STORMWATER MANAGEMENT PLAN & DRAINAGE ANALYSIS

167 Judson Avenue
Village of Dobbs Ferry - New York

November 13, 2020
Revised April 28, 2021

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INTRODUCTION

This Stormwater Management Plan presents the proposed Best Management Practices (BMPs) to control erosion and sedimentation during and upon construction of the proposed pool and patio at 167 Judson Avenue in the Village of Dobbs Ferry, Westchester County, New York.

This plan consists of this narrative and a plan set entitled: “Proposed Pool, 167 Judson Avenue, Village of Dobbs Ferry, Westchester County - New York”, all as prepared by Hudson Engineering and Consulting, P.C., Elmsford, New York, last updated April 28, 2020. The design is in accordance with the Village of Dobbs Ferry’s requirements. Since the project disturbance is less than one acre the New York State Department of Environmental Conservation [NYSDEC] stormwater regulations are not applicable.

METHODOLOGY

The stormwater analysis was developed utilizing the Soil Conservation Service (SCS) TR-20, 24-hour Type III storm events (HydroCad®) to assist with the design of the mitigating practices. The “Curve Number” (CN) value determination is based on soil type, vegetation and land use. The design is in accordance with the Village of Dobbs Ferry’s stormwater regulations. The “Time of Concentration” (T_c) was determined as a direct entry of one-minute. The CN and T_c data are input into the computer model. The project site was modeled for the 100-year Type III – 24-hour storm event.

PRE-DESIGN INVESTIGATIVE ANALYSIS

A pre-design investigative analysis was performed including a percolation and deep-hole test at the location shown on the plans. The percolation test was performed in the vicinity of the potential stormwater mitigation practice [TP-1] until a constant rate was achieved, the result as follows:

- TP-1: A percolation rate of 5.66-minutes per inch (10.6-inches per hour) was observed. A rate of 8.0-inches per hour was utilized in the design.

One (1) deep test hole was excavated and labeled TP-1 as shown on the plans.

- TP-1 was excavated to a depth of 96-inches. The test revealed topsoil to a depth of 12-inches and fine sandy loam to the invert. Ledge rock was encountered at the invert. No groundwater was observed.

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

SITE CONDITIONS

The project site is located on the east side of Judson Avenue, north of Beechdale Road. The site generally slopes moderately from the east side of the property to the west side. The soil classification, based upon Westchester County Soil Mapping, is Urban Land-Woodbridge complex, 3 to 8 percent slopes and Carlton fine sandy loam, 8 to 15 percent slopes.

POST-DEVELOPED CONDITION

The project site was modeled as one watershed, *Watershed 1*. It contains approximately 1,056 square feet of impervious area in the form of the proposed pool and patio. The CN value for this area is 98 and the T_c is a direct entry of 1 minute. The stormwater runoff from this tributary area is conveyed via a comprehensive drainage system to four (4) Cultec Recharger® 330XLHD storm chambers set in one foot of gravel at the sides and at the invert. The system is designed to fully accept (no release) the entire stormwater runoff volume for the 100-year storm event from the watershed and ex-filtrate the runoff into the surrounding soil sub-strata.

CONSTRUCTION SEQUENCING

1. Place orange construction fencing around areas to be used for ex-filtration to avoid compaction
2. Install tree protection on trees as noted on plans.
3. Selective vegetation removal for silt fence installation.
4. Install silt fence down slope of all areas to be disturbed as shown on the plan.
5. Strip topsoil and stockpile at the locations specified on the plans (up gradient of erosion control measures). Temporarily stabilize topsoil stockpiles (hydroseed during May 1st through October 31st planting season or by covering with a tarpaulin(s) November 1st through April 30th. Install silt fence around toe of slope.
6. Demolish any existing site features and/or structures noted as being removed on the construction documents from phase 1, and dispose of off-site.
7. Rough grade site.
8. Excavate and install ex-filtration systems per manufacturer's recommendations and requirements.
9. Install drainage work tributary to ex-filtration systems from proposed work.
10. Excavate and construct foundations for new pool.
11. Construct pool and patios.
12. Fine grade and seed all disturbed areas. Clean drain lines. Clean ex-filtration systems. Ensure grass stand is achieved.
13. Install 4”-6” topsoil, fine grade, seed the entire project site and install landscape plantings. Spread salt hay over seeded areas.

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

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

EROSION AND SEDIMENT CONTROL COMPONENTS

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

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

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

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

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

- **SILT FENCE**

  Silt fence (geo-textile filter cloth) shall be placed in locations depicted on the approved plans. The purpose of the silt fence is to reduce the velocity of sediment laden stormwater from small drainage areas and to intercept the transported sediment load. In general, silt fence shall be used at the toe of

slopes or intermediately within slopes where obvious channel concentration of stormwater is not present.

Maintenance

Silt fencing shall be inspected at a minimum of once per week and prior to and within 24 hours following a rain event ½" or greater. Inspections shall include ensuring that the fence material is tightly secured to the woven wire and the wire is secured to the wood posts. In addition, overlapping filter fabric shall be secured and the fabric shall be maintained a minimum of six (6) inches below grade. In the event that any "bulges" develop in the fence, that section of fence shall be replaced within 24 hours with new fence section. Any sediment build-up against the fence shall be removed within 24 hours and deposited on-site a minimum of 100 feet outside of any wetland or watercourse.

The installation of silt fencing will be maintained or replaced until the fencing is no longer necessary. Once the site is stabilized, all silt fences shall be removed. The immediate area occupied by the silt fence will be shaped to an acceptable grade and stabilized.

- **TREE PROTECTION**

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

Maintenance

The snow fence shall be inspected daily to ensure that the perimeter of the fence remains at the drip-line of the tree to be preserved. Any damaged portions of the fence shall be repaired or replaced within 24 hours. Care shall also be taken to ensure that no construction equipment is driven or parked within the drip-line of the tree to be preserved.

- **SOIL/SHOT ROCK STOCKPILING**

All soil and shot rock stripped from the construction area during grubbing and mass grading shall be stockpiled in locations shown on the plans, but in no case shall they be placed within 100' of a wetland or watercourse. The stockpiled soils shall be re-used during finish-grading to provide a suitable growing medium for plant establishment. Soil stockpiles shall be protected from erosion by vegetating the stockpile with rapidly –germinating grass seed (during the May 1st – October 30$^{th)}$ planting season or covering the stockpile with tarpaulin the remainder of the year. Install silt fence around toe of slope.

Maintenance

Sediment controls (silt fence) surrounding the stockpiles shall be inspected according to the recommended maintenance outline above. *All stockpiles shall be inspected for signs of erosion or problems with seed establishment weekly or tarpaulin and prior to and within 24 hours following a rain event ½" or greater.*

- **GENERAL LAND GRADING**

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

- **SURFACE STABILIZATION**

All disturbed areas will be protected from erosion with the use of vegetative measures (i.e., grass seed mix, sod) hydromulch netting or hay. When activities temporarily cease during construction, soil stockpiles and exposed soil should be stabilized by seed, mulch or other appropriate measures within 7 days after construction activity has ceased, or 24 hours prior to a rain event ½" or greater.

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

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

As mentioned above, temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used to the satisfaction of the Town Engineer. Materials that may be used for mulching include straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, sod or hydromulch. In site areas where significant erosion potential exists (steep slopes) and where specifically directed by the Town's representative, Curlex Excelsior erosion control blankets (manufactured by American Excelsior, or

approved equal) shall be installed. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish-grade and to remain undisturbed.

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

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

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

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

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

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

  2. Grass seed shall be evenly sown by mechanical seeder at a rate of 3.0-4.0 pounds per 1,000 square feet.

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

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

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

  6. <u>Lawn seed mix</u> shall include:

     a. General Recreation areas and lawns:

     - 65% Kentucky Bluegrass blend
     - 20% Perennial Rye
     - 15% Fine fescue

     Sod may be used as an alternate to seeding in select areas.

     Slow release fertilizers will be applied by hand to horticultural plantings as part of regular horticultural maintenance program and shall be limited to a single spring application.

CONSTRUCTION PRACTICES TO MINIMIZE STORMWATER CONTAMINATION

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

- Building materials, garbage, and debris shall be cleaned up daily and deposited into dumpsters, which will be periodically removed from the site and appropriately disposed of.

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

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

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

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

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

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

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

- Sanitary waste will be collected from portable units a minimum of two times a week to avoid overfilling.

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

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

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

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

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

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

STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM

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

- Erosion & Sediment Control Maintenance:

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

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

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

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

- Sumps − Catch Basin/Drain Inlets

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

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

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

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

- Subsurface Exfiltration Chambers:

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

The permanent maintenance program will be managed by the future homeowners upon completion of construction and acceptance of the improvements.

CONCLUSION

The stormwater management plan proposed meets all the requirements set forth by the Village of Dobbs Ferry. Design modification requirements that may occur during the approval process will be performed and submitted for review to the Village of Dobbs Ferry

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	73.869 degrees West
Latitude	41.004 degrees North
Elevation	0 feet
Date/Time	Tue, 03 Nov 2020 11:06:14 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.33	0.51	0.63	0.82	1.03	1.29	**1yr**	0.89	1.23	1.48	1.84	2.27	2.82	3.20	**1yr**	2.49	3.08	3.57	4.29	4.93	**1yr**
2yr	0.40	0.62	0.77	1.01	1.27	1.59	**2yr**	1.10	1.49	1.83	2.26	2.78	3.42	3.85	**2yr**	3.03	3.70	4.26	5.05	5.73	**2yr**
5yr	0.47	0.73	0.91	1.22	1.57	1.98	**5yr**	1.35	1.84	2.29	2.83	3.49	4.28	4.87	**5yr**	3.78	4.68	5.43	6.33	7.08	**5yr**
10yr	0.53	0.83	1.04	1.42	1.84	2.34	**10yr**	1.59	2.17	2.71	3.37	4.14	5.06	5.82	**10yr**	4.48	5.59	6.52	7.50	8.32	**10yr**
25yr	0.61	0.97	1.24	1.71	2.28	2.93	**25yr**	1.96	2.69	3.41	4.24	5.21	6.34	7.37	**25yr**	5.61	7.08	8.33	9.40	10.29	**25yr**
50yr	0.69	1.11	1.42	1.99	2.68	3.47	**50yr**	2.31	3.17	4.05	5.04	6.19	7.51	8.81	**50yr**	6.65	8.47	10.02	11.15	12.10	**50yr**
100yr	0.78	1.27	1.63	2.32	3.16	4.12	**100yr**	2.72	3.75	4.82	6.00	7.36	8.91	10.55	**100yr**	7.89	10.14	12.06	13.23	14.22	**100yr**
200yr	0.89	1.45	1.88	2.69	3.72	4.89	**200yr**	3.21	4.42	5.73	7.14	8.75	10.57	12.63	**200yr**	9.36	12.14	14.52	15.70	16.73	**200yr**
500yr	1.06	1.75	2.28	3.31	4.64	6.13	**500yr**	4.00	5.52	7.20	8.99	11.00	13.27	16.03	**500yr**	11.75	15.41	18.57	19.70	20.75	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.75	0.93	1.13	**1yr**	0.80	1.10	1.31	1.54	2.17	2.45	2.58	**1yr**	2.17	2.48	3.28	4.01	4.40	**1yr**
2yr	0.38	0.59	0.73	0.98	1.21	1.46	**2yr**	1.05	1.43	1.67	2.17	2.69	3.32	3.73	**2yr**	2.94	3.59	4.12	4.88	5.56	**2yr**
5yr	0.41	0.64	0.79	1.09	1.38	1.70	**5yr**	1.19	1.66	1.96	2.52	3.16	3.97	4.52	**5yr**	3.51	4.34	4.99	5.82	6.52	**5yr**
10yr	0.44	0.68	0.84	1.18	1.52	1.88	**10yr**	1.31	1.84	2.19	2.76	3.57	4.55	5.21	**10yr**	4.03	5.01	5.73	6.62	7.28	**10yr**
25yr	0.48	0.73	0.91	1.29	1.70	2.16	**25yr**	1.47	2.11	2.54	3.11	4.19	5.48	6.29	**25yr**	4.85	6.05	6.84	7.88	8.33	**25yr**
50yr	0.50	0.76	0.95	1.37	1.84	2.38	**50yr**	1.59	2.32	2.85	3.38	4.72	6.30	7.24	**50yr**	5.58	6.96	7.78	8.97	9.12	**50yr**
100yr	0.53	0.80	1.00	1.44	1.98	2.60	**100yr**	1.71	2.54	3.17	3.64	5.29	7.27	8.34	**100yr**	6.44	8.02	8.89	10.21	9.94	**100yr**
200yr	0.54	0.82	1.04	1.50	2.10	2.82	**200yr**	1.81	2.76	3.55	3.90	5.96	8.42	9.60	**200yr**	7.45	9.23	10.12	11.61	10.77	**200yr**
500yr	0.57	0.84	1.08	1.57	2.24	3.14	**500yr**	1.93	3.07	4.11	4.22	7.00	10.21	11.49	**500yr**	9.03	11.04	11.98	13.76	11.87	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.37	0.58	0.70	0.95	1.16	1.39	**1yr**	1.01	1.36	1.61	2.11	2.49	3.03	3.49	**1yr**	2.68	3.35	3.86	4.61	5.22	**1yr**
2yr	0.42	0.64	0.79	1.07	1.32	1.60	**2yr**	1.14	1.56	1.82	2.36	2.90	3.55	3.99	**2yr**	3.14	3.84	4.46	5.23	6.03	**2yr**
5yr	0.52	0.80	1.00	1.37	1.74	2.04	**5yr**	1.50	2.00	2.36	3.06	3.81	4.60	5.26	**5yr**	4.07	5.06	5.84	6.83	7.63	**5yr**
10yr	0.63	0.97	1.20	1.67	2.16	2.49	**10yr**	1.87	2.43	2.88	3.74	4.67	5.60	6.52	**10yr**	4.95	6.27	7.23	8.36	9.26	**10yr**
25yr	0.81	1.24	1.54	2.20	2.89	3.25	**25yr**	2.50	3.17	3.76	4.95	6.16	7.24	8.65	**25yr**	6.41	8.31	9.59	10.96	11.98	**25yr**
50yr	0.99	1.51	1.88	2.70	3.63	4.00	**50yr**	3.13	3.91	4.60	6.13	7.59	8.80	10.71	**50yr**	7.79	10.30	11.89	13.45	14.58	**50yr**
100yr	1.22	1.84	2.31	3.33	4.57	4.92	**100yr**	3.94	4.81	5.66	7.63	9.37	10.71	13.30	**100yr**	9.48	12.79	14.80	16.51	17.78	**100yr**
200yr	1.50	2.26	2.87	4.15	5.79	6.06	**200yr**	4.99	5.92	6.95	9.54	11.57	13.02	16.51	**200yr**	11.53	15.87	18.43	20.29	21.71	**200yr**
500yr	2.01	2.99	3.85	5.60	7.96	8.02	**500yr**	6.87	7.84	9.14	12.87	15.29	16.85	22.00	**500yr**	14.91	21.15	24.66	26.64	28.31	**500yr**

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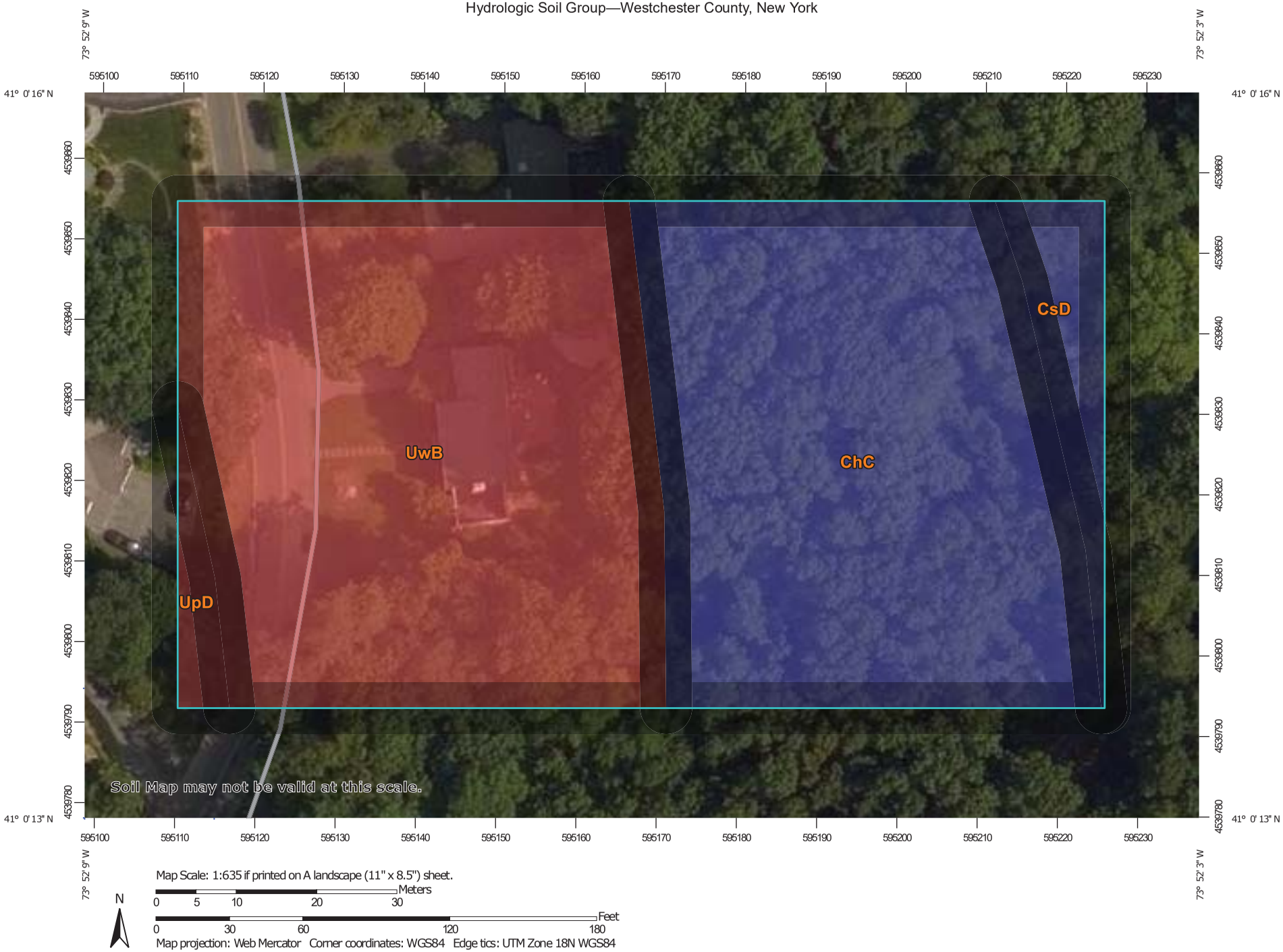
Northeast Regional Climate Center

Hydrologic Soil Group—Westchester County, New York



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Westchester County, New York
Survey Area Data: Version 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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
ChC	Charlton fine sandy loam, 8 to 15 percent slopes	B	0.8	43.7%
CsD	Chatfield-Charlton complex, 15 to 35 percent slopes, very rocky	B	0.1	4.9%
UpD	Urban land-Paxton complex, 15 to 25 percent slopes	D	0.0	1.9%
UwB	Urban land-Woodbridge complex, 3 to 8 percent slopes	D	0.9	49.5%
Totals for Area of Interest			**1.8**	**100.0%**

Description

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

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

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

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

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

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

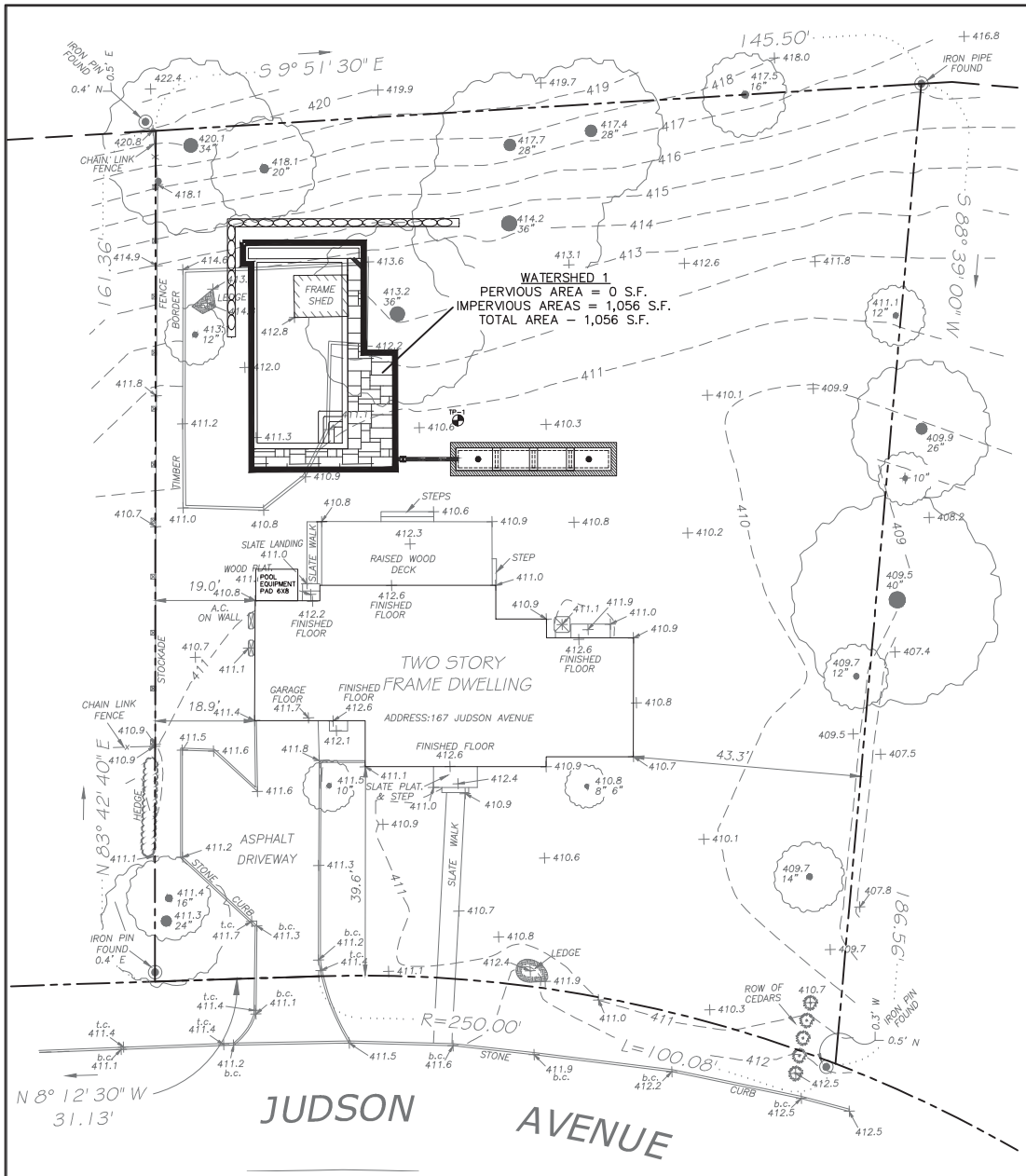
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher



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

GRAPHIC SCALE

10 0 5 10 20 40

(IN FEET)
1 inch = 10 ft.

No.	Revisions	Date

THIS PLAN NOT VALID FOR CONSTRUCTION WITHOUT ENGINEERS SEAL & SIGNATURE

PROJECT:

PROPOSED POOL
167 JUDSON AVENUE
VILLAGE OF DOBBS FERRY
WESTCHESTER COUNTY – NEW YORK

WATERSHED MAP – PROPOSED

HEC

HUDSON ENGINEERING & CONSULTING, P.C.
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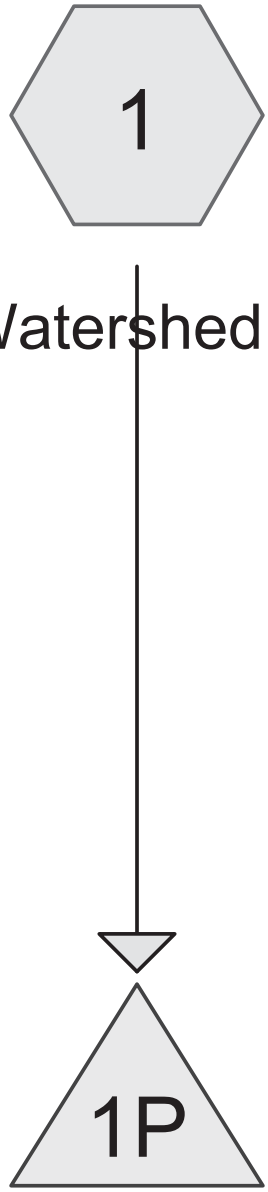
Date: 04/28/21
Scale: 1" = 10'
Designed By: U.A.
Checked By: M.S.
Sheet No. WS-P



4 Cultec R-330XLHD
Chambers

Routing Diagram for Proposed Condition
Prepared by Hudson Engineering & Consulting, P.C., Printed 4/28/2021
HydroCAD® 10.00-14 s/n 02549 © 2015 HydroCAD Software Solutions LLC

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

Subcatchment 1: Watershed 1 Runoff Area=1,056 sf 100.00% Impervious Runoff Depth=8.67"
Tc=1.0 min CN=98 Runoff=0.25 cfs 763 cf

Pond 1P: 4 Cultec R-330XLHD Chambers Peak Elev=1.92' Storage=187 cf Inflow=0.25 cfs 763 cf
Outflow=0.04 cfs 763 cf

Total Runoff Area = 1,056 sf Runoff Volume = 763 cf Average Runoff Depth = 8.67"
0.00% Pervious = 0 sf 100.00% Impervious = 1,056 sf

Summary for Subcatchment 1: Watershed 1

Runoff = 0.25 cfs @ 12.01 hrs, Volume= 763 cf, Depth= 8.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-Year Rainfall=8.91"

	Area (sf)	CN	Description
*	731	98	Proposed Pool & Coping
*	325	98	Proposed Patio
	1,056	98	Weighted Average
	1,056		100.00% Impervious Area

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

Summary for Pond 1P: 4 Cultec R-330XLHD Chambers

Inflow Area = 1,056 sf,100.00% Impervious, Inflow Depth = 8.67" for 100-Year event
Inflow = 0.25 cfs @ 12.01 hrs, Volume= 763 cf
Outflow = 0.04 cfs @ 11.59 hrs, Volume= 763 cf, Atten= 85%, Lag= 0.0 min
Discarded = 0.04 cfs @ 11.59 hrs, Volume= 763 cf

Routing by Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 1.92' @ 12.46 hrs Surf.Area= 200 sf Storage= 187 cf

Plug-Flow detention time= 25.9 min calculated for 763 cf (100% of inflow)
Center-of-Mass det. time= 25.9 min (761.2 - 735.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	0.00'	146 cf	**6.33'W x 31.50'L x 3.54'H Field A** 707 cf Overall - 220 cf Embedded = 487 cf x 30.0% Voids
#2A	1.00'	220 cf	**Cultec R-330XLHD** x 4 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 1 rows
		366 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	0.00'	**8.000 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=0.04 cfs @ 11.59 hrs HW=0.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.04 cfs)

HUDSON ENGINEERING & CONSULTING, P.C.

SITE ADDRESS: 167 Judson Avenue

TOWN/VILLAGE: Dobbs Ferry

DATE: 10-8-2020 TIME: 3:13pm

WEATHER: Sunny TEMP. 63˚ F

WITNESSED BY: Matthew Williams

PERCOLATION TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

Owner _____

HOLE #	CLOCK TIME				PERCOLATION				
					Depth to Water From Ground Surface			Soil Rate	
Hole Number	Run No.	Start	Stop	Elapse Time (Min.)	Start Inches	Stop Inches	Water Level in Inches Drop in inches	Min. per inch	Inches per Hour
# 1	1	3:13	3:29	16	36	39	3	5.33	11.26
	2	3:33	3:50	17	36	39	3	5.66	10.6
4" Ø	3	3:53	4:10	17	36	39	3	5.66	10.6
	4								
	5								
# 2	1								
	2								
4" Ø	3								
	4								
	5								
# 3	1								
	2								
4" Ø	3								
	4								
	5								

Notes:

1) Tests to be repeated at the same depth until approximately equal soil rates are obtained at each percolation test hole. All data to be submitted for review.
2) Depth measurements to be made from top of hole

45 Knollwood Road - Elmsford, NY 10523 (914) 909-0420 Fax (914) 560-2086

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TOWN/VILLAGE: Dobbs Ferry

DATE: 10-8-2020 TIME: 3:13pm

WEATHER: Sunny TEMP. 63°F

WITNESSED BY: Matthew Williams

DEEP TEST HOLE DATA SHEET – STORMWATER MANAGEMENT SYSTEM

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

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

EXCAVATION PERFORMED BY: Precision Field Testing

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