STORMWATER POLLUTION PREVENTION PLAN

for

ADDITION TO
WNY FEDERAL CREDIT UNION
1937 UNION ROAD
TOWN OF WEST SENECA, NY

August 10, 2021

Prepared By:

tredo
ENGINEERS

CIVIL | STRUCTURAL | ENGINEERING

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For:

Kulbacks, Inc.
Wendling Ct.
Lancaster, NY

tredo
ENGINEERS

SUMMARY

This project includes the addition of a 1-story, 3000sf building and drive-thru teller canopy and associated paved parking on a 2.3± acre parcel on the east side of Union Rd, south of Race St in the Town of West Seneca, New York. The development includes a picnic shelter and grove. The C1-zoned site is adjacent to commercial and residential-use properties. The expanded site area of re-development currently contains a frame residence, pavements and storage structures. An existing drainage and sewerage easement traverses the site and which is to remain in force with public utilities to remain uninterrupted during relocation and construction efforts.

Water service: The operating bank facility contains domestic service to remain un-improved. The facility does not contain a fire-protection sprinkler system. A new ¾" PVC domestic service run from the existing facility to the new storage garage is included for maintenance and manual irrigation purposes.

Sanitary sewer currently traverses the project site providing sewer service to the operating facility. This 8" public sewer line is regulated by the Erie County Sewer District (ECSD#1). The operating bank facility contains a service lateral to remain un-improved; however, relocations of the 8" public main are necessary to install the proposed building foundations. Application to the district will be made under separate cover upon approval from the town.

Storm water runoff generated by the site area of development flows overland north and east into the existing public drainage system found traversing the subject property and running north to Race Street, eventually discharging to Buffalo Creek. After the proposed development occurs, runoff from the new building and parking areas will be collected and conveyed to a dry surface detention basin located at the east side of the site. The basin will then discharge into the same public drainage system found on-site. Water quality filtration planters are included to meet the requirements of the NYSDEC SPDES Permit for stormwater discharge from a construction activity >1 acre of soil disturbance.

This development will result in an increase in impervious surfaces on this site. In turn, there will be an increase in the rate of storm water runoff. However, the proposed runoff control measures incorporated in the detention basin outlet will provide the storm water attenuation required to control the discharge of the increased storm water. This project SWPPP contains water quality and water quantity requirements of the NYSDEC SPDES Permit GP-020-001 for storm water discharges from a construction activity. The subject parcel is not within a 100-yr floodplain. This development is not anticipated to disturb wetland or remove old-growth forest habitat.

BACKGROUND DRAINAGE INFORMATION

I. Existing (Pre-Development) Conditions

Portions of developed property within the subject parcel drains overland and into receivers entering to on-site public drainage piping, without detention. Refer to pre-developed mapping in Appendix B for additional information.

II. Hydrologic Soil Group

Hydrologic soil groups (HSG) 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 high shrink-swell potential, soils that have a high water table, soils that have a clay pan 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.

The predominant soil types within the proposed project disturbance area consist of, PhB, Phelps gravelly loam, **HSG B/D**. Refer to soils map contained in Appendix A for additional information.

III. Proposed (Post-Development) Conditions

The proposed development includes the construction of the new structure and associated paved surface driveway and parking area. Stormwater management is

provided for the new development by constructing runoff filtering conveyances and storage basins prior to discharge of runoff into the existing public storm piping system on-site. The design and detail of the proposed on-site drainage system shall meet the intent of the NYSDEC mandated practices for stormwater management, including the extreme flood storm event.

The proposed on-site system utilizes a bio-retention-based planter to achieve the Green Infrastructure and Runoff Reduction (RRv) goals of the NYSDEC. Use of infiltration practices require on-site soils be tested for percolation and infiltration into natural subsoils at the elevation of the bottom of the practice. Due to the presence of HSG D subsoils consisting of silty-clay, these tests are deferred and requisite under-drainage shall be provided to convey stormwater from the filter practice(s) listed.

The proposed surface runoff storage basins and outlet control structure will provide the stormwater controls required to attenuate the discharge rate of the increased storm water in accordance with the Town of West Seneca and NYSDEC requirements. Refer to post-developed mapping in Appendix B for additional information.

STORMWATER MANAGEMENT

I. Design Criteria

The design of the storm water facilities will be in accordance with the following:

i. Town of West Seneca Storm Water Drainage Policy and Construction Standards

ii. NRCC Extreme Precipitation Tables

iii. New York State Department of Environmental Conservation (NYSDEC) Stormwater Design Manual of 2015.

a. Stormwater Conveyance

The stormwater runoff generated by this development will be conveyed overland or culverted to a surface stormwater detention basin. The pitched roof structure downspout collection leader piping shall convey roof drainage to detention.

Tributary areas were estimated for the drainage to each practice or conveyance, and were calculated using the Rational Method. The 10-year rainfall intensities were used to estimate the tributary runoff. Culvert pipe sizing chart is included in Appendix B.

b. Stormwater Detention

According to the Town of West Seneca policy for storm water drainage, detention is required when the storm water runoff from a site is increased due to the increase in impervious surfaces resulting from a new development. The proposed construction of the

building addition and paved surface parking areas (+0.69ac) will result in an increase in impervious surfaces. Therefore, storm water detention will be provided to limit the future peak discharge.

The primary outlet from the surface detention basin is a 10-inch pipe. The hydrographs for the developed conditions 1, 10, 25, and 100-year storm events were then routed through the detention systems to establish the peak outflows to the existing storm sewer. This was then compared to the pre-developed runoff from the 1, 10 and 100-year storm events.

The SCS Unit Hydrograph Method (TR-20) was utilized to estimate the peak discharges associated with the various storm events for both the existing and the proposed conditions. An elevation-storage-discharge relationship was established for the detention basins and the proposed outfall to the public storm drainage system. The results of the calculations are tabulated below:

Detention Basin [1P]	1-Year	10-Year	25-yr	100-Year
Pre-Dev Outfall to off-site [1S], cfs:	1.21	3.89	-	8.79
Peak Post-Dev Basin Inflow, cfs:	0.90	2.96	4.27	6.65
High Water Elevation Detention Basin, feet: (top of bank *775.0*)	620.98	621.63	622.06	622.86
Peak Storage Volume Detention Basin, ac-ft:	0.010	0.027	0.041	0.074
Post-Dev Basin Outfall, cfs:	**0.91**	**2.78**	**3.59**	**5.17**

The discharge rate 1, 10, and 100-year developed conditions storm events from the total development are less than the existing conditions 1, 10 and 100-yr storm events in accordance with the water quantity controls as mandated by the NYSDEC SPDES Permit requirements. In addition, the 25-yr event outfall is less than the pre-existing 10-yr event per the Town of West Seneca requirements. Note the top of detention basin bank el. 623.5 providing 8" of freeboard in the extreme storm event.

Runoff Reduction Techniques and pre-treatment of low-flow runoff events also provide water quality controls. Runoff Reduction was achieved by implementing a Bioretention-based planter as Green Infrastructure Techniques (GIT):

GIT	Impervious Area (acre)	RRv Credit (ac-ft)	Area Credit (acre)
Bio-retention	0.69	0.023	0
Total	0.69	0.023	0

	Area (acres)	Impervious area (acres)	WQv/RRv	
Initial	1.23	0.69	0.060	ac-ft
Credits	0	0	0.023	ac-ft
Adjusted	1.23	0.69	0.034	ac-ft

Note that the RRv credits obtained exceed the NYSDEC minimum value of 0.012 ac-ft (or 20% of the total WQv) based on the Hydrologic Soil types present onsite. The use of additional Runoff Reduction Techniques for the remaining Water Quality (WQv) is limited by space constraints and the reduced effectiveness of the natural subsoil (gravelly-clay HSG D). The Bioretention filtration methods selected will be constructed by installing an undercut volume of new filter media and perforated under-drain pipe system in filter stone bedding.

Stream Channel Protection volume (CPv) which is 24-hr extended detention of the 1-yr storm event minus RRv credit = 0.027ac-ft which is contained in the bio-basins and detention basin and discharged at a reduced rate.

The hydrographs, reservoir report, outlet structure information and routing calculations are included in Appendix B.

COMPONENTS OF EROSION CONTROL

Refer to Planned Erosion & Sediment Control Practices at the end of this report.

I. Daily Site Maintenance (Performed by Owner/Contractor)

At the beginning and end of each day of construction, the Contractor shall walk the site to determine the presence of any extraneous material (litter, packaging and debris) and to review all stormwater outfall locations. All debris shall be picked up and disposed of in an appropriate manner.

Construction chemicals shall be stored in an area that is away from any temporary or permanent stormwater drainage facilities and in an area that is elevated above ground surface, so that surface water runoff does not deteriorate the associated container/bag. All containers shall be adequately sealed at the end of each workday or at the end of use. Large fuel tank(s), if required, shall be located within a secondary containment vessel, size equal to or greater than the capacity of the fuel tank used.

Construction debris shall be stockpiled in one particular area within the site that is located away from any permanent or temporary storm drainage facility. All construction debris shall be removed from the site and disposed of in an appropriate manner. Locate trash receptacle on high ground so as not to allow stormwater runoff to collect

within the bin(s). The material/equipment storage shall be monitored on a daily basis for any identified chemical (oil, grease, etc.) spills.

II. Construction Sequence

- Obtain all necessary shop drawing approvals and applicable permits.
- Conduct a pre-construction meeting.
- Perform stakeout of property limits and facilities. Including 5-acre max limits of earthmoving in phases described on plan. Install orange construction fencing surrounding earthmoving limits, including wetland to be preserved and select trees indicated to remain.
- Install perimeter silt fencing around proposed disturbance area; and construct equipment/ material storage area(s).
- Install stabilized construction entrance and wheel wash station;
- Maintain all erosion and sediment control devices throughout the construction period.
- Rough grade site area including placement and compaction of fill as needed.
- Construct site utilities, stormwater drainage inlets, piping and basins. Install all remaining protection measures including temporary sediment basins at proposed planters.
- Construct and install building and pavements.
- Excavate temporary sediment basins to install bio-filter media *after* pavement binder is installed.
- Final grade entire site including bio-media and topsoil placement, seed and mulch landscaped areas.
- Remove silt fence and other erosion control devices after vegetation has been established in topsoil/seeded areas.

III. Post Construction Operation & Maintenance (Performed by Owner)

α. On a quarterly basis and following rain events of 0.5-inch or greater, perform the following:

1. Inspect catch basins and storm piping for debris and sediments;
2. Remove and properly dispose of any collected debris from the structures;
3. Flush piping with water, if necessary to remove accumulated sediment.
4. Inspect grassed/landscaped areas for un-vegetated area or areas with less than 80% healthy stand of grass and reseed and mulch as necessary. Water areas daily if reseeded through July and August.
5. Maintain all lawn areas by regular mowing, including the grassed slopes and bottom of the stormwater detention basin and drainage swales. Any eroded areas shall be re-graded, seeded and mulched immediately.
6. Refer to Appendix D for Bioretention Bed, conveyance channels and Detention Basin Operations and Maintenance Plans.

IV. OWNER RESPONSIBILITIES

The responsible party for implementation of all components of the Stormwater Pollution Prevention Plan (SWPPP) will be _____, who will be responsible for meeting the requirements as defined within this SWPPP and the conditions of the SPDES General Permit GP-0-20-001. These responsibilities include but are not necessarily limited to the following:

- An initial site assessment shall be performed prior to start of construction.
- Ensure that daily site maintainers and weekly maintenance requirements are met.
- Notify all contractors and subcontractors of the required practices and will also be responsible for making sure that a qualified professional (as defined by the SPDES General Permit) completes the required inspection services.
- The permit-holder shall ensure that the SWPPP is kept current and is amended whenever there is a significant change in design, construction, operation or maintenance or if the SWPPP proves to be ineffective or when any new contractor or subcontractor will be implementing any measures of the SWPPP.
- The permit-holder shall ensure that all inspection reports are maintained in a site log book, that a current copy of the SWPPP, NOI and other related documentation are kept on-site and are readily available for review by NYSDEC, the Town or other interested parties from the date of initiation of construction activities until the date of final site stabilization.
- The permit-holder shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis. (Recommend a mailbox mounted on pole)
- The permit-holder shall prepare a written summary of its status with respect to compliance with the SPDES General Permit at least once every three (3) months during which coverage under the permit exists. The summary should address the status of achieving each component of the SWPPP.
- Upon final site stabilization, a final site inspection shall be performed.
- The permit-holder shall file a Notice of Termination (NOT) with NYSDEC identifying the termination of permit coverage (a copy of blank NOT is included herein).
- The permit-holder shall retain copies of all SWPPP and related documents for a period of at least five (5) years from the date the site is finally stabilized.

OWNER/OPERATOR CERTIFICATION

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

_____ _____
Owner/Operator Signature Title

_____ ___/___/____
Name (Printed) Date

*CONTRACTOR 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 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."

_____ _____
Contractor Signature Title

_____ ___/___/____
Name (Printed) Date

- Note: Only contractors/subs that disturb soil or implement SMP's and Erosion Control measures are required to sign.

The certifications must be executed before Public/Private Improvement Permits can be issued.

PERMITS

The proposed construction of the structure, parking areas and drainage must receive approval from the Town of West Seneca and a Notice of Intent/MS4 Acceptance to discharge storm water from a construction activity must be filed with the NYSDEC. A NYSDOT HWP application shall be made for all restoration work in the state highway, and ECSD public sewer relocation application must be made and approved prior to construction.

PLANNED EROSION AND SEDIMENTATION CONTROL PRACTICES

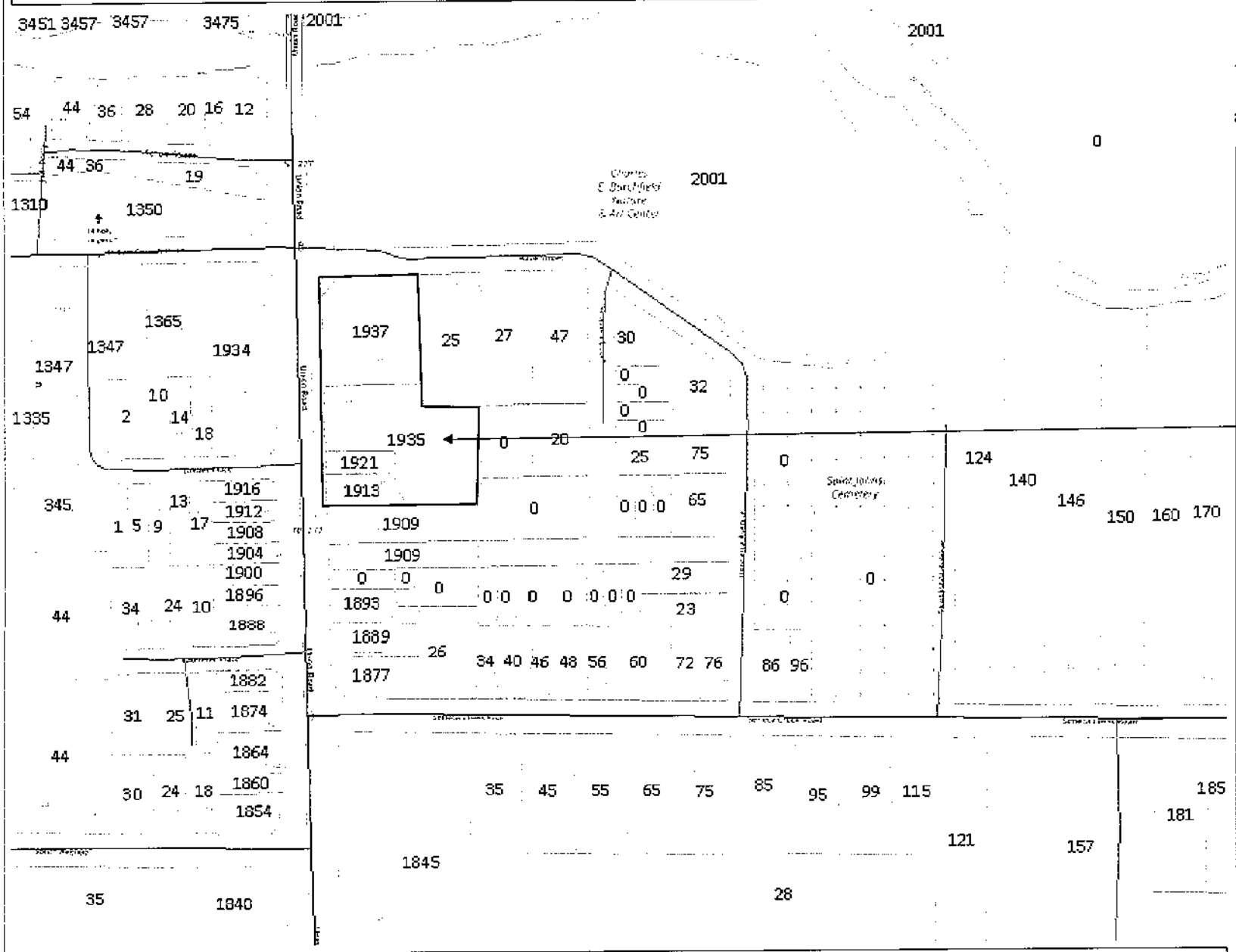
1. **Temporary Gravel Construction Entrance/Exit:** The existing paved access driveway and curb cut from Union Road shall be used by all construction traffic. **A wheel wash station** shall be installed adjacent to the driveway connected to an existing fire hydrant with (contains existing backflow preventer and meter) – or – the contractor may elect to use a water storage tank. All vehicles exiting onto public roadways shall be cleaned of sediment and stones. **The public roadway shall be cleaned immediately of any sediment and stone deposited from a construction vehicle.**
2. **Silt Fencing:** Sediment control fencing and/or 12" dia. compost filter sock shall be installed along the perimeter of the parcel or where shown. **Temporary soil stockpiles shall also contain silt fence surround and be temporarily seeded if left unworked and barren for greater than 14-days.**
3. **Surface Stabilization:** All disturbed soils shall be stabilized as soon as grade is established, either in fill or cut areas, with either vegetation and mulch or geotextile fabric and stone subbase in building pad and paved parking lot footprints. **Temporary or permanent stabilization measures must be initiated by the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. No disturbed soils shall remain barren and un-worked for more than 14-days.**
4. **Dust Control:** Dust shall be controlled by sprinkling during extended periods of soil exposure. See item #1 above for optional temporary water sources.
5. **Sedimentation Basin:** Excavate for stormwater planters but do not install bio-filter media until after tributary drainage area is stabilized with pavement binder.
6. **Excavated Storm Drain Inlet Protection:** Installation of receivers shall leave the rim above the surrounding grades to allow for pooling and settlement of sediment prior to runoff entering the storm sewer piping. A geotextile fabric shall also be installed under the grate of each receiver which shall be regularly cleaned of any built-up sediment.
7. **Land Grading:** All temporary cut slopes shall not exceed 3h:1v to avoid instability due to wet weather. Cut slopes shall be fine graded immediately after rough grading and stabilized per Item #4 above. Fill areas shall be 2h:1v max with fill depths from 1-ft to 2-ft anticipated. Fill layers shall not exceed 8-inches in depth and compacted to 95% modified proctor in pavement areas, and 90% in lawn/landscape beds.
8. **Concrete truck wash pit:** Install it and USE IT for all spoil concrete, grout, and mortar.

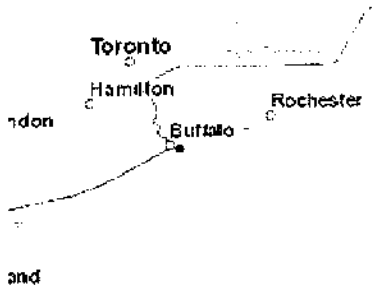
Planning

Practice	Description	Application
Preservation of Undisturbed Areas	Delineate and place into permanent conservation undisturbed forests, native vegetated areas, riparian corridors, wetlands, and natural terrain.	Considered & Not Applied
Preservation of Buffers	Define, delineate and preserve naturally vegetated buffers along perennial streams, rivers, shorelines and wetlands.	N/A
Reduction of Clearing and Grading	Limit clearing and grading to the minimum amount needed for roads, driveways, foundations, utilities and stormwater management facilities.	Considered & Applied
Locating Development in Less Sensitive Areas	Avoid sensitive resource areas such as floodplains, steep slopes, erodible soils, wetlands, mature forests and critical habitats by locating development to fit the terrain in areas that will create the least impact.	Considered & Applied
Open Space Design	Use clustering, conservation design or open space design to reduce impervious cover, preserve more open space and protect water resources.	Considered & Applied
Soil Restoration	Restore the original properties and porosity of the soil by deep till and amendment with compost to reduce the generation of runoff and enhance the runoff reduction performance of post construction practices.	Considered & Applied
Roadway Reduction	Minimize roadway widths and lengths to reduce site impervious area	N/A
Sidewalk Reduction	Minimize sidewalk lengths and widths to reduce site impervious area	Considered & Applied
Driveway Reduction	Minimize driveway lengths and widths to reduce site impervious area	Considered & Applied
Cul-de-sac Reduction	Minimize the number of cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.	N/A
Building Footprint Reduction	Reduce the impervious footprint of residences and commercial buildings by using alternate or taller buildings while maintaining the same floor to area ratio.	Considered & Not Applied
Parking Reduction	Reduce imperviousness on parking lots by eliminating unneeded spaces, providing compact car spaces and efficient parking lanes, minimizing stall dimensions, using porous pavement surfaces in overflow parking areas, and using multi-storied parking decks where appropriate.	Considered & Not Applied

APPENDIX A

Erie County On-Line Mapping Application





Legend

- Parcels
- Streets and Highways
  - Interstate
  - Primary State Road
  - Secondary State Road
  - County Road
  - Local Road

SUBJECT PARCEL: #1913-1937 UNION ROAD

0 0.07 0.1 Miles

WGS_1984_Web_Mercator_Auxiliary_Sphere
THIS MAP IS NOT TO BE USED FOR NAVIGATION

ERIE COUNTY
DEPARTMENT OF ENVIRONMENT & PLANNING
OFFICE OF GIS

1: 4,514

Soil Map—Erie County, New York

Map Scale: 1:580 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 5 10 20 30

Feet: 0 25 50 100 150

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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: Erie County, New York
Survey Area Data: Version 20, Jun 11, 2020

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

Date(s) aerial images were photographed: Jul 4, 2020—Jul 10, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI	HSG
Nh	Niagara silt loam, till substratum	0.1	5.9%	D
PhB	Phelps gravelly loam, 3 to 8 percent slopes	1.0	93.9%	B/D
Wd	Wayland soils complex, 0 to 3 percent slopes, frequently flooded	0.0	0.2%	D
Totals for Area of Interest		**1.1**	**100.0%**	

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Smoothing	Yes
State	New York
Location	
Longitude	78.866 degrees West
Latitude	42.902 degrees North
Elevation	0 feet
Date/Time	Fri, 28 Aug 2020 13:53:33 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.66	0.82	1.00	**1yr**	0.71	0.93	1.13	1.33	1.55	1.80	2.13	**1yr**	1.59	2.05	2.47	2.96	3.47	**1yr**
2yr	0.31	0.47	0.58	0.77	0.97	1.19	**2yr**	0.84	1.09	1.34	1.60	1.88	2.19	2.50	**2yr**	1.94	2.40	2.83	3.37	3.87	**2yr**
5yr	0.36	0.56	0.70	0.94	1.21	1.49	**5yr**	1.04	1.36	1.68	1.99	2.32	2.67	3.05	**5yr**	2.37	2.94	3.43	4.05	4.63	**5yr**
10yr	0.41	0.64	0.81	1.10	1.43	1.77	**10yr**	1.23	1.62	2.01	2.36	2.73	3.11	3.56	**10yr**	2.75	3.42	3.97	4.65	5.31	**10yr**
25yr	0.48	0.77	0.98	1.35	1.79	2.22	**25yr**	1.54	2.03	2.51	2.94	3.37	3.80	4.35	**25yr**	3.36	4.18	4.81	5.58	6.35	**25yr**
50yr	0.55	0.88	1.13	1.57	2.12	2.64	**50yr**	1.83	2.41	2.98	3.48	3.95	4.42	5.07	**50yr**	3.91	4.87	5.57	6.42	7.28	**50yr**
100yr	0.62	1.01	1.30	1.84	2.51	3.14	**100yr**	2.17	2.87	3.55	4.12	4.65	5.14	5.90	**100yr**	4.55	5.68	6.46	7.37	8.34	**100yr**
200yr	0.72	1.17	1.51	2.17	2.99	3.74	**200yr**	2.58	3.42	4.21	4.86	5.46	6.00	6.88	**200yr**	5.31	6.62	7.48	8.48	9.57	**200yr**
500yr	0.86	1.42	1.85	2.68	3.76	4.70	**500yr**	3.24	4.32	5.29	6.06	6.75	7.35	8.43	**500yr**	6.50	8.11	9.10	10.20	11.48	**500yr**

Lower Confidence Limits

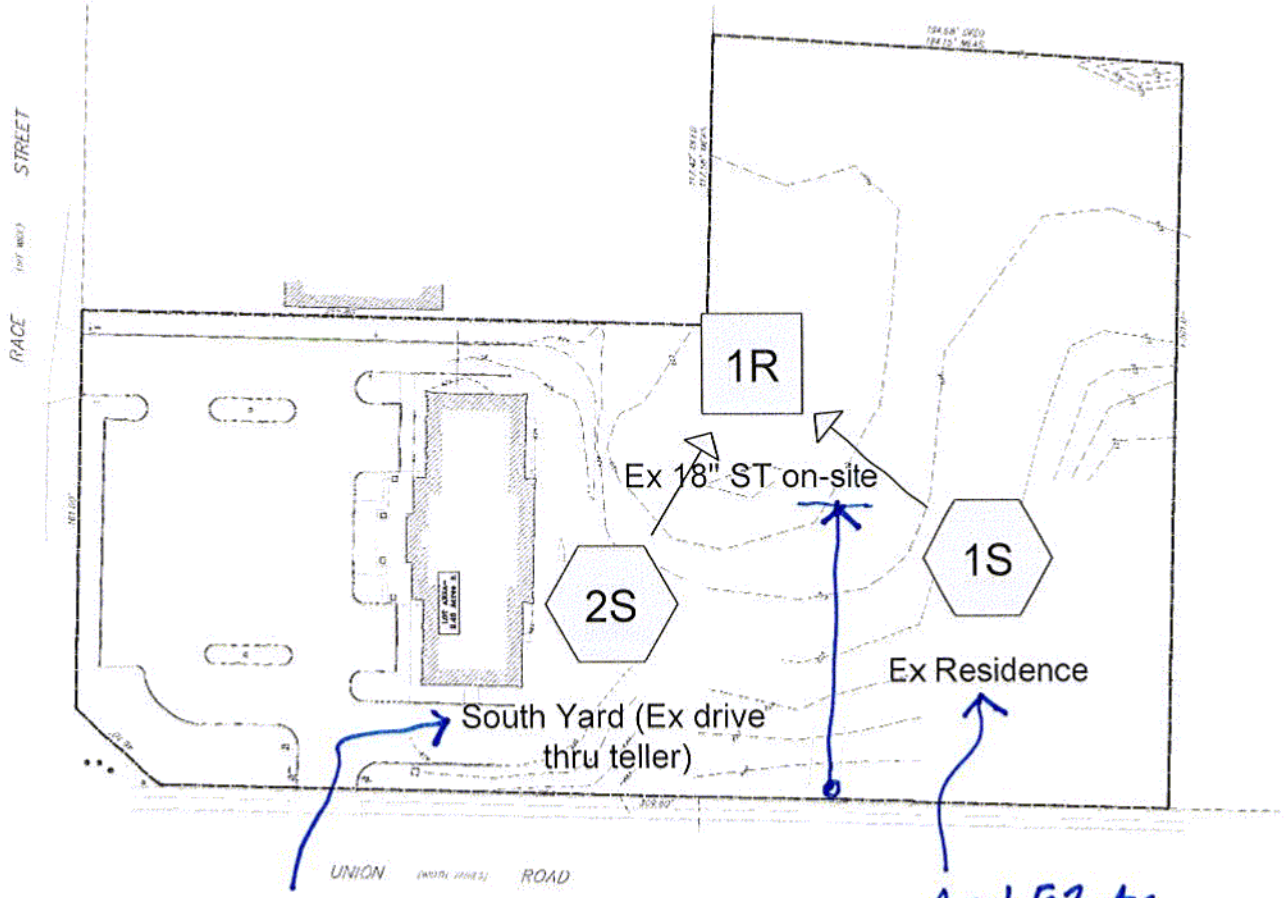
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.22	0.34	0.42	0.57	0.70	0.84	1yr	0.60	0.82	0.87	1.12	1.40	1.64	2.00	1yr	1.45	1.92	2.29	2.76	3.28	1yr
2yr	0.29	0.45	0.55	0.75	0.93	1.06	2yr	0.80	1.04	1.17	1.43	1.72	2.13	2.45	2yr	1.89	2.35	2.76	3.30	3.79	2yr
5yr	0.33	0.51	0.63	0.86	1.10	1.26	5yr	0.95	1.23	1.39	1.69	2.02	2.50	2.88	5yr	2.22	2.77	3.23	3.82	4.38	5yr
10yr	0.36	0.55	0.68	0.96	1.23	1.43	10yr	1.07	1.39	1.57	1.89	2.28	2.81	3.25	10yr	2.49	3.13	3.63	4.26	4.89	10yr
25yr	0.41	0.62	0.77	1.10	1.45	1.67	25yr	1.25	1.64	1.83	2.20	2.65	3.29	3.81	25yr	2.91	3.67	4.24	4.92	5.63	25yr
50yr	0.44	0.67	0.84	1.20	1.62	1.88	50yr	1.40	1.84	2.05	2.46	2.97	3.70	4.31	50yr	3.28	4.14	4.77	5.49	6.28	50yr
100yr	0.48	0.73	0.91	1.32	1.81	2.11	100yr	1.56	2.06	2.29	2.74	3.32	4.16	4.85	100yr	3.68	4.66	5.37	6.13	7.00	100yr
200yr	0.53	0.79	1.00	1.45	2.02	2.37	200yr	1.75	2.32	2.55	3.04	3.69	4.69	5.48	200yr	4.15	5.27	6.05	6.84	7.81	200yr
500yr	0.59	0.88	1.13	1.64	2.33	2.75	500yr	2.01	2.69	2.93	3.47	4.23	5.51	6.43	500yr	4.87	6.18	7.06	7.91	9.03	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	0.93	1.08	1yr	0.81	1.05	1.20	1.43	1.72	1.93	2.28	1yr	1.71	2.19	2.62	3.12	3.65	1yr
2yr	0.32	0.49	0.61	0.82	1.01	1.17	2yr	0.87	1.14	1.29	1.57	1.87	2.26	2.59	2yr	2.00	2.49	2.92	3.48	3.99	2yr
5yr	0.39	0.61	0.75	1.03	1.31	1.54	5yr	1.13	1.50	1.69	2.07	2.46	2.86	3.21	5yr	2.53	3.09	3.62	4.27	4.88	5yr
10yr	0.47	0.72	0.89	1.25	1.61	1.90	10yr	1.39	1.85	2.11	2.55	3.04	3.40	3.80	10yr	3.01	3.65	4.29	5.00	5.72	10yr
25yr	0.60	0.91	1.13	1.61	2.12	2.52	25yr	1.83	2.47	2.80	3.39	4.01	4.31	4.76	25yr	3.81	4.58	5.36	6.17	7.03	25yr
50yr	0.71	1.08	1.34	1.93	2.60	3.13	50yr	2.25	3.06	3.48	4.20	4.94	5.15	5.66	50yr	4.56	5.44	6.35	7.22	8.24	50yr
100yr	0.85	1.29	1.61	2.33	3.20	3.87	100yr	2.76	3.78	4.33	5.20	6.09	6.17	6.71	100yr	5.46	6.45	7.53	8.46	9.64	100yr
200yr	1.02	1.54	1.95	2.82	3.93	4.79	200yr	3.39	4.68	5.40	6.45	7.50	7.40	7.96	200yr	6.55	7.65	8.94	9.92	11.30	200yr
500yr	1.30	1.94	2.50	3.63	5.16	6.35	500yr	4.45	6.21	7.20	8.56	9.90	9.43	9.98	500yr	8.34	9.60	11.21	12.26	13.93	500yr

Powered by ACIS
Northeast Regional Climate Center

APPENDIX B



A = 0.18 Ac
L = 85'
T_c = 2.1 min.
C_n = 88

A = 1.52 Ac
L = 130'
T_c = 5.6 min.
C_n = 78

Subcat Reach Pond Link

Routing Diagram for wnyfcu PRE
Prepared by Hewlett-Packard Company, Printed 8/7/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.858	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.709	98	House, garages, pavements, HSG B (1S)
0.133	98	Roof, paved drive-thru, HSG B (2S)
1.700	**79**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.858	0.000	0.000	0.000	0.858	>75% Grass cover, Good	1S, 2S
0.000	0.709	0.000	0.000	0.000	0.709	House, garages, pavements	1S
0.000	0.133	0.000	0.000	0.000	0.133	Roof, paved drive-thru	2S
0.000	**1.700**	**0.000**	**0.000**	**0.000**	**1.700**	**TOTAL AREA**	

Summary for Subcatchment 1S: Ex Residence

Runoff = 0.95 cfs @ 11.99 hrs, Volume= 0.048 af, Depth= 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

	Area (ac)	CN	Description
*	0.709	98	House, garages, pavements, HSG B
	0.810	61	>75% Grass cover, Good, HSG B
	1.519	78	Weighted Average
	0.810		53.32% Pervious Area
	0.709		46.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0470	1.64		**Sheet Flow, overland front yard** Smooth surfaces n= 0.011 P2= 2.50"
4.8	50	0.0400	0.17		**Sheet Flow, overland back yard** Grass: Short n= 0.150 P2= 2.50"
5.6	130	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: South Yard (Ex drive thru teller)

Runoff = 0.26 cfs @ 11.98 hrs, Volume= 0.012 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

	Area (ac)	CN	Description
*	0.133	98	Roof, paved drive-thru, HSG B
	0.048	61	>75% Grass cover, Good, HSG B
	0.181	88	Weighted Average
	0.048		26.52% Pervious Area
	0.133		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	10	0.1100	0.19		**Sheet Flow, overland lawn** Grass: Short n= 0.150 P2= 2.50"
1.2	75	0.0150	1.02		**Sheet Flow, overland to ex rcvr** Smooth surfaces n= 0.011 P2= 2.50"
2.1	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 49.53% Impervious, Inflow Depth = 0.42" for 1-Year event
Inflow = 1.21 cfs @ 11.98 hrs, Volume= 0.060 af
Outflow = 1.21 cfs @ 11.98 hrs, Volume= 0.060 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Ex Residence

Runoff = 3.29 cfs @ 11.98 hrs, Volume= 0.153 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

	Area (ac)	CN	Description
*	0.709	98	House, garages, pavements, HSG B
	0.810	61	>75% Grass cover, Good, HSG B
	1.519	78	Weighted Average
	0.810		53.32% Pervious Area
	0.709		46.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0470	1.64		**Sheet Flow, overland front yard** Smooth surfaces n= 0.011 P2= 2.50"
4.8	50	0.0400	0.17		**Sheet Flow, overland back yard** Grass: Short n= 0.150 P2= 2.50"
5.6	130	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: South Yard (Ex drive thru teller)

Runoff = 0.61 cfs @ 11.97 hrs, Volume= 0.029 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

	Area (ac)	CN	Description
*	0.133	98	Roof, paved drive-thru, HSG B
	0.048	61	>75% Grass cover, Good, HSG B
	0.181	88	Weighted Average
	0.048		26.52% Pervious Area
	0.133		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	10	0.1100	0.19		**Sheet Flow, overland lawn** Grass: Short n= 0.150 P2= 2.50"
1.2	75	0.0150	1.02		**Sheet Flow, overland to ex rcvr** Smooth surfaces n= 0.011 P2= 2.50"
2.1	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 49.53% Impervious, Inflow Depth = 1.28" for 10-Year event
Inflow = 3.89 cfs @ 11.98 hrs, Volume= 0.182 af
Outflow = 3.89 cfs @ 11.98 hrs, Volume= 0.182 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Subcatchment 1S: Ex Residence

Runoff = 7.63 cfs @ 11.97 hrs, Volume= 0.358 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

	Area (ac)	CN	Description
*	0.709	98	House, garages, pavements, HSG B
	0.810	61	>75% Grass cover, Good, HSG B
	1.519	78	Weighted Average
	0.810		53.32% Pervious Area
	0.709		46.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	80	0.0470	1.64		**Sheet Flow, overland front yard** Smooth surfaces n= 0.011 P2= 2.50"
4.8	50	0.0400	0.17		**Sheet Flow, overland back yard** Grass: Short n= 0.150 P2= 2.50"
5.6	130	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 2S: South Yard (Ex drive thru teller)

Runoff = 1.16 cfs @ 11.97 hrs, Volume= 0.057 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

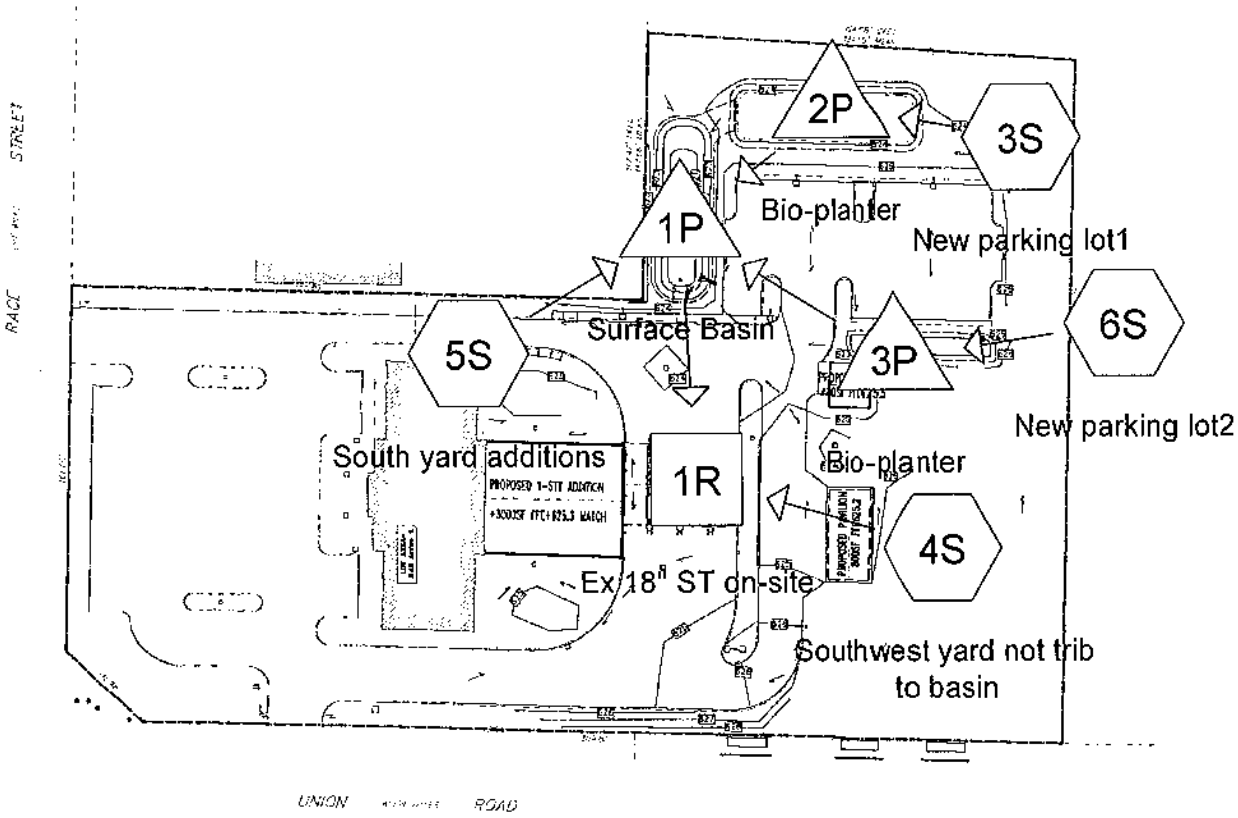
	Area (ac)	CN	Description
*	0.133	98	Roof, paved drive-thru, HSG B
	0.048	61	>75% Grass cover, Good, HSG B
	0.181	88	Weighted Average
	0.048		26.52% Pervious Area
	0.133		73.48% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	10	0.1100	0.19		**Sheet Flow, overland lawn** Grass: Short n= 0.150 P2= 2.50"
1.2	75	0.0150	1.02		**Sheet Flow, overland to ex rcvr** Smooth surfaces n= 0.011 P2= 2.50"
2.1	85	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 49.53% Impervious, Inflow Depth = 2.93" for 100-Year event
Inflow = 8.79 cfs @ 11.97 hrs, Volume= 0.416 af
Outflow = 8.79 cfs @ 11.97 hrs, Volume= 0.416 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs



Subcat Reach Pond Link

Routing Diagram for wnyfcu POST
Prepared by Hewlett-Packard Company, Printed 8/7/2021

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchme Numbers
0.000	0.566	0.000	0.378	0.000	0.944	>75% Grass cover, Good	3S, 4S, 5S, 6S
0.000	0.000	0.000	0.109	0.000	0.109	Addition + Ex Roof	5S
0.000	0.000	0.000	0.084	0.000	0.084	Paved driveway & picnic shelter	4S
0.000	0.000	0.000	0.563	0.000	0.563	Paved parking	3S, 5S, 6S
0.000	**0.566**	**0.000**	**1.134**	**0.000**	**1.700**	**TOTAL AREA**	

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.00	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	1.23	0.69	56%	0.55	2,477	
2						
3						
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	1.23	0.69	56%	0.55	**2,477**	**Subtotal 1**
Total	1.23	0.69	56%	0.55	**2,477**	**Initial WQv**

0.06 ac-ft

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	1.23	0.69	56%	0.55	2,477
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**1.23**	**0.69**	56%	0.55	2,477
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	1.23	0.69	56%	0.55	**2,477**
WQv reduced by Area Reduction techniques					0

0.06 ac-ft

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
1	1.23	0.69	0.56	0.55	2477.48	1.00	
Enter Impervious Area Reduced by Disconnection of Rooftops		0.00	56%	0.55	2,477	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.					0	*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.50	*in/hour*	*Design as an infiltration bioretention practice*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		2,477	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.25	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**2252**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	23	*ft*	
Filter Length	100	*ft*	
Filter Area	2300	*ft^2*	
Actual Volume Provided	2530	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	
RRv	1,012			
RRv applied	**1,012**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	1,465	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

0.023 af > 0.011 OK

WNYFCU

Town of West Seneca

Runoff Reduction Volume and Treated volumes						
	Runoff Reduction Techiques/Standard SMPs		Total Contributing Area	Total Contributing Impervious Area	WQv Reduced (RRv)	WQv Treated
			(acres)	(acres)	cf	cf
Area/Volume Reduction	Conservation of Natural Areas	RR-1	0.00	0.00		
	Sheetflow to Riparian Buffers/Filter Strips	RR-2	0.00	0.00		
	Tree Planting/Tree Pit	RR-3	0.00	0.00		
	Disconnection of Rooftop Runoff	RR-4		0.00		
	Vegetated Swale	RR-5	0.00	0.00	0	
	Rain Garden	RR-6	0.00	0.00	0	
	Stormwater Planter	RR-7	0.00	0.00	0	
	Rain Barrel/Cistern	RR-8	0.00	0.00	0	
	Porous Pavement	RR-9	0.00	0.00	0	
	Green Roof (Intensive & Extensive)	RR-10	0.00	0.00	0	
Standard SMPs w/RRv Capacity	Infiltration Trench	I-1	0.00	0.00	0	0
	Infiltration Basin	I-2	0.00	0.00	0	0
	Dry Well	I-3	0.00	0.00	0	0
	Underground Infiltration System	I-4				
	Bioretention & Infiltration Bioretention	F-5	1.23	0.69	1012	1465
	Dry swale	O-1	0.00	0.00	0	0
Standard SMPs	Micropool Extended Detention (P-1)	P-1				
	Wet Pond (P-2)	P-2				
	Wet Extended Detention (P-3)	P-3				
	Multiple Pond system (P-4)	P-4				
	Pocket Pond (p-5)	P-5				
	Surface Sand filter (F-1)	F-1				
	Underground Sand filter (F-2)	F-2				
	Perimeter Sand Filter (F-3)	F-3				
	Organic Filter (F-4	F-4				
	Shallow Wetland (W-1)	W-1				
	Extended Detention Wetland (W-2	W-2				
	Pond/Wetland System (W-3)	W-3				
	Pocket Wetland (W-4)	W-4				
	Wet Swale (O-2)	O-2				
Totals by Area Reduction →			0.00	0.00	0	
Totals by Volume Reduction →			0.00	0.00	0	
Totals by Standard SMP w/RRV →			1.23	0.69	1012	1465
Totals by Standard SMP →			0.00	0.00		0
Totals (Area + Volume + all SMPs) →			1.23	0.69	1,012	1,465
	Impervious Cover √	okay			0.023 af	0.034 af
	Total Area √	okay				

Addition to WNYFCU

Time span=1.00-36.00 hrs, dt=0.01 hrs, 3501 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 3S: New parking lot1 Runoff Area=0.666 ac 36.04% Impervious Runoff Depth=0.26"
Flow Length=125' Slope=0.0150 '/' Tc=6.0 min CN=74 Runoff=0.25 cfs 0.014 af

Subcatchment 4S: Southwest yard not trib Runoff Area=0.462 ac 18.18% Impervious Runoff Depth=0.56"
Flow Length=100' Tc=6.0 min CN=83 Runoff=0.46 cfs 0.022 af

Subcatchment 5S: South yard additions Runoff Area=0.422 ac 76.30% Impervious Runoff Depth=0.86"
Flow Length=190' Tc=6.0 min CN=89 Runoff=0.65 cfs 0.030 af

Subcatchment 6S: New parking lot2 Runoff Area=0.150 ac 73.33% Impervious Runoff Depth=0.81"
Flow Length=125' Slope=0.0150 '/' Tc=6.0 min CN=88 Runoff=0.22 cfs 0.010 af

Total Runoff Area = 1.700 ac Runoff Volume = 0.077 af Average Runoff Depth = 0.54"
55.53% Pervious = 0.944 ac 44.47% Impervious = 0.756 ac

CpV:

CN AVE = 84

T_C = 6 MIN

R_V = 0.077 af

− RRV <0.023>

Project:	wnyfcu	Project #:	21-28	Sheet #:	of
Description:	Water Quality & RRv Calcs	Date:	8/1/2021	Drawn by:	avm

Compute Stream Channel Protection Volume, (Cp_v)

For Stream Channel Protection, provide 24 hours of extended detention (T) for the one-year event

Avg CN =	84		from HydroCAD
Ia =	0.38		
P =	2.10	inches	
Ia/P =	0.18		
Tc =	0.10	hours	from HydroCAD
qu =	900	csm/in	from NYS Erosion and Sediment Control Fig. 10.16
Using NYS SWMDM Figure 8.5:			
qo/qi =	0.025		
Vs/Vr =	0.65		
Total Vr =	0.077	ac ft	from HydroCAD

Volume for 24-hour	Cpv =	0.050	ac-ft	
	Subtract Actual RRv:	0.023	ac-ft	
	New Cpv =	0.027	ac-ft	1172 cf

Define the Average Release Rate 0.014 cfs

NOI QUESTIONS

#	NOI Question	Reported Value	
		cf	af
28	Total Water Quality Volume (WQv) Required	2477	*0.057*
30	Total RRV Provided	1012	*0.023*
31	Is RRv Provided ≥WQv Required?	No	
32	Minimum RRv	476	*0.011*
32a	Is RRv Provided ≥ Minimum RRv Required?	Yes	
33a	Total WQv Treated	1465	*0.034*
34	Sum of Volume Reduced & Treated	2477	*0.057*
34	Sum of Volume Reduced and Treated	2477	*0.057*
35	Is Sum RRv Provided and WQv Provided ≥WQv Required?	Yes	

40.4%

	Apply Peak Flow Attenuation		AC-FT	CFS
36	Channel Protection	*Cpv*	0.027	0.01
37	Overbank PRE 3.89	*Qp*	0.027	2.78
37	Extreme Flood Control PRE 8.79	*Qf*	0.074	5.17
	Are Quantity Control requirements met?	*Yes*	Plan Completed	

Summary for Subcatchment 3S: New parking lot1

Runoff = 0.25 cfs @ 12.00 hrs, Volume= 0.014 af, Depth= 0.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
0.426	61	>75% Grass cover, Good, HSG B
0.666	74	Weighted Average
0.426		63.96% Pervious Area
0.240		36.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Southwest yard not trib to basin

Runoff = 0.46 cfs @ 11.98 hrs, Volume= 0.022 af, Depth= 0.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

	Area (ac)	CN	Description
	0.378	80	>75% Grass cover, Good, HSG D
*	0.084	98	Paved driveway & picnic shelter, HSG D
	0.462	83	Weighted Average
	0.378		81.82% Pervious Area
	0.084		18.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0380	1.54		**Sheet Flow, overland driveway** Smooth surfaces n= 0.011 P2= 2.50"
2.6	10	0.0200	0.07		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
3.6	100	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: South yard additions

Runoff = 0.65 cfs @ 11.97 hrs, Volume= 0.030 af, Depth= 0.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

	Area (ac)	CN	Description
	0.213	98	Paved parking, HSG D
	0.100	61	>75% Grass cover, Good, HSG B
*	0.109	98	Addition + Ex Roof, HSG D
	0.422	89	Weighted Average
	0.100		23.70% Pervious Area
	0.322		76.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
0.6	30	0.0150	0.85		**Sheet Flow, overland to rcvr** Smooth surfaces n= 0.011 P2= 2.50"
1.1	150	0.0020	2.35	2.89	**Pipe Channel, pipe to basin** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
4.6	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 6S: New parking lot2

Runoff = 0.22 cfs @ 11.98 hrs, Volume= 0.010 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-Year Rainfall=1.80"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.040	61	>75% Grass cover, Good, HSG B
0.150	88	Weighted Average
0.040		26.67% Pervious Area
0.110		73.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 44.47% Impervious, Inflow Depth > 0.54" for 1-Year event
Inflow = 0.91 cfs @ 12.01 hrs, Volume= 0.077 af
Outflow = 0.91 cfs @ 12.01 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: Surface Basin

Inflow Area = 1.238 ac, 54.28% Impervious, Inflow Depth = 0.53" for 1-Year event
Inflow = 0.90 cfs @ 11.98 hrs, Volume= 0.055 af
Outflow = 0.54 cfs @ 12.05 hrs, Volume= 0.055 af, Atten= 40%, Lag= 4.4 min
Primary = 0.54 cfs @ 12.05 hrs, Volume= 0.055 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 620.98' @ 12.05 hrs Surf.Area= 0.023 ac Storage= 0.010 af
Flood Elev= 623.50' Surf.Area= 0.056 ac Storage= 0.107 af

Plug-Flow detention time= 39.3 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 37.9 min (957.0 - 919.1)

Volume	Invert	Avail.Storage	Storage Description
#1	620.50'	0.107 af	**12.00'W x 64.00'L x 3.00'H Surface Basin Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	620.50'	**10.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 620.50' / 620.20' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.54 cfs @ 12.05 hrs HW=620.98' (Free Discharge)
↑**1=Culvert** (Barrel Controls 0.54 cfs @ 2.41 fps)

Summary for Pond 2P: Bio-planter

Inflow Area = 0.666 ac, 36.04% Impervious, Inflow Depth = 0.26" for 1-Year event
Inflow = 0.25 cfs @ 12.00 hrs, Volume= 0.014 af
Outflow = 0.25 cfs @ 12.00 hrs, Volume= 0.014 af, Atten= 0%, Lag= 0.0 min
Primary = 0.25 cfs @ 12.00 hrs, Volume= 0.014 af
Secondary = 0.00 cfs @ 12.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 623.80' @ 12.00 hrs Surf.Area= 0.036 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.014 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (910.2 - 910.2)

Volume	Invert	Avail.Storage	Storage Description
#1	623.80'	0.046 af	**18.00'W x 88.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	623.30'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Secondary	623.80'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=13.77 cfs @ 12.00 hrs HW=623.80' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 13.77 cfs @ 2.31 fps)

Secondary OutFlow Max=0.02 cfs @ 12.00 hrs HW=623.80' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 3P: Bio-planter

Inflow Area = 0.150 ac, 73.33% Impervious, Inflow Depth = 0.81" for 1-Year event
Inflow = 0.22 cfs @ 11.98 hrs, Volume= 0.010 af
Outflow = 0.01 cfs @ 14.12 hrs, Volume= 0.010 af, Atten= 97%, Lag= 128.6 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary = 0.01 cfs @ 14.12 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 624.41' @ 14.12 hrs Surf.Area= 0.014 ac Storage= 0.005 af

Plug-Flow detention time= 353.4 min calculated for 0.010 af (100% of inflow)
Center-of-Mass det. time= 353.4 min (1,191.3 - 837.9)

Volume	Invert	Avail.Storage	Storage Description
#1	624.00'	0.017 af	**8.00'W x 63.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	621.75'	**10.0" Round Culvert to basin** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.75' / 621.58' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	624.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	624.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=624.00' (Free Discharge)
↑—**1=Culvert to basin** (Passes 0.00 cfs of 2.54 cfs potential flow)
↑—**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.01 cfs @ 14.12 hrs HW=624.41' (Free Discharge)
↑—**3=Exfiltration** (Controls 0.01 cfs)

Summary for Subcatchment 3S: New parking lot1

Runoff = 1.15 cfs @ 11.98 hrs, Volume= 0.054 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
0.426	61	>75% Grass cover, Good, HSG B
0.666	74	Weighted Average
0.426		63.96% Pervious Area
0.240		36.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Southwest yard not trib to basin

Runoff = 1.27 cfs @ 11.97 hrs, Volume= 0.059 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

	Area (ac)	CN	Description
	0.378	80	>75% Grass cover, Good, HSG D
*	0.084	98	Paved driveway & picnic shelter, HSG D
	0.462	83	Weighted Average
	0.378		81.82% Pervious Area
	0.084		18.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0380	1.54		**Sheet Flow, overland driveway** Smooth surfaces n= 0.011 P2= 2.50"
2.6	10	0.0200	0.07		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
3.6	100	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: South yard additions

Runoff = 1.47 cfs @ 11.97 hrs, Volume= 0.070 af, Depth= 2.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

	Area (ac)	CN	Description
	0.213	98	Paved parking, HSG D
	0.100	61	>75% Grass cover, Good, HSG B
*	0.109	98	Addition + Ex Roof, HSG D
	0.422	89	Weighted Average
	0.100		23.70% Pervious Area
	0.322		76.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
0.6	30	0.0150	0.85		**Sheet Flow, overland to rcvr** Smooth surfaces n= 0.011 P2= 2.50"
1.1	150	0.0020	2.35	2.89	**Pipe Channel, pipe to basin** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
4.6	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 6S: New parking lot2

Runoff = 0.50 cfs @ 11.97 hrs, Volume= 0.024 af, Depth= 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-Year Rainfall=3.11"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.040	61	>75% Grass cover, Good, HSG B
0.150	88	Weighted Average
0.040		26.67% Pervious Area
0.110		73.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 44.47% Impervious, Inflow Depth > 1.46" for 10-Year event
Inflow = 2.78 cfs @ 12.00 hrs, Volume= 0.207 af
Outflow = 2.78 cfs @ 12.00 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: Surface Basin

Inflow Area = 1.238 ac, 54.28% Impervious, Inflow Depth = 1.44" for 10-Year event
Inflow = 2.96 cfs @ 11.99 hrs, Volume= 0.149 af
Outflow = 1.64 cfs @ 12.11 hrs, Volume= 0.148 af, Atten= 45%, Lag= 7.4 min
Primary = 1.64 cfs @ 12.11 hrs, Volume= 0.148 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 621.63' @ 12.06 hrs Surf.Area= 0.031 ac Storage= 0.027 af
Flood Elev= 623.50' Surf.Area= 0.056 ac Storage= 0.107 af

Plug-Flow detention time= 25.3 min calculated for 0.148 af (100% of inflow)
Center-of-Mass det. time= 21.6 min (894.0 - 872.5)

Volume	Invert	Avail.Storage	Storage Description
#1	620.50'	0.107 af	**12.00'W x 64.00'L x 3.00'H Surface Basin Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	620.50'	**10.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 620.50' / 620.20' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=1.64 cfs @ 12.11 hrs HW=621.57' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 1.64 cfs @ 3.04 fps)

Summary for Pond 2P: Bio-planter

Inflow Area = 0.666 ac, 36.04% Impervious, Inflow Depth = 0.98" for 10-Year event
Inflow = 1.15 cfs @ 11.98 hrs, Volume= 0.054 af
Outflow = 1.15 cfs @ 11.98 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 11.98 hrs, Volume= 0.054 af
Secondary = 0.00 cfs @ 11.98 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 623.80' @ 11.98 hrs Surf.Area= 0.036 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.054 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (860.6 - 860.6)

Volume	Invert	Avail.Storage	Storage Description
#1	623.80'	0.046 af	**18.00'W x 88.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	623.30'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Secondary	623.80'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=13.79 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 13.79 cfs @ 2.31 fps)

Secondary OutFlow Max=0.02 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 3P: Bio-planter

Inflow Area = 0.150 ac, 73.33% Impervious, Inflow Depth = 1.92" for 10-Year event
Inflow = 0.50 cfs @ 11.97 hrs, Volume= 0.024 af
Outflow = 0.44 cfs @ 12.01 hrs, Volume= 0.024 af, Atten= 13%, Lag= 2.4 min
Primary = 0.43 cfs @ 12.01 hrs, Volume= 0.009 af
Secondary = 0.01 cfs @ 12.01 hrs, Volume= 0.015 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 624.56' @ 12.01 hrs Surf.Area= 0.015 ac Storage= 0.008 af

Plug-Flow detention time= 271.9 min calculated for 0.024 af (100% of inflow)
Center-of-Mass det. time= 272.0 min (1,085.2 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	624.00'	0.017 af	**8.00'W x 63.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	621.75'	**10.0" Round Culvert to basin** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.75' / 621.58' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	624.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	624.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=0.43 cfs @ 12.01 hrs HW=624.56' (Free Discharge)
↑—**1=Culvert to basin** (Passes 0.43 cfs of 2.96 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.43 cfs @ 0.83 fps)

Secondary OutFlow Max=0.01 cfs @ 12.01 hrs HW=624.56' (Free Discharge)
↑—**3=Exfiltration** (Controls 0.01 cfs)

Summary for Subcatchment 3S: New parking lot1

Runoff = 1.73 cfs @ 11.98 hrs, Volume= 0.081 af, Depth= 1.45"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.80"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
0.426	61	>75% Grass cover, Good, HSG B
0.666	74	Weighted Average
0.426		63.96% Pervious Area
0.240		36.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Southwest yard not trib to basin

Runoff = 1.73 cfs @ 11.97 hrs, Volume= 0.081 af, Depth= 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.80"

Area (ac)	CN	Description
0.378	80	>75% Grass cover, Good, HSG D
* 0.084	98	Paved driveway & picnic shelter, HSG D
0.462	83	Weighted Average
0.378		81.82% Pervious Area
0.084		18.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0380	1.54		**Sheet Flow, overland driveway** Smooth surfaces n= 0.011 P2= 2.50"
2.6	10	0.0200	0.07		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
3.6	100	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: South yard additions

Runoff = 1.91 cfs @ 11.97 hrs, Volume= 0.093 af, Depth= 2.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.80"

	Area (ac)	CN	Description
	0.213	98	Paved parking, HSG D
	0.100	61	>75% Grass cover, Good, HSG B
*	0.109	98	Addition + Ex Roof, HSG D
	0.422	89	Weighted Average
	0.100		23.70% Pervious Area
	0.322		76.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
0.6	30	0.0150	0.85		**Sheet Flow, overland to rcvr** Smooth surfaces n= 0.011 P2= 2.50"
1.1	150	0.0020	2.35	2.89	**Pipe Channel, pipe to basin** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
4.6	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 6S: New parking lot2

Runoff = 0.66 cfs @ 11.97 hrs, Volume= 0.032 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-Year Rainfall=3.80"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.040	61	>75% Grass cover, Good, HSG B
0.150	88	Weighted Average
0.040		26.67% Pervious Area
0.110		73.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 44.47% Impervious, Inflow Depth > 2.02" for 25-Year event
Inflow = 3.59 cfs @ 11.99 hrs, Volume= 0.286 af
Outflow = 3.59 cfs @ 11.99 hrs, Volume= 0.286 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: Surface Basin

Inflow Area = 1.238 ac, 54.28% Impervious, Inflow Depth = 1.99" for 25-Year event
Inflow = 4.27 cfs @ 11.98 hrs, Volume= 0.205 af
Outflow = 2.14 cfs @ 12.06 hrs, Volume= 0.204 af, Atten= 50%, Lag= 5.3 min
Primary = 2.14 cfs @ 12.06 hrs, Volume= 0.204 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 622.06' @ 12.06 hrs Surf.Area= 0.036 ac Storage= 0.041 af
Flood Elev= 623.50' Surf.Area= 0.056 ac Storage= 0.107 af

Plug-Flow detention time= 22.7 min calculated for 0.204 af (100% of inflow)
Center-of-Mass det. time= 18.8 min (873.5 - 854.7)

Volume	Invert	Avail.Storage	Storage Description
#1	620.50'	0.107 af	**12.00'W x 64.00'L x 3.00'H Surface Basin Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	620.50'	**10.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 620.50' / 620.20' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=2.14 cfs @ 12.06 hrs HW=622.06' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.14 cfs @ 3.93 fps)

Summary for Pond 2P: Bio-planter

Inflow Area = 0.666 ac, 36.04% Impervious, Inflow Depth = 1.45" for 25-Year event
Inflow = 1.73 cfs @ 11.98 hrs, Volume= 0.081 af
Outflow = 1.73 cfs @ 11.98 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min
Primary = 1.73 cfs @ 11.98 hrs, Volume= 0.080 af
Secondary = 0.00 cfs @ 11.98 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 623.80' @ 11.98 hrs Surf.Area= 0.036 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.081 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (848.5 - 848.5)

Volume	Invert	Avail.Storage	Storage Description
#1	623.80'	0.046 af	**18.00'W x 88.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	623.30'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Secondary	623.80'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=13.81 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
↑—**1=Sharp-Crested Rectangular Weir** (Weir Controls 13.81 cfs @ 2.32 fps)

Secondary OutFlow Max=0.02 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
↑—**2=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 3P: Bio-planter

Inflow Area = 0.150 ac, 73.33% Impervious, Inflow Depth = 2.54" for 25-Year event
Inflow = 0.66 cfs @ 11.97 hrs, Volume= 0.032 af
Outflow = 0.64 cfs @ 11.99 hrs, Volume= 0.032 af, Atten= 2%, Lag= 1.0 min
Primary = 0.64 cfs @ 11.99 hrs, Volume= 0.016 af
Secondary = 0.01 cfs @ 11.99 hrs, Volume= 0.016 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 624.58' @ 11.99 hrs Surf.Area= 0.016 ac Storage= 0.008 af

Plug-Flow detention time= 221.0 min calculated for 0.032 af (100% of inflow)
Center-of-Mass det. time= 221.0 min (1,026.1 - 805.1)

Volume	Invert	Avail.Storage	Storage Description
#1	624.00'	0.017 af	**8.00'W x 63.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	621.75'	**10.0" Round Culvert to basin** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.75' / 621.58' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	624.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	624.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=0.63 cfs @ 11.99 hrs HW=624.58' (Free Discharge)
↑—**1=Culvert to basin** (Passes 0.63 cfs of 2.97 cfs potential flow)
↑—**2=Orifice/Grate** (Weir Controls 0.63 cfs @ 0.95 fps)

Secondary OutFlow Max=0.01 cfs @ 11.99 hrs HW=624.58' (Free Discharge)
↑—**3=Exfiltration** (Controls 0.01 cfs)

Summary for Subcatchment 3S: New parking lot1

Runoff = 2.95 cfs @ 11.97 hrs, Volume= 0.137 af, Depth= 2.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

Area (ac)	CN	Description
0.240	98	Paved parking, HSG D
0.426	61	>75% Grass cover, Good, HSG B
0.666	74	Weighted Average
0.426		63.96% Pervious Area
0.240		36.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 4S: Southwest yard not trib to basin

Runoff = 2.66 cfs @ 11.97 hrs, Volume= 0.127 af, Depth= 3.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

	Area (ac)	CN	Description
	0.378	80	>75% Grass cover, Good, HSG D
*	0.084	98	Paved driveway & picnic shelter, HSG D
	0.462	83	Weighted Average
	0.378		81.82% Pervious Area
	0.084		18.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0380	1.54		**Sheet Flow, overland driveway** Smooth surfaces n= 0.011 P2= 2.50"
2.6	10	0.0200	0.07		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
3.6	100	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: South yard additions

Runoff = 2.76 cfs @ 11.97 hrs, Volume= 0.137 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

	Area (ac)	CN	Description
	0.213	98	Paved parking, HSG D
	0.100	61	>75% Grass cover, Good, HSG B
*	0.109	98	Addition + Ex Roof, HSG D
	0.422	89	Weighted Average
	0.100		23.70% Pervious Area
	0.322		76.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to rcvr** Grass: Dense n= 0.240 P2= 2.50"
0.6	30	0.0150	0.85		**Sheet Flow, overland to rcvr** Smooth surfaces n= 0.011 P2= 2.50"
1.1	150	0.0020	2.35	2.89	**Pipe Channel, pipe to basin** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
4.6	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 6S: New parking lot2

Runoff = 0.96 cfs @ 11.97 hrs, Volume= 0.048 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-Year Rainfall=5.14"

Area (ac)	CN	Description
0.110	98	Paved parking, HSG D
0.040	61	>75% Grass cover, Good, HSG B
0.150	88	Weighted Average
0.040		26.67% Pervious Area
0.110		73.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	10	0.0150	0.06		**Sheet Flow, overland to bio-bed** Grass: Dense n= 0.240 P2= 2.50"
1.4	90	0.0150	1.06		**Sheet Flow, overland to bio-bed** Smooth surfaces n= 0.011 P2= 2.50"
0.2	25	0.0150	2.49		**Shallow Concentrated Flow, overland to bio-bed** Paved Kv= 20.3 fps
4.5	125	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 1R: Ex 18" ST on-site

Inflow Area = 1.700 ac, 44.47% Impervious, Inflow Depth > 3.17" for 100-Year event
Inflow = 5.17 cfs @ 11.99 hrs, Volume= 0.449 af
Outflow = 5.17 cfs @ 11.99 hrs, Volume= 0.449 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: Surface Basin

Inflow Area = 1.238 ac, 54.28% Impervious, Inflow Depth > 3.12" for 100-Year event
Inflow = 6.65 cfs @ 11.97 hrs, Volume= 0.322 af
Outflow = 2.85 cfs @ 12.07 hrs, Volume= 0.321 af, Atten= 57%, Lag= 6.0 min
Primary = 2.85 cfs @ 12.07 hrs, Volume= 0.321 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 622.86' @ 12.07 hrs Surf.Area= 0.047 ac Storage= 0.074 af
Flood Elev= 623.50' Surf.Area= 0.056 ac Storage= 0.107 af

Plug-Flow detention time= 20.7 min calculated for 0.321 af (100% of inflow)
Center-of-Mass det. time= 17.4 min (849.6 - 832.1)

Volume	Invert	Avail.Storage	Storage Description
#1	620.50'	0.107 af	**12.00'W x 64.00'L x 3.00'H Surface Basin Z=3.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	620.50'	**10.0" Round Culvert** L= 60.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 620.50' / 620.20' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=2.85 cfs @ 12.07 hrs HW=622.86' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.85 cfs @ 5.23 fps)

Summary for Pond 2P: Bio-planter

Inflow Area = 0.666 ac, 36.04% Impervious, Inflow Depth = 2.48" for 100-Year event
Inflow = 2.95 cfs @ 11.97 hrs, Volume= 0.137 af
Outflow = 2.95 cfs @ 11.98 hrs, Volume= 0.137 af, Atten= 0%, Lag= 0.0 min
Primary = 2.95 cfs @ 11.98 hrs, Volume= 0.137 af
Secondary = 0.00 cfs @ 11.98 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 623.80' @ 11.98 hrs Surf.Area= 0.036 ac Storage= 0.000 af

Plug-Flow detention time= 0.0 min calculated for 0.137 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (832.9 - 832.9)

Volume	Invert	Avail.Storage	Storage Description
#1	623.80'	0.046 af	**18.00'W x 88.00'L x 1.10'H Prismatoid Z=2.0**

Device	Routing	Invert	Outlet Devices
#1	Primary	623.30'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)
#2	Secondary	623.80'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

Primary OutFlow Max=13.85 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
└**1=Sharp-Crested Rectangular Weir** (Weir Controls 13.85 cfs @ 2.32 fps)

Secondary OutFlow Max=0.02 cfs @ 11.98 hrs HW=623.80' (Free Discharge)
└**2=Exfiltration** (Controls 0.02 cfs)

Summary for Pond 3P: Bio-planter

Inflow Area = 0.150 ac, 73.33% Impervious, Inflow Depth = 3.80" for 100-Year event
Inflow = 0.96 cfs @ 11.97 hrs, Volume= 0.048 af
Outflow = 0.95 cfs @ 11.98 hrs, Volume= 0.047 af, Atten= 2%, Lag= 0.8 min
Primary = 0.94 cfs @ 11.98 hrs, Volume= 0.031 af
Secondary = 0.01 cfs @ 11.98 hrs, Volume= 0.017 af

Routing by Stor-Ind method, Time Span= 1.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 624.61' @ 11.98 hrs Surf.Area= 0.016 ac Storage= 0.008 af

Plug-Flow detention time= 158.2 min calculated for 0.047 af (100% of inflow)
Center-of-Mass det. time= 157.5 min (951.2 - 793.7)

Volume	Invert	Avail.Storage	Storage Description
#1	624.00'	0.017 af	**8.00'W x 63.00'L x 1.10'H Prismatoid Z=2.0**

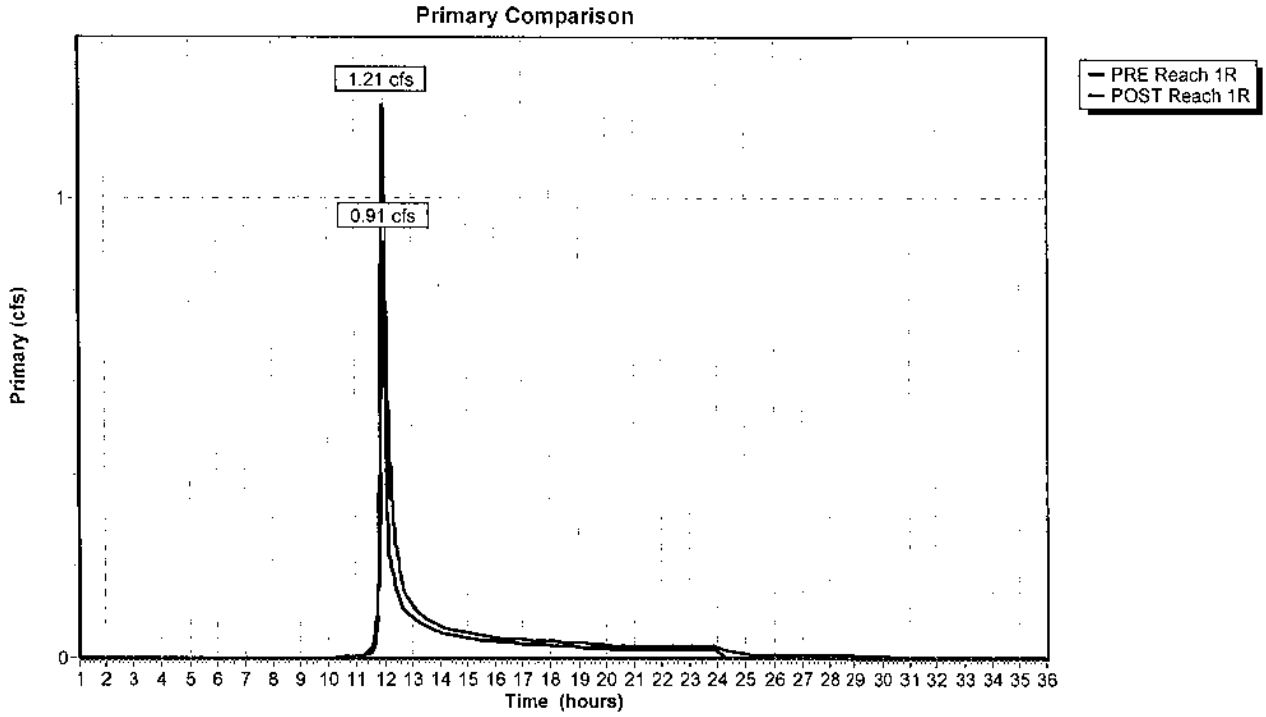
Device	Routing	Invert	Outlet Devices
#1	Primary	621.75'	**10.0" Round Culvert to basin** L= 80.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 621.75' / 621.58' S= 0.0021 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf
#2	Device 1	624.50'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	624.00'	**0.500 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = -5.00'

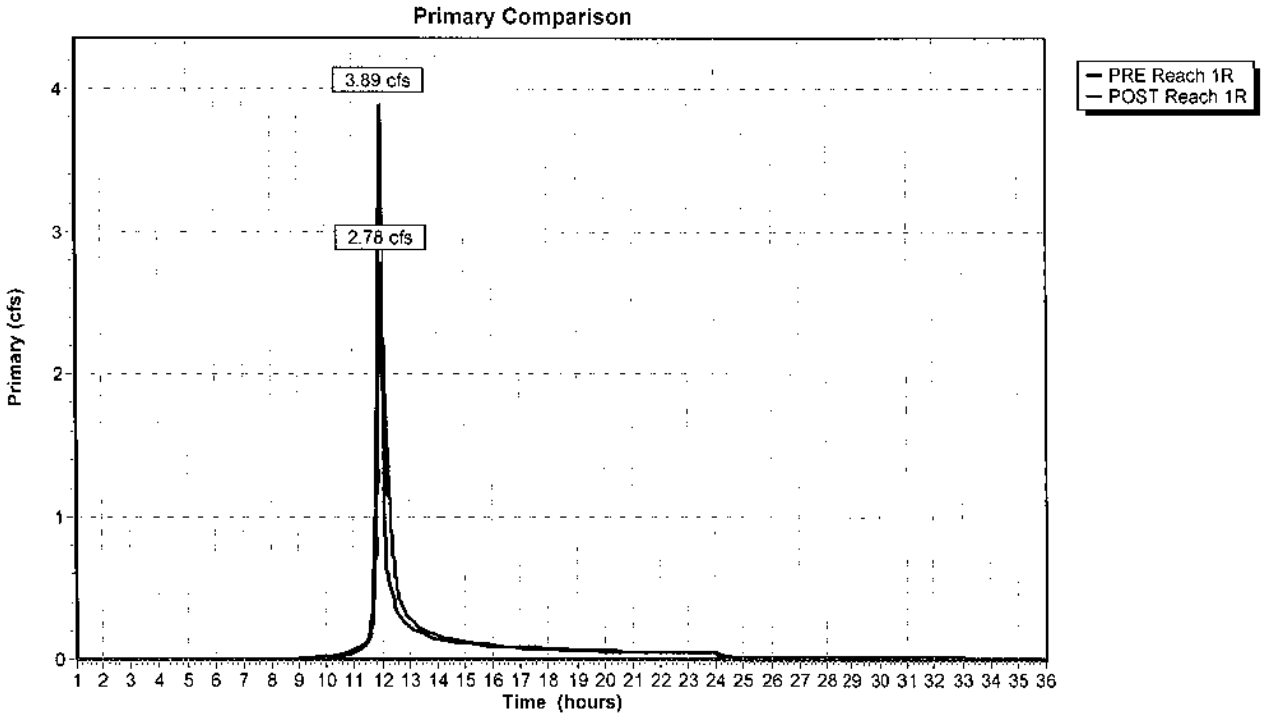
Primary OutFlow Max=0.94 cfs @ 11.98 hrs HW=624.61' (Free Discharge)
└**1=Culvert to basin** (Passes 0.94 cfs of 2.99 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.94 cfs @ 1.08 fps)

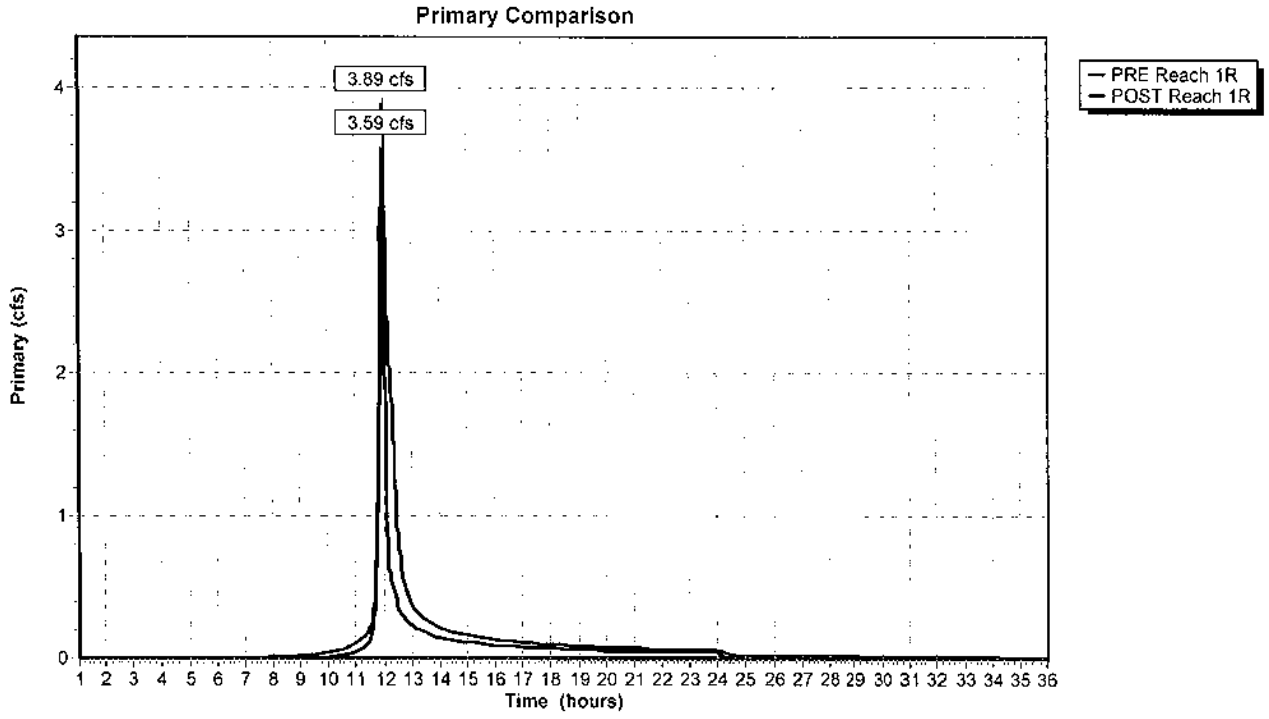
Secondary OutFlow Max=0.01 cfs @ 11.98 hrs HW=624.61' (Free Discharge)
└**3=Exfiltration** (Controls 0.01 cfs)

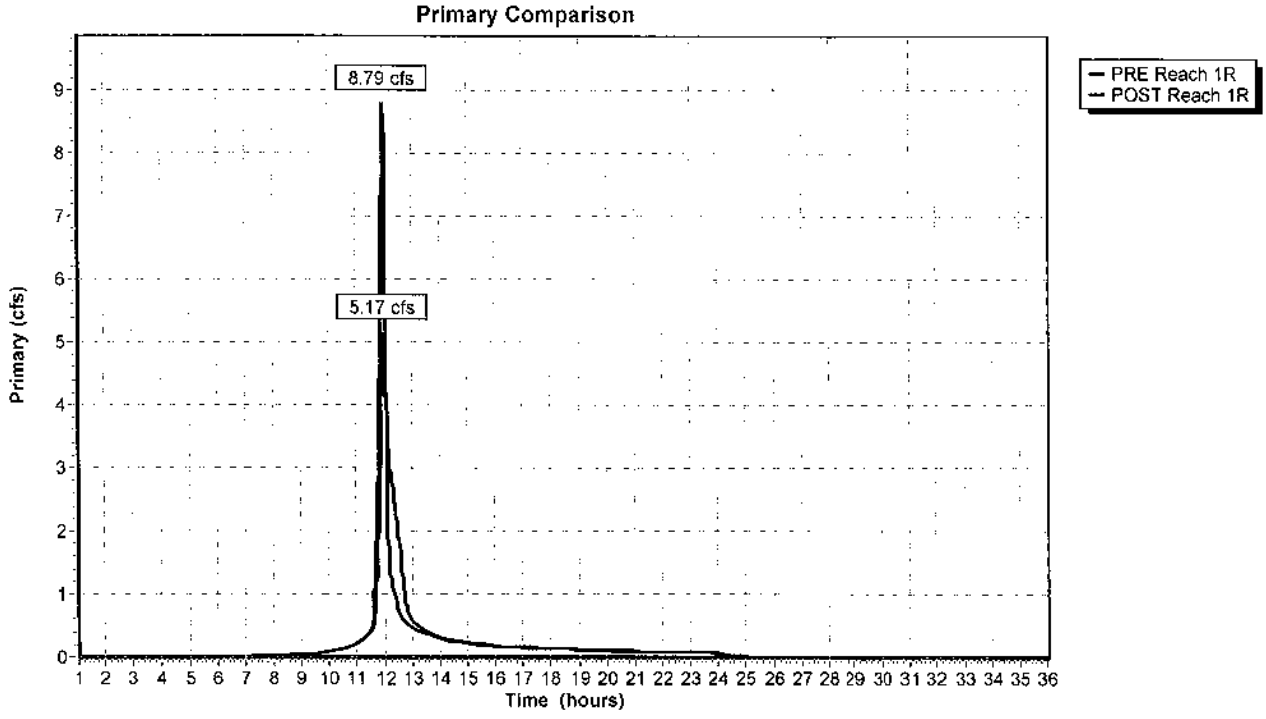
Events for Pond 3P: Bio-planter

Event	Inflow (cfs)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)	Elevation (feet)	Storage (acre-feet)
1-Year	0.22	0.01	0.00	0.01	624.41	0.005
10-Year	0.50	0.44	0.43	0.01	624.56	0.008
25-Year	0.66	0.64	0.64	0.01	624.58	0.008
100-Year	**0.96**	**0.95**	**0.94**	**0.01**	**624.61**	**0.008**


Primary Comparison
1.21 cfs
0.91 cfs
PRE Reach 1R
POST Reach 1R
Primary (cfs)
0
1
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Time (hours)


Primary Comparison
3.89 cfs
2.78 cfs
PRE Reach 1R
POST Reach 1R
Primary (cfs)
Time (hours)
0
1
2
3
4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36


Primary Comparison
3.89 cfs
3.59 cfs
PRE Reach 1R
POST Reach 1R
Primary (cfs)
0
1
2
3
4
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
Time (hours)


Primary Comparison
8.79 cfs
5.17 cfs
PRE Reach 1R
POST Reach 1R
Primary (cfs)
Time (hours)
0 1 2 3 4 5 6 7 8 9
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36

STORM SEWER COMPUTATIONS (10 yr)

RUNOFF AND FLOW

SEWER LOCATION			TRIBUTARY AREA (acres)		RUNOFF COEFFICIANT C					PREV. Tc	T. of conc. c	RUNOFF Tc		TIME OF CONC. T_c (min)	INTENSITY I (in/hr)	FLOW Q (cfs)
area	from	to	A	SUM A	c	cA	SUM cA	LENGTH	SLOPE							
1	CB-1	CB-2	0.18	0.18	0.92	0.17	0.17	90.00	1.20		0.92	2.89	2.89	10.00	4.6	0.76
2	YD-1	CB-2	0.14	0.14	0.92	0.13	0.13	75.00	2.00		0.92	2.23	2.23	10.00	4.6	0.59
3	CB-2	CB-3	0.10	0.42	0.92	0.09	0.39	46.00	1.20	10.57	0.92	2.07	10.57	10.57	4.5	1.74
4	CB-3	BASIN	0.19	0.61	0.92	0.17	0.56	60.00	1.20	10.80	0.92	2.36	10.80	10.80	4.5	2.50
			0.61													

DESIGN

MANNING n	SLOPE S (%)	DIAMETER D (in)	CAPACITY Q (cfs)	CAPACITY VELOCITY V (ft/sec)	% capacity	peak factor	FLOW VELOCITY V (ft/sec)	LENGTH L (ft)
0.012	0.50	8	0.93	2.66	0.82	1.12	2.98	54
0.012	0.20	12	1.73	2.20	0.34	0.90	1.98	80
0.012	0.20	12	1.73	2.20	1.00	1.16	2.56	86
0.012	0.20	15	3.14	2.56	0.80	1.11	2.84	34

APPENDIX C

0644089821

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)
WNY Federal Credit Union

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Bettio

Owner/Operator Contact Person First Name
Marie

Owner/Operator Mailing Address
1937 Union Rd

City
West Seneca

State NY Zip 14224 -

Phone (Owner/Operator) 716 - 771 - 5011

Fax (Owner/Operator) 716 - 675 - 9644

Email (Owner/Operator)
MTBettio@WNYFCU.com

FED TAX ID
16 - 0982318 (not required for individuals)

Project Site Information

Project/Site Name
WNY Federal Credit Union

Street Address (NOT P.O. BOX)
1937 Union Road

Side of Street
○ **North** ○ **South** ● **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)
West Seneca

State: NY | Zip: 14224 - | County: Erie | DEC Region: 9

Name of Nearest Cross Street
Race Street

Distance to Nearest Cross Street (Feet)
200

Project In Relation to Cross Street
● **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel
134.08-3-2.2

Tax Map Numbers

1. Provide the Geographic Coordinates for the project site. To do this, go to the NYSDEC Stormwater Interactive Map on the DEC website at:

https://gisservices.dec.ny.gov/gis/stormwater/

Zoom into your Project Location such that you can accurately click on the centroid of your site. Once you have located the centroid of your project site, go to the bottom right hand corner of the map for the X, Y coordinates. Enter the coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)
-7 1 9 3 3 1 1
Ex. -73.749

Y Coordinates (Northing)
4 7 5 1 2 8 2
Ex. 42.652

2. What is the nature of this construction project?

○ **New Construction**

● **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use	Post-Development Future Land Use
○ FOREST	○ SINGLE FAMILY HOME
○ PASTURE/OPEN LAND	○ SINGLE FAMILY SUBDIVISION
○ CULTIVATED LAND	○ TOWN HOME RESIDENTIAL
● SINGLE FAMILY HOME	○ MULTIFAMILY RESIDENTIAL
○ SINGLE FAMILY SUBDIVISION	○ INSTITUTIONAL/SCHOOL
○ TOWN HOME RESIDENTIAL	○ INDUSTRIAL
○ MULTIFAMILY RESIDENTIAL	● COMMERCIAL
○ INSTITUTIONAL/SCHOOL	○ MUNICIPAL
○ INDUSTRIAL	○ ROAD/HIGHWAY
○ COMMERCIAL	○ RECREATIONAL/SPORTS FIELD
○ ROAD/HIGHWAY	○ BIKE PATH/TRAIL
○ RECREATIONAL/SPORTS FIELD	○ LINEAR UTILITY (water, sewer, gas, etc.)
○ BIKE PATH/TRAIL	○ PARKING LOT
○ LINEAR UTILITY	○ CLEARING/GRADING ONLY
○ PARKING LOT	○ DEMOLITION, NO REDEVELOPMENT
○ OTHER	○ WELL DRILLING ACTIVITY *(Oil, Gas, etc.)
	○ OTHER

Number of Lots

***Note**: for gas well drilling, non-high volume hydraulic fractured wells only

4. In accordance with the larger common plan of development or sale, enter the total project site area; the total area to be disturbed; existing impervious area to be disturbed (for redevelopment activities); and the future impervious area constructed within the disturbed area. (Round to the nearest tenth of an acre.)

Total Site Area	Total Area To Be Disturbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
2.5	1.4	0.2	0.6

5. Do you plan to disturb more than 5 acres of soil at any one time? ○ **Yes** ● **No**

6. Indicate the percentage of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	100 %

7. Is this a phased project? ○ **Yes** ● **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date	End Date
09/30/2021	07/30/2022

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

Buffalo Creek

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ● Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How was the wetland identified?

- ○ Regulatory Map
- ○ Delineated by Consultant
- ○ Delineated by Army Corps of Engineers
- ○ Other (identify)

10. Has the surface waterbody(ies) in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001? ○ **Yes** ● **No**

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001? ○ **Yes** ● **No**

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters? ○ **Yes** ● **No**
If no, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as an E or F on the USDA Soil Survey? ○ **Yes** ● **No**
If Yes, what is the acreage to be disturbed?

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ● **No**

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?

West Seneca

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

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ● **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer
Tredo Engineers

Contact Name (Last, Space, First)
Marino Andrew

Mailing Address
755 Seneca St

City
Buffalo

State NY Zip 14210 -

Phone 716 - 876 - 7147

Fax - -

Email
amarino@tredoengineers.com

SWPPP Preparer Certification

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

First Name
EDWARD

MI
F

Last Name
TREDO

Signature

Date
08 / 10 / 2021

25. Has a construction sequence schedule for the planned management practices been prepared? ● Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ● Sediment Basin
- ○ Sediment Traps
- ● Silt Fence
- ● Stabilized Construction Entrance
- ● Storm Drain Inlet Protection
- ○ Straw/Hay Bale Dike
- ○ Temporary Access Waterway Crossing
- ○ Temporary Stormdrain Diversion
- ○ Temporary Swale
- ○ Turbidity Curtain
- ○ Water bars

Biotechnical

- ○ Brush Matting
- ○ Wattling

Vegetative Measures

- ○ Brush Matting
- ○ Dune Stabilization
- ○ Grassed Waterway
- ○ Mulching
- ○ Protecting Vegetation
- ○ Recreation Area Improvement
- ● Seeding
- ○ Sodding
- ○ Straw/Hay Bale Dike
- ○ Streambank Protection
- ○ Temporary Swale
- ● Topsoiling
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

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

0.060 **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)

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

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	Total Contributing Impervious Area (acres)
○ Hydrodynamic	
○ Wet Vault	
○ Media Filter	
○ Other [ ]	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29.

Total RRv provided

0.023 **acre-feet**

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ● **No**

If Yes, go to question 36.
If No, go to question 32.

32. Provide the Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

0.010 **acre-feet**

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

● **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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

0.034 **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). 0.060

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

0.027 **acre-feet**

CPv Provided

0.027 **acre-feet**

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

3.89 **CFS**

Post-development

2.78 **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development

8.79 **CFS**

Post-development

5.17 **CFS**

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational Rivers
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP [N Y R]
- ○ Other [ ]
- ● None

41. Does this project require a US Army Corps of Engineers Wetland Permit? ○ **Yes** ● **No**
If Yes, Indicate Size of Impact. [ ].[ ]

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ● **Yes** ○ **No**
(If No, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ● **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. [N Y R]

3547089826

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: Marie

MI: T

Print Last Name: Betti

Owner/Operator Signature: Marie T. Betti

Date: 08/09/2021

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:

4b. 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, a mechanism is 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.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; 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 2015)

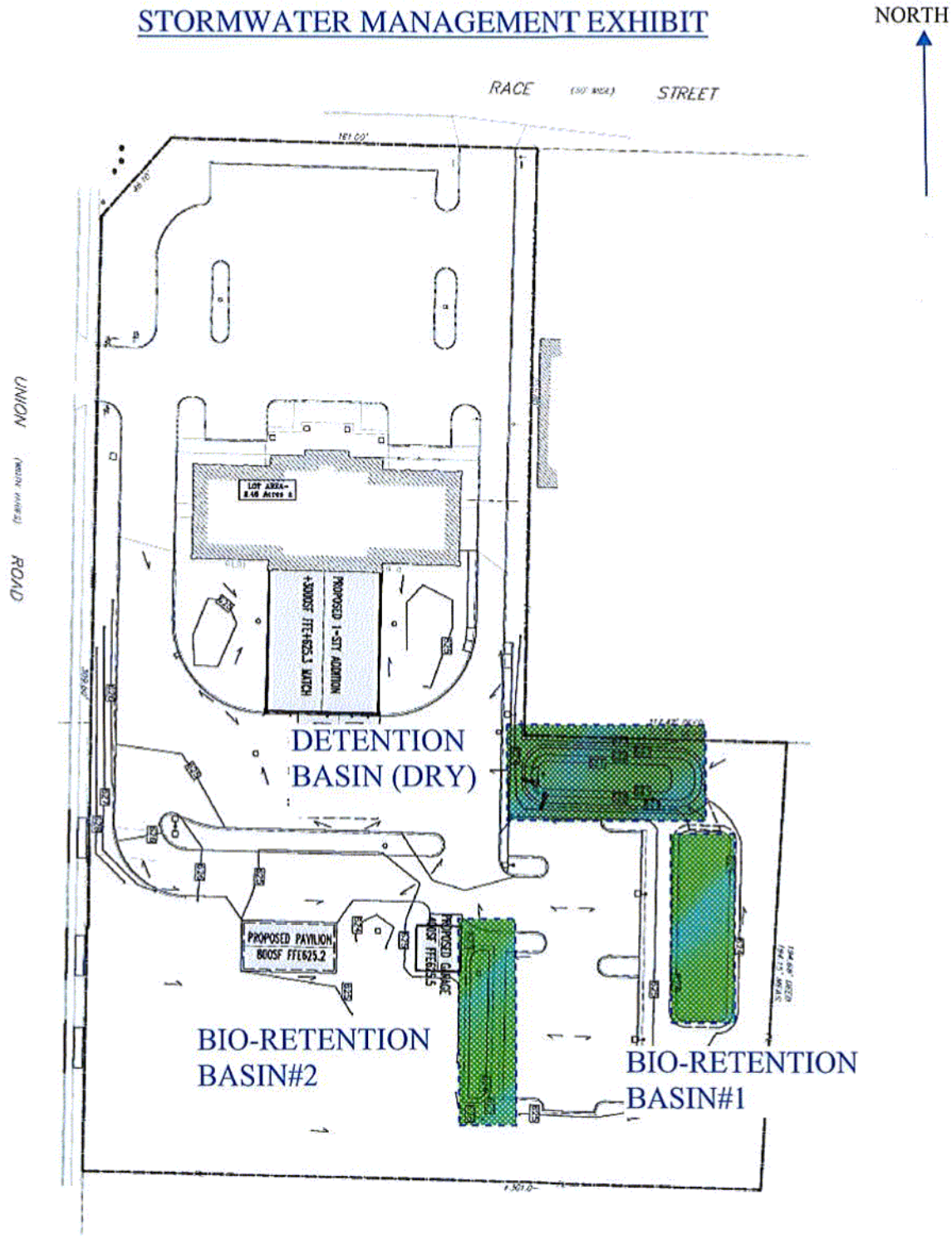
WNYFCU - 1937 UNION ROAD - WEST SENECA NY

STORMWATER CONTROL FACILITY
MAINTENANCE AGREEMENT

Schedule A

Stormwater Management Facility Site Map
Stormwater Management Facility Inspection Procedures
Stormwater Management Facility Inspection Checklists

STORMWATER MANAGEMENT EXHIBIT



Bioretention Operation, Maintenance and Management Inspection Checklist

Project: WNYFCU
Location: 1937 UNION ROAD
Site Status: (T)WEST SENECA, NY

Date:

Time:

Inspector:

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
1. Debris Cleanout (Monthly)		
Bioretention and contributing areas clean of debris		
No dumping of yard wastes into practice		
Litter (branches, etc.) have been removed		
2. Vegetation (Monthly)		
Plant height not less than design water depth		
Fertilized per specifications		
Plant composition according to approved plans		
No placement of inappropriate plants		
Grass height not greater than 6 inches		
No evidence of erosion		
3. Check Dams/Energy Dissipaters/Sumps (Annual, After Major Storms)		
No evidence of sediment buildup		

MAINTENANCE ITEM	SATISFACTORY / UNSATISFACTORY	COMMENTS
Sumps should not be more than 50% full of sediment		
No evidence of erosion at downstream toe of drop structure		
4. Dewatering (Monthly)		
Dewaters between storms		
No evidence of standing water		
5. Sediment Deposition (Annual)		
Swale clean of sediments		
Sediments should not be > 20% of swale design depth		
6. Outlet/Overflow Spillway (Annual, After Major Storms)		
Good condition, no need for repair		
No evidence of erosion		
No evidence of any blockages		
7. Integrity of Filter Bed (Annual)		
Filter bed has not been blocked or filled inappropriately		

Stormwater Management Facility Inspection Procedures

Post Construction Operation & Maintenance

1. On a quarterly basis, perform the following:
   a. Inspect catch basins, storm piping and detention basin for debris
   b. Inspect catch basins and storm piping for accumulation of sediment
   c. Remove and properly dispose of any collected debris from structures
   d. Flush storm sewers with water, if necessary to remove accumulated sediment
   e. Check all stone outfall structures for erosion and re-stone, if necessary to prevent further erosion
   f. Inspect grassed/landscaped areas for unvegetated areas or areas with less than 80% healthy stand of grass and reseed and mulch as necessary. Water areas daily if reseeded through July and August.

2. Maintain all lawn areas by regular mowing, including the grassed slopes of the basins and grassed swale. Any eroded areas shall be re-graded, seeded and mulched immediately.

3. The dry detention basin shall be inspected annually.

4. not used

5. The proposed bioretention areas are to be maintained as required in the NYS SMDM and as a component of the property landscaping and shall be maintained on a regular basis. Mulching, weeding and plant replacement shall occur on an annual basis. Sediment must be removed when accumulation depth exceeds one inch. Any erosion of the bioretention berm must be repaired as soon as possible to prevent diversion around the bioretention area.

Schedule B

SAMPLE STORMWATER CONTROL FACILITY MAINTENANCE AGREEMENT

Whereas, the Municipality of West Seneca ("Municipality") and the _____ ("facility owner") want to enter into an agreement to provide for the long term maintenance and continuation of stormwater control measures approved by the Municipality for the below named project, and

Whereas, the Municipality and the facility owner desire that the stormwater control measures be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components. Therefore, the Municipality and the facility owner agree as follows:

1. This agreement binds the Municipality and the facility owner, its successors and assigns, to the maintenance provisions depicted in the approved project plans which are attached as Schedule A of this agreement.

2. The facility owner shall maintain, clean, repair, replace and continue the stormwater control measures depicted in Schedule A as necessary to ensure optimum performance of the measures to design specifications. The stormwater control measures shall include, but shall not be limited to, the following: drainage ditches, swales, dry wells, infiltrators, drop inlets, pipes, culverts, soil absorption devices and retention ponds.

3. The facility owner shall be responsible for all expenses related to the maintenance of the stormwater control measures and shall establish a means for the collection and distribution of expenses among parties for any commonly owned facilities.

4. The facility owner shall provide for the periodic inspection of the stormwater control measures, not less than once in every five year period, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures.

5. The facility owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality.

6. The facility owner shall undertake necessary repairs and replacement of the stormwater control measures at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.

7. The facility owner shall provide to the Municipality within 30 days of the date of this agreement, a security for the maintenance and continuation of the stormwater control measures in the form of a Bond, letter of credit or escrow account.

8. This agreement shall be recorded in the Office of the County Clerk, County of ERIE together with the deed for the common property and shall be included in the offering plan and/or prospectus approved pursuant to _____.

9. If ever the Municipality determines that the facility owner has failed to construct or maintain the stormwater control measures in accordance with the project plan or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and to affix the expenses thereof as a lien against the property.

10. This agreement is effective _____.

OWNER/OPERATOR

TOWNSHIP

APPENDIX D

CONSTRUCTION DURATION INSPECTIONS

Maintaining Water Quality

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

Housekeeping

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

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

Runoff Control Practices

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

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

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

Runoff Control Practices (continued)

4. Stone Check Dam

Yes No NA

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

5. Rock Outlet Protection

Yes No NA

[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles

Yes No NA

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

2. Revegetation

Yes No NA

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

Sediment Control Practices

1. Stabilized Construction Entrance

Yes No NA

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

2. Silt Fence

Yes No NA

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

Sediment Control Practices (continued)

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

Yes No NA

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

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

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

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

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

Sediment accumulation is ___% of design capacity.

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

CONSTRUCTION DURATION INSPECTIONS

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

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

Modification & Reason:

Bioretention Stormwater Management Practices Level 1 Inspection Checklist

SMP ID #		**SMP Owner**		☐ Private ☐ Public
SMP Location (Address; Latitude & Longitude)				
	Latitude		**Longitude**	

Party Responsible for Maintenance	**System Type**		**Type of Site**
☐ Same as SMP Owner ☐ Other _____	☐ Seasonal ☐ Continuous Use ☐ Other	☐ Above Ground ☐ Below Ground	☐ Commercial ☐ Industrial ☐ Residential ☐ State

Inspection Date		**Inspection Time**	
Inspector			
Date of Last Inspection			

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	**Follow-Up Actions**
 ☐ Bare soil, erosion of the ground (rills washing out the dirt)	☐ Seed and mulch areas of bare soil to establish vegetation. ☐ Fill in erosion areas with soil, compact, and seed and straw to establish vegetation. ☐ 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. ☐ Other:

BR Drainage Area

Look for areas that are uphill from the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
	☐ Kick-Out to Level 2 Inspection: Large areas of soil have been eroded, or larger channels are forming. May require rerouting of flow paths.
 ☐ Piles of grass clippings, mulch, dirt, salt, or other materials	☐ Remove or cover piles of grass clippings, mulch, dirt, etc. ☐ Other:
 ☐ Open containers of oil, grease, paint, or other substances	☐ Cover or properly dispose of materials; consult your local solid waste authority for guidance on materials that may be toxic or hazardous. ☐ Other:

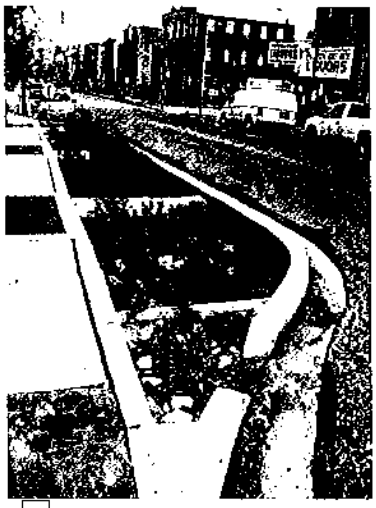
BR Inlets

Stand in the Bioretention cell itself and look for all the places where water flows in. Often there will be multiple points of inflow to the practice.

Problem (Check if Present)	Follow-Up Actions
 ☐ Inlets collect grit and debris or grass/weeds. Some water may not be getting into the Bioretention cell. The objective is to have a clear pathway for water to flow into the cell.	☐ 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 Bioretention cell. ☐ Dispose of all material properly where it will not re-enter the Bioretention cell. ☐ 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 Bioretention cell.
 ☐ 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 Bioretention cell.	☐ 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.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Mulch (if used) needs to be replaced or replenished. The mulch layer had decomposed or is less than 1-inch thick.	☐ Add new mulch to a total depth (including any existing mulch that is left) of 2 to 3 inches. The mulch should be shredded hardwood mulch that is less likely to float away during rainstorms. ☐ Avoid adding too much mulch so that inlets are obstructed or certain areas become higher than the rest of the Bioretention surface. ☐ Other:
 ☐ Minor areas of sediment, grit, trash, or other debris are accumulating on the bottom.	☐ 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 Bioretention cell . ☐ If removing the material creates a hole or low area, fill with soil mix that matches original mix and cover with mulch so that the Bioretention surface area is as flat as possible. ☐ Remove trash, vegetative 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 Bioretention surface. ☐ Kick-Out to Level 2 Inspection: The Bioretention cell is too densely vegetated to assess sediment accumulation or ponding; see BR-4, Vegetation.

BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ There is erosion in the bottom or on the side slopes. Water seems to be carving out rills as it flows across the Bioretention surface or on the slopes, or sinkholes are forming in certain areas. ☐ Source: Stormwater Maintenance, LLC.	☐ Try filling the eroded areas with clean topsoil or sand, and cover with mulch. ☐ If the problem recurs, you may have to use stone (e.g., river cobble) to fill in problem areas. ☐ If the erosion is on a side slope, fill with clay that can be compacted and seed and mulch the area. ☐ Other: ☐ 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 Bioretention cell. ☐ 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.
 ☐ The bottom of the Bioretention cell is not flat, and the water pools at one end, along an edge, or in certain pockets. The whole bottom is not uniformly covered with water. See design plan to verify that bioretention surface is intended to be flat. Check during or immediately after a rainstorm.	☐ If the problem is minor (just small, isolated areas are not covered with water), try raking the surface OR adding mulch to low spots to create a more level surface. You may need to remove and replace plantings in order to properly even off the surface. ☐ Check the surface with a string and bubble level to get the surface as flat as possible. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Ponding water is isolated to less than half of the Bioretention surface area, and there seem to be elevation differences of more than a couple of inches across the surface.

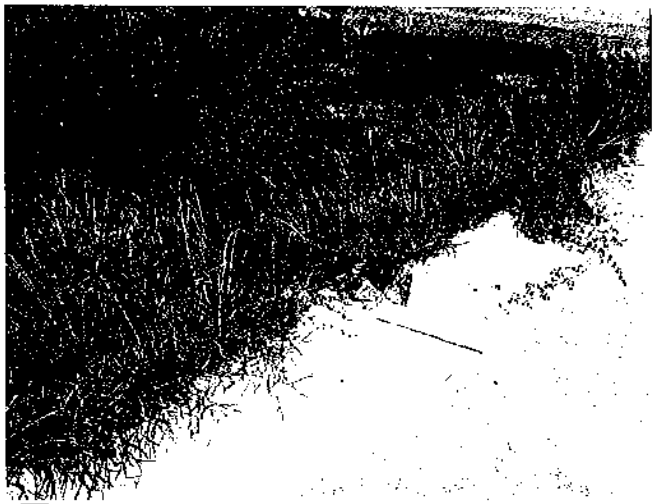
BR Ponding Area

Examine the entire Bioretention surface and side slopes

Problem (Check if Present)	Follow-Up Actions
 ☐ Water stands on the surface more than 72 hours after a rainstorm and /or wetland-type vegetation is present. The Bioretention cell does not appear to be draining properly.	☐ Kick-Out to Level 2 Inspection: This is generally a serious problem, and it will be necessary to activate a Level 2 Inspection.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation requires regular maintenance—pulling weeds, removing dead and diseased plants, replacing mulch around plants, adding plants to fill in areas that are not well vegetated, etc.	☐ If you can identify which plants are weeds or not intended to be part of the planting plan, eliminate these, preferably by hand pulling. ☐ If weeds are widespread, check with the local stormwater authority and/or Extension Office about proper use of herbicides for areas connected with the flow of water. ☐ Even vegetation that is intended to be present can become large, overgrown, and/or crowd out surrounding plants. Prune and thin accordingly. ☐ If weeds or invasive plants have overtaken the whole Bioretention cell , bush-hog the entire area before seedheads form in the spring. It will be necessary to remove the root mat manually or with appropriate herbicides, as noted above. ☐ Re-plant with species that are aesthetically pleasing and seem to be doing well in the Bioretention cell. ☐ Other: ☐ Kick-Out to Level 2 Inspection: You are unsure of the original planting design, or the vegetation maintenance task is beyond your capabilities of time, expertise, or resources. If you are unsure of the health of the vegetation (e.g. salt damage, invasives, which plants are undesirable) or the appropriate season to conduct vegetation management, consult a landscape professional before undertaking any cutting, pruning, mowing, or brush hogging.

BR Vegetation

Examine all Bioretention cell vegetation.

Problem (Check if Present)	Follow-Up Actions
 ☐ Vegetation is too thin, is not healthy, and there are many spots that are not well vegetated.	☐ The original plants are likely not suited for the actual conditions within the Bioretention cell . If you are knowledgeable about plants, select and plant more appropriate vegetation (preferably native plants) so that almost the entire surface area will be covered by the end of the second growing season. ☐ Other: ☐ Kick-Out to Level 2 Inspection: For all but small practices (e.g., rain gardens), this task will likely require a landscape design professional or horticulturalist.

BR Outlets

Examine outlets that release water out of the Bioretention cell.

Problem (Check if Present)	Follow-Up Actions
☐ Erosion at outlet	☐ Add stone to reduce the impact from the water flowing out of the outlet pipe or weir during storms. ☐ Other: ☐ Kick-Out to Level 2 Inspection: Rills have formed and erosion problem becomes more severe.
 ☐ Outlet obstructed with mulch, sediment, debris, trash, etc.	☐ Remove the debris and dispose of it where it cannot re-enter the Bioretention cell . ☐ Other: ☐ Kick-Out to Level 2 Inspection: Outlet is completely clogged or obstructed; there is too much material to remove by hand or with simple hand tools.

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: _____

HC 210
(10/10)

NOTICE TO REDUCE FREQUENCY OF SPDES SITE INSPECTIONS
SPDES GENERAL PERMIT GP-0-20-001

In accordance with Part IV.C.2.c of the SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-20-002 , the Owner/Operator _____ hereby notifies the New York State Department of Environmental Conservation that work on this Contract will be temporarily suspended and temporary stabilization measures have been applied to all disturbed areas.

A Qualified Inspector will conduct a site inspection at least once every 30 calendar days during this period. The standard site inspection frequency will resume when construction activities recommence.

SPDES Permit Identification #NYR _____

Contract No.: _____ PIN: _____

Description: _____

Town, Village, City: _____

County: _____

Reason for temporary suspension of work:

- ☐ Winter Shutdown
- ☐ Other _____

Approximate date work will be suspended: _____

Approximate date work will resume: _____

Signature _____

Name: _____

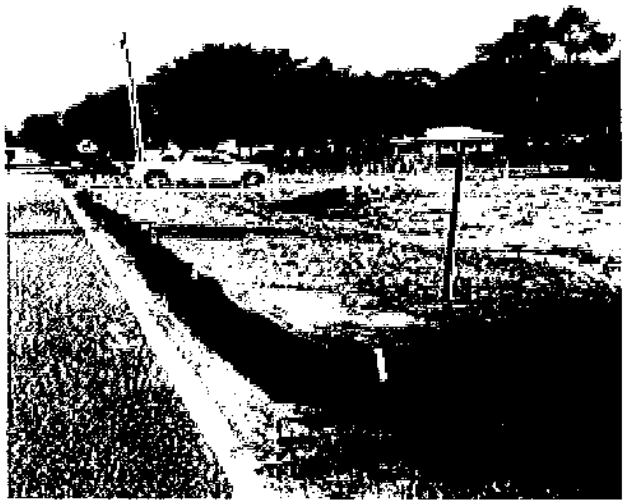
Title: _____

Phone: _____

E-Mail: _____

Date Submitted to NYSDEC: _____

STANDARD AND SPECIFICATIONS FOR COMPOST FILTER SOCK



Definition & Scope

A **temporary** sediment control practice composed of a degradable geotextile mesh tube filled with compost filter media to filter sediment and other pollutants associated with construction activity to prevent their migration offsite.

Condition Where Practice Applies

Compost filter socks can be used in many construction site applications where erosion will occur in the form of sheet erosion and there is no concentration of water flowing to the sock. In areas with steep slopes and/or rocky terrain, soil conditions must be such that good continuous contact between the sock and the soil is maintained throughout its length. For use on impervious surfaces such as road pavement or parking areas, proper anchorage must be provided to prevent shifting of the sock or separation of the contact between the sock and the pavement. Compost filter socks are utilized both at the site perimeter as well as within the construction areas. These socks may be filled after placement by blowing compost into the tube pneumatically, or filled at a staging location and moved into its designed location.

Design Criteria

1. Compost filter socks will be placed on the contour with both terminal ends of the sock extended 8 feet upslope at a 45 degree angle to prevent bypass flow.

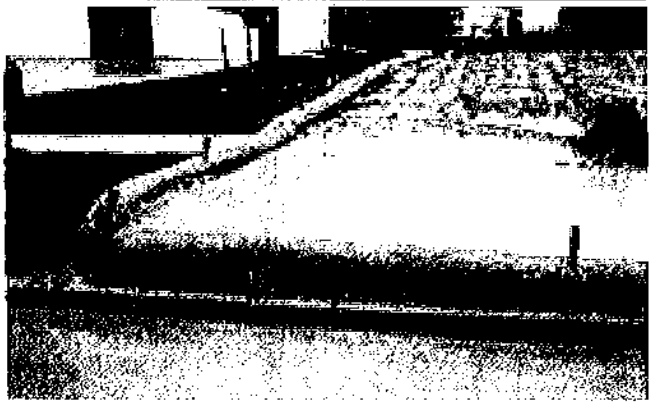
2. Diameters designed for use shall be 12" – 32" except that 8" diameter socks may be used for residential lots to control areas less than 0.25 acres.

3. The flat dimension of the sock shall be at least 1.5 times the nominal diameter.

4. The **Maximum Slope Length** (in feet) above a compost filter sock shall not exceed the following limits:

Dia. (in.)	Slope %						
	2	**5**	**10**	**20**	**25**	**33**	**50**
8	225*	200	100	50	20	—	—
12	250	225	125	65	50	40	25
18	275	250	150	70	55	45	30
24	350	275	200	130	100	60	35
32	450	325	275	150	120	75	50

* Length in feet

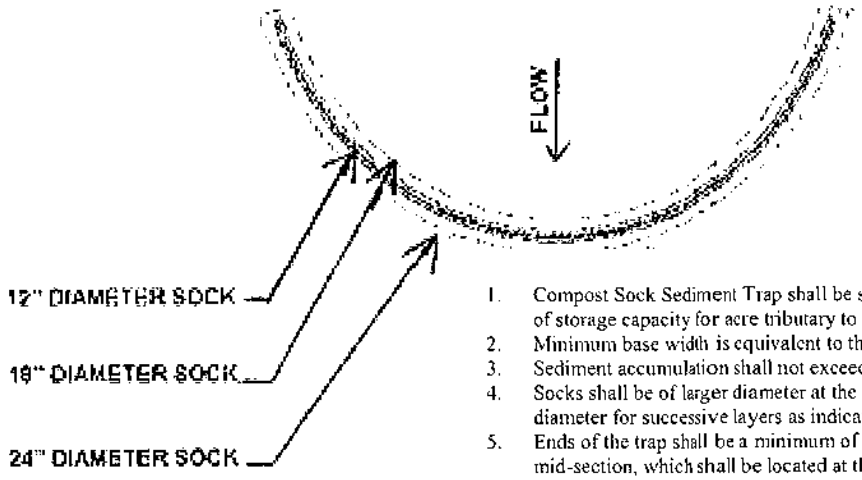


5. The compost infill shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **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. When using compost filter socks adjacent to surface water, the compost should have a low nutrient value.**

6. The compost filter sock fabric material shall meet the

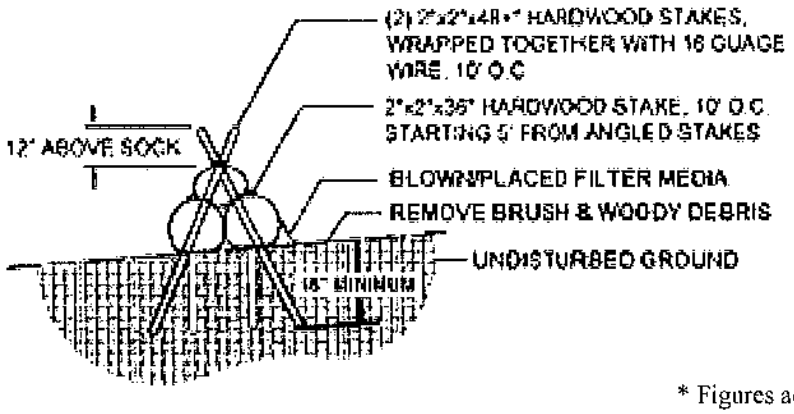
Figure 5.28
Compost Filter Sock Sediment Trap: ST-III

Plan View



1. Compost Sock Sediment Trap shall be sized to provide 3,600 cubic feet of storage capacity for acre tributary to the trap.
2. Minimum base width is equivalent to the height.
3. Sediment accumulation shall not exceed 1/3 the total height of the trap.
4. Socks shall be of larger diameter at the base of the trap and decrease in diameter for successive layers as indicated to the left.
5. Ends of the trap shall be a minimum of 1 foot higher in elevation that the mid-section, which shall be located at the point of discharge.

Staking Detail



* Figures adapted from Filtrexx

Specifications:

1. Sock infill and filter media material shall meet the standards of Table 5.1 on page 5.8 . Compost shall meet the compost filter sock standard of Table 5.2 on page 5.8.

2. Compost sock sediment traps shall not exceed three socks in height and shall be stacked in pyramidal form as shown above. Minimum trap height is one 24 inch diameter sock. Additional storage may be provided by means of an excavated sump 12 inches deep extending 1 to 3 feet upslope of the socks along the lower side of the trap.

3. Compost sock sediment traps shall provide 3,600 cubic feet storage capacity with 12 inches of freeboard for each tributary drainage acreage. (See manufacturer for anticipated settlement.)

4. The maximum tributary drainage area is 5.0 acres. Since compost socks are "flow-through," no spillway is required.

5. Compost sock sediment traps shall be inspected weekly and after each runoff event. Sediment shall be removed when it reaches 1/3 the height of the socks.

6. Photodegradable and biodegradable socks shall not be used for more than 1 year.

Figure 5.31
Excavated Drop Inlet Protection