STORMWATER POLLUTION PREVENTION PLAN

Chopt Restaurant
1043 West Boston Post Road – Tax I.D. 9-21-183
Village of Mamaroneck, New York

Owner/Applicant:

Chop't Creative Salad Company, LLC
800 Westchester Avenue, Suite N-321
Rye Brook, New York 10573

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Project No.: 20-072

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Revision History		
Rev. No.	Date	Description
0	6/23/2021	Site Plan Approval (SPA) Submission

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Section 1 - Project Information

1.1 Project Description

The purpose of this report is to present the Stormwater Pollution Prevention Plan (SWPPP) for the construction of a proposed CHOPT Restaurant (the "Project") located at 1043 West Boston Post Road in the Village of Mamaroneck, Westchester County, New York. The Project Site, Town Tax Map ID 9-21-183 (Village ID 9-56-3) is comprised of a single parcel totaling 0.4782 acre (20,829 ft^2) which is located in the C-1 General Commercial District. The proposed Project will re-purpose the former HSBC bank into a CHOPT Restaurant. The existing building envelope will remain, and interior renovations are proposed with a small addition (167 ft^2) being added at the rear of the existing building to accommodate a walk-in cooler. The Project includes the following site improvements:

- The existing parking lot is being reconfigured to provide a total of 24 parking spaces. Of the parking spaces provided, 6 spaces will have a width of 8.5 feet and will be used by employees and staff. These spaces will be located along the rear property line.
- Of the remaining parking spaces provided, fifteen (15) standard parking spaces (9' width) will be provided for use by customers plus one (1) van accessible parking space.
- An 812 ft^2 outdoor seasonal patio is being added in the front of the building.
- A six (6) foot high stockade fence will be erected along the rear property line to provide screening from the adjacent Residential District.
- The existing trash enclosure will be restored and/or reconstructed.

The property is currently vacant and consists primarily of impervious cover (i.e. building, concrete curb and sidewalk, bituminous pavement) with open green space (landscaping) and lawn area. Exposed rock ledge also runs beyond the pavement adjacent to the eastern and southern (rear) property line. Stormwater runoff generally flows from the south (rear) to the north (front) within the property. Most of the existing runoff is collected within a storm drainage system at several different locations – a drain inlet in the rear of the parking area, and two trench drains at the entry and exiting driveways, except for the front grass/landscaped area where runoff exits the property via overland flow. All runoff exiting the property enters the municipal drainage system within West Boston Post Road.

This SWPPP presents the methodology and design for controlling stormwater runoff from the Project during and post-construction so that it conforms to the requirements of Chapter 294 of the Village Code entitled "Stormwater Management and Erosion and Sediment Control." §294-4, Subsection A(1) requires the submission of and approval by the Village of a SWPPP for "All land development activities resulting in land disturbance of 1,000 square feet or more." §294-6 defines "land development activity" as follows: "Any construction activity, including clearing, grading, excavating, ***soil disturbance*** (emphasis added) or placement of fill, that could potentially result in soil erosion and/or any change in movement of stormwater on the site."

The proposed land disturbance associated with the Project is approximately 0.20 acre (8,700± ft^2). The extent of postconstruction runoff controls that are required for the Project to conform with the provisions and standards in Chapter 294 are dependent on the amount

of resultant land disturbance associated with the Project, as defined in § 294-8B(2). See Section 2.3 of the SWPPP for more details.

1.2 Soils

A review of the USDA Web Soil Survey indicates that there is one (1) soil type present on the proposed Project Site (see Appendix A for copy of downloaded report). Table No. 1 below summarizes the characteristics of the soil types present on the site.

Table No. 1 - Site Soil Characteristics

Map Unit	Area (acres)	Soil Name	Depth to Water Table	Depth to Bedrock	Hydrologic Soil Group (HSG)	Erosion Hazard
Uf	0.5	Urban Land	More than 80"	> 80"	None	Not Rated

Source: USDA Web Soil Survey (https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx)

Additional reports were downloaded from the Web Soil Survey which indicated the Project soil' having ratings of either "None", "Null", or "Not Rated" for the following specific properties that impact stormwater management:

- Flooding Frequency (None) - means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.
- Stormwater Management – Infiltration (NY) (Not Rated) – relative to the extent to which the soils are limited by the soil features that influence the design, construction, and performance of (infiltration) stormwater management practices.
- Subsurface Water Management, System Performance (Not Rated) - based on the soil properties that affect the capacity of the soil to be drained. The properties that affect the subsurface system performance include depth to a water table, salinity/sodium content, flooding, sand content, soil reaction, hydraulic conductivity, soil density, gypsum content, and subsidence.

Based on the above, a determination was made that site-specific subsurface investigation was required to determine the drainage properties of the existing soil stratum for the Project Site. See Section 2.2 of the SWPPP for more details and discussion.

1.3 Floodplain

The site is located within the Long Island Sound Drainage Basin. A review of the Flood Insurance Rate Map Number 36119C0353F (See FIRMette, downloaded from FEMA 10/21/2020, in Appendix A) for the Village of Mamaroneck indicates that the Project Site is located in Zone X – Area of Minimal Flood Hazard.

Section 2 - Storm Water Management

2.1 Methodology

The Project does not require coverage under NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity (Permit No. GP-0-20-001) since the proposed land disturbance does not exceed the one (1) acre threshold. However, since the Project is a land development activity as confirmed in Section 1.1 above that will generate stormwater runoff during and post-construction, the methodology for the design postconstruction runoff controls shall conform to the design criteria and performance standards in Chapter 294.

As stated in Section 1.1 above, § 294-8B(2) defines the extent of postconstruction runoff controls that are required for the Project to conform with the provisions and standards in Chapter 294 based on the amount of resultant land disturbance. The proposed land disturbance associated with the Project is approximately 0.20 acre (8,700± ft^2).

Since the Project will result in a land disturbance greater than 2,000 square feet and less than one acre, the SWPPP includes design of stormwater quantity and water quality controls to provide treatment of the water quality volume (WQv) through runoff reduction, and to attenuate the post development twenty-five-year design storm, twenty-four-hour peak discharge rate (Qf) to predevelopment rates. As set forth in §294-9, the controls have been designed in accordance with the following standards:

- *Urban Hydrology for Small Watersheds* (Technical Release No. 55) published by the United States Department of Agriculture, Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service, SCS), dated June 1986.
- *New York State Storm Water Management Design Manual* (DEC Design Manual), January 2015.

As required by the DEC Design Manual, the 24-hour rainfall data value to be used in the hydrologic analysis and computations is based on the updated isohyetal maps from the Northeast Regional Climate Center (NRCC). Current, site-specific 24-hour NRCC rainfall precipitation and distribution data was used to compute runoff hydrographs for the design storm. The rainfall value associated with the 25-year design storm is 6.41 inches.

To analyze the impact of the Project on downstream, offsite drainage systems and adjacent properties, the peak rates of runoff (i.e., peak discharge rates) were quantified under pre- and post-development drainage conditions for the 25-year storm event. The comparison of peak discharge rates, specifically where future/post-development drainage conditions show increased rates and volumes of runoff due to Project development, shall guide the proper design of any required postconstruction runoff controls.

The pre- and post-development runoff rates for the 25-year storm event was calculated using the computer software program entitled "HydroCAD", Version 10.0, Build 25. This program incorporates the methodology used in NRCS TR-20 and TR-55 to compute and route flood hydrographs.

a. Water Quality Volume (WQv)

Chapter 4 of the DEC Design Manual provides the following equation to determine the WQ_v (in acre-feet of storage):

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

Where:

WQ_v	=	water quality volume (in acre-feet)
P	=	90% Rainfall Event Number (see Figure 4.1, DEC Design Manual)
Rv	=	0.05 + 0.009 (I), where I is the percent of impervious cover
A	=	site area in acres (onsite)

The value of the 90% Rainfall Event (P) for the portion of Westchester County, New York where the Project is located is 1.50 inches.

The technical standards in the DEC Design Manual are mainly directed towards "new construction," which is considered disturbance and construction of new impervious over existing pervious surfaces. While there are design criteria provided in Chapter 9 for a "redevelopment activity", defined in the DEC Design Manual as *"disturbance and reconstruction of existing impervious surfaces"* (emphasis added), the criteria apply to *full-depth* disturbance and reconstruction of the existing pavement section. Construction of the Proposed Project will involve both new construction as well as partial (i.e. not full depth) disturbance and reconstruction of the existing pavement.

Therefore, the approach to be taken, discussed further in Sections 2.3.b and 2.3c below, will be to capture, reduce and/or treat the computed "target" WQv from both the areas of "new construction" and redevelopment activity within the proposed limits of disturbance through the implementation of a standard Stormwater Management Practice (SMP), or green infrastructure (GI) practice/technique as provided in the DEC Design Manual.

2.2 Subsurface Investigation

Based on the Web Soil Survey results discussed in Section 1.2 above, PDE performed infiltration testing on October 29, 2020, at locations INF-1 and INF-2 shown on Figure No. B-1 in Appendix B. The bottoms of the infiltration tests at locations INF-1 and INF-2 were set at depths of 3 feet (36 inches) below existing grades. The infiltration test holes were then filled with 36 inches of water, covered, and allowed to pre-soak overnight. Testing was performed the following day October 30, 2020.

The data sheet of test results provided in Appendix B show a failed in-situ infiltration rate at INF-1 of 0.0 inches/hour and the presence of shallow groundwater, therefore the use of infiltration/recharge SMPs/GI practices in this area would not be feasible. However, the in-situ stabilized infiltration rate recorded at INF-2 of 8.57 inches/hour is much greater than the minimum rate of 0.5 inches/hour required by the standards in the DEC Design Manual for infiltration/recharge GI practices.

2.3 Hydrologic Analysis

a. Pre-Development Conditions

Under pre-development conditions, the existing commercial lot area was used to define the limits of hydrologic study. The lot consists primarily of impervious cover (i.e. building, concrete curb and sidewalk, bituminous pavement) with open green space (landscaping) and lawn area. Exposed rock ledge also runs beyond the pavement adjacent to the eastern and southern (rear) property line. Stormwater runoff generally flows from the south (rear) to the north (front) within the property. Most of the existing runoff is collected within a storm drainage system at several different locations – a drain inlet in the rear of the parking area, and two trench drains at the entrance and exiting driveways, except for the front grass/landscaped area where runoff exits the property via overland flow. The runoff collected within the storm drainage system is conveyed to three 10'diameter x 8' deep drywells, located along the front property line.

In general, the Design Points represent the location(s) where the runoff from the respective drainage area(s) exit the site. For the purposes of this analysis, the Project site frontage along West Boston Post Road is collectively considered the Design Point. The same Design Point is identified in proposed conditions so that a comparison can be made between pre-development and post-development (proposed) conditions.

Refer to the Pre-Development Drainage Map (Figure No. C-1) in Appendix C for a depiction of existing drainage areas and patterns. Table 2, Summary of Existing Drainage Areas and Land Cover Types, below provides a summary of the existing drainage area and its land cover types, generally consisting of pervious and impervious surfaces, associated with the Project.

Table 2 - Summary of Existing Drainage Areas and Land Cover Types

Drainage Area ID	Total Area (s.f.)	Pervious Area (s.f.)	Impervious Area (s.f.)	% Impervious	Runoff CN
EDA-1	20,829	4,657	16,172	77.6	94

b. Post Development Conditions

Under post-development (proposed) conditions, drainage patterns to the Design Point will be like pre-development conditions and therefore the Design Point will remain unchanged. However, the land cover areas draining to Design Point 1 will change under pos-development conditions as compared to existing conditions due to the slight increase in (i.e., new) impervious surfaces within the limits of disturbance. Drawing C-201 illustrates the proposed site grading and drainage layout. The proposed drainage areas and patterns are further illustrated on the Post-Development Drainage Map (Figure No. C-2) in Appendix C. Table 3, Summary of Proposed Drainage Areas and Land Cover Types, below provides a summary of the proposed drainage areas and their land cover types, generally consisting of pervious and impervious surfaces, associated with the Proposed Project.

Table 3 - Summary of Proposed Drainage Areas and Land Cover Types					
Drainage Area ID	**Total Area (Acres)**	**Pervious Area (Acres)**	**Impervious Area (Acres)**	**% Impervious**	**Runoff CN**
PDA-1	16,773	3,239	13,534	80.7	95
PDA-2	2,648	0.00	2,648	100.0	98
PDA-3	1,408	221	1,187	84.3	95
Total	**20,829**	**3,460**	**17,369**	**83.4**	**95**

c. Water Quality Volume (WQv)

Given the combination of "new construction" and redevelopment activity occurring within the proposed limits of disturbance and the results of the investigation summarized in Section 2.2 above, it is the professional opinion of PDE that a subsurface infiltration/recharge SMP can be provided to capture and recharge the WQv.

The target Water Quality Volume (WQv) is computed based on satisfying Water Quality Treatment Option II in Section 9.2 in the DEC Design Manual. This option allows for the use of a "standard" SMP, as described above, to capture and recharge/treat 25% WQv from the existing, disturbed impervious area ("redevelopment activity") and 100% WQv from the area of "new construction" within the proposed limits of disturbance for the Project. Area PDA-2 represents the proposed redevelopment activity, with "new construction" occurring in Area PDA-3.

Table 4 below shows the total Target WQv and breakdown by drainage area. The Target WQv computation is provided in Appendix C-2.

Table 4 – Target WQv Summary Table		
Drainage Area ID	**Area (ft^2)**	**Target WQv Required (ft^3)**
PDA-2	2,648	79
PDA-3	672	142
Total	**3,320**	**221**

d. SMP Application

The proposed subsurface infiltration/recharge SMP will also provide detention storage to attenuate post-construction runoff from the Project. Analysis of the existing subsurface infiltration/recharge and detention SMP meets the criteria in Section 6.3 of the DEC Design Manual. The system will consist of combination infiltration and the existing 10'diameter x 8' deep drywells with an upstream pretreatment sump manhole. The subsurface infiltration/recharge and detention SMP are situated near to where the positive infiltration test was observed at location INF-2. The layout of the subsurface drainage pipes and the subsurface infiltration/recharge and detention SMP to which runoff will be conveyed is depicted on PDE Drawing C-201.

Analysis of the SMP revealed that the Target WQv will be fully contained within the system (227 ft^3 provided at Elevation 27.23) without taking credit for the rate of exfiltration as required by Section 6.3 of the DEC Design Manual (see stage-storage table, Appendix C-2 Page 6). The system has also been designed to fully dewater the entire WQv within 48 hours after a storm event.

As stated above, the proposed SMP has been sized to capture and recharge/treat the Target WQv from Areas PDA-2 and PDA-3. Typically, it is the "standard" approach in stormwater management planning to provide SMPs that capture and recharge/treatment of WQv "at the source" for each drainage area. However, the site limitations of a failed in-situ infiltration test with associated subsurface conditions at INF-1 precluded the use of a source SMP for PDA-3, and negative vertical elevation differential (i.e., head) would not permit direct conveyance of runoff from PDA to the proposed SMP location.

e. Water Quantity Control

NYSDEC and Chapter 294 require that post-development rates of storm water runoff from a site must be equal to or less than pre-development runoff rates so that downstream and/or adjacent properties are not adversely impacted. Comparison of the peak discharge rates for pre- and post-development drainage conditions of the 25-year rainfall event is provided in Table 4 below.

Table 4 - Comparison of Peak Discharge Rates and Volumes

25-Year Design Storm (24-Hour Rainfall 6.41")	Pre-Development Conditions	Post-Development Conditions*
	DP-1	DP-1
Peak Runoff Rate (cfs)	2.83	2.01
Peak Runoff Volume (cf)	9,890	2,759

*Post-Development values account for SMP implementation.

Based on the implementation of the stormwater management measures, the peak runoff rate and volume for the 25-year storm under post-development conditions will be less than the 25-year storm peak runoff rate for pre-development conditions. The stormwater calculations for pre- and post- development drainage conditions have been included in Appendices C-1 and C-2, respectively.

2.4 Erosion & Sediment Control

During construction, the potential for soil erosion and sedimentation will be controlled through the use of temporary soil erosion and sediment control devices and measures. These devices and measures, as shown and detailed on PDE Drawings C-301 and C-402, respectively shall be installed and maintained in accordance with the *New York State Standards and Specifications for Erosion and Sediment Control* dated November 2016 ("Blue Book"). The soil erosion and sediment control (E&SC) measures that will be applied to the Project site during construction are as follows:

- Install and maintain E&SC devices detailed on PDE Drawing C-401 and perform construction in accordance with the construction sequence and design notes on PDE Drawing C-401;
- Retain existing vegetation where feasible and minimize the amount of land disturbance at any one time;
- Trap sediment on-site prior to discharge from the site. Sediment shall be removed as specified under Temporary Erosion and Sediment Control Measures below;
- Stabilize disturbed areas that will not require further earthwork operations within the required periods specified under Temporary Erosion and Sediment Control Measures, and;
- Implement soil restoration to all disturbed and compacted areas that will be remain unpaved, vegetated and/or landscaped in the post-construction condition in accordance with the requirements in Table 4.6 in the Blue Book, prior to final seeding, landscaping, and mulching.

a. Non-Stormwater Discharges

The following non-storm water discharges are anticipated during Project construction:

- Discharges from hydrant and/or water line flushing.
- Pavement wash-water, where no spills or leaks of toxic or hazardous materials have occurred.
- Uncontaminated ground water (if encountered) associated with dewatering activities (see Paragraph b8 under Temporary Erosion and Sediment Control Measures).

b. Temporary Erosion and Sediment Control Measures

1. Silt Fences - Silt fences consist of standard strength filter fabric with wire mesh reinforcement (or extra strength synthetic filter fabric) secured to supporting posts and entrenched at the base. The fence will be three feet high; with the wire fence reinforcement constructed of a minimum 14.5-gauge galvanized steel wire and a minimum mesh spacing of six inches. Fences will be secured in place by galvanized steel or wood posts set at six feet on-center. The filter fabric will be stapled to the upgradient face of each fence. The purpose of silt fences is to intercept and detain sediment contained in sheet overland runoff from disturbed areas of limited extent. In addition, the silt fencing will physically delineate the limit of work on the down slope side of work areas.

Installation and Maintenance

- Silt fences will be installed where the disturbed land is located at a minimum distance of ten feet from critical areas (streams and wetlands).
- Silt fences will be installed on the down slope side of work areas, as close to the disturbed areas as possible.
- Filter fabric requirements and installation design criteria will be in accordance with the requirements in the *New York State Standards and Specifications for Erosion and Sediment Control*.
- Sediment will be removed from behind silt fences when sediment has accumulated to one-third of the original height of the fence.

2. Seeding and Soil Stabilization

General

Application of soil stabilization measures must be initiated by the end of the next business day and completed **within seven (7) days** from the date the soil disturbance activity ceased. The various temporary and/or permanent soil stabilization methods to be made available are described below.

Temporary Seeding

Temporary seeding of exposed areas should be applied as follows:

- Spring/summer/early fall – Ryegrass (annual or perennial) at a rate of 30 lbs/acre (approximately 1 lb/1000 sq ft).
- Late fall/early winter – Certified "Aroostook" winter rye (cereal rye) at a rate of 100 lbs/acre (2.5 lbs/1000 sq ft).

Mulch shall be used to provide initial erosion control until the seed is established or shall be used alone for temporary stabilization in non-growing months. Mulch materials include small grain straw, wood chips or shavings, jute twisted yarn, gravel, crushed stone or slag and hydromulch. Mulches and mulch anchoring shall be applied in accordance with the requirements on Pages 3.29-3.31 of the *New York State Standards and Specifications for Erosion and Sediment Control*.

Permanent Seeding

Ideally, permanent stabilization in non-paved areas shall be performed as soon as possible after completion of grading and placement of topsoil. A permanent seed mixture shall be selected based on site conditions and intended use from Table 3.2 of the *New York State Standards and Specifications for Erosion and Sediment Control*. Establishment and maintenance of permanent grasses shall be as specified on Pages 3.9 and 3.11 of the *New York State Standards and Specifications for Erosion and Sediment Control*.

3. Dust Control

Dust Control shall be accomplished through the use of vegetative cover, mulch, spray adhesive, sprinkling or barriers. Water will be applied by sprinkler or water truck as necessary during grading operations to minimize sediment transport and maintain acceptable air quality conditions. Repetitive treatments will be done as needed until grades are paved or stabilized with vegetation.

4. Stabilized Construction Access

A ramp of crushed stone extending a minimum distance of 50 feet will be installed at each point of ingress and egress from the site. The purpose of the device is to minimize the potential of tracking mud from the site onto public rights-of-way.

Installation and Maintenance

- Minimum length will be 50 feet.
- Stone size - use 1-4" stone or reclaimed or recycled concrete equivalent.
- Length - not less than 50 feet (except on a single residence lot where a 30-foot minimum length would apply).
- Thickness - not less than six (6) inches.
- Width - twelve (12) foot minimum, but not less than the full width at points where ingress or egress occurs. Twenty-four (24) foot if single entrance to site.
- Filter cloth - will be placed over the entire area prior to placing of stone.
- Surface water - all surface water flowing or diverted toward construction entrances shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
- Maintenance - the entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way, all sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
- When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
- Periodic inspection and needed maintenance shall be provided after each rain.

5. Inlet Protection (Type V - Manufactured Insert Type)

An insert type of temporary catch basin protection that prevents the deposition of sediment into the storm sewer system. The insert consists of a geotextile sack supported by straps wrapped around the catch basin grate. An additional geotextile fabric roll attached to the rear portion of the sack sits in front of the curb inlet opening.

Installation and Maintenance

- The drainage area shall be limited to 1 acre at the drain inlet.
- All inserts will be installed and anchored in accordance with the manufacturer's recommendations and design details.
- The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric.
- The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.
- The contractor shall monitor at least once per week and after every runoff-generating storm event.
- Inserts shall be cleaned as needed, but in no case shall the containment area be more than 1/3 full of sediment. Emptying/cleaning shall be done as specified by the manufacturer.

6. Excavation Dewatering

If encountered, water that accumulates within utility trenches or other locations during the excavation phase of construction will be pumped from the trench at a controlled rate into an energy dissipation/sediment filtration device.

Geotextile Filter Bag

The filter bag traps and retains sediment, allowing filtered water to "bleed through" the permeable geotextile surface.

Design, Installation and Maintenance

- Location - the filter bag should be located to minimize interference with construction activities and pedestrian traffic. It should also be placed in a location that is vegetated, relatively level, and provides for ease of access by heavy equipment, cleanout, disposal of trapped sediment, and proper release of filtered water. It shall be placed a minimum of 50 feet from all wetlands, streams, or other surface waters.
- Size – the filter bag shall be sized in accordance with the manufacturers recommendations based on the pump discharge rate. The filter bag shall have an opening large enough to accommodate a 4-inch diameter discharge hose with an attached strap to tie off the bag to the hose to prevent back flow.
- The filter bag shall be placed on a gravel bed 2 inches thick, a straw mat 4 inches thick, or a vegetated filter strip to allow water to flow out of the bag in all directions.
- The filter bag is considered full when remaining bag flow area has been reduced by 75% and should be replaced with a new bag.
- Disposal may be accomplished by removing the bag to an appropriate designated upland area, cut open and remove the geotextile for disposal, and then spread sediment contents and seeded and mulched according to the vegetative plan.

7. Concrete Truck Washout Areas

Discharge of excess or waste concrete and/or wash water from Concrete Ready-Mix Trucks will be allowed on the construction site, but only in temporary excavated or above ground lined constructed pits where concrete mixer trucks and equipment (chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds) can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into the soil.

Design Criteria and Location

- The washout facility shall be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum.
- The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.
- All washout facilities shall be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears and anchored beyond the top of the pit with an earthen berm, sandbags, stone, or other structural appurtenance except at the access point.
- The facility shall be located a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.
- If prefabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of offsite.
- Dispose of the hardened material off-site in a construction/demolition landfill.
- The plastic liner shall be replaced with each cleaning of the washout facility.

- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

The jobsite superintendent is responsible for assuring that these requirements are followed.

c. Erosion and Sediment Control Inspection Schedule

The Village's Stormwater Management Officer under §294-11A may require such inspections as necessary to determine compliance with this SWPPP and Chapter 294 and may either approve that portion of the work completed or notify the applicant wherein the work fails to comply with the requirements of Chapter 258 and the SWPPP as approved. To obtain inspections, the applicant, or the contractor acting on behalf of the applicant, shall notify the Village of Mamaroneck enforcement official Stormwater Management Officer at least 48 hours before any of the following as required by the Stormwater Management Officer:

1. Start of construction.
2. Installation of erosion and sediment control measures (the design professional must also certify installation of the erosion and sediment control measures prior to start of construction);
3. Completion of site clearing and demolition;
4. Completion of rough grading;
5. Installation of stormwater management practices;
6. Completion of final grading;
7. Close of the construction season;
8. Completion of final landscaping; and
9. Establishment of landscaping in public areas.

d. Maintenance and Inspections During Construction

In accordance with §294-10A(2), the applicant or developer, or his or her representative, shall be on site at all times when construction or grading activity takes place and shall inspect and document the effectiveness of all erosion and sediment control practices. The applicant shall have a *qualified professional* (as defined in GP-0-20-001) conduct site inspections and document the effectiveness of all erosion and sediment control practices every seven days and within 24 hours of any storm event producing 0.5 inch of precipitation or more. All required repairs shall be immediately executed by the Contractor. Inspection reports shall be delivered to the Village Stormwater Management Officer and maintained in a logbook at the Project Site.

2.5 Additional Stormwater Pollution Prevention Measures

Based on the standard and specifications in the Blue Book, the contractor(s) shall implement the following measures to control non-sediment pollutants associated with construction activities; to prevent the generation of pollutants due to improper handling, storage, and spills, and; to prevent the movement of toxic substances from the site into surface waters:

- The contractor(s) shall make sure that staging and maintenance areas for construction vehicle and equipment as shown on the drawings are located away from all drainage ways. Parking areas shall be graded so the runoff from these areas is collected, contained, and treated prior to discharge from the site.
- All on-site vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage.
- The contractor(s) shall provide sanitary facilities for on-site personnel. The contractor(s) shall retain a licensed sanitary waste management contractor, as required by local and state regulations, to collect and properly dispose of all sanitary waste from on-site portable units.
- If applicable and/or necessary, the contractor(s) shall provide refueling equipment with secondary containment and other required environmental controls and locate such equipment at least 100 feet from all wetlands, streams, drainage systems, and other surface waters.
- Once applied, fertilizers will be worked into the soil to limit the exposure to stormwater. The contents of partially used fertilizer bags will be transferred to sealable containers to avoid spills.
- The contractor(s) shall follow all local, state, and federal regulations for the storage, handling, application, usage, and disposal of pesticides, fertilizers, petroleum products, and other hazardous wastes. Site personnel will be instructed in these practices, and the individual designated as the Contractor's and/or Owner/Operator's Field Representative will be responsible for seeing that these practices are followed
- The contractor(s) shall store, cover, and isolate construction materials including but not limited to: cement; soil, topsoil, and aggregates; bituminous materials; petroleum-based products; wood and metals; epoxy-based mortars and grouts; paints; detergents, cleaning solvents, and other chemicals, and; fertilizers to prevent runoff of pollutants and contamination of groundwater and surface waters.
- The contractor(s) shall develop and implement a spill prevention and control plan to address the handling of construction fuels, lubricants, and other hazardous chemicals/materials. The plan shall include NYSDEC's spill reporting and initial notification requirements.
- The contractor(s) shall distribute to, and/or conspicuously post informational material for all construction personnel regarding proper handling, spill response, spill kit location, and emergency actions to be taken.
- The contractor(s) shall provide adequate measures for the proper handling, transporting and disposal of solid waste solid waste materials generated during the demolition and construction phases/stages of the Project including woody debris, stumps, and other construction waste. All such measures shall be in accordance with applicable federal, state, and local regulations and requirements. All site personnel will be instructed in the proper procedures for waste disposal, and notices stating proper practices will be posted in the field office. The Contractor and/or Owner/Operator's Field Representative responsible for the conduct of work on the site will be responsible for seeing waste disposal procedures are followed.

2.6 Construction Changes

When changes are made to the Project (e.g. significant changes in scope/type resulting in increases in disturbed and/or impervious area) that will require alterations in the temporary erosion and sediment controls used at the site during construction, and/or the design/construction of post-construction stormwater management practices, the SWPPP will be amended to provide appropriate protection to disturbed areas, all storm water structures, and receiving waters/drainage systems. The SWPPP and supporting drawings shall be amended/modified to reflect such changes:

- whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;
- whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants;
- to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Village or other regulatory authority; and
- to document the final construction conditions.

Copies of the revised SWPPP will be submitted to the Village's Stormwater Management Officer and/or Code Enforcement Official, and the Contractor. The SWPPP will be retained in a designated onsite area for review for the duration of the Project.

Section 3 - Post-Construction Inspection and Maintenance of SMPs

3.1 Stormwater Control Facility Maintenance Agreement

Pursuant to the provision of §294-10D, the Village of Mamaroneck shall approve a formal maintenance agreement for stormwater management facilities binding on all subsequent landowners and recorded in the office of the County Clerk as a deed restriction on the property prior to final plan approval.

A sample entitled "Sample Stormwater Control Facility Maintenance Agreement." is set forth in Appendix E of the SWPPP and is provided for informational purposes only and shall not be construed as final. The final Agreement shall be prepared by the Owner in consultation with, and shall be in a form acceptable to, the Village Attorney.

3.2 Long-Term Post-Construction Inspection and Maintenance

Periodic, long-term Inspection and Maintenance of the SMPs is essential to ensure that the facilities will function as designed. The facility Owner/Operator, its successors and assigns, shall be responsible for maintaining all onsite storm drainage and SMP components. Recommended inspections and required maintenance items and intervals for the SMPs should follow the procedures outlined in the March 31, 2017 publication, "Maintenance Guidance, Stormwater Management Practices" from the NYSDEC.

Inspection, maintenance, and operation of the SMPs shall meet the standards of §294-10C, specifically including:

- A preventive/corrective maintenance program for all critical facilities and systems of treatment and control (or related appurtenances) which are installed or used by the owner or operator to achieve the goals of Chapter 294;
- Written procedures for operation and maintenance and training of new maintenance personnel, and;
- Discharges from the SMPs shall not exceed design criteria or cause or contribute to water quality standard violations, i.e. shall cause an increase in turbidity that will result in substantial visible contrast to natural conditions in surface waters of the State of New York, per §294-9C.

Section 4 - Summary and Conclusion

Based on the information presented in this report, the implementation of the proposed Storm Water Pollutant Prevention Plan for the Project will mitigate water quality and quantity impacts to the Project site both during and after construction.

Respectfully submitted,

Provident Design Engineering, PLLC

Ralph P. Peragine, P.E.
Senior Project Manager
New York PE# 064262

Under New York State Education Law Article 145 - Engineering, Section 7209 (2), it is a violation of this law for any person to alter an item in any way in this Report, unless acting under the direction of a licensed professional engineer. If an item bearing the seal of an engineer is altered, the altering engineer shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

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APPENDIX A

USDA SOIL SURVEY CUSTOM SOIL RESOURCE REPORT

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Westchester County, New York

1043 West Boston Post Road, Village of Mamaroneck, NY

October 21, 2020

Preface

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

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

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

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

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

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

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

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

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

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

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

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

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

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

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

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

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

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

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

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

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

Soil Map

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

Custom Soil Resource Report
Soil Map

Map Scale: 1:508 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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 16, Jun 11, 2020

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Uf	Urban land	0.5	100.0%
Totals for Area of Interest		**0.5**	**100.0%**

Map Unit Descriptions

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

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

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

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Westchester County, New York

Uf—Urban land

Map Unit Setting

National map unit symbol: bd7j
Elevation: 50 to 2,400 feet
Mean annual precipitation: 46 to 50 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 115 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Minor Components

Udorthents

Percent of map unit: 5 percent
Hydric soil rating: No

Riverhead

Percent of map unit: 2 percent
Hydric soil rating: No

Chatfield

Percent of map unit: 2 percent
Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 2 percent
Hydric soil rating: No

Unadilla

Percent of map unit: 2 percent
Hydric soil rating: No

Sutton

Percent of map unit: 2 percent
Hydric soil rating: No

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Flooding Frequency Class—Westchester County, New York
(1043 West Boston Post Road, Village of Mamaroneck, NY)

Map Scale: 1:508 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Frequent
- Very Frequent
- 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 16, Jun 11, 2020

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.

Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Uf	Urban land	None	0.5	100.0%
Totals for Area of Interest			**0.5**	**100.0%**

Description

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

Stormwater Management - Infiltration (NY)—Westchester County, New York
(1043 West Boston Post Road, Village of Mamaroneck, NY)

Map Scale: 1:508 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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
- Most limited
- Somewhat limited
- Least limited
- Not rated or not available

Soil Rating Lines
- Most limited
- Somewhat limited
- Least limited
- Not rated or not available

Soil Rating Points
- Most limited
- Somewhat limited
- Least limited
- 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 16, Jun 11, 2020

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.

Stormwater Management - Infiltration (NY)

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Uf	Urban land	Not rated	Urban land (85%)		0.5	100.0%
			Udorthents (5%)			
			Udorthents, wet substratum (2%)			
			Unadilla (2%)			
			Sutton (2%)			
			Riverhead (2%)			
			Chatfield (2%)			
Totals for Area of Interest					**0.5**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	0.5	100.0%
Totals for Area of Interest	**0.5**	**100.0%**

Description

Proper management of stormwater runoff from construction sites and developed areas is an issue of growing importance in New York State. During construction, exposed soil is subject to a greater risk of erosion, resulting in a greater potential for sedimentation in waterways. Stormwater runoff increases on the rooftops of buildings, paved parking lots, and other impervious surfaces, and thus increases the potential for flooding and discharge of polluted runoff into open water. Management of stormwater runoff can prevent or reduce the availability, release, or transport of substances that can degrade surface and ground waters. Guidelines and design criteria for stormwater management practices have been established by the New York State Department of Environmental Conservation (2008).

This interpretation is designed to evaluate the limitations of soils for stormwater management practices. The purpose of the interpretation is to help decision makers use soil survey information in the selection and implementation of the stormwater management practices best suited to a particular location. The information in the interpretations is intended for planning purposes and does not eliminate the need for on-site investigation of the soil.

Rating class terms indicate the extent to which the soils are limited by the soil features that influence the design, construction, and performance of stormwater management practices. "Least limited" indicates that the soil has features that are very favorable for this practice. Good performance and low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the practice. The limitations can be overcome or minimized by special planning, design, or construction. Fair performance and moderate maintenance can be expected. "Most limited" indicates that the soil has one or more features that are unfavorable for the practice. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive construction procedures. Poor performance and high maintenance can be expected.

The rating class is based on the maximum value of the rating indices generated for each soil feature considered. Where the rating value is:

equal to 0.0, the rating class is "least limited."

greater than 0 and less than 1.0, the rating class is "somewhat limited."

equal to 1.0, the rating class is "most limited."

Design criteria in the "New York State Stormwater Management Design Manual" (New York State Department of Environmental Conservation, 2008) were used to guide the selection of potentially limiting soil properties. Additional limiting features incorporated into the interpretations are based on soil function for the specific practice.

Infiltration Practices

This interpretation evaluates the limitations of soils for stormwater management infiltration practices. Infiltration practices collect stormwater runoff in basins (or trenches) for storage prior to filtration through undisturbed soil in the basin (or trench) floor and sides. Deep, well drained, and permeable soils are required for implementing infiltration practices. Following is a synopsis of the soil features considered in this interpretation.

Excessive permeability: Excessive permeability in one or more layers may allow stormwater to move rapidly through the soil without sufficient filtering, resulting in a potential for groundwater contamination. Additional pretreatment or soil amendments may be required as part of an infiltration practice. The interpretation evaluates the range (low to high) of permeability values for the most transmissive layer in the soil.

Low permeability: Low permeability restricts movement of water through the soil, impeding the infiltration function. The interpretation evaluates the range (low to high) of permeability values for the least transmissive layer in the soil.

Slope gradient: Excessive slope limits the functionality of an infiltration practice. The representative slope gradient percent for the soil component is the property evaluated.

Depth to bedrock: Limited depth to bedrock impedes excavation and restricts infiltration. The minimum depth to bedrock is the property evaluated.

Depth to manufactured layer: In urban areas, some anthropogenic (human-altered) soils have a restrictive layer, such as pavement, below the surface. Limited depth to this feature impedes excavation and restricts infiltration. The minimum depth to a manufactured layer is the property evaluated.

Depth to saturation: A seasonal high water table in the upper part of the soil limits the storage capacity of an infiltration practice. The interpretation evaluates the minimum depth to a zone of saturation.

Excessive fines: Soils with a high content of silt and clay may become plugged with sediment from stormwater, resulting in restricted infiltration. The interpretation evaluates the weighted average of the percent clay and percent silt, for depths greater than 36 inches.

In addition to soil characteristics, other attributes of the site and the surrounding area are important factors in planning and implementing stormwater management practices. For example, proximity and slope direction from the installation practice to a drinking water well are important considerations when sites for infiltration practices are selected.

The components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen, which is displayed in the report. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as the one listed for the map unit. The percent composition of these components is described. As a result, the percentage of the rating class in the map unit is indicated.

Other components with different ratings may occur in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the "Stormwater Management (NY)" report from the Soil Reports tab in Web Soil Survey.

References:

New York State Department of Environmental Conservation. April 2008. New York State Stormwater Management Design Manual.

New York State Department of Environmental Conservation. June 2000. Urban/ Stormwater Runoff Management Practices Catalogue for Nonpoint Source Pollution Prevention in New York State.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Subsurface Water Management, System Performance—Westchester County, New York
(1043 West Boston Post Road, Village of Mamaroneck, NY)

Map Scale: 1:508 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 5 10 20 30

Feet
0 20 40 80 120

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

MAP LEGEND

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

Background
- Aerial Photography

Soils

Soil Rating Polygons
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Lines
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Soil Rating Points
- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Water Features
- Streams and Canals

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

MAP INFORMATION

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

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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 16, Jun 11, 2020

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.

Subsurface Water Management, System Performance

Map unit symbol	Map unit name	Rating	Component name (percent)	Rating reasons (numeric values)	Acres in AOI	Percent of AOI
Uf	Urban land	Not rated	Urban land (85%)		0.5	100.0%
			Unadilla (2%)			
			Riverhead (2%)			
			Chatfield (2%)			
			Sutton (2%)			
Totals for Area of Interest					**0.5**	**100.0%**

Rating	Acres in AOI	Percent of AOI
Null or Not Rated	0.5	100.0%
Totals for Area of Interest	**0.5**	**100.0%**

Description

The ratings for Subsurface Water Management, System Performance are based on the soil properties that affect the capacity of the soil to be drained. The properties that affect the subsurface system performance include depth to a water table, salinity, flooding, sodicity, sand content, soil reaction, hydraulic conductivity, soil density, gypsum content, and subsidence.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as that listed for the map unit. The percent composition of each component in a particular map unit is given so that the user will realize the percentage of each map unit that has the specified rating.

A map unit may have other components with different ratings. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX B

FLOOD INSURANCE RATE MAP (FIRM)/FIRMETTE

National Flood Hazard Layer FIRMette

Legend

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

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

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

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

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

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

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

N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/21/2020 at 12:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

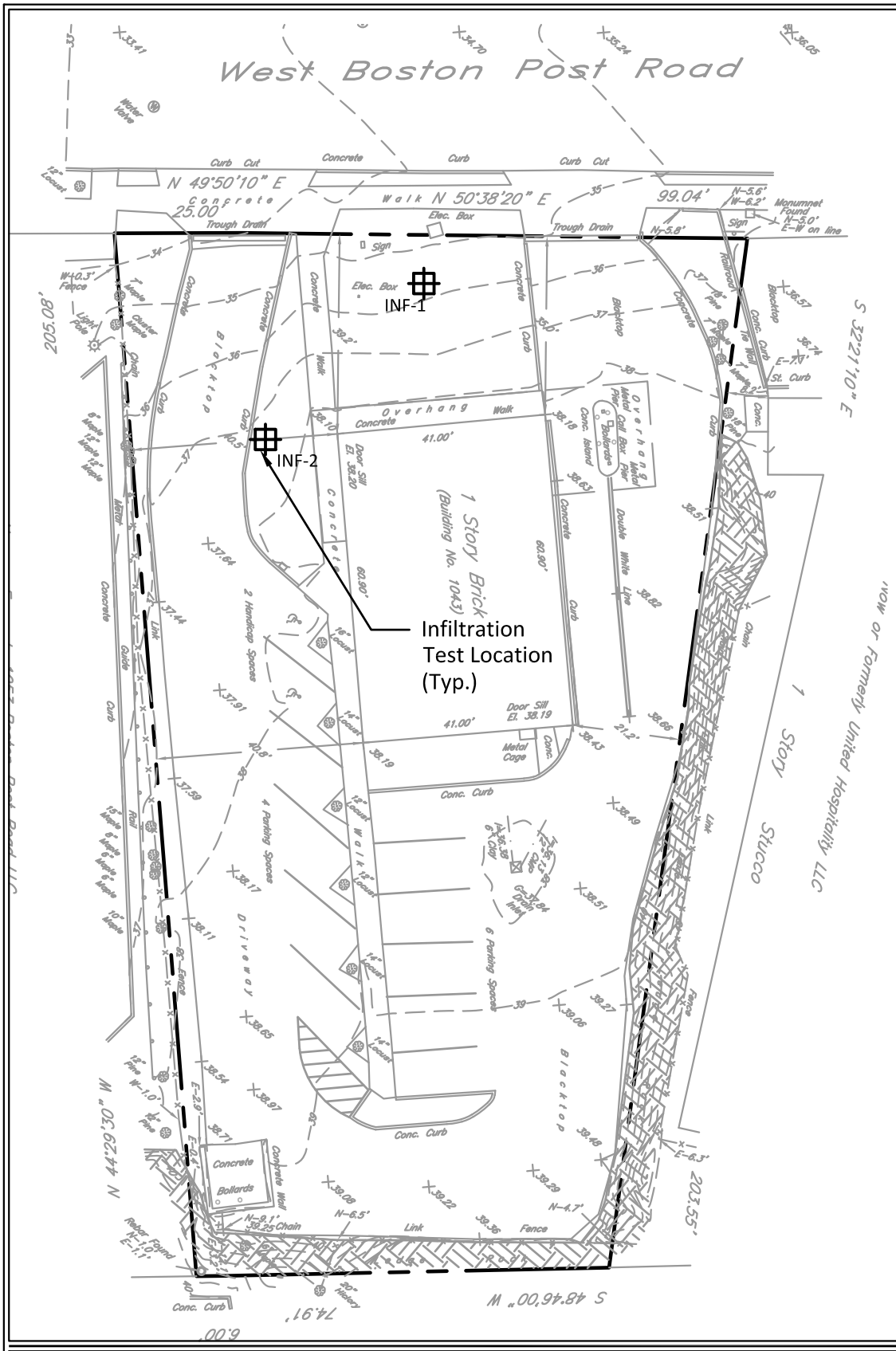
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

APPENDIX C

SUBSURFACE INVESTIGATION

INFILTRATION LOCATION PLAN

DATA SHEET – INFILTRATION TESTING



Provident design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

Chopt
Infiltration Test Locations
1043 West Boston Post Road
Village of Mamaroneck, NY

Project No. 20-072
Scale: 1"=30'
November 2020

Figure No. B-1

Q:\PROJECTS-20\20-072 1043 W Boston Post Rd\Stormwater\Stormwater Testing Locations.dwg

INFILTRATION TESTING
DATA SHEET

Project Name: **20-072 1043 West Boston Post Road** Municipality: **Mamaroneck**
Owner: Watershed: **Larchmont Harbor - Coastal L.I.S. Basin**
Address: **1043 West Boston Post Road** Sec/Bl/Lot: **9/21/183**

Date: **October 30, 2020** Weather: **36 degrees, rainy**
Notes: **Infiltration Test 1 did not drain during pre-soak. Subsequent holes surrounding INF-1 were found to have groundwater around 12" - 16" below ground surface which was not encountered during pre-soak digging**

TEST #	CLOCK TIME					INFILTRATION RATE			
	Run #	Start	Stop	Elapse Time		Depth to Water from Top of Casing		Drop	Infiltration Rate
		HH:MM	HH:MM	Mins	Hours	Start In.'s	Stop In's	Inches	Inches/Hour
INF-1	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Depth of Infiltration Testing: 36"									

TEST #	CLOCK TIME					INFILTRATION RATE			
	Run #	Start	Stop	Elapse Time		Depth to Water from Top of Casing		Drop	Infiltration Rate
		HH:MM	HH:MM	Mins	Hours	Start In.'s	Stop In's	Inches	Inches/Hour
INF-2	1	8:35	8:44	9	0.15	26"	29"	3	20.00
	2	8:45	8:56	11	0.1833	26"	29"	3	16.36
	3	9:01	9:14	13	0.2167	26"	29"	3	13.85
	4	9:15	9:30	15	0.25	26"	29"	3	12.00
	5	9:30	9:51	21	0.35	26"	29"	3	8.57
	6	9:53	10:14	21	0.35	26"	29"	3	8.57
	7	10:14	10:35	21	0.35	26"	29"	3	8.57
Depth of Infiltration Testing: 36"									

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION

DESCRIPTION OF SOILS ENCOUNTENERED IN TEST HOLE

DEPTH	HOLE NO: INF-1	HOLE NO: INF- 2		
G.L	Lawn	Lawn		
0'-6"	Topsoil	Topsoil		
1'-0"	Brown Silty loam	Sandy loam w/ some silt		
1'-6"	Mod. Comp. Light brown silty loam	|		
2'-0"	w/ some clay	|		
2'-6"	|	|		
3'-0"	|	|		
3'-6"				
4'-0"				
4'-6"				
5'-0"				
5'-6"				
6'-0"				
6'-6"				
7'-0"				
7'-6"				
8'-0"				
8'-6"				
9'-0"	Total Depth = 36"	Total Depth = 36"		
9'-6"				
10'-0"				

WAS GROUND WATER ENCOUNTERED? **Yes, during infiltration testing for Hole 1.**
INDICATE LEVEL AT WHICH GROUND WATER WAS ENCOUNTERED: **14"**
INDICATE LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED:
DEEP TEST MADE BY: **Provident Design Engineering, PLLC** DATE OF DEEP TESTS: **10/29/2020**

Design Professional Name: **Ralph P. Peragine, PE** Signature: _____
Address: **7 Skyline Drive**
Hawthorne, New York 10532 Seal:

APPENDIX D

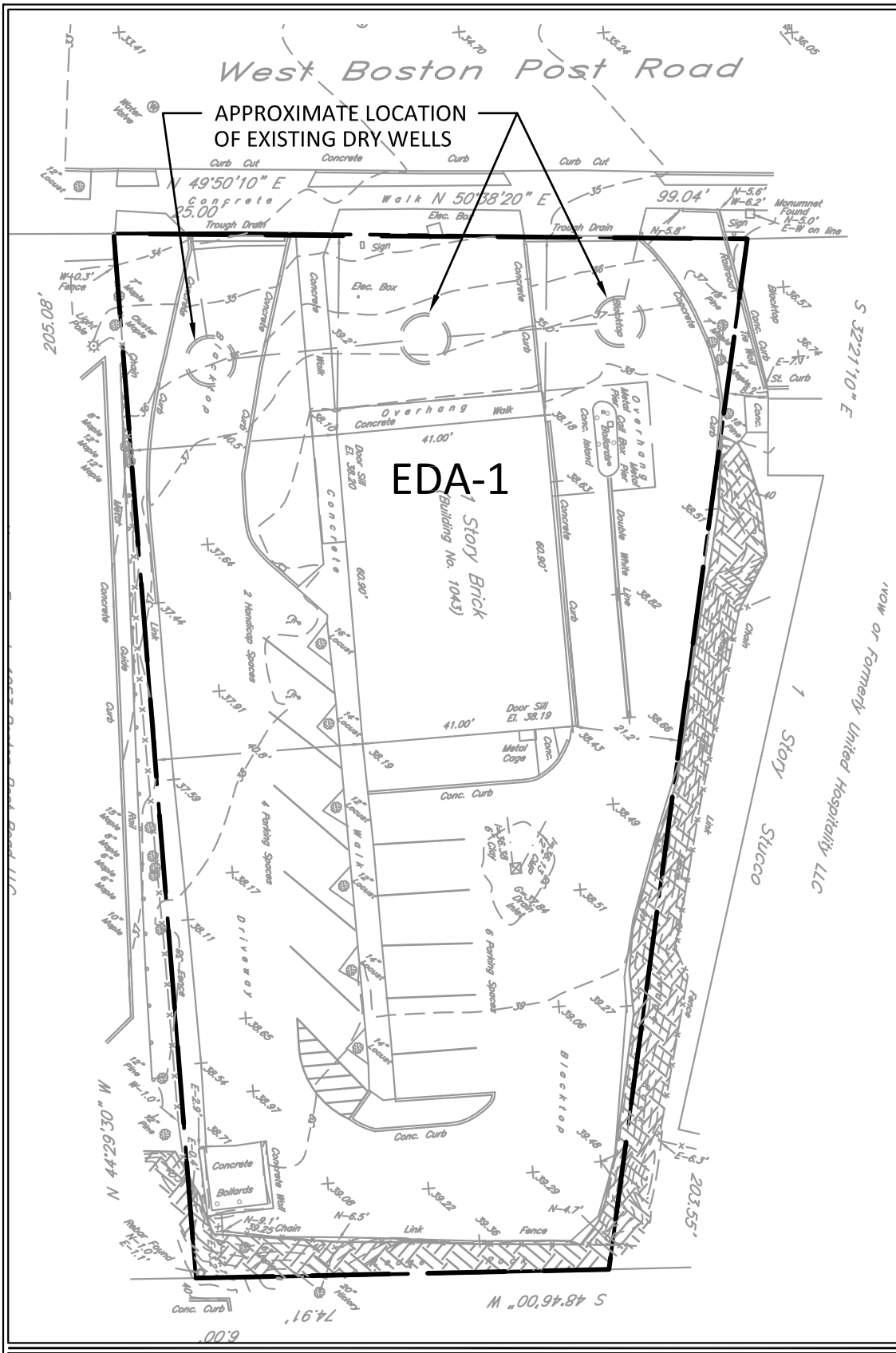
STORM WATER MANAGEMENT CALCULATIONS

APPENDIX D-1

PRE-DEVELOPMENT

DRAINAGE MAP &

HYDROLOGIC CALCULATIONS



Provident design engineering

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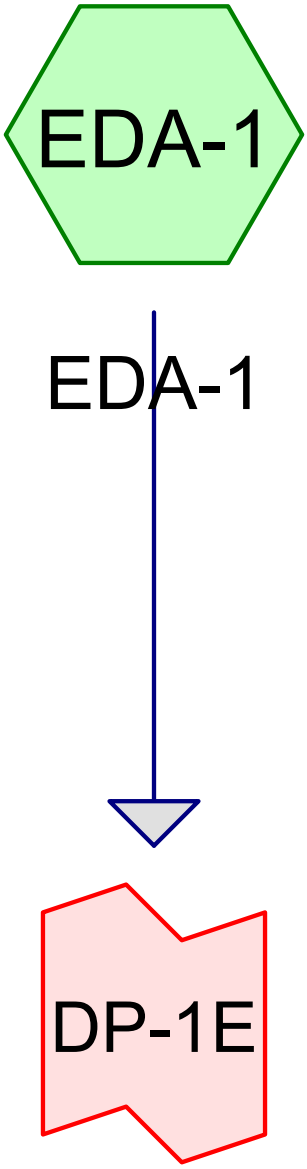
TEL: (914) 592-4040 WWW.PDERESULTS.COM

Chopt
Pre-Development Drainage Map
1043 West Boston Post Road
Village of Mamaroneck, NY

Project No. 20-072
Scale: 1"=30'
June 2021

Figure No. C-1

Q:\PROJECTS-20\20-072 1043 W Boston Post Rd\AutoCAD\SPA\ExistingDrainageMap.dwg



Design Point

Subcat Reach Pond Link

Routing Diagram for 20-072 Hydrologic Model-06-21
Prepared by Provident Design Engineering, PLLC, Printed 6/22/2021

Summary for Subcatchment EDA-1: EDA-1

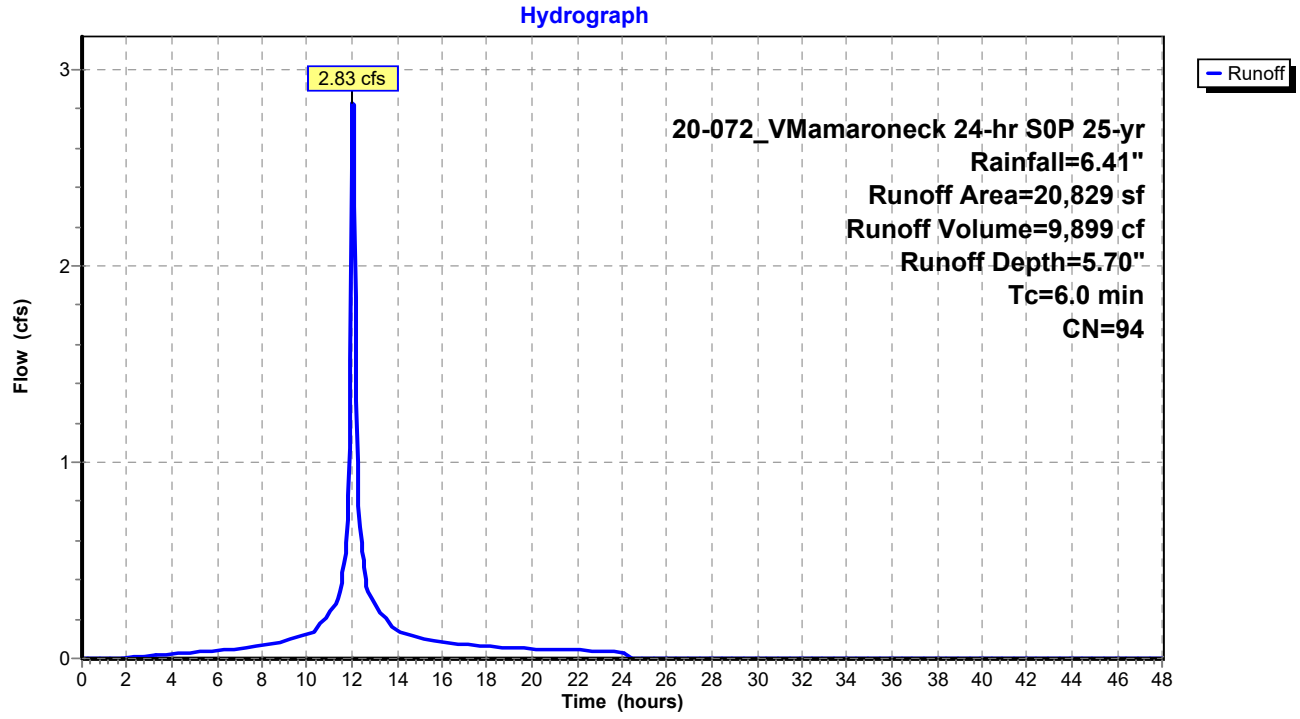
Runoff = 2.83 cfs @ 12.04 hrs, Volume= 9,899 cf, Depth= 5.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 25-yr Rainfall=6.41"

	Area (sf)	CN	Description
	13,641	98	Paved parking, HSG D
	2,503	98	Roofs, HSG D
*	831	89	unvegetated
	3,854	80	>75% Grass cover, Good, HSG D
	20,829	94	Weighted Average
	4,685		22.49% Pervious Area
	16,144		77.51% Impervious Area

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

Subcatchment EDA-1: EDA-1

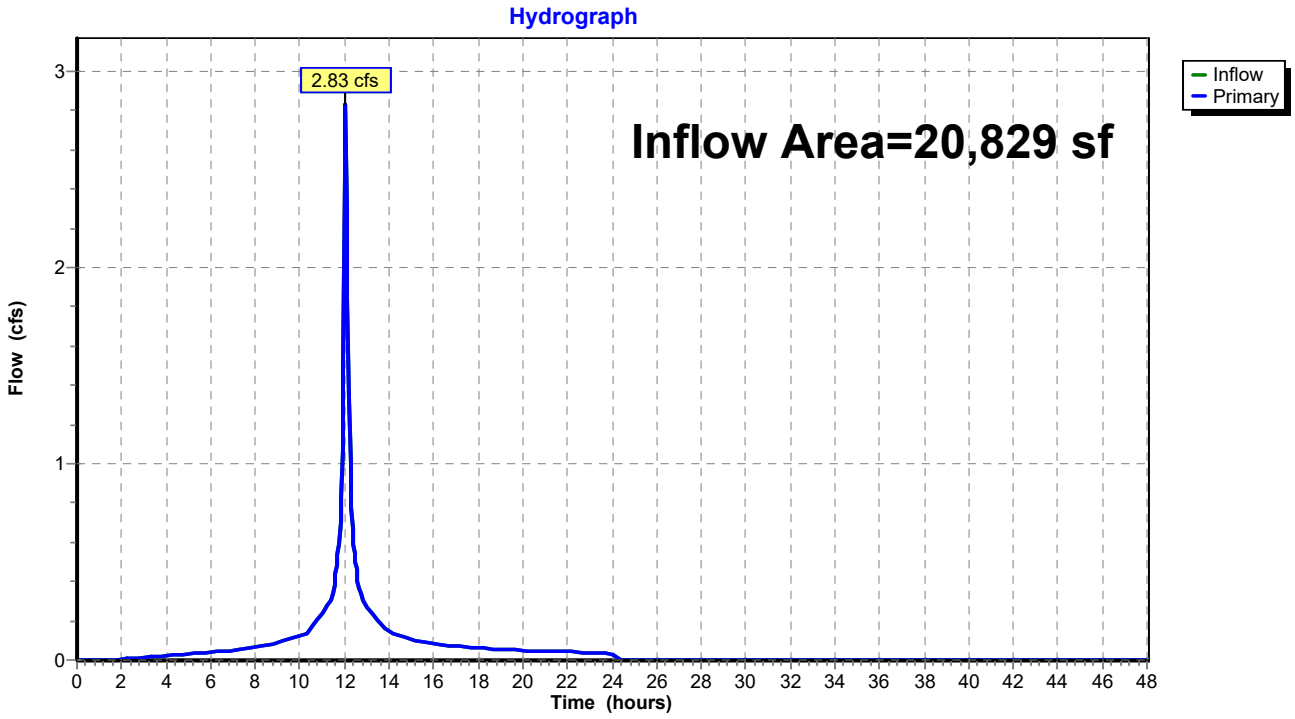


Summary for Link DP-1E: Design Point

Inflow Area = 20,829 sf, 77.51% Impervious, Inflow Depth = 5.70" for 25-yr event
Inflow = 2.83 cfs @ 12.04 hrs, Volume= 9,899 cf
Primary = 2.83 cfs @ 12.04 hrs, Volume= 9,899 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DP-1E: Design Point



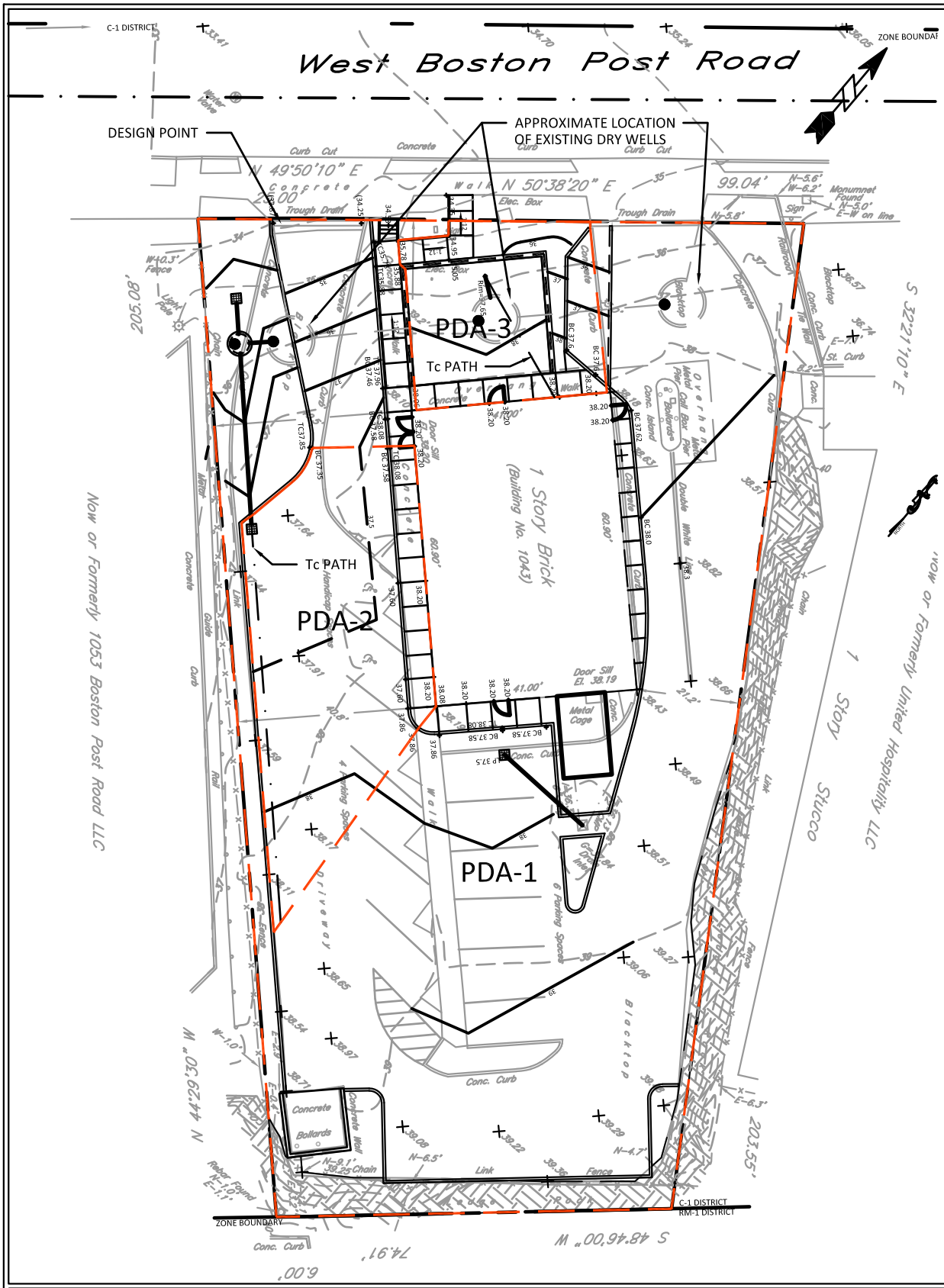
APPENDIX D-2

POST-DEVELOPMENT

DRAINAGE MAP

WATER QUALITY VOLUME (WQV) CALCULATIONS

HYDROLOGIC CALCULATIONS



Provident design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

Chopt
Post-Development Drainage Map
1043 West Boston Post Road
Village of Mamaroneck, NY

Project No. 20-072
Scale: 1"=30'
June 2021

Figure No. C-2

Q:\PROJECTS-20\20-072 1043 W Boston Post Rd\AutoCAD\SPA\ProposedDrainageMap.dwg

Provident Design Engineering, PLLC

Project:	**Chopt** **1043 W Bosaton Post Rd, Mamaroneck, NY**	**Project No.:**	**20-072**
		Date:	June 2021
Subject:	**Drywell Sizing Worksheet**	**Comp. By:**	JLM
		Chckd. By:	RPP

Soil Percolation Rate (Sr)		
Sr = (Vp) cu.ft./(Ap) sq.ft/(Tp) min		
Percolation Test Hole	**INF-2**	
Percolation Hole Diameter =	12	inches
Bottom area of Percolation test hole =	0.785	sq.ft
Area of percolation (Ap) =	0.785	sq.ft
Volume of percolation (Vp) = Ap* h =	0.196	cu.ft
Percolation Time =	7.00	min per inch
Sr =	0.0357	cu.ft/sq.ft/min
Sr =	51.4	cu.ft/sq.ft/day
Clogging Factor =	25%	(Sandy loams soils)
Sr =	38.6	cu.ft/sq.ft/day

Parameter	**1**
Design Year	25
Rainfall, In. =	6.41
Existing CN =	94
S =	**0.64**
Runoff, Q =	**5.70**
Proposed CN	95
S =	**0.53**
Runoff, Q =	**5.82**
Runoff Depth, in. =	**0.12**
Drainage Area, S.F. =	20,829
Required Volume, C.F. =	**2,417**
Oustide Diameter, OD (ft.) =	10.00
Inside Diameter, ID (ft.) =	9.00
Stone Envelope (Ft.) =	2.00
Stone Envelope OD , (Ft.) =	**14.00**
Stone Porosity =	0.40
Drywell Volume/Ft. of Depth =	**63.62**
Stone Volume/Ft. of Depth =	**30.16**
Percolation Rate =	38.57
Percolation Volume =	**7,708.9**
Total Volume/Ft. of Depth =	**7,802.7**
Effective Depth (Ft.) =	1.00
Total Volume, c.f. =	**7,802.7**
Number of Existing Drywells =	3
Total Volume Provided by Existing Drywells =	**23,408**

Provident Design Engineering, PLLC

Project:	**Chopt**	**Project No.:**	**20-072**
		Date:	**June 2021**
Subject:	**Water Quality Volume (WQv)**		
	NYSDEC Methodology	**Comp. By:**	**CSH**
	Drainage Areas: PDA-2 & PDA-3		
		Chckd. By:	**RPP**

WQv - Area PDA-2

$$WQv = \frac{(P)\,(Rv)\,(A)}{12}$$

Where:

P	=	90% Rainfall Event Number (Figure 4.1, NYSDEC Design Manual)			
A	=	Site area in acres (onsite)	=	2,648 S.F.	
Ai	=	Site impervious area in acres (onsite)	=		2,648 S.F.
I	=	Percent of impervious cover, proposed			
Rv	=	0.05 + 0.009 * I			
WQv	=	Required water quality volume (acre-feet)			

Parameter						
P (in.)	**Ai (acres)**	**A (acres)**	**I (%)**	**Rv**	**Water Quality Volume**	
					(Acre-ft)	**(Cu. Ft.)**
1.5	0.06	0.06	100.0	0.95	0.007	314

Redevelopment Criteria

% Impervious Cover			% Water Quality Volume		WQv
Existing	Proposed	Reduction	Standard	Alternative	**(Cu. Ft.)**
100.0%	100.0%	0.0%	25.0%	0.0%	**79**

Water Quality Peak Discharge Rate (Qwq)

Runoff (Qa)	=	WQv/Area
CN	=	1000/[10 + 5P + 10Qa - 10(Qa^2 + 1.25*Qa*P)^1/2]
Ia	=	200/CN - 2
Tc	=	Time of Concentration
qu	=	From Table 4.III TR-55- Urban Hydrology for Urban Watersheds, Type III Storm
Qwq	=	qu*A*Qa

Runoff (Qa) (in.)	**CN**	**Ia**	**Ia/P**	**Tc (hrs)**	**qu (csm/in)**	**Qwq (cfs)**	**Qwq (gal/min)**
0.36	82.3	0.429	0.286	0.10	650	**0.022**	10

Project:	**Chopt**	**Project No.:**	**20-072**
		Date:	**June 2021**
Subject:	**Water Quality Volume (WQv)**		
	NYSDEC Methodology	**Comp. By:**	**CSH**
	Drainage Areas: PDA-2 & PDA-3		
		Chckd. By:	**RPP**

WQv - Area PDA-3

Where:

P	=	90% Rainfall Event Number (Figure 4.1, NYSDEC Design Manual)			
A	=	Site area in acres (onsite)	=	1,408	S.F.
Ai	=	Site impervious area in acres (onsite)	=	1,187	S.F.
I	=	Percent of impervious cover, proposed			
Rv	=	0.05 + 0.009 * I			
WQv	=	Required water quality volume (acre-feet)			

Parameter						
P (in.)	**Ai (acres)**	**A (acres)**	**I (%)**	**Rv**	**Water Quality Volume**	
					(Acre-ft)	**(Cu. Ft.)**
1.5	0.03	0.03	84.3	0.81	0.003	**142**

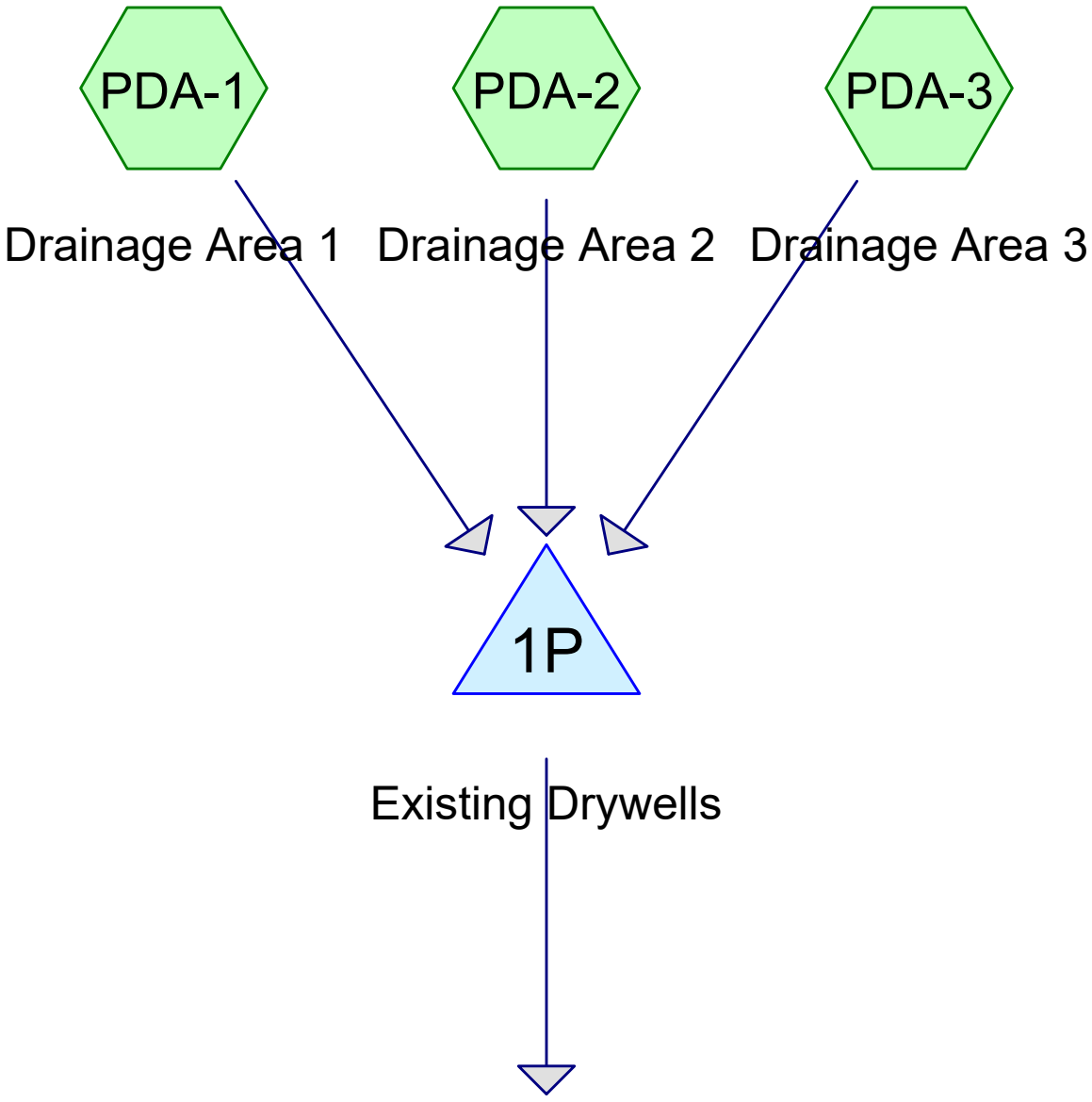
Water Quality Peak Discharge Rate (Qwq)

Runoff (Qa)	=	WQv/Area
CN	=	1000/[10 + 5P + 10Qa - 10(Qa^2 + 1.25*Qa*P)^1/2]
Ia	=	200/CN - 2
Tc	=	Time of Concentration
qu	=	From Table 4.III TR-55- Urban Hydrology for Urban Watersheds, Type III Storm
Qwq	=	qu*A*Qa

Runoff (Qa) (in.)	**CN**	**Ia**	**Ia/P**	**Tc (hrs)**	**qu (csm/in)**	**Qwq (cfs)**	**Qwq (gal/min)**
1.21	97.3	0.055	0.037	0.10	650	**0.075**	34

Total WQv = 221 Cu. Ft.

Reference: NYSDEC Stormwater Management Design Manual



Subcat Reach Pond Link

Routing Diagram for 20-072 Hydrologic Model-06-21
Prepared by Provident Design Engineering, PLLC, Printed 6/22/2021

Summary for Subcatchment PDA-1: Drainage Area 1

Runoff = 0.52 cfs @ 12.05 hrs, Volume= 1,415 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 1-yr WQv Rainfall=1.50"

	Area (sf)	CN	Description
	10,864	98	Paved parking, HSG D
	2,670	98	Roofs, HSG D
	2,427	80	>75% Grass cover, Good, HSG D
*	812	89	Unvegetated
	16,773	95	Weighted Average
	3,239		19.3% Pervious Area
	13,534		80.7% Impervious Area

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

Summary for Subcatchment PDA-2: Drainage Area 2

Runoff = 0.10 cfs @ 12.04 hrs, Volume= 282 cf, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 1-yr WQv Rainfall=1.50"

Area (sf)	CN	Description
2,648	98	Paved parking, HSG D
2,648		100.0% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	86	0.0152	1.24		**Sheet Flow, Parking-Rain Garden** Smooth surfaces n= 0.011 P2= 3.45"
1.2	86	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment PDA-3: Drainage Area 3

Runoff = 0.04 cfs @ 12.05 hrs, Volume= 119 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 1-yr WQv Rainfall=1.50"

Area (sf)	CN	Description
1,187	98	Paved parking, HSG D
221	80	>75% Grass cover, Good, HSG D
1,408	95	Weighted Average
221		15.7% Pervious Area
1,187		84.3% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	31	0.0226	1.19		**Sheet Flow, Permeable Pavers** Smooth surfaces n= 0.011 P2= 3.45"
0.4	31	Total, Increased to minimum Tc = 6.0 min			

Summary for Pond 1P: Existing Drywells

Inflow Area = 20,829 sf, 83.4% Impervious, Inflow Depth = 1.05" for WQv event
Inflow = 0.66 cfs @ 12.05 hrs, Volume= 1,817 cf
Outflow = 0.09 cfs @ 11.85 hrs, Volume= 1,817 cf, Atten= 86%, Lag= 0.0 min
Discarded = 0.09 cfs @ 11.85 hrs, Volume= 1,817 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 24.35' @ 12.45 hrs Surf.Area= 462 sf Storage= 476 cf
Flood Elev= 33.00' Surf.Area= 462 sf Storage= 3,126 cf

Plug-Flow detention time= 31.0 min calculated for 1,815 cf (100% of inflow)
Center-of-Mass det. time= 31.0 min (844.0 - 813.0)

Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	1,006 cf	**14.00'D x 11.00'H Drywell Stone Storage** x 3 5,080 cf Overall - 2,566 cf Embedded = 2,514 cf x 40.0% Voids
#2	24.00'	2,121 cf	**10.00'D x 9.00'H Drywells** x 3 Inside #1 2,566 cf Overall - 6.0" Wall Thickness = 2,121 cf
		3,126 cf	Total Available Storage

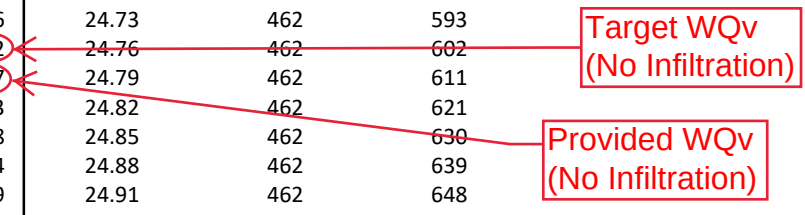
Device	Routing	Invert	Outlet Devices
#1	Discarded	22.00'	**8.570 in/hr Exfiltration over Surface area below 22.00'**
#2	Primary	31.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.90' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.09 cfs @ 11.85 hrs HW=22.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=22.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 1P: Existing Drywells

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
22.00	**462**	0	23.56	462	288
22.03	462	6	23.59	462	294
22.06	462	11	23.62	462	299
22.09	462	17	23.65	462	305
22.12	462	22	23.68	462	310
22.15	462	28	23.71	462	316
22.18	462	33	23.74	462	321
22.21	462	39	23.77	462	327
22.24	462	44	23.80	462	333
22.27	462	50	23.83	462	338
22.30	462	55	23.86	462	344
22.33	462	61	23.89	462	349
22.36	462	67	23.92	462	355
22.39	462	72	23.95	462	360
22.42	462	78	23.98	462	366
22.45	462	83	24.01	462	373
22.48	462	89	24.04	462	382
22.51	462	94	24.07	462	391
22.54	462	100	24.10	462	400
22.57	462	105	24.13	462	409
22.60	462	111	24.16	462	418
22.63	462	116	24.19	462	428
22.66	462	122	24.22	462	437
22.69	462	127	24.25	462	446
22.72	462	133	24.28	462	455
22.75	462	139	24.31	462	464
22.78	462	144	24.34	462	474
22.81	462	150	24.37	462	483
22.84	462	155	24.40	462	492
22.87	462	161	24.43	462	501
22.90	462	166	24.46	462	510
22.93	462	172	24.49	462	520
22.96	462	177	24.52	462	529
22.99	462	183	24.55	462	538
23.02	462	188	24.58	462	547
23.05	462	194	24.61	462	556
23.08	462	200	24.64	462	565
23.11	462	205	24.67	462	575
23.14	462	211	24.70	462	584
23.17	462	216	24.73	462	593
23.20	462	222	24.76	462	602
23.23	462	227	24.79	462	611
23.26	462	233	24.82	462	621
23.29	462	238	24.85	462	630
23.32	462	244	24.88	462	639
23.35	462	249	24.91	462	648
23.38	462	255	24.94	462	657
23.41	462	260	24.97	462	667
23.44	462	266	25.00	462	676
23.47	462	272	25.03	462	685
23.50	462	277	25.06	462	694
23.53	462	283	25.09	462	703



Stage-Area-Storage for Pond 1P: Existing Drywells (continued)

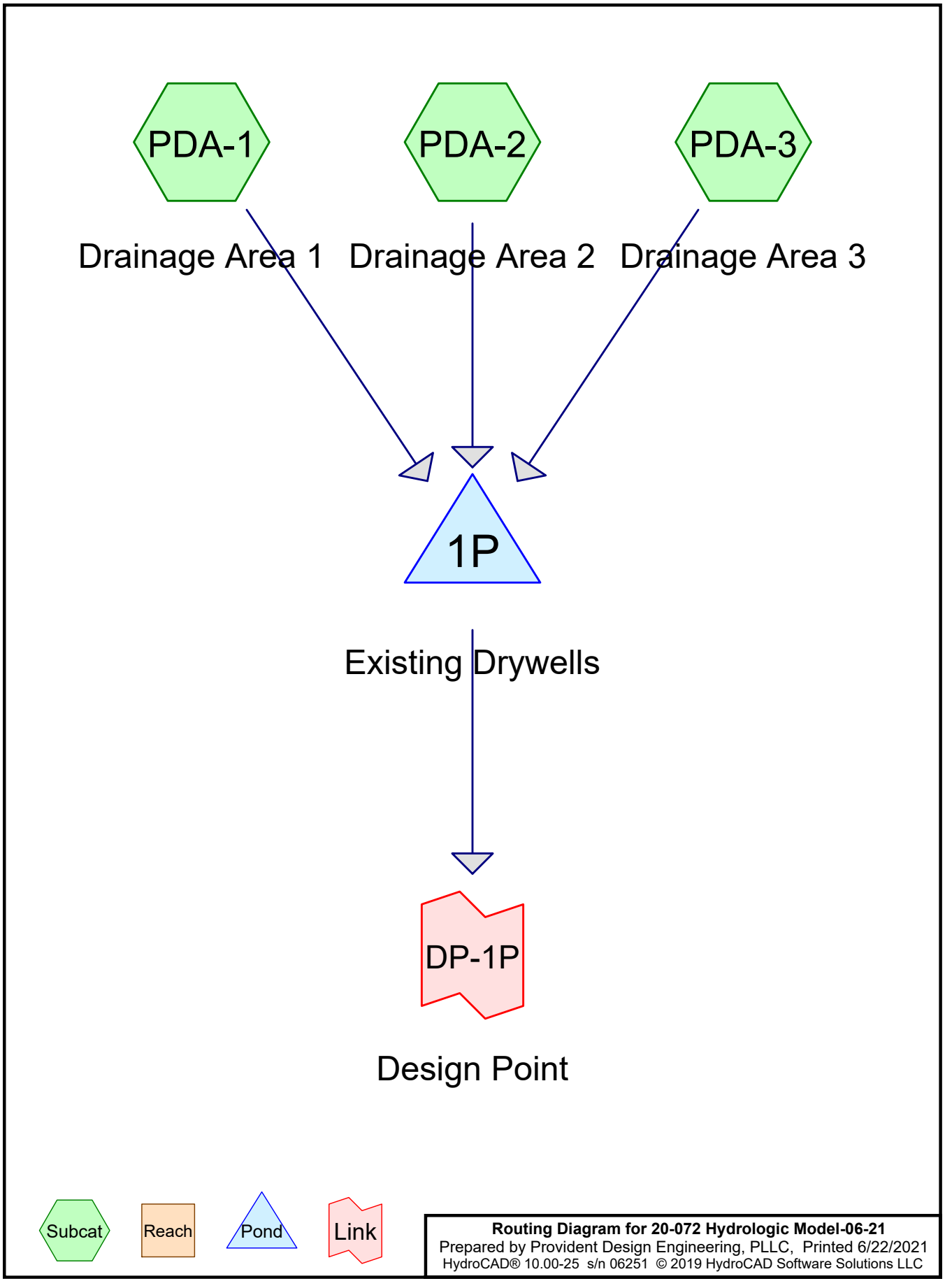
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
25.12	462	713	26.68	462	1,190
25.15	462	722	26.71	462	1,200
25.18	462	731	26.74	462	1,209
25.21	462	740	26.77	462	1,218
25.24	462	749	26.80	462	1,227
25.27	462	758	26.83	462	1,236
25.30	462	768	26.86	462	1,245
25.33	462	777	26.89	462	1,255
25.36	462	786	26.92	462	1,264
25.39	462	795	26.95	462	1,273
25.42	462	804	26.98	462	1,282
25.45	462	814	27.01	462	1,291
25.48	462	823	27.04	462	1,301
25.51	462	832	27.07	462	1,310
25.54	462	841	27.10	462	1,319
25.57	462	850	27.13	462	1,328
25.60	462	860	27.16	462	1,337
25.63	462	869	27.19	462	1,347
25.66	462	878	27.22	462	1,356
25.69	462	887	27.25	462	1,365
25.72	462	896	27.28	462	1,374
25.75	462	905	27.31	462	1,383
25.78	462	915	27.34	462	1,393
25.81	462	924	27.37	462	1,402
25.84	462	933	27.40	462	1,411
25.87	462	942	27.43	462	1,420
25.90	462	951	27.46	462	1,429
25.93	462	961	27.49	462	1,438
25.96	462	970	27.52	462	1,448
25.99	462	979	27.55	462	1,457
26.02	462	988	27.58	462	1,466
26.05	462	997	27.61	462	1,475
26.08	462	1,007	27.64	462	1,484
26.11	462	1,016	27.67	462	1,494
26.14	462	1,025	27.70	462	1,503
26.17	462	1,034	27.73	462	1,512
26.20	462	1,043	27.76	462	1,521
26.23	462	1,053	27.79	462	1,530
26.26	462	1,062	27.82	462	1,540
26.29	462	1,071	27.85	462	1,549
26.32	462	1,080	27.88	462	1,558
26.35	462	1,089	27.91	462	1,567
26.38	462	1,098	27.94	462	1,576
26.41	462	1,108	27.97	462	1,585
26.44	462	1,117	28.00	462	1,595
26.47	462	1,126	28.03	462	1,604
26.50	462	1,135	28.06	462	1,613
26.53	462	1,144	28.09	462	1,622
26.56	462	1,154	28.12	462	1,631
26.59	462	1,163	28.15	462	1,641
26.62	462	1,172	28.18	462	1,650
26.65	462	1,181	28.21	462	1,659

Stage-Area-Storage for Pond 1P: Existing Drywells (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
28.24	462	1,668	29.80	462	2,146
28.27	462	1,677	29.83	462	2,155
28.30	462	1,687	29.86	462	2,164
28.33	462	1,696	29.89	462	2,174
28.36	462	1,705	29.92	462	2,183
28.39	462	1,714	29.95	462	2,192
28.42	462	1,723	29.98	462	2,201
28.45	462	1,733	30.01	462	2,210
28.48	462	1,742	30.04	462	2,220
28.51	462	1,751	30.07	462	2,229
28.54	462	1,760	30.10	462	2,238
28.57	462	1,769	30.13	462	2,247
28.60	462	1,778	30.16	462	2,256
28.63	462	1,788	30.19	462	2,265
28.66	462	1,797	30.22	462	2,275
28.69	462	1,806	30.25	462	2,284
28.72	462	1,815	30.28	462	2,293
28.75	462	1,824	30.31	462	2,302
28.78	462	1,834	30.34	462	2,311
28.81	462	1,843	30.37	462	2,321
28.84	462	1,852	30.40	462	2,330
28.87	462	1,861	30.43	462	2,339
28.90	462	1,870	30.46	462	2,348
28.93	462	1,880	30.49	462	2,357
28.96	462	1,889	30.52	462	2,367
28.99	462	1,898	30.55	462	2,376
29.02	462	1,907	30.58	462	2,385
29.05	462	1,916	30.61	462	2,394
29.08	462	1,925	30.64	462	2,403
29.11	462	1,935	30.67	462	2,413
29.14	462	1,944	30.70	462	2,422
29.17	462	1,953	30.73	462	2,431
29.20	462	1,962	30.76	462	2,440
29.23	462	1,971	30.79	462	2,449
29.26	462	1,981	30.82	462	2,458
29.29	462	1,990	30.85	462	2,468
29.32	462	1,999	30.88	462	2,477
29.35	462	2,008	30.91	462	2,486
29.38	462	2,017	30.94	462	2,495
29.41	462	2,027	30.97	462	2,504
29.44	462	2,036	31.00	462	2,514
29.47	462	2,045	31.03	462	2,523
29.50	462	2,054	31.06	462	2,532
29.53	462	2,063	31.09	462	2,541
29.56	462	2,073	31.12	462	2,550
29.59	462	2,082	31.15	462	2,560
29.62	462	2,091	31.18	462	2,569
29.65	462	2,100	31.21	462	2,578
29.68	462	2,109	31.24	462	2,587
29.71	462	2,118	31.27	462	2,596
29.74	462	2,128	31.30	462	2,605
29.77	462	2,137	31.33	462	2,615

Stage-Area-Storage for Pond 1P: Existing Drywells (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
31.36	462	2,624
31.39	462	2,633
31.42	462	2,642
31.45	462	2,651
31.48	462	2,661
31.51	462	2,670
31.54	462	2,679
31.57	462	2,688
31.60	462	2,697
31.63	462	2,707
31.66	462	2,716
31.69	462	2,725
31.72	462	2,734
31.75	462	2,743
31.78	462	2,753
31.81	462	2,762
31.84	462	2,771
31.87	462	2,780
31.90	462	2,789
31.93	462	2,798
31.96	462	2,808
31.99	462	2,817
32.02	462	2,826
32.05	462	2,835
32.08	462	2,844
32.11	462	2,854
32.14	462	2,863
32.17	462	2,872
32.20	462	2,881
32.23	462	2,890
32.26	462	2,900
32.29	462	2,909
32.32	462	2,918
32.35	462	2,927
32.38	462	2,936
32.41	462	2,945
32.44	462	2,955
32.47	462	2,964
32.50	462	2,973
32.53	462	2,982
32.56	462	2,991
32.59	462	3,001
32.62	462	3,010
32.65	462	3,019
32.68	462	3,028
32.71	462	3,037
32.74	462	3,047
32.77	462	3,056
32.80	462	3,065
32.83	462	3,074
32.86	462	3,083
32.89	462	3,093
32.92	462	3,102
32.95	462	3,111
32.98	462	**3,120**



Routing Diagram for 20-072 Hydrologic Model-06-21
Prepared by Provident Design Engineering, PLLC, Printed 6/22/2021

Summary for Subcatchment PDA-1: Drainage Area 1

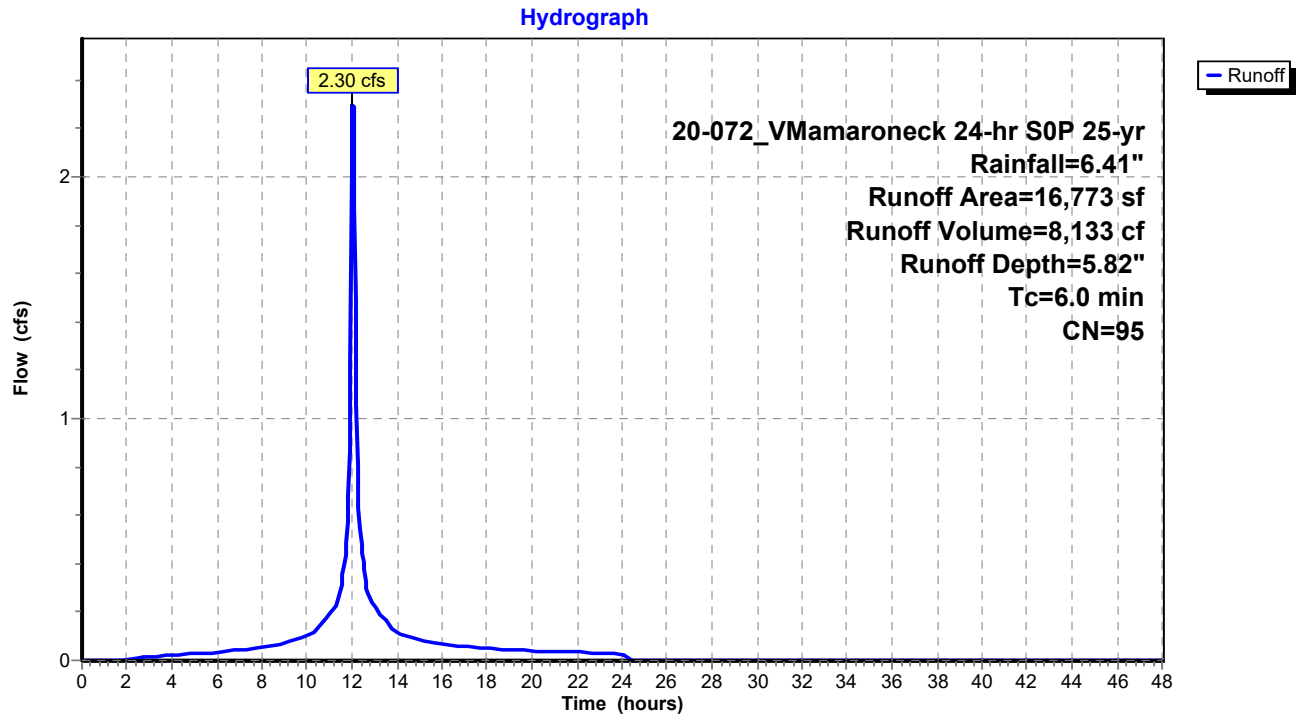
Runoff = 2.30 cfs @ 12.04 hrs, Volume= 8,133 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 25-yr Rainfall=6.41"

	Area (sf)	CN	Description
	10,864	98	Paved parking, HSG D
	2,670	98	Roofs, HSG D
	2,427	80	>75% Grass cover, Good, HSG D
*	812	89	Unvegetated
	16,773	95	Weighted Average
	3,239		19.3% Pervious Area
	13,534		80.7% Impervious Area

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

Subcatchment PDA-1: Drainage Area 1



Summary for Subcatchment PDA-2: Drainage Area 2

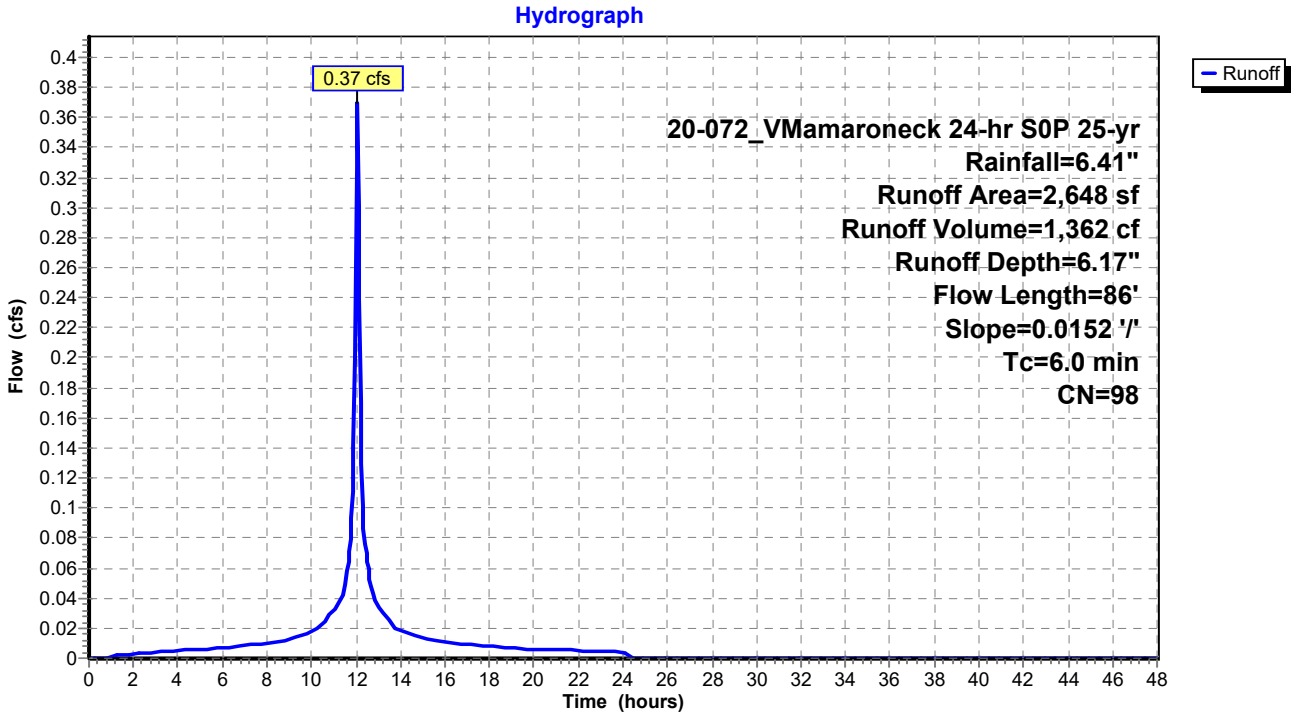
Runoff = 0.37 cfs @ 12.04 hrs, Volume= 1,362 cf, Depth= 6.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 25-yr Rainfall=6.41"

Area (sf)	CN	Description
2,648	98	Paved parking, HSG D
2,648		100.0% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	86	0.0152	1.24		**Sheet Flow, Parking-Rain Garden** Smooth surfaces n= 0.011 P2= 3.45"
1.2	86	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PDA-2: Drainage Area 2



Summary for Subcatchment PDA-3: Drainage Area 3

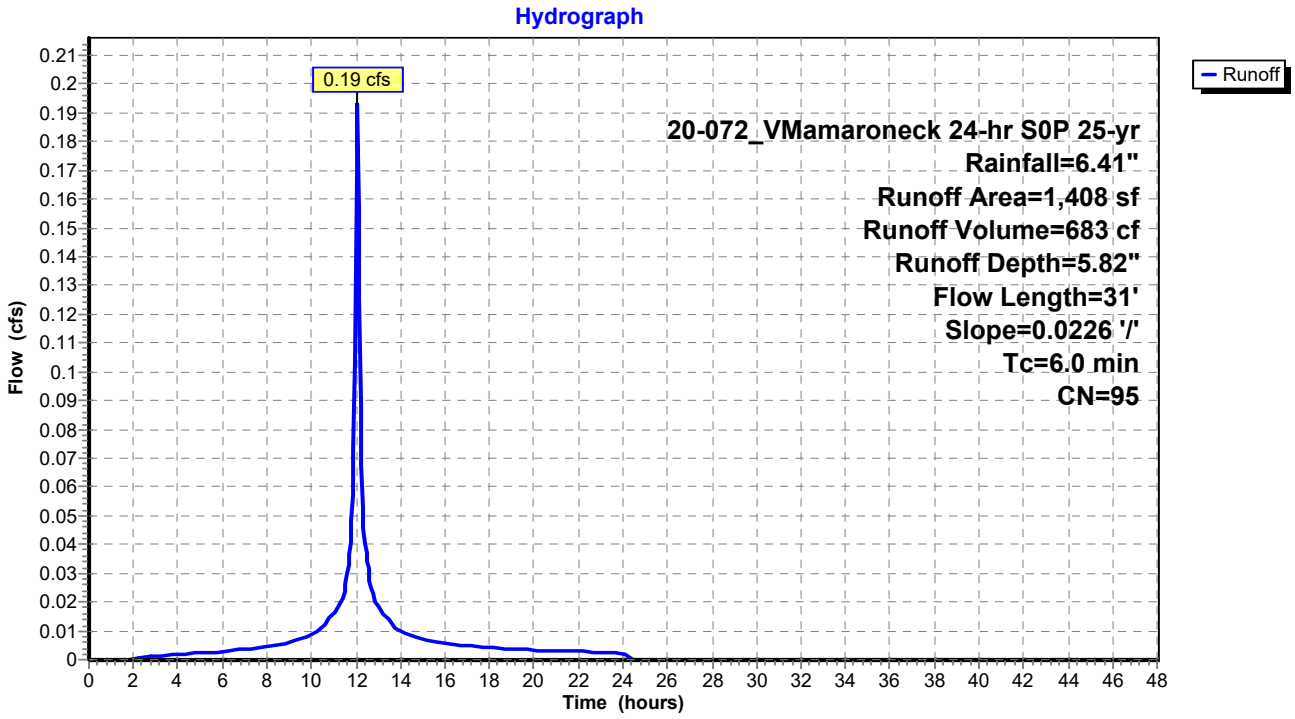
Runoff = 0.19 cfs @ 12.04 hrs, Volume= 683 cf, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
20-072_VMamaroneck 24-hr S0P 25-yr Rainfall=6.41"

Area (sf)	CN	Description
1,187	98	Paved parking, HSG D
221	80	>75% Grass cover, Good, HSG D
1,408	95	Weighted Average
221		15.7% Pervious Area
1,187		84.3% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	31	0.0226	1.19		**Sheet Flow, Permeable Pavers** Smooth surfaces n= 0.011 P2= 3.45"
0.4	31	Total, Increased to minimum Tc = 6.0 min			

Subcatchment PDA-3: Drainage Area 3



Summary for Pond 1P: Existing Drywells

Inflow Area = 20,829 sf, 83.4% Impervious, Inflow Depth = 5.86" for 25-yr event
Inflow = 2.86 cfs @ 12.04 hrs, Volume= 10,178 cf
Outflow = 2.11 cfs @ 12.14 hrs, Volume= 10,178 cf, Atten= 26%, Lag= 5.7 min
Discarded = 0.09 cfs @ 9.15 hrs, Volume= 7,419 cf
Primary = 2.01 cfs @ 12.14 hrs, Volume= 2,759 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 31.92' @ 12.14 hrs Surf.Area= 462 sf Storage= 2,796 cf
Flood Elev= 33.00' Surf.Area= 462 sf Storage= 3,126 cf

Plug-Flow detention time= 181.4 min calculated for 10,167 cf (100% of inflow)
Center-of-Mass det. time= 181.5 min (942.8 - 761.2)

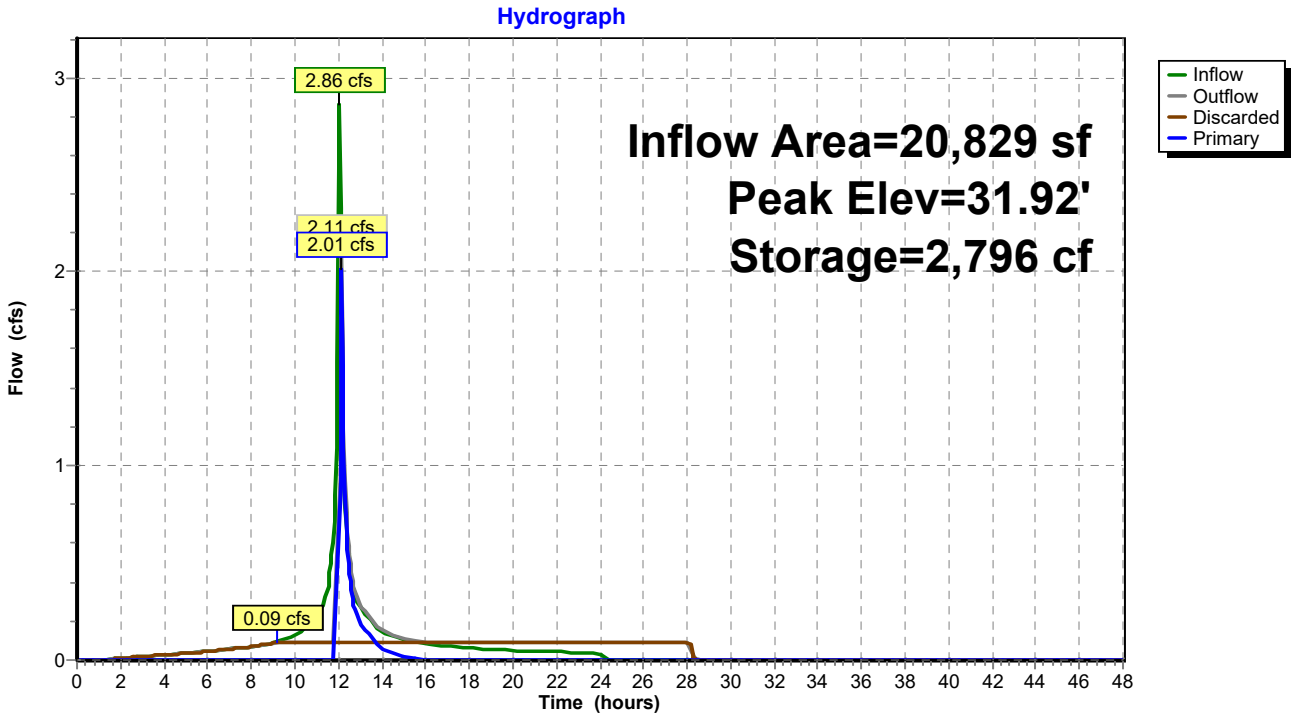
Volume	Invert	Avail.Storage	Storage Description
#1	22.00'	1,006 cf	**14.00'D x 11.00'H Drywell Stone Storage** x 3 5,080 cf Overall - 2,566 cf Embedded = 2,514 cf x 40.0% Voids
#2	24.00'	2,121 cf	**10.00'D x 9.00'H Drywells** x 3 Inside #1 2,566 cf Overall - 6.0" Wall Thickness = 2,121 cf
		3,126 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Discarded	22.00'	**8.570 in/hr Exfiltration over Surface area below 22.00'**
#2	Primary	31.00'	**12.0" Round Culvert** L= 10.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 31.00' / 30.90' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.09 cfs @ 9.15 hrs HW=22.11' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=1.96 cfs @ 12.14 hrs HW=31.90' (Free Discharge)
└**2=Culvert** (Barrel Controls 1.96 cfs @ 3.46 fps)

Pond 1P: Existing Drywells

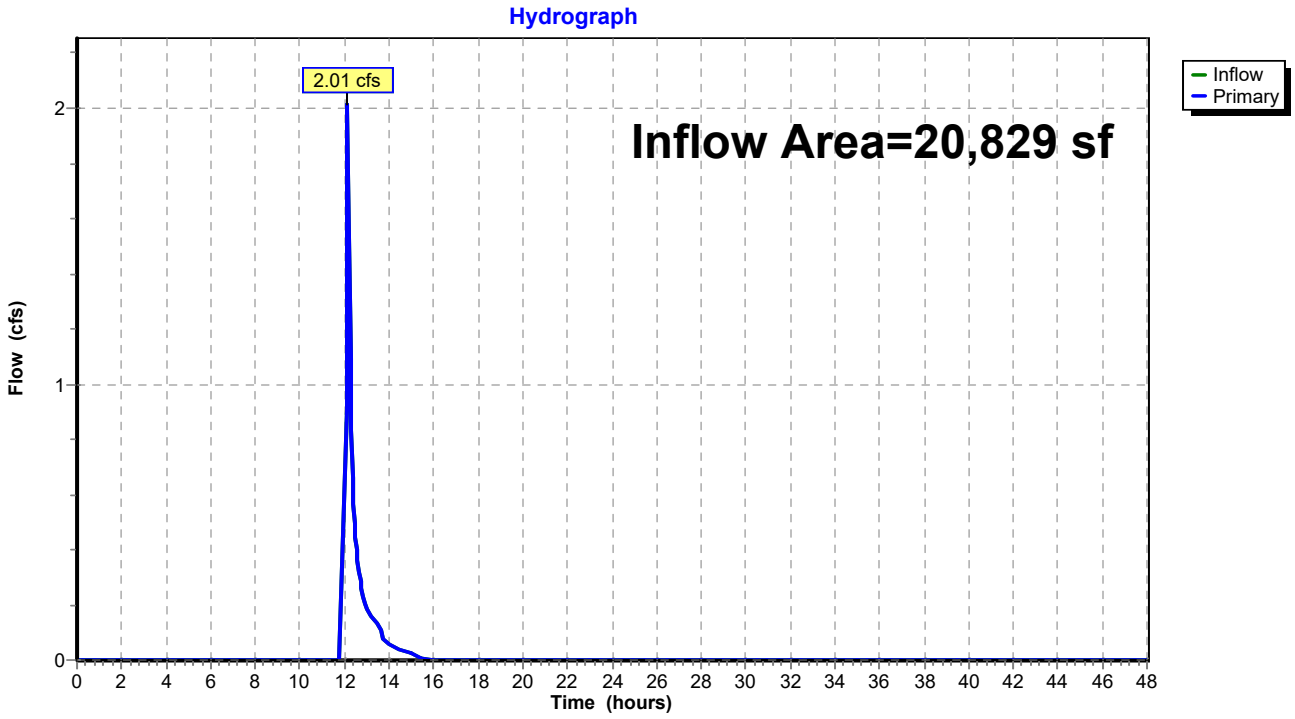


Summary for Link DP-1P: Design Point

Inflow Area = 20,829 sf, 83.4% Impervious, Inflow Depth = 1.59" for 25-yr event
Inflow = 2.01 cfs @ 12.14 hrs, Volume= 2,759 cf
Primary = 2.01 cfs @ 12.14 hrs, Volume= 2,759 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link DP-1P: Design Point



APPENDIX E

CONTRACTOR/SUB-CONTRACTOR SWPPP CERTIFICATION

CONTRACTOR/SUB-CONTRACTOR SWPPP CERTIFICATION

Project Name: CHOPT Restaurant

Address: 1043 West Boston Post Road

Village of Mamaroneck, NY

In accordance with the requirements of Chapter 294 of the Village of Mamaroneck Code, the Contractor and Sub-Contractor are required to certify that they understand and agree with the terms and conditions of the SWPPP and their responsibilities for its implementation. Any Contractor or Sub-Contractor performing an activity that involves soil disturbance shall provide a signed copy of this certification to the Engineer and/or the Village Stormwater Management Officer prior to undertaking any land development activity.

"I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that it is unlawful for any person to cause or contribute to a violation of water quality standards."

Company Name: _____

Address: _____

_____

Tel.: _____

Fax: _____

Description of Specific SWPPP Elements Company is Responsible For:

_____

_____

_____ _____

Signature **Date**

_____ _____

Printed Name **Title**

Name and Title of Trained Individual(s) Responsible for SWPPP Implementation:

_____

APPENDIX F

SAMPLE STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT

The sample agreement set forth herein is provided for informational purposes only and should not be construed as final. The final Agreement shall be prepared by the Owner in consultation with, and in a form acceptable to, the Village Attorney.

STORMWATER MANAGEMENT
Sample Stormwater Control Facility Maintenance Agreement

Whereas, the Village of Mamaroneck ("Municipality") and the _____ ("Facility Owner") desire to enter into an agreement to provide for the long-term maintenance and continuation of stormwater control measures approved by the Municipality for the below named project, and
Whereas, the Municipality and the Facility Owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components.

Therefore, the Municipality and the Facility Owner agree as follows:

1. This agreement binds the Municipality and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.
2. The facility owner shall maintain, clean, repair, replace and continue the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices, stormwater ponds and wetlands, bioretention and rain gardens, tree boxes, green roofs, stormwater planters, rain tanks and cisterns, and porous pavement.
3. The facility owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.
4. The facility owner shall provide for the periodic inspection of the stormwater control measures at the frequency recommended in the Design Manual, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.
5. The facility owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality.
6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.
7. The facility owner shall provide to the Municipality within 30 days of the date of this agreement, a security for the maintenance and continuation of the stormwater control measures in the form of (a Bond, letter of credit or escrow account).

8. This agreement shall be recorded in the Office of the County Clerk, County of Westchester together with the deed for the common property and shall be included in the offering plan and/or prospectus approved pursuant to _____.
9. If ever the Municipality determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a lien against the property.
10. This agreement is effective _____.