

MBM Dental Office

***5538 North Burdick Street
Town of Manlius
Onondaga County, NY 13066
RZE# 20014***

SWPPP

07/09/2020

Prepared for:
5538 North Burdick, LLC
125 East Jefferson St
Syracuse, NY 13202

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981

Table of Contents

- 1.0 – Summary**
- 2.0 – Objective**
- 3.0 – Existing Site Conditions**
- 4.0 – Proposed Site Use and Improvements**
- 5.0 – Runoff Computations**
- 6.0 – Stormwater Mitigation and BMP's**
- 7.0 – Stormwater Drainage Facilities**
- 8.0 – Stormwater Quality Volume**
- 9.0 – Phosphorous Removal**
- 9.1 – Ley Creek Watershed Requirements**
- 10.0 – Soil Restoration Practices**
- 11.0 – Possible Contaminants from Construction Activities**
- 12.0 – Erosion Control Measures**

- Figure 1 – Topographic Map – USGS**
- Figure 2 – Aerial Map – Google Earth**
- Figure 3 – Site Soils Map – Web Soil Survey**
- Figure 4 – Pre-Development Watershed Map**
- Figure 5 – Post-Development Watershed Map**
- Figure 6 – NYSDEC Stormwater Map**
- Figure 7 – Hydrocad Analysis Diagram**
- Figure 8 – SHPO Map**
- Figure 9 – NYSDEC Wetlands and Endangered Species Map**
- Figure 10 – Federal Wetlands Map**
- Figure 11 – National Flood Insurance Program (NFIP) FIRM**

- Appendix A – Site Soils and Field Testing Information**
- Appendix B – Site Rainfall Data**
- Appendix C – Pre-Development Watershed Analysis**
- Appendix D – Post-Development Watershed Analysis**
- Appendix E – Stormwater BMP Calculations**
- Appendix F – Drainage Facilities Basis**
- Appendix G – Water Quality Calculations**
- Appendix H – Stormwater Inspection Forms, Notice of Intent, Notice of Termination**
- Appendix I – Erosion Control Measures**
- Appendix J – SPDES General Permit**
- Appendix K – Installation, Maintenance and Procedures**
- Appendix L – SHPO Documentation**

1.0 – SUMMARY

5538 North Burdick, LLC proposes to develop a site located at 5538 North Burdick St in the Town of Manlius, Onondaga County, NY. The existing site consists of an existing residence as well as woods/grass cover. Proposed for development is a new dental office building with associated parking and access off of North Burdick St. Proposed site improvements within the project will also include stormwater facilities, general utilities, and general site landscaping. Site disturbance is estimated at approximately 4.0± acres. An aerial photo and USGS Topographic Map have been provided in the report, see Figures 1 and 2. This report has been prepared with supporting documentation and calculations for the stormwater design of the site.

2.0 – OBJECTIVE

The purpose of this Report is to describe the additional stormwater management and erosion control measures for the site and the rationale for their use. This Report has been prepared in accordance with the United States Department of Agriculture (USDA) - Soil Conservation Service (SCS) “NYS Standards and Specifications for Erosion and Sediment Control,” the New York State Department of Environmental Conservation (NYSDEC) “NYS Stormwater Management Design Manual,” and the NYSDEC “SPDES General Permit for Stormwater Discharges from Construction Activities.”

This report will provide a narrative description of the proposed site improvements including stormwater management structures and erosion control methods to be temporarily or permanently employed at the site.

A copy of this SWPPP shall be maintained on site by the owner/contractor for the duration of the construction process.

3.0 – EXISTING SITE CONDITIONS

Existing Site Use

5538 North Burdick, LLC proposes to develop a site located at 5538 North Burdick St in the Town of Manlius, Onondaga County, NY. The location of the site in relation to major roads and other points of reference are presented in Figures 1-3 along with an aerial photo of the site, general environmental mapping, and general vicinity. The existing site consists of an existing abandoned residence as well as woods/grass cover.

For the purposes of analysis, one watershed was delineated in existing conditions. EXDA-1 consists of the existing site including the existing structures and woods cover. Stormwater within EXDA-1 travels via sheetflow generally north toward the Erie Canal where it discharges.

According to soil information provided by the National Cooperative Soil Survey the site soils consists of Cazenovia Silt Loam – HSG Type C and Palmyra gravelly loam – HSG

Type A. A representative of RZ Engineering performed infiltration tests at the site with results found in Appendix A. Additional soil testing has been performed by Kenny Geotechnical and also provided in Appendix A. Testing has been further discussed in Section 6.0 below.

The existing land-surface cover descriptions and totals for this site within the site watershed(s) are described as follows:

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 0.928 | 39 | >75% Grass cover, Good, HSG A (1S) |
| 0.110 | 98 | Paved parking, HSG A (1S) |
| 2.930 | 30 | Woods, Good, HSG A (1S) |
| 0.674 | 70 | Woods, Good, HSG C (1S) |
| 4.642 | 39 | TOTAL AREA |

4.0 –PROPOSED SITE USE AND IMPROVEMENTS

Proposed Site Use

The site improvements proposed for the proposed development will require stormwater quality controls for the site development and proposed stormwater bypass conveyance. For purposes of analysis, the onsite and offsite watersheds were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities. Further discussion of the analysis is discussed in the next few report sections. The site is proposed to be connected to water and sanitary sewer systems. Access to the site during construction will be made via the proposed entrance along North Burdick Street.

Due to site development, some of drainage areas may change in size somewhat and Tc Flowpaths altered but the downstream discharge points will remain the same.

Site Improvements

The proposed grading and drainage plan for the site is designed to maintain the site drainageways within it, attempting to improve existing storm runoff conditions. Onsite stormwater runoff from site improvements in PRDA-1 will flow to the proposed stormwater practices via sheet flow, shallow concentrated flow, and channel flow through the proposed drainage system. All stormwater runoff from the subject site eventually discharges to the Erie Canal and subsequent Butternut Creek.

The proposed land-surface cover descriptions and totals for this site within the site watershed are described as follows:

| Area (acres) | CN | Description (subcatchment-numbers) |
|-----------------|-----------|---------------------------------------|
| 2.794 | 39 | >75% Grass cover, Good, HSG A (2S) |
| 0.606 | 74 | >75% Grass cover, Good, HSG C (2S) |
| 1.407 | 98 | Paved parking, HSG A (2S) |
| 4.807 | 61 | TOTAL AREA |

5.0 – STORMWATER RUNOFF COMPUTATIONS

This section of the Report outlines the results of a stormwater runoff analysis that was conducted for the proposed site. The analysis includes a comparison of pre-development hydrologic conditions with those of the post-development conditions. This analysis is based on the site watershed's total area under both Pre- and Post-Development Conditions.

HydroCAD Version 10.00 was utilized in this Report for estimating runoff and peak discharges from the site disturbed area watershed. This computerized model was developed by the USDA-SCS to determine runoff volumes and peak rates of discharge, and takes into account watershed area, rainfall frequency, runoff coefficients characterizing land surfaces, flow duration or time of concentration, and average watershed slopes. Pre- and post-development calculations were generated for a 1, 2, 5, 10, 25, 50 and 100-year frequency, 24-hour storm event. Exhibits outlining stormwater runoff information referenced from the New York Standards and Specifications for Erosion and Sediment Control are presented in Appendix I.

The SCS has developed curve numbers characterizing land surfaces for urban areas and agricultural lands, which were utilized in the computer modeling of this site.

The time of concentration (t_c) value is utilized in the modeling of stormwater runoff for a site. Time of concentration is the duration that it takes for runoff to travel from the hydraulically most distant point of the watershed to a point of interest (outfall) within the watershed. It is also the sum of the travel time from the various consecutive flow segments along the flow path of the watershed to the outfall. The time of concentration is dependent on the velocity of the runoff, and is a function of the surface roughness, slope of the surface, and flow segment length.

Pre-Development Analysis

For purposes of analysis, the site watersheds were analyzed to determine the existing site peak runoff rate to the downstream discharge point(s). This peak runoff rate at the downstream discharge point was used as the limiting factor when comparing the post-development rates from the site.

The computer modeling results of the pre-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year, 24-hour storm event indicates that the following peak runoff rates in cubic feet per second (cfs) are anticipated to discharge from the pre-site condition

drainage area(s). Calculations are presented in Appendix C.

Pre-Development Site Watersheds

| <u>Drainage Area</u> | <u>Area</u> | <u>1 Year Storm</u> | <u>2 Year Storm</u> | <u>5 Year Storm</u> | <u>10 Year Storm</u> | <u>25 Year Storm</u> | <u>50 Year Storm</u> | <u>100 Yr Storm</u> |
|----------------------|----------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|---------------------|
| | | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> |
| <u>(I.D.)</u> | <u>(Acres)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> |
| EXDA-1 | 4.642 | 0.00 | 0.00 | 0.00 | 0.01 | 0.03 | 0.13 | 0.51 |

Post-Development Analysis

For purposes of analysis, the proposed site construction limits were analyzed under pre- and post-conditions to determine peak runoff conditions associated with the design of the stormwater control facilities.

The computer modeling results of the post-development site conditions for a 1, 2, 5, 10, 25, 50 and 100-year 24-hour storm event indicates that the following peak runoff rates are anticipated to discharge from the post-site condition drainage area. Calculations are presented in Appendix D.

Post-Development Site Watersheds

| <u>Drainage Area</u> | <u>Area</u> | <u>1 Year Storm</u> | <u>2 Year Storm</u> | <u>5 Year Storm</u> | <u>10 Year Storm</u> | <u>25 Year Storm</u> | <u>50 Year Storm</u> | <u>100 Yr Storm</u> |
|----------------------|----------------|---------------------|---------------------|---------------------|----------------------|----------------------|----------------------|---------------------|
| | | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> | <u>Peak Flow</u> |
| <u>(I.D.)</u> | <u>(Acres)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> | <u>(cfs)</u> |
| PRDA-1 | 4.807 | 0.07 | 0.33 | 1.33 | 2.66 | 5.22 | 7.98 | 11.58 |

Comparison of Pre- and Post-Development Runoff

The peak flow conditions for the pre- and post-development watershed areas of the project site are summarized below:

Pre-Development Watershed vs. Post-Development Watersheds (Pre Routing)

| <u>Drainage Area</u> | <u>Drainage Area (ac)</u> | | <u>1 Year Storm</u> | | <u>2 Year Storm</u> | | <u>5 Year Storm</u> | | <u>10 Year Storm</u> | | <u>25 Year Storm</u> | | <u>50 Year Storm</u> | | <u>100 Year Storm</u> | |
|----------------------|---------------------------|------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------|
| | <u>Pre Site</u> | <u>Post Site</u> | <u>Peak Flow (cfs)</u> | |
| <u>(I.D.)</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> | <u>Pre Site</u> | <u>Post Site</u> |
| DA-1 | 4.64 | 4.81 | 0.00 | 0.07 | 0.00 | 0.33 | 0.00 | 1.33 | 0.01 | 2.66 | 0.03 | 5.22 | 0.13 | 7.98 | 0.51 | 11.58 |

The above table reflects both an increase in peak runoff conditions for all storms in DA-

1. The increases in peak runoff conditions are due to proposed site development. Therefore PRDA-1 will require quality and quantity controls to be discussed in the next section in accordance with Chapter 10 of the NYS Stormwater Design Manual.

6.0 – STORMWATER MITIGATION AND BMP'S

As can be found in Appendix A, the results of the soil testing revealed favorable infiltration results at several different soil depths. Therefore we have proposed an infiltration basin for DA-1 to provide onsite stormwater water quantity and quality requirements with proposed depths of witnessed favorable infiltrations rates to meet NYSDEC standards. A summary of the stormwater flows post routing are found in the table below with calculations found in Appendix E. As can be seen in the table below, the proposed stormwater measures will provide necessary water quantity controls to limit overall peak flows to the overall downstream discharge point in post-development conditions to levels at or below pre-development downstream peak flows.

Pre-Development Watershed vs. Post-Development Watershed (Post Routing)

| <u>Drainage Area</u> | <u>Drainage Area (ac)</u> | | <u>1 Year Storm</u> | | <u>2 Year Storm</u> | | <u>5 Year Storm</u> | | <u>10 Year Storm</u> | | <u>25 Year Storm</u> | | <u>50 Year Storm</u> | | <u>100 Year Storm</u> | |
|----------------------|---------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|------------------------|-------------|
| | <u>Pre</u> | <u>Post</u> | <u>Peak Flow (cfs)</u> | |
| | <u>Site</u> | <u>Site</u> | <u>Pre</u> | <u>Post</u> |
| (I.D.) | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site | Site |
| DA-1 | 4.64 | 4.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.01 | 0.00 | 0.03 | 0.00 | 0.11 | 0.13 | 0.51 | 0.21 |

DA-1 I-2 Infiltration Basin

The I-2 Infiltration Basin for DA-1 contains 44,337 +/- cubic feet of total storage. A proposed 6" HDPE underdrain has been set at 430.50. A proposed concrete outlet structure has been proposed for location at the northern end of the swale. The outlet structure has a proposed 3" diameter orifice at invert elevation 435.40 to discharge any non-infiltrated flows. The concrete structure will also have an open rim at elevation 437.10. Any flows entering the outlet structure will discharge through a proposed 12" HDPE outlet pipe at invert 430.50. An emergency spillway at has been set at invert 437.50 to allow for extreme storm passage. The water quality volume for this watershed is 0.126 ac-ft. The WQv provided below the invert of the basin is 0.218 ac-ft. Two forebays at inlets have been provided with permanent checkdams to provide the minimum 25% of the WQv of the watershed. See contract drawings for check dam location. Per the NYS Stormwater Design Manual, the WQv must be drained from the infiltration basin within 48 hours as shown in the following calculation.

Percolation Rate = 34 min. / inch.

Total inches percolation per hour = $60/34 = 1.76$ inches / hour

Total inches percolation per 48 hours = $1.76 \times 48 = 84.48$ inches = 7 feet

Total Basin Basal Area at bottom elevation = 1,614 sf

Total Volume capable of being discharged by percolation = $7 \text{ ft} \times 1,614 \text{ sf} = 11,298 \text{ cf}$

Total WQv/CPv storage volume provided = 8,924 cf

Check -----8,924 cf < 11,298 cf -----ok

7.0 – PROPOSED STORMWATER DRAINAGE FACILITIES

All on site drainage facilities are designed to transmit flows from a 10 year storm event to downstream stormwater Best Management Practices. The location, size and type of all pipes and structures are provided on the contract drawings. The calculations and basis for analysis of these systems are presented in Appendix F.

8.0 – STORMWATER QUALITY VOLUME

Typically, the water quality volume (denoted as WQ_v) is designed to improve water quality, sized to capture and treat 90% of the average annual stormwater runoff volume. The WQ_v is directly related to the amount of impervious cover created at the site. The following equation is used to estimate water quality storage volume WQ_v in acre feet of storage:

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

Where:

- WQ_v = water quality volume (in acre-feet)
- P = 90% Rainfall Event Number (Figure 4.1 – Appendix G)
- R_v = $0.05 + 0.009(I)$, where I is the percent of impervious cover
- A = site area in acres

It is assumed that by meeting the WQ_v requirements thru the employment practices outlined in Table 5.1 of the “New York State Stormwater Management Design Manual”, a project will, by default, meet water quality objectives. Calculations of water quality volume can be found in Appendix G. The proposed BMP is also successful in achieving CPv requirements. Calculations of CPv can be found in Appendix G.

It is assumed that by meeting the WQ_v requirements thru the employment practices outlined in Table 5.1 of the “New York State Stormwater Management Design Manual”, a project will, by default, meet water quality objectives.

9.0 – PHOSPHORUS REMOVAL

Chapter 10 of the NYS Stormwater Design Manual outlines the requirements for treatment of phosphorus in stormwater. Enhanced Phosphorus Removal requires calculation of the 1 year, 24 hour design storm in the post development watershed. The site is not located in a TMDL Phosphorous watershed and therefore, no additional phosphorus treatment volume for the 1 year storm event has been provided.

10.0 – RUNOFF REDUCTION VOLUME AND GREEN PRACTICES

Since standard infiltration practices are being employed on this site, 100% of the water quality volume may be taken as RRv. As a result, no additional RRv/Green Infrastructure practices are required for this site and the site meets RRv requirements.

Green Practices

| <u>PRACTICE</u> | <u>WATERSHEDS</u> | <u>TYPE OF REDUCTION</u> |
|----------------------------------|--------------------------|---------------------------------|
| • Tree Planting | Post Development DA-1 | Area Reduction |
| • Standard Infiltration Practice | Post Development DA-1 | Source Control |

Soil Restoration Requirements **

According to Section 5 of the NYS Stormwater Design Manual, soil restoration practices must be applied across the site in areas of soil disturbance. This is necessary to reclaim the original properties and porosity of the soil before construction. The benefits of soil restoration include but are not limited to:

- Less stormwater runoff
- Increased porosity on redevelopment sites where impervious cover is converted to pervious
- Achieves performance standards on runoff reduction practices
- Healthier, aesthetically pleasing landscapes
- Enhances direct groundwater recharge
- Promotes successful long term revegetation by restoring soil organic matter, permeability, drainage and water holding capacity for healthy root system development of trees, shrubs and deep-rooted ground covers, minimizing lawn chemical requirements, plant drowning during wet periods, and burnout during dry periods

| Table 5.3 Soil Restoration Requirements | | | |
|---|--|---------------------------------------|---|
| Type of Soil Disturbance | Soil Restoration Requirement | | Comments/Examples |
| No soil disturbance | Restoration not permitted | | Preservation of Natural Features |
| Minimal soil disturbance | Restoration not required | | Clearing and grubbing |
| Areas where topsoil is stripped only - no change in grade | HSG A & B | HSG C & D | Protect area from any ongoing construction activities. |
| | apply 6 inches of topsoil | Aerate* and apply 6 inches of topsoil | |
| Areas of cut or fill | HSG A & B | HSG C & D | |
| | Aerate and apply 6 inches of topsoil | Apply full Soil Restoration ** | |
| Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls) | Apply full Soil Restoration (de-compaction and compost enhancement) | | |
| Areas where Runoff Reduction and/or Infiltration practices are applied | Restoration not required, but may be applied to enhance the reduction specified for appropriate practices. | | Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area |
| Redevelopment projects | Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area. | | |

*Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per “Deep Ripping and De-compaction, DEC 2008”.

** taken from the NYS Stormwater Management Manual (version 2010)

Many of the Runoff Reduction practices will require soil restoration measures applied in and around the practice in order to reach the desired runoff reduction performance. Table 5.13 on page 5-22 of the NYS Stormwater Design Manual has been included below that highlights these requirements and provides guidance on when to implement soil restoration techniques. Also included is the NYS Stormwater Design Manual section on Practice implementation, Maintenance and Inspection.

Soil Restoration Practice Implementation:

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil
2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller, mixing, and circulating air and compost into subsoils

Figure 5. 16 Soil aerator implement



Figure 5. 17 Soil aerator implement



3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site
4. Apply topsoil to a depth of 6 inches
5. Vegetate as required by approved plan.

Figures 5.16 and 5.17 above show two attachments used for soil decompaction. Tilling (step 2 above) should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Soil Restoration Inspection:

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight.

Compost Specifications

Compost shall be aged, from plant derived materials, free of viable weed seeds, have no visible free water or dust produced when handling, pass through a half inch screen and have a pH suitable to grow desired plants.

Soil Restoration Maintenance:

The maintenance agreement with the town should identify where Soil Restoration has been applied (in addition to already being shown on the contract documents), where newly restored areas are/cannot be cleared, who the responsible parties are to ensure that routine vegetation improvements are made (i.e., thinning, invasive plant removal, etc.). Soil compost amendments within a filter strip or grass channel should be located in public right of way, or within a dedicated stormwater or drainage easement.

First Year Maintenance Operations Includes:

- Initial inspections for the first six months (once after each storm greater than half- inch)
- Reseeding to repair bare or eroding areas to assure grass stabilization
- Water once every three days for first month, and then provide a half inch of water per week during first year. Irrigation plan may be adjusted according to the rain event.
- Fertilization may be needed in the fall after the first growing season to increase plant vigor

Ongoing Maintenance:

Two points help ensure lasting results of decompaction:

1. Planting the appropriate ground cover with deep roots to maintain the soil structure
2. Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few years)

11.0 – POSSIBLE CONTAMINANTS FROM CONSTRUCTION ACTIVITIES

During construction contaminants from materials and equipment could enter the stormwater drainage system unintentionally. The contractor should store construction materials and equipment in the designated staging area and all possible contaminants should be stored to prevent damage.

This particular project will require construction equipment such as a backhoe, drum roller, dump trucks, a grader, and bull dozer. These vehicles use oil and petroleum products which if not treated carefully could enter the storm drainage system. Accidental spills should be reported to the Department of Environmental Conservation 24 hour spill response hotline at 1-800-457-7362. On site fueling of construction equipment shall be limited to a bermed/ diked area located within the project staging area. The table below provides a guide for quantities that should be reported. Should a spill incident occur, the employee or party responsible for the spill should contain the spill, start cleanup and report the spill to his/ her superiors. The spill should be reported to the appropriate governing agency should the spill exceed the reportable quantity or enter surface waters.

| Examples of Reportable Quantities | | |
|---|--------------------------|----------------------------|
| <i>Material</i> | <i>Media Released To</i> | <i>Reportable Quantity</i> |
| Engine oil, fuel, hydraulic and brake fluid | Land | 25 gallons |
| | Water | Visible Sheen |
| Antifreeze | Land | 100 lbs (13 gal.) |
| Battery Acid | Land, Water | 100 lbs. |
| Refrigerant | Air | 1 lb. |
| Gasoline | Air, Land, Water | 100 lbs. |
| Engine Degreasers | Air, Land, Water | 100 lbs. |

All construction waste material such as housing materials and utility installation materials shall be disposed of as required by law.

Wastewater from concrete washout areas is prohibited from discharging directly to any site areas not managed by an appropriate stormwater control measure. Also prohibited are washouts from stucco, paint, form release oils, curing compounds, and other construction materials. Soaps, solvents, fuels, oils, or other pollutants used in vehicle operations or maintenance shall also be controlled by an appropriate stormwater control measure. Staging areas are designated on the plans for storage of equipment and vehicles. Locations subject to the above contaminants outside the staging area shall require additional measures and should be reviewed with the SWPPP inspector and MS4 representative prior to commencement of activities that may result in contamination.

12.0 – EROSION CONTROL MEASURES

Structural erosion and sediment control measures are classified as either temporary or permanent, according to how they are used. Temporary structural measures shall be used during construction of the site to prevent off-site sedimentation. Permanent structural measures shall be utilized following construction and shall be implemented to convey surface water safely to the existing drainage ways present in the pre-development condition. The permanent structural measures shall remain in-place and continue to function after the completion of construction. General construction notes and maintenance plan for implementing the temporary and permanent stormwater and erosion control structures during and after construction have been developed for the project.

Erosion control measures shall be inspected once weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. The owner shall file a Notice of Intent (NOI) with the NYS DEC prior

to commencement of further construction activities. The NOI shall be sent to:

NYSDEC- Notice of Intent
Bureau of Water Permits
625 Broadway
Albany, NY 12233-3505

Temporary Structural Measures

This subsection will describe the specific temporary control measures to be implemented to reduce and/or eliminate erosion and sedimentation during the construction phase of this project. Example details of the following erosion control measures are presented in Appendix I. As construction progresses more site areas may be opened after already constructed areas are permanently stabilized in accordance with the New York State Standards and Specifications for Erosion and Sediment Control.

Silt Fence

A temporary barrier of geotextile fabric (filter cloth) fence shall be used to intercept sediment-laden runoff along the borders of disturbed site areas during construction. A geotextile fabric fence shall also be placed around all permanent stormwater drainage structures, in the absence of straw bale dikes, (catch basins and manholes) to intercept sediment and protect the structure during construction. The geotextile filter fabric fence requires periodic maintenance and should be checked for tears or clogging with silt or debris. Silt can be removed from the woven filter cloth with a stiff brush if clogging occurs.

Stabilized Construction Entrance

A stabilized pad of aggregate underlain with filter cloth shall be positioned at points where traffic will be entering or leaving the construction site area onto public roads. This measure will reduce the tracking of soils onto public roads or streets.

Dust Control

Construction activities should be scheduled to minimize the amount of disturbed area at a single time. If vegetated areas can be left in tact to serve as a buffer zone these areas should be maintained where practical. During dry conditions, open soil areas may require hosing down with water to prevent excessive dust. Spray adhesives may be utilized as outlined in the NYS Standards and Specifications for Erosion and Sediment Control. Fences or vegetation may be required to minimize dust pollution to adjacent properties and should be incorporated into the site erosion control plan as required.

Drop Inlet Protection

A temporary, somewhat permeable barrier shall be installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and to prevent heavily sediment laden water from entering a storm drain system through inlets. The barrier should be inspected after each rain event and repairs shall be made as necessary. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the area around the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Maintenance of Temporary and Permanent Control Structures

Temporary and Permanent Stormwater Facilities during Construction

Temporary stormwater and erosion control structures must be constructed in accordance with their design intent and maintained to prevent sediment-laden runoff from leaving the site during construction. In general, the temporary structures during construction should be inspected on a routine basis and maintained as follows:

- Temporary silt fences, straw bale dikes, and sediment interceptors shall be installed prior to earth disturbance to reduce runoff velocity and transportation of sediment. The stabilization structures shall be inspected weekly and after every rainfall; and the structures cleaned, repaired, or replaced as required. Temporary stabilization structures shall be removed when their contributory drainage area is stabilized.
- Temporary storm drain inlet protection shall be installed to prevent heavily sediment laden water from entering a storm drain through inlets. Inspections shall be bi-weekly and after major storms to insure that sediment is not being allowed into the storm system. The inlet protection shall be cleaned, repaired, and or replaced as required until the contributing drainage area is stabilized. When this occurs, the devices shall be removed and the area around the inlet shall be stabilized in the manner appropriate the site.
- All permanent drainage structures, installed as part of the site improvements, shall be inspected weekly and after every rainfall to insure structural integrity, detect vandalism and damage, and for cleaning. Permanent drainage structures shall be repaired or replaced, as required.
- All disturbed soil areas, upon final grading of topsoil, shall be seeded, and mulched. All seeded areas shall be inspected monthly and after every rainfall and the areas repaired and re-seeded, as required.
- Stabilized construction entrance shall be installed to control erosion at location where traffic will be entering or leaving the construction area. The temporary construction entrance shall be inspected periodically and after each rainfall; and the entrance cleaned, repaired, or replaced, as required. The temporary construction entrance shall be removed when construction is completed and all

disturbed areas are stabilized.

Permanent Stormwater Facilities after Construction

Permanent stormwater control structures must be constructed in accordance with their design intent and maintained on a routine basis to remain effective. This site has employed stormwater management facilities. Prior to submission of the Notice of Termination to NYSDEC the contractor shall provide as built drawings of all stormwater best management practices and facilities to allow verification of construction in compliance with this SWPPP and the contract drawings. **It is the responsibility of the owner to maintain these facilities as required by the NYS Stormwater Design Manual. Maintenance requirements and design information is included in Appendix K of this report.**

In general, the structures after construction should be inspected periodically and maintained as follows:

- Permanent stormwater drainage structures shall be inspected semi-annually and after every 0.5 inches of rainfall to insure structural integrity, detect vandalism and damage, and for cleaning. The structures shall be repaired or replaced, as required.
- Permanent lawns and grassed areas shall be inspected and maintained on a regular basis, consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed, and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.
- **Stormwater Best Management Practices used on this site; their design intents and inspection and maintenance punch list forms have been included in Appendix K.**

Site Stabilization

The Owner/Contractor shall initiate stabilization measures as soon as practicable in a portion of the site where construction activities have temporarily or permanently ceased, but in no case more than 7 days after the construction activity in that portion of the site has temporarily or permanently ceased. This requirement does not apply in the following instances:

- a. Where the initiation of stabilization measures by the 7th day after construction activity temporarily or permanently ceased is precluded by snow cover or frozen ground conditions, stabilization measures shall be initiated as soon as possible;

- b. Where disturbed area is 5 acres or more, stabilization measures must be employed no more than 7 days after construction activities have temporarily or permanently ceased.

Site Assessment and Inspection

Initial Inspection

The Owner shall have a qualified professional conduct an assessment of the site prior to the commencement of construction. The qualified professional shall certify that the appropriate erosion and sediment controls described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Post Construction Inspection

The Owner shall have a qualified professional conduct an assessment of the site after construction is complete. The qualified professional shall be a Licensed Professional Engineer or possess the appropriate certifications for inspection. The qualified professional shall certify that the appropriate erosion and sediment controls and stormwater BMP’s described in this SWPPP and required by the permit have been adequately installed or implemented to ensure overall preparedness of the site for commencement of construction. The “qualified professional” shall meet the requirements of the SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. If the site is located in an area governed by a traditional MS4, the MS4 must also make a final inspection and sign the Notice of Termination.

In addition, the owner must ensure that a properly qualified inspector is performing inspections of post construction stormwater practices as outlined in the NYS Stormwater Design Manual. The owner shall ensure that a binding maintenance agreement is in place for inspection and maintenance of all stormwater practices and ensure that the inspection and maintenance is performed by a qualified professional. The owner must then identify the responsible party for these inspections and maintenance on the Notice of Termination.

As-Builts

Prior to Submission of the Notice of Termination by a Licensed Professional Engineer and upon completion of the site, a surveyor or appropriate inspector shall be required to produce an Autocad or paper as-built map to the design engineer for verification that stormwater items and BMP’s were installed as per the approved plans.

Stormwater BMP Inspection and maintenance punch list forms are provided behind the appropriate design intent page in Appendix K.

Inspections and Records during Construction

Inspection Frequency

After commencement of construction, site inspections shall be conducted by the qualified professional at least once per week if under 5 acres disturbance or twice per week if above 5 acres of disturbance. Two consecutive working days shall be given between site inspections per week. Prior to filing a Notice of Termination (NOT) or at the end of the permit term, the owner shall have the qualified professional perform a final site inspection.

Records during Inspection

A site map shall be maintained on site indicating the extent of all disturbed onsite areas and drainageways throughout the duration of construction. The site map shall contain all areas expected to undergo initial disturbance or significant site work within every 7-day period. The map shall indicate all areas of the site that have undergone temporary or permanent stabilization. All disturbed areas that have not undergone active site work during the previous 7-day inspection period shall be noted on the map. All sediment control measures shall be inspected and the degree of accumulation as a percentage of the sediment storage volume shall be recorded. Inspector must describe and inspect all points of discharge to natural surface water bodies located within, or immediately adjacent to property boundaries. Photographic record of inspections and any deficiencies shall be included in the inspection reports and photos of corrective action must be recorded upon compliance. Any maintenance required for installed erosion and sediment control structures shall be noted, and documentation of areas where adjustments are needed to those measures shall be provided. Any deficiencies identified with the implementation of the SWPPP shall be recorded. Erosion control measures shall be inspected weekly by a Licensed Professional Engineer or Erosion Control Specialist until the site is completely stabilized. Inspections and maintenance of erosion control structures shall be in accordance with the NYS Pollution Discharge Elimination System for Construction Activities GP-0-20-001 (SPDES) program. These inspection reports should be in compliance with the requirements set forth under part IV.C-4 of the general permit. A copy of the general permit is included in Appendix J.

Inspection Log Book

The Owner/ contractor shall maintain an inspection logbook which shall contain a record of all inspection reports. The site logbook shall be maintained on site and shall be made available to the permitting authority upon request. The Owner shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis.

Certifications

At the final site inspection the qualified professional shall certify that the site has undergone final stabilization using either vegetative or structural stabilization methods, and that all temporary erosion and sedimentation measures have been removed. Final

certification requires completion of the Notice of Termination form. The Notice of Termination shall be signed by the qualified professional. The owner shall provide the qualified professional with as built drawings in AutoCAD format so that the qualified professional can verify that all stormwater practices have been installed in accordance with the approved plans, SWPPP and the General Permit. The owner shall certify that the requirements of the permit have been satisfied within 48 hours of actually meeting such requirements and sign the Notice of Termination.

RELIANCE

Engineer's Certification

The undersigned agrees that this SWPPP has been prepared in accordance with all applicable standards outlined in this report. The undersigned understands that the owner intends to use this SWPPP to support his application for a New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

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

Prepared By:  Date: 07/06/2020

Helen McMillen
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Reviewed By:  Date: 07/06/2020

Rudy L. Zona, P.E.
RZ Engineering, PLLC
6320 Fly Road, Suite 201
East Syracuse, NY 13057
(315) 432.1089

Owner's Certification

I certify that I have read and understand the requirements outlined in this SWPPP report. The undersigned agrees that I have employed the above professional to prepare this SWPPP and that the recommendations within this Report and accompanying documents support the requirements set forth by the New York State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001. I certify that I intend to employ a contractor who will follow the recommendations of this SWPPP and any requirements set forth by the New York State SPDES General Permit for Stormwater Runoff from Construction Activity, GP-0-20-001.

Owner: _____

Owner's Representative:  Date: 7/5/20

Title: Owners Representative

Contractor's / Sub-Contractor's Certification

Contractor's/Sub-Contractor's Certification "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 the owner or operator must comply with the terms and conditions of the New York State Pollution Discharge Elimination System (SPDES) general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and/or administrative proceedings."

Contractor: _____

Contractor's Representative: _____ Date:_____

Title: _____

Signature: _____ Date:_____

Contractor's "trained contractor":_____ Date:_____ (must have DEC 4 hr training, responsible for the daily implementation of SWPPP)
Contractor is responsible for SWPPP components identified:

SWPPP Inspections

Address: _____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date: _____

Sub-Contractor's "trained contractor": _____ Date: _____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)

Sub-Contractor is responsible for SWPPP components identified:

Address: _____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date: _____

Sub-Contractor's "trained contractor": _____ Date: _____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)

Sub-Contractor is responsible for SWPPP components identified:

Address: _____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date: _____

Sub-Contractor's "trained contractor": _____ Date: _____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)

Sub-Contractor is responsible for SWPPP components identified:

Address: _____

Phone: _____

Fax: _____

Sub-Contractor: _____

Sub-Contractor's Representative: _____ Date: _____

Title: _____

Signature: _____ Date: _____

Sub-Contractor's "trained contractor": _____ Date: _____
(must have DEC 4 hr training, responsible for the daily implementation of SWPPP)

Sub-Contractor is responsible for SWPPP components identified:

Address: _____

Phone: _____

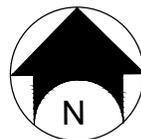
Fax: _____



RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
 USGS MAP
 SCALE 1:800

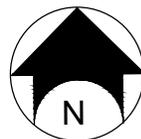
FIGURE 1



RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
AERIAL MAP

SCALE 1:150

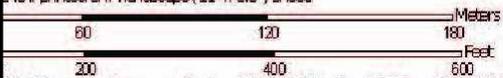
FIGURE 2

Hydrologic Soil Group—Onondaga County, New York



at the water at this scale.

240 if printed on A landscape (11" x 8.5") sheet.



Web Mercator Corner coordinates: WGS84 Edgetics: UTM Zone 18N WGS84

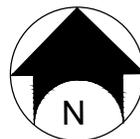
Web Soil Survey
National Cooperative Soil Survey

4/9/2020
Page 1 of 4

RZ Engineering, PLLC

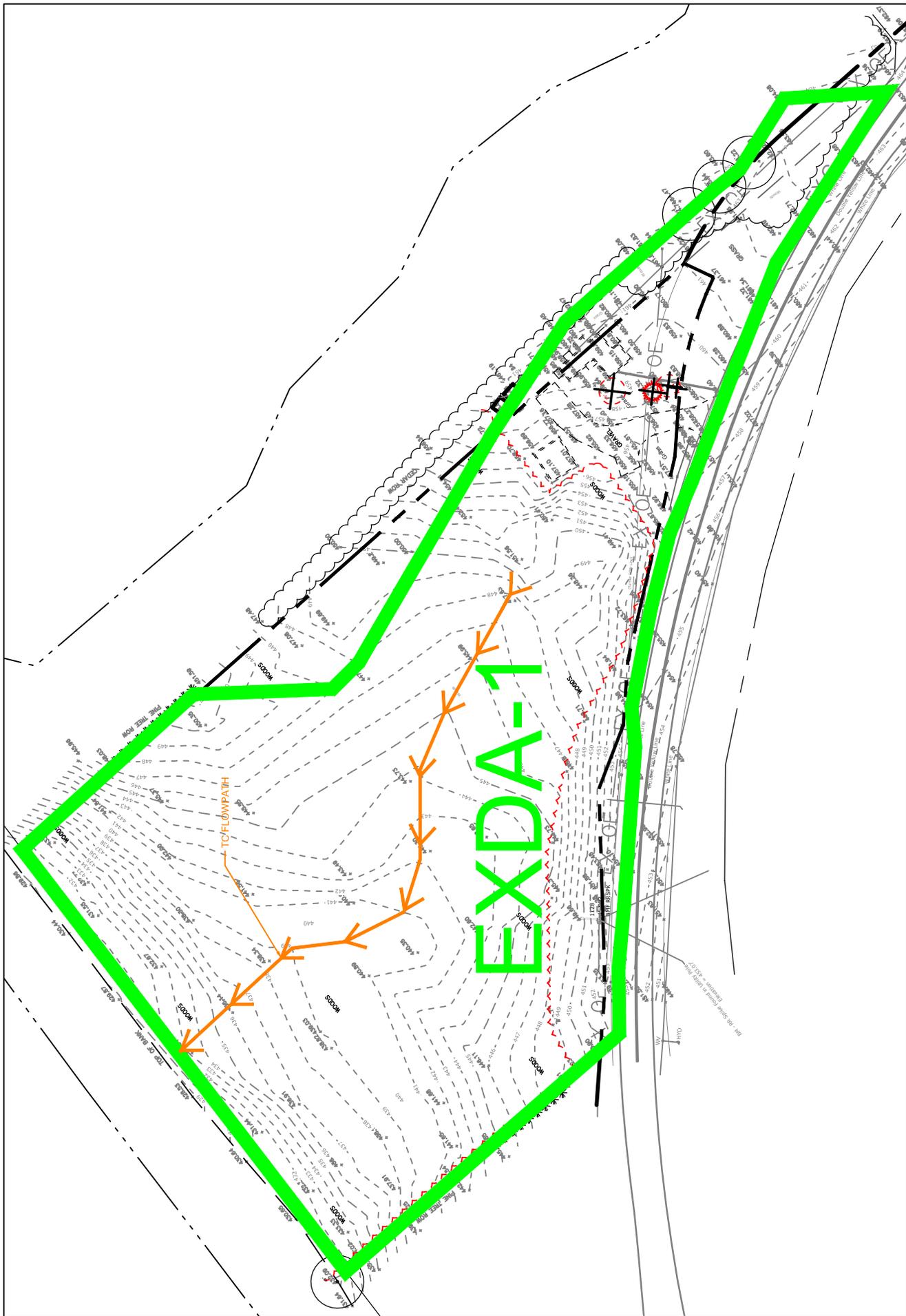
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
SOILS MAP
SCALE 1:200

FIGURE 3



MBM Dental Office
 Town of Morrisville, Onondaga County, NY

Figure 4: Existing Site Watersheds



SCALE: 1:100

RZ Engineering, PLLC
 SURVEYING WATER ENVIRONMENTAL TRANSPORTATION
 6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



MBM Dental Office
 Town of Morrisville, Onondaga County, NY

Figure 5: Proposed Site Watersheds



SCALE: 1:100

RZ Engineering, PLLC

ESTIMATING SURVEYING WATER ENVIRONMENTAL TRANSPORTATION
 6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981

Stormwater Interactive Map

Search

Tools

Permit Related Layers

All Layers

Layers become visible at different scales

 Watershed Improvement Strategy

Regulated MS4s

- Automatic
- Designation 2003
- Designation 2008
- Designation 2010

303D Stream Construction

303D Estuary Construction

303D Lake Construction

1-Year 24-Hour Rainfall

90 Percentile Rainfall

Class AAAAS Watersheds

Other Useful Reference Layers

General Permit Information

Project Information

Contacts

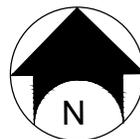


RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

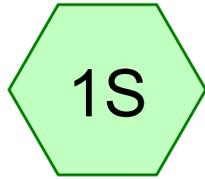
6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981

UPDATED: 8 / 23 /17



MBM BURDICK ST DENTAL OFFICE
 NYSDEC STORMWATER MAP
 SCALE 1:800

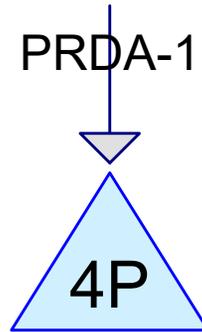
FIGURE 6



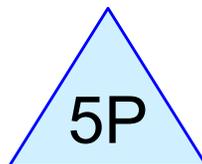
EXDA-1



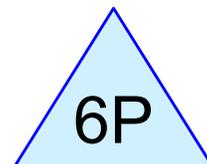
PRDA-1



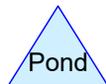
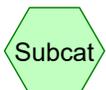
Infiltration Basin



Forebay 1



Forebay 2





RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



CROUSE COMMUNITY HOUSING
 SHPO MAP

SCALE 1:600

FIGURE 8

Environmental Resource Mapper

Search

Tools

Layers and Legend

- All Layers
- Unique Geological Features
- Waterbody Classifications for Rivers/Streams
- Waterbody Classifications for Lakes
- State Regulated Freshwater Wetlands (Outside of the Adirondack Park)
 - State Regulated Wetland Checkzone
- Significant Natural Communities
 - Natural Communities Near This Location

Other Wetland Layers

Reference Layers

Tell Me More...

Need A Permit?

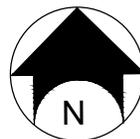
Contacts



RZ Engineering, PLLC

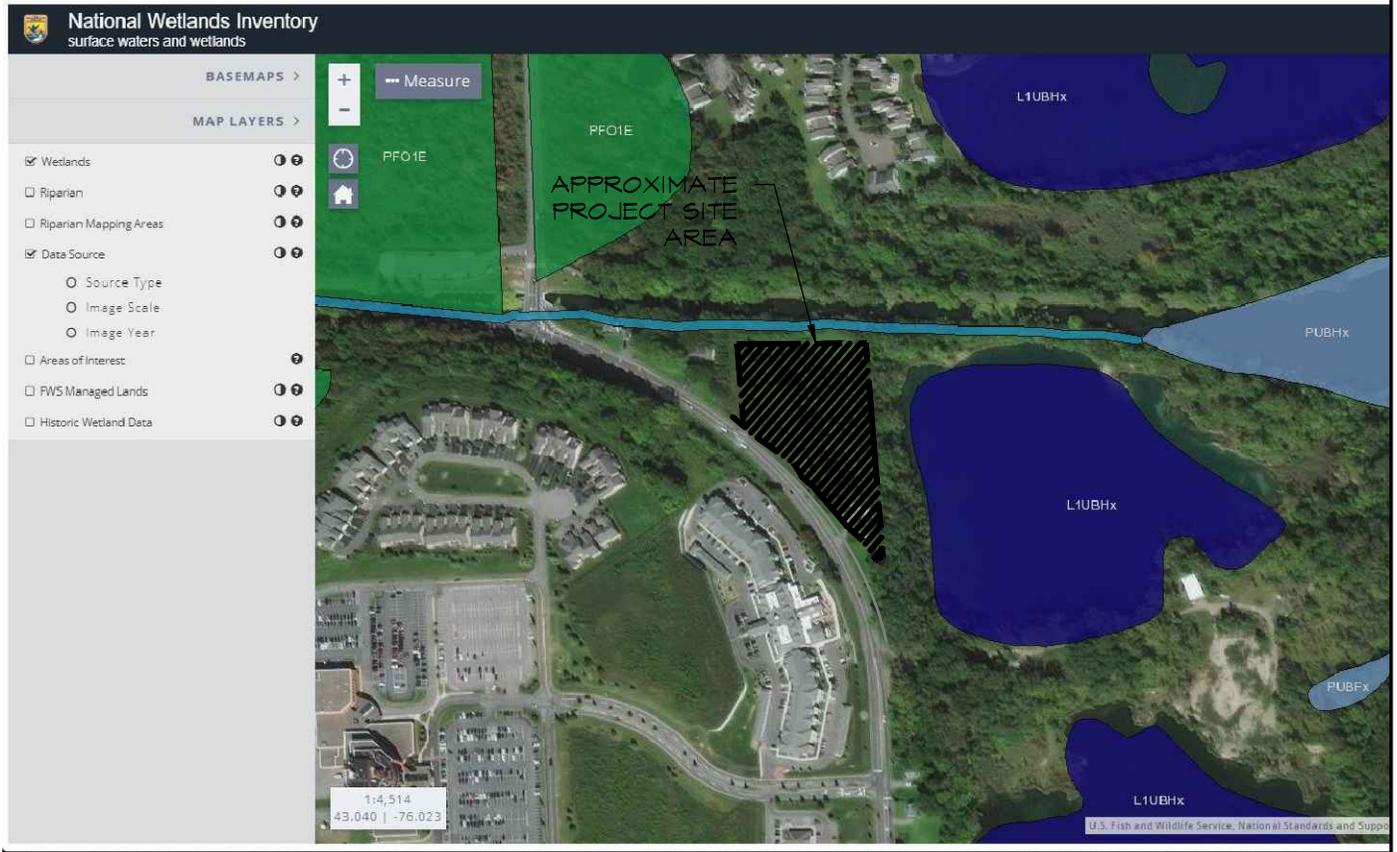
STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
EAST SYRACUSE, NY 13057
PH (315) 432-1089
FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
NYSDEC WETLANDS AND
ENDANGERED SPECIES MAP
SCALE 1:600

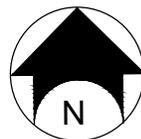
FIGURE 9



RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

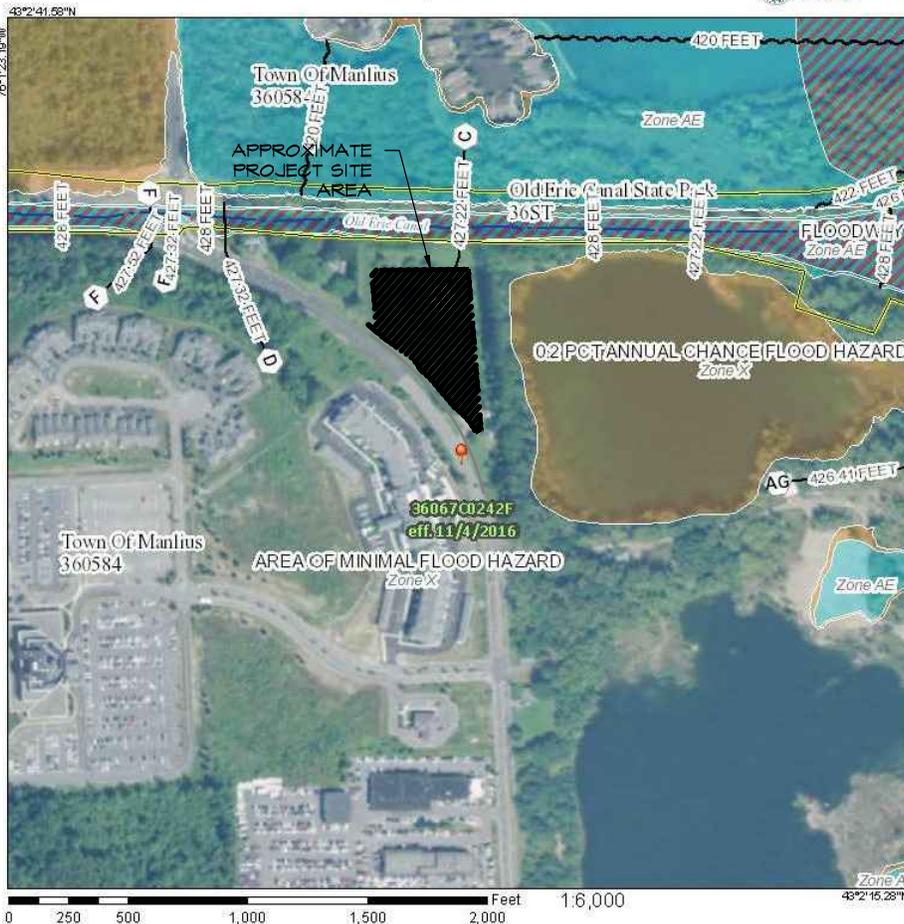
6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
 FEDERAL WETLANDS MAP
 SCALE 1:600

FIGURE 10

National Flood Hazard Layer FIRMette



Legend

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

- SPECIAL FLOOD HAZARD AREAS**
 - Without Base Flood Elevation (BFE) Zone A, V, AGP
 - With BFE or Depth Zone AE, AO, AH, VE, AP
 - 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**
 - 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
- CROSS SECTIONS**
 - 26.2 Cross Sections with 1% Annual Chance Water Surface Elevation
 - 12.6 Coastal Transect
 - Coastal Transect Base Flood Elevation Line (BFE)
 - Limit of Study
 - Jurisdiction Boundary
 - Coastal Transect Baseline
- OTHER FEATURES**
 - Profile Baseline
 - Hydrographic Feature
- MAP PANELS**
 - Digital Data Available
 - No Digital Data Available
 - Unmapped

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.

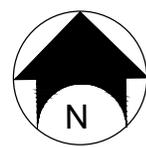
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/10/2020 at 8:33:31 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded 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.

RZ Engineering, PLLC

STORMWATER/SANITARY WATER ENVIRONMENTAL TRANSPORTATION

6320 FLY ROAD SUITE 109
 EAST SYRACUSE, NY 13057
 PH (315) 432-1089
 FAX (315) 445-7981



MBM BURDICK ST DENTAL OFFICE
 NATIONAL FLOOD INSURANCE MAP
 SCALE 1:800

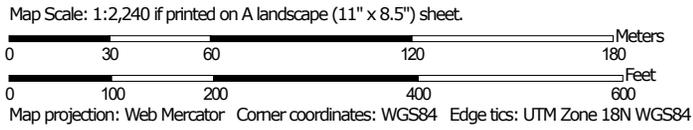
FIGURE 11

APPENDIX A

Hydrologic Soil Group—Onondaga County, New York



Soil Map may not be valid at this scale.



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 1:20,000.

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: Onondaga County, New York
 Survey Area Data: Version 14, Sep 16, 2019

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

Date(s) aerial images were photographed: Jun 18, 2011—Oct 10, 2016

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 |
|------------------------------------|--|--------|--------------|----------------|
| CfB | Cazenovia silt loam, 2 to 8 percent slopes | C | 2.6 | 30.1% |
| PG | Gravel pits | | 0.9 | 10.3% |
| PgB | Palmyra gravelly loam, 3 to 8 percent slopes | A | 5.0 | 57.6% |
| W | Water | | 0.2 | 2.0% |
| Totals for Area of Interest | | | 8.6 | 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

APPENDIX B

Extreme Precipitation Tables

Northeast Regional Climate Center

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

| | |
|------------------|---------------------------------|
| Smoothing | No |
| State | New York |
| Location | |
| Longitude | 76.018 degrees West |
| Latitude | 43.041 degrees North |
| Elevation | 0 feet |
| Date/Time | Thu, 09 Apr 2020 10:38:58 -0400 |

Extreme Precipitation Estimates

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|------|------|------|--------------|------|------|-------|-------|-------|--------------|
| 1yr | 0.28 | 0.43 | 0.53 | 0.71 | 0.87 | 0.99 | 1yr | 0.75 | 0.97 | 1.11 | 1.39 | 1.68 | 2.04 | 2.28 | 1yr | 1.81 | 2.20 | 2.62 | 3.16 | 3.68 | 1yr |
| 2yr | 0.33 | 0.51 | 0.62 | 0.84 | 1.04 | 1.19 | 2yr | 0.90 | 1.16 | 1.31 | 1.63 | 1.97 | 2.38 | 2.68 | 2yr | 2.11 | 2.58 | 3.03 | 3.64 | 4.20 | 2yr |
| 5yr | 0.39 | 0.60 | 0.75 | 1.03 | 1.31 | 1.47 | 5yr | 1.13 | 1.44 | 1.63 | 2.01 | 2.44 | 2.93 | 3.31 | 5yr | 2.59 | 3.19 | 3.71 | 4.38 | 4.99 | 5yr |
| 10yr | 0.45 | 0.70 | 0.86 | 1.20 | 1.56 | 1.73 | 10yr | 1.34 | 1.69 | 1.92 | 2.35 | 2.86 | 3.43 | 3.89 | 10yr | 3.03 | 3.74 | 4.33 | 5.04 | 5.69 | 10yr |
| 25yr | 0.55 | 0.84 | 1.05 | 1.49 | 1.97 | 2.15 | 25yr | 1.70 | 2.10 | 2.39 | 2.89 | 3.54 | 4.21 | 4.82 | 25yr | 3.73 | 4.63 | 5.32 | 6.07 | 6.77 | 25yr |
| 50yr | 0.64 | 0.97 | 1.21 | 1.74 | 2.35 | 2.53 | 50yr | 2.03 | 2.47 | 2.83 | 3.39 | 4.16 | 4.93 | 5.66 | 50yr | 4.37 | 5.45 | 6.21 | 6.99 | 7.72 | 50yr |
| 100yr | 0.75 | 1.13 | 1.42 | 2.04 | 2.80 | 2.99 | 100yr | 2.42 | 2.92 | 3.35 | 3.97 | 4.89 | 5.78 | 6.66 | 100yr | 5.11 | 6.41 | 7.27 | 8.05 | 8.81 | 100yr |
| 200yr | 0.87 | 1.31 | 1.66 | 2.40 | 3.35 | 3.53 | 200yr | 2.89 | 3.45 | 3.96 | 4.65 | 5.76 | 6.76 | 7.84 | 200yr | 5.98 | 7.54 | 8.50 | 9.28 | 10.05 | 200yr |
| 500yr | 1.07 | 1.60 | 2.05 | 2.98 | 4.25 | 4.41 | 500yr | 3.66 | 4.31 | 4.96 | 5.74 | 7.14 | 8.33 | 9.73 | 500yr | 7.38 | 9.36 | 10.46 | 11.20 | 11.98 | 500yr |

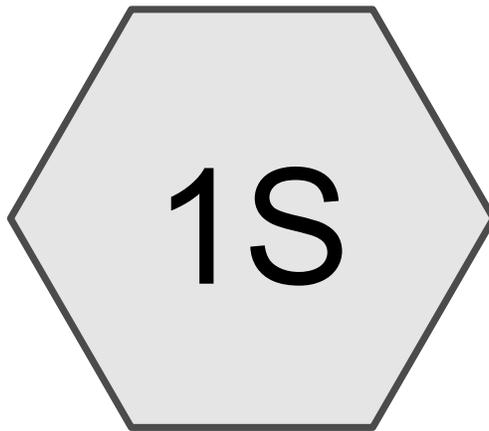
Lower Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|------|------|------|--------------|------|------|------|------|-------|--------------|
| 1yr | 0.25 | 0.38 | 0.47 | 0.63 | 0.77 | 0.88 | 1yr | 0.66 | 0.86 | 0.92 | 1.10 | 1.40 | 1.65 | 2.04 | 1yr | 1.46 | 1.96 | 2.39 | 2.77 | 3.32 | 1yr |
| 2yr | 0.32 | 0.49 | 0.61 | 0.82 | 1.02 | 1.14 | 2yr | 0.88 | 1.12 | 1.27 | 1.56 | 1.90 | 2.32 | 2.61 | 2yr | 2.05 | 2.51 | 2.93 | 3.54 | 4.10 | 2yr |
| 5yr | 0.36 | 0.55 | 0.68 | 0.94 | 1.19 | 1.35 | 5yr | 1.03 | 1.32 | 1.49 | 1.86 | 2.27 | 2.72 | 3.07 | 5yr | 2.40 | 2.96 | 3.46 | 4.10 | 4.69 | 5yr |
| 10yr | 0.39 | 0.60 | 0.74 | 1.04 | 1.34 | 1.51 | 10yr | 1.16 | 1.47 | 1.68 | 2.08 | 2.55 | 3.06 | 3.46 | 10yr | 2.70 | 3.33 | 3.89 | 4.54 | 5.19 | 10yr |
| 25yr | 0.44 | 0.67 | 0.83 | 1.18 | 1.55 | 1.73 | 25yr | 1.34 | 1.69 | 1.98 | 2.42 | 2.94 | 3.53 | 4.03 | 25yr | 3.12 | 3.87 | 4.54 | 5.21 | 5.93 | 25yr |
| 50yr | 0.47 | 0.71 | 0.88 | 1.27 | 1.71 | 1.92 | 50yr | 1.47 | 1.88 | 2.21 | 2.68 | 3.25 | 3.93 | 4.49 | 50yr | 3.48 | 4.32 | 5.10 | 5.78 | 6.54 | 50yr |
| 100yr | 0.50 | 0.76 | 0.95 | 1.38 | 1.89 | 2.31 | 100yr | 1.63 | 2.26 | 2.49 | 2.97 | 3.60 | 4.34 | 4.99 | 100yr | 3.84 | 4.80 | 5.72 | 6.37 | 7.22 | 100yr |
| 200yr | 0.54 | 0.82 | 1.04 | 1.50 | 2.10 | 2.63 | 200yr | 1.81 | 2.57 | 2.79 | 3.28 | 3.99 | 4.80 | 5.56 | 200yr | 4.25 | 5.34 | 6.40 | 7.02 | 7.97 | 200yr |
| 500yr | 0.84 | 1.25 | 1.60 | 2.33 | 3.31 | 3.13 | 500yr | 2.86 | 3.06 | 3.22 | 3.75 | 4.55 | 5.45 | 6.36 | 500yr | 4.83 | 6.11 | 7.40 | 7.95 | 9.06 | 500yr |

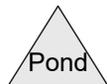
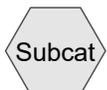
Upper Confidence Limits

| | 5min | 10min | 15min | 30min | 60min | 120min | | 1hr | 2hr | 3hr | 6hr | 12hr | 24hr | 48hr | | 1day | 2day | 4day | 7day | 10day | |
|--------------|------|-------|-------|-------|-------|--------|--------------|------|------|------|------|-------|-------|-------|--------------|------|-------|-------|-------|-------|--------------|
| 1yr | 0.30 | 0.46 | 0.57 | 0.76 | 0.94 | 1.07 | 1yr | 0.81 | 1.05 | 1.21 | 1.55 | 1.84 | 2.22 | 2.63 | 1yr | 1.97 | 2.53 | 2.83 | 3.38 | 3.97 | 1yr |
| 2yr | 0.35 | 0.54 | 0.66 | 0.90 | 1.11 | 1.24 | 2yr | 0.96 | 1.21 | 1.37 | 1.72 | 2.08 | 2.49 | 2.80 | 2yr | 2.21 | 2.69 | 3.12 | 3.75 | 4.33 | 2yr |
| 5yr | 0.42 | 0.65 | 0.81 | 1.11 | 1.42 | 1.61 | 5yr | 1.22 | 1.57 | 1.76 | 2.19 | 2.63 | 3.12 | 3.54 | 5yr | 2.76 | 3.41 | 3.98 | 4.67 | 5.32 | 5yr |
| 10yr | 0.50 | 0.76 | 0.95 | 1.32 | 1.71 | 1.99 | 10yr | 1.48 | 1.95 | 2.16 | 2.68 | 3.21 | 3.84 | 4.27 | 10yr | 3.40 | 4.10 | 4.80 | 5.52 | 6.23 | 10yr |
| 25yr | 0.63 | 0.95 | 1.19 | 1.69 | 2.23 | 2.65 | 25yr | 1.92 | 2.59 | 2.82 | 3.54 | 4.21 | 4.73 | 5.50 | 25yr | 4.19 | 5.29 | 6.17 | 6.90 | 7.70 | 25yr |
| 50yr | 0.74 | 1.13 | 1.41 | 2.02 | 2.72 | 3.29 | 50yr | 2.35 | 3.22 | 3.47 | 4.34 | 5.14 | 5.68 | 6.66 | 50yr | 5.03 | 6.41 | 7.49 | 8.19 | 9.03 | 50yr |
| 100yr | 0.89 | 1.35 | 1.69 | 2.44 | 3.34 | 3.97 | 100yr | 2.88 | 3.88 | 4.27 | 5.36 | 6.30 | 6.83 | 8.09 | 100yr | 6.05 | 7.78 | 9.10 | 9.73 | 10.60 | 100yr |
| 200yr | 1.06 | 1.60 | 2.03 | 2.94 | 4.10 | 4.91 | 200yr | 3.54 | 4.80 | 5.24 | 6.63 | 7.74 | 8.21 | 9.82 | 200yr | 7.26 | 9.44 | 11.06 | 11.58 | 12.47 | 200yr |
| 500yr | 1.28 | 1.91 | 2.45 | 3.56 | 5.06 | 6.49 | 500yr | 4.37 | 6.34 | 6.90 | 8.77 | 10.15 | 10.50 | 12.75 | 500yr | 9.29 | 12.26 | 14.36 | 14.56 | 15.46 | 500yr |

APPENDIX C



EXDA-1



Summary for Subcatchment 1S: EXDA-1

Runoff = 0.51 cfs @ 12.40 hrs, Volume= 0.149 af, Depth= 0.38"

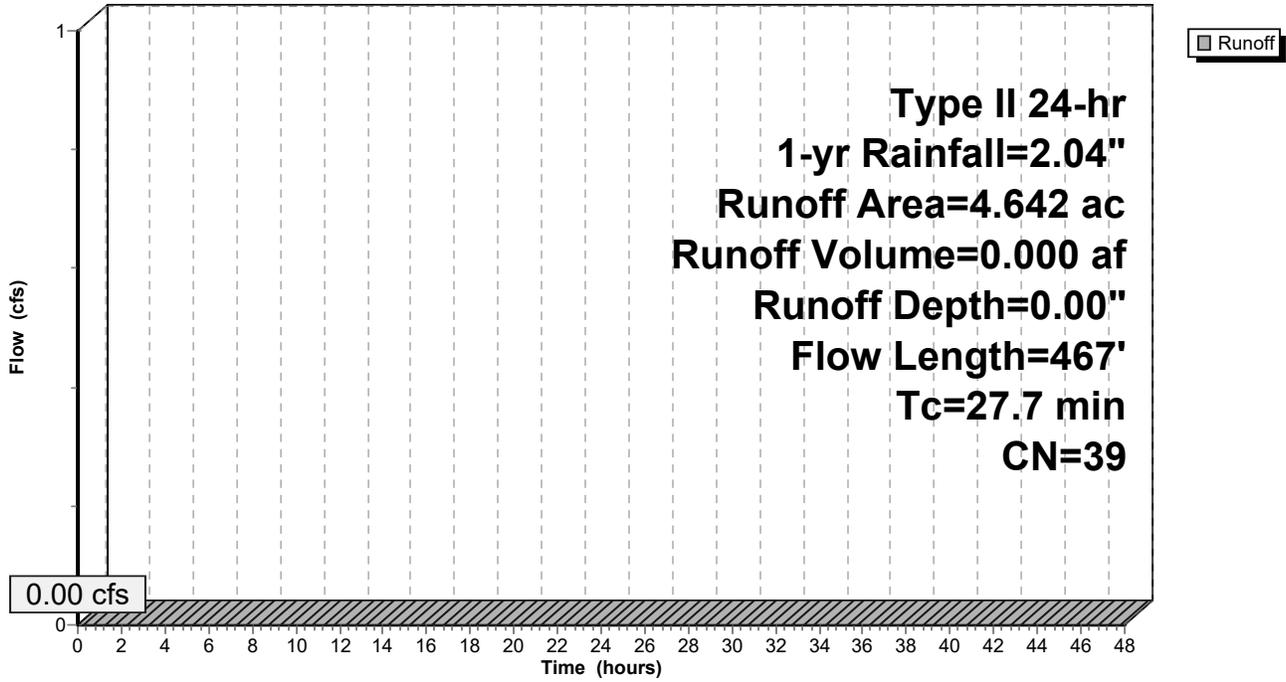
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type II 24-hr 100-yr Rainfall=5.78"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 2.930 | 30 | Woods, Good, HSG A |
| 0.674 | 70 | Woods, Good, HSG C |
| 0.110 | 98 | Paved parking, HSG A |
| 0.928 | 39 | >75% Grass cover, Good, HSG A |
| 4.642 | 39 | Weighted Average |
| 4.532 | | 97.63% Pervious Area |
| 0.110 | | 2.37% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 21.2 | 100 | 0.0300 | 0.08 | | Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.38" |
| 6.5 | 367 | 0.0354 | 0.94 | | Shallow Concentrated Flow, Woodland Kv= 5.0 fps |
| 27.7 | 467 | Total | | | |

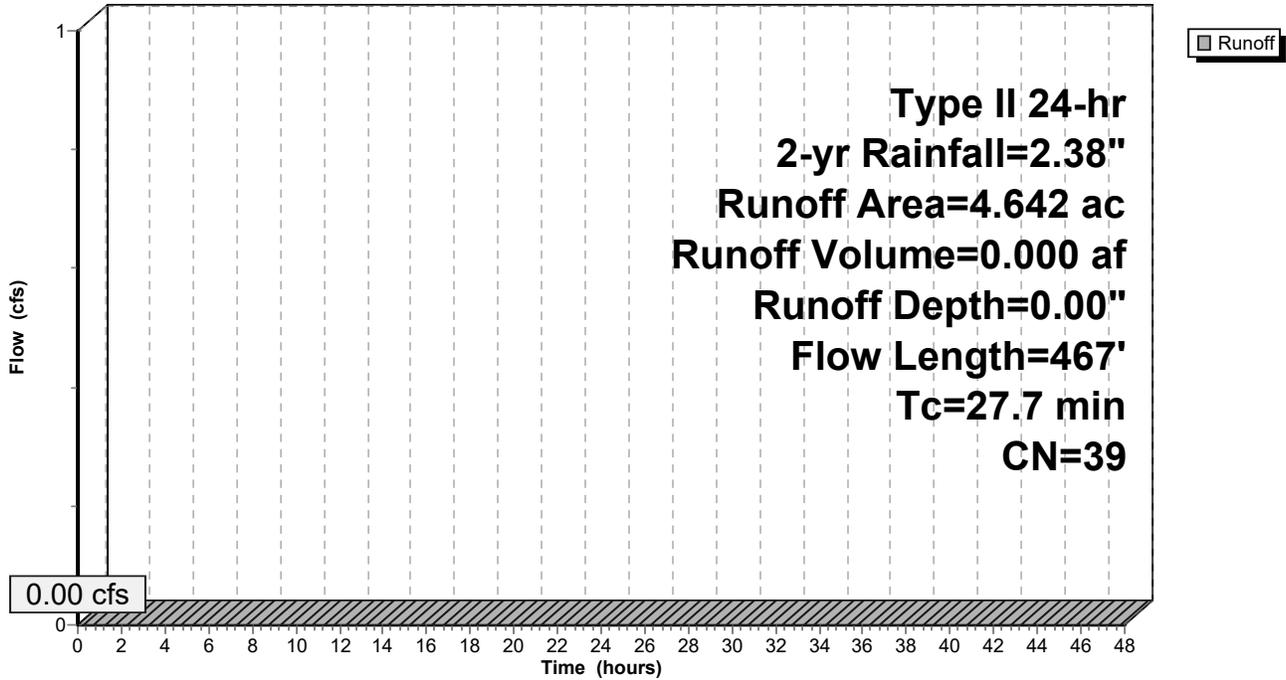
Subcatchment 1S: EXDA-1

Hydrograph



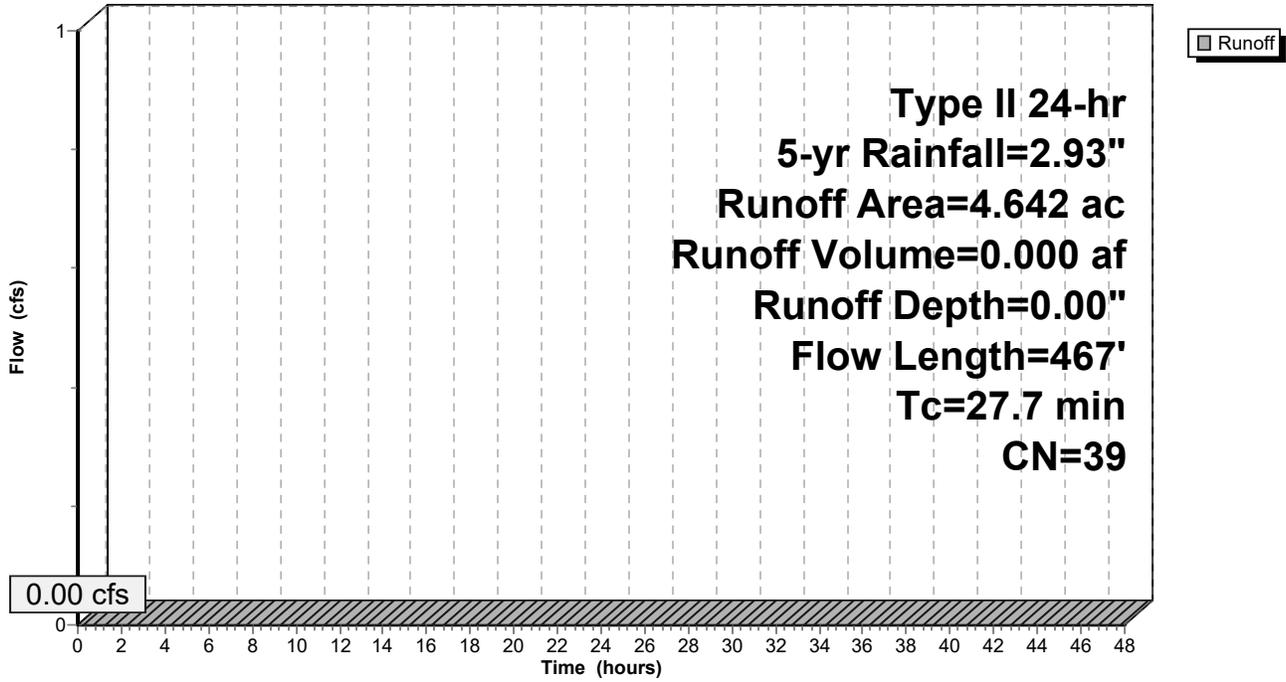
Subcatchment 1S: EXDA-1

Hydrograph



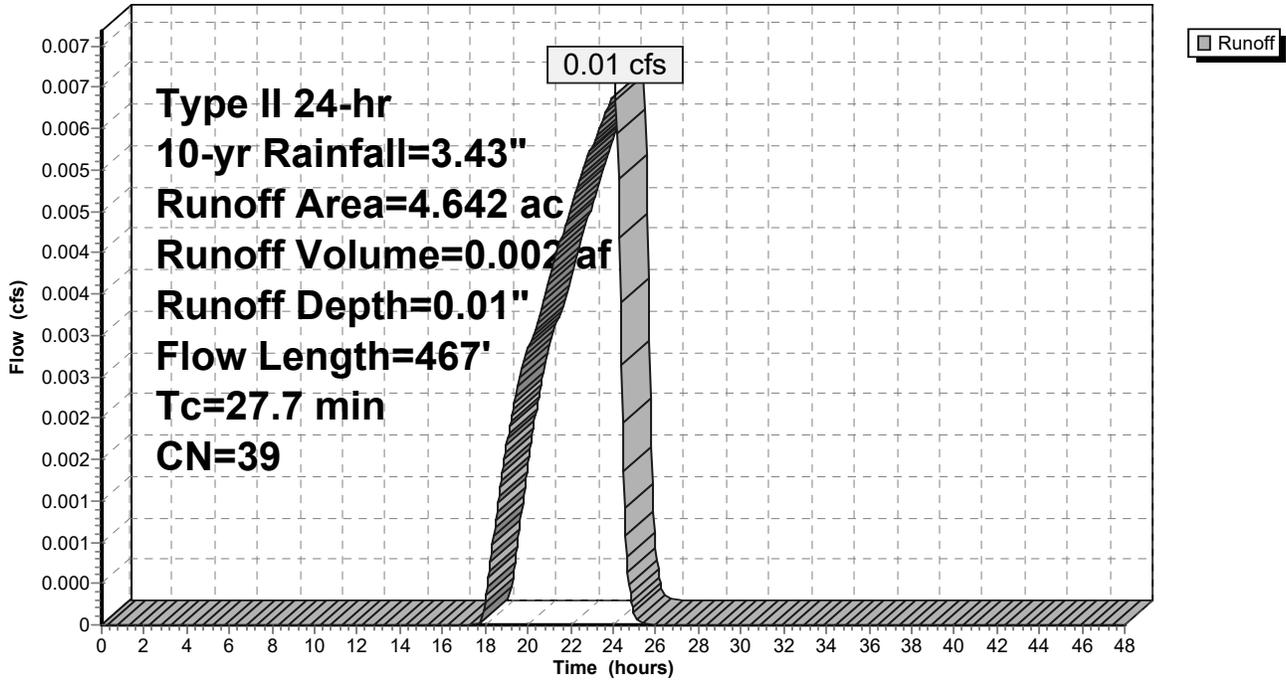
Subcatchment 1S: EXDA-1

Hydrograph



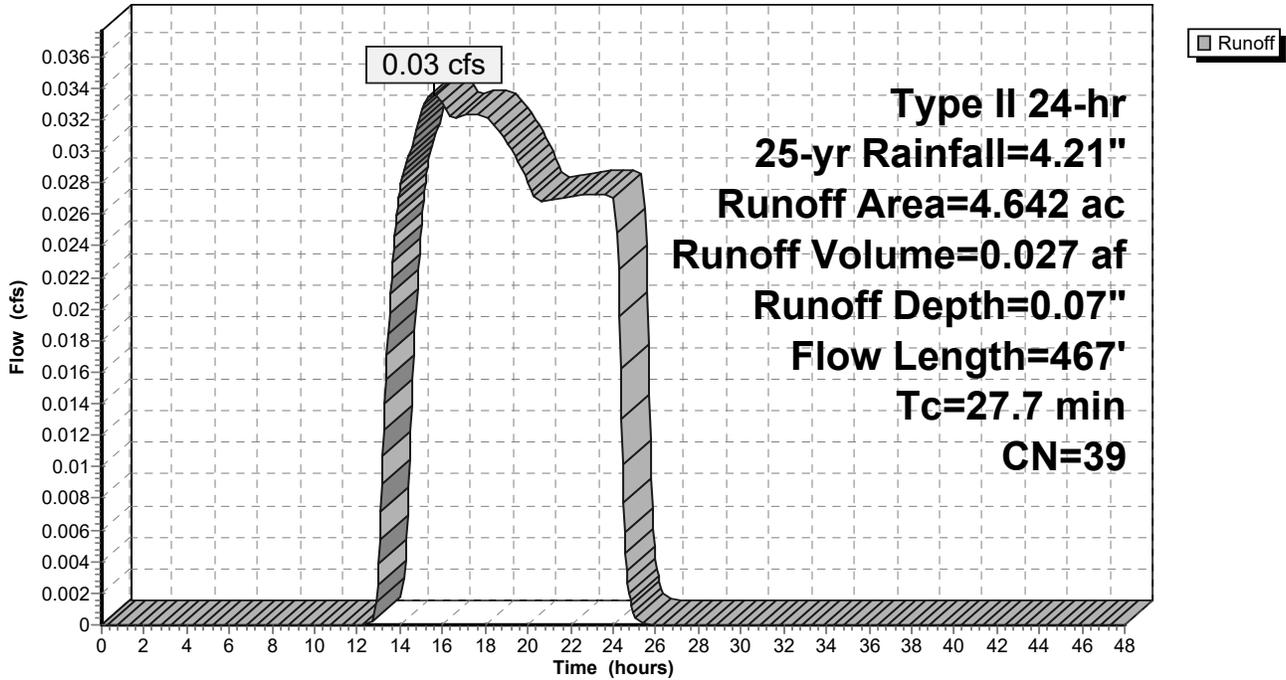
Subcatchment 1S: EXDA-1

Hydrograph



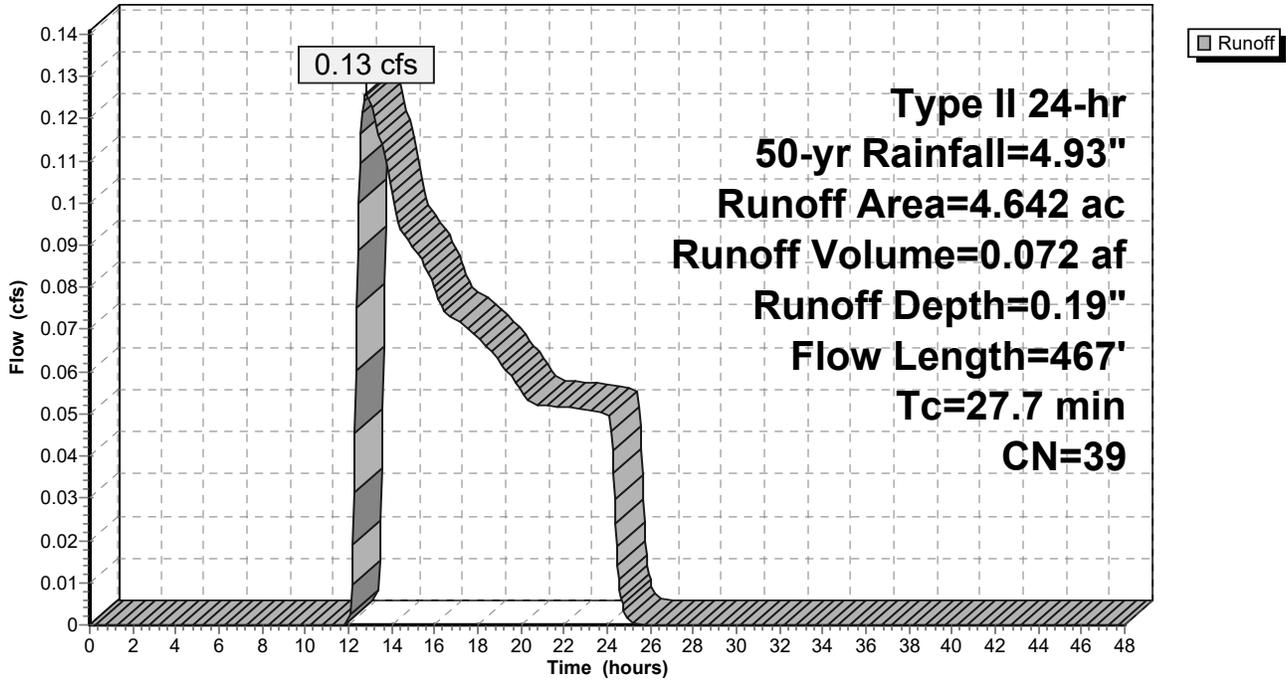
Subcatchment 1S: EXDA-1

Hydrograph



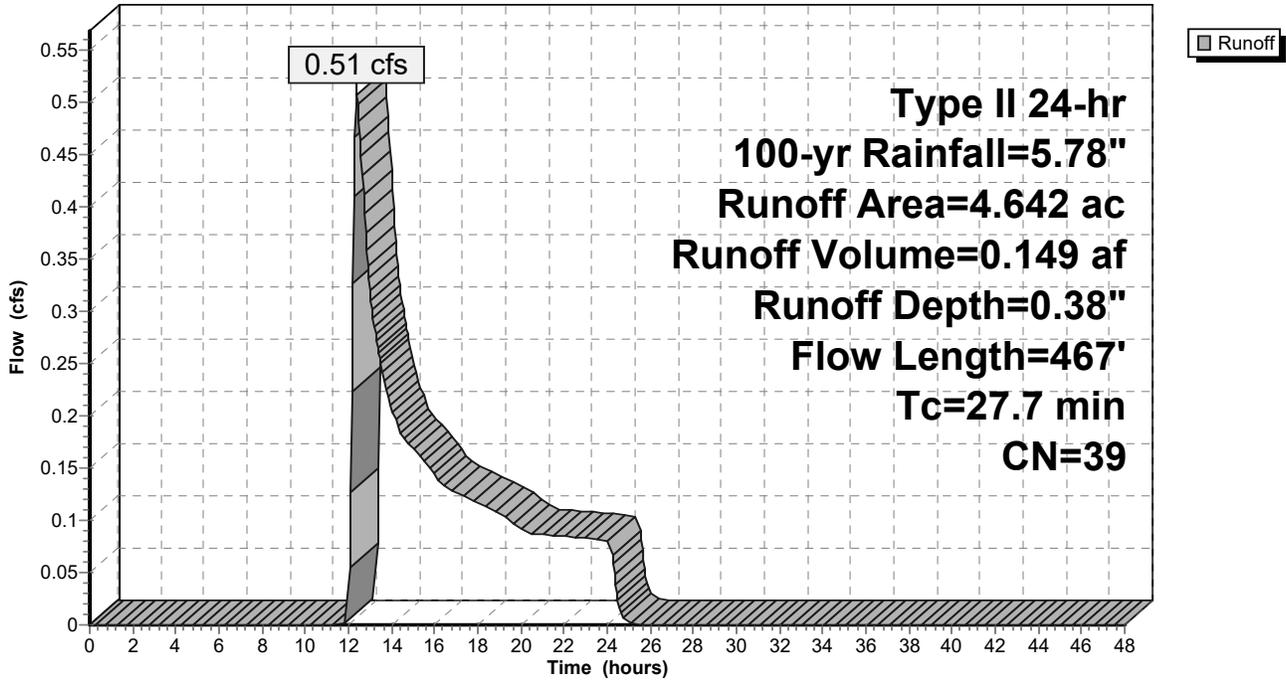
Subcatchment 1S: EXDA-1

Hydrograph

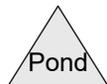
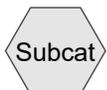
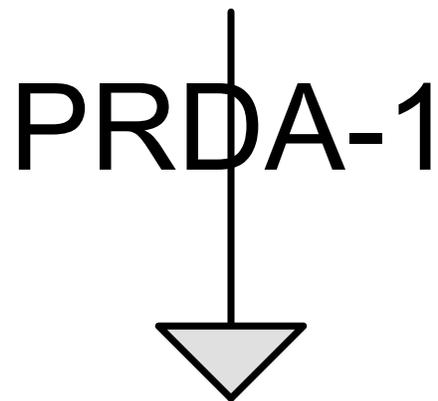


Subcatchment 1S: EXDA-1

Hydrograph



APPENDIX D



Summary for Subcatchment 2S: PRDA-1

Runoff = 11.58 cfs @ 12.07 hrs, Volume= 0.745 af, Depth= 1.86"

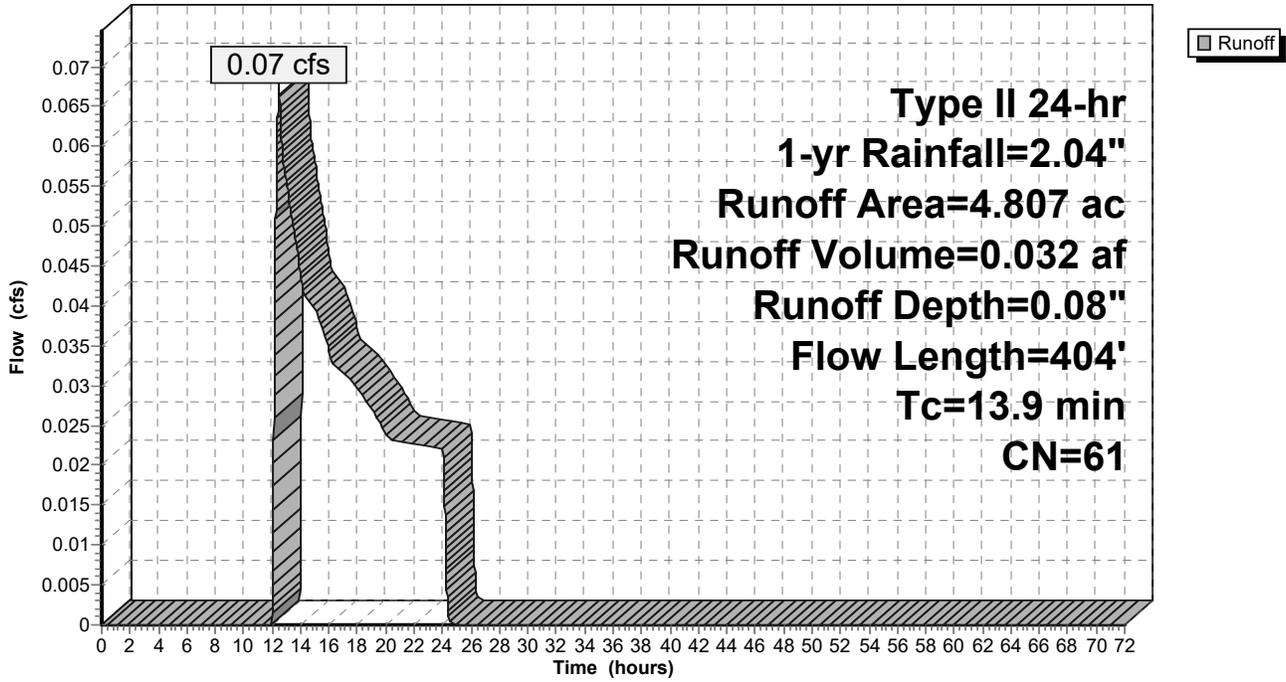
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
 Type II 24-hr 100-yr Rainfall=5.78"

| Area (ac) | CN | Description |
|-----------|----|-------------------------------|
| 1.407 | 98 | Paved parking, HSG A |
| 0.606 | 74 | >75% Grass cover, Good, HSG C |
| 2.794 | 39 | >75% Grass cover, Good, HSG A |
| 4.807 | 61 | Weighted Average |
| 3.400 | | 70.73% Pervious Area |
| 1.407 | | 29.27% Impervious Area |

| Tc (min) | Length (feet) | Slope (ft/ft) | Velocity (ft/sec) | Capacity (cfs) | Description |
|----------|---------------|---------------|-------------------|----------------|--|
| 9.4 | 100 | 0.0320 | 0.18 | | Sheet Flow, Grass: Short n= 0.150 P2= 2.38" |
| 4.5 | 304 | 0.0260 | 1.13 | | Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps |
| 13.9 | 404 | Total | | | |

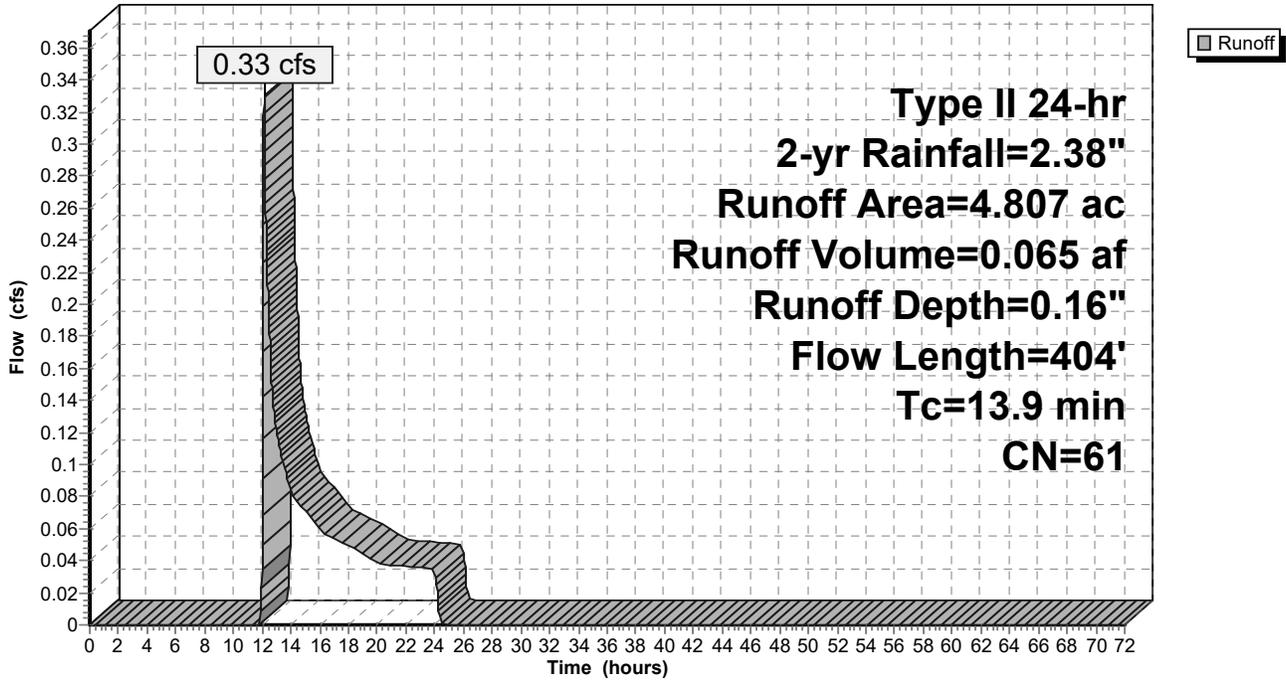
Subcatchment 2S: PRDA-1

Hydrograph



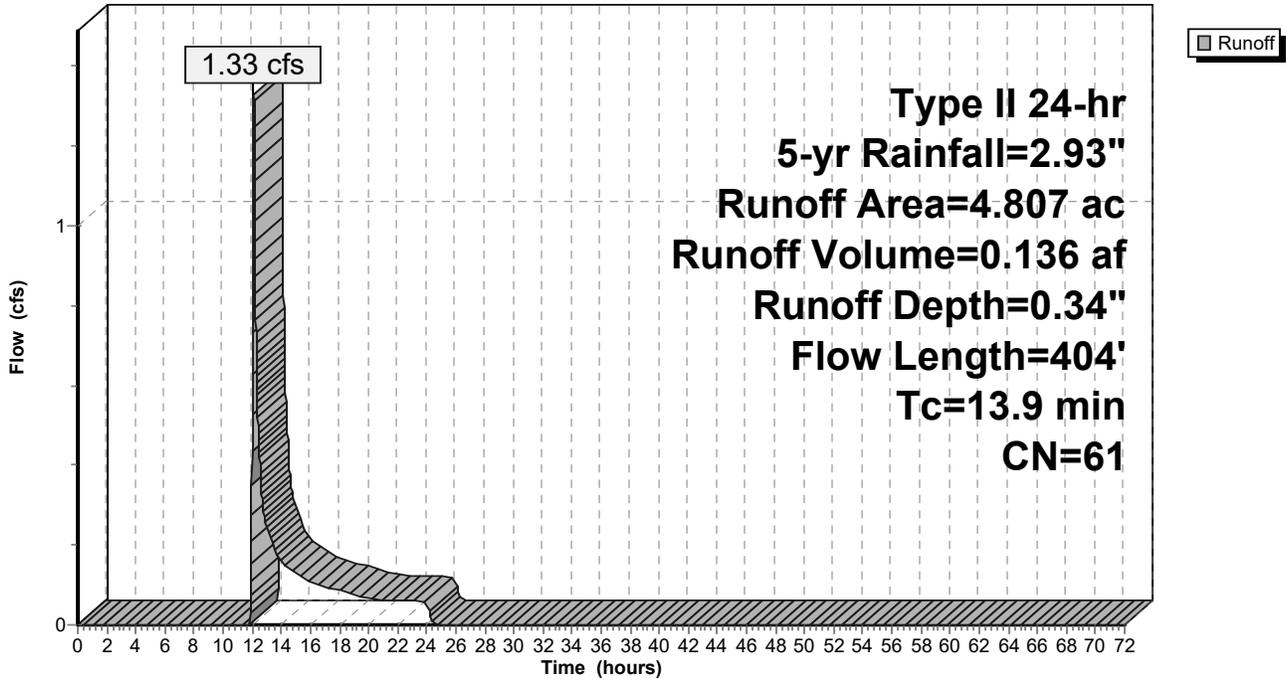
Subcatchment 2S: PRDA-1

Hydrograph



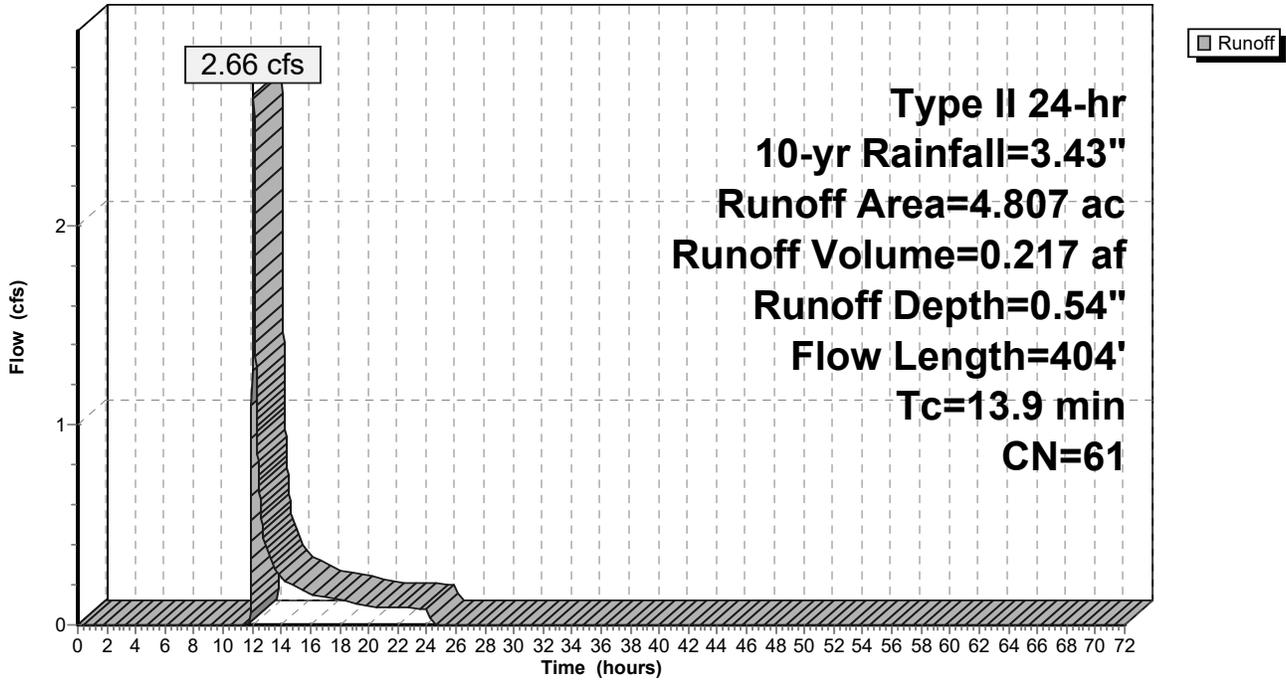
Subcatchment 2S: PRDA-1

Hydrograph



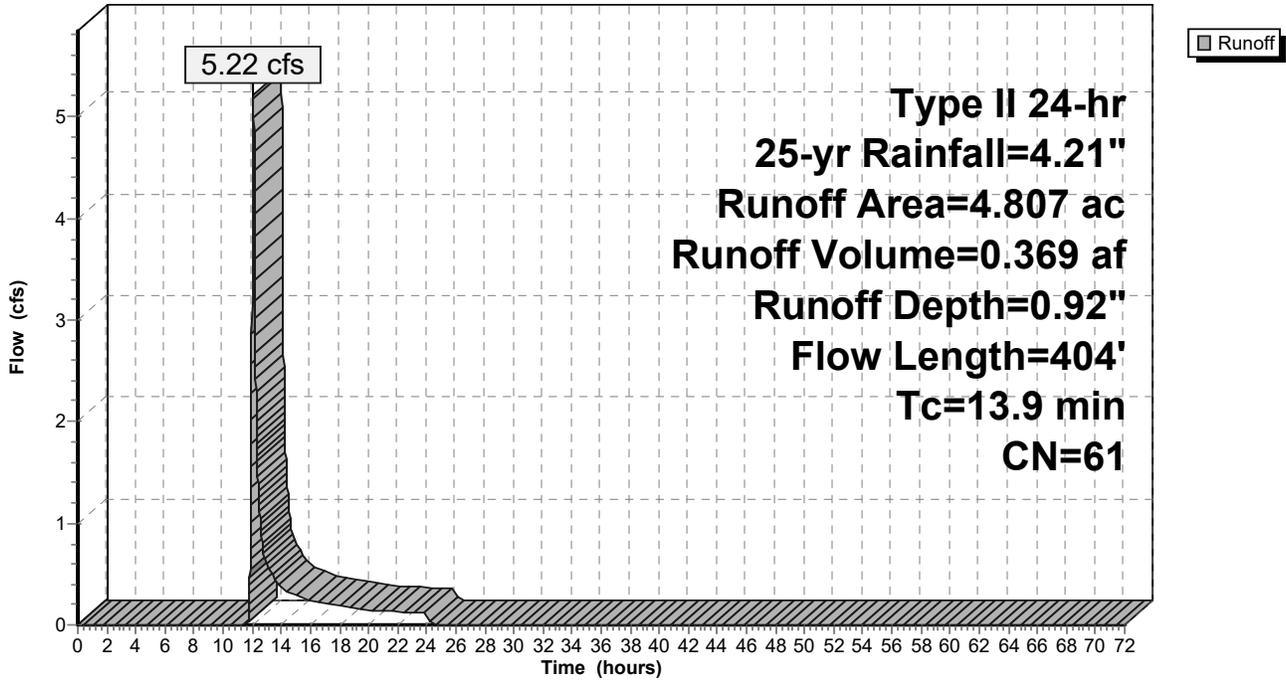
Subcatchment 2S: PRDA-1

Hydrograph



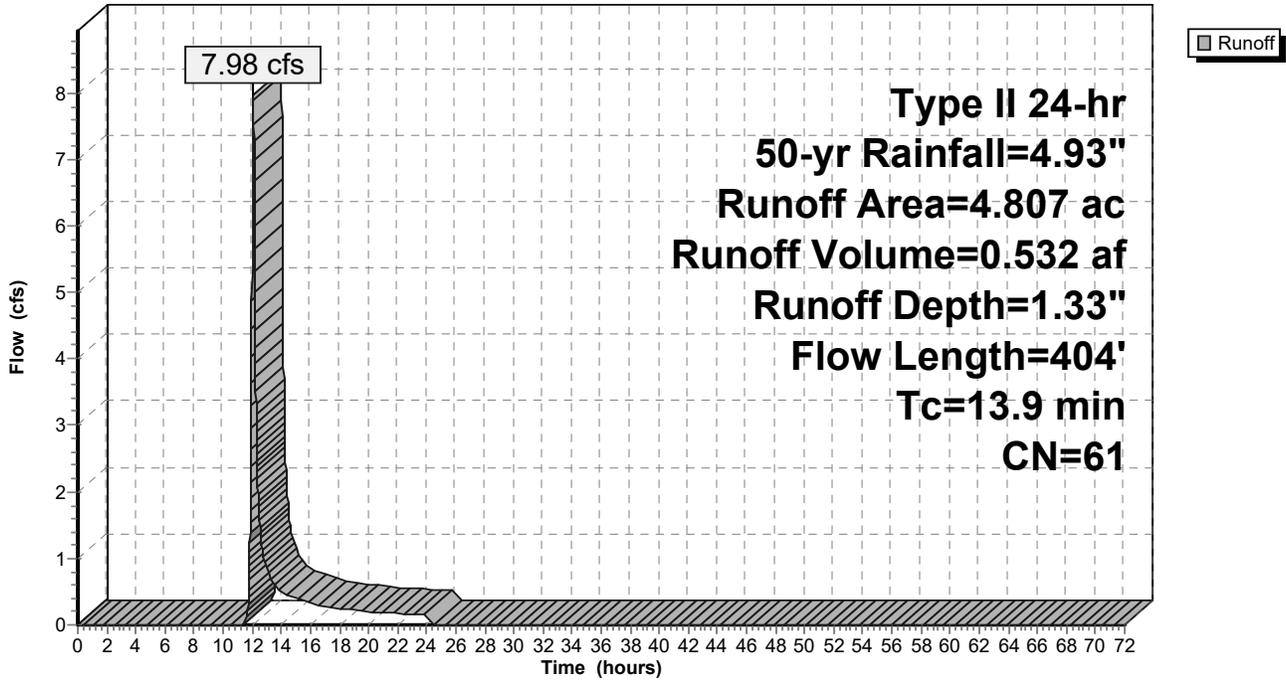
Subcatchment 2S: PRDA-1

Hydrograph



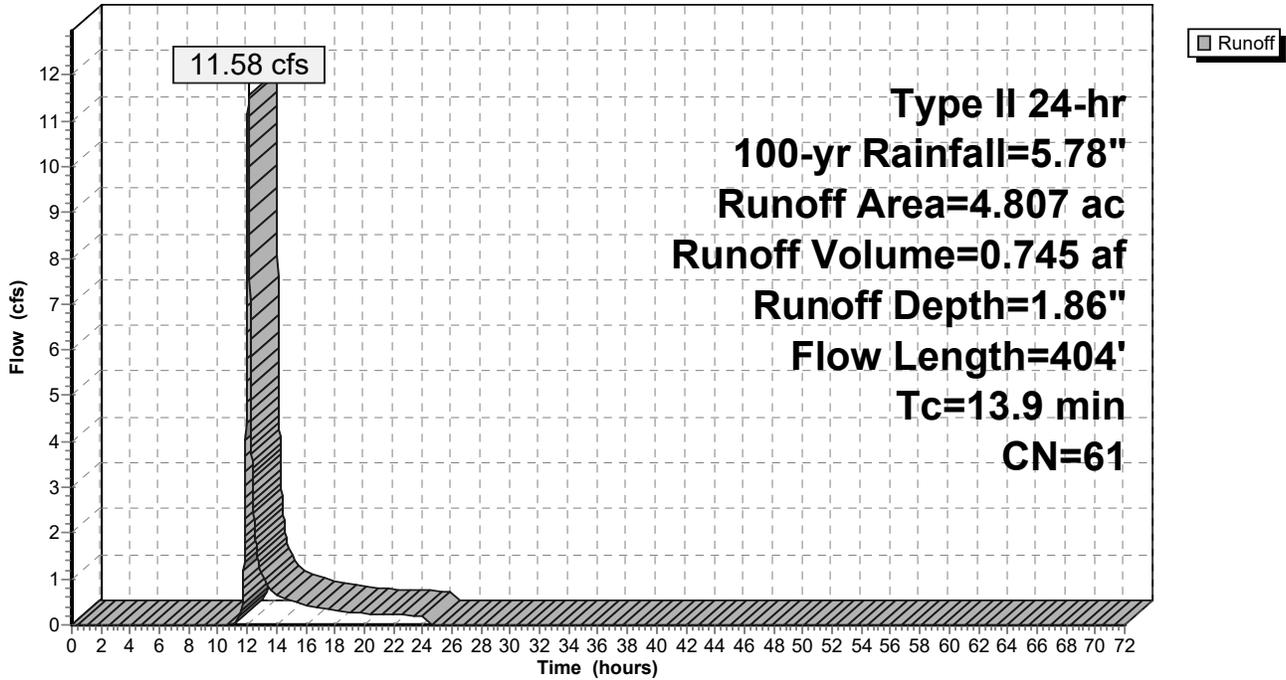
Subcatchment 2S: PRDA-1

Hydrograph

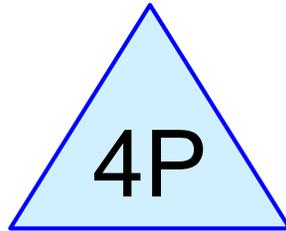


Subcatchment 2S: PRDA-1

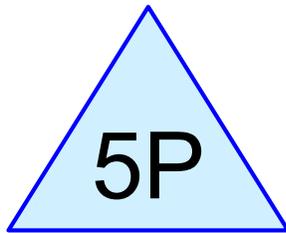
Hydrograph



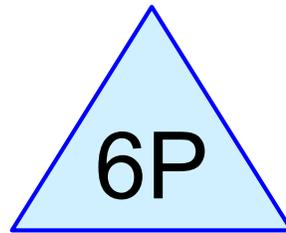
APPENDIX E



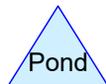
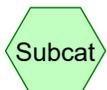
Infiltration Basin



Forebay 1



Forebay 2



Summary for Pond 4P: Infiltration Basin

Inflow Area = 4.807 ac, 29.27% Impervious, Inflow Depth = 1.86" for 100-yr event
 Inflow = 11.58 cfs @ 12.07 hrs, Volume= 0.745 af
 Outflow = 0.54 cfs @ 14.80 hrs, Volume= 0.745 af, Atten= 95%, Lag= 163.9 min
 Discarded = 0.33 cfs @ 14.80 hrs, Volume= 0.567 af
 Primary = 0.21 cfs @ 14.80 hrs, Volume= 0.178 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 436.35' @ 14.80 hrs Surf.Area= 9,450 sf Storage= 17,275 cf

Plug-Flow detention time= 503.8 min calculated for 0.745 af (100% of inflow)
 Center-of-Mass det. time= 503.9 min (1,370.5 - 866.5)

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 433.00' | 44,337 cf | Basin (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|------------------|-------------------|------------------------|------------------------|
| 433.00 | 1,614 | 0 | 0 |
| 434.00 | 3,298 | 2,456 | 2,456 |
| 435.00 | 5,747 | 4,523 | 6,979 |
| 436.00 | 8,534 | 7,141 | 14,119 |
| 437.00 | 11,143 | 9,839 | 23,958 |
| 438.00 | 13,916 | 12,530 | 36,487 |
| 438.50 | 17,485 | 7,850 | 44,337 |

| Device | Routing | Invert | Outlet Devices |
|--------|-----------|---------|---|
| #1 | Primary | 430.50' | 12.0" Round Culvert L= 39.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 430.50' / 430.00' S= 0.0128 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf |
| #2 | Secondary | 437.50' | Emergency Spillway, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 Width (feet) 15.00 25.00 |
| #3 | Device 1 | 437.10' | 24.0" Horiz. Rim C= 0.600 Limited to weir flow at low heads |
| #4 | Device 1 | 435.40' | 3.0" Vert. Orifice C= 0.600 Limited to weir flow at low heads |
| #5 | Discarded | 433.00' | 1.500 in/hr Exfiltration over Surface area |

Discarded OutFlow Max=0.33 cfs @ 14.80 hrs HW=436.35' (Free Discharge)
 ↳5=Exfiltration (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.21 cfs @ 14.80 hrs HW=436.35' (Free Discharge)
 ↳1=Culvert (Passes 0.21 cfs of 8.75 cfs potential flow)
 ↳3=Rim (Controls 0.00 cfs)
 ↳4=Orifice (Orifice Controls 0.21 cfs @ 4.38 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=433.00' (Free Discharge)
 ↳2=Emergency Spillway (Controls 0.00 cfs)

Stage-Area-Storage for Pond 4P: Infiltration Basin

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 433.00 | 1,614 | 0 | 438.30 | 16,057 | 40,983 |
| 433.10 | 1,782 | 170 | 438.40 | 16,771 | 42,624 |
| 433.20 | 1,951 | 356 | 438.50 | 17,485 | 44,337 |
| 433.30 | 2,119 | 560 | | | |
| 433.40 | 2,288 | 780 | | | |
| 433.50 | 2,456 | 1,018 | | | |
| 433.60 | 2,624 | 1,272 | | | |
| 433.70 | 2,793 | 1,542 | | | |
| 433.80 | 2,961 | 1,830 | | | |
| 433.90 | 3,130 | 2,135 | | | |
| 434.00 | 3,298 | 2,456 | | | |
| 434.10 | 3,543 | 2,798 | | | |
| 434.20 | 3,788 | 3,165 | | | |
| 434.30 | 4,033 | 3,556 | | | |
| 434.40 | 4,278 | 3,971 | | | |
| 434.50 | 4,523 | 4,411 | | | |
| 434.60 | 4,767 | 4,876 | | | |
| 434.70 | 5,012 | 5,365 | | | |
| 434.80 | 5,257 | 5,878 | | | |
| 434.90 | 5,502 | 6,416 | | | |
| 435.00 | 5,747 | 6,979 | | | |
| 435.10 | 6,026 | 7,567 | | | |
| 435.20 | 6,304 | 8,184 | | | |
| 435.30 | 6,583 | 8,828 | | | |
| 435.40 | 6,862 | 9,500 | | | |
| 435.50 | 7,141 | 10,200 | | | |
| 435.60 | 7,419 | 10,928 | | | |
| 435.70 | 7,698 | 11,684 | | | |
| 435.80 | 7,977 | 12,468 | | | |
| 435.90 | 8,255 | 13,280 | | | |
| 436.00 | 8,534 | 14,119 | | | |
| 436.10 | 8,795 | 14,985 | | | |
| 436.20 | 9,056 | 15,878 | | | |
| 436.30 | 9,317 | 16,797 | | | |
| 436.40 | 9,578 | 17,741 | | | |
| 436.50 | 9,839 | 18,712 | | | |
| 436.60 | 10,099 | 19,709 | | | |
| 436.70 | 10,360 | 20,732 | | | |
| 436.80 | 10,621 | 21,781 | | | |
| 436.90 | 10,882 | 22,856 | | | |
| 437.00 | 11,143 | 23,958 | | | |
| 437.10 | 11,420 | 25,086 | | | |
| 437.20 | 11,698 | 26,242 | | | |
| 437.30 | 11,975 | 27,425 | | | |
| 437.40 | 12,252 | 28,637 | | | |
| 437.50 | 12,530 | 29,876 | | | |
| 437.60 | 12,807 | 31,142 | | | |
| 437.70 | 13,084 | 32,437 | | | |
| 437.80 | 13,361 | 33,759 | | | |
| 437.90 | 13,639 | 35,109 | | | |
| 438.00 | 13,916 | 36,487 | | | |
| 438.10 | 14,630 | 37,914 | | | |
| 438.20 | 15,344 | 39,413 | | | |

Summary for Pond 5P: Forebay 1

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 433.00' | 1,362 cf | Basin (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 433.00 | 100 | 0 | 0 |
| 434.00 | 373 | 237 | 237 |
| 435.00 | 845 | 609 | 846 |
| 435.50 | 1,222 | 517 | 1,362 |

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 437.50' | Emergency Spillway, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 Width (feet) 15.00 25.00 |

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↳1=Emergency Spillway (Controls 0.00 cfs)

Stage-Area-Storage for Pond 5P: Forebay 1

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 433.00 | 100 | 0 | 438.30 | 1,222 | 1,362 |
| 433.10 | 127 | 11 | 438.40 | 1,222 | 1,362 |
| 433.20 | 155 | 25 | 438.50 | 1,222 | 1,362 |
| 433.30 | 182 | 42 | | | |
| 433.40 | 209 | 62 | | | |
| 433.50 | 237 | 84 | | | |
| 433.60 | 264 | 109 | | | |
| 433.70 | 291 | 137 | | | |
| 433.80 | 318 | 167 | | | |
| 433.90 | 346 | 201 | | | |
| 434.00 | 373 | 237 | | | |
| 434.10 | 420 | 276 | | | |
| 434.20 | 467 | 321 | | | |
| 434.30 | 515 | 370 | | | |
| 434.40 | 562 | 423 | | | |
| 434.50 | 609 | 482 | | | |
| 434.60 | 656 | 545 | | | |
| 434.70 | 703 | 613 | | | |
| 434.80 | 751 | 686 | | | |
| 434.90 | 798 | 763 | | | |
| 435.00 | 845 | 846 | | | |
| 435.10 | 920 | 934 | | | |
| 435.20 | 996 | 1,030 | | | |
| 435.30 | 1,071 | 1,133 | | | |
| 435.40 | 1,147 | 1,244 | | | |
| 435.50 | 1,222 | 1,362 | | | |
| 435.60 | 1,222 | 1,362 | | | |
| 435.70 | 1,222 | 1,362 | | | |
| 435.80 | 1,222 | 1,362 | | | |
| 435.90 | 1,222 | 1,362 | | | |
| 436.00 | 1,222 | 1,362 | | | |
| 436.10 | 1,222 | 1,362 | | | |
| 436.20 | 1,222 | 1,362 | | | |
| 436.30 | 1,222 | 1,362 | | | |
| 436.40 | 1,222 | 1,362 | | | |
| 436.50 | 1,222 | 1,362 | | | |
| 436.60 | 1,222 | 1,362 | | | |
| 436.70 | 1,222 | 1,362 | | | |
| 436.80 | 1,222 | 1,362 | | | |
| 436.90 | 1,222 | 1,362 | | | |
| 437.00 | 1,222 | 1,362 | | | |
| 437.10 | 1,222 | 1,362 | | | |
| 437.20 | 1,222 | 1,362 | | | |
| 437.30 | 1,222 | 1,362 | | | |
| 437.40 | 1,222 | 1,362 | | | |
| 437.50 | 1,222 | 1,362 | | | |
| 437.60 | 1,222 | 1,362 | | | |
| 437.70 | 1,222 | 1,362 | | | |
| 437.80 | 1,222 | 1,362 | | | |
| 437.90 | 1,222 | 1,362 | | | |
| 438.00 | 1,222 | 1,362 | | | |
| 438.10 | 1,222 | 1,362 | | | |
| 438.20 | 1,222 | 1,362 | | | |

Summary for Pond 6P: Forebay 2

| Volume | Invert | Avail.Storage | Storage Description |
|--------|---------|---------------|--|
| #1 | 433.00' | 1,258 cf | Basin (Prismatic) Listed below (Recalc) |

| Elevation (feet) | Surf.Area (sq-ft) | Inc.Store (cubic-feet) | Cum.Store (cubic-feet) |
|---------------------|----------------------|---------------------------|---------------------------|
| 433.00 | 120 | 0 | 0 |
| 434.00 | 382 | 251 | 251 |
| 435.00 | 759 | 571 | 822 |
| 435.50 | 985 | 436 | 1,258 |

| Device | Routing | Invert | Outlet Devices |
|--------|---------|---------|--|
| #1 | Primary | 437.50' | Emergency Spillway, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.00 Width (feet) 15.00 25.00 |

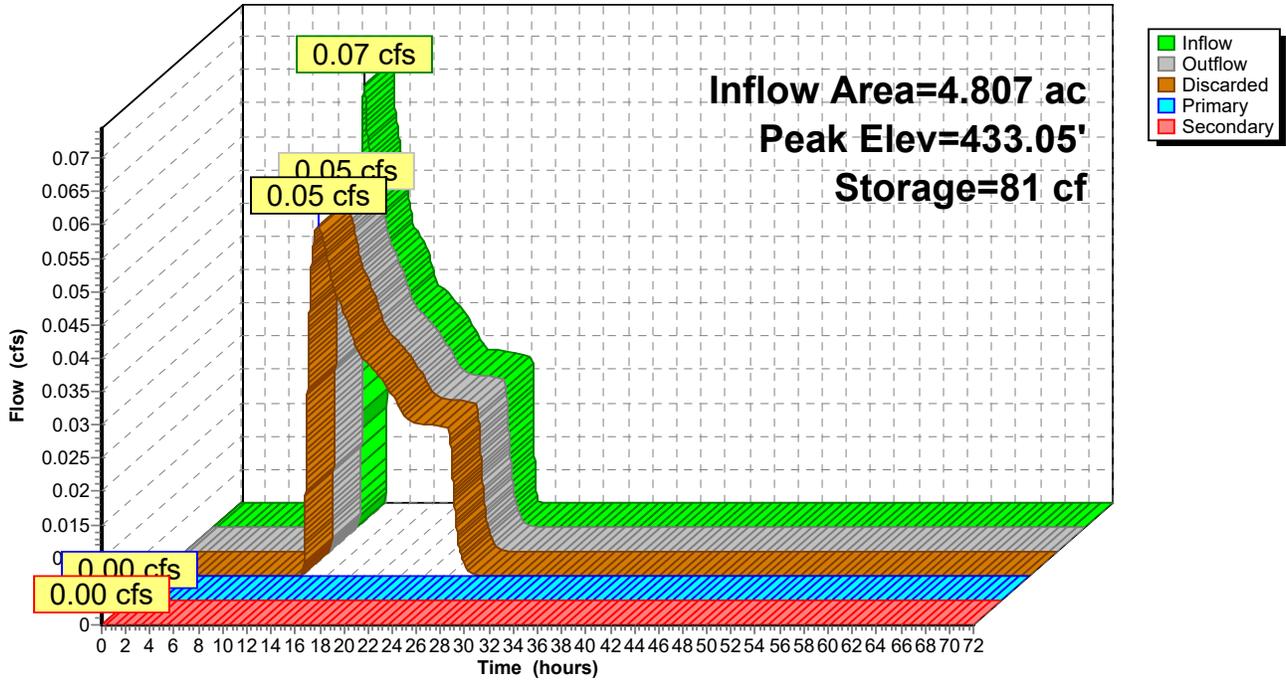
Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=0.00' (Free Discharge)
 ↳1=Emergency Spillway (Controls 0.00 cfs)

Stage-Area-Storage for Pond 6P: Forebay 2

| Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) | Elevation (feet) | Surface (sq-ft) | Storage (cubic-feet) |
|---------------------|--------------------|-------------------------|---------------------|--------------------|-------------------------|
| 433.00 | 120 | 0 | 438.30 | 985 | 1,258 |
| 433.10 | 146 | 13 | 438.40 | 985 | 1,258 |
| 433.20 | 172 | 29 | 438.50 | 985 | 1,258 |
| 433.30 | 199 | 48 | | | |
| 433.40 | 225 | 69 | | | |
| 433.50 | 251 | 93 | | | |
| 433.60 | 277 | 119 | | | |
| 433.70 | 303 | 148 | | | |
| 433.80 | 330 | 180 | | | |
| 433.90 | 356 | 214 | | | |
| 434.00 | 382 | 251 | | | |
| 434.10 | 420 | 291 | | | |
| 434.20 | 457 | 335 | | | |
| 434.30 | 495 | 383 | | | |
| 434.40 | 533 | 434 | | | |
| 434.50 | 571 | 489 | | | |
| 434.60 | 608 | 548 | | | |
| 434.70 | 646 | 611 | | | |
| 434.80 | 684 | 677 | | | |
| 434.90 | 721 | 747 | | | |
| 435.00 | 759 | 822 | | | |
| 435.10 | 804 | 900 | | | |
| 435.20 | 849 | 982 | | | |
| 435.30 | 895 | 1,070 | | | |
| 435.40 | 940 | 1,161 | | | |
| 435.50 | 985 | 1,258 | | | |
| 435.60 | 985 | 1,258 | | | |
| 435.70 | 985 | 1,258 | | | |
| 435.80 | 985 | 1,258 | | | |
| 435.90 | 985 | 1,258 | | | |
| 436.00 | 985 | 1,258 | | | |
| 436.10 | 985 | 1,258 | | | |
| 436.20 | 985 | 1,258 | | | |
| 436.30 | 985 | 1,258 | | | |
| 436.40 | 985 | 1,258 | | | |
| 436.50 | 985 | 1,258 | | | |
| 436.60 | 985 | 1,258 | | | |
| 436.70 | 985 | 1,258 | | | |
| 436.80 | 985 | 1,258 | | | |
| 436.90 | 985 | 1,258 | | | |
| 437.00 | 985 | 1,258 | | | |
| 437.10 | 985 | 1,258 | | | |
| 437.20 | 985 | 1,258 | | | |
| 437.30 | 985 | 1,258 | | | |
| 437.40 | 985 | 1,258 | | | |
| 437.50 | 985 | 1,258 | | | |
| 437.60 | 985 | 1,258 | | | |
| 437.70 | 985 | 1,258 | | | |
| 437.80 | 985 | 1,258 | | | |
| 437.90 | 985 | 1,258 | | | |
| 438.00 | 985 | 1,258 | | | |
| 438.10 | 985 | 1,258 | | | |
| 438.20 | 985 | 1,258 | | | |

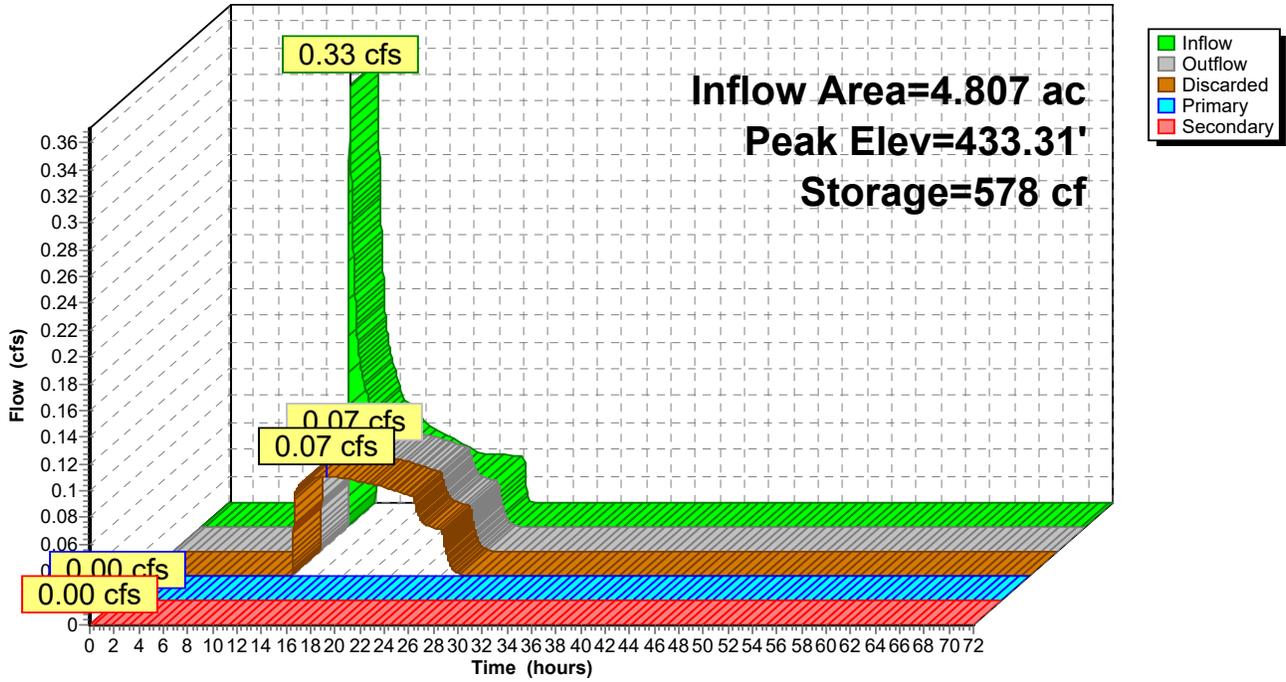
Pond 4P: Infiltration Basin

Hydrograph



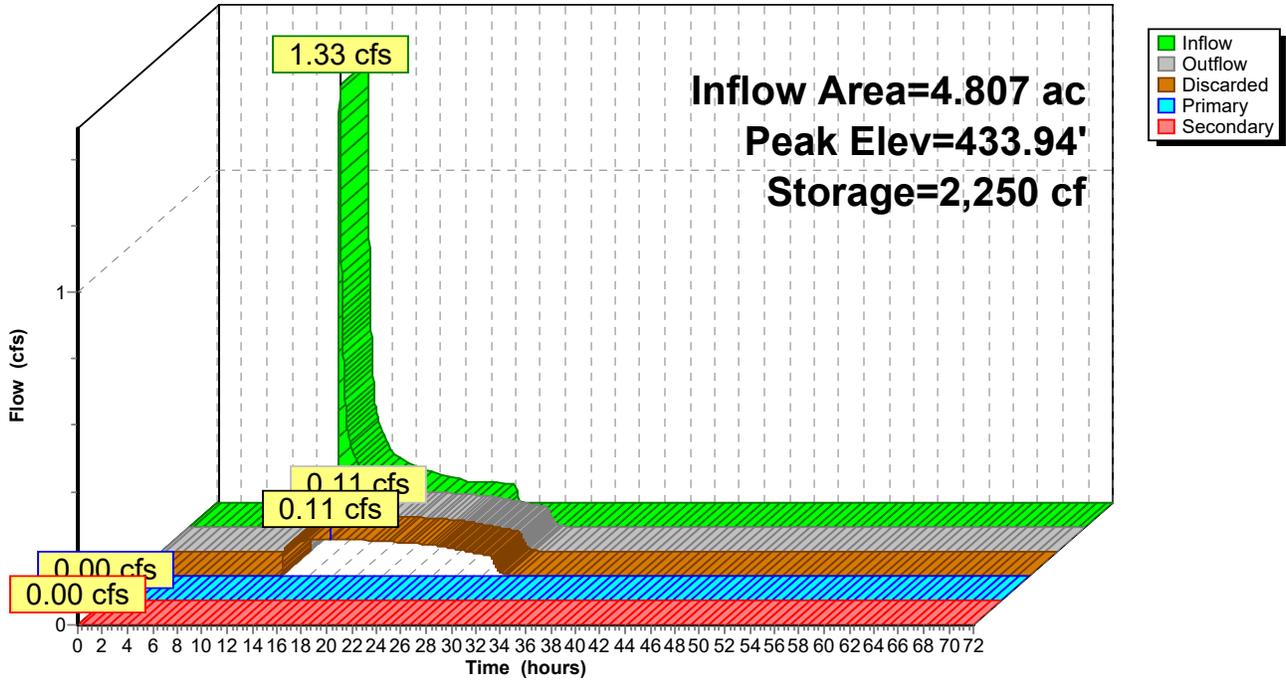
Pond 4P: Infiltration Basin

Hydrograph



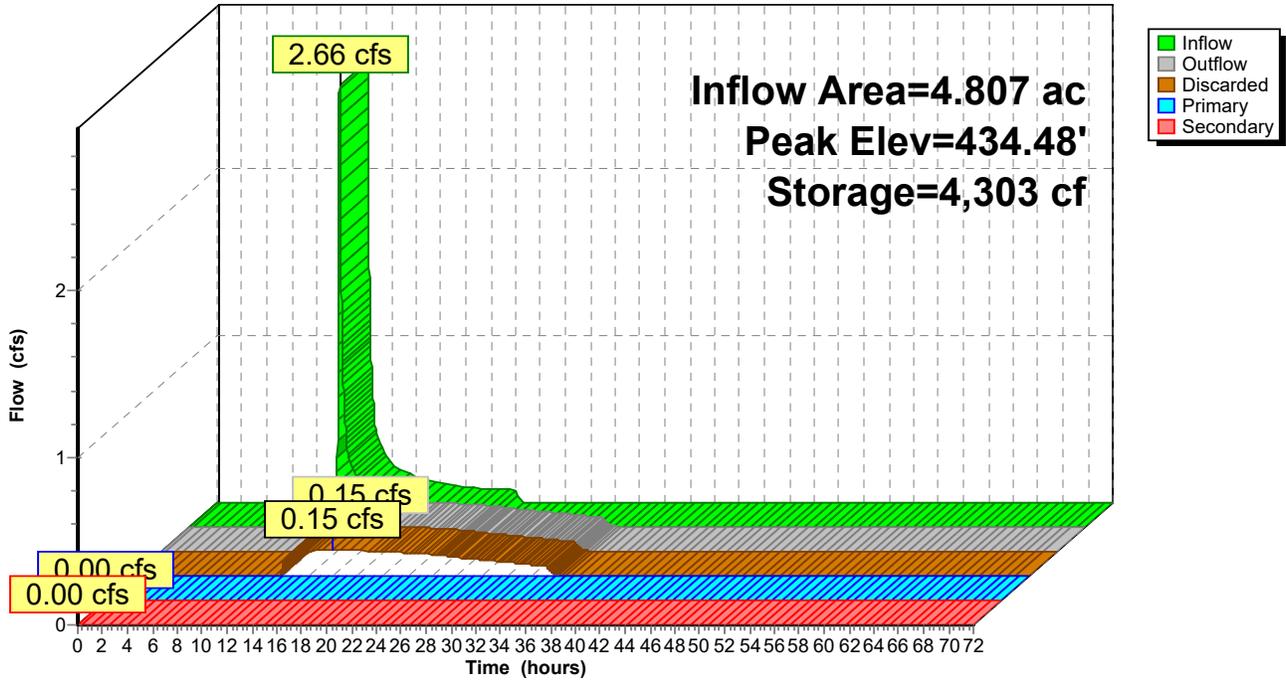
Pond 4P: Infiltration Basin

Hydrograph



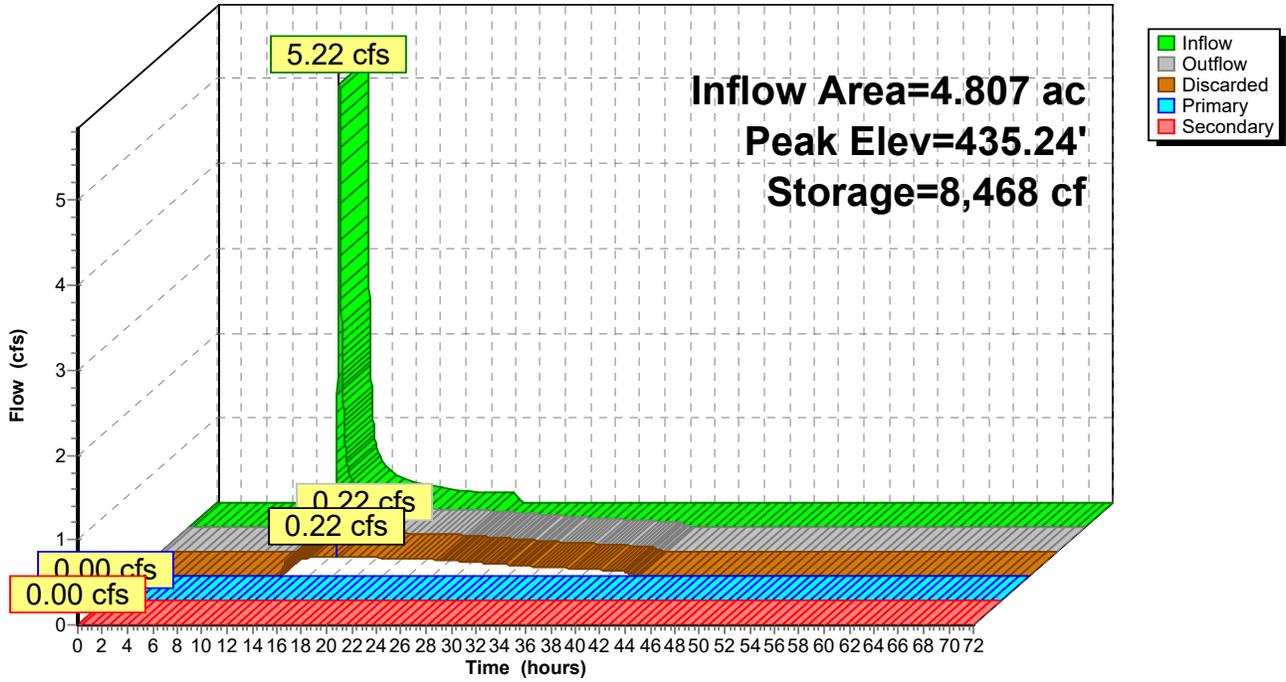
Pond 4P: Infiltration Basin

Hydrograph



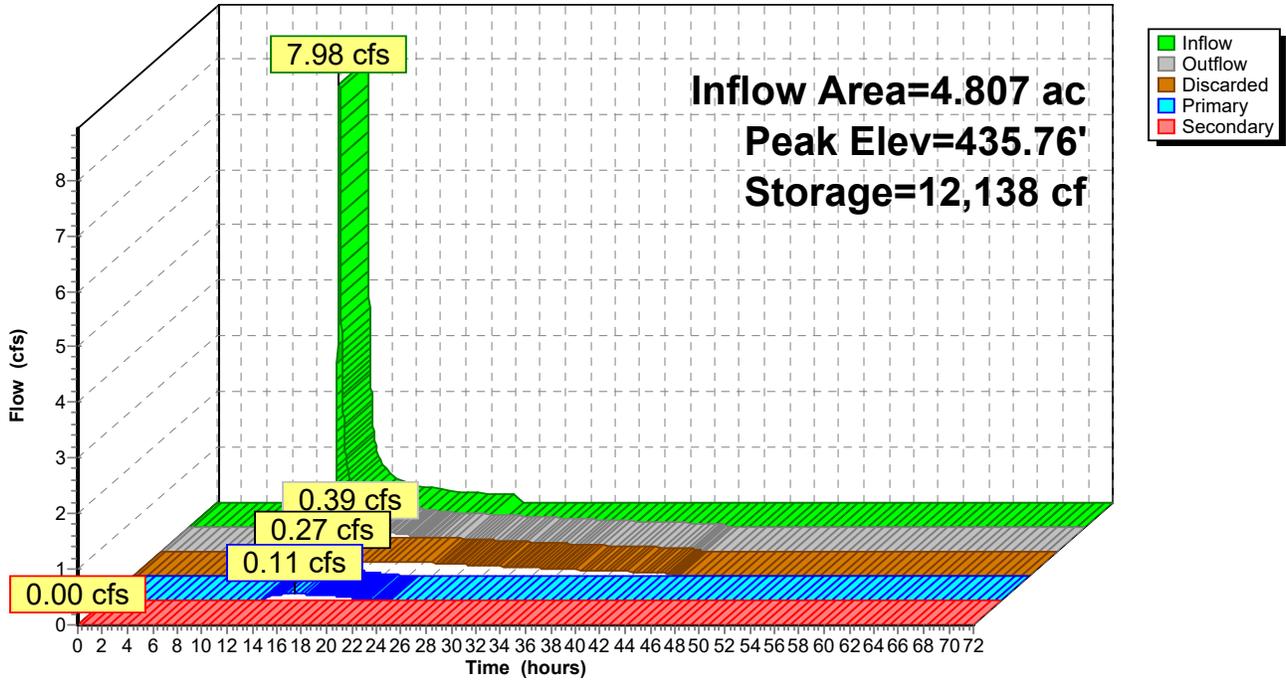
Pond 4P: Infiltration Basin

Hydrograph



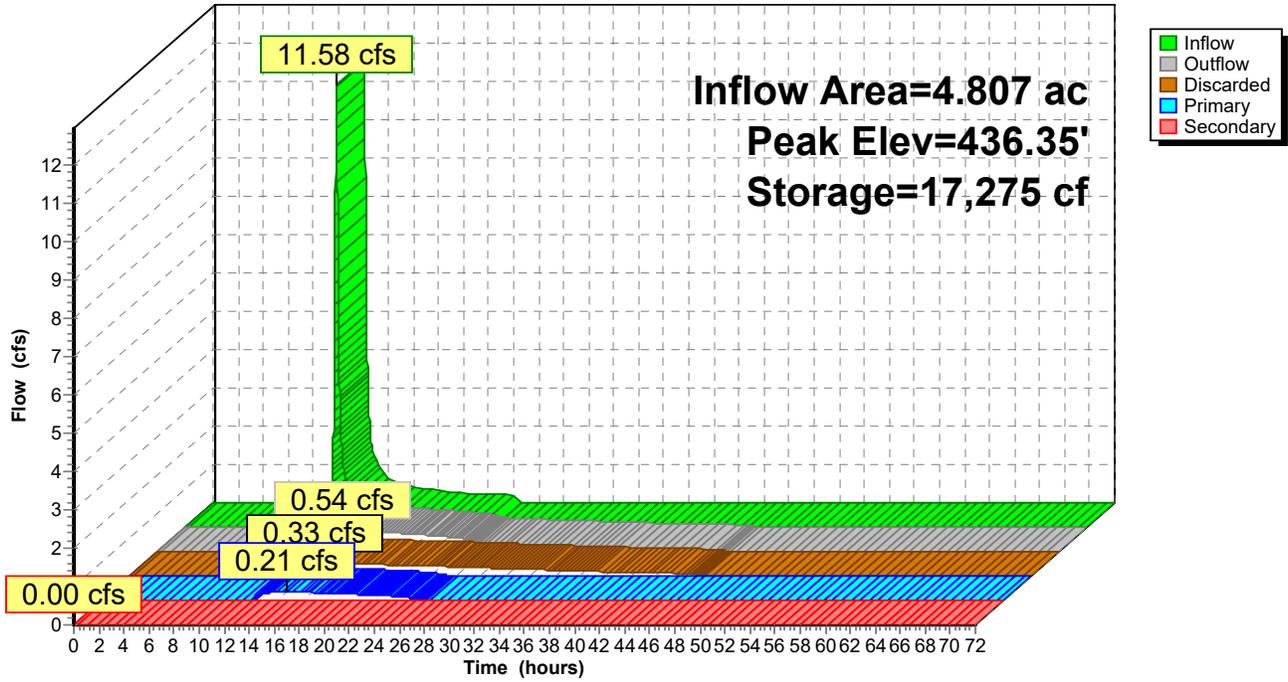
Pond 4P: Infiltration Basin

Hydrograph



Pond 4P: Infiltration Basin

Hydrograph



APPENDIX F

6

QUANTITY OF STORMWATER

storm, is common. The range of coefficients, classified with respect to the general character of the tributary area reported in use, is:

| Description of Area | Runoff Coefficients |
|------------------------------|---------------------|
| Business | |
| Downtown | 0.70 to 0.95 |
| Neighborhood | 0.50 to 0.70 |
| Residential | |
| Single-family | 0.30 to 0.50 |
| Multi-units, detached | 0.40 to 0.60 |
| Multi-units, attached | 0.60 to 0.75 |
| Residential (suburban) | 0.25 to 0.40 |
| Apartment | 0.50 to 0.70 |
| Industrial | |
| Light | 0.50 to 0.80 |
| Heavy | 0.60 to 0.90 |
| Parks, cemeteries | 0.10 to 0.25 |
| Playgrounds | 0.20 to 0.35 |
| Railroad yard | 0.20 to 0.35 |
| Unimproved | 0.10 to 0.30 |

Downtown [0.95]
Residential = 0.40

It often is desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure often is applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area. Coefficients with respect to surface type currently in use are:

| Character of Surface | Runoff Coefficients |
|-------------------------------|---------------------|
| Pavement | |
| Asphaltic and Concrete | 0.70 to 0.95 |
| Brick | 0.70 to 0.85 |
| Roofs | 0.75 to 0.95 |
| Lawns, sandy soil | |
| Flat, 2 percent | 0.05 to 0.10 |
| Average, 2 to 7 percent | 0.10 to 0.15 |
| Steep, 7 percent | 0.15 to 0.20 |
| Lawns, heavy soil | |
| Flat, 2 percent | 0.13 to 0.17 |
| Average, 2 to 7 percent | 0.18 to 0.22 |
| Steep, 7 percent | 0.25 to 0.35 |

The coefficients in these two tabulations are applicable for storms of 5- to 10-yr frequencies. Less frequent, higher intensity storms will require the use of higher coefficients because infiltration and other losses have a proportionally smaller effect on runoff. The coefficients are based on the assumption that the design storm does not occur when the ground surface is frozen.

(c) Coefficients Varying with Time.—Figure 11 shows the variation of the runoff coefficient with respect to length of time of prior wetting,

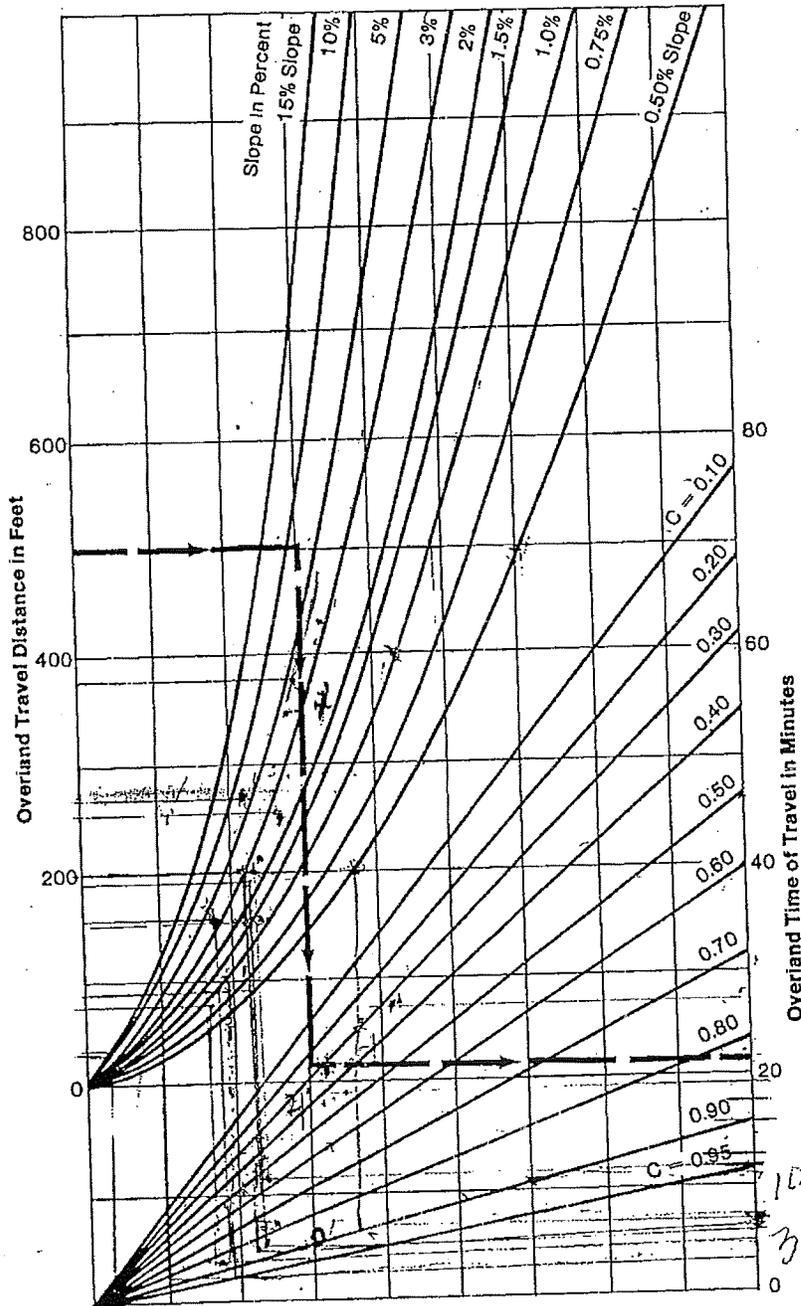
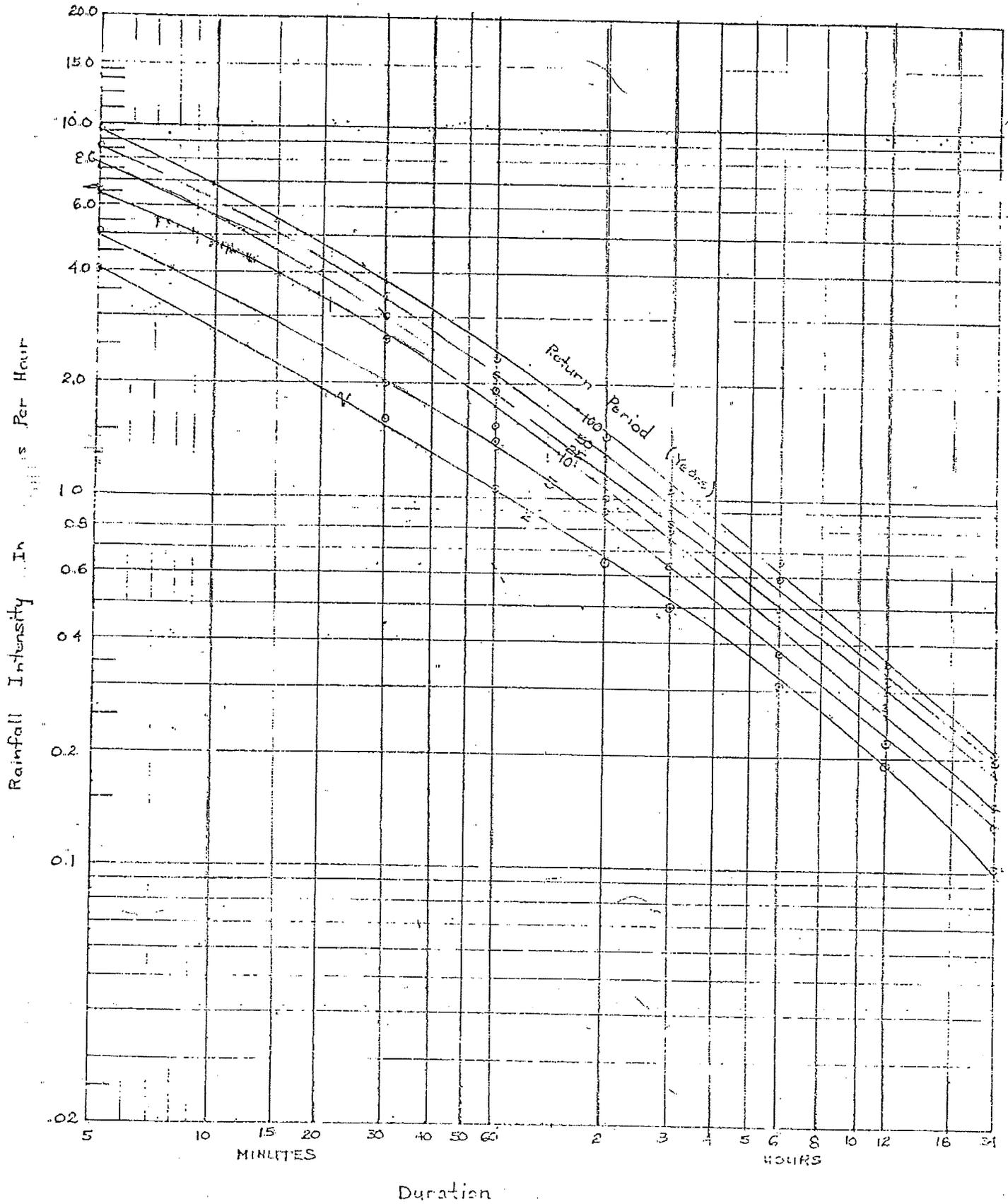


Figure 3-10 Overland time of flow graph.

3DD

1 21

Syracuse, New York 1903-1970



APPENDIX G

RZ Engineering, PLLC

STORMWATER SANITARY WATER ENVIRONMENTAL TRANSPORTATION

Project: MBM Burdick Dental
Water Quality Calculations

Date: 7/3/2020

Owner: _____

Project No.: 20014

Location: 5538 North Burdick St

Drawings: Grading and Site Plans

Estimated By: HJM

PRDA-1

$$WQv = (P)(Rv)(A)/12$$

P= 90% Rainfall Number - Figure 4.1 = 1.00

Rv= 0.05 + 0.009(I)

Where I = % New Impervious

Impervious = 1.407 Acres

Total Site Area = 4.807 Acres

% Impervious= 0.293

---->%Impervious= 100% New Impervious Area / Total Site Area

Therefore Rv =0.05 + 0.009(29.27 %)

Rv = 0.313

A= Total Site Area = 4.807 Acres

Therefore Water Quality Volume WQv =

$$WQv = [(P)(Rv)(A)]/12$$

= 0.126 acre feet

or

= 5469.14 cubic feet

Project: MBM Burdick Dental Date: 7/3/2020
Channel Protection Volume Calculations

 Owner: _____ Project No.: 20014
 Location: 5538 North Burdick St
 Drawings: _____ Estimated By: HJM PRDA-1

Calculate Unit Peak Discharge (qu) using TR-55 & Type II Rainfall Distribution

| | |
|--|--------|
| Curve Number (CN) from Hydracadd analysis | 61 |
| Initial Abstraction (Ia) | 1.28 |
| Rainfall (P) - 1 year storm | 2.38 |
| Ia/P | 0.54 |
| Tc from Hydracadd analysis in hrs | 0.23 |
| Unit Peak Discharge (qu) from TR-55 Exhibit 4-II | 300.00 |
| Ratio of Outflow to Inflow (qo/qi) from qu and Figure 8.5) | 0.060 |

Calculate Channel Protection Volume per Appendix B

$$V_s/V_r = 0.682 - 1.43*(q_o/q_i) + 1.64*(q_o/q_i)^2 - 0.804*(q_o/q_i)^3$$

V_r = runoff volume 1 year post development(acre-feet) 0.032 acre-feet

$V_s/V_r =$ 0.601930 (no units)
 Therefore $V_s =$ 0.019262 acre-feet

Cpv = 0.019 acre feet
 or
 = 839.04 cubic feet

Calculate Runoff Rate for 24 hr. detention time

Channel Protection Volume = 0.019 acre feet
 Time to release V_s = 24 hours
Projected release rate = 0.01 cfs

APPENDIX H

NOTICE OF INTENT



**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

NYR
(For DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-20-001
All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of the permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

- IMPORTANT -
RETURN THIS FORM TO THE ADDRESS ABOVE
OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

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

5 5 3 8 N o r t h B u r d i c k , L L C

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

D u m a s

Owner/Operator Contact Person First Name

S c o t t

Owner/Operator Mailing Address

1 2 5 E a s t J e f f e r s o n S t S u i t e 1 5 1 0

City

S y r a c u s e

State

N Y

Zip

1 3 2 0 2 -

Phone (Owner/Operator)

3 1 5 - 8 7 7 - 5 1 1 3

Fax (Owner/Operator)

- - -

Email (Owner/Operator)

s c o t t d u m a s 1 0 7 @ g m a i l . c o m

FED TAX ID

8 4 - 3 7 7 0 3 1 8 (not required for individuals)

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? Yes No Unknown

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

State of NY [grid of empty boxes for name entry]

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

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

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

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

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)? Yes No

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)? Yes No
If No, skip questions 23 and 27-39.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual? Yes No

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- Preservation of Undisturbed Areas
- Preservation of Buffers
- Reduction of Clearing and Grading
- Locating Development in Less Sensitive Areas
- Roadway Reduction
- Sidewalk Reduction
- Driveway Reduction
- Cul-de-sac Reduction
- Building Footprint Reduction
- Parking Reduction

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).
- Compacted areas were considered as impervious cover when calculating the **WQv Required**, and the compacted areas were assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions for the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout).

Total WQv Required

. acre-feet

29. Identify the RR techniques (Area Reduction), RR techniques (Volume Reduction) and Standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the Total WQv Required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

| <u>RR Techniques (Area Reduction)</u> | <u>Total Contributing Area (acres)</u> | | <u>Total Contributing Impervious Area (acres)</u> | |
|---|--|----------------------|---|----------------------|
| <input type="radio"/> Conservation of Natural Areas (RR-1) ... | <input type="text"/> | <input type="text"/> | and/or | <input type="text"/> |
| <input type="radio"/> Sheetflow to Riparian Buffers/Filters Strips (RR-2) | <input type="text"/> | <input type="text"/> | and/or | <input type="text"/> |
| <input type="radio"/> Tree Planting/Tree Pit (RR-3) | <input type="text"/> | <input type="text"/> | and/or | <input type="text"/> |
| <input type="radio"/> Disconnection of Rooftop Runoff (RR-4) .. | <input type="text"/> | <input type="text"/> | and/or | <input type="text"/> |
| <u>RR Techniques (Volume Reduction)</u> | | | | |
| <input type="radio"/> Vegetated Swale (RR-5) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Rain Garden (RR-6) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Stormwater Planter (RR-7) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Rain Barrel/Cistern (RR-8) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Porous Pavement (RR-9) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Green Roof (RR-10) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <u>Standard SMPs with RRv Capacity</u> | | | | |
| <input type="radio"/> Infiltration Trench (I-1) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Infiltration Basin (I-2) | <input type="text"/> | <input type="text"/> | 1 | 4 0 7 |
| <input type="radio"/> Dry Well (I-3) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Underground Infiltration System (I-4) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Bioretention (F-5) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Dry Swale (O-1) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <u>Standard SMPs</u> | | | | |
| <input type="radio"/> Micropool Extended Detention (P-1) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Wet Pond (P-2) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Wet Extended Detention (P-3) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Multiple Pond System (P-4) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Pocket Pond (P-5) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Surface Sand Filter (F-1) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Underground Sand Filter (F-2) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Perimeter Sand Filter (F-3) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Organic Filter (F-4) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Shallow Wetland (W-1) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Extended Detention Wetland (W-2) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Pond/Wetland System (W-3) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Pocket Wetland (W-4) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |
| <input type="radio"/> Wet Swale (O-2) | <input type="text"/> | <input type="text"/> | | <input type="text"/> |

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv (=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

| | | | | | | | |
|--|--|--|--|--|--|--|--|
| | | | | | | | |
|--|--|--|--|--|--|--|--|

 .

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

 acre-feet

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

 .

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? Yes No

If Yes, go to question 36.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (36a), if applicable.

| | | | | | | | | | | | | | | |
|--|---------------------|---|---|---|---|---|--|--|--|--|---|---|---|---|
| CPv Required | CPv Provided | | | | | | | | | | | | | |
| <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">9</td> </tr> </table> acre-feet | | | | 0 | 1 | 9 | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px; text-align: center;">8</td> </tr> </table> acre-feet | | | | 0 | 2 | 1 | 8 |
| | | | | | | | | | | | | | | |
| 0 | 1 | 9 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |
| 0 | 2 | 1 | 8 | | | | | | | | | | | |

36a. The need to provide channel protection has been waived because:

- Site discharges directly to tidal waters or a fifth order or larger stream.
- Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

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

Total Overbank Flood Control Criteria (Qp)

| | | | | | | | | | | | | | |
|--|-------------------------|---|---|---|---|--|--|--|--|---|---|---|--|
| Pre-Development | Post-development | | | | | | | | | | | | |
| <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px;"></td> </tr> </table> CFS | | | 0 | 0 | 1 | | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px; text-align: center;">0</td> <td style="width: 20px; height: 20px;"></td> </tr> </table> CFS | | | 0 | 0 | 0 | |
| | | 0 | | | | | | | | | | | |
| 0 | 1 | | | | | | | | | | | | |
| | | 0 | | | | | | | | | | | |
| 0 | 0 | | | | | | | | | | | | |

Total Extreme Flood Control Criteria (Qf)

| | | | | | | | | | | | | | |
|--|-------------------------|---|---|---|---|--|--|--|--|---|---|---|--|
| Pre-Development | Post-development | | | | | | | | | | | | |
| <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">5</td> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px;"></td> </tr> </table> CFS | | | 0 | 5 | 1 | | <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px;"></td> <td style="width: 20px; height: 20px; text-align: center;">0</td> </tr> </table> . <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; height: 20px; text-align: center;">2</td> <td style="width: 20px; height: 20px; text-align: center;">1</td> <td style="width: 20px; height: 20px;"></td> </tr> </table> CFS | | | 0 | 2 | 1 | |
| | | 0 | | | | | | | | | | | |
| 5 | 1 | | | | | | | | | | | | |
| | | 0 | | | | | | | | | | | |
| 2 | 1 | | | | | | | | | | | | |

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name

SCOTT

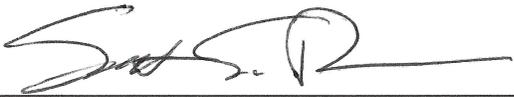
MI

E

Print Last Name

DUMAS

Owner/Operator Signature



Date

07 / 05 / 2020



New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form
for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name: 5538 North Burdick, LLC
2. Contact Person: Scott Dumas
3. Street Address: 125 East Jefferson St Suite 1510
4. City/State/Zip: Syracuse, NY 13202

II. Project Site Information

5. Project/Site Name: MBM Dental Office
6. Street Address: 5538 North Burdick St
7. City/State/Zip: Fayetteville, NY 13066

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A _____
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).

Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

SITE PLAN/SKETCH

Inspector (print name)

Date of Inspection

Qualified Professional (print name)

Qualified Professional Signature

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

Maintaining Water Quality

Yes No NA

- Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
- Is there residue from oil and floating substances, visible oil film, or globules or grease?
- All disturbance is within the limits of the approved plans.
- Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions

Yes No NA

- Is construction site litter and debris appropriately managed?
- Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
- Is construction impacting the adjacent property?
- Is dust adequately controlled?

2. Temporary Stream Crossing

Yes No NA

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

Runoff Control Practices

1. Excavation Dewatering

Yes No NA

- Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
- Clean water from upstream pool is being pumped to the downstream pool.
- Sediment laden water from work area is being discharged to a silt-trapping device.
- Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader

Yes No NA

- Installed per plan.
- Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
- Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales

Yes No NA

- Installed per plan with minimum side slopes 2H:1V or flatter.
- Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
- Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

- Is channel stable? (flow is not eroding soil underneath or around the structure).
- Check is in good condition (rocks in place and no permanent pools behind the structure).
- Has accumulated sediment been removed?.

5. Rock Outlet Protection

Yes No NA

- Installed per plan.
- Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

- Stockpiles are stabilized with vegetation and/or mulch.
- Sediment control is installed at the toe of the slope.

2. Revegetation

Yes No NA

- Temporary seedings and mulch have been applied to idle areas.
- 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

- Stone is clean enough to effectively remove mud from vehicles.
- Installed per standards and specifications?
- Does all traffic use the stabilized entrance to enter and leave site?
- Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence

Yes No NA

- Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
 - Joints constructed by wrapping the two ends together for continuous support.
 - Fabric buried 6 inches minimum.
 - Posts are stable, fabric is tight and without rips or frayed areas.
- Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

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

Yes No NA

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

4. Temporary Sediment Trap

Yes No NA

- Outlet structure is constructed per the approved plan or drawing.
 - Geotextile fabric has been placed beneath rock fill.
- Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

- Basin and outlet structure constructed per the approved plan.
 - Basin side slopes are stabilized with seed/mulch.
 - Drainage structure flushed and basin surface restored upon removal of sediment basin facility.
- Sediment accumulation is ___% of design capacity.

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

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] _____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge _____

Describe any other water quality standards or permit violations _____

Additional Comments: _____

Photographs attached



**New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505**

(NOTE: Submit completed form to address above)

**NOTICE OF TERMINATION for Storm Water Discharges Authorized
under the SPDES General Permit for Construction Activity**

Please indicate your permit identification number: NYR ____ ____ ____ ____ ____

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person:

4a. Telephone:

5. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP.
*Date final stabilization completed (month/year): _____

9b. Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ____ ____ ____ ____ ____
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? yes no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed?
 yes no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? yes no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

- Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.
- Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).
- For post-construction stormwater management practices that are privately owned, the deed of record has been modified to include a deed covenant that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.
- For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, college, university), or government agency or authority, policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? yes no
(If Yes, complete section VI - "MS4 Acceptance" statement)

V. Additional Information/Explanation:
(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:

Title/Position:

Signature:

Date:

**NOTICE OF TERMINATION for Storm Water Discharges Authorized under the
SPDES General Permit for Construction Activity - continued**

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:

Title/Position:

Signature:

Date:

(NYS DEC Notice of Termination - January 2010)

APPENDIX I

Erosion and Sedimentation Control Measures Maintenance Schedule

1. Temporary Construction Entrance: During Construction inspect periodically. Maintain entrance in a manner that will prevent tracking of sediment into public right of ways. Remove built up sediment deposits; and clean, repair, or replace temporary construction entrance as required.
2. Temporary Sediment Trap: During construction inspect weekly. Clean and restore traps to their original size when sediment has accumulated to one-half of the basin depth. Remove temporary sediment traps and stabilize areas when their contributory drainage area is stabilized.
3. Temporary Silt Fence: During construction inspect weekly. Remove built up sediment deposits; and clean, repair, or replace silt fence as required. Remove temporary silt fence when contributory drainage areas are stabilized.
4. Grass-Lined Drainage Channels: During construction inspect weekly to insure their stability and to locate points of scour, rodent-holes, breaches, and deposition of sediment or other obstructions. Clean, repair, and re-seed drainage channels as required. After construction inspect semi-annually and after every heavy rainfall.
5. Culvert: During construction inspect weekly to insure structural integrity, detect vandalism and damage, and for cleaning. Clean, repair, or replace culvert as required. After construction inspect semi-annually and after every heavy rainfall.
6. Stone Erosion Protection Aprons: During construction inspect weekly to insure structural integrity and to verify that stone is not by-passed, or developing excessive scour at the stone base or sediment build-up. Remove sediment accumulated within the riprap stone aprons at inlets and outlets of culverts and grassed waterways, or replace stone, as required, to allow the stormwater to drain through the stone to reduce erosive velocities and prevent large flows from carrying sediment over their tops. After construction inspect semi-annually and after every heavy rainfall.
7. Disturbed Soil Areas: Seed and mulch upon final grading of topsoil. During construction inspect weekly and repair and re-seed areas, as required. After construction inspect and maintain on regular basis permanent lawns and grassed areas consistent with favorable plant growth, soil, and climatic conditions to insure soil protection and structural integrity of the site's plant cover. Maintenance involves regular seasonal work for mowing, fertilizing, liming, watering, pruning, fire controls, weed and pest control, re-seeding, and timely repairs, as required. Maintenance of vegetative areas shall also include removal of debris and protection from unintended uses or traffic.

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION



Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.
2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.
3. Provide surface drainage and divert excess runoff to stabilized areas.
4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.
5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.
6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT



Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should 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.

Location: Locate the facility 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.

Liner: All washout facilities will 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, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated 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 off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- 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.

STANDARD AND SPECIFICATIONS FOR DUST CONTROL



dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS



inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

| Fabric Properties ³ | Light Duty ¹ Roads Grade Sub- grade | Heavy Duty ² Haul Roads Rough Graded | Test Meth- od |
|--------------------------------|---|---|--------------------|
| Grab Tensile Strength (lbs) | 200 | 220 | ASTM D1682 |
| Elongation at Failure (%) | 50 | 60 | ASTM D1682 |
| Mullen Burst Strength (lbs) | 190 | 430 | ASTM D3786 |
| Puncture Strength (lbs) | 40 | 125 | ASTM D751 Modified |
| Equivalent | 40-80 | 40-80 | US Std Sieve |
| Opening Size | | | CW-02215 |
| Aggregate Depth | 6 | 10 | - |

Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be

¹Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

²Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

³Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

STANDARD AND SPECIFICATIONS FOR DIVERSION



Definition & Scope

A drainage way of parabolic or trapezoidal cross-section with a supporting ridge on the lower side that is constructed across the slope to intercept and convey runoff to stable outlets at non-erosive velocities.

Conditions Where Practice Applies

Diversions are used where:

1. Runoff from higher areas has potential for damaging properties, causing erosion, or interfering with, or preventing the establishment of, vegetation on lower areas.
2. Surface and/or shallow subsurface flow is damaging sloping upland.
3. The length of slopes needs to be reduced so that soil loss will be kept to a minimum.

Diversions are only applicable below stabilized or protected areas. Avoid establishment on slopes greater than fifteen percent. Diversions should be used with caution on soils subject to slippage. Construction of diversions shall be in compliance with state and local drainage and water laws.

Design Criteria

Location

Diversion location shall be determined by considering outlet conditions, topography, land use, soil type, length of slope, seep planes (when seepage is a problem), and the development layout.

Capacity

Peak rates of runoff values used in determining the capacity requirements shall be calculated using the most current hydrologic data from the Northeast Regional Climate Center in an appropriate model.

The constructed diversion shall have capacity to carry, as a minimum, the peak discharge from a 10 year frequency rainfall event with freeboard of not less than 0.3 feet.

Diversions designed to protect homes, schools, industrial buildings, roads, parking lots, and comparable high-risk areas, and those designed to function in connection with other structures, shall have sufficient capacity to carry peak runoff expected from a storm frequency consistent with the hazard involved.

Cross Section

The diversion channel shall be parabolic or trapezoidal in shape. Parabolic Diversion design charts are provided in Tables 3.2, 3.3 and 3.4 on pages 3.10, 3.12 and 3.13. The diversion shall be designed to have stable side slopes. The side slopes shall not be steeper than 2:1 and shall be flat enough to ensure ease of maintenance of the diversion and its protective vegetative cover.

The ridge shall have a minimum width of four feet at the design water elevation; a minimum of 0.3 feet freeboard and a reasonable settlement factor shall be provided.

Velocity and Grade

The permissible velocity for the specified method of stabilization will determine the maximum grade. Maximum permissible velocities of flow for the stated conditions of stabilization shall be as shown in Table 3.1 on page 3.10 of this standard.

Diversions are not usually applicable below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with, or before, the diversions.

Outlets

Each diversion must have an adequate outlet. The outlet may be a grassed waterway, vegetated or paved area, grade stabilization structure, flow spreader, flow diffuser, stable watercourse, or subsurface drain outlet. In all cases, the outlet must convey runoff to a point where outflow will not cause damage. Vegetated outlets shall be installed before diversion construction, if needed, to ensure establishment of

vegetative cover in the outlet channel.

Stabilization

The design elevation of the water surface in the diversion shall not be lower than the design elevation of the water surface in the outlet at their junction when both are operating at design flow.

Vegetated diversions shall be stabilized in accordance with the following tables.

**Table 3.1
Diversion Maximum Permissible Design Velocities Table**

| Soil Texture | Retardance and Cover | Permissible Velocity (ft / second) for Selected Channel Vegetation |
|---|---|--|
| Sand, Silt, Sandy loam, silty loam, loamy sand (ML, SM, SP, SW) | C-Kentucky 31 tall fescue and Kentucky bluegrass | 3.0 |
| | D-Annuals ¹ Small grain (rye, oats, barley, millet) Ryegrass | 2.5 |
| Silty clay loam, Sandy clay loam (ML-CL, SC) | C-Kentucky 31 tall fescue and Kentucky bluegrass | 4.0 |
| | D-Annuals ¹ Small grain (rye, oats, barley, millet) Ryegrass | 3.5 |
| Clay (CL) | C-Kentucky 31 tall fescue and Kentucky bluegrass | 5.0 |
| | D-Annuals ¹ Small grain (rye, oats, barley, millet) Ryegrass | 4.0 |

¹ Annuals—Use only as temporary protection until permanent vegetation is established.

Table 3.2 - Retardance Factors for Various Grasses and Legumes Table

| Retardance | Cover | Condition |
|------------|--|---|
| A | Reed canarygrass | Excellent stand, tall (average 36 inches) |
| B | Smooth bromegrass | Good stand, mowed (average 12 to 15 inches) |
| | Tall fescue | Good stand, unmowed (average 18 inches) |
| | Grass-legume mixture—Timothy, smooth bromegrass, or Orchard grass with birdsfoot trefoil | Good stand, uncut (average 20 inches) |
| | Reed canarygrass | Good stand, mowed (average 12 to 15 inches) |
| | Tall fescue, with birdsfoot trefoil or ladino clover | Good stand, uncut (average 18 inches) |
| C | Redtop | Good stand, headed (15 to 20 inches) |
| | Grass-legume mixture—summer (Orchard grass, redtop, Annual ryegrass, and ladino or white clover) | Good stand, uncut (6 to 8 inches) |
| | Kentucky bluegrass | Good stand, headed (6 to 12 inches) |
| D | Red fescue | Good stand, headed (12 to 18 inches) |
| | Grass-legume mixture—fall, spring (Orchard grass, redtop, Annual ryegrass, and white or ladino clover) | Good stand, uncut (4 to 5 inches) |

**Figure 3.4
Diversion Detail**

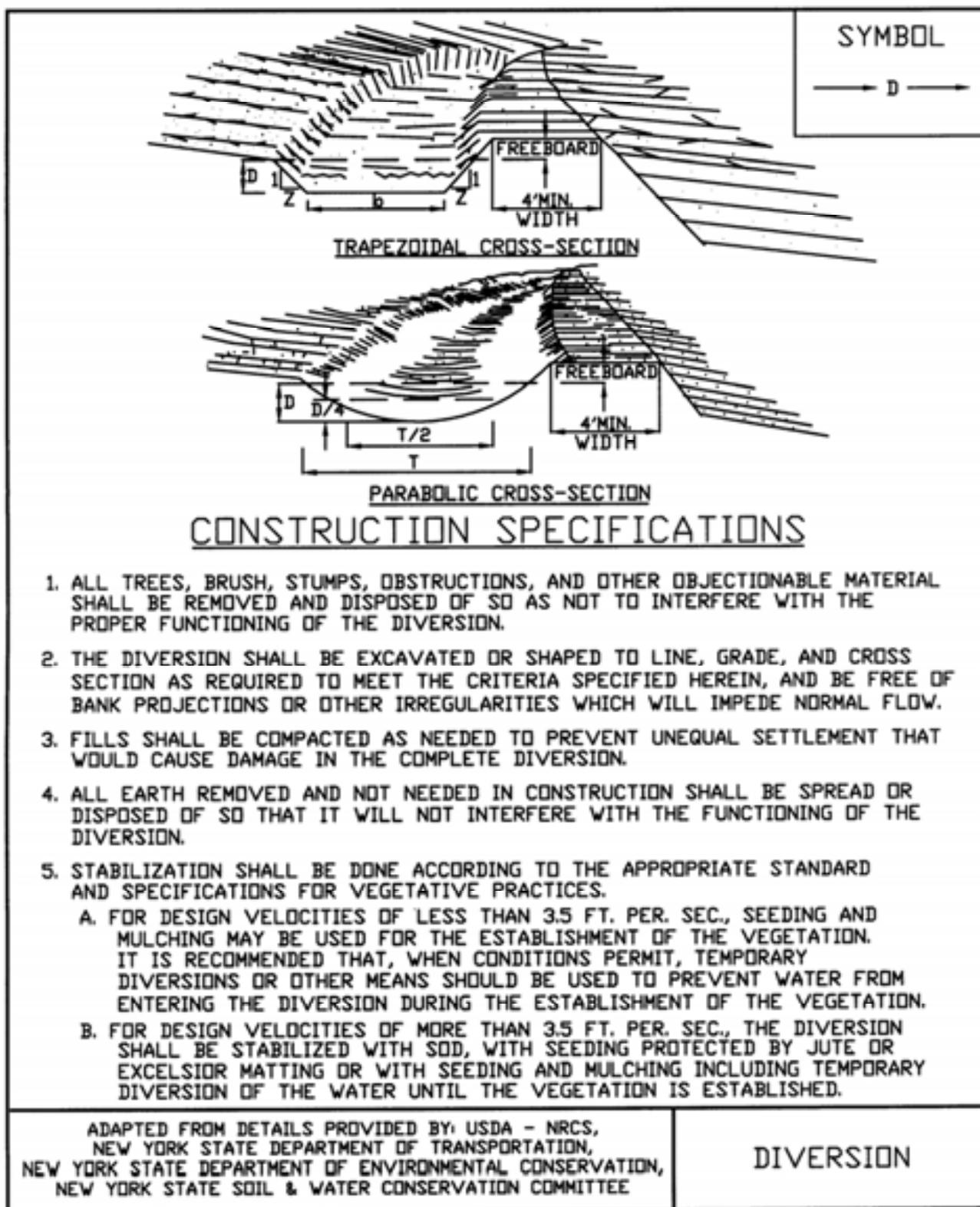


Table 3.3

Parabolic Diversion Design, Without Freeboard Tables - 1 (USDA-NRCS)

| PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD | | | | | | | | | | | | | RETARDANCE - D B C GRADE, % - 0.50 | | | | | | | | | |
|---|----------------------|-----|----------------------|----|----------------------|----------------|----------------------|-----|----------------------|----|----------------------|----------------|---------------------------------------|-----|----------------------|----|----------------------|----------------|---|---|----------------|--|
| V ₁ Based on Permissible Velocity of the Soil With Retardance "D" Top Width, Depth & V ₂ Based on Retardance "C" | | | | | | | | | | | | | | | | | | | | | | |
| Q | V ₁ = 2.0 | | V ₁ = 2.5 | | V ₁ = 3.0 | | V ₁ = 3.5 | | V ₁ = 4.0 | | V ₁ = 4.5 | | V ₁ = 5.0 | | V ₁ = 5.5 | | V ₁ = 6.0 | | | | | |
| cfs | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | |
| 15 | 9 | 1.6 | 1.6 | | | | | | | | | | | | | | | | | | | |
| 20 | 11 | 1.6 | 1.7 | | | | | | | | | | | | | | | | | | | |
| 25 | 14 | 1.6 | 1.7 | 9 | 1.9 | 2.1 | | | | | | | | | | | | | | | | |
| 30 | 17 | 1.6 | 1.7 | 11 | 1.9 | 2.2 | 8 | 2.2 | 2.5 | | | | | | | | | | | | | |
| 35 | 20 | 1.6 | 1.7 | 12 | 1.9 | 2.3 | 9 | 2.1 | 2.6 | | | | | | | | | | | | | |
| 40 | 22 | 1.6 | 1.7 | 14 | 1.8 | 2.3 | 11 | 2.1 | 2.7 | | | | | | | | | | | | | |
| 45 | 25 | 1.5 | 1.7 | 16 | 1.8 | 2.3 | 12 | 2.0 | 2.8 | | | | | | | | | | | | | |
| 50 | 28 | 1.5 | 1.7 | 18 | 1.8 | 2.4 | 13 | 2.0 | 2.8 | 10 | 2.4 | 3.2 | | | | | | | | | | |
| 55 | 31 | 1.5 | 1.7 | 19 | 1.8 | 2.4 | 15 | 2.0 | 2.8 | 11 | 2.4 | 3.3 | | | | | | | | | | |
| 60 | 33 | 1.5 | 1.7 | 21 | 1.8 | 2.4 | 16 | 2.0 | 2.8 | 11 | 2.4 | 3.3 | | | | | | | | | | |
| 65 | 36 | 1.5 | 1.8 | 23 | 1.8 | 2.4 | 17 | 2.0 | 2.9 | 12 | 2.4 | 3.3 | | | | | | | | | | |
| 70 | 39 | 1.5 | 1.7 | 24 | 1.8 | 2.4 | 18 | 2.0 | 2.9 | 13 | 2.3 | 3.4 | | | | | | | | | | |
| 75 | 42 | 1.5 | 1.8 | 26 | 1.8 | 2.4 | 19 | 2.0 | 2.9 | 14 | 2.3 | 3.4 | 11 | 2.7 | 3.7 | | | | | | | |
| 80 | 44 | 1.5 | 1.8 | 28 | 1.8 | 2.4 | 21 | 2.0 | 2.9 | 15 | 2.3 | 3.4 | 12 | 2.7 | 3.8 | | | | | | | |
| 90 | 50 | 1.5 | 1.8 | 31 | 1.8 | 2.4 | 24 | 2.0 | 2.9 | 17 | 2.3 | 3.4 | 13 | 2.7 | 3.8 | | | | | | | |
| 100 | 55 | 1.5 | 1.8 | 35 | 1.8 | 2.4 | 26 | 2.0 | 2.9 | 19 | 2.3 | 3.5 | 15 | 2.6 | 3.9 | 12 | 3.0 | 4.1 | | | | |
| ... | | | | | | | | | | | | | | | | | | | | | | |

| PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD | | | | | | | | | | | | | RETARDANCE - D B C GRADE, % - 1.0 | | | | | | | | | | | |
|---|----------------------|-----|----------------------|----|----------------------|----------------|----------------------|-----|----------------------|----|----------------------|----------------|--------------------------------------|-----|----------------------|----|----------------------|----------------|----|-----|----------------|----|-----|-----|
| V ₁ based on Permissible Velocity of the Soil With Retardance "D" Top Width, Depth & V ₂ Based on Retardance "C" | | | | | | | | | | | | | | | | | | | | | | | | |
| Q | V ₁ = 2.0 | | V ₁ = 2.5 | | V ₁ = 3.0 | | V ₁ = 3.5 | | V ₁ = 4.0 | | V ₁ = 4.5 | | V ₁ = 5.0 | | V ₁ = 5.5 | | V ₁ = 6.0 | | | | | | | |
| cfs | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | T | D | V ₂ | | | |
| 15 | 13 | 1.1 | 1.5 | 8 | 1.3 | 2.0 | | | | | | | | | | | | | | | | | | |
| 20 | 18 | 1.1 | 1.5 | 11 | 1.3 | 2.1 | 8 | 1.5 | 2.6 | | | | | | | | | | | | | | | |
| 25 | 22 | 1.1 | 1.5 | 14 | 1.3 | 2.1 | 9 | 1.5 | 2.6 | 8 | 1.6 | 3.0 | | | | | | | | | | | | |
| 30 | 27 | 1.1 | 1.5 | 17 | 1.3 | 2.1 | 11 | 1.5 | 2.7 | 9 | 1.6 | 3.0 | | | | | | | | | | | | |
| 35 | 31 | 1.1 | 1.5 | 19 | 1.3 | 2.2 | 13 | 1.5 | 2.8 | 11 | 1.6 | 3.1 | 8 | 1.8 | 3.6 | | | | | | | | | |
| 40 | 35 | 1.1 | 1.5 | 22 | 1.3 | 2.1 | 15 | 1.4 | 2.8 | 12 | 1.5 | 3.1 | 9 | 1.8 | 3.7 | | | | | | | | | |
| 45 | 40 | 1.1 | 1.5 | 25 | 1.3 | 2.2 | 17 | 1.5 | 2.8 | 13 | 1.6 | 3.2 | 10 | 1.8 | 3.7 | | | | | | | | | |
| 50 | 44 | 1.1 | 1.5 | 28 | 1.3 | 2.2 | 19 | 1.4 | 2.8 | 15 | 1.5 | 3.2 | 11 | 1.8 | 3.7 | 9 | 2.0 | 4.2 | | | | | | |
| 55 | 48 | 1.1 | 1.5 | 30 | 1.3 | 2.2 | 20 | 1.4 | 2.8 | 16 | 1.5 | 3.3 | 12 | 1.8 | 3.8 | 10 | 2.0 | 4.3 | | | | | | |
| 60 | 53 | 1.1 | 1.5 | 33 | 1.3 | 2.2 | 22 | 1.4 | 2.8 | 18 | 1.5 | 3.3 | 14 | 1.7 | 3.8 | 10 | 2.0 | 4.3 | | | | | | |
| 65 | 57 | 1.1 | 1.5 | 36 | 1.3 | 2.2 | 24 | 1.4 | 2.8 | 19 | 1.5 | 3.3 | 15 | 1.7 | 3.8 | 11 | 2.0 | 4.3 | 9 | 2.2 | 4.7 | | | |
| 70 | 61 | 1.1 | 1.5 | 38 | 1.3 | 2.2 | 26 | 1.4 | 2.8 | 21 | 1.5 | 3.3 | 16 | 1.7 | 3.9 | 12 | 2.0 | 4.4 | 10 | 2.2 | 4.7 | | | |
| 75 | 66 | 1.1 | 1.5 | 41 | 1.3 | 2.2 | 28 | 1.4 | 2.9 | 22 | 1.5 | 3.3 | 17 | 1.7 | 3.9 | 13 | 2.0 | 4.5 | 11 | 2.2 | 4.7 | | | |
| 80 | 70 | 1.1 | 1.5 | 44 | 1.3 | 2.2 | 29 | 1.4 | 2.9 | 24 | 1.5 | 3.3 | 18 | 1.7 | 3.9 | 14 | 2.0 | 4.5 | 11 | 2.2 | 4.9 | | | |
| 90 | 79 | 1.1 | 1.5 | 49 | 1.3 | 2.2 | 33 | 1.4 | 2.9 | 27 | 1.5 | 3.3 | 20 | 1.7 | 3.9 | 15 | 1.9 | 4.5 | 13 | 2.2 | 4.9 | 11 | 2.4 | 5.2 |
| 100 | 87 | 1.1 | 1.5 | 55 | 1.3 | 2.2 | 37 | 1.4 | 2.9 | 29 | 1.5 | 3.3 | 22 | 1.7 | 3.9 | 17 | 1.9 | 4.5 | 14 | 2.2 | 4.9 | 12 | 2.4 | 5.3 |

Table 3.4

Parabolic Diversion Design, Without Freeboard Tables - 2 (USDA-NRCS)

| PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD | | | | | | | | | | | | | RETARDANCE - D & C GRADE, % - 1.5 | | | | | | |
|---|----------------------|-----|----------------------|----|----------------------|-----|----------------------|-----|----------------------|----|----------------------|-----|--------------------------------------|-----|----------------------|----|----------------------|-----|----------------|
| V ₁ Based on Permissible Velocity of the Soil With Retardance "D" Top Width, Depth & V ₂ Based on Retardance "C" | | | | | | | | | | | | | | | | | | | |
| Q | V ₁ = 2.0 | | V ₁ = 2.5 | | V ₁ = 3.0 | | V ₁ = 3.5 | | V ₁ = 4.0 | | V ₁ = 4.5 | | V ₁ = 5.0 | | V ₁ = 5.5 | | V ₁ = 6.0 | | |
| cfs | T | D | T | D | T | D | T | D | T | D | T | D | T | D | T | D | T | D | V ₂ |
| 15 | 17 | 0.9 | 1.4 | 11 | 1.1 | 1.9 | 8 | 1.2 | 2.4 | | | | | | | | | | |
| 20 | 23 | 0.9 | 1.4 | 15 | 1.0 | 1.9 | 10 | 1.2 | 2.5 | | | | | | | | | | |
| 25 | 28 | 0.9 | 1.4 | 19 | 1.0 | 1.9 | 12 | 1.2 | 2.6 | | | | | | | | | | |
| 30 | 34 | 0.9 | 1.4 | 22 | 1.0 | 1.9 | 15 | 1.2 | 2.6 | 10 | 1.3 | 3.2 | 8 | 1.5 | 3.6 | | | | |
| 35 | 40 | 0.9 | 1.4 | 26 | 1.0 | 2.0 | 17 | 1.1 | 2.6 | 12 | 1.3 | 3.3 | 10 | 1.4 | 3.7 | 7 | 1.6 | 4.0 | |
| 40 | 45 | 0.9 | 1.4 | 30 | 1.0 | 1.9 | 20 | 1.2 | 2.6 | 14 | 1.3 | 3.3 | 11 | 1.4 | 3.7 | 9 | 1.6 | 4.2 | |
| 45 | 51 | 0.9 | 1.4 | 33 | 1.0 | 2.0 | 22 | 1.1 | 2.6 | 15 | 1.3 | 3.4 | 12 | 1.4 | 3.8 | 10 | 1.5 | 4.3 | 7 1.6 4.6 |
| 50 | 56 | 0.9 | 1.4 | 37 | 1.0 | 2.0 | 25 | 1.1 | 2.7 | 17 | 1.3 | 3.4 | 14 | 1.4 | 3.9 | 11 | 1.5 | 4.3 | 8 1.6 4.6 |
| 55 | 62 | 0.9 | 1.5 | 41 | 1.0 | 2.0 | 27 | 1.1 | 2.6 | 19 | 1.3 | 3.4 | 15 | 1.4 | 3.9 | 10 | 1.7 | 4.9 | 9 1.6 4.8 |
| 60 | 67 | 0.9 | 1.5 | 44 | 1.0 | 2.0 | 30 | 1.1 | 2.7 | 20 | 1.3 | 3.4 | 16 | 1.4 | 3.9 | 14 | 1.7 | 4.9 | 8 1.0 5.1 |
| 65 | 73 | 0.9 | 1.5 | 48 | 1.0 | 2.0 | 32 | 1.1 | 2.7 | 22 | 1.3 | 3.4 | 18 | 1.4 | 3.9 | 15 | 1.7 | 5.0 | 9 1.9 5.2 |
| 70 | 78 | 0.9 | 1.5 | 51 | 1.0 | 2.0 | 34 | 1.1 | 2.7 | 24 | 1.3 | 3.4 | 19 | 1.4 | 3.9 | 16 | 1.5 | 4.4 | 10 1.9 5.3 |
| 75 | 83 | 0.9 | 1.5 | 55 | 1.0 | 2.0 | 37 | 1.1 | 2.7 | 25 | 1.3 | 3.4 | 21 | 1.4 | 3.9 | 17 | 1.5 | 4.4 | 10 1.9 5.4 |
| 80 | 89 | 0.9 | 1.5 | 59 | 1.0 | 2.0 | 39 | 1.1 | 2.7 | 27 | 1.3 | 3.4 | 22 | 1.4 | 3.9 | 18 | 1.5 | 4.4 | 11 1.9 5.4 |
| 90 | 100 | 0.9 | 1.5 | 66 | 1.0 | 2.0 | 44 | 1.1 | 2.7 | 30 | 1.3 | 3.5 | 25 | 1.4 | 3.9 | 20 | 1.5 | 4.4 | 11 2.0 5.9 |
| 100 | | | | 73 | 1.0 | 2.0 | 49 | 1.1 | 2.7 | 33 | 1.3 | 3.5 | 27 | 1.4 | 3.9 | 22 | 1.5 | 4.5 | 15 1.9 5.5 |
| | | | | | | | | | | | | | | | | | | | 17 1.7 5.1 |
| | | | | | | | | | | | | | | | | | | | 19 1.9 5.2 |
| | | | | | | | | | | | | | | | | | | | 20 1.9 5.3 |
| | | | | | | | | | | | | | | | | | | | 20 1.9 5.4 |
| | | | | | | | | | | | | | | | | | | | 21 1.9 5.4 |
| | | | | | | | | | | | | | | | | | | | 22 1.9 5.5 |
| | | | | | | | | | | | | | | | | | | | 23 1.9 5.5 |
| | | | | | | | | | | | | | | | | | | | 23 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 24 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 25 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 26 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 27 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 28 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 29 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 30 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 31 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 32 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 33 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 34 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 35 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 36 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 37 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 38 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 39 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 40 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 41 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 42 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 43 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 44 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 45 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 46 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 47 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 48 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 49 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 50 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 51 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 52 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 53 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 54 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 55 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 56 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 57 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 58 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 59 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 60 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 61 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 62 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 63 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 64 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 65 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 66 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 67 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 68 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 69 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 70 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 71 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 72 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 73 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 74 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 75 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 76 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 77 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 78 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 79 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 80 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 81 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 82 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 83 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 84 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 85 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 86 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 87 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 88 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 89 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 90 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 91 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 92 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 93 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 94 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 95 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 96 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 97 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 98 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 99 1.9 5.9 |
| | | | | | | | | | | | | | | | | | | | 100 1.9 5.9 |

| PARABOLIC DIVERSION DESIGN, WITHOUT FREEBOARD | | | | | | | | | | | | | RETARDANCE - D & C GRADE, % - 2.0 | | | | | | |
|---|----------------------|-----|----------------------|----|----------------------|-----|----------------------|-----|----------------------|----|----------------------|-----|--------------------------------------|-----|----------------------|---|----------------------|-----|----------------|
| V ₁ Based on Permissible Velocity of the Soil With Retardance "D" Top Width, Depth & V ₂ Based on Retardance "C" | | | | | | | | | | | | | | | | | | | |
| Q | V ₁ = 2.0 | | V ₁ = 2.5 | | V ₁ = 3.0 | | V ₁ = 3.5 | | V ₁ = 4.0 | | V ₁ = 4.5 | | V ₁ = 5.0 | | V ₁ = 5.5 | | V ₁ = 6.0 | | |
| cfs | T | D | T | D | T | D | T | D | T | D | T | D | T | D | T | D | T | D | V ₂ |
| 15 | 21 | 0.8 | 1.3 | 13 | 0.9 | 1.9 | 9 | 1.0 | 2.4 | 7 | 1.2 | 2.9 | | | | | | | |
| 20 | 28 | 0.8 | 1.3 | 17 | 0.9 | 1.9 | 12 | 1.0 | 2.4 | 9 | 1.1 | 3.0 | | | | | | | |
| 25 | 35 | 0.8 | 1.3 | 21 | 0.9 | 1.9 | 15 | 1.0 | 2.4 | 11 | 1.1 | 3.0 | | | | | | | |
| 30 | 41 | 0.8 | 1.3 | 26 | 0.9 | 1.9 | 18 | 1.0 | 2.5 | 13 | 1.1 | 3.0 | 10 | 1.2 | 3.7 | 8 | 1.3 | 4.0 | |
| 35 | 48 | 0.8 | 1.4 | 30 | 0.9 | 1.9 | 22 | 1.0 | 2.4 | 15 | 1.1 | 3.1 | | | | | | | |

STANDARD AND SPECIFICATIONS FOR GRASSED WATERWAY



Definition & Scope

A natural or **permanent** man-made channel of parabolic or trapezoidal cross-section that is below adjacent ground level and is stabilized by suitable vegetation. The flow channel is normally wide and shallow and conveys the runoff down the slope without causing damage by erosion.

Conditions Where Practice Applies

Grass waterways are used where added vegetative protection is needed to control erosion resulting from concentrated runoff.

Design Criteria

Capacity

The minimum capacity shall be that required to confine the peak rate of runoff expected from a 10-year 24 hour frequency rainfall event or a higher frequency corresponding to the hazard involved. This requirement for confinement may be waived on slopes of less than one (1) percent where out-of-bank flow will not cause erosion or property damage.

Peak rates of runoff values used in determining the capacity requirements shall be computed by appropriate methods. Where there is base flow, it shall be handled by a stone center, subsurface drain, or other suitable means since sustained wetness usually prevents adequate vegetative cover. The cross-sectional area of the stone center or subsurface drain size to be provided shall be determined by using a flow rate of 0.1 cfs/acre or by actual measurement of the maximum base flow.

Velocity

Please see Table 3.1, Diversion Maximum Permissible Design Velocities on page 3.10, for seed, soil, and velocity variables.

Cross Section

The design water surface elevation of a grassed waterway receiving water from diversions or other tributary channels shall be equal to or less than the design water surface elevation in the diversion or other tributary channels.

The top width of parabolic waterways shall not exceed 30 feet and the bottom width of trapezoidal waterways shall not exceed 15 feet unless multiple or divided waterways, stone center, or other means are provided to control meandering of low flows.

Structural Measures

In cases where grade or erosion problems exist, special control measures may be needed such as lined waterways (see page 3.27), or grade stabilization measures (see page 3.21). Where needed, these measures will be supported by adequate design computations. For typical cross sections of waterways with riprap sections or stone centers, refer to Figure 3.8 on page 3.24.

The design procedures for parabolic and trapezoidal channels are available in the NRCS Engineering Field Handbook. Figure 3.9 on page 3.25 also provides a design chart for parabolic waterway.

Outlets

Each waterway shall have a stable outlet. The outlet may be another waterway, a stabilized open channel, grade stabilization structure, etc. In all cases, the outlet must discharge in such a manner as not to cause erosion. Outlets shall be constructed and stabilized prior to the operation of the waterway.

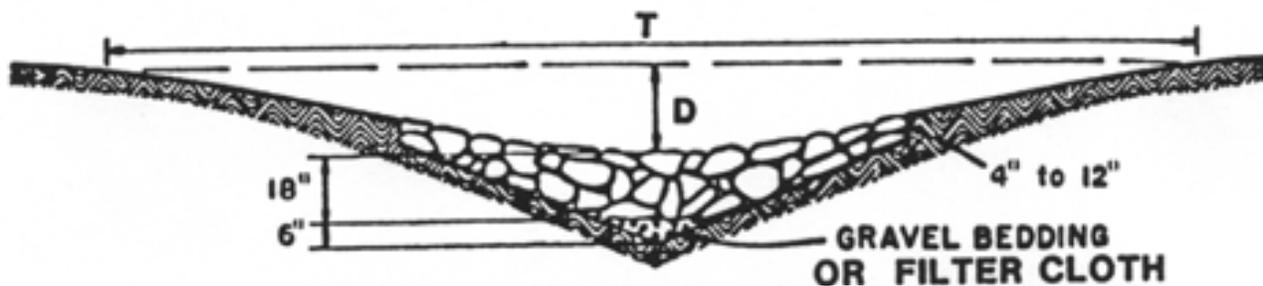
Stabilization

Waterways shall be stabilized in accordance with the appropriate vegetative stabilization standard and specifications, and will be dependent on such factors as slope, soil class, etc. See standard for Vegetating Waterways on Page 4.78.

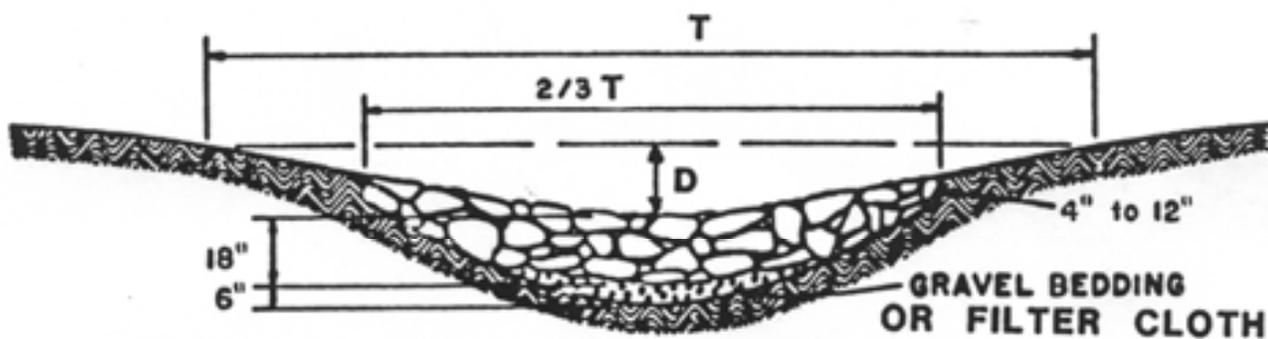
Construction Specifications

See Figure 3.10 on page 3.26 for details.

Figure 3.8
Typical Waterway Cross Sections Details

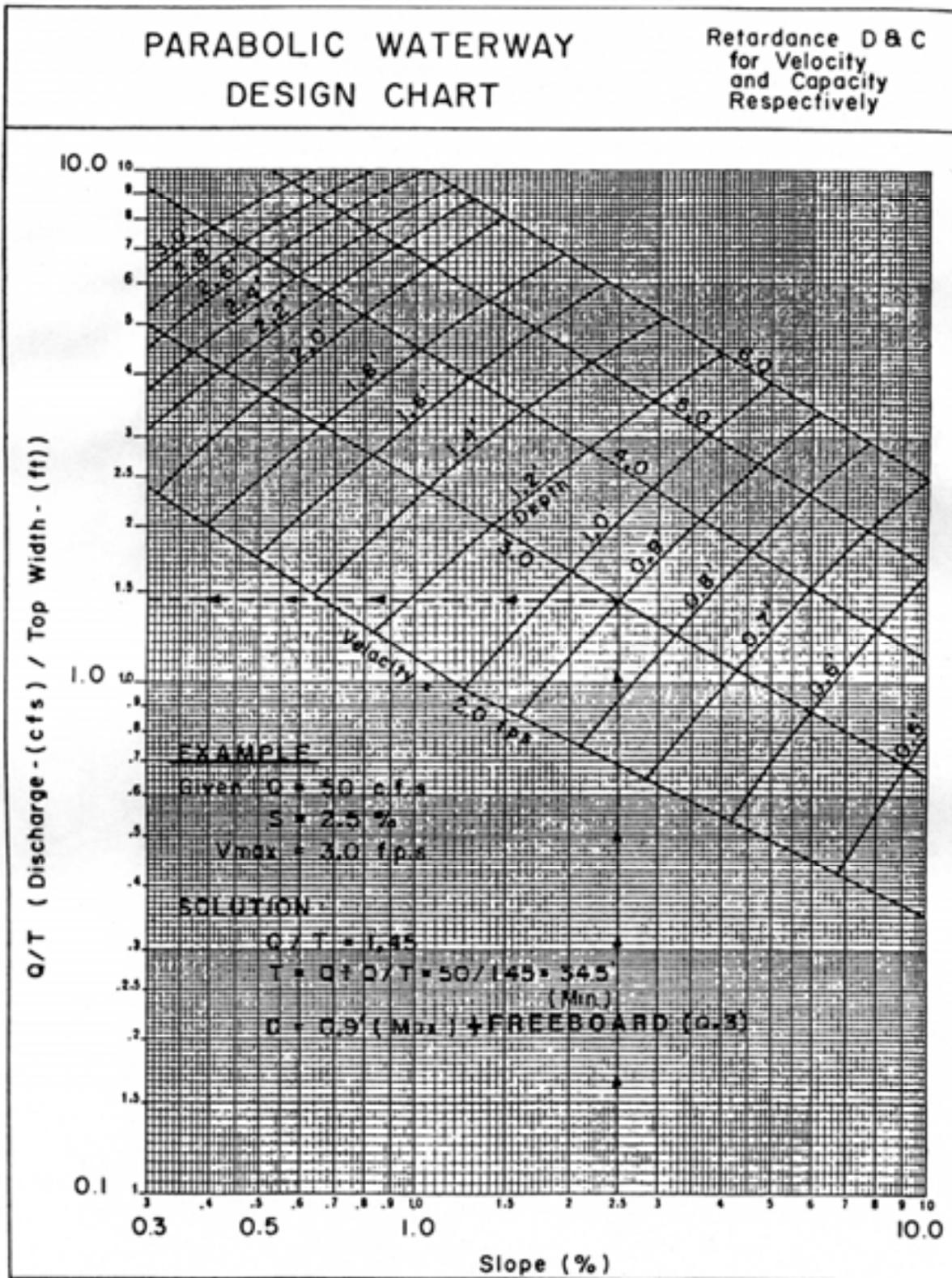


Waterway with stone center drain. "V" section shaped by motor grader.

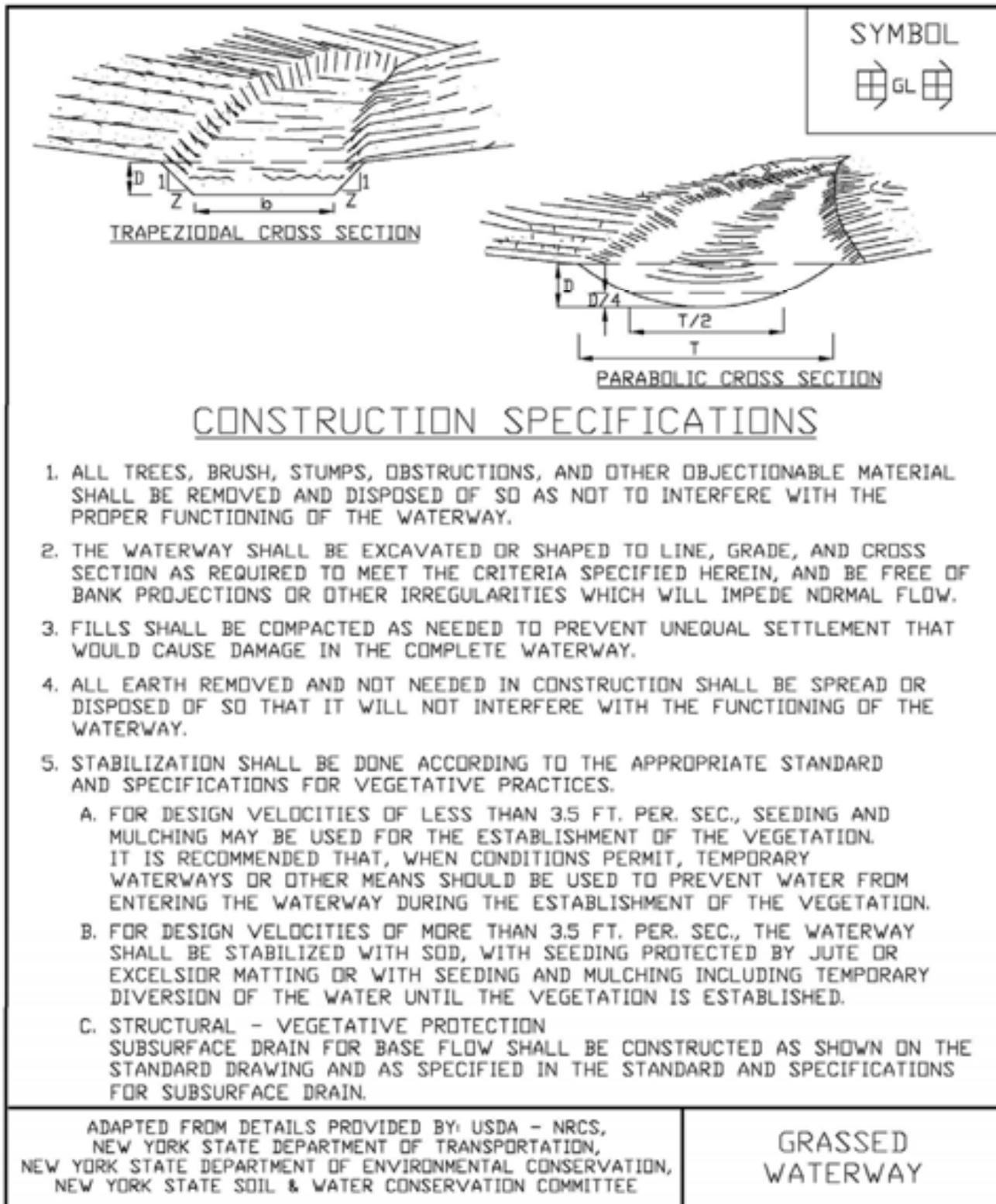


Waterway with stone center drain. Rounded section shaped by bulldozer.

Figure 3.9
Parabolic Waterway Design Chart (USDA - NRCS)



**Figure 3.10
Grassed Waterway Detail**



STANDARD AND SPECIFICATIONS FOR LINED WATERWAY



lets.

4. Soils are highly erosive or other soil and climate conditions preclude using vegetation.
5. High value property or adjacent facilities warrant the extra cost to contain design runoff in a limited space.

Design Criteria

Capacity

1. The minimum capacity shall be adequate to carry the peak rate of runoff from a 10-year, 24-hour storm. Velocity shall be computed using Manning's equation with a coefficient of roughness "n" as follows:

| Lined Material | "n" |
|------------------|---|
| Concrete (Type): | |
| Trowel Finish | 0.015 |
| Float Finish | 0.019 |
| Gunite | 0.019 |
| Flagstone | 0.022 |
| Riprap | Determine from Figure 3.11 on page 3.30 |
| Gabion | 0.030 |

Definition & Scope

A **permanent** waterway or outlet with a lining of concrete, stone, or other durable, hardened material. The lined section extends up the side slopes to the designed depth. The earth above the permanent lining may be vegetated or otherwise protected.

The lined waterway is constructed to provide for the disposal of concentrated runoff without damage from erosion or flooding, where grassed waterways would be inadequate due to high velocities.

Conditions Where Practice Applies

This standard applies to waterways or outlets with linings of cast-in-place concrete, flagstone mortared in place, rock riprap, gabions, or similar permanent linings. It does not apply to irrigation ditch or canal linings, grassed waterways with stone centers or small lined sections that carry prolonged low flows, or to reinforced concrete channels. Lined waterways should not be used if they are directly discharging to C(T) or higher streams unless thermal impacts are mitigated by biotechnical practices (Section 4). The maximum capacity of the waterway flowing at design depth shall not exceed 100 cubic feet per second.

This practice applies where the following or similar conditions exist:

1. Concentrated runoff is such that a lining is required to control erosion.
2. Steep grades, wetness, prolonged base flow, seepage, or piping that would cause erosion.
3. The location is such that damage from use by people or animals precludes use of vegetated waterways or out-

2. Riprap gradation and filter (bedding) are generally designed in accordance with criteria set forth in the National Cooperative Highway Research Program Report 108, available from the University Microfilm International, 300 N. Zeeb Road, Ann Arbor, Michigan 48106, Publication No. PB-00839; or the Hydraulic Engineering Circular No. 11, prepared by the U.S. Bureau of Public Roads, available from Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, HNG-31, or the procedure in the USDA-NRCS's Engineering Field Manual, Chapter 16.

Velocity

1. Maximum design velocity shall be as shown below. Except for short transition sections, flow with a channel gradient within the range of 0.7 to 1.3 of this flow's critical slope must be avoided unless the channel is straight. Velocities exceeding critical will be restricted to straight reaches.

| Design Flow Depth (ft.) | Maximum Velocity (ft./sec.) |
|-------------------------|-----------------------------|
| 0.0 - 0.5 | 25 |
| 0.5 - 1.0 | 15 |
| Greater than 1.0 | 10 |

- Waterways or outlets with velocities exceeding critical shall discharge into an energy dissipater to reduce velocity to less than critical, or to a velocity the downstream soil and vegetative conditions will allow.

Cross Section

The cross section shall be triangular, parabolic, or trapezoidal. Monolithic concrete or gabions may be rectangular.

Freeboard

The minimum freeboard for lined waterways or outlets shall be 0.25 feet above design high water in areas where erosion resistant vegetation cannot be grown adjacent to the paved side slopes. No freeboard is required where good vegetation can be grown and is maintained.

Side Slope

Steepest permissible side slopes, horizontal to vertical will be as follows:

- Non-Reinforced Concrete
 - Hand-placed, formed concrete
 - Height of lining, 1.5 ft or less Vertical
 - Hand placed screened concrete or mortared
 - In-place flagstone
 - Height of lining, less than 2 ft 1 to 1
 - Height of lining, more than 2 ft 2 to 1
- Slip form concrete:
 - Height of lining, less than 3 ft 1 to 1
- Rock Riprap 2 to 1
- Gabions Vertical
- Pre-cast Concrete Sections Vertical

Lining Thickness

Minimum lining thickness shall be as follows:

- Concrete 4 in. (In most problem areas, shall be 5 in. with welded wire fabric reinforcing)
- Rock Riprap 1.5 x maximum stone size plus thickness of filter or bedding.
- Flagstone 4 in. including mortar bed.

Related Structures

Side inlets, drop structures, and energy dissipaters shall meet the hydraulic and structural requirements of the site.

Filters or Bedding

Filters or bedding to prevent piping, reduce uplift pressure, and collect water will be used as required and will be designed in accordance with sound engineering principles. Weep holes and drains should be provided as needed.

Concrete

Concrete used for lining shall be so proportioned that it is plastic enough for thorough consolidation and stiff enough to stay in place on side slopes. A dense product will be required. A mix that can be certified as suitable to produce a minimum strength of at least 3,000 pounds per square inch will be required. Cement used shall be Portland Cement, Type I, II, IV, or V. Aggregate used shall have a maximum diameter of 1 ½ inches.

Weep holes should be provided in concrete footings and retaining walls to allow free drainage of water. Pipe used for weep holes shall be non-corrosive.

Mortar

Mortar used for mortared in-place flagstone shall consist of a mix of cement, sand, and water. Follow directions on the bag of mortar for proper mixing of mortar and water.

Contraction Joints

Contraction joints in concrete linings, where required, shall be formed transversely to a depth of about one third the thickness of the lining at a uniform spacing in the range of 10 to 15 feet.

Rock Riprap or Flagstone

Stone used for riprap or gabions shall be dense and hard enough to withstand exposure to air, water, freezing, and thawing. Flagstone shall be flat for ease of placement and have the strength to resist exposure and breaking. Rock riprap maximum size shall be as follows:

| Velocity (f.p.s.) | d _{max} (in.) |
|-------------------|------------------------|
| 5.0 | 6 |
| 8.5 | 12 |
| 10 | 18 |
| 12 | 24 |
| 15 | 36 |

A complete listing riprap gradations is provided in Table 4.1, page 4.9.

Cutoff Walls

Cutoff walls shall be used at the beginning and ending of concrete lining. For rock riprap lining, cutoff walls shall be keyed into the channel bottom and at both ends of the lining.

Construction Specifications

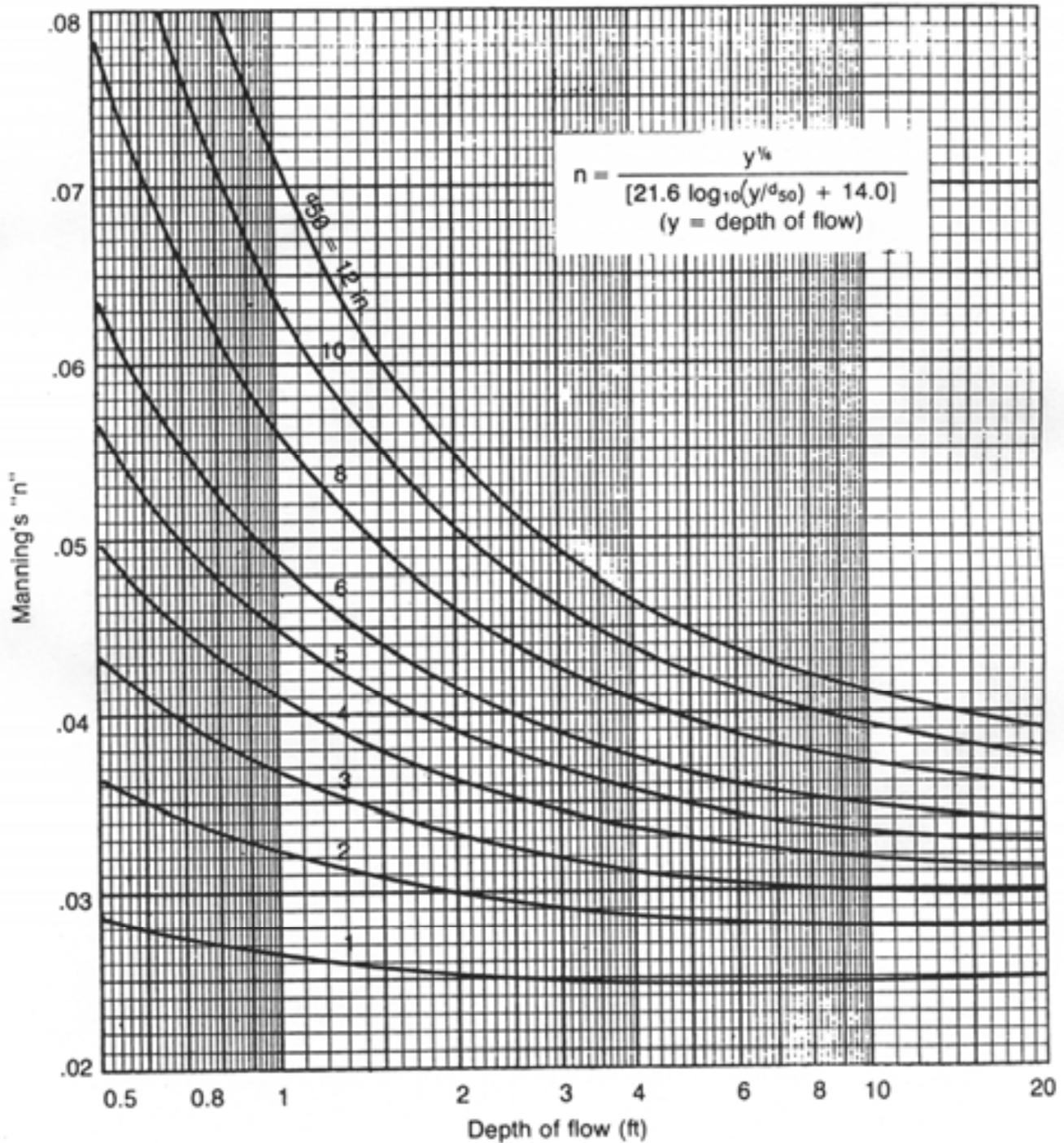
1. The foundation area shall be cleared of trees, stumps, roots, sod, loose rock, or other objectionable material.
2. The cross-section shall be excavated to the neat lines and grades as shown on the plans. Over-excavated areas shall be backfilled with moist soil compacted to the density of the surrounding material.
3. No abrupt deviations from design grade or horizontal alignment shall be permitted.
4. Concrete linings shall be placed to the thickness shown on the plans and trowel finished. Adequate precautions shall be taken to protect freshly placed concrete from extreme (hot or cold) temperatures, to ensure proper curing.
5. Filter bedding and rock riprap shall be placed to line and grade in the manner specified.
6. Construction operation shall be done in such a manner that erosion, air pollution, and water pollution will be minimized and held within legal limits. The completed job shall meet all design requirements for the appropriate finish. All disturbed areas shall be vegetated or otherwise protected against soil erosion.

Maintenance

Pavement or lining should be maintained as built to prevent undermining and deterioration. Existing trees next to pavements should be removed, as roots can cause uplift damage.

Vegetation next to pavement should be maintained in good condition to prevent scouring if the pavement is overtopped. See Standard and Specifications for Permanent Construction Area Planting on page 4.42.

Figure 3.11
Determining “n” for Riprap Lined Channel using Depth of Flow Chart
 (USDA - NRCS)



STANDARD AND SPECIFICATIONS FOR ROCK OUTLET PROTECTION



Definition & Scope

A **permanent** section of rock protection placed at the outlet end of the culverts, conduits, or channels to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach.

Conditions Where Practice Applies

This practice applies where discharge velocities and energies at the outlets of culverts, conduits, or channels are sufficient to erode the next downstream reach. This applies to:

1. Culvert outlets of all types.
2. Pipe conduits from all sediment basins, dry storm water ponds, and permanent type ponds.
3. New channels constructed as outlets for culverts and conduits.

Design Criteria

The design of rock outlet protection depends entirely on the location. Pipe outlet at the top of cuts or on slopes steeper than 10 percent, cannot be protected by rock aprons or riprap sections due to re-concentration of flows and high velocities encountered after the flow leaves the apron.

Many counties and state agencies have regulations and design procedures already established for dimensions, type and size of materials, and locations where outlet protection is required. Where these requirements exist, they shall be followed.

Tailwater Depth

The depth of tailwater immediately below the pipe outlet

must be determined for the design capacity of the pipe. If the tailwater depth is less than half the diameter of the outlet pipe, and the receiving stream is wide enough to accept divergence of the flow, it shall be classified as a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example. If the tailwater depth is greater than half the pipe diameter and the receiving stream will continue to confine the flow, it shall be classified as a Maximum Tailwater Condition; see Figure 3.17 on page 3.43 as an example. Pipes which outlet onto flat areas with no defined channel may be assumed to have a Minimum Tailwater Condition; see Figure 3.16 on page 3.42 as an example.

Apron Size

The apron length and width shall be determined from the curves according to the tailwater conditions:

Minimum Tailwater – Use Figure 3.16 on page 3.42

Maximum Tailwater – Use Figure 3.17 on page 3.43

If the pipe discharges directly into a well defined channel, the apron shall extend across the channel bottom and up the channel banks to an elevation one foot above the maximum tailwater depth or to the top of the bank, whichever is less.

The upstream end of the apron, adjacent to the pipe, shall have a width two (2) times the diameter of the outlet pipe, or conform to pipe end section if used.

Bottom Grade

The outlet protection apron shall be constructed with no slope along its length. There shall be no overfall at the end of the apron. The elevation of the downstream end of the apron shall be equal to the elevation of the receiving channel or adjacent ground.

Alignment

The outlet protection apron shall be located so that there are no bends in the horizontal alignment.

Materials

The outlet protection may be done using rock riprap, grouted riprap, or gabions. Outlets constructed on the bank of a stream or wetland shall not use grouted rip-rap, gabions or concrete.

Riprap shall be composed of a well-graded mixture of rock size so that 50 percent of the pieces, by weight, shall be larger than the d_{50} size determined by using the charts. A

well-graded mixture, as used herein, is defined as a mixture composed primarily of larger rock sizes, but with a sufficient mixture of other sizes to fill the smaller voids between the rocks. The diameter of the largest rock size in such a mixture shall be 1.5 times the d_{50} size.

Thickness

The minimum thickness of the riprap layer shall be 1.5 times the maximum rock diameter for d_{50} of 15 inches or less; and 1.2 times the maximum rock size for d_{50} greater than 15 inches. The following chart lists some examples:

| D₅₀ (inches) | d_{max} (inches) | Minimum Blanket Thick- ness (inches) |
|------------------------------------|-------------------------------------|---|
| 4 | 6 | 9 |
| 6 | 9 | 14 |
| 9 | 14 | 20 |
| 12 | 18 | 27 |
| 15 | 22 | 32 |
| 18 | 27 | 32 |
| 21 | 32 | 38 |
| 24 | 36 | 43 |

Rock Quality

Rock for riprap shall consist of field rock or rough unhewn quarry rock. The rock shall be hard and angular and of a quality that will not disintegrate on exposure to water or weathering. The specific gravity of the individual rocks shall be at least 2.5.

Filter

A filter is a layer of material placed between the riprap and the underlying soil surface to prevent soil movement into and through the riprap. Riprap shall have a filter placed under it in all cases.

A filter can be of two general forms: a gravel layer or a plastic filter cloth. The plastic filter cloth can be woven or non-woven monofilament yarns, and shall meet these base requirements: thickness 20-60 mils, grab strength 90-120 lbs; and shall conform to ASTM D-1777 and ASTM D-1682.

Gravel filter blanket, when used, shall be designed by comparing particle sizes of the overlying material and the base material. Design criteria are available in Standard and Specification for Anchored Slope and Channel Stabilization on page 4.7.

Gabions

Gabions shall be made of hexagonal triple twist mesh with heavily galvanized steel wire. The maximum linear dimension of the mesh opening shall not exceed 4 ½ inches and the area of the mesh opening shall not exceed 10 square inches.

Gabions shall be fabricated in such a manner that the sides, ends, and lid can be assembled at the construction site into a rectangular basket of the specified sizes. Gabions shall be of single unit construction and shall be installed according to manufacturer’s recommendations.

The area on which the gabion is to be installed shall be graded as shown on the drawings. Foundation conditions shall be the same as for placing rock riprap, and filter cloth shall be placed under all gabions. Where necessary, key, or tie, the structure into the bank to prevent undermining of the main gabion structure.

Maintenance

Once a riprap outlet has been installed, the maintenance needs are very low. It should be inspected after high flows for evidence of scour beneath the riprap or for dislodged rocks. Repairs should be made immediately.

Design Procedure

1. Investigate the downstream channel to assure that nonerosive velocities can be maintained.
2. Determine the tailwater condition at the outlet to establish which curve to use.
3. Use the appropriate chart with the design discharge to determine the riprap size and apron length required. It is noted that references to pipe diameters in the charts are based on full flow. For other than full pipe flow, the parameters of depth of flow and velocity must be used to adjust the design discharges.
4. Calculate apron width at the downstream end if a flare section is to be employed.

Design Examples are demonstrated in Appendix B.

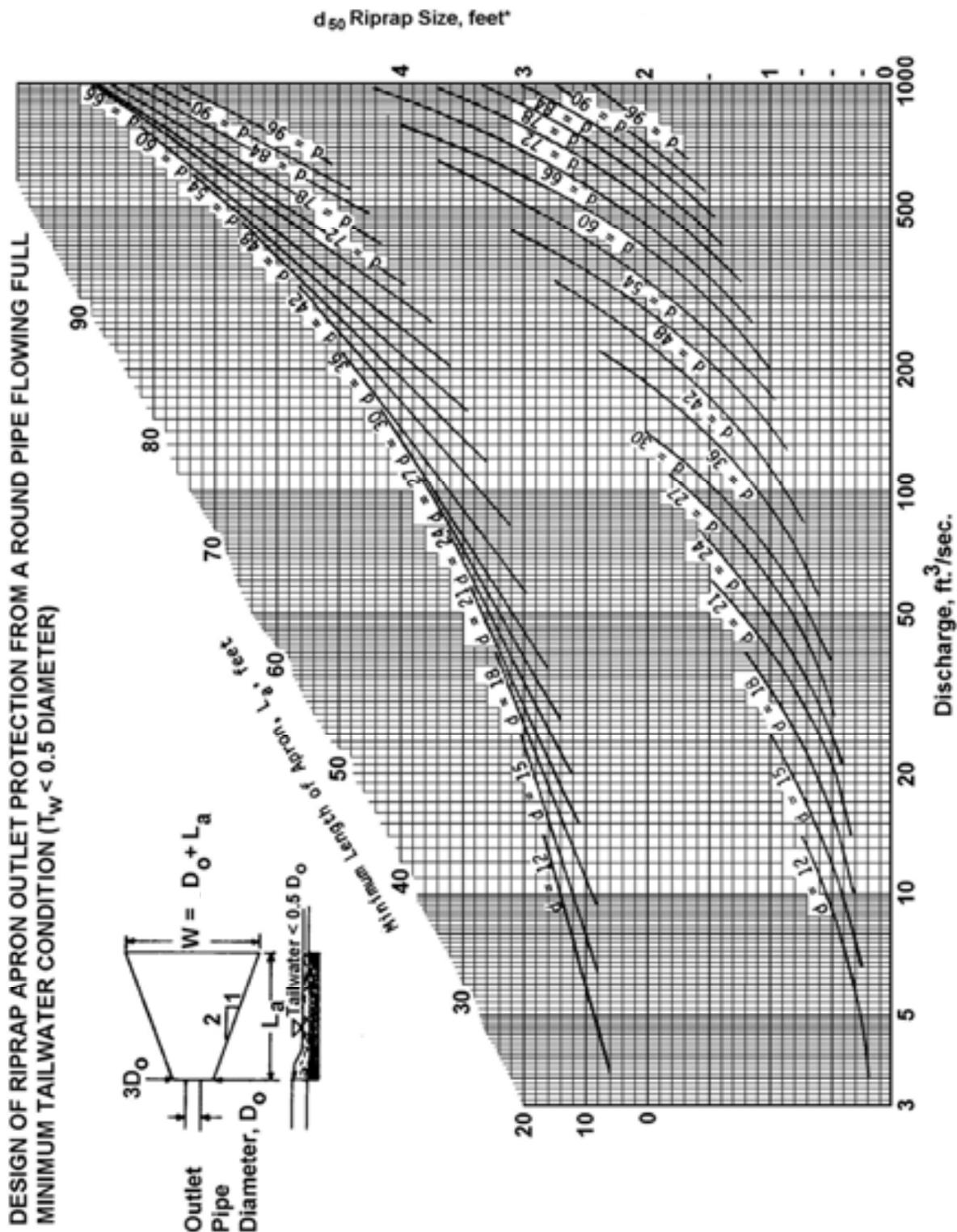
Construction Specifications

1. The subgrade for the filter, riprap, or gabion shall be prepared to the required lines and grades. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The rock or gravel shall conform to the specified grad-

ing limits when installed respectively in the riprap or filter.

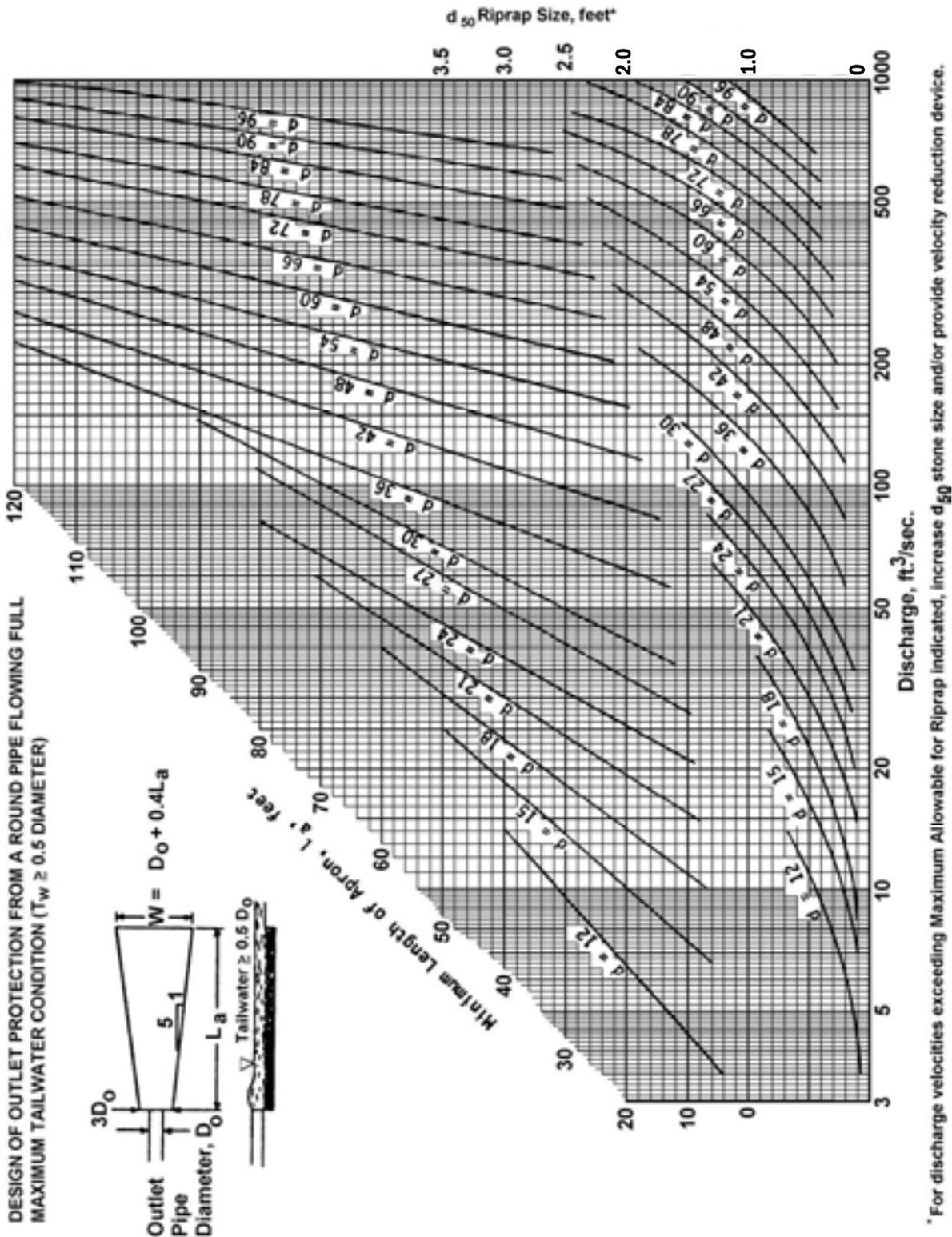
3. Filter cloth shall be protected from punching, cutting, or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged part or by completely replacing the cloth. All overlaps, whether for repairs or for joining two pieces of cloth shall be a minimum of one foot.
4. Rock for the riprap or gabion outlets may be placed by equipment. Both shall each be constructed to the full course thickness in one operation and in such a manner as to avoid displacement of underlying materials. The rock for riprap or gabion outlets shall be delivered and placed in a manner that will ensure that it is reasonably homogenous with the smaller rocks and spalls filling the voids between the larger rocks. Riprap shall be placed in a manner to prevent damage to the filter blanket or filter cloth. Hand placement will be required to the extent necessary to prevent damage to the permanent works.

Figure 3.16
Outlet Protection Design—Minimum Tailwater Condition Chart
(Design of Outlet Protection from a Round Pipe Flowing Full,
Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)

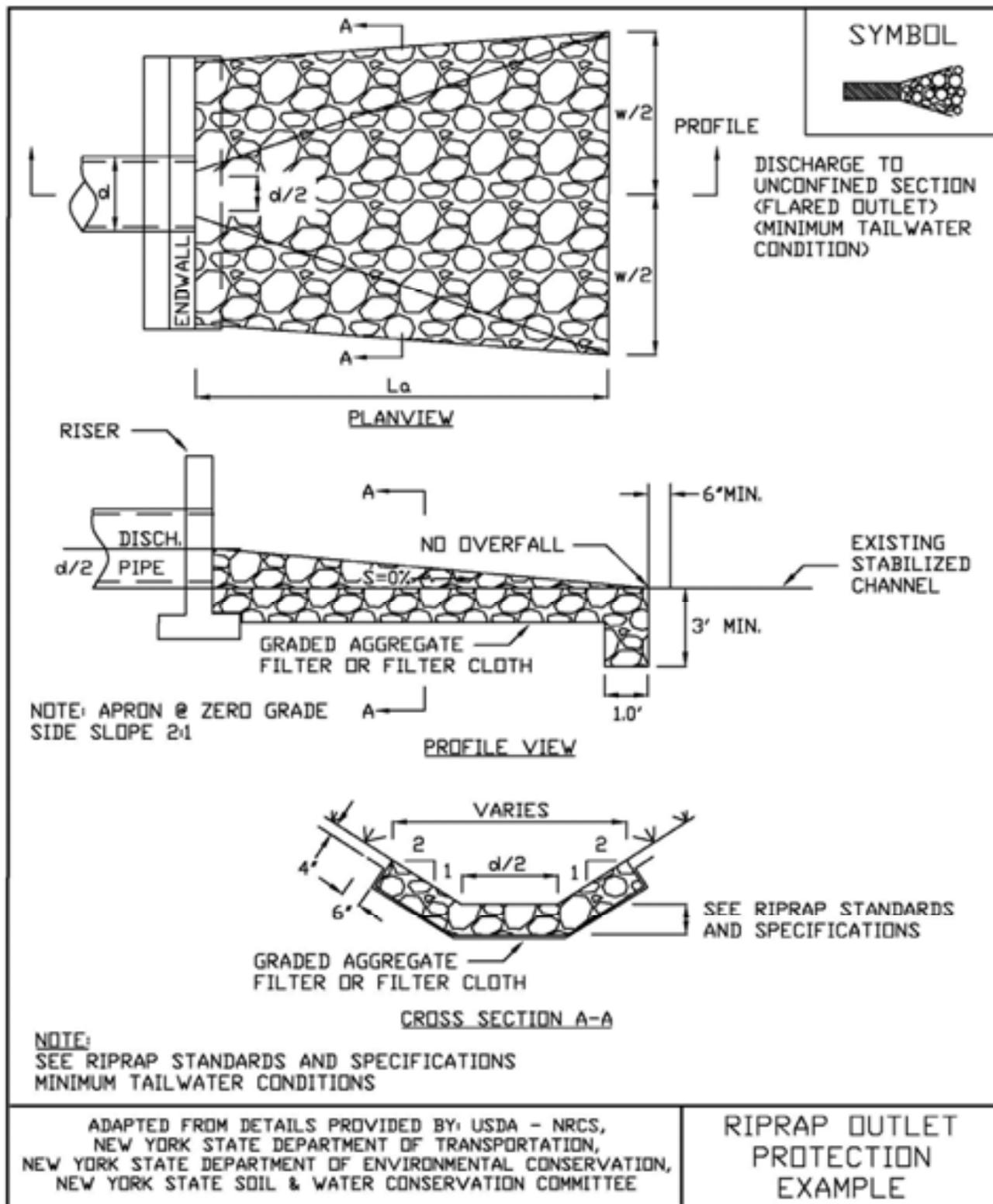


* For discharge velocities exceeding Maximum A for riprap indicated, increase d_{50} stone size and/or provide velocity reduction device.

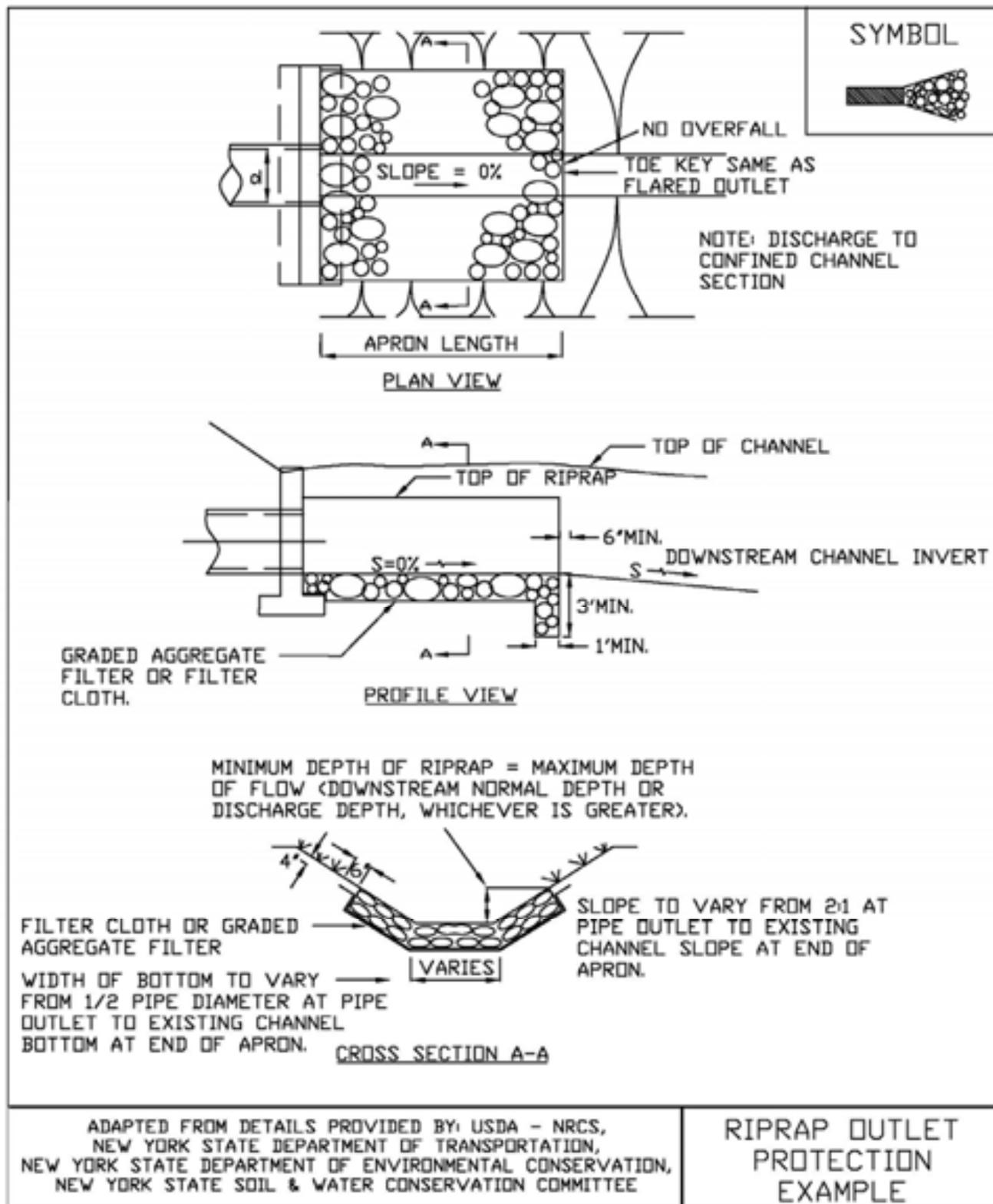
Figure 3.17
Outlet Protection Design—Maximum Tailwater Condition Chart
(Design of Outlet Protection from a Round Pipe Flowing Full,
Maximum Tailwater Condition: $T_w \geq 0.5D_o$) (USDA - NRCS)



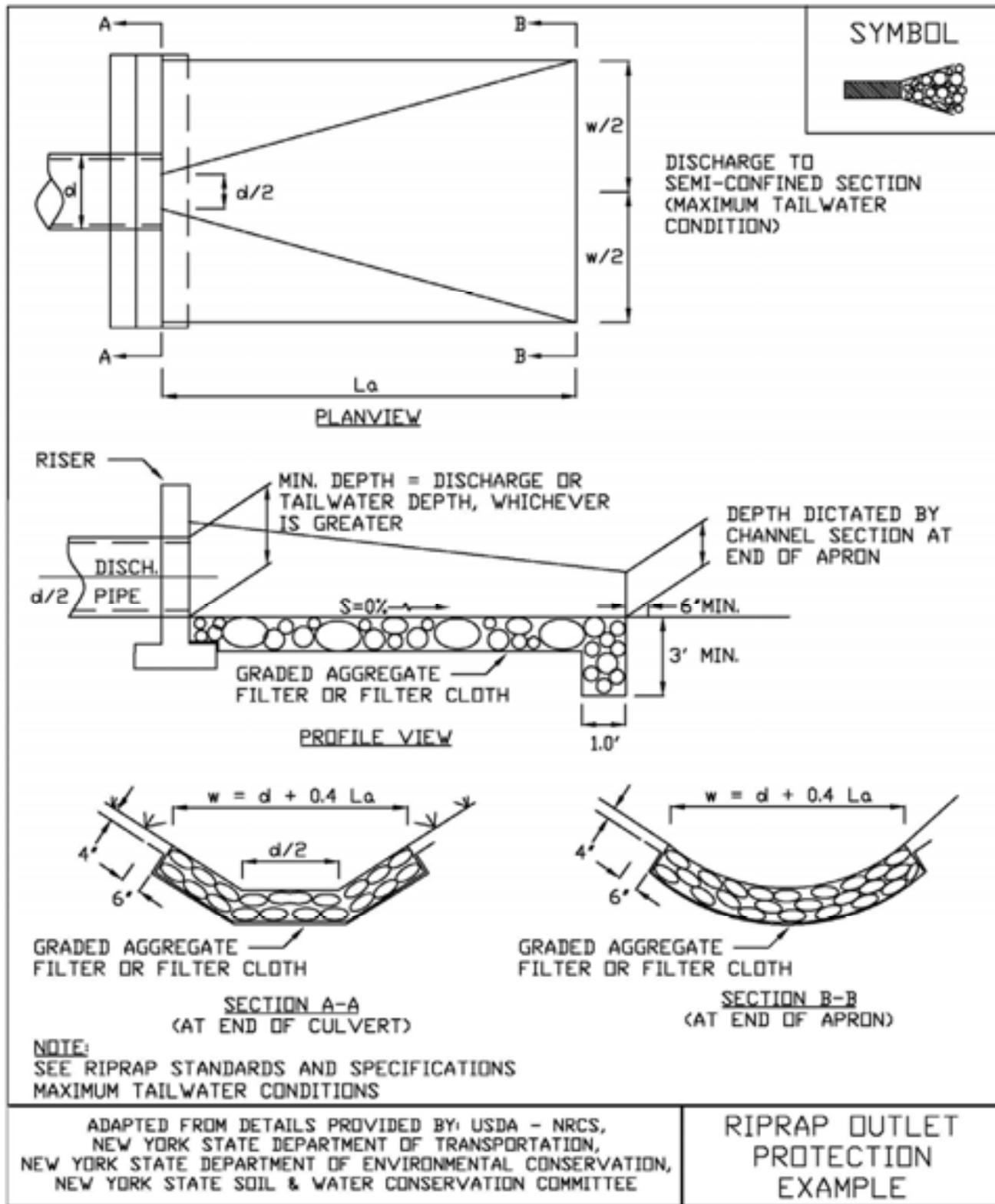
**Figure 3.18
Riprap Outlet Protection Detail (1)**



**Figure 3.19
Riprap Outlet Protection Detail (2)**



**Figure 3.20
Riprap Outlet Protection Detail (3)**



STANDARD AND SPECIFICATIONS FOR LANDGRADING



Definition & Scope

Permanent reshaping of the existing land surface by grading in accordance with an engineering topographic plan and specification to provide for erosion control and vegetative establishment on disturbed, reshaped areas.

Design Criteria

The grading plan should be based upon the incorporation of building designs and street layouts that fit and utilize existing topography and desirable natural surrounding to avoid extreme grade modifications. Information submitted must provide sufficient topographic surveys and soil investigations to determine limitations that must be imposed on the grading operation related to slope stability, effect on adjacent properties and drainage patterns, measures for drainage and water removal, and vegetative treatment, etc.

Many municipalities and counties have regulations and design procedures already established for land grading and cut and fill slopes. Where these requirements exist, they shall be followed.

The plan must show existing and proposed contours of the area(s) to be graded. The plan shall also include practices for erosion control, slope stabilization, safe disposal of runoff water and drainage, such as waterways, lined ditches, reverse slope benches (include grade and cross section), grade stabilization structures, retaining walls, and surface and subsurface drains. The plan shall also include phasing of these practices. The following shall be incorporated into the plan:

1. Provisions shall be made to safely convey surface runoff to storm drains, protected outlets, or to stable water courses to ensure that surface runoff will not

damage slopes or other graded areas; see standards and specifications for Grassed Waterway, Diversion, or Grade Stabilization Structure.

2. Cut and fill slopes that are to be stabilized with grasses shall not be steeper than 2:1. When slopes exceed 2:1, special design and stabilization consideration are required and shall be adequately shown on the plans. (Note: Where the slope is to be mowed, the slope should be no steeper than 3:1, although 4:1 is preferred because of safety factors related to mowing steep slopes.)
3. Reverse slope benches or diversion shall be provided whenever the vertical interval (height) of any 2:1 slope exceeds 20 feet; for 3:1 slope it shall be increased to 30 feet and for 4:1 to 40 feet. Benches shall be located to divide the slope face as equally as possible and shall convey the water to a stable outlet. Soils, seeps, rock outcrops, etc., shall also be taken into consideration when designing benches.
 - A. Benches shall be a minimum of six feet wide to provide for ease of maintenance.
 - B. Benches shall be designed with a reverse slope of 6:1 or flatter to the toe of the upper slope and with a minimum of one foot in depth. Bench gradient to the outlet shall be between 2 percent and 3 percent, unless accompanied by appropriate design and computations.
 - C. The flow length within a bench shall not exceed 800 feet unless accompanied by appropriate design and computations; see Standard and Specifications for Diversion on page 3.9
4. Surface water shall be diverted from the face of all cut and/or fill slopes by the use of diversions, ditches and swales or conveyed downslope by the use of a designed structure, except where:
 - A. The face of the slope is or shall be stabilized and the face of all graded slopes shall be protected from surface runoff until they are stabilized.
 - B. The face of the slope shall not be subject to any concentrated flows of surface water such as from natural drainage ways, graded ditches, downspouts, etc.
 - C. The face of the slope will be protected by anchored stabilization matting, sod, gravel, riprap, or other stabilization method.

5. Cut slopes occurring in ripable rock shall be serrated as shown in Figure 4.9 on page 4.26. The serrations shall be made with conventional equipment as the excavation is made. Each step or serration shall be constructed on the contour and will have steps cut at nominal two-foot intervals with nominal three-foot horizontal shelves. These steps will vary depending on the slope ratio or the cut slope. The nominal slope line is 1 ½: 1. These steps will weather and act to hold moisture, lime, fertilizer, and seed thus producing a much quicker and longer-lived vegetative cover and better slope stabilization. Overland flow shall be diverted from the top of all serrated cut slopes and carried to a suitable outlet.
6. Subsurface drainage shall be provided where necessary to intercept seepage that would otherwise adversely affect slope stability or create excessively wet site conditions.
7. Slopes shall not be created so close to property lines as to endanger adjoining properties without adequately protecting such properties against sedimentation, erosion, slippage, settlement, subsidence, or other related damages.
8. Fill material shall be free of brush, rubbish, rocks, logs, stumps, building debris, and other objectionable material. It should be free of stones over two (2) inches in diameter where compacted by hand or mechanical tampers or over eight (8) inches in diameter where compacted by rollers or other equipment. Frozen material shall not be placed in the fill nor shall the fill material be placed on a frozen foundation.
9. Stockpiles, borrow areas, and spoil shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.
10. All disturbed areas shall be stabilized structurally or vegetatively in compliance with the Permanent Construction Area Planting Standard on page 4.42.
4. Areas to be filled shall be cleared, grubbed, and stripped of topsoil to remove trees, vegetation, roots, or other objectionable material.
5. Areas that are to be topsoiled shall be scarified to a minimum depth of four inches prior to placement of topsoil.
6. All fills shall be compacted as required to reduce erosion, slippage, settlement, subsidence, or other related problems. Fill intended to support buildings, structures, and conduits, etc., shall be compacted in accordance with local requirements or codes.
7. All fill shall be placed and compacted in layers not to exceed 9 inches in thickness.
8. Except for approved landfills or nonstructural fills, fill material shall be free of frozen particles, brush, roots, sod, or other foreign objectionable materials that would interfere with, or prevent, construction of satisfactory fills.
9. Frozen material or soft, mucky or highly compressible materials shall not be incorporated into fill slopes or structural fills.
10. Fill shall not be placed on saturated or frozen surfaces.
11. All benches shall be kept free of sediment during all phases of development.
12. Seeps or springs encountered during construction shall be handled in accordance with the Standard and Specification for Subsurface Drain on page 3.48 or other approved methods.
13. All graded areas shall be permanently stabilized immediately following finished grading.
14. Stockpiles, borrow areas, and spoil areas shall be shown on the plans and shall be subject to the provisions of this Standard and Specifications.

Construction Specifications

See Figures 4.9 and 4.10 for details.

1. All graded or disturbed areas, including slopes, shall be protected during clearing and construction in accordance with the erosion and sediment control plan until they are adequately stabilized.
2. All erosion and sediment control practices and measures shall be constructed, applied and maintained in accordance with the erosion and sediment control plan and these standards.
3. Topsoil required for the establishment of vegetation shall be stockpiled in amount necessary to complete finished grading of all exposed areas.



Figure 4.9
Typical Section of Serrated Cut Slope

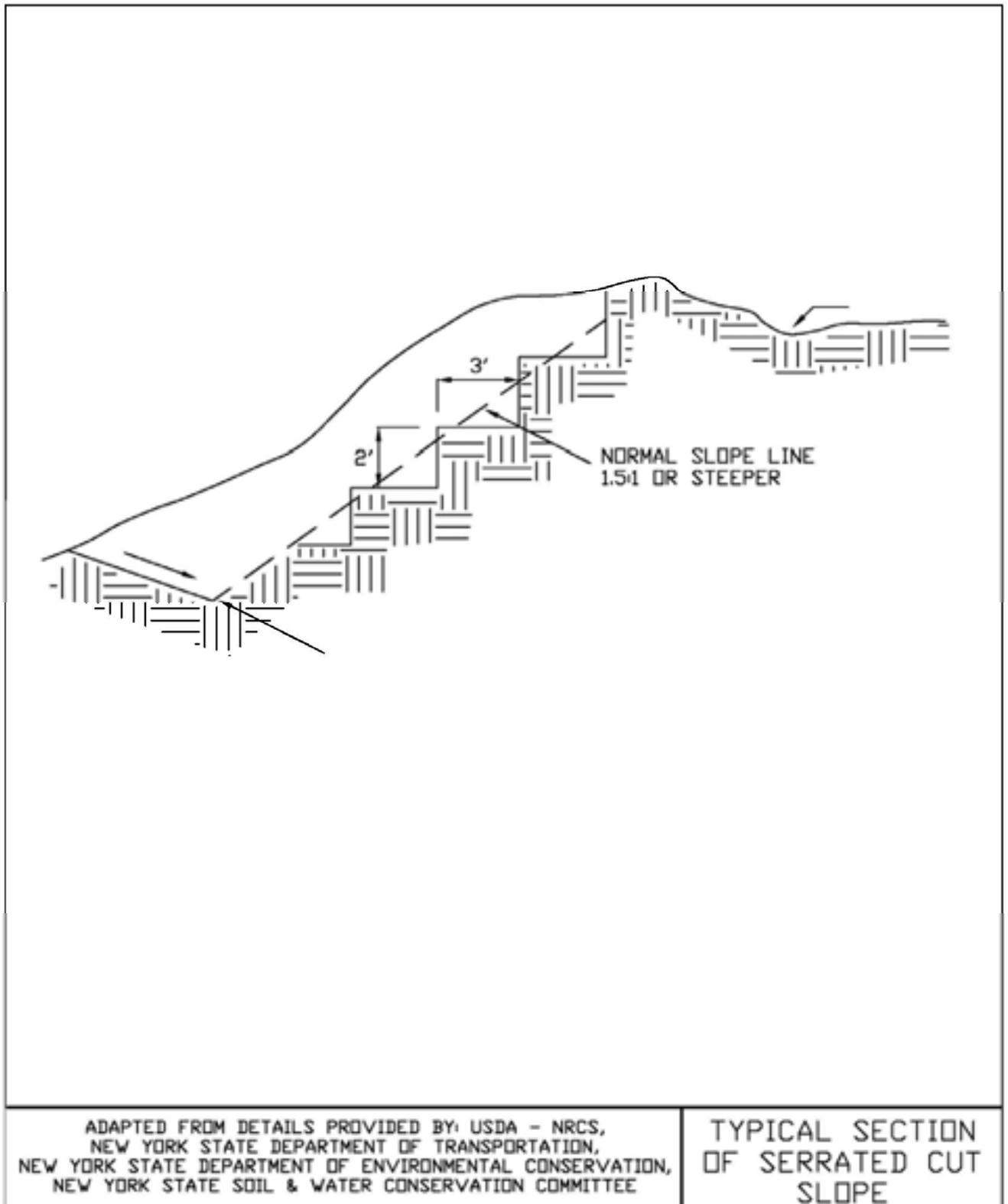


Figure 4.10
Landgrading

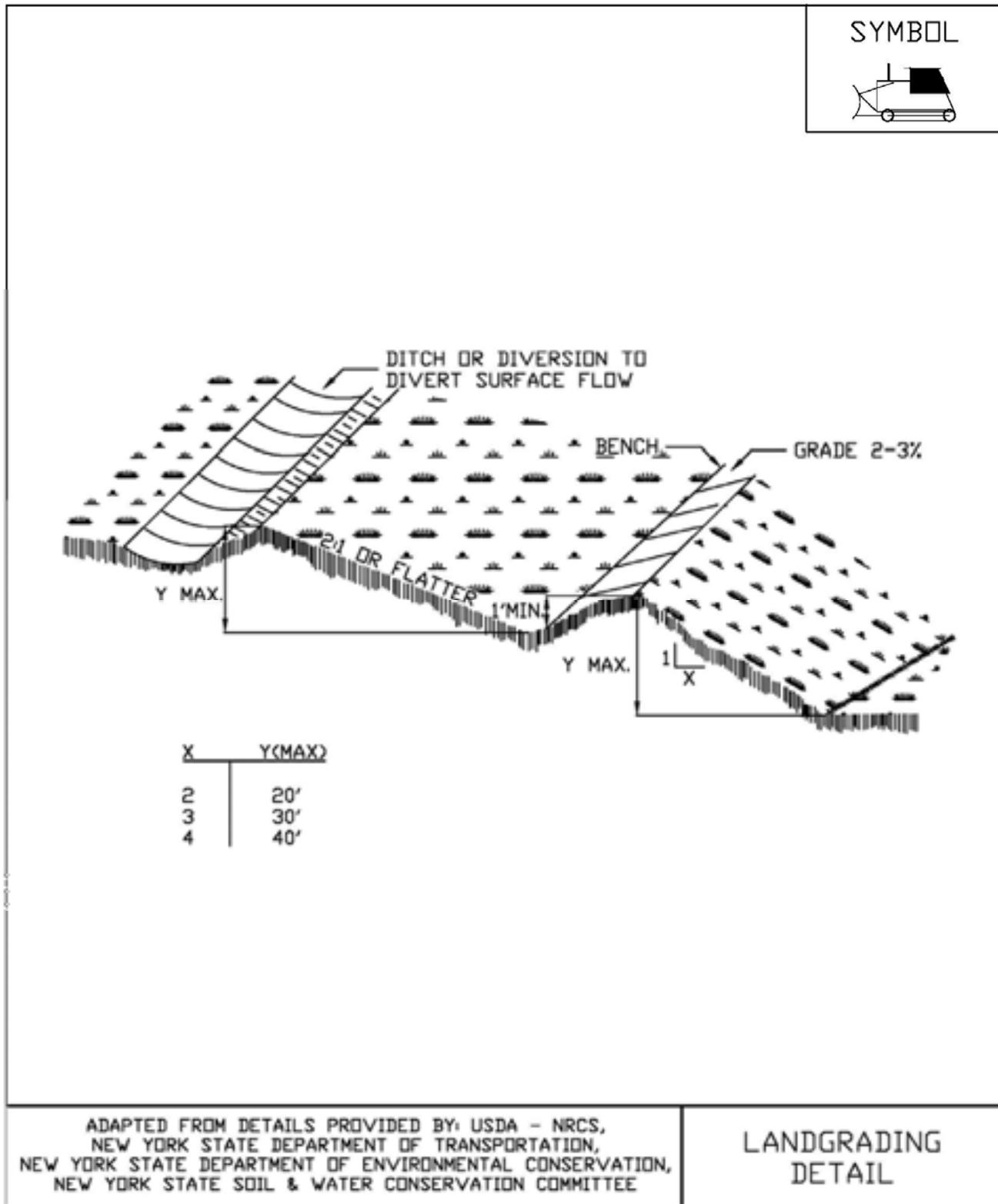


Figure 4.11
Landgrading - Construction Specifications

| <u>CONSTRUCTION SPECIFICATIONS</u> | |
|--|---|
| <ol style="list-style-type: none"> 1. ALL GRADED OR DISTURBED AREAS INCLUDING SLOPES SHALL BE PROTECTED DURING CLEARING AND CONSTRUCTION IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN UNTIL THEY ARE PERMANENTLY STABILIZED. 2. ALL SEDIMENT CONTROL PRACTICES AND MEASURES SHALL BE CONSTRUCTED, APPLIED AND MAINTAINED IN ACCORDANCE WITH THE APPROVED EROSION AND SEDIMENT CONTROL PLAN. 3. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED IN AMOUNT NECESSARY TO COMPLETE FINISHED GRADING OF ALL EXPOSED AREAS. 4. AREAS TO BE FILLED SHALL BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS OR OTHER OBJECTIONABLE MATERIAL. 5. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF FOUR INCHES PRIOR TO PLACEMENT OF TOPSOIL. 6. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES. 7. ALL FILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS. 8. EXCEPT FOR APPROVED LANDFILLS, FILL MATERIAL SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS, SOD, OR OTHER FOREIGN OR OTHER OBJECTIONABLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS. 9. FROZEN MATERIALS OR SOFT, MUCKY OR HIGHLY COMPRESSIBLE MATERIALS SHALL NOT BE INCORPORATED IN FILLS. 10. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES. 11. ALL BENCHES SHALL BE KEPT FREE OF SEDIMENT DURING ALL PHASES OF DEVELOPMENT. 12. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD. 13. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY FOLLOWING FINISHED GRADING. 14. STOCKPILES, BORROW AREAS AND SPOIL AREAS SHALL BE SHOWN ON THE PLANS AND SHALL BE SUBJECT TO THE PROVISIONS OF THIS STANDARD AND SPECIFICATION. | |
| <p style="font-size: small; margin: 0;">ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE</p> | <p style="font-size: large; margin: 0;">LANDGRADING SPECIFICATIONS</p> |

STANDARD AND SPECIFICATIONS FOR MULCHING



Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedlings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.



Table 4.2
Guide to Mulch Materials, Rates, and Uses

| Mulch Material | Quality Standards | per 1000 Sq. Ft. | per Acre | Depth of Application | Remarks |
|--|--|--------------------------------|------------------------|-----------------------------|--|
| Wood chips or shavings | Air-dried. Free of objectionable coarse material | 500-900 lbs. | 10-20 tons | 2-7" | Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly. |
| Wood fiber cellulose (partly digested wood fibers) | Made from natural wood usually with green dye and dispersing agent | 50 lbs. | 2,000 lbs. | — | Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw. |
| Gravel, Crushed Stone or Slag | Washed; Size 2B or 3A—1 1/2" | 9 cu. yds. | 405 cu. yds. | 3" | Excellent mulch for short slopes and around plants and ornaments. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control. |
| Hay or Straw | Air-dried; free of undesirable seeds & coarse materials | 90-100 lbs. 2-3 bales | 2 tons (100-120 bales) | cover about 90% surface | Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds. |
| Jute twisted yarn | Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/yd. 60-90 lbs./roll | 48" x 50 yds. or 48" x 75 yds. | — | — | Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow. |
| Excelsior wood fiber mats | Interlocking web of excelsior fibers with photodegradable plastic netting | 4' x 112.5' or 8' x 112.5'. | — | — | Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways. |
| Straw or coconut fiber, or combination | Photodegradable plastic net on one or two sides | Most are 6.5 ft. x 3.5 ft. | 81 rolls | — | Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll. |

Table 4.3
Mulch Anchoring Guide

| Anchoring Method or Material | Kind of Mulch to be Anchored | How to Apply |
|------------------------------|------------------------------|---|
| 1. Peg and Twine | Hay or straw | After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine. |
| 2. Mulch netting | Hay or straw | Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic. |
| 3. Wood cellulose fiber | Hay or straw | Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous. |
| 4. Mulch anchoring tool | Hay or straw | Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3". |
| 5. Tackifier | Hay or straw | Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45 ^o Fahrenheit are required. |

STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION



Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.



Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.

2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table, except for "Particle Size" 100% will pass the 1/2" sieve. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**



2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8” metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

**Table 4.6
Soil Restoration Requirements**

| Type of Soil Disturbance | Soil Restoration Requirement | | Comments/Examples |
|--|--|---------------------------------------|---|
| No soil disturbance | Restoration not permitted | | Preservation of Natural Features |
| Minimal soil disturbance | Restoration not required | | Clearing and grubbing |
| Areas where topsoil is stripped only - no change in grade | HSG A&B | HSG C&D | Protect area from any ongoing construction activities. |
| | Apply 6 inches of topsoil | Aerate* and apply 6 inches of topsoil | |
| Areas of cut or fill | HSG A&B | HSG C&D | |
| | Aerate* and apply 6 inches of topsoil | Apply full Soil Restoration** | |
| Heavy traffic areas on site (especially in a zone 5-25 feet around buildings but not within a 5 foot perimeter around foundation walls) | Apply full Soil Restoration (decompaction and compost enhancement) | | |
| Areas where Runoff Reduction and/or Infiltration practices are applied | Restoration not required, but may be applied to enhance the reduction specified for appropriate practices. | | Keep construction equipment from crossing these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area |
| Redevelopment projects | Soil Restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area. | | |
| <p>* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler. ** Per “Deep Ripping and De-compaction, DEC 2008”.</p> | | | |

STANDARD AND SPECIFICATIONS FOR STABILIZATION WITH SOD



Definition & Scope

Stabilizing restored, exposed soil surfaces by establishing long term stands of grass with sod to reduce damage from sediment and runoff to downstream areas and enhance natural beauty.

Conditions Where Practice Applies

On exposed soils that have a potential for causing off site environmental damage where a quick vegetative cover is desired. Moisture, either applied or natural, is essential to success.

Design Criteria

1. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist.
2. Sod shall be machine cut at a uniform soil thickness of 3/4 inch, plus or minus 1/4 inch. Measurement for thickness shall exclude top growth and thatch.
3. Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.
4. Sod shall be free of weeds and undesirable coarse weedy grasses. Wild native or pasture grass sod shall not be used unless specified.
5. Sod shall not be harvested or transplanted when

moisture content (excessively dry or wet) may adversely affect its survival.

6. Sod shall be harvested, delivered, and installed within a period of 36 hours. Sod not transplanted within this period shall be inspected and approved by the contracting officer or his designated representative prior to its installation.

Site Preparation

Fertilizer and lime application rates shall be determined by soil tests. Under unusual circumstances where there is insufficient time for a complete soil test and the contracting officer agrees, fertilizer and lime materials may be applied in amounts shown in subsection 2 below. Slope land such as to provide good surface water drainage. Avoid depressions or pockets.

1. Prior to sodding, the surface shall be smoothed and cleared of all trash, debris, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, fertilizing or maintenance operations.
2. **The soil should be tested to determine the amounts of amendments needed.** Where the soil is acid or composed of heavy clays, ground limestone shall be spread to raise the pH to 6.5. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply commercial fertilizer at 20 lbs. of 5-5-10 (or equivalent) and mix into the top 3 inches of soil with the required lime for every 1,000 square feet. Soil should be moist prior to sodding. Arrange for temporary storage of sod to keep it shaded and cool.

Sod Installation

1. For the operation of laying, tamping, and irrigating for any areas, sod shall be completed within eight hours. During periods of excessively high temperature, the soil shall be lightly moistened immediately prior to laying the sod.
2. The first row of sod shall be laid in a straight line with subsequent rows placed parallel to, and tightly wedged against, each other. Lateral joints shall be staggered to promote more uniform growth and strength. Ensure that sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots. On sloping areas where erosion may be a problem, sod shall be laid with the long edges parallel to the contour and with

staggered joints.

3. Secure the sod by tamping and pegging, or other approved methods. As sodding is completed in any one section, the entire area shall be rolled or tamped to ensure solid contact of roots with the soil surface.
4. Sod shall be watered immediately after rolling or tamping until the underside of the new sod pad and soil surface below the sod are thoroughly wet. Keep sod moist for at least two weeks.

Sod Maintenance

1. In the absence of adequate rainfall, watering shall be performed daily, or as often as deemed necessary by the inspector, during the first week and in sufficient quantities to maintain moist soil to a depth of 4 inches. Watering should be done in the morning. Avoid excessive watering during applications.
2. After the first week, sod shall be watered as necessary to maintain adequate moisture and ensure establishment.
3. The first mowing should not be attempted until sod is firmly rooted. No more than 1/3 of the grass leaf shall be removed by the initial cutting or subsequent cuttings. Grass height shall be maintained between 2 and 3 inches unless otherwise specified. Avoid heavy mowing equipment for several weeks to prevent rutting.
4. If the soil must be fertilized before results of a soil test can be obtained to determine fertilizer needs, apply fertilizer three to four weeks after sodding, at a rate of 1 pound nitrogen/1,000 sq.ft. Use a complete fertilizer with a 2-1-1 ratio.
5. Weed Control: Target herbicides for weeds present. Consult current Cornell Pest Control Recommendations for Commercial Turfgrass Management or consult the local office of Cornell Cooperative Extension.
6. Disease Control: Consult the local office of the Cornell Cooperative Extension.

Additional References

1. Home Lawns, Establishment and Maintenance, CCE Information Bulletin 185, Revised November 1994. Cornell University, Ithaca, NY.
2. Installing a Sod Lawn. CCE Suffolk County, NY. Thomas Kowalsick February 1994, Revised January 1999. www.cce.cornell.edu/counties/suffolk/grownet

STANDARD AND SPECIFICATIONS FOR TOPSOILING



Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.
2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.
3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.
2. Complete rough grading and final grade, allowing for depth of topsoil to be added.
3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompact in accordance with the Soil Restoration Standard.
4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.
2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.
3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.
4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.
5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.
6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.
2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.
3. Apply topsoil in the amounts shown in Table 4.7 below:

| Table 4.7 - Topsoil Application Depth | | |
|--|-----------------------|------------------------------|
| Site Conditions | Intended Use | Minimum Topsoil Depth |
| 1. Deep sand or loamy sand | Mowed lawn | 6 in. |
| | Tall legumes, unmowed | 2 in. |
| | Tall grass, unmowed | 1 in. |
| 2. Deep sandy loam | Mowed lawn | 5 in. |
| | Tall legumes, unmowed | 2 in. |
| | Tall grass, unmowed | none |
| 3. Six inches or more: silt loam, clay loam, loam, or silt | Mowed lawn | 4 in. |
| | Tall legumes, unmowed | 1 in. |
| | Tall grass, unmowed | 1 in. |

APPENDIX J



Department of
Environmental
Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

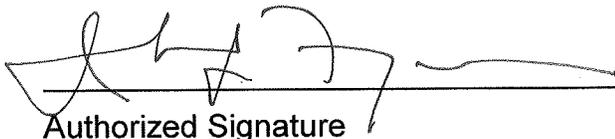
Issued Pursuant to Article 17, Titles 7, 8 and Article 70
of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator



Authorized Signature

1-23-20

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act (“CWA”), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System (“NPDES”)* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of “*construction activity*”, as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM
CONSTRUCTION ACTIVITIES**

Table of Contents

| | |
|---|----|
| Part 1. PERMIT COVERAGE AND LIMITATIONS | 1 |
| A. Permit Application | 1 |
| B. Effluent Limitations Applicable to Discharges from Construction Activities | 1 |
| C. Post-construction Stormwater Management Practice Requirements | 4 |
| D. Maintaining Water Quality | 8 |
| E. Eligibility Under This General Permit..... | 9 |
| F. Activities Which Are Ineligible for Coverage Under This General Permit | 9 |
| Part II. PERMIT COVERAGE | 12 |
| A. How to Obtain Coverage | 12 |
| B. Notice of Intent (NOI) Submittal | 13 |
| C. Permit Authorization | 13 |
| D. General Requirements For Owners or Operators With Permit Coverage | 15 |
| E. Permit Coverage for Discharges Authorized Under GP-0-15-002..... | 17 |
| F. Change of Owner or Operator | 17 |
| Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)..... | 18 |
| A. General SWPPP Requirements | 18 |
| B. Required SWPPP Contents | 20 |
| C. Required SWPPP Components by Project Type..... | 24 |
| Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS | 24 |
| A. General Construction Site Inspection and Maintenance Requirements | 24 |
| B. Contractor Maintenance Inspection Requirements | 24 |
| C. Qualified Inspector Inspection Requirements | 25 |
| Part V. TERMINATION OF PERMIT COVERAGE | 29 |
| A. Termination of Permit Coverage | 29 |
| Part VI. REPORTING AND RETENTION RECORDS | 31 |
| A. Record Retention | 31 |
| B. Addresses | 31 |
| Part VII. STANDARD PERMIT CONDITIONS..... | 31 |
| A. Duty to Comply..... | 31 |
| B. Continuation of the Expired General Permit..... | 32 |
| C. Enforcement..... | 32 |
| D. Need to Halt or Reduce Activity Not a Defense..... | 32 |
| E. Duty to Mitigate | 33 |
| F. Duty to Provide Information..... | 33 |
| G. Other Information | 33 |
| H. Signatory Requirements..... | 33 |
| I. Property Rights | 35 |
| J. Severability..... | 35 |

| | | |
|--|---|----|
| K. | Requirement to Obtain Coverage Under an Alternative Permit..... | 35 |
| L. | Proper Operation and Maintenance | 36 |
| M. | Inspection and Entry | 36 |
| N. | Permit Actions | 37 |
| O. | Definitions | 37 |
| P. | Re-Opener Clause | 37 |
| Q. | Penalties for Falsification of Forms and Reports | 37 |
| R. | Other Permits | 38 |
| APPENDIX A – Acronyms and Definitions | | 39 |
| | Acronyms..... | 39 |
| | Definitions..... | 40 |
| APPENDIX B – Required SWPPP Components by Project Type | | 48 |
| | Table 1..... | 48 |
| | Table 2..... | 50 |
| APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal..... | | 52 |
| APPENDIX D – Watersheds with Lower Disturbance Threshold | | 58 |
| APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s) | | 59 |
| APPENDIX F – List of NYS DEC Regional Offices | | 65 |

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges to surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;
2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants to surface waters of the State*.
3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

Discharges authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize the discharge of pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

- a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:
- (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharges*;
 - (ii) Control stormwater *discharges*, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;
 - (iii) *Minimize* the amount of soil exposed during *construction activity*;
 - (iv) *Minimize* the disturbance of *steep slopes*;
 - (v) *Minimize* sediment *discharges* from the site;
 - (vi) Provide and maintain *natural buffers* around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharges*, unless *infeasible*;
 - (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;
 - (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and
 - (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.
- b. **Soil Stabilization.** In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

- c. **Dewatering.** *Discharges* from *dewatering* activities, including *discharges* from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

- d. **Pollution Prevention Measures.** Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:
 - (i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

 - (ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

 - (iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

- e. **Prohibited *Discharges*.** The following *discharges* are prohibited:
 - (i) Wastewater from washout of concrete;

 - (ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

- (iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;
 - (iv) Soaps or solvents used in vehicle and equipment washing; and
 - (v) Toxic or hazardous substances from a spill or other release.
- f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator of a construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual (“Design Manual”), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices (“SMPs”) are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. The *owner or operator of a construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

- (i) Runoff Reduction Volume (“RRv”): Reduce the total Water Quality Volume (“WQv”) by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.
- (ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual.

The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (“Cpv”): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site discharges directly to tidal waters, or fifth order or larger streams.

- (iv) *Overbank* Flood Control Criteria (“Qp”): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

- (v) Extreme Flood Control Criteria (“Qf”): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site discharges directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

b. Sizing Criteria for New Development in Enhanced Phosphorus Removal Watershed

- (i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

- (ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible*.

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

- (iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
 - (1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
 - (2) The site *discharges* directly to tidal waters, or fifth order or larger streams.
- (iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.
- (v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
 - (1) the site *discharges* directly to tidal waters or fifth order or larger streams, or
 - (2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

- (i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.
- (1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or
 - (2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or
 - (3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or
 - (4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

- (ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.
- (iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharges* necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;
2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and
3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharges* authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharges* authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharges* will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.
2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharges*; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.
3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: “Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned”; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharges* from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.
4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharges* after *construction activities* have been completed and the site has undergone *final stabilization*;
2. *Discharges* that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;
3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;
4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;
6. *Construction activities* for residential, commercial and institutional projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase “E” or “F” (regardless of the map unit name), or a combination of the three designations.
7. *Construction activities* for linear transportation projects and linear utility projects:
 - a. Where the *discharges* from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and
 - b. Which are undertaken on land with no existing *impervious cover*; and
 - c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase “D” (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase “E” or “F” (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:
- a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.
 - 1-5 acres of disturbance - 20 feet
 - 5-20 acres of disturbance - 50 feet
 - 20+ acres of disturbance - 100 feet, or
 - b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
 - (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
 - (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
 - (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
 - (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or
 - c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

- (i) No Affect
- (ii) No Adverse Affect
- (iii) Executed Memorandum of Agreement, or

d. Documentation that:

- (i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.
9. *Discharges from construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.
2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.
3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (<http://www.dec.ny.gov/>). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

**NOTICE OF INTENT
NYS DEC, Bureau of Water Permits
625 Broadway, 4th Floor
Albany, New York 12233-3505**

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.
3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.
4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.
2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:
 - a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (<http://www.dec.ny.gov/>) for more information,
 - b. where required, all necessary Department permits subject to the *Uniform Procedures Act* ("UPA") (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators of construction activities* that are required to obtain UPA permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

- c. the final SWPPP has been prepared, and
 - d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.
3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:
- a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or
 - (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;
 - (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

- b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:
 - (i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed “MS4 SWPPP Acceptance” form, or
 - (ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed “MS4 SWPPP Acceptance” form.
4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination (“NOT”) has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.
2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor’s or subcontractor’s certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.
3. The *owner or operator of a construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

- use control MS4, the regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:
- a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
 - c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.
 - d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.
 - e. The *owner or operator* shall include the requirements above in their SWPPP.
4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..
 5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.
 6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of a *construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4*, the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.
2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.
3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.
2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.
3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.
4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:
 - a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

- b. 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*;
 - c. to address issues or deficiencies identified during an inspection by the *qualified inspector*, the Department or other regulatory authority; and
 - d. to document the final construction conditions.
5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.
6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor*. The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharges* from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:
 - a. Background information about the scope of the project, including the location, type and size of project

- b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge(s)*;
- c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);
- d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;
- e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;
- f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;
- g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;
- h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;
- i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

- j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;
 - k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and
 - l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.
2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

The post-construction stormwater management practice component of the SWPPP shall include the following:

- a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

- b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;
- c. A Stormwater Modeling and Analysis Report that includes:
 - (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;
 - (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;
 - (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;
 - (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;
 - (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and
 - (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;
- d. Soil testing results and locations (test pits, borings);
- e. Infiltration test results, when required; and
- f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria*, Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators of construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators of the construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.
2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.
3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
 - Certified Professional in Erosion and Sediment Control (CPESC),
 - New York State Erosion and Sediment Control Certificate Program holder
 - Registered Landscape Architect, or
 - someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].
1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:
 - a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

- b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;
 - c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and
 - d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.
2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:
- a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
 - b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
 - c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

- d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4*, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed; and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice*” certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.
 - e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.
3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization*, all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.
 4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;
- f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;
- g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);
- k. Identification and status of all corrective actions that were required by previous inspection; and

- I. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
6. All inspection reports shall be signed by the *qualified inspector*. Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.
2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:
 - a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

- b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;
 - c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.
 - d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.
3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the “*Final Stabilization*” and “*Post-Construction Stormwater Management Practice certification statements*” on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.
4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the “*MS4 Acceptance*” statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector’s* final site inspection certification(s) required in Part V.A.3. of this permit.
5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:
 - a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

- b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),
- c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,
- d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator*, its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to \$37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit, or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:
 - a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

- (i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;
 - b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or
 - c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:
 - (i) the chief executive officer of the agency, or
 - (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).
- 2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:
 - a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;
 - b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

- c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.
3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.
4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4*, or by a duly authorized representative of that person.

It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge(s)*, the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner's or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;
2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.
4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.
2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer

BMP – Best Management Practice

CPESC – Certified Professional in Erosion and Sediment Control

Cpv – Channel Protection Volume

CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)

DOW – Division of Water

EAF – Environmental Assessment Form

ECL - Environmental Conservation Law

EPA – U. S. Environmental Protection Agency

HSG – Hydrologic Soil Group

MS4 – Municipal Separate Storm Sewer System

NOI – Notice of Intent

NOT – Notice of Termination

NPDES – National Pollutant Discharge Elimination System

OPRHP – Office of Parks, Recreation and Historic Places

Qf – Extreme Flood

Qp – Overbank Flood

RRv – Runoff Reduction Volume

RWE – Regional Water Engineer

SEQR – State Environmental Quality Review

SEQRA - State Environmental Quality Review Act

SHPA – State Historic Preservation Act

SPDES – State Pollutant Discharge Elimination System

SWPPP – Stormwater Pollution Prevention Plan

TMDL – Total Maximum Daily Load

UPA – Uniform Procedures Act

USDA – United States Department of Agriculture

WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property – means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both “sewage” and “stormwater”.

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for “*Construction Activity(ies)*” also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for “*Commence (Commencement of) Construction Activities*” and “*Larger Common Plan of Development or Sale*” also.

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department’s rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State;
- (ii) Designed or used for collecting or conveying stormwater;
- (iii) Which is not a *combined sewer*, and
- (iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the “Required Elements” sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank Flood* (Qp), and *Extreme Flood* (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture (“USDA”) Soil Survey as Soil Slope Phase “D”, (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint sources*. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint sources*, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

| |
|--|
| <p>The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:</p> <ul style="list-style-type: none">• Single family home <u>not</u> located in one of the watersheds listed in Appendix C or <u>not directly discharging</u> to one of the 303(d) segments listed in Appendix E• Single family residential subdivisions with 25% or less impervious cover at total site build-out and <u>not</u> located in one of the watersheds listed in Appendix C and <u>not</u> directly discharging to one of the 303(d) segments listed in Appendix E• Construction of a barn or other <i>agricultural building</i>, silo, stock yard or pen. |
| <p>The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:</p> <p>All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.</p> |
| <p>The following construction activities that involve soil disturbances of one (1) or more acres of land:</p> <ul style="list-style-type: none">• Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains• Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects• Pond construction• Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover• Cross-country ski trails and walking/hiking trails• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;• Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.• Slope stabilization projects• Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics |

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State”, excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES
POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW's, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover*, and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual (“Design Manual”).

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

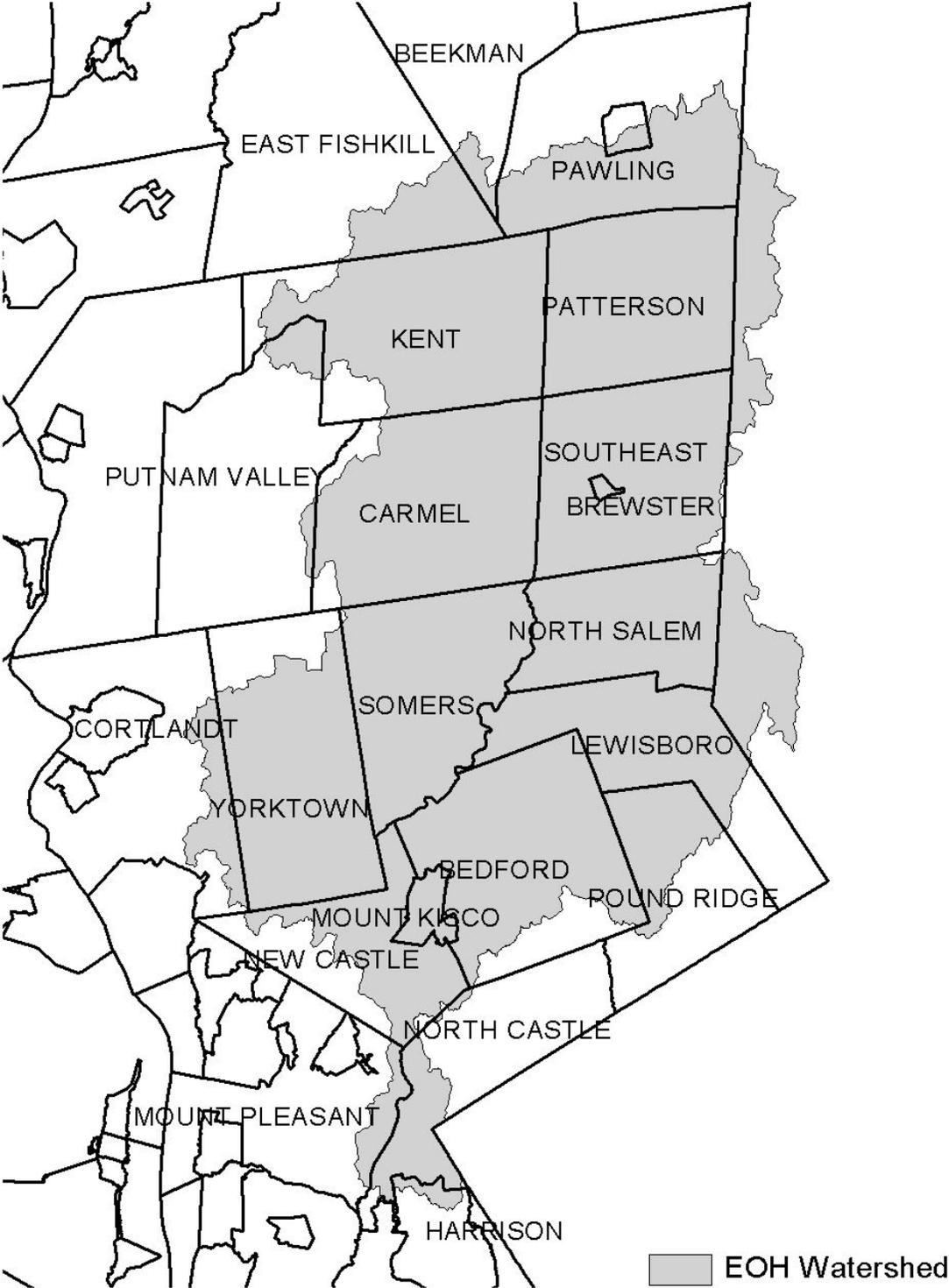


Figure 2 - Onondaga Lake Watershed



Figure 3 - Greenwood Lake Watershed



Figure 4 - Oscawana Lake Watershed

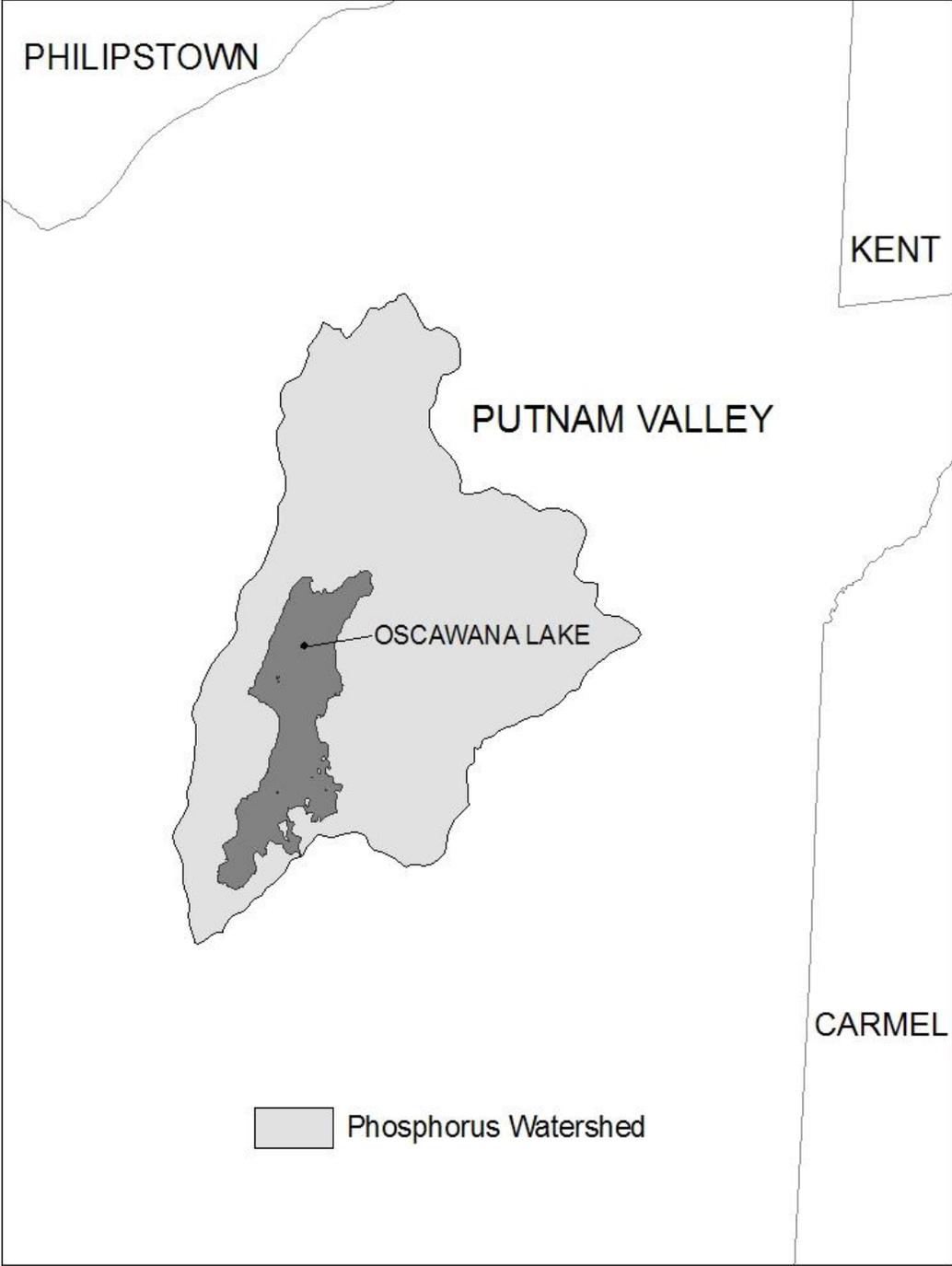
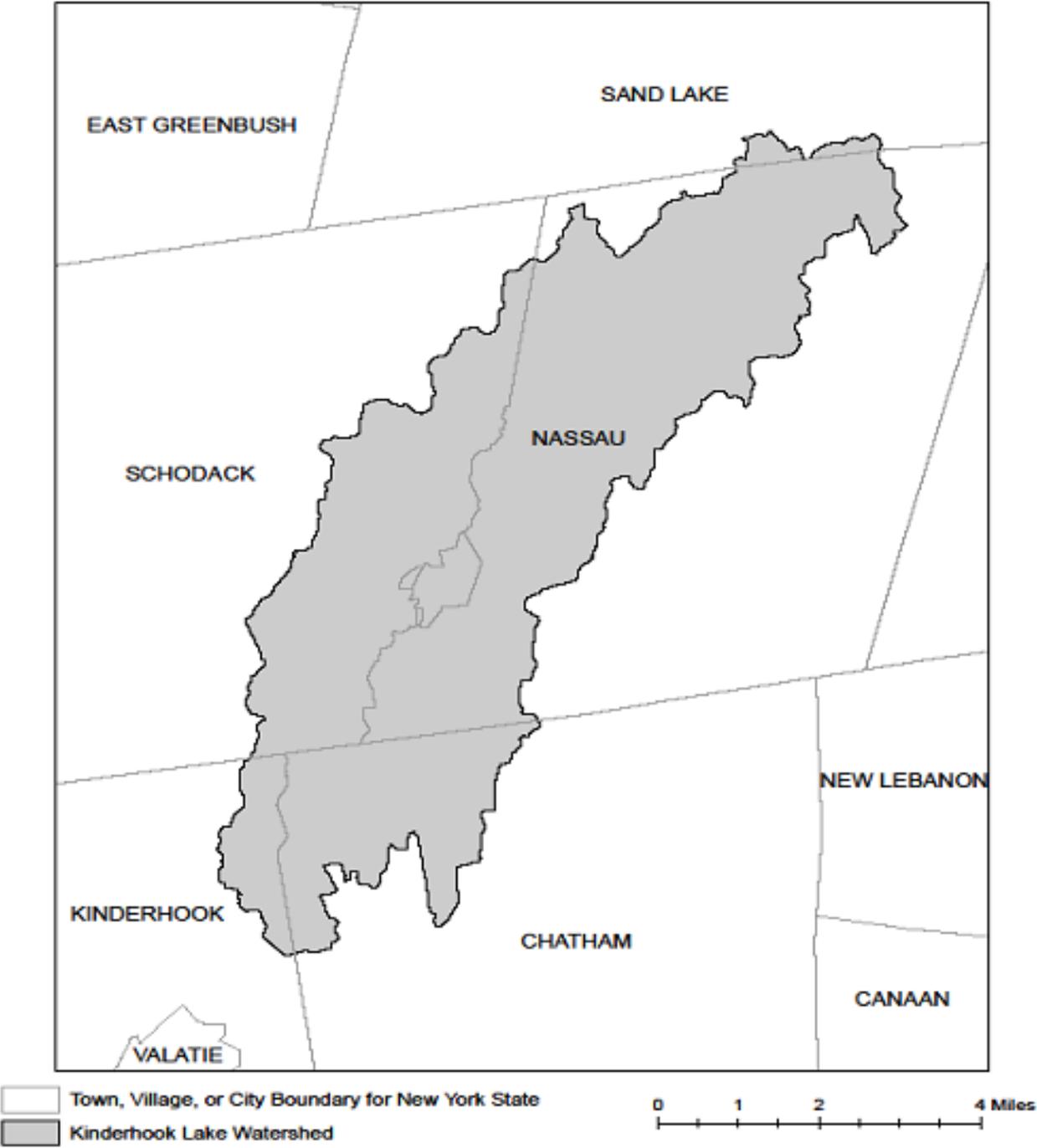


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

| COUNTY | WATERBODY | POLLUTANT |
|-------------|--|---------------|
| Albany | Ann Lee (Shakers) Pond, Stump Pond | Nutrients |
| Albany | Basic Creek Reservoir | Nutrients |
| Allegany | Amity Lake, Saunders Pond | Nutrients |
| Bronx | Long Island Sound, Bronx | Nutrients |
| Bronx | Van Cortlandt Lake | Nutrients |
| Broome | Fly Pond, Deer Lake, Sky Lake | Nutrients |
| Broome | Minor Tribs to Lower Susquehanna (north) | Nutrients |
| Broome | Whitney Point Lake/Reservoir | Nutrients |
| Cattaraugus | Allegheny River/Reservoir | Nutrients |
| Cattaraugus | Beaver (Alma) Lake | Nutrients |
| Cattaraugus | Case Lake | Nutrients |
| Cattaraugus | Linlyco/Club Pond | Nutrients |
| Cayuga | Duck Lake | Nutrients |
| Cayuga | Little Sodus Bay | Nutrients |
| Chautauqua | Bear Lake | Nutrients |
| Chautauqua | Chadakoin River and tribs | Nutrients |
| Chautauqua | Chautauqua Lake, North | Nutrients |
| Chautauqua | Chautauqua Lake, South | Nutrients |
| Chautauqua | Findley Lake | Nutrients |
| Chautauqua | Hulburt/Clymer Pond | Nutrients |
| Clinton | Great Chazy River, Lower, Main Stem | Silt/Sediment |
| Clinton | Lake Champlain, Main Lake, Middle | Nutrients |
| Clinton | Lake Champlain, Main Lake, North | Nutrients |
| Columbia | Kinderhook Lake | Nutrients |
| Columbia | Robinson Pond | Nutrients |
| Cortland | Dean Pond | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|------------|---|---------------|
| Dutchess | Fall Kill and tribs | Nutrients |
| Dutchess | Hillside Lake | Nutrients |
| Dutchess | Wappingers Lake | Nutrients |
| Dutchess | Wappingers Lake | Silt/Sediment |
| Erie | Beeman Creek and tribs | Nutrients |
| Erie | Ellicott Creek, Lower, and tribs | Silt/Sediment |
| Erie | Ellicott Creek, Lower, and tribs | Nutrients |
| Erie | Green Lake | Nutrients |
| Erie | Little Sister Creek, Lower, and tribs | Nutrients |
| Erie | Murder Creek, Lower, and tribs | Nutrients |
| Erie | Rush Creek and tribs | Nutrients |
| Erie | Scajaquada Creek, Lower, and tribs | Nutrients |
| Erie | Scajaquada Creek, Middle, and tribs | Nutrients |
| Erie | Scajaquada Creek, Upper, and tribs | Nutrients |
| Erie | South Branch Smoke Cr, Lower, and tribs | Silt/Sediment |
| Erie | South Branch Smoke Cr, Lower, and tribs | Nutrients |
| Essex | Lake Champlain, Main Lake, South | Nutrients |
| Essex | Lake Champlain, South Lake | Nutrients |
| Essex | Willsboro Bay | Nutrients |
| Genesee | Bigelow Creek and tribs | Nutrients |
| Genesee | Black Creek, Middle, and minor tribs | Nutrients |
| Genesee | Black Creek, Upper, and minor tribs | Nutrients |
| Genesee | Bowen Brook and tribs | Nutrients |
| Genesee | LeRoy Reservoir | Nutrients |
| Genesee | Oak Orchard Cr, Upper, and tribs | Nutrients |
| Genesee | Tonawanda Creek, Middle, Main Stem | Nutrients |
| Greene | Schoharie Reservoir | Silt/Sediment |
| Greene | Sleepy Hollow Lake | Silt/Sediment |
| Herkimer | Steele Creek tribs | Silt/Sediment |
| Herkimer | Steele Creek tribs | Nutrients |
| Jefferson | Moon Lake | Nutrients |
| Kings | Hendrix Creek | Nutrients |
| Kings | Prospect Park Lake | Nutrients |
| Lewis | Mill Creek/South Branch, and tribs | Nutrients |
| Livingston | Christie Creek and tribs | Nutrients |
| Livingston | Conesus Lake | Nutrients |
| Livingston | Mill Creek and minor tribs | Silt/Sediment |
| Monroe | Black Creek, Lower, and minor tribs | Nutrients |
| Monroe | Buck Pond | Nutrients |
| Monroe | Cranberry Pond | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|----------|--|---------------|
| Monroe | Lake Ontario Shoreline, Western | Nutrients |
| Monroe | Long Pond | Nutrients |
| Monroe | Mill Creek and tribs | Nutrients |
| Monroe | Mill Creek/Blue Pond Outlet and tribs | Nutrients |
| Monroe | Minor Tribs to Irondequoit Bay | Nutrients |
| Monroe | Rochester Embayment - East | Nutrients |
| Monroe | Rochester Embayment - West | Nutrients |
| Monroe | Shipbuilders Creek and tribs | Nutrients |
| Monroe | Thomas Creek/White Brook and tribs | Nutrients |
| Nassau | Beaver Lake | Nutrients |
| Nassau | Camaans Pond | Nutrients |
| Nassau | East Meadow Brook, Upper, and tribs | Silt/Sediment |
| Nassau | East Rockaway Channel | Nutrients |
| Nassau | Grant Park Pond | Nutrients |
| Nassau | Hempstead Bay | Nutrients |
| Nassau | Hempstead Lake | Nutrients |
| Nassau | Hewlett Bay | Nutrients |
| Nassau | Hog Island Channel | Nutrients |
| Nassau | Long Island Sound, Nassau County Waters | Nutrients |
| Nassau | Massapequa Creek and tribs | Nutrients |
| Nassau | Milburn/Parsonage Creeks, Upp, and tribs | Nutrients |
| Nassau | Reynolds Channel, west | Nutrients |
| Nassau | Tidal Tribs to Hempstead Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Nutrients |
| Nassau | Tribs (fresh) to East Bay | Silt/Sediment |
| Nassau | Tribs to Smith/Halls Ponds | Nutrients |
| Nassau | Woodmere Channel | Nutrients |
| New York | Harlem Meer | Nutrients |
| New York | The Lake in Central Park | Nutrients |
| Niagara | Bergholtz Creek and tribs | Nutrients |
| Niagara | Hyde Park Lake | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Niagara | Lake Ontario Shoreline, Western | Nutrients |
| Oneida | Ballou, Nail Creeks and tribs | Nutrients |
| Onondaga | Harbor Brook, Lower, and tribs | Nutrients |
| Onondaga | Ley Creek and tribs | Nutrients |
| Onondaga | Minor Tribs to Onondaga Lake | Nutrients |
| Onondaga | Ninemile Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Lower, and tribs | Nutrients |
| Onondaga | Onondaga Creek, Middle, and tribs | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|------------|--|---------------|
| Onondaga | Onondaga Lake, northern end | Nutrients |
| Onondaga | Onondaga Lake, southern end | Nutrients |
| Ontario | Great Brook and minor tribs | Silt/Sediment |
| Ontario | Great Brook and minor tribs | Nutrients |
| Ontario | Hemlock Lake Outlet and minor tribs | Nutrients |
| Ontario | Honeoye Lake | Nutrients |
| Orange | Greenwood Lake | Nutrients |
| Orange | Monhagen Brook and tribs | Nutrients |
| Orange | Orange Lake | Nutrients |
| Orleans | Lake Ontario Shoreline, Western | Nutrients |
| Orleans | Lake Ontario Shoreline, Western | Nutrients |
| Oswego | Lake Neatahwanta | Nutrients |
| Oswego | Pleasant Lake | Nutrients |
| Putnam | Bog Brook Reservoir | Nutrients |
| Putnam | Boyd Corners Reservoir | Nutrients |
| Putnam | Croton Falls Reservoir | Nutrients |
| Putnam | Diverting Reservoir | Nutrients |
| Putnam | East Branch Reservoir | Nutrients |
| Putnam | Lake Carmel | Nutrients |
| Putnam | Middle Branch Reservoir | Nutrients |
| Putnam | Oscawana Lake | Nutrients |
| Putnam | Palmer Lake | Nutrients |
| Putnam | West Branch Reservoir | Nutrients |
| Queens | Bergen Basin | Nutrients |
| Queens | Flushing Creek/Bay | Nutrients |
| Queens | Jamaica Bay, Eastern, and tribs (Queens) | Nutrients |
| Queens | Kissena Lake | Nutrients |
| Queens | Meadow Lake | Nutrients |
| Queens | Willow Lake | Nutrients |
| Rensselaer | Nassau Lake | Nutrients |
| Rensselaer | Snyders Lake | Nutrients |
| Richmond | Grasmere Lake/Bradys Pond | Nutrients |
| Rockland | Congers Lake, Swartout Lake | Nutrients |
| Rockland | Rockland Lake | Nutrients |
| Saratoga | Ballston Lake | Nutrients |
| Saratoga | Dwaas Kill and tribs | Silt/Sediment |
| Saratoga | Dwaas Kill and tribs | Nutrients |
| Saratoga | Lake Lonely | Nutrients |
| Saratoga | Round Lake | Nutrients |
| Saratoga | Tribs to Lake Lonely | Nutrients |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|-------------|---|---------------|
| Schenectady | Collins Lake | Nutrients |
| Schenectady | Duane Lake | Nutrients |
| Schenectady | Mariaville Lake | Nutrients |
| Schoharie | Engleville Pond | Nutrients |
| Schoharie | Summit Lake | Nutrients |
| Seneca | Reeder Creek and tribs | Nutrients |
| St.Lawrence | Black Lake Outlet/Black Lake | Nutrients |
| St.Lawrence | Fish Creek and minor tribs | Nutrients |
| Steuben | Smith Pond | Nutrients |
| Suffolk | Agawam Lake | Nutrients |
| Suffolk | Big/Little Fresh Ponds | Nutrients |
| Suffolk | Canaan Lake | Silt/Sediment |
| Suffolk | Canaan Lake | Nutrients |
| Suffolk | Flanders Bay, West/Lower Sawmill Creek | Nutrients |
| Suffolk | Fresh Pond | Nutrients |
| Suffolk | Great South Bay, East | Nutrients |
| Suffolk | Great South Bay, Middle | Nutrients |
| Suffolk | Great South Bay, West | Nutrients |
| Suffolk | Lake Ronkonkoma | Nutrients |
| Suffolk | Long Island Sound, Suffolk County, West | Nutrients |
| Suffolk | Mattituck (Marratooka) Pond | Nutrients |
| Suffolk | Meetinghouse/Terrys Creeks and tribs | Nutrients |
| Suffolk | Mill and Seven Ponds | Nutrients |
| Suffolk | Millers Pond | Nutrients |
| Suffolk | Moriches Bay, East | Nutrients |
| Suffolk | Moriches Bay, West | Nutrients |
| Suffolk | Peconic River, Lower, and tidal tribs | Nutrients |
| Suffolk | Quantuck Bay | Nutrients |
| Suffolk | Shinnecock Bay and Inlet | Nutrients |
| Suffolk | Tidal tribs to West Moriches Bay | Nutrients |
| Sullivan | Bodine, Montgomery Lakes | Nutrients |
| Sullivan | Davies Lake | Nutrients |
| Sullivan | Evens Lake | Nutrients |
| Sullivan | Pleasure Lake | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Nutrients |
| Tompkins | Cayuga Lake, Southern End | Silt/Sediment |
| Tompkins | Owasco Inlet, Upper, and tribs | Nutrients |
| Ulster | Ashokan Reservoir | Silt/Sediment |
| Ulster | Esopus Creek, Upper, and minor tribs | Silt/Sediment |
| Warren | Hague Brook and tribs | Silt/Sediment |

303(d) Segments Impaired by Construction Related Pollutant(s)

| | | |
|-------------|--|---------------|
| Warren | Huddle/Finkle Brooks and tribs | Silt/Sediment |
| Warren | Indian Brook and tribs | Silt/Sediment |
| Warren | Lake George | Silt/Sediment |
| Warren | Tribs to L.George, Village of L George | Silt/Sediment |
| Washington | Cossayuna Lake | Nutrients |
| Washington | Lake Champlain, South Bay | Nutrients |
| Washington | Tribs to L.George, East Shore | Silt/Sediment |
| Washington | Wood Cr/Champlain Canal and minor tribs | Nutrients |
| Wayne | Port Bay | Nutrients |
| Westchester | Amawalk Reservoir | Nutrients |
| Westchester | Blind Brook, Upper, and tribs | Silt/Sediment |
| Westchester | Cross River Reservoir | Nutrients |
| Westchester | Lake Katonah | Nutrients |
| Westchester | Lake Lincolndale | Nutrients |
| Westchester | Lake Meahagh | Nutrients |
| Westchester | Lake Mohegan | Nutrients |
| Westchester | Lake Shenorock | Nutrients |
| Westchester | Long Island Sound, Westchester (East) | Nutrients |
| Westchester | Mamaroneck River, Lower | Silt/Sediment |
| Westchester | Mamaroneck River, Upper, and minor tribs | Silt/Sediment |
| Westchester | Muscoot/Upper New Croton Reservoir | Nutrients |
| Westchester | New Croton Reservoir | Nutrients |
| Westchester | Peach Lake | Nutrients |
| Westchester | Reservoir No.1 (Lake Isle) | Nutrients |
| Westchester | Saw Mill River, Lower, and tribs | Nutrients |
| Westchester | Saw Mill River, Middle, and tribs | Nutrients |
| Westchester | Sheldrake River and tribs | Silt/Sediment |
| Westchester | Sheldrake River and tribs | Nutrients |
| Westchester | Silver Lake | Nutrients |
| Westchester | Teatown Lake | Nutrients |
| Westchester | Titicus Reservoir | Nutrients |
| Westchester | Truesdale Lake | Nutrients |
| Westchester | Wallace Pond | Nutrients |
| Wyoming | Java Lake | Nutrients |
| Wyoming | Silver Lake | Nutrients |

APPENDIX F – List of NYS DEC Regional Offices

| <u>Region</u> | <u>COVERING THE FOLLOWING COUNTIES:</u> | <u>DIVISION OF ENVIRONMENTAL PERMITS (DEP) PERMIT ADMINISTRATORS</u> | <u>DIVISION OF WATER (DOW) WATER (SPDES) PROGRAM</u> |
|---------------|--|--|--|
| 1 | NASSAU AND SUFFOLK | 50 CIRCLE ROAD STONY BROOK, NY 11790 TEL. (631) 444-0365 | 50 CIRCLE ROAD STONY BROOK, NY 11790-3409 TEL. (631) 444-0405 |
| 2 | BRONX, KINGS, NEW YORK, QUEENS AND RICHMOND | 1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4997 | 1 HUNTERS POINT PLAZA, 47-40 21ST ST. LONG ISLAND CITY, NY 11101-5407 TEL. (718) 482-4933 |
| 3 | DUTCHESS, ORANGE, PUTNAM, ROCKLAND, SULLIVAN, ULSTER AND WESTCHESTER | 21 SOUTH PUTT CORNERS ROAD NEW PALTZ, NY 12561-1696 TEL. (845) 256-3059 | 100 HILLSIDE AVENUE, SUITE 1W WHITE PLAINS, NY 10603 TEL. (914) 428 - 2505 |
| 4 | ALBANY, COLUMBIA, DELAWARE, GREENE, MONTGOMERY, OTSEGO, RENSSELAER, SCHENECTADY AND SCHOHARIE | 1150 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2069 | 1130 NORTH WESTCOTT ROAD SCHENECTADY, NY 12306-2014 TEL. (518) 357-2045 |
| 5 | CLINTON, ESSEX, FRANKLIN, FULTON, HAMILTON, SARATOGA, WARREN AND WASHINGTON | 1115 STATE ROUTE 86, Po Box 296 RAY BROOK, NY 12977-0296 TEL. (518) 897-1234 | 232 GOLF COURSE ROAD WARRENSBURG, NY 12885-1172 TEL. (518) 623-1200 |
| 6 | HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE | STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245 | STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554 |
| 7 | BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438 | 615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500 |
| 8 | CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES | 6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466 | 6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466 |
| 9 | ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165 | 270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070 |

APPENDIX K

Infiltration Stormwater Management Practices

Level 1 Inspection Checklist

| | | | | |
|--|--|--|--|----------------------------------|
| SMP ID # | | SMP Owner | | <input type="checkbox"/> Private |
| | | | | <input type="checkbox"/> Public |
| SMP Location (Address; Latitude & Longitude) | | | | |
| | Latitude | | Longitude | |
| Party Responsible for Maintenance | System Type | | Type of Site | |
| <input type="checkbox"/> Same as SMP Owner <input type="checkbox"/> Other <hr style="width: 100%;"/> | <input type="checkbox"/> Seasonal <input type="checkbox"/> Continuous Use <input type="checkbox"/> Other | <input type="checkbox"/> Above Ground <input type="checkbox"/> Below Ground | <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> State | |
| Inspection Date | | Inspection Time | | |
| Inspector | | | | |
| Date of Last Inspection | | | | |

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration cell.

| Problem (Check if Present) | Follow-Up Actions |
|--|--|
|  <div style="margin-top: 10px;"> <input type="checkbox"/> Bare soil, erosion of the ground (rills washing out the dirt) </div> | <input type="checkbox"/> Seed and straw areas of bare soil to establish vegetation. <input type="checkbox"/> Fill in erosion areas with soil, compact, and seed and straw to get vegetation established. <input type="checkbox"/> If a rill or small channel is forming, try to redirect water flowing to this area by creating a small berm or adding topsoil to areas that are heavily compacted. <input type="checkbox"/> Other: |

IN Drainage Area

Look for both pervious and impervious areas that are uphill from the Infiltration cell.

| Problem (Check if Present) | Follow-Up Actions |
|---|---|
|  | <input type="checkbox"/> Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths. |
| <input type="checkbox"/> For Dry Wells: Leaves, sticks, or other debris in gutters and downspouts | <input type="checkbox"/> Remove all debris by hand. <input type="checkbox"/> Other: |
|  | <input type="checkbox"/> Piles of grass clippings, mulch, dirt, salt, or other materials <input type="checkbox"/> Remove or cover piles of grass clippings, mulch, dirt, etc. <input type="checkbox"/> Other: |
|  | <input type="checkbox"/> Open containers of oil, grease, paint, or other substances <input type="checkbox"/> Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. <input type="checkbox"/> Other: |

IN Inlets

Look for all the places where water flows into the Infiltration practice.

Problem (Check if Present)



- Inlets are collecting grit and debris or grass/weeds are growing. Some water may not be getting into the Infiltration practice.

Follow-Up Actions

- Use a flat shovel to remove grit and debris (especially at curb inlets or openings). Parking lots generate fine grit that will accumulate at these spots.
- Pull out clumps of growing grass or weeds and scoop out the soil or grit that the plants are growing in.
- Remove any grass clippings, leaves, sticks, and other debris that is collecting at inlets.
- For pipes and ditches, remove sediment and debris that is partially blocking the pipe or ditch opening where it enters the Infiltration practice.
- Dispose of all material properly in an area where it will not re-enter the practice.
- Other:

- Kick-Out to Level 2 Inspection: Inlets are blocked to the extent that most of the water does not seem to be entering the Infiltration practice.

- Some or all of the inlets are eroding so that rills, gullies, and other erosion is present, or there is bare dirt that is washing into the Infiltration practice.

- For small areas of erosion, smooth out the eroded part and apply rock or stone (e.g., river cobble) to prevent further erosion. Usually, filter fabric is placed under the rock or stone.
- In some cases, reseeding and applying erosion-control matting can be used to prevent further erosion. Some of these materials may be available at a garden center, but it may be best to consult a landscape contractor.
- Other:

- Kick-Out to Level 2 Inspection: Erosion is occurring at most of the inlets and it looks like there is too much water that is concentrating at these points. The inlet design may have to be modified.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

Problem (Check if Present)

Follow-Up Actions



- For grass-covered Infiltration practices: grass has grown very tall,

Photo credit: Stormwater Maintenance, LLC

- Mow infiltration area at least twice per year.
 Other:



- For grass-covered Infiltration practices: sparse vegetation cover or bare spots

- Add topsoil (as needed), grass seed, straw, and water during the growing season to re-establish consistent grass coverage.
 Other:

- Kick-Out to Level 2 Inspection: Sparse vegetation cover can be a sign that the infiltration area is not infiltrating at the proper rate and water is standing too long after a storm. The surface may be saturated or squishy, and the conditions do not enable grass to grow. This situation should be evaluated by a Level 2 Inspection and likely corrected by a qualified contractor.

- Minor areas of sediment, grit, trash, or other debris are accumulating on the surface.

- Use a shovel to scoop out minor areas of sediment or grit, especially in the spring after winter sanding materials may wash in and accumulate. Dispose of the material where it cannot re-enter the Infiltration practice.
 If removing the material creates a hole or low area, rake the surface smooth and level.
 Remove trash, debris, and other undesirable materials.
 Other:

- Kick-Out to Level 2 Inspection: Sediment has accumulated more than 2-inches deep and covers 25% or more of the surface of the Infiltration area.

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

| Problem (Check if Present) | Follow-Up Actions |
|--|--|
| <div style="display: flex; align-items: flex-start;">  <div style="margin-left: 10px;"> <input type="checkbox"/> There is erosion on the surface; water seems to be carving out rills as it flows across the surface of the Infiltration area or sinkholes are forming in certain areas. </div> </div> | <div style="margin-bottom: 20px;"> <input type="checkbox"/> For minor areas of erosion, try filling the eroded areas with clean topsoil, sand, or stone (whatever the existing cover is). <input type="checkbox"/> If the problem recurs, you may have to use larger stone (e.g., river cobble) to fill in problem areas. <input type="checkbox"/> Other: </div> <div style="background-color: #f0f0f0; padding: 10px;"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: The problem persists or the erosion is more than 3-inches deep and seems to be an issue with how water enters and moves through the infiltration area. <input type="checkbox"/> Kick-Out to Level 2 Inspection: The problem does not seem to be caused by flowing water but a collapse or sinking of the surface (e.g., "sinkhole") due to some underground problem. </div> |
| <div style="display: flex; align-items: flex-start;">  <div style="margin-left: 10px;"> <input type="checkbox"/> Observation well is damaged or cap is missing </div> </div> | <div style="background-color: #f0f0f0; padding: 10px;"> <input type="checkbox"/> Kick-Out to Level 2 Inspection: Requires replacing pipes or caps. </div> |

IN Infiltration Area

Examine the surface of the infiltration area and the observation well. Note: The following Problem and Follow-Up Actions apply to infiltration practice pretreatment areas also.

| Problem (Check if Present) | Follow-Up Actions |
|--|---|
|  <p><input type="checkbox"/> Water still visible in the observation well more than 72 hours after a rain storm. The Infiltration practice does not appear to be draining properly.</p> | <p><input type="checkbox"/> Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.</p> |

IN Outlets

Locate and inspect all outlets.

| Problem (Check if Present) | Follow-Up Actions |
|---|---|
|  <p><input type="checkbox"/> Outlet obstructed with sediment, debris, trash, etc.</p> | <p><input type="checkbox"/> Remove the debris and dispose of it where it cannot re-enter the infiltration area.</p> <p><input type="checkbox"/> Other:</p> <p><input type="checkbox"/> Kick-Out to Level 2 Inspection: Outlet is completely obstructed; there is too much material to remove by hand or with simple hand tools.</p> |
| <p><input type="checkbox"/> Rills or gullies are forming at outlet.</p> | <p><input type="checkbox"/> For minor rills, fill in with soil, compact, and seed and straw to establish vegetation.</p> <p><input type="checkbox"/> Other:</p> <p><input type="checkbox"/> Kick-Out to Level 2 Inspection: Rills are more than 2" to 3" deep and require more than just hand raking and re-seeding.</p> |

Additional Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

“I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected.”

Inspector/Operator: _____

Date: _____

Infiltration Stormwater Management Practices Level 2 Inspection Checklist

| | | | | |
|---|--|--|--|----------------------------------|
| SMP ID # | | SMP Owner | | <input type="checkbox"/> Private |
| | | | | <input type="checkbox"/> Public |
| SMP Location (Address; Latitude & Longitude) | | | | |
| | Latitude | | Longitude | |
| Party Responsible for Maintenance | System Type | | Type of Site | |
| <input type="checkbox"/> Same as SMP Owner <input type="checkbox"/> Other _____ | <input type="checkbox"/> Seasonal <input type="checkbox"/> Continuous Use <input type="checkbox"/> Other | <input type="checkbox"/> Above Ground <input type="checkbox"/> Below Ground | <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Residential <input type="checkbox"/> State | |
| Inspection Date | | Inspection Time | | |
| Inspector | | | | |
| Date of Last Inspection | | | | |

Level 2 Inspection: INFILTRATION

Recommended Repairs

Triggers for Level 3 Inspection

Observed Condition: Water Stands on Surface for More than 72 Hours after Storm

Condition 1: Small pockets of standing water

For infiltration basins with soil, use a soil probe or auger to examine the soil profile. For gravel infiltration trenches or basins, use a shovel to dig into the gravel layer where the problem is occurring. If isolated areas have accumulated grit, fine silt, or vegetative debris or have bad soil or clogged gravel, try removing and replacing with clean material. If the practice is supposed to have grass cover, it will likely be necessary to replant once the problem is resolved.

Condition 2: Standing water is widespread or covers entire surface

Look in the observation well (if it exists) and use a tape measure to estimate the depth of water standing in the soil or gravel. Requires diagnosis and resolution of problem:

- Too much sediment/grit washing in from drainage area?
- Too much ponding depth?
- Improper infiltration media?
- Underlying soil not suitable for infiltration?

As above, the resolution will likely require replanting and re-establishment of good grass cover if this is part of the design.

- Infiltration media is clogged and problem cannot be diagnosed from Level 2 inspection.
- Level 2 inspection identifies problem, but it cannot be resolved easily or it is associated with the original design of the practice.

Level 3 Inspection necessary

Observed Condition: Severe erosion of infiltration bed, inlets, or around outlets

Condition 1: Erosion at inlets

The lining (e.g., grass, matting, stone, rock) may not be adequate for the actual flow velocities coming through the inlets. First line of defense is to try a less erosive lining and/or extending the lining further down to where inlet slopes meet the infiltration surface. If problem persists, analysis by a Qualified Professional is warranted.

Condition 2: Erosion of infiltration bed

This is often caused by “preferential flow paths” along the surface. The source of flow should be analyzed and methods employed to dissipate energy and disperse the flow (e.g., check dams, rock splash pads).

- Erosion (rills, gullies) is more than 12 inches deep
- The issue is not caused by moving water but some sort of subsurface defect, which may manifest as a sinkhole or linear depression and be associated with problems with the underlying stone or soil.

Level 3 Inspection necessary

Notes:

Inspector: _____

Date: _____

Complete the following if follow-up/corrective actions were identified during this inspection:

Certified Completion of Follow-Up Actions:

“I hereby certify that the follow-up/corrective actions identified in the inspection performed on _____ (DATE) have been completed and any required maintenance deficiencies have been adequately corrected.”

Inspector/Operator: _____

Date: _____

APPENDIX L



**Parks, Recreation,
and Historic Preservation**

ANDREW M. CUOMO
Governor

ERIK KULLESEID
Commissioner

March 14, 2020

Vincent Ryan
Project Manager
Keplinger Freeman Associates
6320 Fly Rd.
Suite 109
Syracuse, NY 13057

Re: DEC
Burdick St. Commercial Development
5538 N Burdick St, Town of Manlius, Onondaga County, NY
20PR01563

Dear Vincent Ryan:

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the opinion of OPRHP that no properties, including archaeological and/or historic resources, listed in or eligible for the New York State and National Registers of Historic Places will be impacted by this project.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

R. Daniel Mackay

Deputy Commissioner for Historic Preservation
Division for Historic Preservation