabilized construction entrance.
- Install silt fence and tree protection in locations as indicated on the plan.
- Commence clearing and grubbing for proposed driveway, dwelling, SSDS, stormwater practices, etc.
- Commence construction of driveway and dwelling.
- Install stormwater infiltration systems, keep the systems offline until contributing drainage areas have been stabilized.
- Install subsurface sewage disposal system.
- Provide dust control during construction as necessary.
- Final grade driveway.
- Re-vegetate all disturbed areas.
- Final stabilize all disturbed areas.
- Put stormwater systems online once contributing areas are stabilized.
- Remove silt fence and all erosion control parameters upon site's final stabilization.

5.2 TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES

The proposed soil erosion and sediment control devices include the planned erosion control practices outlined below. Maintenance procedures for each erosion control practice are also provided herein. The owner or operator must ensure that all erosion and sediment control practices identified herein are maintained in effective operating condition at all times.

In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of next business day or completed within seven (7) calendar days.

STABILIZED CONSTRUCTION ENTRANCE

A stabilized construction entrance shall be installed at the project entrance as indicated on the plans. The purpose of the stabilized construction entrance is to prevent vehicles leaving the site from tracking sediment, mud or any other construction-related materials from the site onto Hillcrest Drive.

Maintenance/Inspection

Stabilized construction entrance shall be inspected a minimum of once every seven (7) calendar days. The Contractor shall maintain the construction entrance in a manner which prevents or significantly reduces the tracking of sediment/soil onto Hillcrest Drive. The Contractor shall inspect the construction entrance daily and after each rain event for displacement or loss of aggregate. The Contractor shall top-dress the construction entrance when displacement/loss of aggregate occurs, or if the aggregate becomes clogged or silted to the extent that the entrance can no longer perform its intended function. The Contractor shall inspect the vicinity of the construction entrance several times a day and immediately remove any sediment dropped or washed onto Hillcrest Drive

SILT FENCE

Silt fence (geotextile 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 down-gradient perimeter of disturbed areas, toe of slopes or intermediately within slopes where obvious channel concentration of stormwater is not present. Silt fence shall always be installed parallel to the contours in order to prevent concentrated flows from developing along the silt fence.

Maintenance/Inspection

Silt fencing shall be inspected a minimum of once every seven (7) calendar days. Inspections shall include ensuring that the fence material is tightly 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 immediately with a new fence section. Any visible sediment build-up against the fence shall be removed immediately and deposited on-site a minimum of 100 feet outside of any regulated wetland area, watercourse or waterbody.

INLET PROTECTION

After the drain inlets have been installed and the site is completely stabilized, these drain inlets will receive stormwater from the driveway and overland watersheds. During construction, a filter fabric drop inlet barrier shall be placed around the drain inlets to allow stormwater to be filtered prior to the stormwater being discharged to the drainage system.

Maintenance/Inspection

Inlet protection devices shall be inspected a minimum of once every seven (7) calendar days. Care shall be taken to ensure that all inlet protection devices are properly located and secure and do not become displaced. Upon stabilization of the drainage areas, remove all materials and sediment and dispose of properly. Any accumulated sediments shall be removed from the device and deposited not less than 100 feet from a regulated wetland area, watercourse or waterbody.

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 three (3) feet 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/saved are illustrated on the construction drawings and will be identified in the field prior to construction.

Maintenance/Inspection

The snow fence shall remain at the drip-line of the tree to be preserved. The snow fence shall be inspected a minimum of once every seven (7) calendar days. Any damaged portions of the fence shall be repaired or replaced. 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.

RIP-RAP OUTLET PROTECTION

The outlets of all stormwater discharge areas will be protected from erosion by the placement of stone rip-rap at the culvert outlet. The purpose of the stone outlet protection is to reduce the velocities of the discharged water such that flows will not erode the receiving area.

Maintenance/Inspection

Maintenance of the outlet protection devices shall be inspected once every seven (7) calendar days to determine if any scouring beneath the rip-rap has occurred and/or if any rip-rap has been displaced. All displaced rip-rap shall be re-positioned or replaced with new rip-rap. In addition, all leaves, twigs and brush shall be removed in the vicinity of the culvert/swale outlet to ensure that stormwater is flowing unobstructed.

SOIL/MATERIAL STOCKPILING

All soil/material stripped from the construction area during grubbing and grading shall be stockpiled within the vicinity of the locations illustrated on the approved plans, or in practical locations on-site approved by the Town representative.

Maintenance/Inspection

All stockpiles shall be inspected a minimum of once every seven (7) calendar days for signs of erosion or problems with seed establishment. Soil stockpiles shall be protected from erosion by vegetating the stockpile with a rapidly-germinating grass seed and surrounded with silt fence. If the project is ongoing during the non-growing season, the stockpiles shall be protected with a tarpaulin covering the entire stockpile.

SURFACE STABILIZATION

All disturbed areas will be protected from erosion with the use of vegetative measures (e.g., grass seed mix, sod), hydromulch, hay or erosion control blankets.

Erosion control barriers consisting of silt fencing shall be placed around exposed areas during construction. Any areas stripped of vegetation during construction will be vegetated and/or mulched immediately to prevent erosion of the exposed soils. In areas where significant erosion potential exists (steep slopes) and/or where specifically directed, Curlex Excelsior erosion control blankets (manufactured by American Excelsior or approved equal) shall be installed.

Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, erosion control blankets or sod. A permanent vegetative cover will be established upon completion of construction of those areas which have been brought to finish grade and to remain undisturbed.

GENERAL LAND GRADING

The applicant/developer or their representatives shall be on-site at all times when construction or grading activity takes place and shall inspect and document the effectiveness of all sediment and erosion control practices. No more than five (5) acres of disturbed land will be exposed without stabilization at any one time.

The intent of the erosion controls is to control all disturbed areas, such that soils are protected from erosion by temporary methods and, ultimately by permanent vegetation.

DUST CONTROL

Where vegetative or mulch cover is not practical in disturbed areas of the site, dust shall be controlled by the use of water sprinkling. The surface shall be sprayed until wet. Dust control shall continue until such time as the entire site is adequately stabilized with permanent vegetative cover.

CRITICAL AREA SEEDING

This practice applies to all disturbed areas devoid of vegetation, except where specific seeding/planting recommendations exist in other standards and specifications for specific uses such as recreation.

Site preparation will include:

- A. Seed bed preparation-scarify if compacted. Remove debris and obstacles such as rocks and stumps. A minimum of four (4) inches of topsoil shall be provided.
- B. Soil Amendments:
 - a. Lime to pH 6.0
 - b. Fertilize with 600 lbs. of 5-10-10 or equivalent per acre (14 lbs/1,000 sq. ft.)
- C. Seed Mixtures:

Critical Area Seed Mixture @ 35 lbs. Per Acre (0.8 lb./1,000 sq. ft.)

Seed mixture to consist of:

Creeping Red Fescue (*Festuca Rubra*)

Switchgrass (*Panicum Virgatum*)

Timothy (*Phleum Pratense*)

Big Bluestem (*Andropogon Gerardii*)

Little Bluestem (*Andropogon Scoparius*)

Add inoculant immediately prior to seeding.
- D. Time of Seeding:

Permanent seedings may be established at any time of the year if property mulched and adequate moisture is provided. Mid summer is not a good time to seed, but these seedings, if construction is complete and adequately irrigated, will facilitate covering the land. Temporary seedings should be made within 24 hours of construction or disturbance. If not, the soil must be scarified prior to seeding.
- E. Method of Seeding:

Hand-broadcasting, drilling with cultipack type seeder to hydroseeding are acceptable. Hydroseeding shall be performed in accordance with the current edition of the "NYSDOT's Standard Specifications - Construction and Materials", Section 610-3.02, Method No. 1. Good soil to seed contact is the key to successful seedings.
- F. Mulching:

Mulching is essential to obtain a uniform stand of plants and should be applied to prevent erosion while vegetation cover is established. The mulching specifications provided hereon apply to all exposed areas.

Mulch Material: Air-dried straw (cereal grain); free of undesirable seeds and coarse materials.

Application Rate: 90 - 100 lbs. per 1,000 sq. ft. or 2 tons per acre.

Recommended Surface Coverage: Approximately 90%

Mulch Anchoring Material: Biodegradable mulch netting or hydromulch 11 - 17 lbs. per 1,000 sq. ft. or 500 - 750 lbs. per acre.

Method of Anchoring Application: Staple much netting (light-weight paper, jute wood fiber, or plastic netting) to soil surface in accordance with netting manufacturer's recommendations.

Hydromulch to be applied through a hydroseeder immediately after mulching.

G. Irrigation:

Watering is essential to establish a new seeding. Weather conditions and the intended use of he area will dictate when to water. Irrigation is a specialized practice and care needs to be taken not to exceed the application rate/infiltration rate of a given soil. Each application must be uniformly applied and 1 to 2 inches of water should be applied per application set up.

WINTER STABILIZATION

This standard applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

DESIGN CRITERIA:

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.
2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.
3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.
4. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.
5. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.
6. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.
7. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.
8. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:
 - A. Work will resume within 24 hours in the same area and no precipitation is forecast or;
 - B. The work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

2. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance/ Inspection

The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", all bare exposed soil must be stabilized by established vegetation, straw or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

5.3 PERMANENT EROSION AND SEDIMENT CONTROL MEASURES

Permanent erosion and sediment control will be accomplished by diverting stormwater runoff from steep slopes, controlling/reducing stormwater runoff velocities and volumes, and vegetative and structural surface stabilization. All of the permanent facilities are relatively maintenance free and only require periodic inspections. The owner will provide maintenance for all the permanent erosion and sediment control facilities.

Riprap aprons will be used at the discharge end of all piped drainage systems. Runoff velocities will be reduced to levels that are non-erosive to the receiving waterbodies through use of these aprons.

Other than the buildings and paved surfaces, disturbed surfaces will be stabilized with vegetation. The vegetation will control stormwater runoff by preventing soil erosion, reducing runoff volume and velocities, and providing a filter medium. Permanent seeding should optimally be undertaken in the spring from March through May and in late summer and fall from late August to October.

5.4 POLLUTION PREVENTION MEASURES FOR CONSTRUCTION RELATED ACTIVITIES

Pollution prevention practices for preventing litter, construction chemicals (if applicable) and construction debris from becoming a pollutant source in stormwater discharge include daily pickup of construction debris, inspection, and physical controls such as silt fencing. Inspections will also be conducted to ensure that dust control measures are utilized as necessary. During construction, maintenance, construction and waste materials will be stored within suitable areas/dumpsters, as appropriate, to minimize the exposure of the materials to stormwater and spill prevention. All maintenance and construction waste will be disposed of in a safe manner in accordance with all applicable regulations.

The following measures must be implemented to control the possible exposure of harmful substances and materials to stormwater runoff:

1. Material resulting from the clearing and grubbing operation must be stockpiled away from storm drainage, water bodies or watercourses and surrounded with adequate erosion and sediment

- control measures. Soil stockpile locations must be exposed no longer than fourteen (14) calendar days before seeding.
2. Equipment maintenance areas must be protected from stormwater flows and must be supplied with appropriate waste receptacles for spent chemicals, solvents, oils, greases, gasoline, and any pollutants that might contaminate the surrounding habitat or water supply. Equipment wash-down zones must be within areas draining to sediment control devices.
 3. The use of detergents for large-scale (i.e., vehicles, buildings, pavement surfaces, etc.) washing is prohibited.
 4. Material storage locations and facilities (i.e., covered storage areas, storage sheds, etc.) must be on-site and must be stored according to the manufacturer's standards in a dedicated staging area. Chemicals, paints, solvents, fertilizers, and other toxic material must be stored in waterproof containers. Runoff containing such materials must be collected, removed from the site, treated and disposed at an approved solid waste or chemical disposal facility.
 5. Hazardous spills must be immediately contained to prevent pollutants from entering the surrounding habitat or water supply. Spill Kits must be provided on-site and must be displayed in a prominent location for ease of access and use. Spills greater than 5 gallons must be reported to the NYSDEC Response Unit at 1-800-457-7362. In addition, a record of the incidents or notifications must be documented and attached to the SWPPP.
 6. Portable sanitary waste facilities must be provided on-site for workers and must be properly maintained.
 7. Dumpsters or debris containers must be on-site and must be of adequate size to manage respective materials. Regular collection and disposal of wastes must occur as required.
 8. Temporary concrete washout facilities must be a minimum of fifty (50) feet from storm drain inlets, open drainage facilities, and watercourses. Each facility should be away from construction traffic or access areas to prevent disturbance or tracking. A sign must be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities. When temporary concrete washout facilities are no longer required for the work, the hardened concrete must be removed and disposed of. Materials used to construct the temporary concrete washout facilities must be removed and disposed of. Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities must be backfilled or repaired, seeded, and mulched for final stabilization. Wastewater discharges from washout of concrete is prohibited.
 9. Non-stormwater components of site discharge must be clean water. Water used for construction, which discharges from the site, must originate from a public water supply or approved private well. Water used for construction that does not originate from an approved public supply must not discharge from the site.

10. Discharges from dewatering activities, including discharges from dewatering trenches and excavations, must be managed by appropriate control measures.
11. Wastewater discharges from washout and cleanout of stucco, paint, form release oils, curing compounds, and other construction materials is prohibited.

6.0 SWPPP IMPLEMENTATION

6.1 PRE-CONSTRUCTION MEETING

Before beginning construction, the owner or operator must set up a pre-construction meeting with the Town representative, contractors, and subcontractors. The primary purpose of the pre-construction meeting is to discuss the responsibilities of each party as they relate to the implementation of the SWPPP and clarify any questions.

A copy of the Contractor Certification Form is provided in Appendix A. This form will be signed by the contractor prior to the commencement of construction activity. Each contractor and subcontractor shall identify at least one (1) person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the Trained Contractor. The Trained Contractor shall be on site on a daily basis when soil disturbance activities are being performed. The Trained Contractor must receive four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. The Trained Contractor must receive four (4) hours of training every three (3) years.

6.2 CONSTRUCTION SITE LOGBOOK

The owner/operator shall maintain at the construction site a copy of the Stormwater Pollution Prevention Plan Report D'Onofrio Residence, the MS4 SWPPP Acceptance Form and inspection reports from the Qualified Inspector until all disturbed areas have achieved final stabilization.

6.3 CONSTRUCTION INSPECTIONS

The applicant or developer or their representative shall be on site at all times when construction or grading activity takes place.

6.3.1 TRAINED CONTRACTOR INSPECTIONS

The Trained Contractor must inspect the erosion and sediment control practices and pollution prevention measures to ensure that they are being maintained in effective operating condition at all times. The inspections must be conducted as follows:

- For construction-sites where soil disturbance activities are on-going, the Trained Contractor must inspect the measures within the active work area daily. If deficiencies are identified, the Contractor must begin implementing corrective actions within one business day and must complete the corrective actions by the end of the day.
- For construction-sites where soil disturbance activities have been temporarily suspended (e.g., winter shutdown) and temporary stabilization measures have been applied to all disturbed areas,

the Trained Contractor can stop conducting the maintenance inspections. The Trained Contractor must resume conducting the daily maintenance inspections as soil disturbance activities resume.

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

7.0 POST-CONSTRUCTION REQUIREMENTS

7.1 AS-BUILT PLANS AND CERTIFICATION

The owners/contractor is required to submit As-Built plans for any stormwater management practices located on site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be certified by a New York State Licensed Land Surveyor or Professional Engineer.

7.2 RECORD RETENTION

Following construction, the owner or operator must retain a copy of SWPPP, project plans, and any inspection reports that were prepared in conjunction with the NYSDEC General Permit (GP-020-001) for at least five (5) years.

7.3 LONG-TERM INSPECTION AND MAINTENANCE

7.3.1 INSPECTION REQUIREMENTS

The “Grading, Utility & Erosion and Sediment Control Plan” (Sheet C-120), “Slope Disturbance Plan” (Sheet C-130) and “Erosion and Sediment Control Details” (Sheet C-500) are integral components of the post-construction stormwater facility inspection and maintenance program. The owner, its successors and/or assigns shall completely familiarize themselves with the plans, details and notes.

The stormwater facilities consist of the drainage collection system and a infiltration system and their related appurtenances and shall be collectively referred to herein as the “stormwater facilities.” The purpose of the inspection/maintenance program is to provide basic instructions to the site owner (and future owners) as to the proper inspection and maintenance of the stormwater facilities and related appurtenances and to help the owner identify if these facilities are not performing properly.

Post construction inspections and maintenance must be performed by Owner’s qualified Representative as described below. Inspections and maintenance for the various site components and stormwater management facilities must be performed in accordance with the accompanying project plans and this SWPPP.

These stormwater facilities will be inspected weekly for the first three (3) months following the completion of construction. Thereafter, these facilities will be inspected at a minimum quarterly, and always immediately following a significant rain event. Upon inspection, facilities shall be immediately maintained and/or cleaned, as required. Any site areas exhibiting soil erosion of any kind shall be immediately restored and stabilized with vegetation, mulch or rip-rap stone, as appropriate. Upon each inspection, all visible debris including, but not limited to, twigs, leaf and forest litter shall be removed from swales, discharge points and frames and grates of drainage structures.

DRAIN INLETS

All drain inlets have been designed with sumps to trap sediment prior to its transport to the infiltration systems. 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) and every four (4) months thereafter. The owner shall take measurements of the sump depth and shall remove the accumulated sediment when it reaches one-half the capacity of the sump. Sediments can be removed from the sumps with hand-labor or with a vacuum device.

INFILTRATION SYSTEM

The inlets and inspection ports shall be inspected once per month for the first year (after infiltration system have been put into service) for clogging; any debris shall be removed as necessary. Thereafter, the inlets and inspection ports shall be inspected every four (4) months. Any debris removed shall be disposed of in accordance with applicable laws and regulations.

The infiltration system shall be equipped with inspection ports located on the inlet row. From the surface through the inspection port, a stadia rod may be used to measure the depth of accumulated sediment in the inlet row of the inspection port. If the depth of accumulated sediment is greater than three (3) inches, then the inlet row shall be cleaned with water through a culvert cleaning nozzle. This shall be performed from the upstream drain inlet.

7.3.2 RESPONSIBLE PARTY

The owner, its successors and/or assigns shall be responsible for the ongoing inspection and maintenance of the proposed stormwater facilities. The applicant must execute a maintenance easement agreement/deed restriction that shall be binding on all subsequent and future lot owners served by the stormwater management facilities. In the event that an owner is not fulfilling his/her inspection and maintenance obligations, the easement shall provide for access to the facility at reasonable times for periodic inspection by the Town of Ossining to ensure that the facility is maintained in proper working condition to meet design standards and any other provisions established by the Town. The easement shall be recorded by the grantor in the office of the Westchester County Clerk and Town Clerk after approval by the Town Attorney for the Town of Ossining.

CONTACT PERSON

The entity responsible for implementing the inspection and maintenance program for all on-site stormwater facilities will be the owner, its successors and/or assigns. The current owner is Michael & Lisa D'Onofrio, 3 Spencer Place, Ossining, New York 10562.

8.0 CONCLUSION

This SWPPP identifies the measures to be implemented during construction to minimize soil erosion and control sediment transport off-site, and after construction to control the water quality and quantity of stormwater runoff from the developed site to minimize adverse effects to downstream conditions.

Considering the level of stormwater treatment and peak rate attenuation proposed in the post-development condition, the applicant believes that the project will not adversely impact the stormwater quantity or a degradation in the quality to any reservoir, watercourse or wetland. Based upon the results of the stormwater quantity analysis, the peak discharge rates and total stormwater runoff volumes will not have an adverse effect on any receiving wetlands, downstream watercourses or reservoirs.

This Stormwater Pollution Prevention Plan has been developed in accordance with the requirements of the Town of Ossining and the New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System (SPDES) Phase II technical standards. In the opinion of the SWPPP preparer, the proposed project will not adversely impact adjacent or downstream properties, or receiving surface waters or wetlands, if the erosion and sediment control measures and stormwater management facilities are properly constructed, and maintained in accordance with the requirements outlined herein.

https://kellardsessionsconsulti.sharepoint.com/sites/Kellard/Project Docs P/OSDONOFRIO100/KSC Reports/SWPPP/2024-03_OSDonofrio100_SWPPP.docx

FIGURES

FIGURE 1: SITE LOCATION MAP

FIGURE 2: SOILS MAP

FIGURE 3: EXISTING CONDITIONS HYDROLOGY PLAN

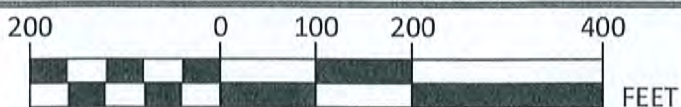
FIGURE 4: PROPOSED CONDITIONS HYDROLOGY PLAN



FIGURE 1: SITE LOCATION MAP
HILLCREST DRIVE - LOT 59.2

TOWN OF OSSINING, WESTCHESTER COUNTY, NEW YORK

DECEMBER 04, 2023



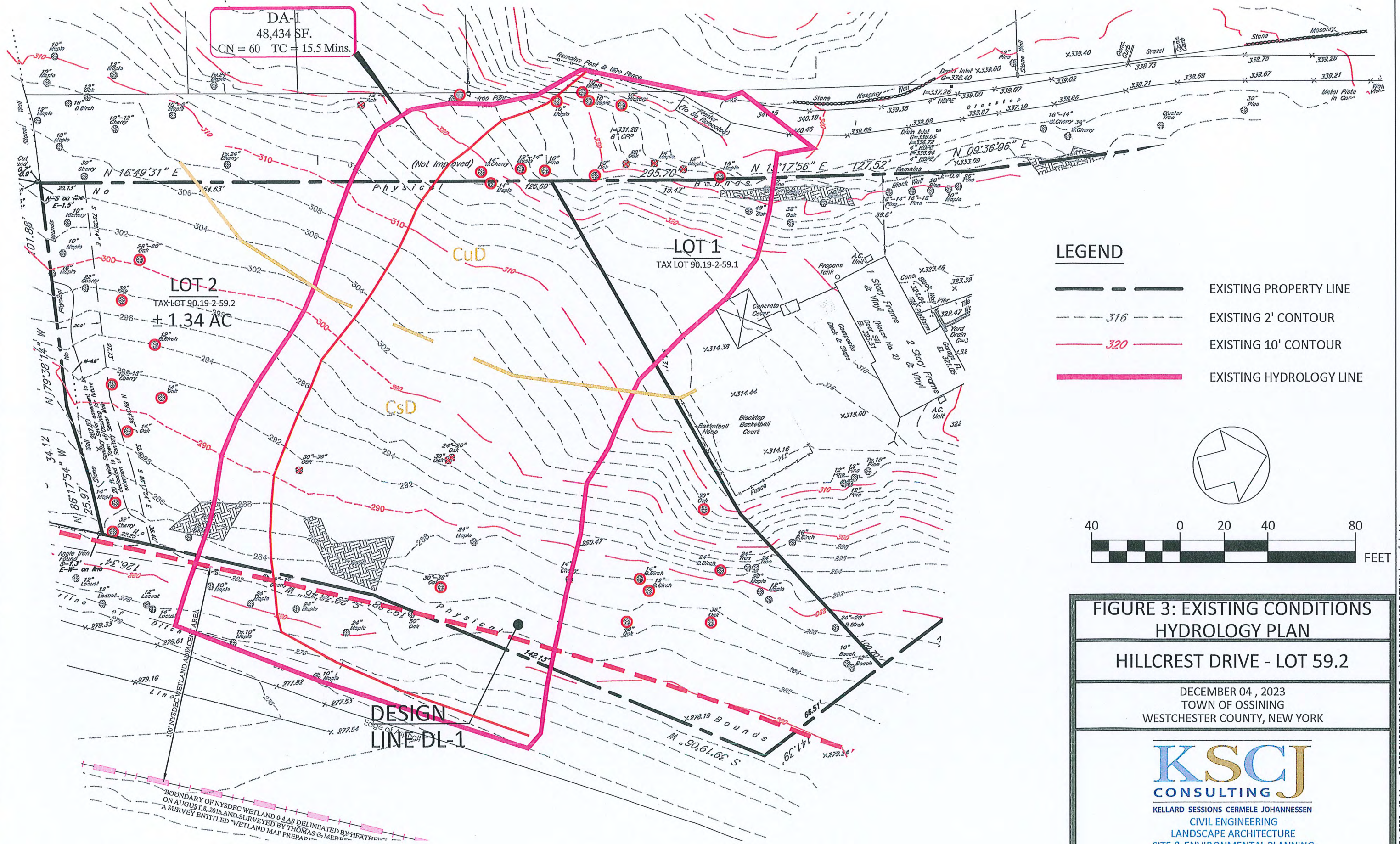
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 CONSULTING

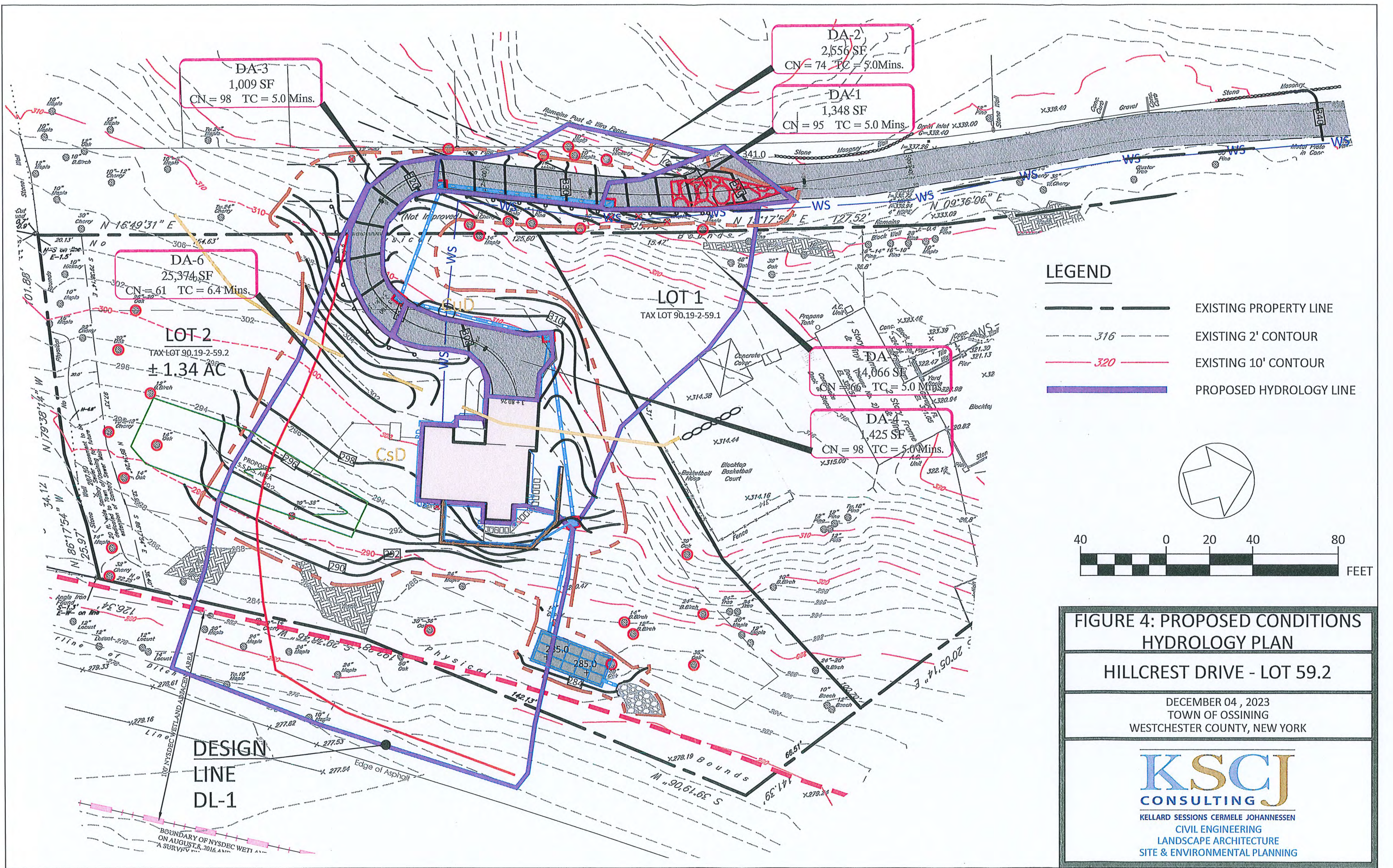
KELLARD SESSIONS CERMELE JOHANNESSEN

CIVIL ENGINEERING
 LANDSCAPE ARCHITECTURE
 SITE & ENVIRONMENTAL PLANNING

KSCJ
CONSULTING
KELLARD SESSIONS CERMELE JOHANNESSEN
CIVIL ENGINEERING
LANDSCAPE ARCHITECTURE
SITE & ENVIRONMENTAL PLANNING

MAP UNIT SYMBOL	NAME	HYDROLOGIC SOIL GROUP	DESCRIPTION
CuD	CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX	B	15% TO 35% SLOPES
CsD	CHATFIELD-CHARLTON COMPLEX	B	15% TO 35% SLOPES





APPENDICES

APPENDIX A. CONTRACTOR CERTIFICATION AND SAMPLE INSPECTION REPORTS

- **CONTRACTOR CERTIFICATION**
 - **NYSDEC PHASE II PRE-CONSTRUCTION MEETING REPORT**
 - **NYSDEC PHASE II CONSTRUCTION DURATION INSPECTION REPORT**

TRAINED CONTRACTOR CERTIFICATION

Each contractor and subcontractor identified in the Stormwater Pollution Prevention Plan (SWPPP) involved in soil disturbance and/or stormwater management practices shall sign and date a copy of the following certification statement prior to undertaking any land development activity.

Project Name: _____

Project Location: _____

I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations.

Signature

Date

Contractor Name: _____

Contractor Title: _____

Contracting Firm: _____

Firm Location: _____

Firm Telephone Number: _____

Each contractor and subcontractor shall identify at least one (1) person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the Trained Contractor. The Trained Contractor shall be on site on a daily basis when soil disturbance activities are being performed. The Trained Contractor must receive four (4) hours of NYSDEC endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC endorsed entity. The Trained Contractor must receive four (4) hours of training every three (3) years.

Trained Contractor Name: _____

NYSDEC PHASE II PRE-CONSTRUCTION MEETING REPORT

Name of Permitted Facility: _____	Permit Identification Number: _____
Facility Address: _____	Date of Authorization: _____
Owner / Operator Contact: _____ Name: _____ Phone: _____ Email: _____	Qualified Inspector Contact: _____ Name: _____ Phone: _____ Email: _____ Address: 500 Main Street, Armonk, New York 10504
Contractor Contact: _____ Name: _____ Phone: _____ Email: _____	KSCJ Project No: _____ Inspection Report No.: _____ Day / Date of Inspection: _____ Time of Inspection: _____ Weather: _____

PREAMBLE TO SITE ASSESSMENT AND INSPECTIONS: The following information is to be read by all persons involved in the construction of stormwater related activities:

The Operator agrees to have a qualified inspector assess the site prior to the commencement of construction and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify (See Appendix A of this report) that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements. A preconstruction meeting shall be held to review the SWPPP requirements with construction personnel.

When construction starts, site inspections shall be conducted by the qualified inspector in accordance with Part IV.C of the General Permit but in no case less than once every 7 calendar days. The Operator shall maintain a record of all inspection reports on site and make them available to the permitting authorities upon request.

Prior to filing the Notice of Termination, the Operator shall have a qualified inspector perform a final site inspection to certify that the site has undergone final stabilization and that all temporary erosion and sediment controls 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.

QUALIFIED INSPECTOR CERTIFICATION:

Qualified Inspector (print name)

Qualified Inspector (signature)

The above-signed acknowledges that, to the best of his/her knowledge, that all information provided within this report is accurate and complete.

PRE-CONSTRUCTION SITE ASSESSMENT CHECKLIST

1. NOTICE OF INTENT, SWPPP, AND CONTRACTOR'S CERTIFICATION

YES NO N/A

- ☐ ☐ ☐ Has a Notice of Intent been filed with the NYS Department of Environmental Conservation?
- ☐ ☐ ☐ Is the SWPPP on-site? Where? _____
- ☐ ☐ ☐ Is the Plan current? What is the latest revision date? _____
- ☐ ☐ ☐ Is a copy of the Notice of Intent (with brief description) on-site? Where? _____
- ☐ ☐ ☐ Have all contractors involved with stormwater activities signed a contractor's certification?

2. RESOURCE PROTECTION

YES NO N/A

- ☐ ☐ ☐ 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.
- ☐ ☐ ☐ Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. SURFACE WATER PROTECTION

YES NO N/A

- ☐ ☐ ☐ Clean stormwater runoff has been diverted from areas to be disturbed.
- ☐ ☐ ☐ Bodies of water located either on site or in the vicinity of the site have been identified and protected.
- ☐ ☐ ☐ Appropriate practices to protect on-site or downstream surface water are installed.
- ☐ ☐ ☐ Are clearing and grading operations divided into areas <5 acres?

4. STABILIZED CONSTRUCTION ACCESS

YES NO N/A

- ☐ ☐ ☐ A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
- ☐ ☐ ☐ Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
- ☐ ☐ ☐ Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. SEDIMENT CONTROLS

YES

NO

N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| ☐ | ☐ | ☐ | 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

N/A

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| ☐ | ☐ | ☐ | 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 on-site. Where?_____ |

COMMENTS AND / OR CORRECTIVE ACTION:

NYSDEC PHASE II CONSTRUCTION DURATION INSPECTION REPORT

Name of Permitted Facility: _____	Permit Identification Number: _____
Facility Address: _____	Date of Authorization: _____
Owner / Operator Contact: _____	Qualified Inspector Contact: _____
Name: _____	Name: _____
Phone: _____	Phone: _____
Email: _____	Email: _____
	Address: 500 Main Street, Armonk, New York 10504
Contractor Contact: _____	KSCJ Project No: _____
Name: _____	Inspection Report No.: _____
Phone: _____	Day / Date of Inspection: _____
Email: _____	Time of Inspection: _____
	Weather: _____

QUALIFIED INSPECTOR CERTIFICATION:

Qualified Inspector (print name)

Qualified Inspector (signature)

The above-signed acknowledges that, to the best of his/her knowledge, that all information provided within this report is accurate and complete.

GENERAL PERMIT REFERENCE: PART IV.C.2.A, B AND E STATES:

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

- a. For construction sites where soil disturbance activities are on-going, the qualified inspector shall conduct a site inspection at least once every seven (7) calendar days.
- b. For construction sites where soil disturbance activities are on-going and the owner or operator has received authorization in accordance with Part II.C.3 to disturb greater than five (5) acres of soil at any one time, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
- e. For construction sites that directly discharge to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the qualified inspector shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days."

QUALIFIED INSPECTION REPORT: To be prepared subsequent to each inspection and shall include and/or address, at a minimum, the following:

- a. A description of the condition of the runoff at all points of discharge from the construction site;
- b. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the construction site which receive runoff from disturbed areas;

- c. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- d. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- e. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- f. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- g. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- h. Identification and status of all corrective actions that were required by previous inspection;
- i. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions.

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

IDENTIFY LOCATION AND NATURE OF WORK, BY CONTRACTOR AND SUBCONTRACTORS, FOR EACH OPERATION:

Refer to Erosion Control Inspection Sketch No. _____ dated _____ and accompanying photos (Appendix A):

CURRENT ACTIVITIES

INSPECTION CHECKLIST

MAINTAINING WATER QUALITY

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

Is there any increase in turbidity causing a substantial visible contrast to natural conditions at the outfalls?

☐☐☐

Is there residue from oil and floating substances, visible oil film, or globules or grease at the outfalls?

☐☐☐

All disturbance is within the limits of approved plans.

☐☐☐

Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

HOUSEKEEPING

1. GENERAL SITE CONDITIONS

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

Is construction site litter, debris and spoils appropriately managed?

☐☐☐

Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?

☐☐☐

Is construction impacting the adjacent property?

☐☐☐

Is dust adequately controlled?

2. TEMPORARY STREAM CROSSING

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

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 and prevent sediment from entering stream during high flow.

3. STABILIZED CONSTRUCTION ACCESS

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

Stone is clean enough to effectively remove mud from vehicles.

☐☐☐

Installed per standards and specifications?

☐☐☐

Does all traffic use the stabilized entrance to enter and leave site?

☐☐☐

Is adequate drainage provided to prevent ponding at entrance?

RUNOFF CONTROL PRACTICES

1. EXCAVATION DEWATERING

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

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. FLOW SPREADER

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

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

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

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 and structure.

4. STONE CHECK DAM

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

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

☐

NEEDS IMMEDIATE ATTENTION – SEE COMMENTS

YES NO N/A

☐☐☐

Installed per plan.

☐☐☐

Installed concurrently with pipe installation.

SOIL STABILIZATION**1. TOPSOIL AND SPOIL STOCKPILES**☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

☐☐☐

Stockpiles are stabilized with vegetation and/or mulch.

☐☐☐

Sediment control is installed at the toe of the slope.

2. REVEGETATION☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

☐☐☐

Temporary seedings and mulch have been applied to idle areas.

☐☐☐

4 inches minimum of topsoil has been applied under permanent seedings.

SEDIMENT CONTROL PRACTICES**1. SILT FENCE AND LINEAR BARRIERS**☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

☐☐☐

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.

2. STORM DRAIN INLET PROTECTION (USE FOR STONE & BLOCK; FILTER FABRIC; CURB; OR, EXCAVATED; FILTER SOCK OR**MANUFACTURED PRACTICES).**☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

☐☐☐

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 1 acre 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 maximum 8-inch spacing.

- ☐ ☐ ☐ Posts are stable, fabric is tight and without rips or frayed areas.
- ☐ ☐ ☐ Manufactured insert fabric is free of tears and punctures.
- ☐ ☐ ☐ Filter Sock is not torn or flattened and fill material is contained within the mesh sock.

Sediment accumulation is _____% of design capacity.

3. TEMPORARY SEDIMENT TRAP

☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

- ☐ ☐ ☐ Outlet structure is constructed per the approved plan or drawing.
- ☐ ☐ ☐ Geotextile fabric has been placed beneath rock fill.
- ☐ ☐ ☐ Sediment trap slopes and disturbed areas are stabilized.

Sediment accumulation is _____% of design capacity.

4. TEMPORARY SEDIMENT BASIN

☐ **NEEDS IMMEDIATE ATTENTION – SEE COMMENTS**

YES NO N/A

- ☐ ☐ ☐ Basin and outlet structure constructed per the approved plan.
- ☐ ☐ ☐ Basin side slopes are stabilized with seed/mulch.
- ☐ ☐ ☐ Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
- ☐ ☐ ☐ Sediment basin dewatering pool is dewatering at appropriate rate.

Sediment accumulation is _____% of design capacity.

MODIFICATIONS TO THE SWPPP (TO BE COMPLETED AT DESCRIBED BELOW)

The Operator shall amend the SWPPP whenever:

1. There is 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.

SWPPP MODIFICATION & REASON:

APPENDIX B. HYDROLOGIC AND HYDRAULIC CALCULATIONS

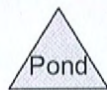
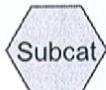
- **EXISTING AND PROPOSED CONDITIONS HYDROLOGIC ANALYSIS**
 - **WATER QUALITY VOLUME (WQV) CALCULATIONS**



DA 1



DESIGN LINE #1



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Page 2

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25yr	Type III 24-hr		Default	24.00	1	6.49	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.112	60	Woods, Fair, HSG B (EXDA1)
1.112	60	TOTAL AREA

OSDONOFRIO100-EXISTING

Type III 24-hr 25yr Rainfall=6.49"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EXDA1: DA 1

Runoff Area=48,434 sf 0.00% Impervious Runoff Depth=2.25"
Flow Length=430' Tc=15.5 min CN=60 Runoff=2.08 cfs 0.208 af

Link DL1: DESIGN LINE #1

Inflow=2.08 cfs 0.208 af
Primary=2.08 cfs 0.208 af

Total Runoff Area = 1.112 ac Runoff Volume = 0.208 af Average Runoff Depth = 2.25"
100.00% Pervious = 1.112 ac 0.00% Impervious = 0.000 ac

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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment EXDA1: DA 1

Runoff = 2.08 cfs @ 12.23 hrs, Volume= 0.208 af, Depth= 2.25"
Routed to Link DL1 : DESIGN LINE #1

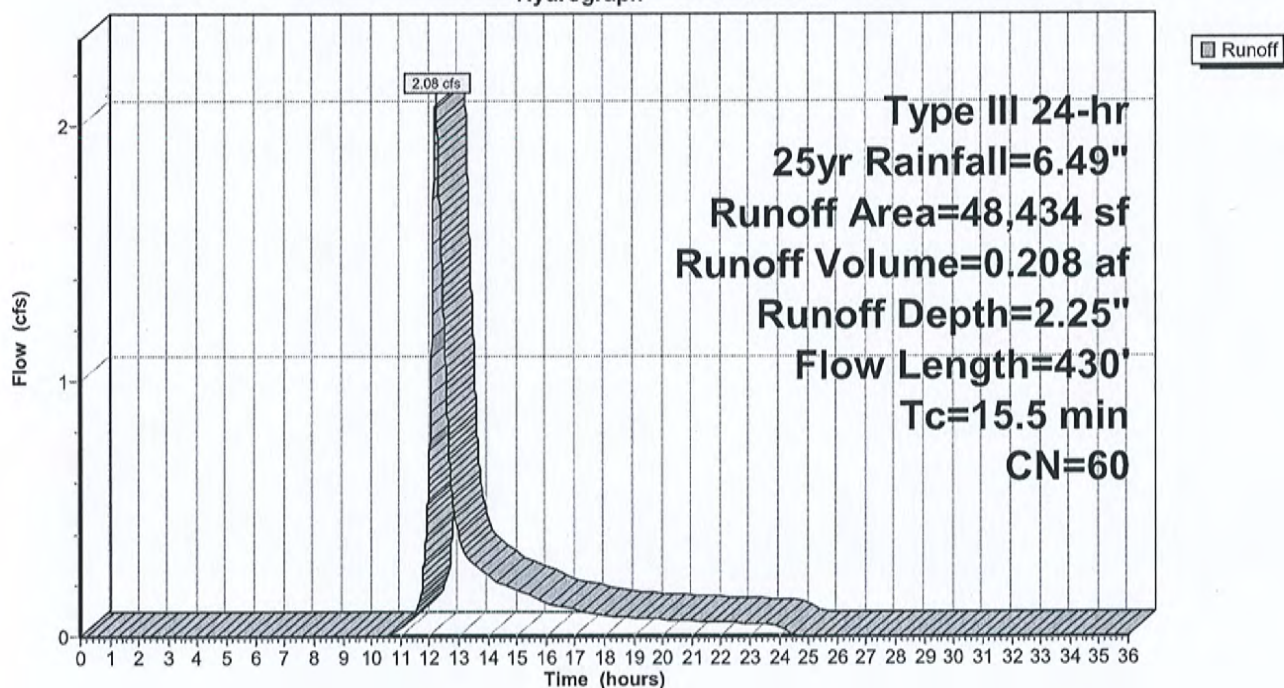
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
48,434	60	Woods, Fair, HSG B
48,434		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	100	0.3000	0.14		Sheet Flow, Woods: Dense underbrush n= 0.800 P2= 3.41"
3.2	330	0.1200	1.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
15.5	430	Total			

Subcatchment EXDA1: DA 1

Hydrograph

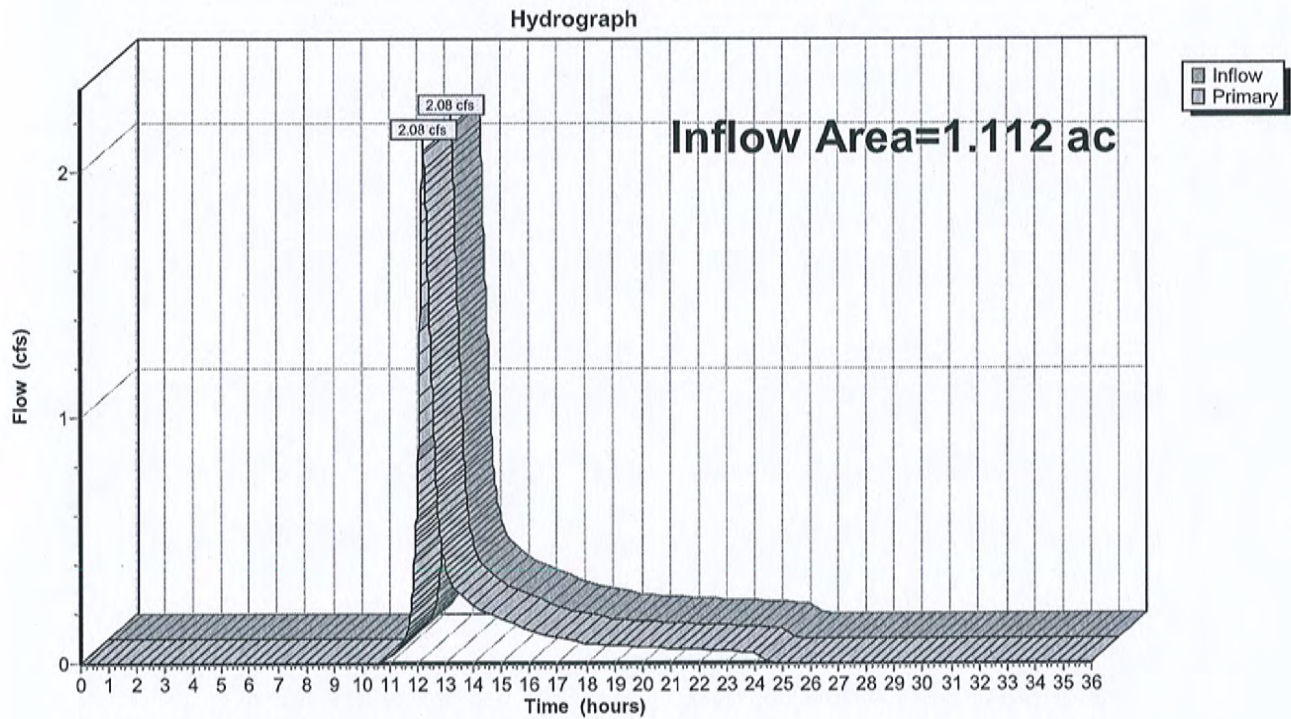


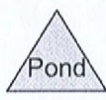
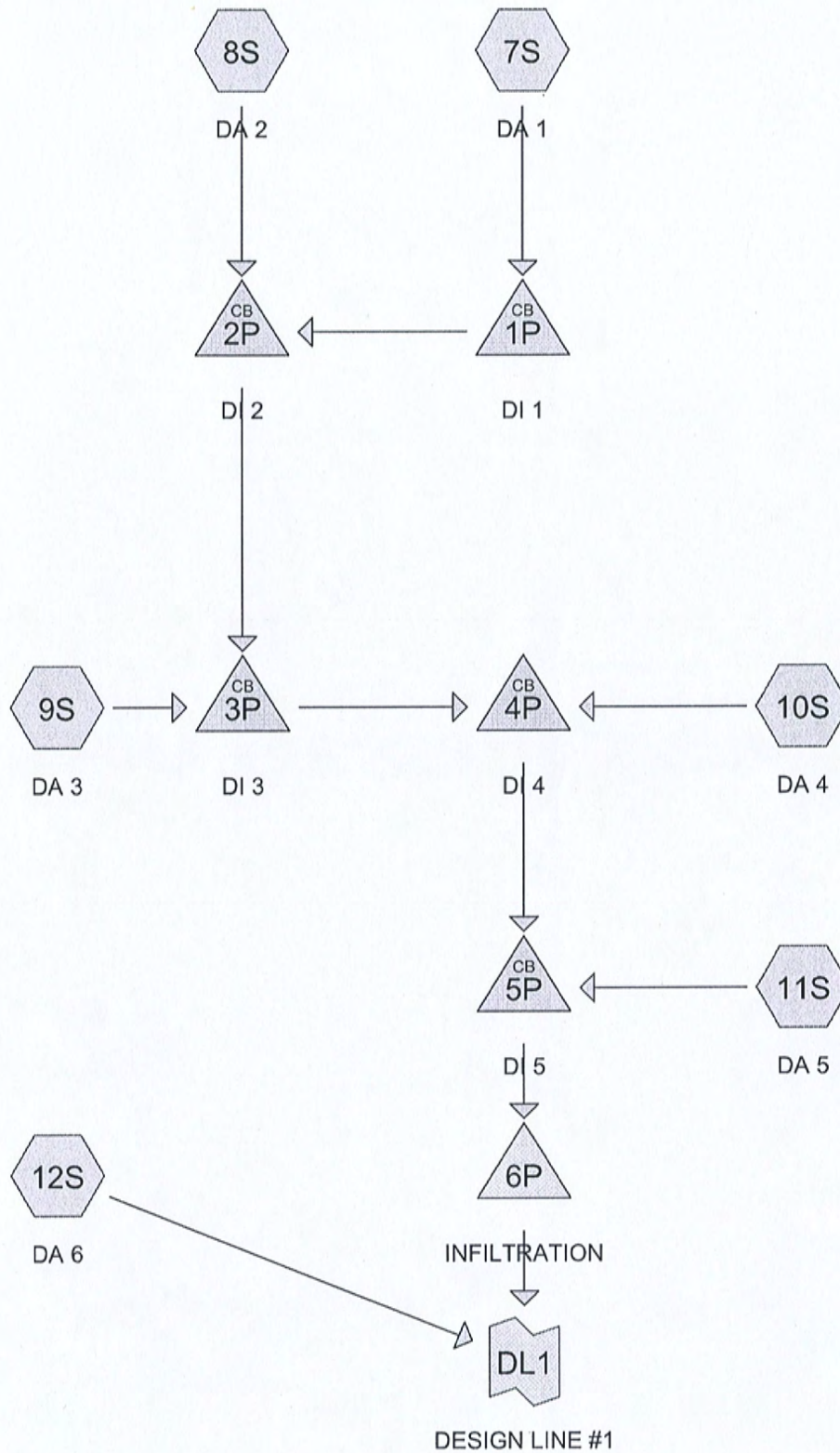
Summary for Link DL1: DESIGN LINE #1

Inflow Area = 1.112 ac, 0.00% Impervious, Inflow Depth = 2.25" for 25yr event
 Inflow = 2.08 cfs @ 12.23 hrs, Volume= 0.208 af
 Primary = 2.08 cfs @ 12.23 hrs, Volume= 0.208 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DL1: DESIGN LINE #1





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Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	25yr	Type III 24-hr		Default	24.00	1	6.49	2

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.468	61	>75% Grass cover, Good, HSG B (7S, 8S, 11S, 12S)
0.154	98	Paved parking, HSG B (7S, 8S, 9S, 10S, 11S)
0.489	60	Woods, Fair, HSG B (11S, 12S)
1.112	66	TOTAL AREA

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Type III 24-hr 25yr Rainfall=6.49"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 7S: DA 1	Runoff Area=1,348 sf 91.02% Impervious Runoff Depth=5.90" Tc=5.0 min CN=95 Runoff=0.20 cfs 0.015 af
Subcatchment 8S: DA 2	Runoff Area=2,556 sf 34.66% Impervious Runoff Depth=3.60" Tc=5.0 min CN=74 Runoff=0.26 cfs 0.018 af
Subcatchment 9S: DA 3	Runoff Area=1,009 sf 100.00% Impervious Runoff Depth=6.25" Tc=5.0 min CN=98 Runoff=0.15 cfs 0.012 af
Subcatchment 10S: DA 4	Runoff Area=1,425 sf 100.00% Impervious Runoff Depth=6.25" Tc=5.0 min CN=98 Runoff=0.22 cfs 0.017 af
Subcatchment 11S: DA 5	Runoff Area=14,066 sf 15.41% Impervious Runoff Depth=2.81" Tc=5.0 min CN=66 Runoff=1.09 cfs 0.076 af
Subcatchment 12S: DA 6	Runoff Area=28,027 sf 0.00% Impervious Runoff Depth=2.25" Flow Length=332' Tc=6.4 min CN=60 Runoff=1.60 cfs 0.121 af
Pond 1P: DI 1	Peak Elev=329.55' Inflow=0.20 cfs 0.015 af 12.0" Round Culvert n=0.013 L=78.0' S=0.1359 ' Outflow=0.20 cfs 0.015 af
Pond 2P: DI 2	Peak Elev=322.28' Inflow=0.46 cfs 0.033 af 12.0" Round Culvert n=0.013 L=55.0' S=0.2655 ' Outflow=0.46 cfs 0.033 af
Pond 3P: DI 3	Peak Elev=307.75' Inflow=0.61 cfs 0.045 af 12.0" Round Culvert n=0.013 L=70.0' S=0.0429 ' Outflow=0.61 cfs 0.045 af
Pond 4P: DI 4	Peak Elev=304.49' Inflow=0.83 cfs 0.062 af 15.0" Round Culvert n=0.013 L=85.0' S=0.0612 ' Outflow=0.83 cfs 0.062 af
Pond 5P: DI 5	Peak Elev=295.28' Inflow=1.91 cfs 0.138 af 15.0" Round Culvert n=0.013 L=45.0' S=0.2422 ' Outflow=1.91 cfs 0.138 af
Pond 6P: INFILTRATION	Peak Elev=283.42' Storage=0.026 af Inflow=1.91 cfs 0.138 af Discarded=0.49 cfs 0.138 af Primary=0.00 cfs 0.000 af Outflow=0.49 cfs 0.138 af
Link DL1: DESIGN LINE #1	Inflow=1.60 cfs 0.121 af Primary=1.60 cfs 0.121 af

Total Runoff Area = 1.112 ac Runoff Volume = 0.258 af Average Runoff Depth = 2.79"
86.14% Pervious = 0.958 ac 13.86% Impervious = 0.154 ac

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Type III 24-hr 25yr Rainfall=6.49"

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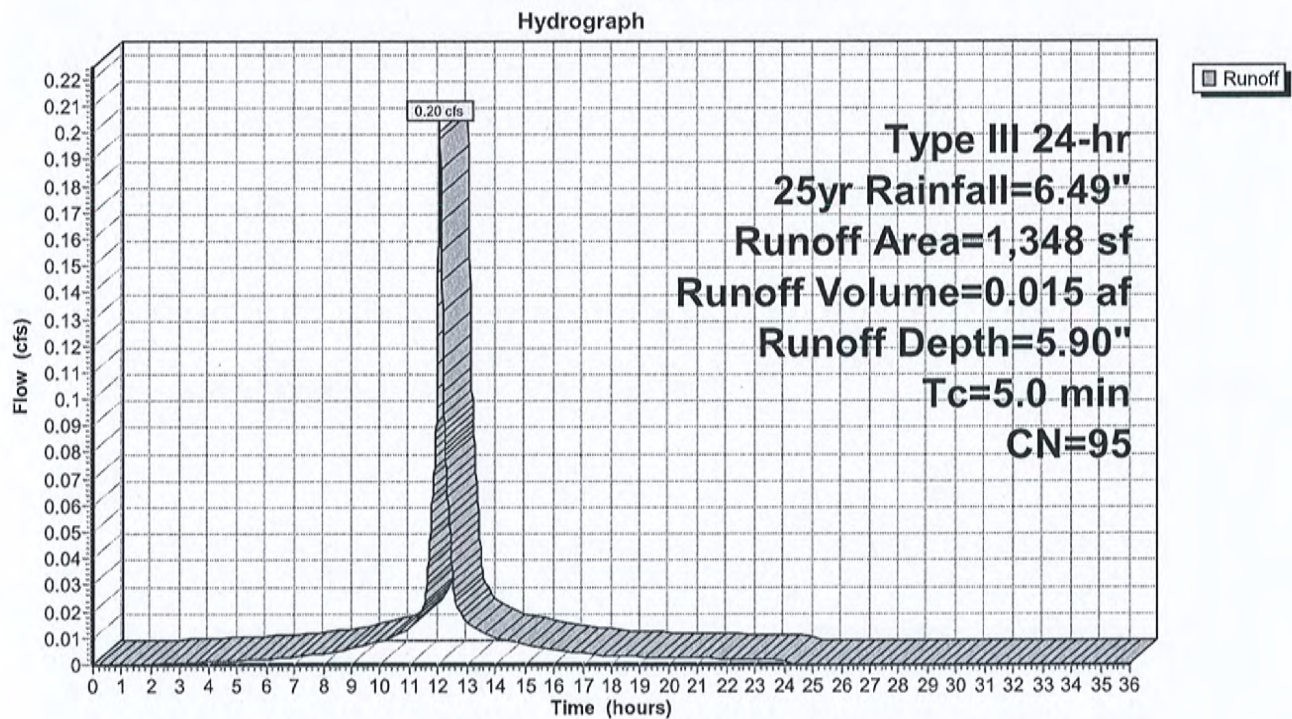
Summary for Subcatchment 7S: DA 1

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af, Depth= 5.90"
Routed to Pond 1P : DI 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
1,227	98	Paved parking, HSG B
121	61	>75% Grass cover, Good, HSG B
1,348	95	Weighted Average
121		8.98% Pervious Area
1,227		91.02% Impervious Area

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

Subcatchment 7S: DA 1

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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment 8S: DA 2

Runoff = 0.26 cfs @ 12.07 hrs, Volume= 0.018 af, Depth= 3.60"
Routed to Pond 2P : DI 2

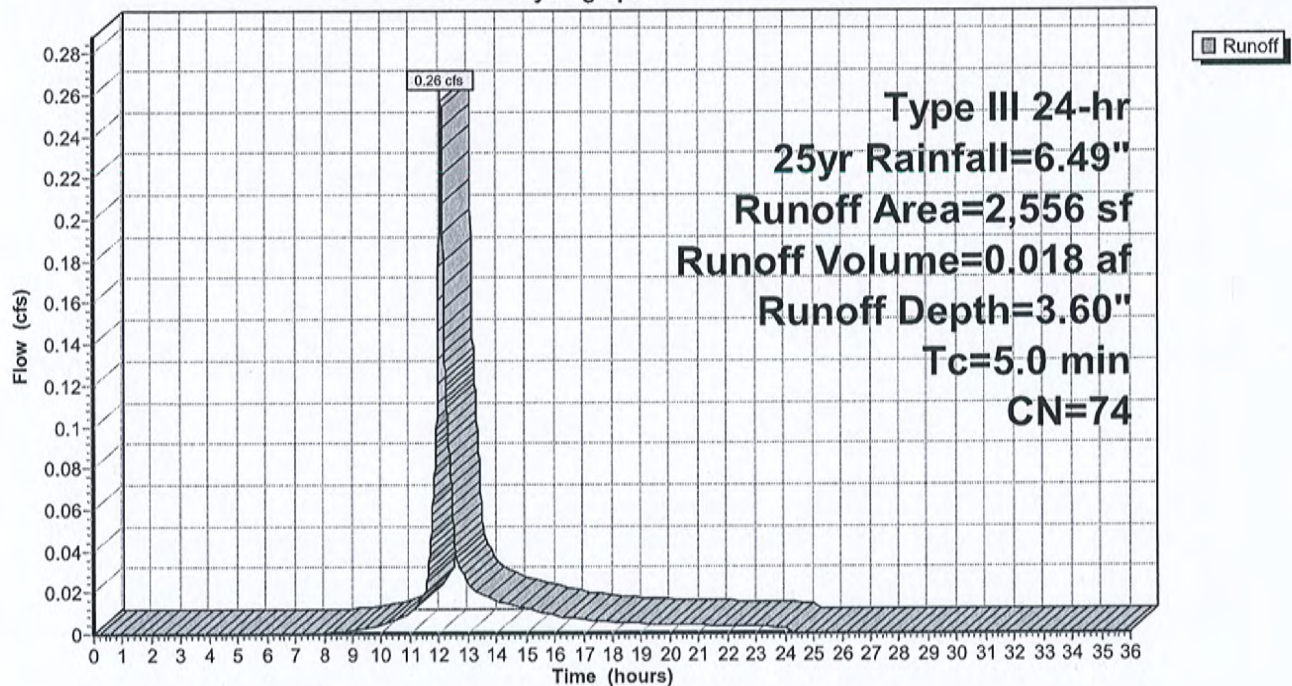
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
1,670	61	>75% Grass cover, Good, HSG B
886	98	Paved parking, HSG B
2,556	74	Weighted Average
1,670		65.34% Pervious Area
886		34.66% Impervious Area

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

Subcatchment 8S: DA 2

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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment 9S: DA 3

Runoff = 0.15 cfs @ 12.07 hrs, Volume= 0.012 af, Depth= 6.25"
Routed to Pond 3P : DI 3

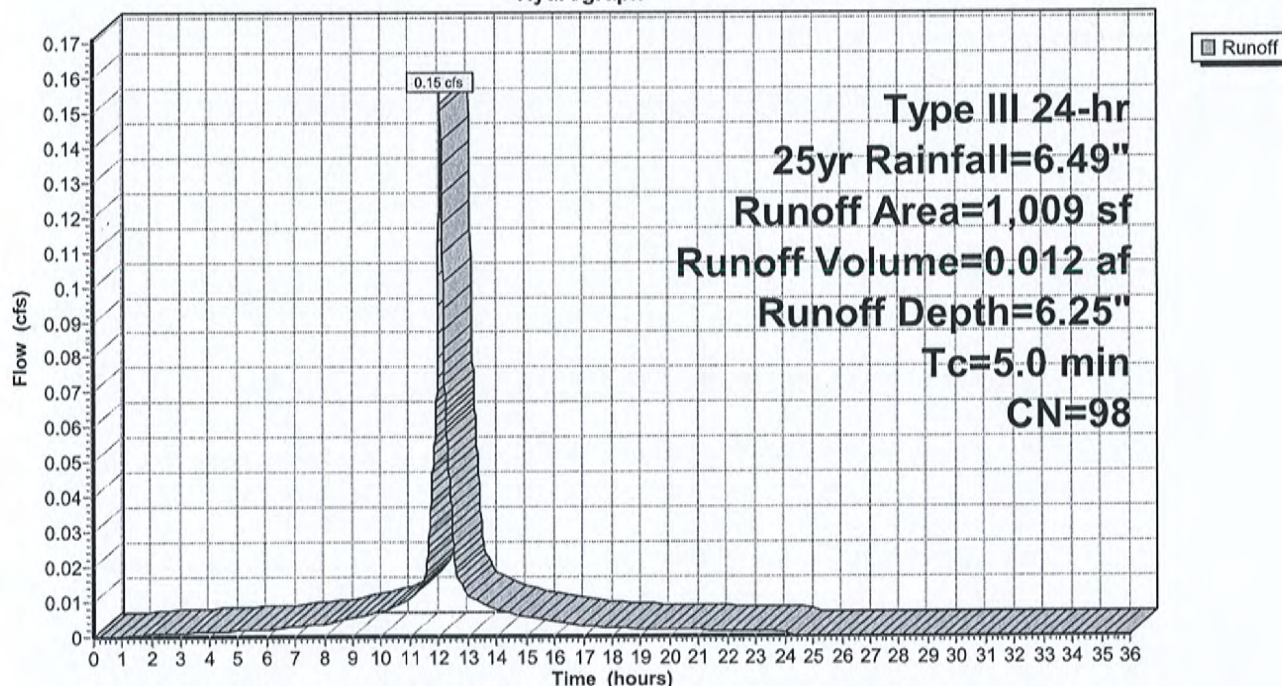
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
1,009	98	Paved parking, HSG B
1,009		100.00% Impervious Area

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

Subcatchment 9S: DA 3

Hydrograph



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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment 10S: DA 4

Runoff = 0.22 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 6.25"
Routed to Pond 4P : DI 4

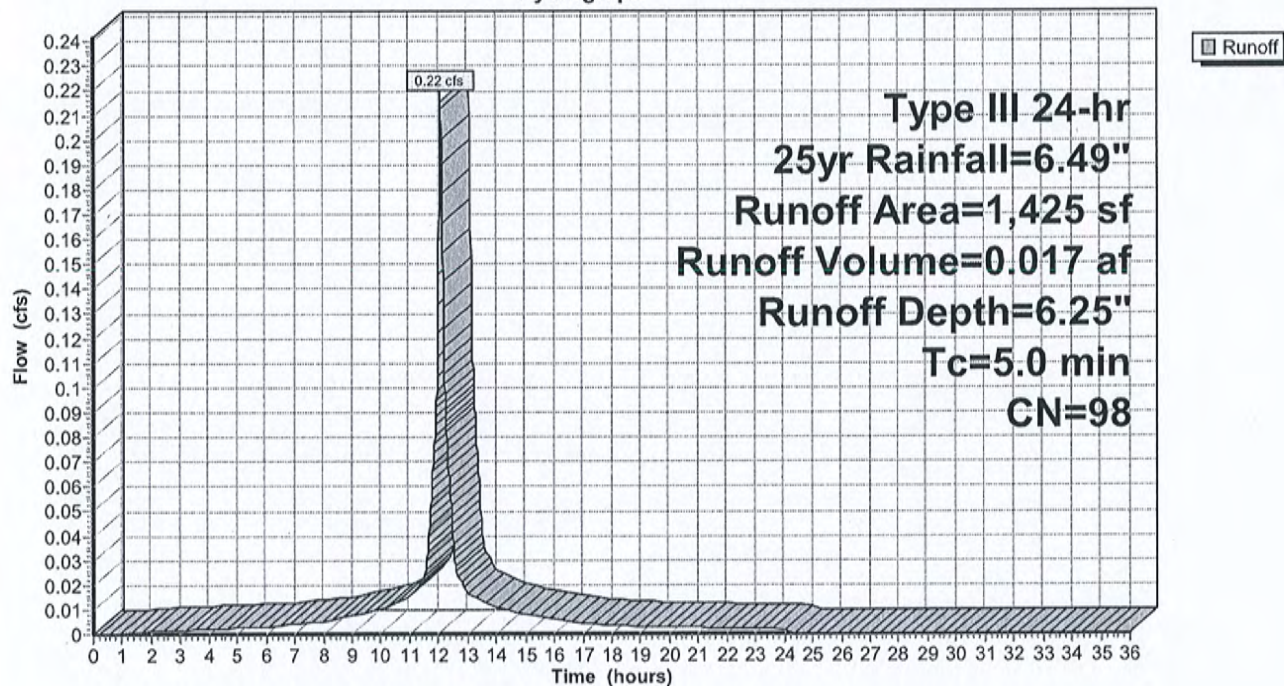
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
1,425	98	Paved parking, HSG B
1,425		100.00% Impervious Area

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

Subcatchment 10S: DA 4

Hydrograph



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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment 11S: DA 5

Runoff = 1.09 cfs @ 12.08 hrs, Volume= 0.076 af, Depth= 2.81"
Routed to Pond 5P : DI 5

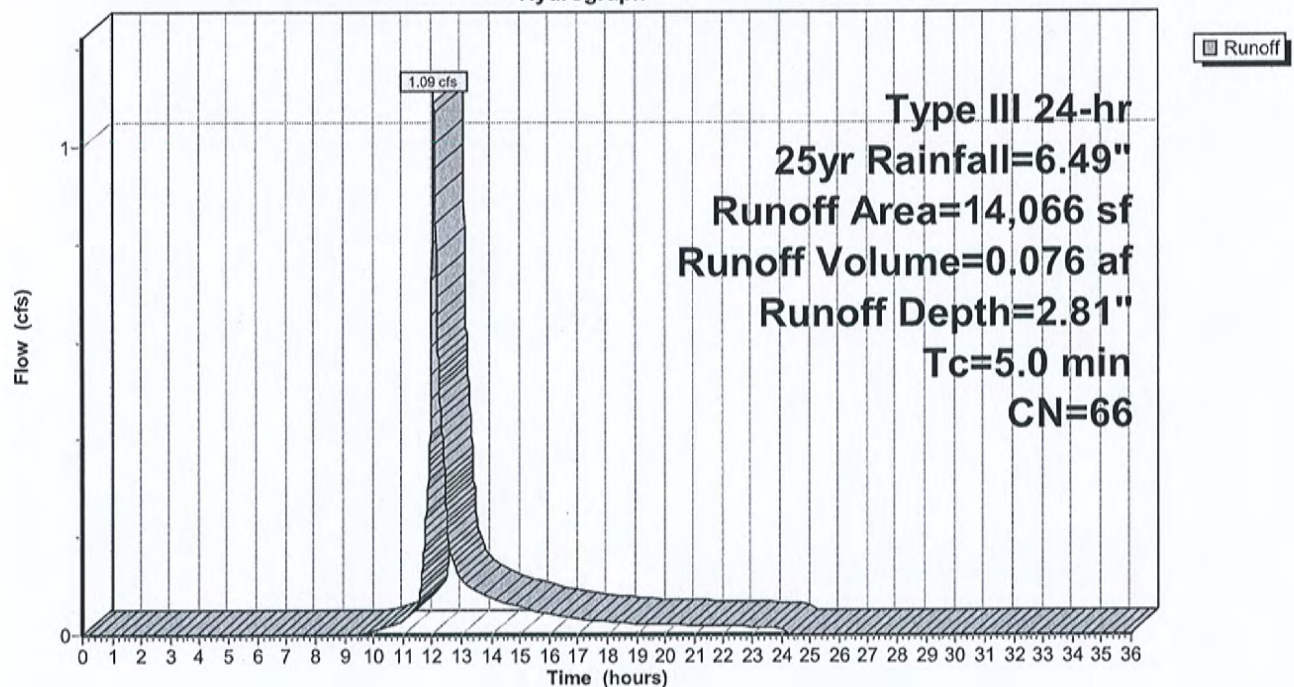
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
2,167	98	Paved parking, HSG B
4,892	61	>75% Grass cover, Good, HSG B
7,007	60	Woods, Fair, HSG B
14,066	66	Weighted Average
11,899		84.59% Pervious Area
2,167		15.41% Impervious Area

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

Subcatchment 11S: DA 5

Hydrograph



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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Subcatchment 12S: DA 6

Runoff = 1.60 cfs @ 12.10 hrs, Volume= 0.121 af, Depth= 2.25"
 Routed to Link DL1 : DESIGN LINE #1

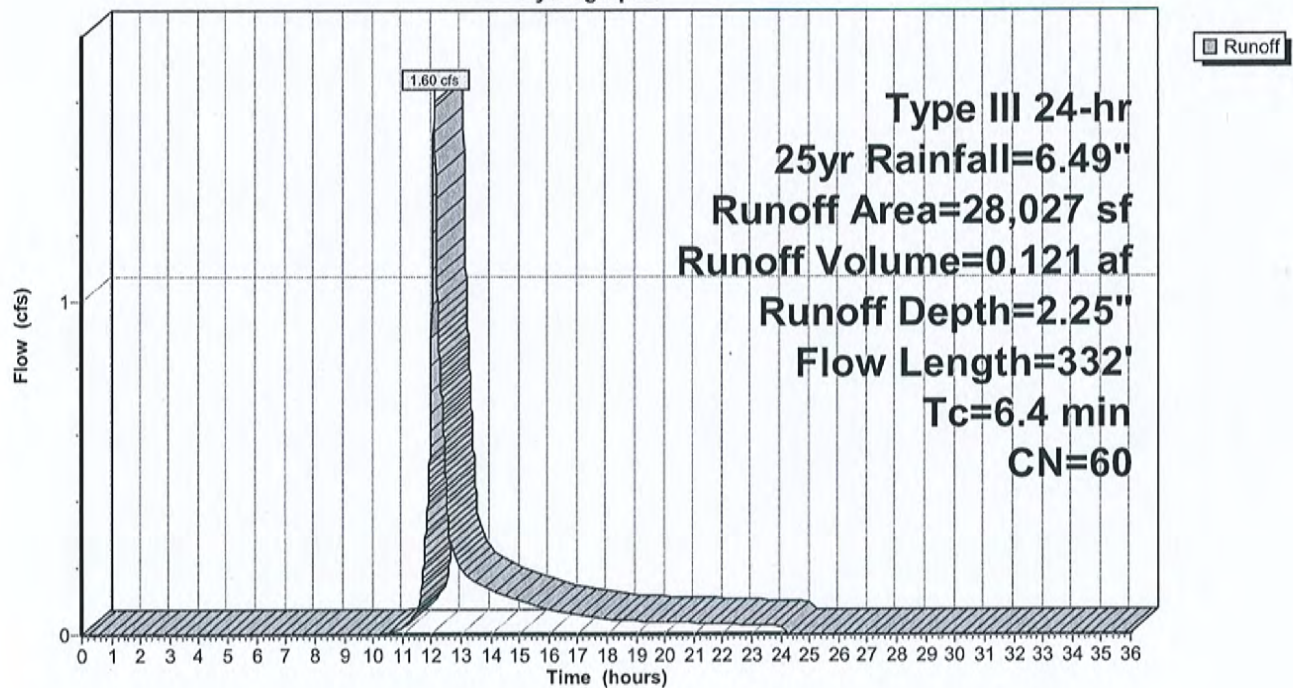
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Type III 24-hr 25yr Rainfall=6.49"

Area (sf)	CN	Description
13,717	61	>75% Grass cover, Good, HSG B
14,310	60	Woods, Fair, HSG B
28,027	60	Weighted Average
28,027		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	100	0.1700	0.41		Sheet Flow, Grass: Short n= 0.150 P2= 3.42"
0.4	60	0.1600	2.80		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
2.0	172	0.0800	1.41		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
6.4	332	Total			

Subcatchment 12S: DA 6

Hydrograph



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Summary for Pond 1P: DI 1

Inflow Area = 0.031 ac, 91.02% Impervious, Inflow Depth = 5.90" for 25yr event
Inflow = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af
Outflow = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.07 hrs, Volume= 0.015 af
Routed to Pond 2P : DI 2

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 329.55' @ 12.07 hrs

Flood Elev= 332.50'

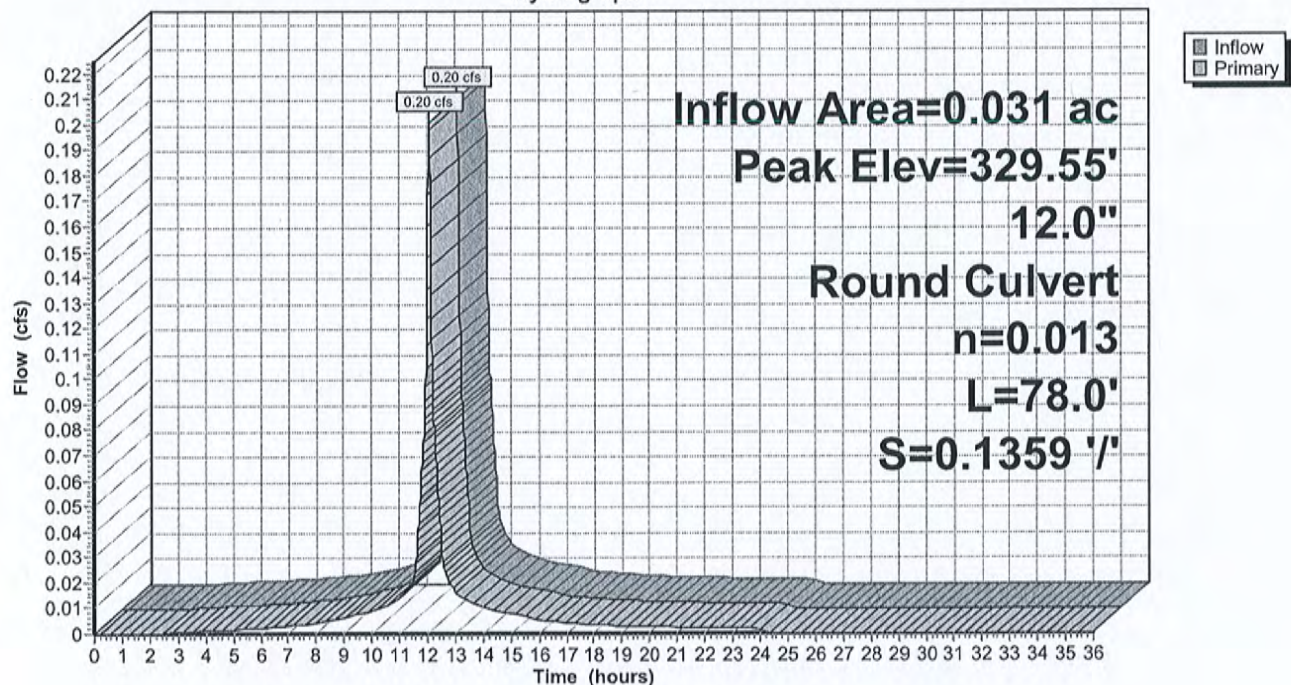
Device	Routing	Invert	Outlet Devices
#1	Primary	329.30'	12.0" Round Culvert L= 78.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 329.30' / 318.70' S= 0.1359 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.07 hrs HW=329.55' (Free Discharge)

1=Culvert (Inlet Controls 0.20 cfs @ 1.33 fps)

Pond 1P: DI 1

Hydrograph



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Summary for Pond 2P: DI 2

[58] Hint: Peaked 0.38' above defined flood level

[79] Warning: Submerged Pond 1P Primary device # 1 OUTLET by 3.58'

Inflow Area = 0.090 ac, 54.12% Impervious, Inflow Depth = 4.39" for 25yr event
Inflow = 0.46 cfs @ 12.07 hrs, Volume= 0.033 af
Outflow = 0.46 cfs @ 12.07 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.0 min
Primary = 0.46 cfs @ 12.07 hrs, Volume= 0.033 af
Routed to Pond 3P : DI 3

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 322.28' @ 12.07 hrs

Flood Elev= 321.90'

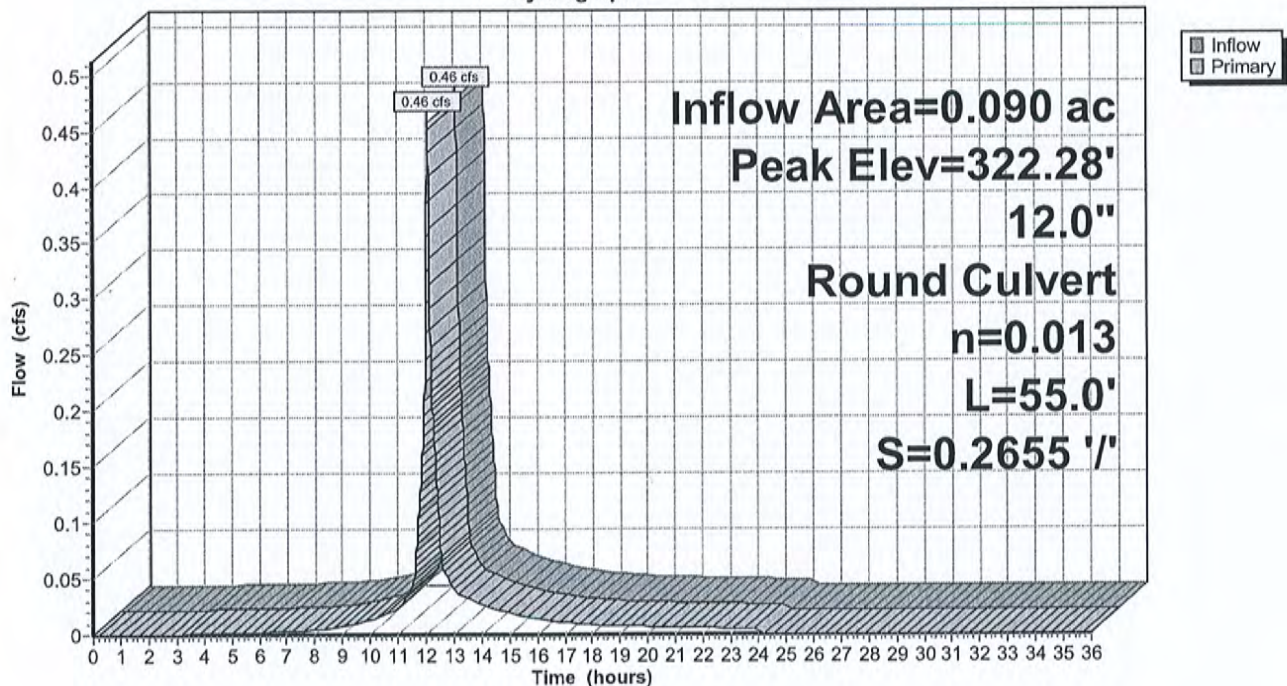
Device	Routing	Invert	Outlet Devices
#1	Primary	321.90'	12.0" Round Culvert L= 55.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.90' / 307.30' S= 0.2655 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.07 hrs HW=322.28' (Free Discharge)

1=Culvert (Inlet Controls 0.46 cfs @ 1.66 fps)

Pond 2P: DI 2

Hydrograph



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Summary for Pond 3P: DI 3

[79] Warning: Submerged Pond 2P Primary device # 1 OUTLET by 0.45'

Inflow Area = 0.113 ac, 63.55% Impervious, Inflow Depth = 4.78" for 25yr event
Inflow = 0.61 cfs @ 12.07 hrs, Volume= 0.045 af
Outflow = 0.61 cfs @ 12.07 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min
Primary = 0.61 cfs @ 12.07 hrs, Volume= 0.045 af
Routed to Pond 4P : DI 4

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 307.75' @ 12.07 hrs

Flood Elev= 310.50'

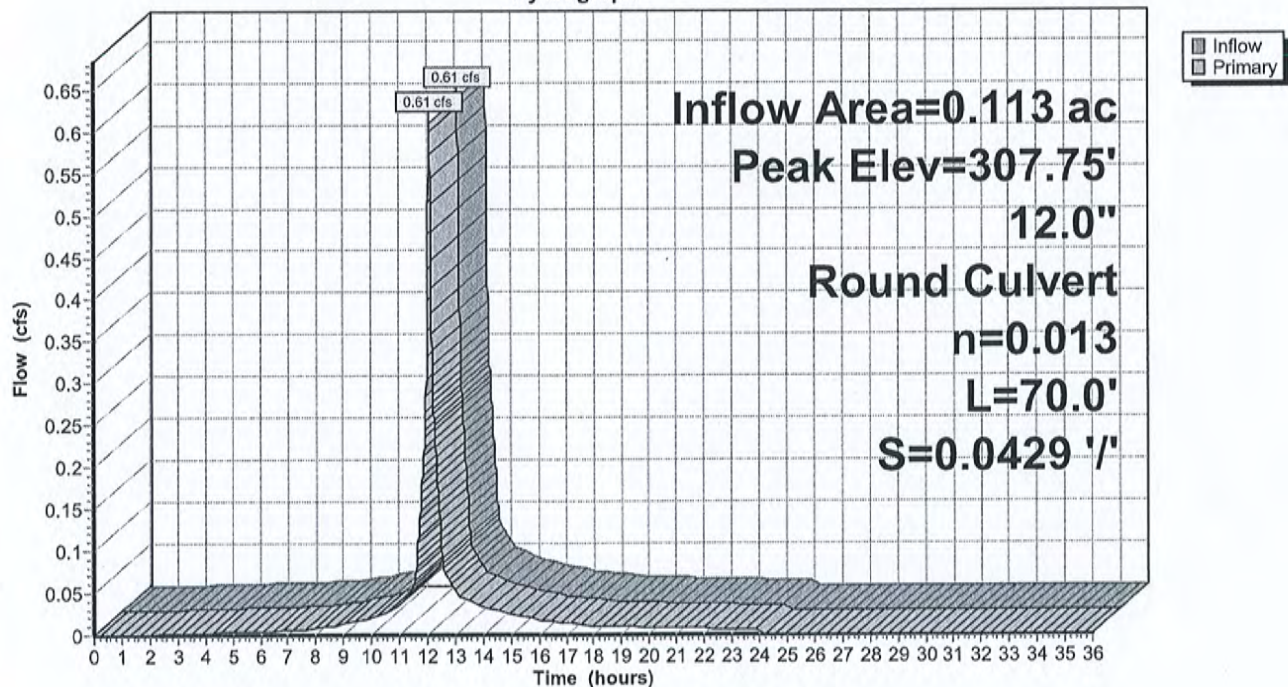
Device	Routing	Invert	Outlet Devices
#1	Primary	307.30'	12.0" Round Culvert L= 70.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 307.30' / 304.30' S= 0.0429 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.61 cfs @ 12.07 hrs HW=307.75' (Free Discharge)

1=Culvert (Inlet Controls 0.61 cfs @ 1.80 fps)

Pond 3P: DI 3

Hydrograph



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Summary for Pond 4P: DI 4

[79] Warning: Submerged Pond 3P Primary device # 1 OUTLET by 0.19'

Inflow Area = 0.146 ac, 71.74% Impervious, Inflow Depth = 5.11" for 25yr event
Inflow = 0.83 cfs @ 12.07 hrs, Volume= 0.062 af
Outflow = 0.83 cfs @ 12.07 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
Primary = 0.83 cfs @ 12.07 hrs, Volume= 0.062 af
Routed to Pond 5P : DI 5

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 304.49' @ 12.07 hrs

Flood Elev= 307.50'

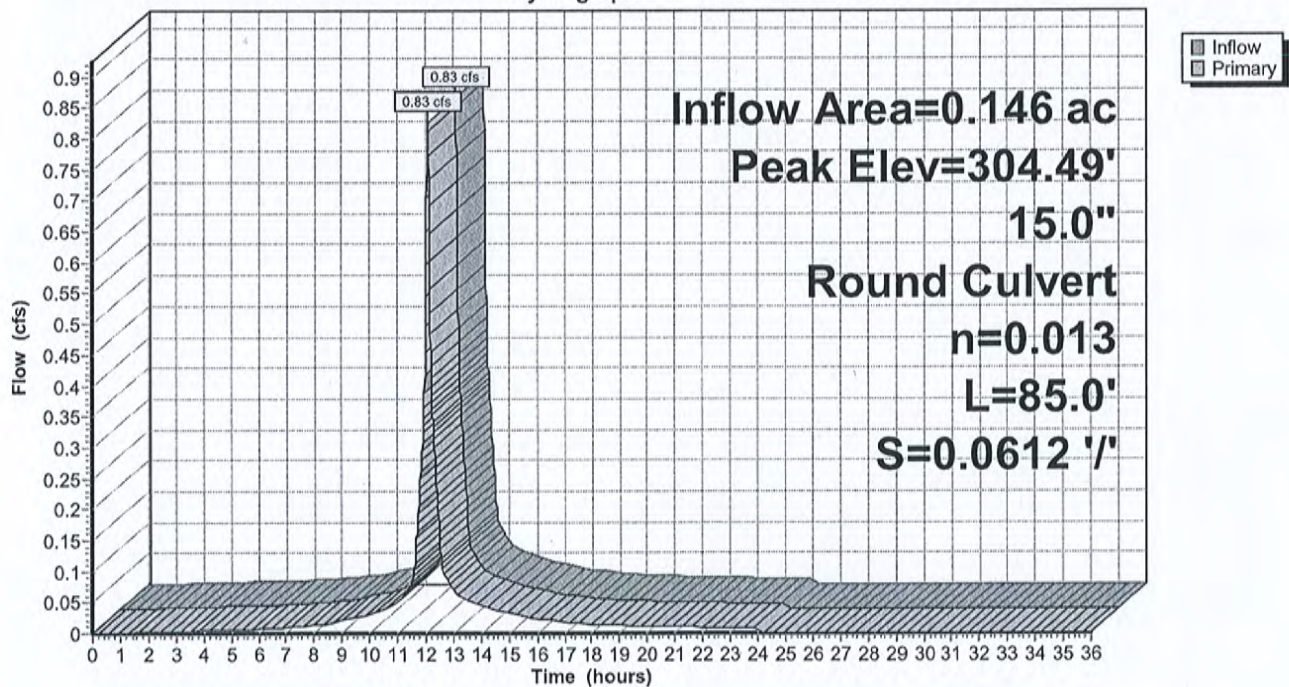
Device	Routing	Invert	Outlet Devices
#1	Primary	304.00'	15.0" Round Culvert L= 85.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 304.00' / 298.80' S= 0.0612 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=0.82 cfs @ 12.07 hrs HW=304.49' (Free Discharge)

1=Culvert (Inlet Controls 0.82 cfs @ 1.87 fps)

Pond 4P: DI 4

Hydrograph



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Type III 24-hr 25yr Rainfall=6.49"

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Summary for Pond 5P: DI 5

Inflow Area = 0.468 ac, 32.91% Impervious, Inflow Depth = 3.52" for 25yr event
Inflow = 1.91 cfs @ 12.08 hrs, Volume= 0.138 af
Outflow = 1.91 cfs @ 12.08 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min
Primary = 1.91 cfs @ 12.08 hrs, Volume= 0.138 af
Routed to Pond 6P : INFILTRATION

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 295.28' @ 12.08 hrs

Flood Elev= 304.00'

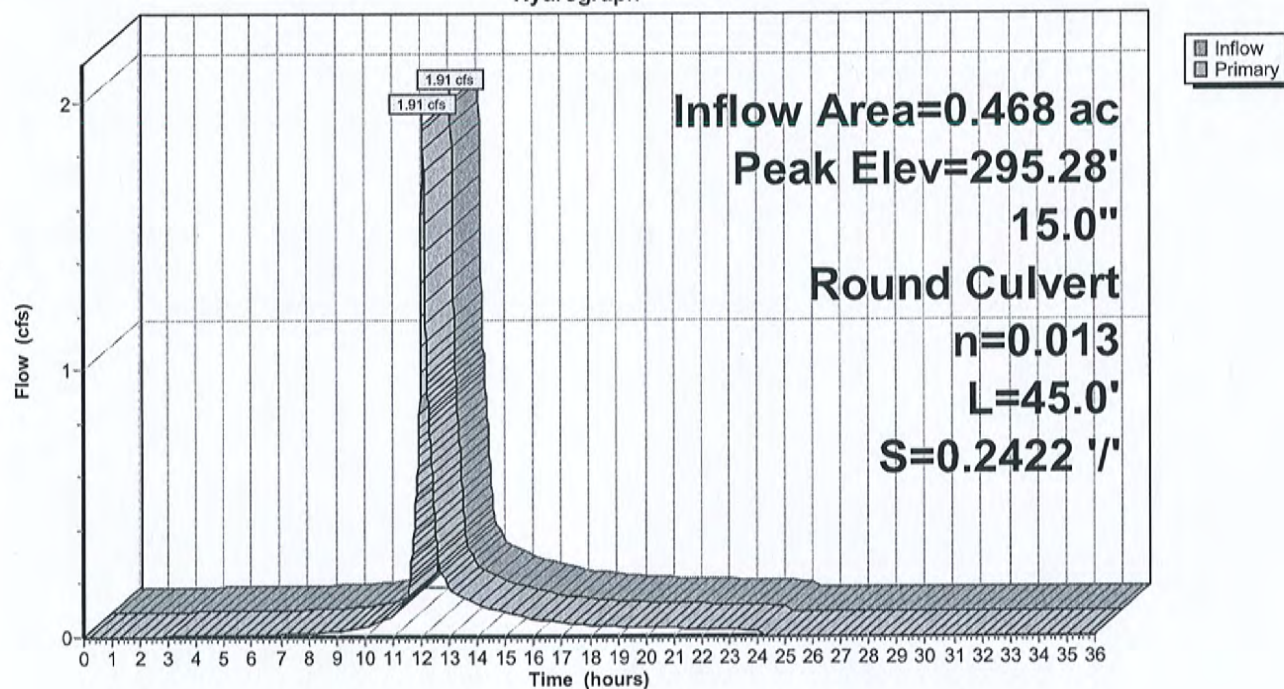
Device	Routing	Invert	Outlet Devices
#1	Primary	294.50'	15.0" Round Culvert L= 45.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 294.50' / 283.60' S= 0.2422 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=1.91 cfs @ 12.08 hrs HW=295.28' (Free Discharge)

1=Culvert (Inlet Controls 1.91 cfs @ 2.37 fps)

Pond 5P: DI 5

Hydrograph



OSDONOFRIO100-PROPOSED

Type III 24-hr 25yr Rainfall=6.49"

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Summary for Pond 6P: INFILTRATION

Inflow Area = 0.468 ac, 32.91% Impervious, Inflow Depth = 3.52" for 25yr event
 Inflow = 1.91 cfs @ 12.08 hrs, Volume= 0.138 af
 Outflow = 0.49 cfs @ 11.82 hrs, Volume= 0.138 af, Atten= 74%, Lag= 0.0 min
 Discarded = 0.49 cfs @ 11.82 hrs, Volume= 0.138 af
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Routed to Link DL1 : DESIGN LINE #1

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 283.42' @ 12.46 hrs Surf.Area= 0.016 ac Storage= 0.026 af

Plug-Flow detention time= 11.1 min calculated for 0.137 af (100% of inflow)
 Center-of-Mass det. time= 11.1 min (821.2 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	281.00'	0.016 af	18.00'W x 39.50'L x 3.54'H Field A 0.058 af Overall - 0.019 af Embedded = 0.039 af x 40.0% Voids
#2A	281.50'	0.019 af	Cultec R-330XLHD x 15 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 3 rows
		0.034 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	281.00'	30.000 in/hr Exfiltration over Surface area
#2	Primary	283.60'	6.0" Round Culvert L= 8.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 283.60' / 283.00' S= 0.0750 ' S= 0.0750 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Discarded OutFlow Max=0.49 cfs @ 11.82 hrs HW=281.04' (Free Discharge)
 ↳ **1=Exfiltration** (Exfiltration Controls 0.49 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=281.00' (Free Discharge)
 ↳ **2=Culvert** (Controls 0.00 cfs)

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Pond 6P: INFILTRATION - Chamber Wizard Field A

Chamber Model = Cultec R-330XLHD (Cultec Recharger® 330XLHD)

Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf

Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap

Row Length Adjustment= +1.50' x 7.45 sf x 3 rows

52.0" Wide + 12.0" Spacing = 64.0" C-C Row Spacing

5 Chambers/Row x 7.00' Long +1.50' Row Adjustment = 36.50' Row Length +18.0" End Stone x 2 = 39.50' Base Length

3 Rows x 52.0" Wide + 12.0" Spacing x 2 + 18.0" Side Stone x 2 = 18.00' Base Width

6.0" Stone Base + 30.5" Chamber Height + 6.0" Stone Cover = 3.54' Field Height

15 Chambers x 52.2 cf +1.50' Row Adjustment x 7.45 sf x 3 Rows = 815.9 cf Chamber Storage

2,518.1 cf Field - 815.9 cf Chambers = 1,702.2 cf Stone x 40.0% Voids = 680.9 cf Stone Storage

Chamber Storage + Stone Storage = 1,496.8 cf = 0.034 af

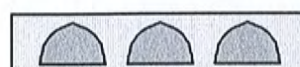
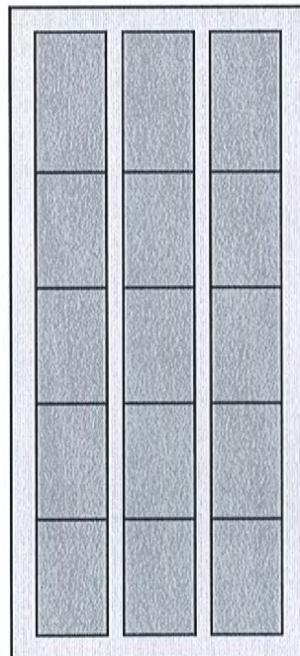
Overall Storage Efficiency = 59.4%

Overall System Size = 39.50' x 18.00' x 3.54'

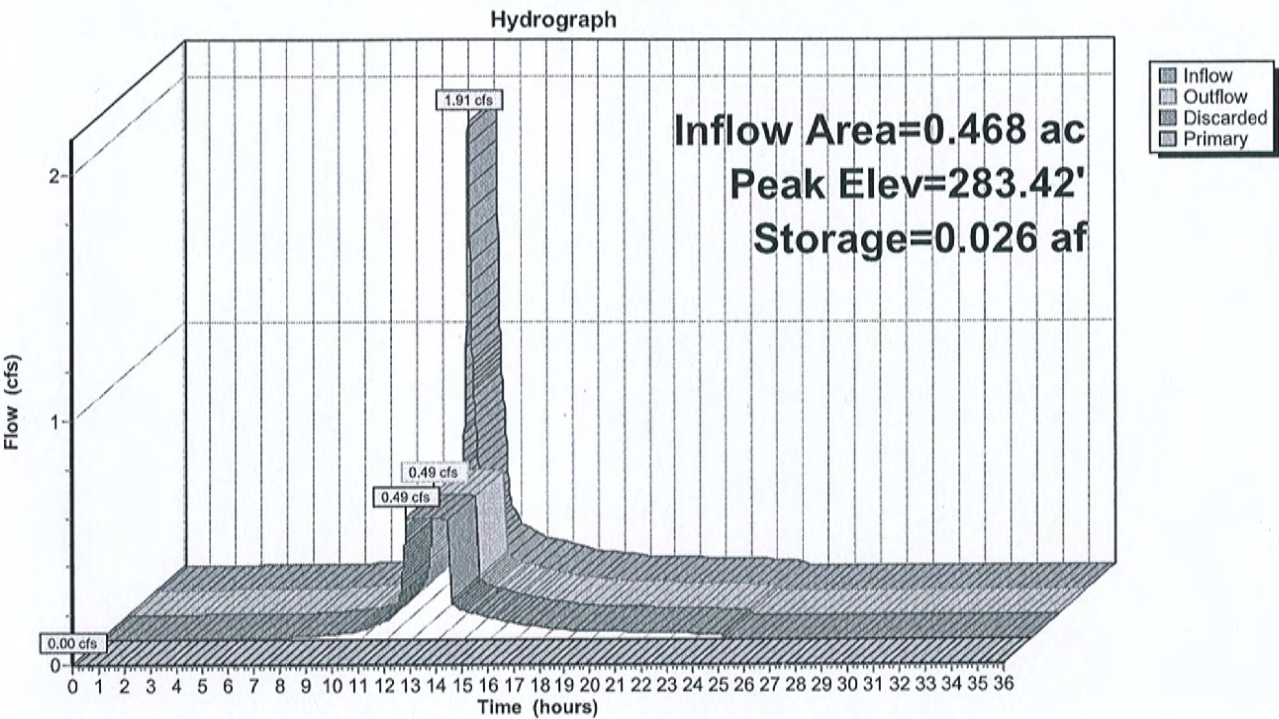
15 Chambers

93.3 cy Field

63.0 cy Stone



Pond 6P: INFILTRATION

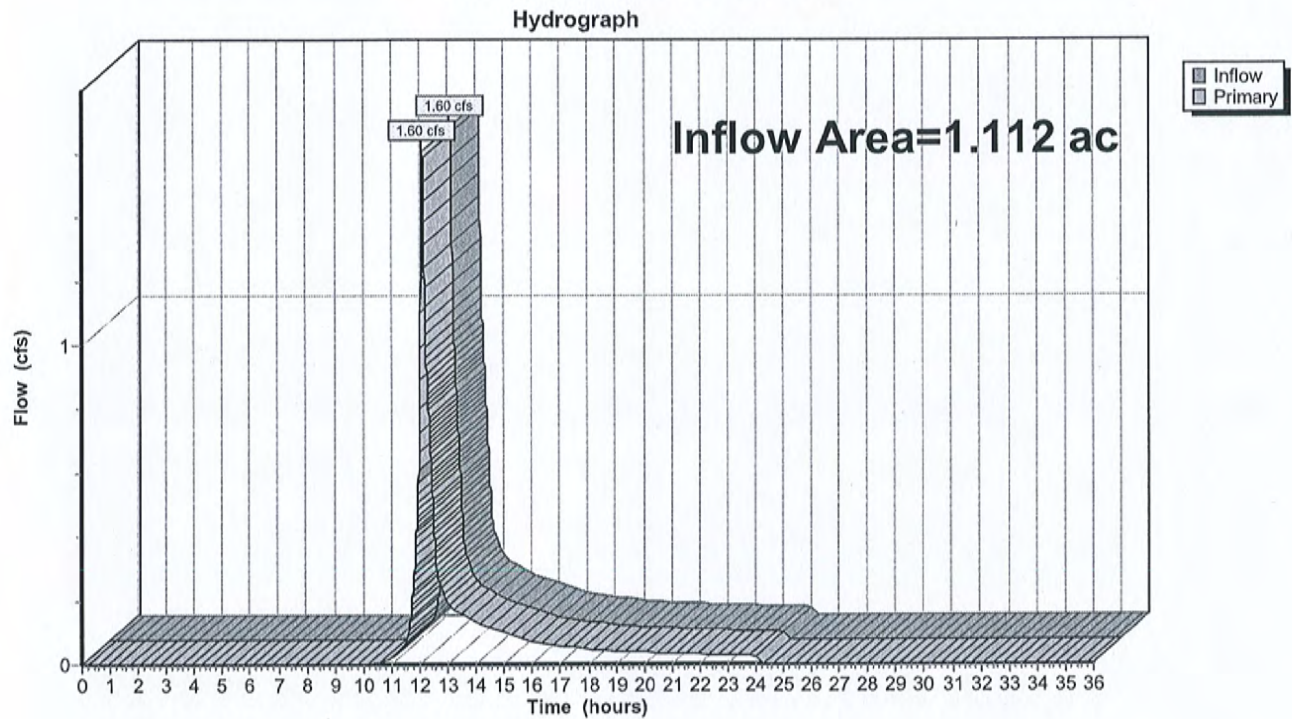


Summary for Link DL1: DESIGN LINE #1

Inflow Area = 1.112 ac, 13.86% Impervious, Inflow Depth = 1.30" for 25yr event
 Inflow = 1.60 cfs @ 12.10 hrs, Volume= 0.121 af
 Primary = 1.60 cfs @ 12.10 hrs, Volume= 0.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link DL1: DESIGN LINE #1



NYSDEC Water Quality Volume (WQv) Calculation

PROJECT: OSDONOFRIO100

BMP Location: Infiltration Area #1

Enter Total Watershed Area: 0.47 Acres

Enter Impervious Area: 0.155 Acres

% Impervious is: 32.91

Enter Value of P: 1.4 Inches

$$R_v = 0.05 + (0.009 \times I)$$

RV = (or min. 0.2) 0.3462

$$WQ_v = P \times R_v \times A / 12$$

WQv = 0.0190 Acre-Feet
827 Cubic Feet

APPENDIX C. DESIGN DATA

- **WEB SOIL SURVEY REPORT**
 - **SOIL TEST DATA SHEETS**
- **NRCS EXTREME PRECIPITATION DATA**



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Westchester County, New York**

2 Hillcrest Drive, Briarcliff manor



November 10, 2023

Preface

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

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

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

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

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

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

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CuD—Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes.....	15
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How Soil Surveys Are Made

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

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

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

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

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

Custom Soil Resource Report

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

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

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

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

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

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

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

Custom Soil Resource Report

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

Soil Map

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

Custom Soil Resource Report Soil Map



Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)			Spoil Area
	Area of Interest (AOI)		Stony Spot
Soils			Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
Special Point Features		Water Features	
	Blowout		Streams and Canals
	Borrow Pit	Transportation	
	Clay Spot		Rails
	Closed Depression		Interstate Highways
	Gravel Pit		US Routes
	Gravelly Spot		Major Roads
	Landfill		Local Roads
	Lava Flow	Background	
	Marsh or swamp		Aerial Photography
	Mine or Quarry		
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

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: Westchester County, New York
Survey Area Data: Version 19, Sep 6, 2023

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	1.1	71.1%
CuD	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	0.5	28.9%
Totals for Area of Interest		1.6	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

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delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Westchester County, New York

CsD—Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky

Map Unit Setting

National map unit symbol: 2w69k
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, very stony, and similar soils: 45 percent
Charlton, very stony, and similar soils: 35 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 2 inches: fine sandy loam
Bw - 2 to 30 inches: gravelly fine sandy loam
2R - 30 to 40 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

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Description of Charlton, Very Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex, linear
Across-slope shape: Convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 4 inches: fine sandy loam
Bw - 4 to 27 inches: gravelly fine sandy loam
C - 27 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 1.6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Leicester, very stony

Percent of map unit: 6 percent
Landform: Depressions, ground moraines, hills, drainageways
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear, concave
Across-slope shape: Concave
Hydric soil rating: Yes

Hollis, very stony

Percent of map unit: 5 percent
Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Side slope, nose slope, crest
Down-slope shape: Convex
Across-slope shape: Linear, convex

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Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent

Landform: Ridges, hills

Hydric soil rating: No

Sutton, very stony

Percent of map unit: 4 percent

Landform: Ground moraines, hills

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Linear

Hydric soil rating: No

CuD—Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes

Map Unit Setting

National map unit symbol: 2w69h

Elevation: 0 to 1,540 feet

Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days

Farmland classification: Not prime farmland

Map Unit Composition

Chatfield, extremely stony, and similar soils: 35 percent

Hollis, extremely stony, and similar soils: 30 percent

Rock outcrop: 20 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chatfield, Extremely Stony

Setting

Landform: Ridges, hills

Landform position (two-dimensional): Backslope, shoulder, summit

Landform position (three-dimensional): Crest, side slope, nose slope

Down-slope shape: Convex

Across-slope shape: Linear, convex

Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material

A - 1 to 2 inches: fine sandy loam

Bw - 2 to 30 inches: gravelly fine sandy loam

2R - 30 to 40 inches: bedrock

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Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 20 to 41 inches to lithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Hollis, Extremely Stony

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Crest, side slope, nose slope
Down-slope shape: Convex
Across-slope shape: Linear, convex
Parent material: Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

Typical profile

Oi - 0 to 2 inches: slightly decomposed plant material
A - 2 to 7 inches: gravelly fine sandy loam
Bw - 7 to 16 inches: gravelly fine sandy loam
2R - 16 to 26 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: 8 to 23 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

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Ecological site: F144AY033MA - Shallow Dry Till Uplands

Hydric soil rating: No

Description of Rock Outcrop

Setting

Landform: Ridges, hills

Parent material: Igneous and metamorphic rock

Typical profile

R - 0 to 79 inches: bedrock

Properties and qualities

Slope: 15 to 35 percent

Depth to restrictive feature: 0 inches to lithic bedrock

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)

Available water supply, 0 to 60 inches: Very low (about 0.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: No

Minor Components

Charlton, extremely stony

Percent of map unit: 7 percent

Landform: Ridges, hills

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Convex

Hydric soil rating: No

Leicester, extremely stony

Percent of map unit: 4 percent

Landform: Ground moraines, hills, drainageways, depressions

Landform position (two-dimensional): Toeslope, footslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave, linear

Across-slope shape: Concave

Hydric soil rating: Yes

Paxton, extremely stony

Percent of map unit: 2 percent

Landform: Hills, drumlins, ground moraines

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, linear

Across-slope shape: Linear, convex

Hydric soil rating: No

Sutton, extremely stony

Percent of map unit: 2 percent

Landform: Ground moraines, hills

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Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

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KELLARD SESSIONS

CONSULTING, P.C.

DESIGN DATA SHEET - STORM WATER SYSTEM

OWNER O'Donofrio ADDRESS _____

PROPERTY LOCATION: 2 Hillcrest Dr. Briarcliff Manor SEC. _____ BLK. _____ LOT. _____

MUNICIPALITY: Ossining / Briarcliff NYCDEP: JOINT REVIEW _____ DELEGATED _____

WATERSHED _____

SOIL PERCOLATION TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

PRESOAK DATE: _____ RUN DATE: 3/22/17

HOLE#		CLOCK TIME			PERCOLATION			
HOLE NUMBER	RUN NO.	START	STOP	ELAPSE TIME MIN.	DEPTH TO WATER FROM GROUND SURFACES		WATER LEVEL DROP IN INCHES	SOIL RATE MIN./IN DROP
					START INCHES	STOP INCHES		
1	1	1:18	1:27	9	15.5	19.5	4	2.25
	2	1:28	1:45	17	17	20.5	3.5	4.86
	3	1:47	2:05	18	19	22	3	6
	4							
	5							
2	1	1:20	1:34	14	21	24	3	4.67
	2	1:35	1:56	21	22	25	3	7
	3	1:57	2:17	20	23	26	3	6.67
	4							
	5							
3	1	2:12	2:50	38	17	20	3	12.67
	2	2:51	3:21	30	17	19	2	15
	3							
	4							
	5							

PERC TEST DONE BY: Kellard Sessions

NOTES:

1. TESTS TO BE REPEATED AT SAME DEPTH UNTIL APPROXIMATELY EQUAL SOIL RATES ARE OBTAINED AT EACH PERCOLATION TEST HOLE, ALL DATA TO BE SUBMITTED FOR REVIEW.

2. DEPTH MEASUREMENTS TO BE MADE FROM TOP OF HOLE, DO NOT REPORT INCREMENTS OF LESS THAN ONE INCH.

KELLARD SESSIONS

CONSULTING, P.C.

DESIGN DATA SHEET - STORM WATER SYSTEM

OWNER _____ ADDRESS _____

PROPERTY LOCATION: 2 Hillcrest Dr. Briarcliff Manor SEC. _____ BLK. _____ LOT. _____

MUNICIPALITY: _____ NYCDEP: JOINT REVIEW _____ DELEGATED _____

WATERSHED _____

SOIL PERCOLATION TEST DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

PRESOAK DATE: _____ RUN DATE: 3/22/17

HOLE#		CLOCK TIME			PERCOLATION			
HOLE NUMBER	RUN NO.	START	STOP	ELAPSE TIME MIN.	DEPTH TO WATER FROM GROUND SURFACES		WATER LEVEL DROP IN INCHES	SOIL RATE MIN./IN DROP
					START INCHES	STOP INCHES		
<u>4</u>	<u>1</u>	<u>2:30</u>	<u>2:33</u>	<u>3</u>	<u>20</u>	<u>23</u>	<u>3</u>	<u>1</u>
	<u>2</u>	<u>2:34</u>	<u>2:39</u>	<u>5</u>	<u>18</u>	<u>21</u>	<u>3</u>	<u>1.67</u>
	<u>3</u>	<u>2:41</u>	<u>2:46</u>	<u>5</u>	<u>18</u>	<u>21.5</u>	<u>3.5</u>	<u>1.43</u>
	<u>4</u>	<u>2:47</u>	<u>2:53</u>	<u>6</u>	<u>18</u>	<u>21</u>	<u>3</u>	<u>2</u>
	<u>5</u>							
	<u>1</u>							
	<u>2</u>							
	<u>3</u>							
	<u>4</u>							
	<u>5</u>							
	<u>1</u>							
	<u>2</u>							
	<u>3</u>							
	<u>4</u>							
	<u>5</u>							

PERC TEST DONE BY: Kellard Sessions

NOTES:

1. TESTS TO BE REPEATED AT SAME DEPTH UNTIL APPROXIMATELY EQUAL SOIL RATES ARE OBTAINED AT EACH PERCOLATION TEST HOLE. ALL DATA TO BE SUBMITTED FOR REVIEW.

2. DEPTH MEASUREMENTS TO BE MADE FROM TOP OF HOLE. DO NOT REPORT INCREMENTS OF LESS THAN ONE INCH.

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. <u>1</u>	HOLE NO. <u>2</u>	HOLE NO. <u>3</u>	HOLE NO. <u>4</u>
G.L.	↓ Top Soil	↓ Top Soil	↓ Top Soil	↓ Top Soil
6"	8	8	6	6
12"	↓ silty loam	↓ silty sands	↓ silty sands	↓ silty sands
18"	↓	18	↓	↓
24"	24	↓	24	24
30"	↓ silty clay	↓	↓	↓ tight compact
36"	↓ loam	↓	↓ gray / tan	↓ gray / tan
42"	↓	↓ silty w/ cobbles	↓ silty loam	↓ silty loam
48"	50 ledge	↓	↓ tight compact	↓
54"		↓	↓	↓
60"		↓	↓	60 ledge
66"		↓	66 ledge	
72"		↓		
78"		78 ledge		
84"				
90"				
96"				

WAS GROUNDWATER ENCOUNTERED? YES / NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: Kellard Session DATE OF DEEP TESTS 3/22/17

SOIL RATE USED _____ MIN. / 1" DROP: S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____

SEAL

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. <u>5</u>	HOLE NO. <u>6</u>	HOLE NO. <u>7</u>	HOLE NO. <u>8</u>
G.L.	↓ Top Soil	↓ Top Soil	↓ Top Soil	
6"	6	6	6	
12"	sandy loam	sandy loam	tight compact	
18"	↓	↓	sandy silts	
24"	20	20		
30"		grey silty		
36"	grey silty	sands w/		36/40 ledge
42"	sands w/	cobbles and	↓	
48"	cobbles and	boulders	48	
54"	boulders	56 water seep	med fine	
60"			sands	
66"	↓		63	
72"	72 ledge		ledge slopes	
78"		↓		
84"		84	84	
90"				
96"				

WAS GROUNDWATER ENCOUNTERED? YES / NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: Kellard Session DATE OF DEEP TESTS 3/22/17

SOIL RATE USED _____ MIN. / 1" DROP: S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____ SEAL

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. <u>9</u>	HOLE NO. <u>10</u>	HOLE NO. <u>11</u>	HOLE NO. <u>12</u>
G.L.	↓ Top Soil	↓ Top Soil	↓ Top Soil	↓ Top Soil
6"	6	6	18	12
12"	sandy loam	sandy loam	↓	↓
18"	↓	↓	18	sandy loam
24"	↓	24	↓	24
30"	↓	↓	sandy loam	↓
36"	36	↓	↓	↓
42"	↓	fine sands	42	grey fine
48"	mix sands	↓	↓	to med sands
54"	+ gravel	↓	↓	to med sands
60"	(bank run)	↓	grey / Brown	No ledge
66"	↓	70 ledge	mix sands	No water
72"	↓	↓	No ledge	↓
78"	↓	↓	No water	↓
84"	↓	↓	↓	↓
90"	↓	↓	↓	↓
96"	96	↓	↓	↓
			102	108

WAS GROUNDWATER ENCOUNTERED? YES / NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: Kellard Session DATE OF DEEP TESTS 3/22/17

SOIL RATE USED _____ MIN. / 1" DROP: S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____ SEAL

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. <u>13</u>	HOLE NO. <u>14</u>	HOLE NO. <u>15</u>	HOLE NO. <u>16</u>
G.L.			↓ Top Soil	↓ Top Soil
6"		↓ Top Soil	↓	↓
12"			sandy loam	sandy loam
18"		↓	↓	↓
24"		28	24	20
30"	30 water seep	silty loam clay		
36"		↓		
42"		40 water seep		
48"			med fine.	fine sands
54"			sands	w/ silts
60"			w/ stones	w/ stones
66"				
72"				
78"				
84"			↓	84
90"				
96"			96	

WAS GROUNDWATER ENCOUNTERED? YES / NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: Kellard Sessia DATE OF DEEP TESTS 3/22/17

SOIL RATE USED _____ MIN. / 1" DROP: S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____

SEAL

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLES

DEPTH	HOLE NO. <u>17</u>	HOLE NO. _____	HOLE NO. _____	HOLE NO. _____
G.L.	↓ Top Soil			
6"	6			
12"	↓ sandy loam			
18"	↓			
24"	24			
30"				
36"	med fine			
42"	sands w/ stones			
48"	+ boulders			
54"	+ broken rocks			
60"				
66"				
72"				
78"				
84"	↓			
90"	92 ledge			
96"				

WAS GROUNDWATER ENCOUNTERED? YES / NO

INDICATE LEVEL AT WHICH GROUND WATER IS ENCOUNTERED _____ FT. / IN.

INDICATED LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED _____ FT. / IN.

DEEP TEST MADE BY: Keller & Sessions DATE OF DEEP TESTS 3/22/17

SOIL RATE USED _____ MIN. / 1" DROP; S.D. USABLE AREA PROVIDED

INFILTRATION SYSTEM PROV. BY _____ UNITS OTHER _____

DESIGN PROFESSIONAL NAME _____ SIGNATURE _____

ADDRESS _____
 _____ SEAL

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	New York
Location	New York, United States
Latitude	41.162 degrees North
Longitude	73.821 degrees West
Elevation	90 feet
Date/Time	Mon Nov 13 2023 11:21:46 GMT-0500 (Eastern Standard 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	0.51	0.64	0.84	1.05	1.30	1yr	0.90	1.24	1.49	1.84	2.26	2.78	3.16	1yr	2.46	3.04	3.54	4.25	4.89	1yr
2yr	0.40	0.62	0.77	1.02	1.28	1.60	2yr	1.11	1.49	1.84	2.27	2.79	3.41	3.84	2yr	3.02	3.69	4.26	5.03	5.70	2yr
5yr	0.47	0.73	0.92	1.23	1.57	1.99	5yr	1.36	1.83	2.29	2.85	3.51	4.31	4.88	5yr	3.81	4.69	5.45	6.29	7.07	5yr
10yr	0.52	0.82	1.04	1.41	1.83	2.34	10yr	1.58	2.15	2.71	3.38	4.18	5.13	5.86	10yr	4.54	5.63	6.57	7.46	8.32	10yr
25yr	0.60	0.96	1.22	1.69	2.25	2.91	25yr	1.95	2.65	3.40	4.26	5.29	6.49	7.46	25yr	5.74	7.18	8.42	9.35	10.32	25yr
50yr	0.68	1.09	1.40	1.97	2.64	3.45	50yr	2.28	3.11	4.04	5.08	6.30	7.76	8.97	50yr	6.86	8.63	10.16	11.10	12.15	50yr
100yr	0.77	1.24	1.61	2.28	3.10	4.08	100yr	2.68	3.66	4.79	6.05	7.53	9.28	10.79	100yr	8.21	10.37	12.26	13.17	14.32	100yr
200yr	0.87	1.42	1.84	2.64	3.65	4.84	200yr	3.15	4.30	5.70	7.23	9.01	11.11	12.98	200yr	9.83	12.48	14.81	15.64	16.88	200yr
500yr	1.04	1.70	2.22	3.23	4.53	6.05	500yr	3.91	5.32	7.17	9.13	11.42	14.12	16.59	500yr	12.49	15.95	19.03	19.62	20.98	500yr

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.52	0.70	0.87	1.15	1yr	0.75	1.13	1.37	1.69	2.16	2.41	2.91	1yr	2.13	2.80	3.29	3.78	4.33	1yr
2yr	0.39	0.60	0.74	1.00	1.23	1.47	2yr	1.06	1.44	1.69	2.16	2.70	3.30	3.71	2yr	2.92	3.57	4.10	4.83	5.51	2yr
5yr	0.43	0.67	0.83	1.14	1.44	1.73	5yr	1.25	1.69	1.98	2.51	3.15	4.04	4.49	5yr	3.58	4.32	4.98	5.81	6.51	5yr
10yr	0.47	0.73	0.90	1.26	1.62	1.93	10yr	1.40	1.88	2.22	2.77	3.54	4.55	5.19	10yr	4.03	4.99	5.76	6.47	7.04	10yr
25yr	0.53	0.80	1.00	1.43	1.88	2.22	25yr	1.62	2.17	2.59	3.16	4.14	5.49	6.31	25yr	4.86	6.06	7.23	7.63	7.96	25yr
50yr	0.57	0.87	1.09	1.57	2.11	2.48	50yr	1.82	2.42	2.92	3.48	4.66	6.34	7.31	50yr	5.61	7.03	8.44	8.64	8.67	50yr
100yr	0.63	0.96	1.20	1.73	2.37	2.77	100yr	2.05	2.71	3.29	3.82	5.24	7.35	8.49	100yr	6.51	8.17	9.87	9.79	9.41	100yr
200yr	0.69	1.04	1.32	1.91	2.66	3.08	200yr	2.29	3.01	3.72	4.19	5.92	8.56	9.90	200yr	7.57	9.52	11.54	11.06	10.18	200yr
500yr	0.78	1.17	1.50	2.18	3.10	3.56	500yr	2.67	3.48	4.40	4.72	6.98	10.48	12.13	500yr	9.27	11.67	14.23	13.01	11.19	500yr

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.38	0.58	0.71	0.96	1.18	1.42	1yr	1.02	1.39	1.63	2.12	2.54	2.99	3.40	1yr	2.65	3.27	3.85	4.67	5.32	1yr
2yr	0.42	0.65	0.80	1.08	1.33	1.60	2yr	1.15	1.56	1.82	2.36	2.91	3.55	4.00	2yr	3.14	3.84	4.42	5.26	6.04	2yr
5yr	0.51	0.79	0.98	1.34	1.70	2.02	5yr	1.47	1.97	2.34	3.04	3.81	4.60	5.30	5yr	4.07	5.09	5.93	6.76	7.56	5yr
10yr	0.60	0.93	1.15	1.61	2.08	2.42	10yr	1.79	2.37	2.82	3.70	4.65	5.77	6.58	10yr	5.11	6.32	7.43	8.51	9.41	10yr
25yr	0.76	1.15	1.43	2.05	2.69	3.09	25yr	2.32	3.02	3.62	4.87	6.09	7.60	8.76	25yr	6.73	8.42	9.65	11.25	12.22	25yr
50yr	0.90	1.37	1.71	2.45	3.30	3.75	50yr	2.85	3.66	4.38	5.99	7.45	9.36	10.86	50yr	8.29	10.44	11.99	13.90	14.92	50yr
100yr	1.08	1.64	2.05	2.96	4.06	4.53	100yr	3.50	4.43	5.30	7.41	9.12	11.53	13.47	100yr	10.20	12.95	14.92	17.17	18.22	100yr
200yr	1.30	1.95	2.48	3.59	5.00	5.48	200yr	4.32	5.36	6.42	9.13	11.16	14.20	16.69	200yr	12.56	16.05	18.55	21.19	22.28	200yr
500yr	1.68	2.49	3.21	4.66	6.63	7.06	500yr	5.72	6.90	8.25	12.13	14.58	18.67	22.17	500yr	16.53	21.31	24.74	28.07	29.11	500yr

APPENDIX D. BEST MANAGEMENT PRACTICE SPECIFICATIONS

- **CULTEC SYSTEM SPECIFICATIONS AND OPERATION AND MAINTENANCE MANUAL**

CONTACTOR® & RECHARGER®

STORMWATER MANAGEMENT SOLUTIONS



OPERATION & MAINTENANCE GUIDELINES FOR CULTEC STORMWATER MANAGEMENT SYSTEMS



STORMWATER MANAGEMENT SOLUTIONS

CULTEC



OPERATIONS AND MAINTENANCE GUIDELINES

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Contact Information:

For general information on our other products and services, please contact our offices within the United States at (800)428-5832, (203)775-4416 ext. 202, or e-mail us at CT-CustomerService@cultec.com.

For technical support, please call (203)775-4416 ext. 203 or e-mail CT-Tech@cultec.com.

Visit www.cultec.com/downloads.html for Product Downloads and CAD details.

Doc ID: CLT057 11-23

November 2023

*These instructions are for single-layer traffic applications only. For multi-layer applications, contact CULTEC.
All illustrations and photos shown herein are examples of typical situations. Be sure to follow the engineer's drawings.
Actual designs may vary.*

This manual contains guidelines recommended by CULTEC and may be used in conjunction with, but not to supersede, local regulations or regulatory authorities. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Introduction

The CULTEC Subsurface Stormwater Management System is a high-density polyethylene (HDPE) chamber system arranged in parallel rows surrounded by washed stone. The CULTEC chambers create arch-shaped voids within the washed stone to provide stormwater detention, retention, infiltration, and reclamation. Filter fabric is placed between the native soil and stone interface to prevent the intrusion of fines into the system. In order to minimize the amount of sediment which may enter the CULTEC system, a sediment collection device (stormwater pretreatment device) is recommended upstream from the CULTEC chamber system. Examples of pretreatment devices include, but are not limited to, an appropriately sized catch basin with sump, pretreatment catchment device, oil grit separator, or baffled distribution box. Manufactured pretreatment devices may also be used in accordance with CULTEC chambers. Installation, operation, and maintenance of these devices shall be in accordance with manufacturer's recommendations. Almost all of the sediment entering the stormwater management system will be collected within the pretreatment device.

Best Management Practices allow for the maintenance of the preliminary collection systems prior to feeding the CULTEC chambers. The pretreatment structures shall be inspected for any debris that will restrict inlet flow rates. Outfall structures, if any, such as outlet control must also be inspected for any obstructions that would restrict outlet flow rates. OSHA Guidelines must be followed when inspecting or cleaning any structure.

Operation and Maintenance Requirements

I. Operation

CULTEC stormwater management systems shall be operated to receive only stormwater run-off in accordance with applicable local regulations. CULTEC subsurface stormwater management chambers operate at peak performance when installed in series with pretreatment. Pretreatment of suspended solids is superior to treatment of solids once they have been introduced into the system. The use of pretreatment is adequate as long as the structure is maintained and the site remains stable with finished impervious surfaces such as parking lots, walkways, and pervious areas are properly maintained. If there is to be an unstable condition, such as improvements to buildings or parking areas, all proper silt control measures shall be implemented according to local regulations.

II. Inspection and Maintenance Options

- A. The CULTEC system may be equipped with an inspection port located on the inlet row. The inspection port is a circular cast box placed in a rectangular concrete collar. When the lid is removed, a 6-inch (150 mm) pipe with a screw-in plug will be exposed. Remove the plug. This will provide access to the CULTEC Chamber row below. From the surface, through this access, the sediment may be measured at this location. A stadia rod may be used to measure the depth of sediment if any in this row. If the depth of sediment is in excess of 3 inches (76 mm), then this row should be cleaned with high pressure water through a culvert cleaning nozzle. This would be carried out through an upstream manhole or through the CULTEC StormFilter Unit (or other pretreatment device). CCTV inspection of this row can be deployed through this access port to determine if any sediment has accumulated in the inlet row.
- B. If the CULTEC bed is not equipped with an inspection port, then access to the inlet row will be through an upstream manhole or the CULTEC StormFilter.
 1. **Manhole Access**
This inspection should only be carried out by persons trained in confined space entry and sewer inspection services. After the manhole cover has been removed a gas detector must be lowered into the manhole to ensure that there are not high concentrations of toxic gases present. The inspector should be lowered into the manhole with the proper safety equipment as per OSHA requirements. The inspector may be able to observe sediment from this location. If this is not possible, the inspector will need to deploy a CCTV robot to permit viewing of the sediment.

2. StormFilter Access

Remove the manhole cover to allow access to the unit. Typically a 30-inch (750 mm) pipe is used as a riser from the StormFilter to the surface. As in the case with manhole access, this access point requires a technician trained in confined space entry with proper gas detection equipment. This individual must be equipped with the proper safety equipment for entry into the StormFilter. The technician will be lowered onto the StormFilter unit. The hatch on the unit must be removed. Inside the unit are two filters which may be removed according to StormFilter maintenance guidelines. Once these filters are removed the inspector can enter the StormFilter unit to launch the CCTV camera robot.

- C. The inlet row of the CULTEC system is placed on a polyethylene liner to prevent scouring of the washed stone beneath this row. This also facilitates the flushing of this row with high pressure water through a culvert cleaning nozzle. The nozzle is deployed through a manhole or the StormFilter and extended to the end of the row. The water is turned on and the inlet row is back-flushed into the manhole or StormFilter. This water is to be removed from the manhole or StormFilter using a vacuum truck.

III. Maintenance Guidelines

The following guidelines shall be adhered to for the operation and maintenance of the CULTEC stormwater management system:

- A. The owner shall keep a maintenance log which shall include details of any events which would have an effect on the system's operational capacity.
- B. The operation and maintenance procedure shall be reviewed periodically and changed to meet site conditions.
- C. Maintenance of the stormwater management system shall be performed by qualified workers and shall follow applicable occupational health and safety requirements.
- D. Debris removed from the stormwater management system shall be disposed of in accordance with applicable laws and regulations.

IV. Suggested Maintenance Schedules

A. Minor Maintenance

The following suggested schedule shall be followed for routine maintenance during the regular operation of the stormwater system:

Frequency	Action
Monthly in first year	Check inlets and outlets for clogging and remove any debris, as required.
Spring and Fall	Check inlets and outlets for clogging and remove any debris, as required.
One year after commissioning and every third year following	Check inlets and outlets for clogging and remove any debris, as required.

B. Major Maintenance

The following suggested maintenance schedule shall be followed to maintain the performance of the CULTEC stormwater management chambers. Additional work may be necessary due to insufficient performance and other issues that might be found during the inspection of the stormwater management chambers. (See table on next page)

	Frequency	Action
Inlets and Outlets	Every 3 years	Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
	Spring and Fall	Check inlet and outlets for clogging and remove any debris as required.
CULTEC Stormwater Chambers	2 years after commissioning	- Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. - Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
	9 years after commissioning every 9 years following	- Clean stormwater management chambers and feed connectors of any debris. - Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. - Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	45 years after commissioning	- Clean stormwater management chambers and feed connectors of any debris. - Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. - Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. - Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. - Attain the appropriate approvals as required. - Establish a new operation and maintenance schedule.
Surrounding Site	Monthly in 1 st year	Check for depressions in areas over and surrounding the stormwater management system.
	Spring and Fall	Check for depressions in areas over and surrounding the stormwater management system.
	Yearly	Confirm that no unauthorized modifications have been performed to the site.

For additional information concerning the maintenance of CULTEC Subsurface Stormwater Management Chambers, please contact CULTEC at 1-800-428-5832.



WQMP Operation & Maintenance (O&M) Plan

Project Name: _____

Prepared for:

Project Name: _____

Address: _____

City, State Zip: _____

Prepared on:

Date: _____

This O&M Plan describes the designated responsible party for implementation of this WQMP, including: operation and maintenance of all the structural BMP(s), conducting the training/educational program and duties, and any other necessary activities. The O&M Plan includes detailed inspection and maintenance requirements for all structural BMPs, including copies of any maintenance contract agreements, manufacturer's maintenance requirements, permits, etc.

8.1.1 Project Information

Project name	
Address	
City, State Zip	
Site size	
List of structural BMPs, number of each	
Other notes	

8.1.2 Responsible Party

The responsible party for implementation of this WQMP is:

Name of Person or HOA Property Manager	
Address	
City, State Zip	
Phone number	
24-Hour Emergency Contact number	
Email	

8.1.3 Record Keeping

Parties responsible for the O&M plan shall retain records for at least 5 years.

All training and educational activities and BMP operation and maintenance shall be documented to verify compliance with this O&M Plan. A sample Training Log and Inspection and Maintenance Log are included in this document.

8.1.4 Electronic Data Submittal

This document along with the Site Plan and Attachments shall be provided in PDF format. AutoCAD files and/or GIS coordinates of BMPs shall also be submitted to the City.

Appendix ____

BMP SITE PLAN

Site plan is preferred on minimum 11" by 17" colored sheets, as long as legible.

Project Name: _____

Today's Date: _____

Signature: _____

[illegible]

Minor Maintenance

Frequency		Action
Monthly in first year		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
☐ Month 1	Date:	
☐ Month 2	Date:	
☐ Month 3	Date:	
☐ Month 4	Date:	
☐ Month 5	Date:	
☐ Month 6	Date:	
☐ Month 7	Date:	
☐ Month 8	Date:	
☐ Month 9	Date:	
☐ Month 10	Date:	
☐ Month 11	Date:	
☐ Month 12	Date:	
Spring and Fall		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
☐ Spring	Date:	
☐ Fall	Date:	
☐ Spring	Date:	
☐ Fall	Date:	
☐ Spring	Date:	
☐ Fall	Date:	
☐ Spring	Date:	
☐ Fall	Date:	
☐ Spring	Date:	
☐ Fall	Date:	
☐ Spring	Date:	
☐ Fall	Date:	
One year after commissioning and every third year following		Check inlets and outlets for clogging and remove any debris, as required.
		Notes
☐ Year 1	Date:	
☐ Year 4	Date:	
☐ Year 7	Date:	
☐ Year 10	Date:	
☐ Year 13	Date:	
☐ Year 16	Date:	
☐ Year 19	Date:	
☐ Year 22	Date:	

Major Maintenance

	Frequency	Action
Inlets and Outlets	Every 3 years	Obtain documentation that the inlets, outlets and vents have been cleaned and will function as intended.
		Notes
	☐ Year 1	Date:
	☐ Year 4	Date:
	☐ Year 7	Date:
	☐ Year 10	Date:
	☐ Year 13	Date:
	☐ Year 16	Date:
	☐ Year 19	Date:
	☐ Year 22	Date:
	Spring and Fall	Check inlet and outlets for clogging and remove any debris, as required.
		Notes
	☐ Spring	Date:
	☐ Fall	Date:
	☐ Spring	Date:
	☐ Fall	Date:
	☐ Spring	Date:
	☐ Fall	Date:
	☐ Spring	Date:
	☐ Fall	Date:
	☐ Spring	Date:
	☐ Fall	Date:
CULTEC Stormwater Chambers	2 years after commissioning	☐ Inspect the interior of the stormwater management chambers through inspection port for deficiencies using CCTV or comparable technique. ☐ Obtain documentation that the stormwater management chambers and feed connectors will function as anticipated.
		Notes
	☐ Year 2	Date:

Major Maintenance

Frequency		Action
CULTEC Stormwater Chambers	9 years after commissioning every 9 years following	☐ Clean stormwater management chambers and feed connectors of any debris. ☐ Inspect the interior of the stormwater management structures for deficiencies using CCTV or comparable technique. ☐ Obtain documentation that the stormwater management chambers and feed connectors have been cleaned and will function as intended.
	Notes	
	☐ Year 9	Date:
	☐ Year 18	Date:
	☐ Year 27	Date:
	☐ Year 36	Date:
	45 years after commissioning	☐ Clean stormwater management chambers and feed connectors of any debris. ☐ Determine the remaining life expectancy of the stormwater management chambers and recommended schedule and actions to rehabilitate the stormwater management chambers as required. ☐ Inspect the interior of the stormwater management chambers for deficiencies using CCTV or comparable technique. ☐ Replace or restore the stormwater management chambers in accordance with the schedule determined at the 45-year inspection. ☐ Attain the appropriate approvals as required. ☐ Establish a new operation and maintenance schedule.
	Notes	
	☐ Year 45	Date:

Major Maintenance

Frequency		Action	
Surrounding Site	Monthly in 1st year		
	☐ Check for depressions in areas over and surrounding the stormwater management system.		
	Notes		
	☐ Month 1	Date:	
	☐ Month 2	Date:	
	☐ Month 3	Date:	
	☐ Month 4	Date:	
	☐ Month 5	Date:	
	☐ Month 6	Date:	
	☐ Month 7	Date:	
	☐ Month 8	Date:	
	☐ Month 9	Date:	
	☐ Month 10	Date:	
	☐ Month 11	Date:	
	☐ Month 12	Date:	
	Spring and Fall		
	☐ Check for depressions in areas over and surrounding the stormwater management system.		
	Notes		
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	☐ Spring	Date:	
	☐ Fall	Date:	
	Yearly		
	☐ Confirm that no unauthorized modifications have been performed to the site.		
Notes			
☐ Year 1	Date:		
☐ Year 2	Date:		
☐ Year 3	Date:		
☐ Year 4	Date:		
☐ Year 5	Date:		
☐ Year 6	Date:		
☐ Year 7	Date:		



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