STORMWATER POLLUTION PREVENTION PLAN & DRAINAGE ANALYSIS

Proposed Residential Development
129-133 Prospect Avenue
Village of Mamaroneck - New York

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1.) Contractor Certification Statement

CONTRACTOR CERTIFICATION STATEMENT

Site Location: 129-133 Prospect Avenue
Mamaroneck, NY 10543

The owner or operator shall have each contractor and subcontractor involved in soil disturbance sign a copy of the following certification statement before they commence any construction activity:

"I certify under penalty of law that I understand and agree to comply with the terms and conditions of the stormwater pollution prevention plan. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Responsible Corporate Officer/Partner Signature	Date
Name of above Signatory	Name of Company
Title of above	Signatory Mailing Address
Telephone of Company	City, State and Zip

2.) Narrative

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A. INTRODUCTION

This Stormwater Pollution Prevention Plan & Stormwater Analysis presents the proposed Best Management Practices (BMPs) to control erosion, sedimentation, and manage stormwater during the construction of a new multi-unit residential building located at 129-133 Prospect Avenue in the Village of Mamaroneck, Westchester County, New York.

This plan consists of this narrative and a plan set entitled: "Proposed Residential Development, 129-133 Prospect Avenue, Village of Mamaroneck, Westchester County, New York", all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last revised on March 28, 2023. The design is in accordance with the Village of Mamaroneck requirements. The plans have also been prepared to meet the requirements of the New York State Department of Environmental Conservation (NYSDEC), per the Village code.

B. METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20 methodologies (HydroCad®) to assist with the drainage analysis and design of the mitigating practice. The "Complex Number" (CN) value determination is based on soil type, vegetation and land use. *See Soil Map & Report contained herein.* The "Time of Concentration" (T_c) is determined by the time wise longest flow path within each watershed. The CN and T_c data is input into the computer model. This project involves modifications to an existing developed property and was modeled for the peak rates of runoff from the 1-, 10- and 25-year Type III–24-hour extreme storm events in the Post-Developed Conditions. *See Extreme Precipitation Table contained within the report*.

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

C. PRE-DESIGN INVESTIGATIVE ANALYSIS

A pre-design investigative analysis was performed including percolation and deep hole tests in the locations shown on the plans.

Percolation tests were performed in accordance with Appendix D of the NYSDEC SMDM and were completed as follows: Two (2) 8-inch percolation test holes

were excavated 24 inches below the invert of the proposed stormwater practice. A 4-inch diameter pipe was inserted into the percolation hole and backfilled around. The hole was pre-soaked for 24 hours prior to running the tests. The pipe was filled with 24 inches of water and monitored for 1 hour or until the test hole completely drained, whichever came first. The runs were repeated for a minimum of 4 runs and a consistent percolation rate. A percolation test was performed in the vicinity of the potential stormwater mitigation practice [TP-1, TP-2, and TP-3] until constant rates were achieved, the results are as follows:

- TP-1: A percolation rate of 6.67-minutes per inch (9-inches per hour) was observed. This location was not utilized in the design.

- TP-2: A percolation rate of 5.45-minutes per inch (11-inches per hour) was observed. This location was not utilized in the design.

- TP-3: A percolation rate of 2.20-minutes per inch (27.3-inches per hour) was observed. This location was not utilized in the design.

Three (3) deep test hole was excavated and labeled [TP-1, TP-2 and TP-3] as shown on the plans.

- TP-1 was excavated to a depth of 96-inches. The test revealed topsoil to a depth of 12-inches, sandy silt w/ large rocks to the invert. No groundwater or ledge rock was encountered.

- TP-2 was excavated to a depth of 68-inches. The test revealed topsoil to a depth of 24-inches and brown compact, sandy loam to the invert. Ledge rock was encountered at a depth of 68-inches and no ground water was observed for the entire depth.

- TP-3 was excavated to a depth of 57-inches. The test revealed topsoil to a depth of 6-inches, fill with large rock to a depth of 36-inches and fine sandy loam to the invert. Ledge rock was encountered at a depth of 57-inches and no ground water was observed for the entire depth.

The deep test hole log and percolation test data sheets are attached.

D. BACKGROUND INFORMATION

The project site is located on the north side of Prospect Avenue approximately 120 feet west of the intersection of Prospect Avenue and Mamaroneck Avenue. The site is moderately sloped from west to east. The soil classification based upon Westchester County Soils Mapping is Urban Land. Because urban Land has No HSG soil type, The closest soil to the site has a HSG 'Type B' rating. For the purpose of this analysis, all on-site soils are assumed to be 'Type B' soils. The site vegetation can be characterized as lawn and landscaped. The site consists of two existing frame residences with associated driveways and

walkways. The project site consists of no formally designed stormwater management facilities.

E. PRE-DEVELOPED CONDITION

In the pre-developed condition, the site was modeled as one watershed, Watershed 1. Watershed 1 was analyzed as follows:

Watershed 1 contains a tributary area of 10,324 square feet. Approximately 4,704 square feet is pervious in the form of lawn and landscaping and the remaining 5,620 square feet is impervious cover in the form of the existing dwellings and associated site improvements. This watershed has a weighted complex number (CN) Value of 81 and a calculated time of concentration (Tc) of 3.9 Minutes. Runoff from the tributary area originates in the center of the rear yards and flows in a northerly direction where it exits the property at Point 'B'.

The runoff rates in the pre-developed condition were calculated as follows:

Pre-Developed Conditions - Peak Rate of Runoff			
	1- Year	10-Year	25-Year
	cfs	cfs	cfs
	0.36	0.93	1.27

F. POST-DEVELOPED CONDITION

In the post-developed condition, the site was modeled as two watersheds, Watershed 1 and watershed 1A. Each watershed was analyzed as follows:

Watershed 1 contains approximately 1,696-square feet of tributary area which includes 197-square feet of impervious area, in the form of proposed driveways and building entrance. Approximately 1,499-square feet of lawn and landscaping of pervious area is being proposed. The weighted Complex Number (CN) value is calculated as 65 and the Time of Concentration (Tc) of direct entry of 1.0 minutes.

Watershed 1A contains approximately 8,628-square feet of tributary area which includes 8,039-square feet of impervious area, in the form of the proposed building & driveway area. Approximately 589-square feet of pervious area in the form of roof top planters* and Lawn/landscaping in HSG 'Type B' soils. This watershed has a weighted complex number (CN) Value of 97 and a direct entry time of concentration (Tc) of 1.0 Minute. Runoff from the tributary area is collected via a comprehensive roof drainage system and conveyed via pipe to a pipe attenuation gallery consisting of 60 linear feet of 36" HDPE pipe with soil tight joints and three staged reduced diameter orifices to control flows leaving the system. The runoff is then conveyed via pipe to an existing catch basin located within the right-of-way.
*Conservatively, a CN value of 89 was utilized for the roof top planters.

The runoff rates in the post-developed condition were calculated as follows:

Post-Developed Conditions - Peak Rate of Runoff			
	1- Year	10-Year	25-Year
	cfs	cfs	cfs
	0.36	0.89	1.19

The rate of runoff matches or decrease compared to the existing conditions.

F. WATER QUALITY VOLUME

The Water Quality Volume (WQv) calculations were performed for all the proposed impervious areas for Watershed 1A:

P= 90% Rainfall 1.5 -inches

A_i = Impervious Area = 8,039 -square feet

A_i = 0.1846 -acres

A_t = Tributary Area = 8,628 -square feet

A_t = 0.1981 -acres

I = % Impervious = 93.17%

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

R_v= 0.889 **(0.20 minimum)**

R_v= 0.889

$$WQ_v = \frac{(P \times R_v \times A_t)}{12} = 0.02200 \text{ acre-feet} = 958.31 \text{ cubic feet}$$

Rainfall = 1.65 -inches → 964 cubic feet OKAY

The Water Quality Volume (WQv) from all proposed impervious areas results in 964 cubic feet. This total water quality volume is equal to a 1.65-inch storm event from *Watershed 1A*. The proposed hydrodynamic separator has the capacity to treat the entire water quality volume for the tributary area. *Water Quality Volume calculations are contained within Section 8 of this report.*

G. CONSTRUCTION PHASE

During the construction phase of the project, a sediment and erosion control plan shall be implemented in accordance with the New York State Department of Environmental Conservation's Best Management Practices (BMP). The primary goals of the sediment and erosion control plan are to prevent the tracking of dirt and mud onto adjacent roads, to prevent mud and silt from entering into existing and proposed drainage facilities, and to protect the receiving waters from contamination during the construction.

During construction, the party responsible for implementing the temporary (during construction) Stormwater Management facilities Maintenance Program will be the owner. Contact information will be filed with the Village.

A New York State Professional Engineer or Certified Professional In Erosion and Sediment Control (P.E. or CPESC) shall conduct an assessment of the site prior to the commencement of construction and certify in an inspection report that the appropriate erosion and sediment controls shown on the plan have been adequately installed and/or implemented to ensure overall preparedness of the site for construction. Following the commencement of construction, site inspections shall be conducted by the P.E. or CPESC at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater.

During each inspection, the representative shall record the following:

1. On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

2. Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

3. Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

4. Inspect all sediment control practices and record approximate degree of sediment accumulation as a percentage of the sediment storage volume;

5. Inspect all erosion and sediment control practices and record all maintenance requirements. Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along the barrier. Record the depth of sediment within containment structures and any erosion near outlet and overflow structures.

6. All identified deficiencies.

The construction manager shall maintain a record of all inspection reports in a site logbook. The site logbook shall be maintained on-site and be made available to the Village of Mamaroneck. A summary of the site inspection activities shall be posted on a monthly basis in a public accessible location at the site.

The projects anticipated start date is Summer 2023 and the anticipated completed date is Fall 2024.

H. CONSTRUCTION SEQUENCING

The following erosion control schedule shall be utilized:

1. Establish construction staging area.
2. Selective vegetation removal for silt fence installation.
3. Install silt fence & construction fence around perimeter of property as shown on construction drawings.
4. Strip topsoil and stockpile at the locations specified on the plans (up gradient of erosion control measures). Temporarily stabilize topsoil stockpiles (hydroseed during May 1st through October 31st planting season or by covering with a tarpaulin(s) November 1st through April 30th. Install silt fence around toe of slope.
5. Demolish all buildings & all other site features.
6. Rough grade the site. Install subsurface attenuation gallery and tributary drainage.
7. Excavate building foundation. Construct building. Connect internal building drainage to stormwater system.
8. Install curbing and sub-base courses. Fine grade and seed all disturbed areas. Spread salt hay over seeded areas.
9. Install bituminous concrete top course.
10. Clean drain lines, catch basins and subsurface exfiltration chambers.
11. Remove all temporary soil erosion and sediment control measures after site has achieved final stabilization (80% uniform density of permanent vegetation or permanent mulch/stone).

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

I. EROSION AND SEDIMENT CONTROL COMPONENTS

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

Planned erosion and sedimentation control practices during construction include the installation, inspection and maintenance of the inlet protection, soil stockpile areas and silt fencing. General land grading practices, including land stabilization and construction sequencing are also integrated into the Sediment and Erosion Control Plan. Dust control is not expected to be a problem due to the relatively limited area of exposure, the undisturbed perimeter of trees around the project area and the relatively short time of exposure. Should excessive dust be generated, it will be controlled by sprinkling.

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

- New York State General Permit for Stormwater Discharges, GP-0-20-001 (General permit).
- "Reducing the Impacts of Stormwater Runoff from New Development", as published by the New York State Department of Environmental Conservation (NYSDEC), second edition, April, 1993.
- New York State Standards and Specifications for Erosion and Sediment Control, November 2016.

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

- **SILT FENCE**

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

  <u>Maintenance</u>

  Silt fencing shall be inspected at a minimum of once per week and prior to and within 48 hours following a rain event ½" or greater. Inspections shall

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

- **TREE PROTECTION**

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

  Maintenance

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

- **SOIL/SHOT ROCK STOCKPILING**

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

  Maintenance

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

- **GENERAL LAND GRADING**

  The intent of the Erosion & Sediment Control Plan is to control disturbed areas such that soils are protected from erosion by temporary methods and, ultimately, by permanent vegetation. Where practicable, all cut and fill slopes

shall be kept to a maximum slope of 2:1. In the event that a slope must exceed a 2:1 slope, it will be stabilized with stone riprap. On fill slopes, all material will be placed in layers not to exceed 12 inches in depth and adequately compacted.

- **SURFACE STABILIZATION**

  All disturbed will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod) hydromulch netting or hay. When activities temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures as soon as possible, but in no case more than 14 days after construction activity has ceased. All seeded areas will be re-seeded areas as necessary and mulch according to the site plan to maintain a vigorous, dense vegetative cover. Seeding mixtures and rates shall be completed in accordance with the latest version of the 'NYS Standards and Specifications for Erosion and Sediment Control'.

Site - Use	Species (% by weight)	lbs/1.000 ft^2 (PLS)	lbs/acre (PLS)
Sunny Sites (well, moderately well, and somewhat poorly drained soils)	***Athletic fields and similar areas***		
	80% Hard fescue	2.4-3.2	105-138
	20% Perennial ryegrass	0.6-0.8	25-37
		3.0-4.0	130-175
	OR, for southern and eastern, NY 50% Hard fescue	1.5-2.0	65-88
	50% perennial ryegrass	1.5-2.0	65-87
		3.0-4.0	130-175
	OR, 100% Creeping Red Fescue	3.4-4.6	150-200
	General recreation areas and lawns (Medium to high maintenance)		
	65% Creeping red fescue	2.0-2.6	85-114
	20% Perennial ryegrass	0.6-0.8	26-35
	15% Fine fescue	0.4-0.6	19-26
		3.0-4.0	130-175
	OR, 100% Creeping red fescue	3.4-4.6	150-200
Sunny Droughty Sites (general recreation areas and lawns, low maintenance) (somewhat excessively to excessively drained soils, excluding Long Island)	65% Fine fescue	2.6-3.3	114-143
	15% Perennial ryegrass	0.6-0.7	26-33
	20% Creeping red fescue	0.8-1.0	35-44
		4.0-5.0	175-220
	OR, 100% Creeping red fescue	3.4-4.6	150-200
Shady Dry Sites (well to somewhat poorly drained soils)	65% fine fescue	2.6-3.3	114-143
	15% perennial ryegrass	0.6-0.7	26-33
	20% Creeping red fescue	0.8-1.0	35-44
	OR	4.0-5.0	174-220
	80% blend of shade-tolerant Ceral rye	2.4-3.2	105-138
	20% perennial ryegrass	0.6-0.8	25-37
	OR	3.0-4.0	130-175
	100% Creeping red fescue	3.4-4.6	150-200
Shady Wet Sites (somewhat poor to poorly drained soils)	70% Creeping red fescue	1.4-2.1	60-91
	30% blend of shade-tolerant Hard fescue	0.6-0.9	25-39
	OR	2.0-3.0	85-130
	100% Chewings fescue	3.4-4.6	150-200
For varieties suitable for specific locations, contact Cornell Cooperative Extension Turf Specialist. Reference: Thurn, M.C., N.W. Hummel, and A.M. Petrovic. Cornell Extension Pub. Info. Bulletin 185 Revised. HomeLawns Establishment and Maintenance. 1994.			

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

As mentioned above, temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used to the satisfaction of the Village of Mamaroneck Stormwater Management officer and in accordance

with the New York State Standards and Specifications for Erosion and Sediment Control, latest revision. Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, sod or hydromulch. In site areas where significant erosion potential exists (steep slopes) and where specifically directed by the Town/Village's representative, Curlex Excelsior erosion control blankets (manufactured by American Excelsior, or approved equal) shall be installed. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish-grade and to remain undisturbed.

- **DEWATERING**

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

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

  Convey water removed from excavations, and rain water, to collecting or run-off area. Cut and maintain temporary drainage ditches and provide other necessary diversions outside excavation limits for each structure. Do not use trench excavations as temporary drainage ditches.

  Provide temporary controls to restrict the velocity of discharged water as necessary to prevent erosion and siltation of receiving areas.

J. CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION

General:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Spill Control & Spill Response:

- For all hazardous materials stored on site, the manufacturer's recommended methods for spill clean up will be clearly posted. Site personnel will be made aware of the procedures, and the locations of the information and cleanup supplies.
- Appropriate cleanup materials and equipment will be maintained by the Contractor in the materials storage area on-site. As appropriate, equipment and materials may include items such as booms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for clean up purposes.
- All spills will be cleaned immediately after discovery and the materials disposed of properly.
- The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- After a spill, a report will be prepared describing the spill, what caused it, and the cleanup measures taken. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring, as well as clean up instructions in the event of reoccurrences.
- The Contractor's site superintendent, responsible for day-to-day operations, will be the spill prevention and cleanup coordinator. The Contractor is responsible for ensuring that the site superintendent has had appropriate training for hazardous materials handling, spill management, and cleanup.
- The Contractor's site superintendent will be notified immediately when a spill or the threat of a spill is observed. The superintendent will assess the situation and determine the appropriate response.
- If spills represent an imminent threat of escaping erosion and sediment controls and entering receiving waters, personnel will be directed to respond immediately to contain the release and notify the superintendent after the situation has been stabilized.
- Spill kits containing appropriate materials and equipment for spill response and cleanup will be maintained by the Contractor at the site.
- If oil sheen is observed on surface water, action will be taken immediately to remove the material causing the sheen. The Contractor will use appropriate materials to contain and absorb the spill. The source of the oil

sheen will also be identified and removed or repaired as necessary to prevent further releases.

- If a spill occurs the superintendent or the superintendent's designee will be responsible for completing the spill reporting form and for reporting the spill to the contacts listed below.
- Personnel with primary responsibility for spill response and clean up will receive training by the Contractor's site superintendent or designee. The training must include identifying the location of the spill kits and other spill response equipment and the use of spill response materials.
- Spill response equipment will be inspected and maintained as necessary to replace any materials used in spill response activities.

Spill Control Notification:

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

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

  - 911 – Police, Fire and EMS
  - Village of Mamaroneck Engineering Department
    169 Mount Pleasant Avenue
    Phone: (914) 777-7731
  - Mamaroneck Fire Department
    123 Mamaroneck Avenue
    Phone: (914) 825-8777
  - NYS Department of Environmental Conservation (NYSDEC)
    Spill Reporting Hotline
    (1800) 457–7362
  - National Response Center: (1800) 424-8802
  - Local Emergency Planning Committee (LEPC)
    Westchester County Office of Emergency Management
    200 Bradhurst Avenue
    Hawthorne, NY 10532
    (914) 864–5450
  - Westchester County Department of Health (WCDOH)
    Spill Reporting Hotline
    (914) 813-5000

- U.S. Environmental Protection Agency (USEPA)
  EPCRA Information Hotline
  1(800) 535–0202
- U.S. Department of Labor and Occupational Safety and Health Administration (OSHA)
  Tarrytown, NY
  (914) 524–7510

K. STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

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

- Erosion & Sediment Control Maintenance:

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

- General Stormwater Facilities Maintenance (Storm Sewer and Catch Basins/Drain Inlets)

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

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

- Hydrodynamic Separator Device:

  The hydrodynamic separator device (First Defense Unit) located upstream of the discharge location shall be inspected every six (6) months (Spring and Fall) for excess sediment accumulation. During dry weather conditions,

accumulated sediments shall be vacuumed out when sediment has reached 1/2 (one-half) the capacity of the isolated sump, or when an appreciable level of hydrocarbons and trash has accumulated, whichever occurs first.

Upon completion of construction, the First Defense Unit should be inspected quarterly during the first year in order to develop an appropriate schedule of maintenance. When the sediment pile is within 30 to 36 inches of the water surface, the system should be maintained. A vacuum truck/trailer shall be used to remove the accumulated sediment and debris. Refer to manufacturer's literature for detailed maintenance instructions.

- Subsurface Attenuation Gallery:

  The subsurface attenuation gallery shall be inspected immediately after construction. Thereafter, the gallery shall be inspected every six (6) months (Spring and Fall) for excess sediment accumulation and clogging of the inlet and outlet piping. During dry weather conditions, when sediment has accumulated to an average depth exceeding 3" (three inches), the gallery shall be water jetted clean, and all accumulated sediments shall be vacuumed out or removed manually. A stadia rod may be inserted to determine the depth of the sediment.

L. CONCLUSION:

The stormwater management plan proposed meets and exceeds all the requirements set forth by the Village of Mamaroneck and the New York State Department of Environmental Conservation (NYSDEC) for redevelopment projects with new development. Design modification requirements that may occur during the approval process, will be performed and submitted for review to the Village of Mamaroneck.

3.) Extreme Precipitation Table

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	73.734 degrees West
Latitude	40.950 degrees North
Elevation	0 feet
Date/Time	Thu, 24 Mar 2022 13:52:56 -0400

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	1.31	**1yr**	0.90	1.23	1.50	1.87	2.31	2.86	3.22	**1yr**	2.53	3.10	3.58	4.31	4.94	**1yr**
2yr	0.41	0.63	0.78	1.02	1.28	1.59	**2yr**	1.11	1.50	1.83	2.26	2.80	3.45	3.87	**2yr**	3.05	3.72	4.27	5.07	5.75	**2yr**
5yr	0.47	0.74	0.92	1.24	1.58	2.00	**5yr**	1.37	1.85	2.31	2.86	3.52	4.32	4.89	**5yr**	3.82	4.70	5.45	6.38	7.13	**5yr**
10yr	0.53	0.84	1.06	1.43	1.86	2.37	**10yr**	1.61	2.17	2.75	3.41	4.19	5.12	5.84	**10yr**	4.53	5.62	6.56	7.60	8.38	**10yr**
25yr	0.62	0.98	1.25	1.73	2.31	2.97	**25yr**	1.99	2.69	3.45	4.30	5.28	6.41	7.40	**25yr**	5.67	7.11	8.37	9.56	10.39	**25yr**
50yr	0.70	1.13	1.45	2.03	2.72	3.53	**50yr**	2.35	3.17	4.11	5.11	6.27	7.60	8.85	**50yr**	6.73	8.51	10.08	11.38	12.24	**50yr**
100yr	0.80	1.29	1.66	2.36	3.21	4.19	**100yr**	2.77	3.73	4.89	6.09	7.46	9.03	10.58	**100yr**	7.99	10.18	12.14	13.56	14.41	**100yr**
200yr	0.91	1.48	1.92	2.75	3.79	4.98	**200yr**	3.27	4.39	5.83	7.26	8.88	10.72	12.66	**200yr**	9.49	12.18	14.62	16.15	16.97	**200yr**
500yr	1.09	1.79	2.33	3.38	4.73	6.25	**500yr**	4.08	5.46	7.33	9.14	11.18	13.47	16.06	**500yr**	11.92	15.44	18.71	20.35	21.08	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.39	0.48	0.65	0.80	0.89	**1yr**	0.69	0.87	1.28	1.55	1.96	2.58	2.95	**1yr**	2.28	2.84	3.29	3.94	4.57	**1yr**
2yr	0.39	0.61	0.75	1.01	1.25	1.50	**2yr**	1.08	1.47	1.71	2.19	2.73	3.35	3.76	**2yr**	2.97	3.61	4.14	4.93	5.61	**2yr**
5yr	0.44	0.68	0.84	1.16	1.47	1.78	**5yr**	1.27	1.74	2.01	2.58	3.22	4.03	4.54	**5yr**	3.56	4.37	5.06	5.94	6.69	**5yr**
10yr	0.49	0.75	0.93	1.30	1.68	2.03	**10yr**	1.45	1.98	2.28	2.93	3.62	4.62	5.21	**10yr**	4.09	5.01	5.89	6.80	7.63	**10yr**
25yr	0.55	0.84	1.05	1.50	1.97	2.40	**25yr**	1.70	2.34	2.70	3.43	4.22	5.53	6.24	**25yr**	4.90	6.00	7.21	8.13	9.07	**25yr**
50yr	0.61	0.93	1.15	1.66	2.23	2.71	**50yr**	1.92	2.65	3.08	3.90	4.70	6.33	7.14	**50yr**	5.60	6.87	8.42	9.27	10.34	**50yr**
100yr	0.68	1.02	1.28	1.85	2.53	3.06	**100yr**	2.19	2.99	3.51	4.43	5.29	7.24	8.17	**100yr**	6.41	7.85	9.83	10.58	11.79	**100yr**
200yr	0.75	1.13	1.44	2.08	2.90	3.47	**200yr**	2.50	3.39	4.02	5.04	5.92	8.30	9.36	**200yr**	7.34	9.00	11.49	12.08	13.47	**200yr**
500yr	0.87	1.30	1.67	2.43	3.45	4.14	**500yr**	2.98	4.05	4.82	6.05	8.33	9.91	11.19	**500yr**	8.77	10.76	14.16	14.37	16.06	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.58	0.71	0.95	1.17	1.38	**1yr**	1.01	1.35	1.62	2.14	2.62	3.13	3.49	**1yr**	2.77	3.35	3.85	4.64	5.26	**1yr**
2yr	0.42	0.65	0.80	1.08	1.34	1.62	**2yr**	1.15	1.58	1.88	2.37	2.99	3.56	4.03	**2yr**	3.15	3.87	4.41	5.27	5.94	**2yr**
5yr	0.51	0.79	0.97	1.34	1.70	2.00	**5yr**	1.47	1.96	2.32	3.02	3.75	4.61	5.24	**5yr**	4.08	5.04	5.86	6.83	7.58	**5yr**
10yr	0.60	0.92	1.14	1.60	2.06	2.39	**10yr**	1.78	2.34	2.82	3.66	4.53	5.63	6.43	**10yr**	4.98	6.18	7.26	8.39	9.15	**10yr**
25yr	0.75	1.14	1.41	2.02	2.66	3.04	**25yr**	2.29	2.97	3.66	4.73	5.83	7.32	8.44	**25yr**	6.48	8.11	9.65	11.02	11.72	**25yr**
50yr	0.88	1.34	1.66	2.39	3.22	3.64	**50yr**	2.78	3.56	4.45	5.74	7.07	8.95	10.36	**50yr**	7.92	9.96	11.97	13.54	14.14	**50yr**
100yr	1.04	1.57	1.97	2.85	3.90	4.37	**100yr**	3.37	4.27	5.40	6.98	8.56	10.93	12.74	**100yr**	9.68	12.25	14.84	16.64	17.08	**100yr**
200yr	1.23	1.85	2.34	3.39	4.73	5.24	**200yr**	4.09	5.13	6.56	8.47	10.37	13.35	15.68	**200yr**	11.82	15.08	18.40	20.48	20.61	**200yr**
500yr	1.55	2.30	2.96	4.30	6.12	6.66	**500yr**	5.28	6.51	8.48	10.96	13.29	17.42	20.65	**500yr**	15.41	19.86	24.45	26.96	26.45	**500yr**

Powered by ACIS
Northeast Regional Climate Center

4.) Soils Maps & Soils Data

Map Scale: 1:840 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 40 80 160 240

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 17, Sep 1, 2021

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

Date(s) aerial images were photographed: Jul 21, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Uf	Urban land		2.7	98.2%
UhC	Urban land-Charlton complex, 8 to 15 percent slopes	B	0.0	1.8%
Totals for Area of Interest			**2.7**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

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

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

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

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

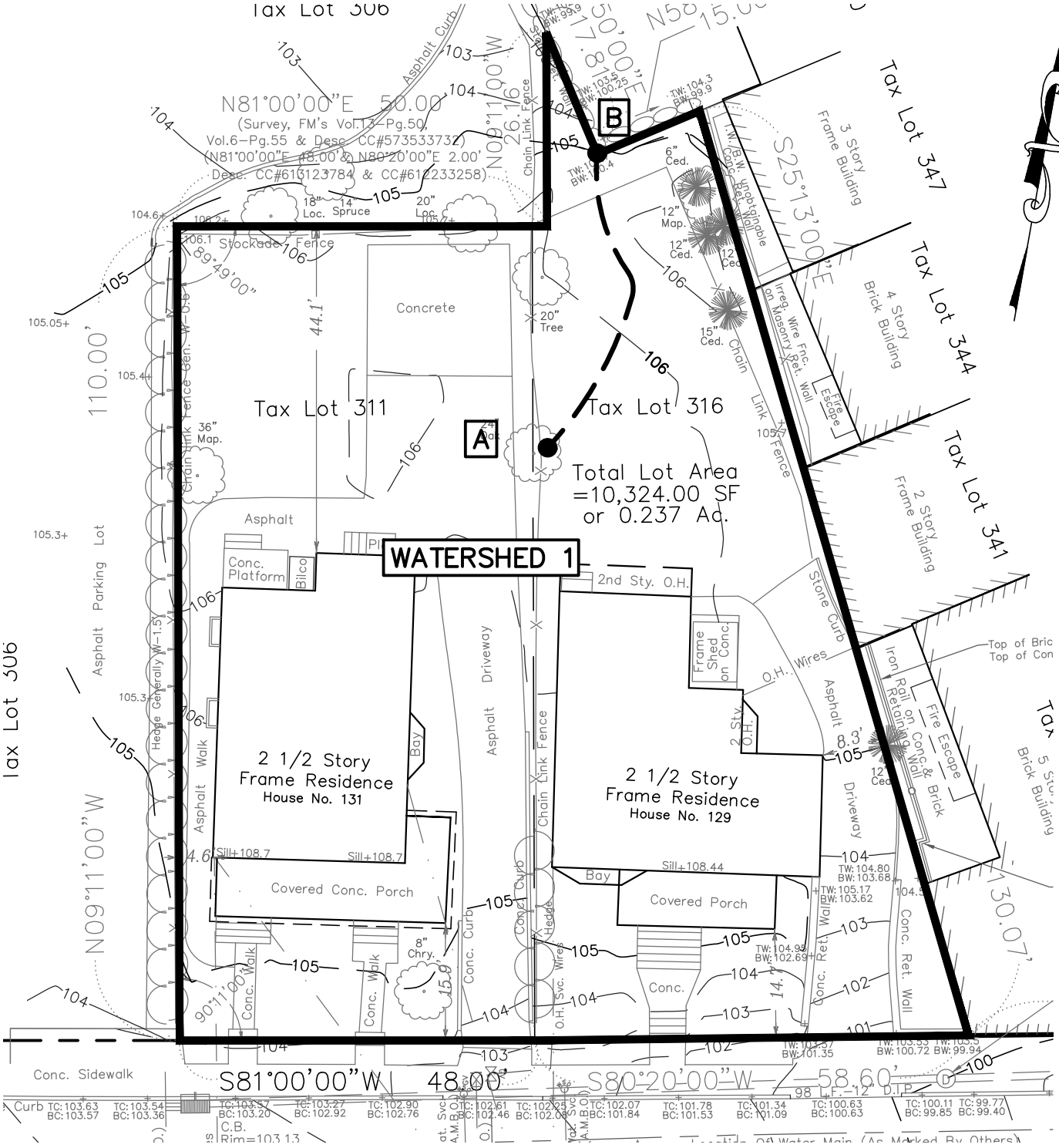
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

5.) Watershed Maps



PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT
129–133 PROSPECT AVENUE
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

TITLE: EXISTING WATERSHED MAP

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

NO	REVISIONS	DATE
	Revisions	

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

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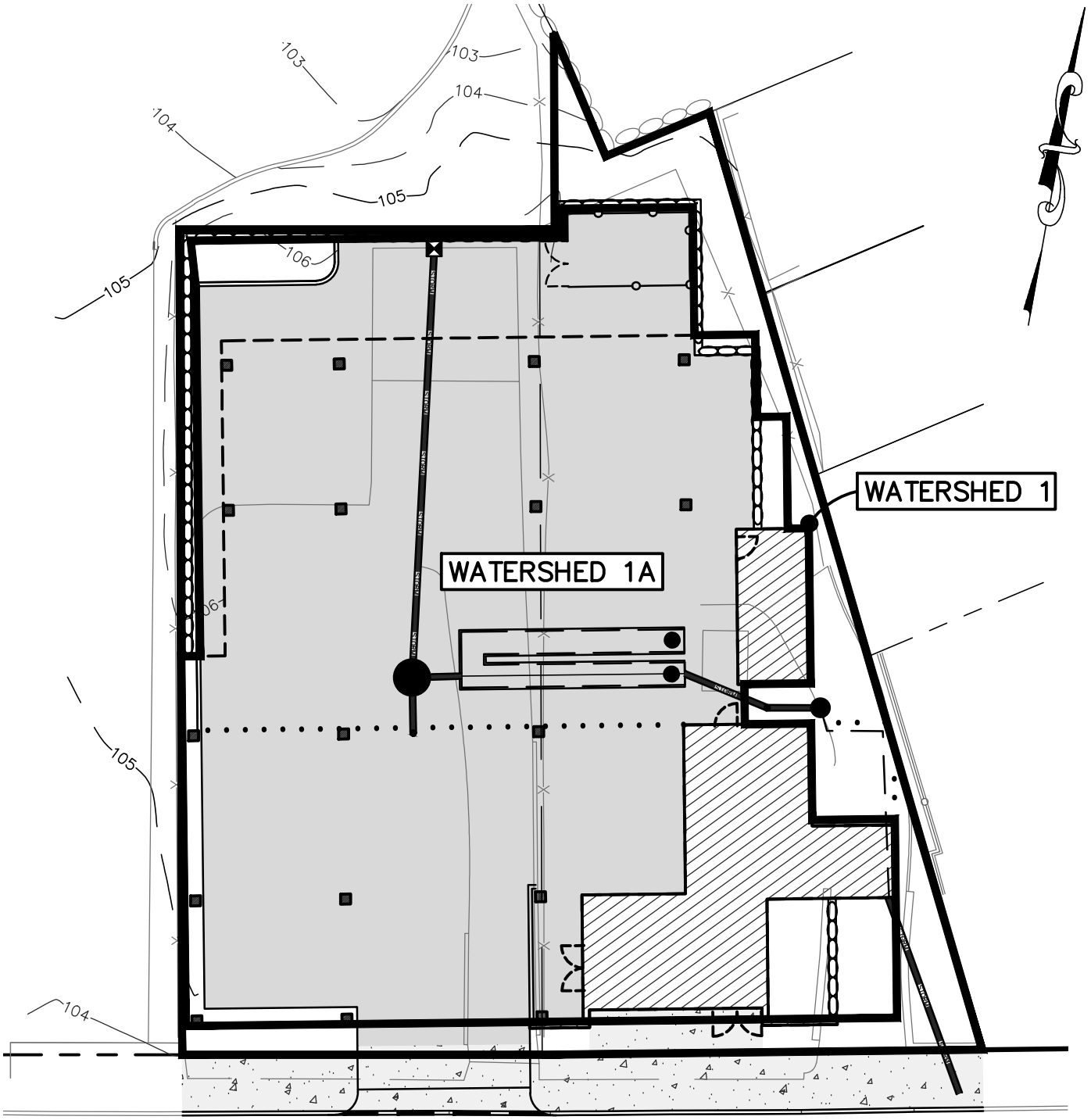
Date: 06/15/22
Scale: 1" = 20'
Drawn By: T.K.
Checked By: M.S.
Sheet: 1/2
Sheet No. WS-E



PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT
129–133 PROSPECT AVENUE
VILLAGE OF MAMARONECK
WESTCHESTER COUNTY – NEW YORK

TITLE:

PROPOSED WATERSHED MAP

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

NO	REVISIONS	DATE
	Revisions	

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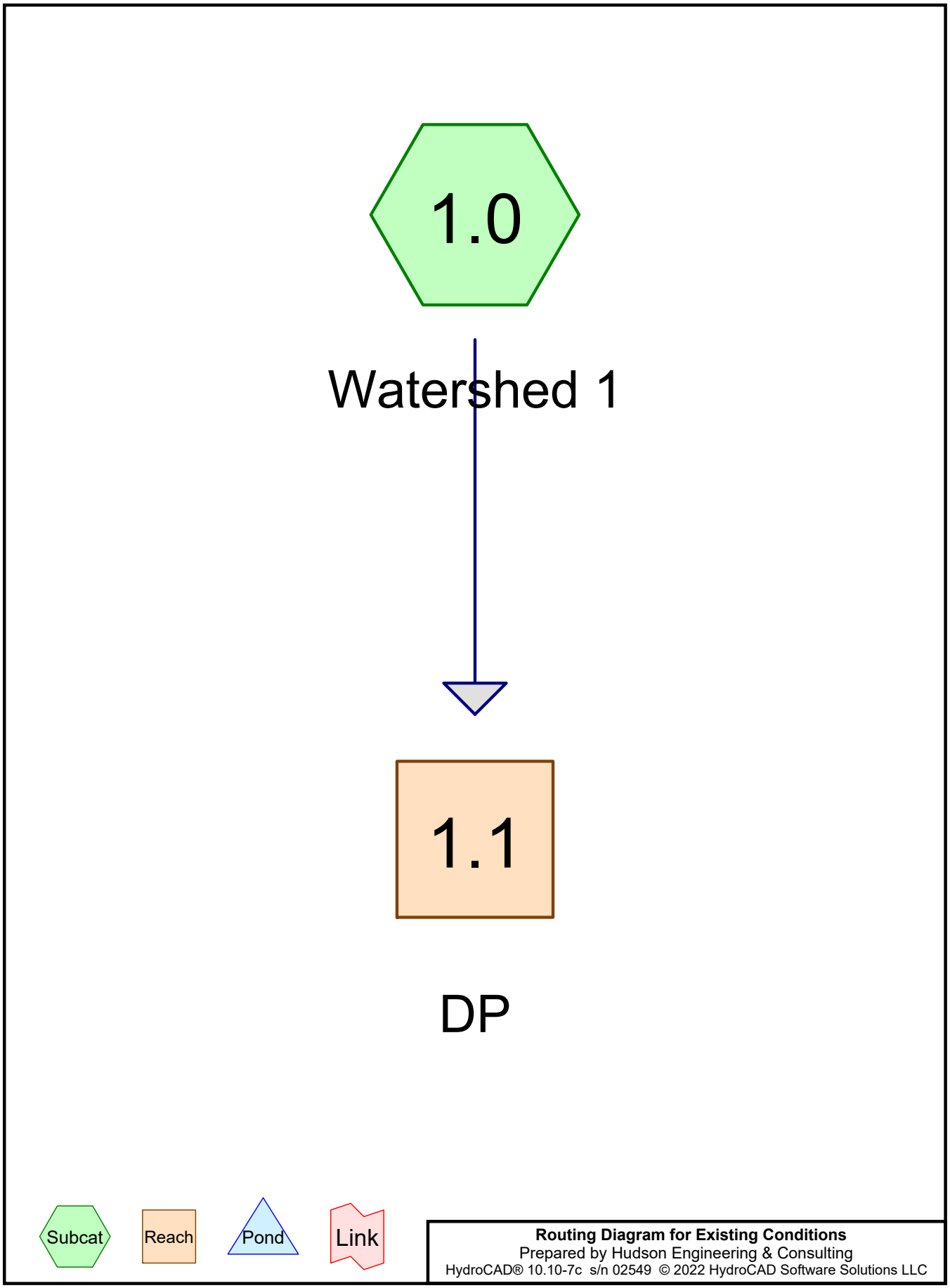
Date: 06/15/22
Scale: 1" = 20'
Drawn By: T.K.
Checked By: M.S.
Sheet: 1 / 2
Sheet No. WS-P

6.) Pre-Developed Analysis of the 1-, 10-, and 25-Year Extreme Storm Events


1.0
Watershed 1
1.1
DP
Subcat
Reach
Pond
Link
Routing Diagram for Existing Conditions
Prepared by Hudson Engineering & Consulting
HydroCAD® 10.10-7c s/n 02549 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment 1.0: Watershed 1

Runoff = 0.36 cfs @ 12.06 hrs, Volume= 1,038 cf, Depth= 1.21"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	5,620	98	Impervious
	4,704	61	>75% Grass cover, Good, HSG B
	10,324	81	Weighted Average
	4,704		45.56% Pervious Area
	5,620		54.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	44	0.0341	0.19		**Sheet Flow, A->DP-1** Grass: Short n= 0.150 P2= 3.50"

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 54.44% Impervious, Inflow Depth = 1.21" for 1-Year event
Inflow = 0.36 cfs @ 12.06 hrs, Volume= 1,038 cf
Outflow = 0.36 cfs @ 12.06 hrs, Volume= 1,038 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1.0: Watershed 1

Runoff = 0.93 cfs @ 12.06 hrs, Volume= 2,660 cf, Depth= 3.09"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.12"

	Area (sf)	CN	Description
*	5,620	98	Impervious
	4,704	61	>75% Grass cover, Good, HSG B
	10,324	81	Weighted Average
	4,704		45.56% Pervious Area
	5,620		54.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	44	0.0341	0.19		**Sheet Flow, A->DP-1** Grass: Short n= 0.150 P2= 3.50"

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 54.44% Impervious, Inflow Depth = 3.09" for 10-Year event
Inflow = 0.93 cfs @ 12.06 hrs, Volume= 2,660 cf
Outflow = 0.93 cfs @ 12.06 hrs, Volume= 2,660 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Subcatchment 1.0: Watershed 1

Runoff = 1.27 cfs @ 12.06 hrs, Volume= 3,664 cf, Depth= 4.26"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	5,620	98	Impervious
	4,704	61	>75% Grass cover, Good, HSG B
	10,324	81	Weighted Average
	4,704		45.56% Pervious Area
	5,620		54.44% Impervious Area

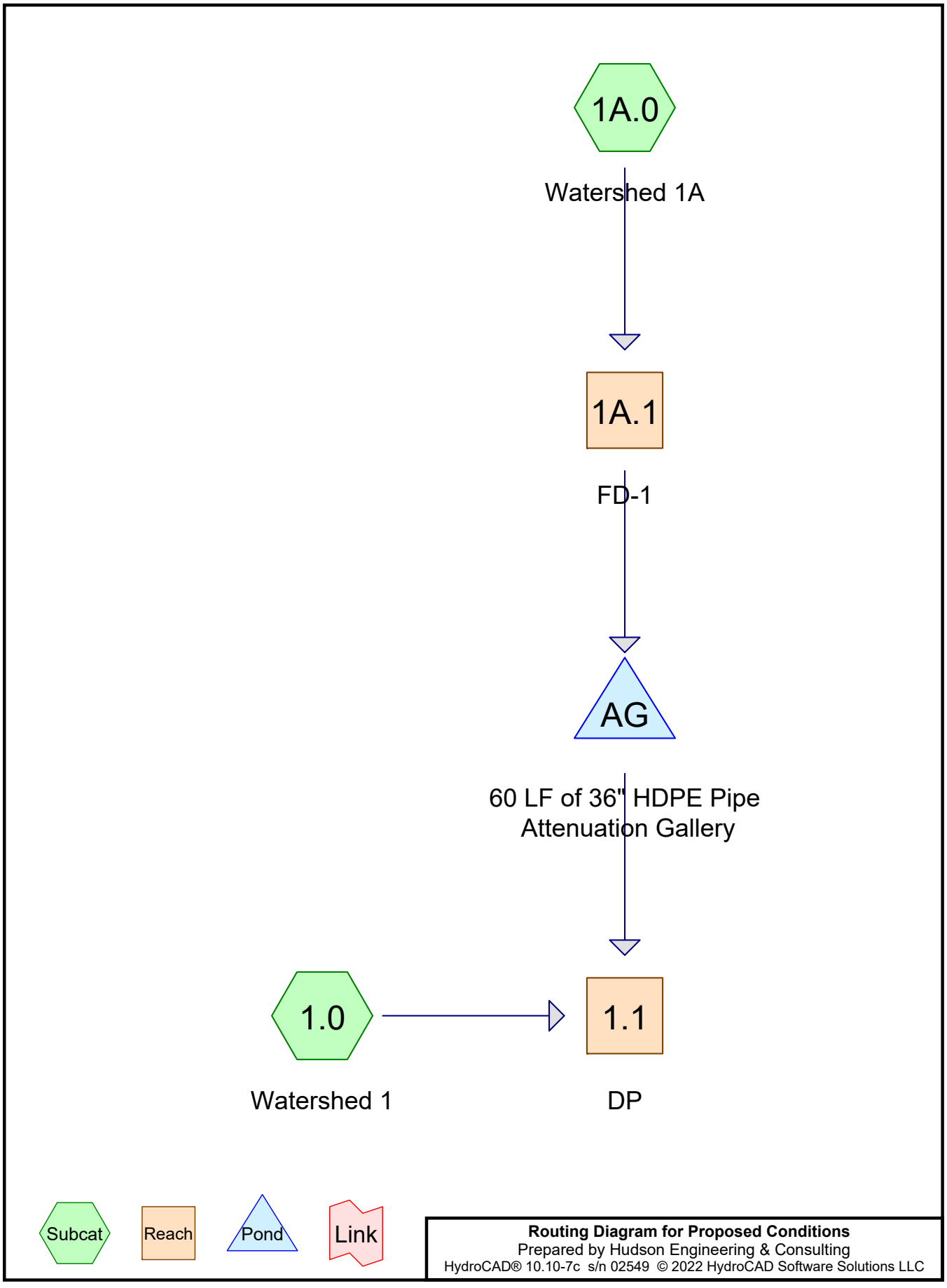
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	44	0.0341	0.19		**Sheet Flow, A->DP-1** Grass: Short n= 0.150 P2= 3.50"

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 54.44% Impervious, Inflow Depth = 4.26" for 25-Year event
Inflow = 1.27 cfs @ 12.06 hrs, Volume= 3,664 cf
Outflow = 1.27 cfs @ 12.06 hrs, Volume= 3,664 cf, Atten= 0%, Lag= 0.0 min

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

7.) Post-Developed Analysis of the 1-, 10-, and 25-Year Extreme Storm Events



Routing Diagram for Proposed Conditions
Prepared by Hudson Engineering & Consulting

Summary for Subcatchment 1.0: Watershed 1

Runoff = 0.02 cfs @ 12.03 hrs, Volume= 63 cf, Depth= 0.44"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
	1,499	61	>75% Grass cover, Good, HSG B
*	197	98	Driveway/building ent./Walls
	1,696	65	Weighted Average
	1,499		88.38% Pervious Area
	197		11.62% Impervious Area

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

Summary for Subcatchment 1A.0: Watershed 1A

Runoff = 0.64 cfs @ 12.01 hrs, Volume= 1,812 cf, Depth= 2.52"
Routed to Reach 1A.1 : FD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 1-Year Rainfall=2.86"

	Area (sf)	CN	Description
*	7,051	98	Building
*	988	98	Driveway
*	472	89	Roof top planters
	117	61	>75% Grass cover, Good, HSG B
	8,628	97	Weighted Average
	589		6.83% Pervious Area
	8,039		93.17% Impervious Area

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

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 79.78% Impervious, Inflow Depth = 2.18" for 1-Year event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,874 cf
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 1,874 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Reach 1A.1: FD-1

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.64 cfs @ 12.01 hrs, Volume= 1,812 cf
Outflow = 0.64 cfs @ 12.01 hrs, Volume= 1,812 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond AG : 60 LF of 36" HDPE Pipe Attenuation Gallery

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

Summary for Pond AG: 60 LF of 36" HDPE Pipe Attenuation Gallery

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 2.52" for 1-Year event
Inflow = 0.64 cfs @ 12.01 hrs, Volume= 1,812 cf
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 1,812 cf, Atten= 46%, Lag= 4.8 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 1,812 cf
Routed to Reach 1.1 : DP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 99.81' @ 12.09 hrs Surf.Area= 179 sf Storage= 179 cf

Plug-Flow detention time= 4.5 min calculated for 1,811 cf (100% of inflow)
Center-of-Mass det. time= 4.5 min (768.8 - 764.3)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	424 cf	**36.0" Round Pipe Storage** L= 60.0'

Device	Routing	Invert	Outlet Devices		
#1	Primary	98.50'	**3.5" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	99.92'	**4.2" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#3	Primary	101.16'	**4.0" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=0.35 cfs @ 12.09 hrs HW=99.81' TW=0.00' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.35 cfs @ 5.20 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Subcatchment 1.0: Watershed 1

Runoff = 0.09 cfs @ 12.02 hrs, Volume= 245 cf, Depth= 1.73"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.12"

	Area (sf)	CN	Description
	1,499	61	>75% Grass cover, Good, HSG B
*	197	98	Driveway/building ent./Walls
	1,696	65	Weighted Average
	1,499		88.38% Pervious Area
	197		11.62% Impervious Area

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

Summary for Subcatchment 1A.0: Watershed 1A

Runoff = 1.17 cfs @ 12.01 hrs, Volume= 3,427 cf, Depth= 4.77"
Routed to Reach 1A.1 : FD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-Year Rainfall=5.12"

	Area (sf)	CN	Description
*	7,051	98	Building
*	988	98	Driveway
*	472	89	Roof top planters
	117	61	>75% Grass cover, Good, HSG B
	8,628	97	Weighted Average
	589		6.83% Pervious Area
	8,039		93.17% Impervious Area

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

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 79.78% Impervious, Inflow Depth = 4.27" for 10-Year event
Inflow = 0.90 cfs @ 12.06 hrs, Volume= 3,672 cf
Outflow = 0.90 cfs @ 12.06 hrs, Volume= 3,672 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Reach 1A.1: FD-1

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 1.17 cfs @ 12.01 hrs, Volume= 3,427 cf
Outflow = 1.17 cfs @ 12.01 hrs, Volume= 3,427 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond AG : 60 LF of 36" HDPE Pipe Attenuation Gallery

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

Summary for Pond AG: 60 LF of 36" HDPE Pipe Attenuation Gallery

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 4.77" for 10-Year event
Inflow = 1.17 cfs @ 12.01 hrs, Volume= 3,427 cf
Outflow = 0.82 cfs @ 12.07 hrs, Volume= 3,427 cf, Atten= 30%, Lag= 3.3 min
Primary = 0.82 cfs @ 12.07 hrs, Volume= 3,427 cf
Routed to Reach 1.1 : DP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 100.71' @ 12.07 hrs Surf.Area= 159 sf Storage= 335 cf

Plug-Flow detention time= 4.8 min calculated for 3,427 cf (100% of inflow)
Center-of-Mass det. time= 4.8 min (755.4 - 750.6)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	424 cf	**36.0" Round Pipe Storage** L= 60.0'

Device	Routing	Invert	Outlet Devices		
#1	Primary	98.50'	**3.5" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	99.92'	**4.2" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#3	Primary	101.16'	**4.0" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=0.82 cfs @ 12.07 hrs HW=100.71' TW=0.00' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.46 cfs @ 6.91 fps)
- **2=Orifice/Grate** (Orifice Controls 0.36 cfs @ 3.77 fps)
- **3=Orifice/Grate** (Controls 0.00 cfs)

Summary for Subcatchment 1.0: Watershed 1

Runoff = 0.14 cfs @ 12.02 hrs, Volume= 375 cf, Depth= 2.65"
Routed to Reach 1.1 : DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
	1,499	61	>75% Grass cover, Good, HSG B
*	197	98	Driveway/building ent./Walls
	1,696	65	Weighted Average
	1,499		88.38% Pervious Area
	197		11.62% Impervious Area

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

Summary for Subcatchment 1A.0: Watershed 1A

Runoff = 1.48 cfs @ 12.01 hrs, Volume= 4,352 cf, Depth= 6.05"
Routed to Reach 1A.1 : FD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-Year Rainfall=6.41"

	Area (sf)	CN	Description
*	7,051	98	Building
*	988	98	Driveway
*	472	89	Roof top planters
	117	61	>75% Grass cover, Good, HSG B
	8,628	97	Weighted Average
	589		6.83% Pervious Area
	8,039		93.17% Impervious Area

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

Summary for Reach 1.1: DP

Inflow Area = 10,324 sf, 79.78% Impervious, Inflow Depth = 5.49" for 25-Year event
Inflow = 1.22 cfs @ 12.06 hrs, Volume= 4,727 cf
Outflow = 1.22 cfs @ 12.06 hrs, Volume= 4,727 cf, Atten= 0%, Lag= 0.0 min

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

Summary for Reach 1A.1: FD-1

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.48 cfs @ 12.01 hrs, Volume= 4,352 cf
Outflow = 1.48 cfs @ 12.01 hrs, Volume= 4,352 cf, Atten= 0%, Lag= 0.0 min
Routed to Pond AG : 60 LF of 36" HDPE Pipe Attenuation Gallery

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

Summary for Pond AG: 60 LF of 36" HDPE Pipe Attenuation Gallery

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 6.05" for 25-Year event
Inflow = 1.48 cfs @ 12.01 hrs, Volume= 4,352 cf
Outflow = 1.10 cfs @ 12.06 hrs, Volume= 4,352 cf, Atten= 25%, Lag= 2.9 min
Primary = 1.10 cfs @ 12.06 hrs, Volume= 4,352 cf
Routed to Reach 1.1 : DP

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 101.33' @ 12.06 hrs Surf.Area= 84 sf Storage= 414 cf

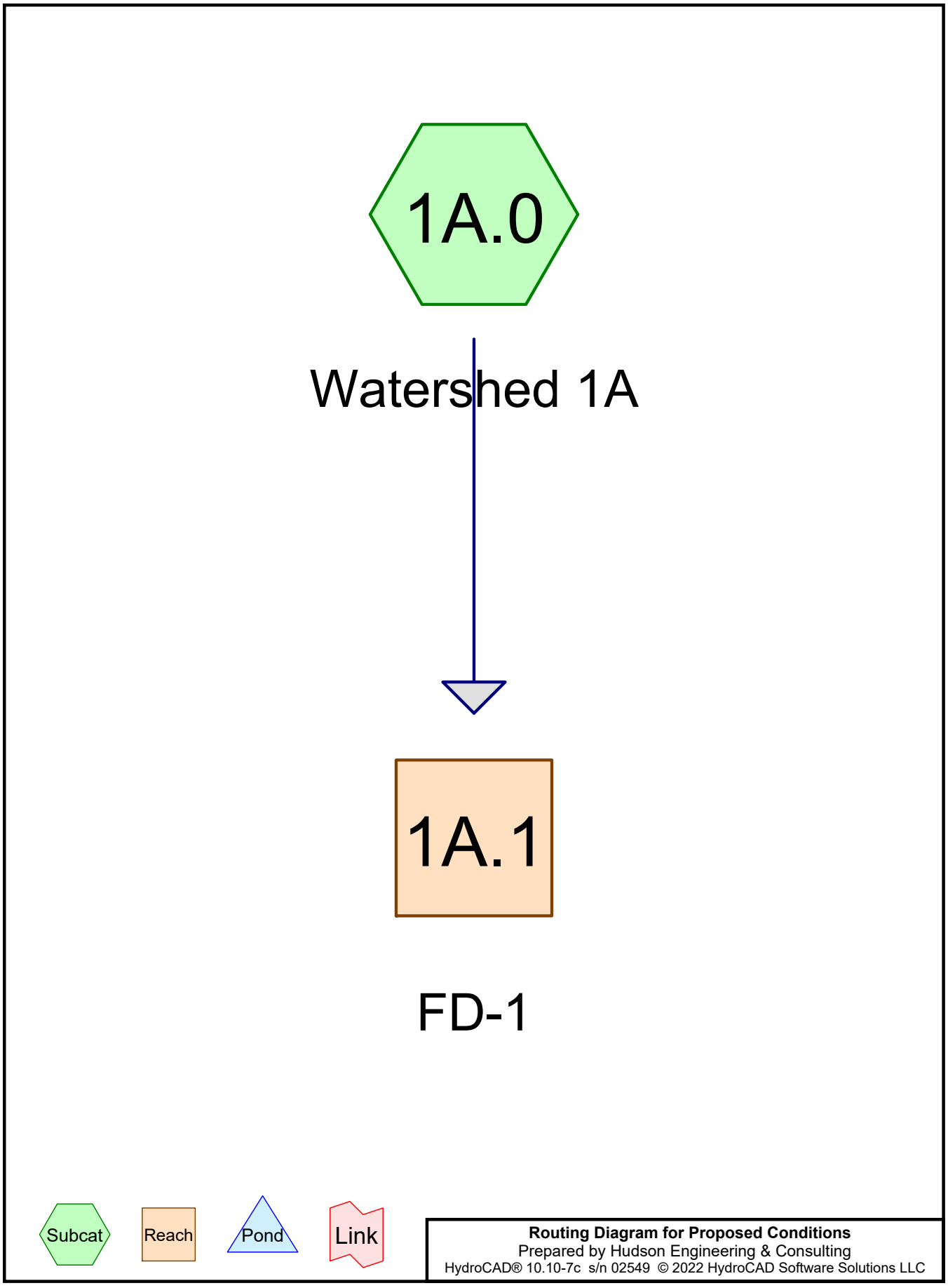
Plug-Flow detention time= 4.8 min calculated for 4,352 cf (100% of inflow)
Center-of-Mass det. time= 4.8 min (751.1 - 746.3)

Volume	Invert	Avail.Storage	Storage Description
#1	98.50'	424 cf	**36.0" Round Pipe Storage** L= 60.0'

Device	Routing	Invert	Outlet Devices		
#1	Primary	98.50'	**3.5" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#2	Primary	99.92'	**4.2" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads
#3	Primary	101.16'	**4.0" Vert. Orifice/Grate**	C= 0.600	Limited to weir flow at low heads

Primary OutFlow Max=1.10 cfs @ 12.06 hrs HW=101.32' TW=0.00' (Dynamic Tailwater)
- **1=Orifice/Grate** (Orifice Controls 0.53 cfs @ 7.88 fps)
- **2=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.33 fps)
- **3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 1.37 fps)

8). Water Quality Calculations


1A.0
Watershed 1A
1A.1
FD-1
Subcat
Reach
Pond
Link
Routing Diagram for Proposed Conditions
Prepared by Hudson Engineering & Consulting
HydroCAD® 10.10-7c s/n 02549 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment 1A.0: Watershed 1A

Runoff = 0.35 cfs @ 12.01 hrs, Volume= 956 cf, Depth= 1.33"
Routed to Reach 1A.1 : FD-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr WQV Rainfall=1.65"

	Area (sf)	CN	Description
*	7,051	98	Building
*	988	98	Driveway
*	472	89	Roof top planters
	117	61	>75% Grass cover, Good, HSG B
	8,628	97	Weighted Average
	589		6.83% Pervious Area
	8,039		93.17% Impervious Area

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

Summary for Reach 1A.1: FD-1

Inflow Area = 8,628 sf, 93.17% Impervious, Inflow Depth = 1.33" for WQV event
Inflow = 0.35 cfs @ 12.01 hrs, Volume= 956 cf
Outflow = 0.35 cfs @ 12.01 hrs, Volume= 956 cf, Atten= 0%, Lag= 0.0 min

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

9.) Percolation and Deep Hole Test Results

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 129-133 Prospect Avenue

TOWN/VILLAGE: Mamaroneck (V)

DATE: 03/03/2022 TIME: 9:30am

WEATHER: Sunny TEMP. 40˚ F

WITNESSED BY: Matthew Williams

PERCOLATION TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

Owner _____

HOLE #	CLOCK TIME				PERCOLATION				
					Depth to Water From Ground Surface			Soil Rate	
Hole Number	Run No.	Start	Stop	Elapse Time (Min.)	Start Inches	Stop Inches	Water Level in Inches Drop in inches	Min. per inch	Inches per Hour
# 1	1	11:20	12:20	60	22	40	18	3.33	18
	2	12:20	1:20	60	22	33	11	5.45	11
4" Ø	3	1:20	2:20	60	22	31	9	6.67	9
	4	2:20	3:20	60	22	31	9	6.67	9
	5								
# 2	1	11:25	12:25	60	22	35	13	4.61	13
	2	12:25	1:25	60	22	35	13	4.61	13
4" Ø	3	1:25	2:25	60	22	33	11	5.45	11
	4	2:25	3:25	60	22	33	11	5.45	11
	5								
# 3	1	11:22	12:13	51	22	46	24	2.12	28.3
	2	12:14	1:07	53	22	46	24	2.2	27.27
4" Ø	3	1:07	2:00	53	22	46	24	2.2	27.27
	4	2:00	2:53	53	22	46	24	2.2	27.27
	5								

Notes:

1) Tests to be repeated at the 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

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 129 – 133 Prospect Ave.

TOWN/VILLAGE: Mamaroneck (V)

DATE: 3/03/2022 TIME: 9:30am

WEATHER: Sunny TEMP. 39° F

WITNESSED BY: Nicholas Shirriah

DEEP TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

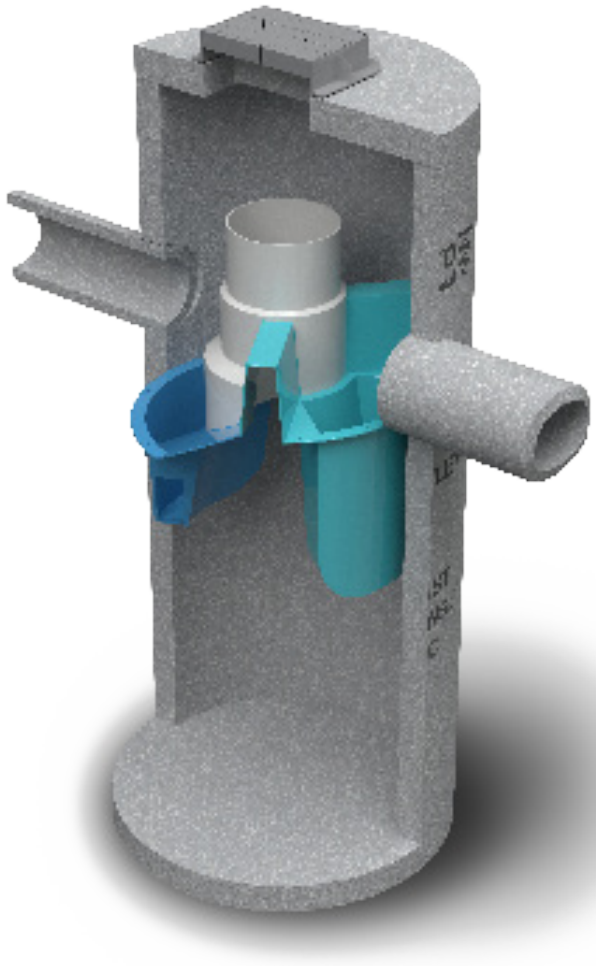
DEPTH	HOLE NO. 1	HOLE NO. 2	HOLE NO. 3	HOLE NO. 4
G.L.	0 – 12" Topsoil	0 – 24" Topsoil	0 – 6" Topsoil	
6"				
12"	12 – 96"			
18"	Sandy silt w/			
24"	Large rocks, very			
30"	Rocky			
36"			6 – 36" Fill	
42"	No Ledge		w/ large rocks	
48"	No GW			
54"			36 – 57"	
60"			Fine sandy loam	
66"		24 – 68"	Ledge @ 57"	
72"		Brown, compact	No GW	
78"		Sandy loam		
84"		Ledge @ 68"		
90"		No GW		
96"				
102"				
108"				

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

EXCAVATION PERFORMED BY: PRECISION FIELD TESTING

10.) Hydrointernational First Defense Maintenance Data

Hydro International



Operation and Maintenance Manual

First Defense® High Capacity and First Defense®Optimum

Vortex Separator for Stormwater Treatment

Table of Contents

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

I. First Defense® by Hydro International

Introduction

The First Defense® is an enhanced vortex separator that combines an effective and economical stormwater treatment chamber with an integral peak flow bypass. It efficiently removes total suspended solids (TSS), trash and hydrocarbons from stormwater runoff without washing out previously captured pollutants. The First Defense® is available in several model configurations to accommodate a wide range of pipe sizes, peak flows and depth constraints.

The two product models described in this guide are the First Defense® High Capacity and the First Defense® Optimum; they are inspected and maintained identically.

Operation

The First Defense® operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirement and is fabricated with durable non-corrosive components. No manual procedures are required to operate the unit and maintenance is limited to monitoring accumulations of stored pollutants and periodic clean-outs. The First Defense® has been designed to allow for easy and safe access for inspection, monitoring and clean-out procedures. Neither entry into the unit nor removal of the internal components is necessary for maintenance, thus safety concerns related to confined-space-entry are avoided.

Pollutant Capture and Retention

The internal components of the First Defense® have been designed to optimize pollutant capture. Sediment is captured and retained in the base of the unit, while oil and floatables are stored on the water surface in the inner volume (Fig.1).

The pollutant storage volumes are isolated from the built-in bypass chamber to prevent washout during high-flow storm events. The sump of the First Defense® retains a standing water level between storm events. This ensures a quiescent flow regime at the onset of a storm, preventing resuspension and washout of pollutants captured during previous events.

Accessories such as oil absorbent pads are available for enhanced oil removal and storage. Due to the separation of the oil and floatable storage volume from the outlet, the potential for washout of stored pollutants between clean-outs is minimized.

Applications

- Stormwater treatment at the point of entry into the drainage line
- Sites constrained by space, topography or drainage profiles with limited slope and depth of cover
- Retrofit installations where stormwater treatment is placed on or tied into an existing storm drain line
- Pretreatment for filters, infiltration and storage

Advantages

- Inlet options include surface grate or multiple inlet pipes
- Integral high capacity bypass conveys large peak flows without the need for “offline” arrangements using separate junction manholes
- Long flow path through the device ensures a long residence time within the treatment chamber, enhancing pollutant settling
- Delivered to site pre-assembled and ready for installation

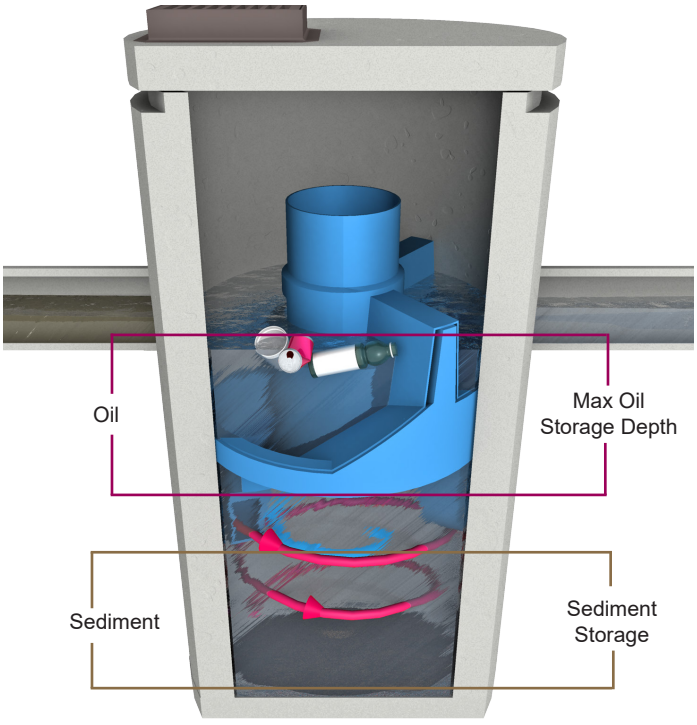


Fig.1 Pollutant storage volumes in the First Defense®.

II. Model Sizes & Configurations

The First Defense® inlet and internal bypass arrangements are available in several model sizes and configurations. The components have modified geometries allowing greater design flexibility to accommodate various site constraints.

All First Defense® models include the internal components that are designed to remove and retain total suspended solids (TSS), gross solids, floatable trash and hydrocarbons (Fig.2). First Defense® model sizes (diameter) are shown in Table 1.

III. Maintenance

First Defense® Components

1. **Built-In Bypass**
2. **Inlet Pipe**
3. **Inlet Chute**
4. **Floatables Draw-off Port**
5. **Outlet Pipe**
6. **Floatables Storage**
7. **Sediment Storage**
8. **Inlet Grate or Cover**

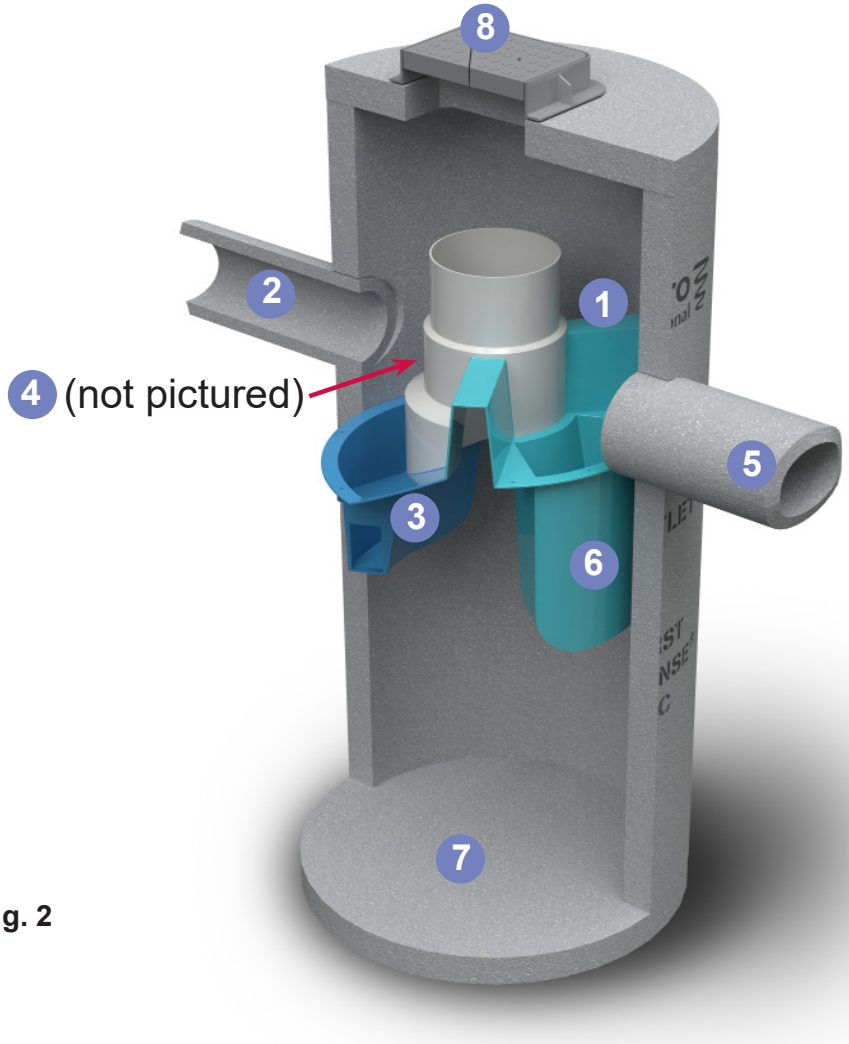


Fig. 2

First Defense® Model Sizes
(ft / m) diameter
3 / 0.9
4 / 1.2
5 / 1.5
6 / 1.8
8 / 2.4
10 / 3.0

Table 1

Overview

The First Defense® protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the continuous, long-term functioning of the First Defense®. The First Defense® will capture and retain sediment and oil until the sediment and oil storage volumes are full to capacity. When sediment and oil storage capacities are reached, the First Defense® will no longer be able to store removed sediment and oil.

The First Defense® allows for easy and safe inspection, monitoring and clean-out procedures. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables. Access ports are located in the top of the manhole.

Maintenance events may include Inspection, Oil & Floatables Removal, and Sediment Removal. Maintenance events do not require entry into the First Defense®, nor do they require the internal components of the First Defense® to be removed. In the case of inspection and floatables removal, a vactor truck is not required. However, a vactor truck is required if the maintenance event is to include oil removal and/or sediment removal.

Maintenance Equipment Considerations

The internal components of the First Defense® have a centrally located circular shaft through which the sediment storage sump can be accessed with a sump vac hose. The open diameter of this access shaft is 15 inches in diameter (Fig.3). Therefore, the nozzle fitting of any vactor hose used for maintenance should be less than 15 inches in diameter.

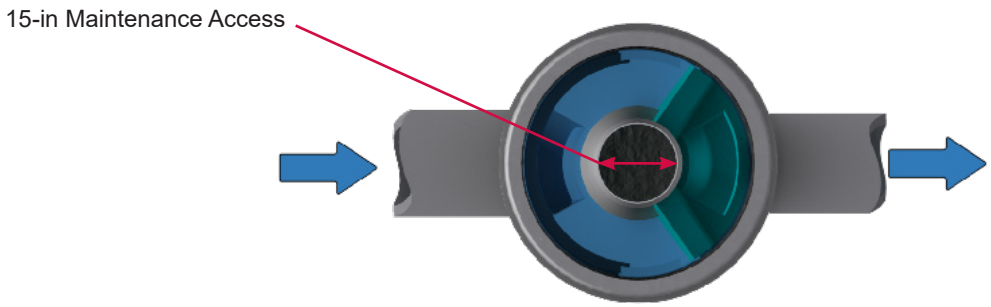


Fig.3 The central opening to the sump of the First Defense®is 15 inches in diameter.

Determining Your Maintenance Schedule

The frequency of clean out is determined in the field after installation. During the first year of operation, the unit should be inspected every six months to determine the rate of sediment and floatables accumulation. A simple probe such as a Sludge-Judge® can be used to determine the level of accumulated solids stored in the sump. This information can be recorded in the maintenance log (see page 9) to establish a routine maintenance schedule.

The vactor procedure, including both sediment and oil / flotables removal, for First Defense® typically takes less than 30 minutes and removes a combined water/oil volume of about 765 gallons.

Inspection Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities. Fig.4 shows the standing water level that should be observed.

4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the components and water surface.

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel.

6. On the Maintenance Log (see page 9), record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or blockages.

7. Securely replace the grate or lid.

8. Take down safety equipment.

9. Notify Hydro International of any irregularities noted during inspection.

Floatables and Sediment Clean Out

Floatables clean out is typically done in conjunction with sediment removal. A commercially or municipally owned sump-vac is used to remove captured sediment and floatables (Fig.4).

Floatables and loose debris can also be netted with a skimmer and pole. The access port located at the top of the manhole provides unobstructed access for a vactor hose to be lowered to the base of the sump.

Scheduling

- Floatables and sump clean out are typically conducted once a year during any season.

- Floatables and sump clean out should occur as soon as possible following a spill in the contributing drainage area.

Fig.4 Floatables are removed with a vactor hose

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar or other tool to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge Judge®)
- Vactor truck (flexible hose recommended)
- First Defense® Maintenance Log

Floatables and Sediment Clean Out Procedures

1. Set up any necessary safety equipment around the access port or grate of the First Defense® as stipulated by local ordinances. Safety equipment should notify passing pedestrian and road traffic that work is being done.

2. Remove the grate or lid to the manhole.

3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.

4. Remove oil and floatables stored on the surface of the water with the vactor hose or with the skimmer or net

5. Using a sediment probe such as a Sludge Judge®, measure the depth of sediment that has collected in the sump of the vessel and record it in the Maintenance Log (page 9).

6. Once all floatables have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris off the sump floor

7. Retract the vactor hose from the vessel.

8. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components, blockages, or irregularly high or low water levels.

9. Securely replace the grate or lid.

Maintenance at a Glance

Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Oil and Floatables Removal	- Once per year, with sediment removal - Following a spill in the drainage area
Sediment Removal	- Once per year or as needed - Following a spill in the drainage area
NOTE: For most clean outs the entire volume of liquid does not need to be removed from the manhole. Only remove the first few inches of oils and floatables from the water surface to reduce the total volume of liquid removed during a clean out.	

First Defense® Installation Log

HYDRO INTERNATIONAL REFERENCE NUMBER:	
SITE NAME:	
SITE LOCATION:	
OWNER:	CONTRACTOR:
CONTACT NAME:	CONTACT NAME:
COMPANY NAME:	COMPANY NAME:
ADDRESS:	ADDRESS:
TELEPHONE:	TELEPHONE:
FAX:	FAX:

INSTALLATION DATE: / /

MODEL SIZE (CIRCLE ONE): [3-FT] [4-FT] [5-FT] [6-FT] [8-FT] [10-FT]

INLET (CIRCLE ALL THAT APPLY): GRATED INLET (CATCH BASIN) INLET PIPE (FLOW THROUGH)

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

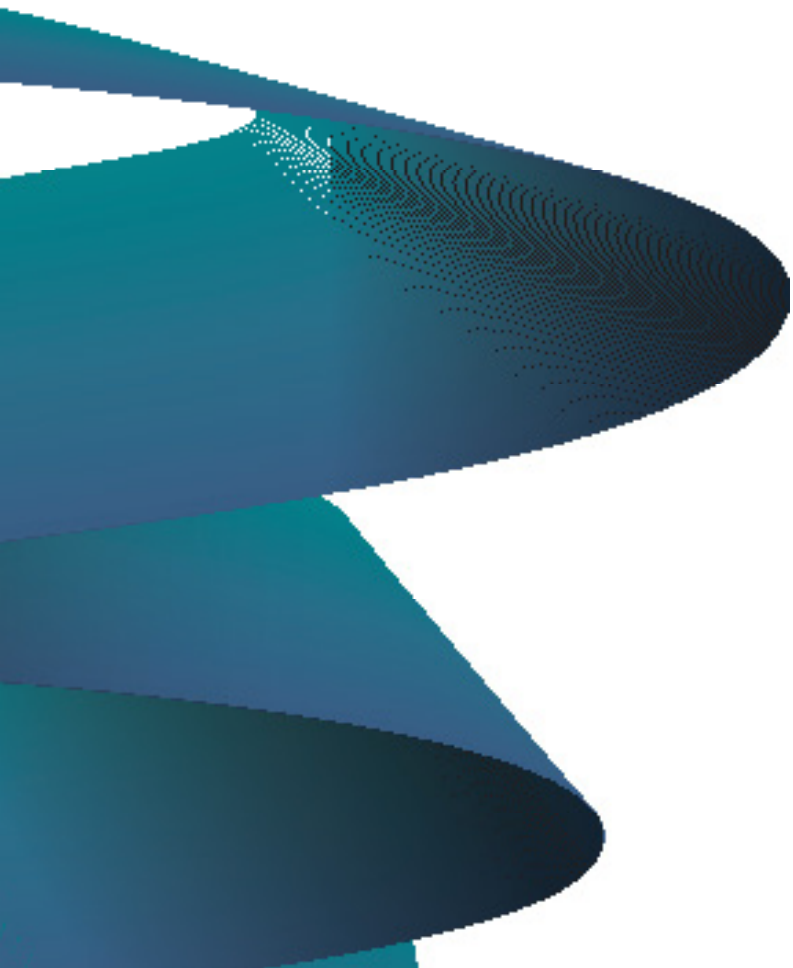
First Defense® Inspection and Maintenance Log

Date	Initials	Depth of Floatables and Oils	Sediment Depth Measured	Volume of Sediment Removed	Site Activity and Comments

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Hydro International®



Stormwater Solutions

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

Turning Water Around...®

FD_O+M_J_2009(2)

11.) Stormwater Management Construction Checklists

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

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

I. PRE-CONSTRUCTION MEETING DOCUMENTS

Project Name _____

Permit No. _____ **Date of Authorization** _____

Name of Operator _____

Prime Contractor _____

a. Preamble to Site Assessment and Inspections

The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

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

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

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

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

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

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

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

4. Stabilized Construction Entrance

Yes No NA

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

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

CONSTRUCTION DURATION INSPECTIONS **Page 1 of _____**

SITE PLAN/SKETCH

Inspector (print name)	**Date of Inspection**
Qualified Professional (print name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

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

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

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative

Name of Permittee or Duly Authorized Representative Date

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

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

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

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

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

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

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

Signature of Permittee or Duly Authorized Representative | Name of Permittee or Duly Authorized Representative | Date

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

Inspection and Maintenance Checklist
Catch Basins, Manholes, and Inlets

Date: _____

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

Site: _____ Inspector(s): _____

Description or location of Project: _____

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

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

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

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

Inspection and Maintenance Checklist
Conveyance Systems (Pipes & Ditches)

Date: _____

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

Site: _____ Inspector(s): _____

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

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

Inspection and Maintenance Checklist
Grass Filter Strips

Date: _____

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

Site: _____ Inspector(s): _____

Defect	Conditions When Maintenance is Needed	Maintenance (1 or 2)*	Comments
General			
Sediment Accumulation on Grass	Sediment depth exceeds 2 inches.		
Vegetation	When the grass becomes excessively tall (greater than 10 inches); when nuisance weeds and other vegetation start to take over.		
Trash and Debris Accumulation	Trash and debris accumulated on filter strip.		
Erosion/Scouring	Eroded or scoured areas due to flow channelization, or higher flows.		
Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed through entire filter width.		

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