STORMWATER MANAGEMENT
&
SEDIMENT AND EROSION CONTROL PLAN

Prepared for:

STONEARCH DEVELOPMENT CORPORATION
42J DOVER POINT ROAD
DOVER, NH 03820
COMMERCIAL SITE PLAN
LOTS 26-58 & 26-59

Prepared by:

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70 PORTSMOUTH AVENUE
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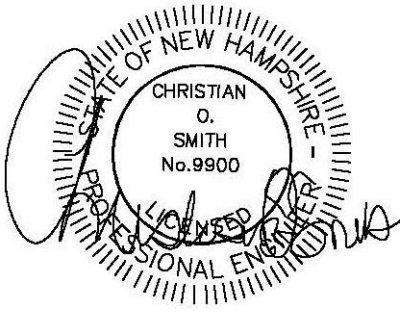
Project Number:
NH-1144.5
NH Route 125
Barrington, New Hampshire

October 2023



DESIGN METHOD OBJECTIVES – EXECUTIVE SUMMARY

StoneArch Development Corportation proposes a Commercial Site Plan on the recently approved lots shown as Tax Map 223 as Lots 26-58 & 26-59 on approximately 8.77 acres of land located off NH Route 125 in Barrington, NH. A commercial development project (NH Alteration of Terrain Permit #AoT-2319) was approved by NHDES on March 13, 2023 for St. Hilaire Motor Sports. A revised drainage analysis for the proposed commercial development was conducted for the purpose of estimating the peak rate of stormwater run-off and to subsequently design adequate drainage structures. Two models were compiled; one for the area in its existing (pre-construction) condition, and a second for its proposed (post-construction) condition. The analysis was conducted using data for the 2-year, 10-year, and 50-year 24-hour storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment. The purpose of this analysis is to estimate the peak rates of run-off from the site and to compare the peak rate of run-off between the existing and proposed conditions. Rainfall data utilized is as provided in the Extreme Precipitation tables by Cornell University for the following 24-hour storm events:

Storm Event	Rainfall Depth (inches)
2-Year	3.08
10-Year	4.64
50-Year	7.00

Peak Rate of Discharge

		Component Peak Rate of Discharge (CFS)		
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**50-Year**
Reach #300 - Northerly Analysis Point Old Green Hill stream crossing	Existing Proposed	16.01 14.35	41.35 38.40	86.47 86.47

Channel Protection

Analysis Point # Analysis Point Description	Condition	2-Year Storm Volume (Acre-Feet)
Reach #300 - Northerly Analysis Point Old Green Hill stream crossing	Existing Proposed	3.515 3.208

The existing property is located on a parcel consisting of forest, and a wetland area draining to a New Hampshire Department of Transportation (NHDOT) culvert under Route 125. The existing topography is such that the site analysis is divided into two subcatchments (though the entire area & all nodes draining to Reach 300 is provided as approved by AoT-2069). The reach flows Northerly toward culverts under the class 6 Old Green Hill Road to a large prime wetland

complex. Classified by Site Specific Soil Mapping, the land within the drainage analysis is composed of slopes ranging from 3% to 15%, and soils categorized into the Hydrologic Soil Groups (HSG) B and C. No flood hazard zone exists on the parcel.

The proposed commercial layout includes buildings, pavement, and stormwater controls. The curve numbers (CNs) and times of concentration (Tc's) were revised accordingly to reflect a net result of offsetting any potential increase in peak rates of run-off from the site. The proposed development divides the site into multiple post-construction subcatchments to reflect the flow from stormwater areas (roofs, pavement, lawn, etc.) into stormwater controls (catchbasins, sediment forebays, overland flow, etc.). Impervious area take-offs were calculated digitally from the proposed pavement and roof areas. Seasonal high-water tables for the sediment forebay and sand filter pond to be expanded were modeled based on actual test pits logged within the proposed BMP areas. The run-off is treated and infiltrated or outletted toward wetlands areas modeled as HydroCAD "reaches" and "ponds". The overall development area, which includes the Signature Drive subdivision, consists of constructed swales, existing flow paths through larger subcatchments, roadway culverts, deep sump catch basins, wet detention pond, constructed gravel wetlands, infiltration basins, and level spreaders. Required groundwater recharge will be met by a reduction in overall impervious areas by 0.75 acres from the previously approved development estimates.

The use of Best Management Practices per the New Hampshire Stormwater Manual has been applied to the design of these structures and will be observed during all stages of construction. All land disturbed during construction will be permanently stabilized within 60 days of groundbreaking, and existing wetlands and abutters will suffer no adversity resulting from this development.

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1.0 RAINFALL CHARACTERISTICS

This stormwater management plan includes an existing conditions analysis of the area involved in the proposed development, as well as proposed conditions, or post-construction analysis of the same location. These analyses were accomplished using the USDA SCS TR-20 Method within the HydroCAD Stormwater Modeling System. The curve numbers were developed using the SCS TR-55 Runoff Curve numbers for Urban Areas. A Type III SCS 24-hour rainfall distribution was utilized in analyzing the data for the 2, 10 and 50Yr – 24 Hr storm events using the USDA SCS TR-20 method within the HydroCAD Stormwater Modeling System environment.

Peak Rate of Discharge

		Component Peak Rate of Discharge (CFS)		
Analysis Point # Analysis Point Description	**Condition**	**2-Year**	**10-Year**	**50-Year**
Reach #300 - Northerly Analysis Point Old Green Hill stream crossing	Existing	16.01	41.35	86.47
	Proposed	14.35	38.40	86.47

Channel Protection

Analysis Point # Analysis Point Description	**Condition**	**2-Year Storm Volume (Acre-Feet)**
Reach #300 - Northerly Analysis Point Old Green Hill stream crossing	Existing	3.515
	Proposed	3.208

2.0 EXISTING CONDITIONS

Reference: Sheet W-1, Existing Conditions Watershed Plan (Enclosed)
Existing Conditions Plans

The existing property is located on a parcel consisting of forest, and a wetland area draining to an NHDOT culvert under Route 125. The existing topography is such that the site analysis is divided into two subcatchments (though the entire area & all nodes draining to Reach 300 is provided as approved by Ao.T-2069). The reach flows Northerly toward culverts under the class 6 Old Green Hill Road to a large prime wetland complex. Classified by Site Specific Soil Mapping, the land within the drainage analysis is composed of slopes ranging from 3% to 15%, and soils categorized into the Hydrologic Soil Groups (HSG) B and C. No flood hazard zone exists on the parcel.

3.0 PROPOSED CONDITIONS

Reference: W-Sheets Proposed Conditions Watershed Plan (Enclosed)
C Sheets Proposed Conditions Plans

The addition of the impervious area from the proposed buildings and pavement will cause an increase in the curve number (Cn) and a decrease in the time of concentration (Tc), the net result being a potential increase in peak rates of run-off from the site. The proposed development divides the site into multiple post-construction subcatchments. Impervious area take-offs were calculated digitally from the proposed pavement and roof areas. Seasonal high-water tables for the sediment forebay and expanded sand filter pond were modeled based on actual test pits logged within the proposed BMP areas. The run-off is treated and infiltrated or outletted toward wetlands areas modeled as HydroCAD "reaches" and "ponds". Required groundwater recharge will be met by a reduction in overall impervious areas by 0.75 acres from the previously approved development estimates.

The use of Best Management Practices per the New Hampshire Stormwater Manual has been applied to the design of these structures and will be observed during all stages of construction. All land disturbed during construction will be permanently stabilized within 60 days of groundbreaking, and existing wetlands and abutters will suffer no adversity resulting from this development.

To prevent the sedimentation of adjacent wetlands or abutting property silt barriers, a sediment forebay, and a sand filter pond will be utilized. Ksat values were utilized based on field testing with an amoozemeter. Post development stormwater flows are reduced or match the previously approved development analysis for all storm events, and the sand filter pond safely passes the 50-Year storm event as required by NHDES AoT. It should also be noted that the stormwater volume to the analysis point is reduced compared to the existing conditions under the 2-Year frequency storm event. All BMP's have been designed per the New Hampshire Stormwater Manual and design worksheets appear in the appendices. During construction, appropriate temporary and/or permanent BMP's will be applied to negate the potential for sediment-laden run-off to discharge into wetlands prior to the final stabilization of the proposed grading. The structures outlined in this proposal provide for compliant treatment of stormwater run-off and for sediment control.

4.0 SEDIMENT & EROSION CONTROL BEST MANAGEMENT PRACTICES

Reference: C Sheets Proposed Conditions Plan
E Sheet Erosion & Sediment Control Details

The proposed site development is protected from erosion and the roadways and abutting properties are protected from sediment using Best Management Practices as outlined in the New Hampshire Stormwater Manual. Any area disturbed by construction will be permanently re-stabilized within 60 days and abutting properties and wetlands will not be adversely affected by this development. All swales and drainage structures will be constructed and stabilized prior to having run-off directed to them.

4.1 Silt Fence / Erosion Control Berm and Construction Fence

The plan set demonstrates the location of silt fence or Erosion Control Berm for sediment control. In areas where the limits of construction need to be emphasized to operators, construction fence for added visibility will be installed. Sheet E-1, Erosion and Sediment Control Details, has the specifications for installation and maintenance of the silt fence. Orange construction fence will be VISI Perimeter Fence by Conwed Plastic Fencing, or equal. The four-foot fencing to be installed using six-foot posts at least two feet in the ground with spacing of six to eight feet.

4.2 Vegetated Stabilization

All areas that are disturbed during construction will be stabilized with vegetated material within 60 days of breaking ground. Construction will be managed in such a manner that erosion is prevented and that no abutter's property will be subjected to any siltation, unless otherwise permitted. All areas to be planted with grass for long-term cover will follow the specification and on Sheet E-1 using seeding mixture C, as follows:

Mixture	**Pounds** per Acre	**Pounds per** 1,000 Sq. Ft.
Tall Fescue	20	0.45
Creeping Red Fescue	28	0.65
Total	48	1.10

4.3 Stabilized Construction Entrance

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

4.4 Environmental Dust Control

Dust will be controlled on the site using multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

4.5 Construction Sequence

1. Construct and/or install temporary and permanent sediment erosion and detention control facilities (silt fence/erosion control berm, vegetated swales, level spreaders, and constructed Vegetated buffers), as required. Erosion and sediment facilities shall be installed and stabilized prior to any earth moving operation, and prior to directing run-off to them.

2. Clear, cut, grub, and dispose of debris in approved facilities.

3. Excavate and stockpile topsoil / loam. All disturbed areas shall be stabilized immediately after grading.

4. Construct the roadway and its associated drainage structures.

5. Begin permanent and temporary seeding and mulching. All cut and fill slopes and disturbed areas shall be seeded and mulched as required, or directed.

6. Daily, or as required, construct temporary berms, drainage ditches, sediment traps, etc. to prevent erosion on the site and prevent any siltation of abutting waters or property.

7. Inspect and maintain all erosion and sediment control measures during construction every two weeks and after every storm event with 0.5" or more rain.

9. Complete permanent seeding and landscaping.

9. Remove temporary erosion control measures after seeding areas have established themselves and site improvements are complete. Smooth and re-vegetate all disturbed areas.

10. All swales and all drainage ponds and structures will be constructed and fully stabilized prior to having run-off being directed to them.

11. Finish graveling all roadways/parking.

4.6 Temporary Erosion Control Measures

1. The smallest practical area of open soil shall be exposed at any one time.

2. Erosion, sediment control measures shall be installed as shown on the plans and at locations as required, or directed by the engineer.

3. All disturbed areas shall be returned to original grades and elevations. Disturbed areas shall be loamed with a minimum of 4" of loam and seeded with not less than 1.10 pound of seed per 1,000 square feet (48 pounds per acre) of area.

4. Silt fences and other barriers shall be inspected periodically and after every rainstorm during the life of the project. All damaged areas shall be repaired; sediment deposits shall periodically be removed and properly disposed of.

5. After all disturbed areas have been stabilized, the temporary erosion control measures are to be removed and the area disturbed by the removal smoothed and revegetated.

6. Areas must be seeded and mulched within 5 days of final grading, permanently stabilized within 15 days of final grading, or temporarily stabilized within 30 days of initial disturbance of soil.

4.7 Inspection and Maintenance Schedule

Fencing/Erosion Control Berm will be inspected during and after storm events to ensure that the fence still has integrity and is not allowing sediment to pass. Sediment build-up in swales and level spreaders will be removed if it is deeper than six inches.

5.0 CONCLUSION

This proposed development off NH Route 125 in Barrington, NH will have no adverse effect on abutting property owners by way of stormwater run-off or siltation. The post-construction peak rate of run-off for the site has been decreased or match from that of the approved conditions for the analyzed design storms and roadway run-off will be treated by deep-sump catchbasins, a sediment forebay, and a sand filter pond. Appropriate steps will be taken to eliminate erosion and sedimentation through the Best Management Practices developed by the State of New Hampshire that have been utilized in the design of this system and these applications will be enforced throughout the construction process.

An Alteration of Terrain Permit (RSA 485: A-17) is required for this project based on the condition cited in permit #AoT-2069.

Respectfully Submitted,

BEALS ASSOCIATES, *PLLC.*

Christian O. Smith

Christian O. Smith, PE
Principal

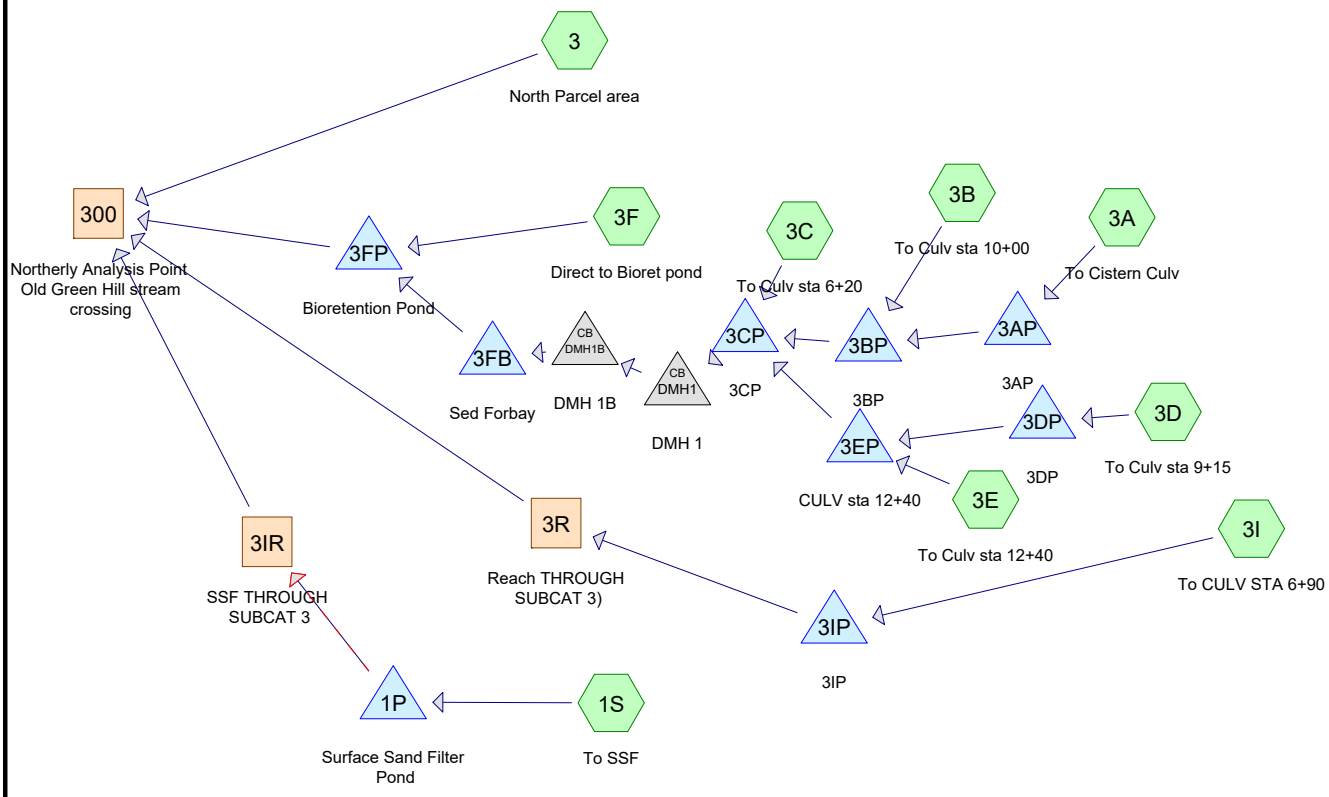
Appendix I

Existing Conditions Analysis

2-Year 24-Hour Summary

10-Year 24-Hour Complete

50-Year 24-Hour Summary



Subcat Reach Pond Link

Routing Diagram for NH-1144.5-Existing 08-2023
Prepared by Beals Associates, PLLC, Printed 10/12/2023

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.971	68	1 acre lots, 20% imp, HSG B (3)
5.465	79	1 acre lots, 20% imp, HSG C (3B, 3I)
3.786	80	1/2 acre lots, 25% imp, HSG C (3, 3A)
0.579	65	2 acre lots, 12% imp, HSG B (3)
2.119	77	2 acre lots, 12% imp, HSG C (3)
0.424	61	>75% Grass cover, Good, HSG B (3F)
1.114	74	>75% Grass cover, Good, HSG C (1S, 3, 3C, 3D, 3E)
0.724	96	Gravel surface, HSG C (3)
0.350	89	Paved roads w/open ditches, 50% imp, HSG B (3C)
2.132	92	Paved roads w/open ditches, 50% imp, HSG C (1S, 3, 3A, 3B, 3D, 3E)
0.037	98	Roofs, HSG C (1S)
3.362	94	Urban commercial, 85% imp, HSG C (1S, 3)
1.980	98	Water Surface, HSG D (3)
2.673	55	Woods, Good, HSG B (3, 3F)
31.643	70	Woods, Good, HSG C (1S, 3, 3A, 3B)
57.359	**75**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
4.997	HSG B	3, 3C, 3F
50.383	HSG C	1S, 3, 3A, 3B, 3C, 3D, 3E, 3I
1.980	HSG D	3
0.000	Other	
57.359		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchr Numbers
0.000	0.971	5.465	0.000	0.000	6.436	1 acre lots, 20% imp	
0.000	0.000	3.786	0.000	0.000	3.786	1/2 acre lots, 25% imp	
0.000	0.579	2.119	0.000	0.000	2.698	2 acre lots, 12% imp	
0.000	0.424	1.114	0.000	0.000	1.539	>75% Grass cover, Good	
0.000	0.000	0.724	0.000	0.000	0.724	Gravel surface	
0.000	0.350	2.132	0.000	0.000	2.482	Paved roads w/open ditches, 50% imp	
0.000	0.000	0.037	0.000	0.000	0.037	Roofs	
0.000	0.000	3.362	0.000	0.000	3.362	Urban commercial, 85% imp	
0.000	0.000	0.000	1.980	0.000	1.980	Water Surface	
0.000	2.673	31.643	0.000	0.000	34.316	Woods, Good	
0.000	**4.997**	**50.383**	**1.980**	**0.000**	**57.359**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1S: To SSF Runoff Area=139,897 sf 39.67% Impervious Runoff Depth=1.44"
Flow Length=968' Tc=22.6 min CN=82 Runoff=3.45 cfs 0.386 af

Subcatchment 3: North Parcel area Runoff Area=1,832,858 sf 12.91% Impervious Runoff Depth=0.96"
Flow Length=1,703' Tc=68.0 min CN=74 Runoff=16.01 cfs 3.364 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=1.25"
Flow Length=802' Tc=22.4 min CN=79 Runoff=1.81 cfs 0.204 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=0.96"
Flow Length=935' Tc=24.8 min CN=74 Runoff=2.15 cfs 0.266 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=1.58"
Flow Length=253' Tc=7.3 min CN=84 Runoff=0.92 cfs 0.069 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=2.06"
Tc=6.0 min CN=90 Runoff=0.58 cfs 0.041 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=1.73"
Tc=6.0 min CN=86 Runoff=0.57 cfs 0.040 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=398' Tc=11.2 min CN=57 Runoff=0.17 cfs 0.034 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=1.25"
Flow Length=653' Tc=28.8 min CN=79 Runoff=3.49 cfs 0.440 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: Reach THROUGH SUBCAT 3) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=0.00 cfs 0.000 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=16.01 cfs 3.515 af
Outflow=16.01 cfs 3.515 af

Pond 1P: Surface Sand Filter Pond Peak Elev=194.13' Storage=5,688 cf Inflow=3.45 cfs 0.386 af
Discarded=0.67 cfs 0.386 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.67 cfs 0.386 af

Pond 3AP: 3AP Peak Elev=266.66' Storage=20 cf Inflow=1.81 cfs 0.204 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=1.81 cfs 0.204 af

Pond 3BP: 3BP Peak Elev=246.90' Storage=37 cf Inflow=3.93 cfs 0.470 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=3.93 cfs 0.470 af

Pond 3CP: 3CP Peak Elev=239.32' Storage=30 cf Inflow=4.79 cfs 0.620 af
Outflow=4.79 cfs 0.620 af

Pond 3DP: 3DP Peak Elev=259.35' Storage=2 cf Inflow=0.58 cfs 0.041 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=0.58 cfs 0.041 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.52' Storage=15 cf Inflow=1.14 cfs 0.082 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=1.14 cfs 0.082 af

Pond 3FB: Sed Forbay Peak Elev=214.75' Storage=3,328 cf Inflow=4.79 cfs 0.620 af
Outflow=4.79 cfs 0.550 af

Pond 3FP: Bioretention Pond Peak Elev=215.08' Storage=12,747 cf Inflow=4.96 cfs 0.584 af
Discarded=0.16 cfs 0.433 af Primary=0.58 cfs 0.151 af Outflow=0.74 cfs 0.584 af

Pond 3IP: 3IP Peak Elev=247.17' Storage=19,180 cf Inflow=3.49 cfs 0.440 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=0.00 cfs 0.000 af

Pond DMH1: DMH 1 Peak Elev=223.97' Inflow=4.79 cfs 0.620 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=4.79 cfs 0.620 af

Pond DMH1B: DMH 1B Peak Elev=216.97' Inflow=4.79 cfs 0.620 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=4.79 cfs 0.620 af

Total Runoff Area = 57.359 ac Runoff Volume = 4.845 af Average Runoff Depth = 1.01"
84.88% Pervious = 48.687 ac 15.12% Impervious = 8.673 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1S: To SSF Runoff Area=139,897 sf 39.67% Impervious Runoff Depth=2.76"
Flow Length=968' Tc=22.6 min CN=82 Runoff=6.65 cfs 0.738 af

Subcatchment 3: North Parcel area Runoff Area=1,832,858 sf 12.91% Impervious Runoff Depth=2.08"
Flow Length=1,703' Tc=68.0 min CN=74 Runoff=37.00 cfs 7.295 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=2.49"
Flow Length=802' Tc=22.4 min CN=79 Runoff=3.70 cfs 0.409 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=2.08"
Flow Length=935' Tc=24.8 min CN=74 Runoff=4.93 cfs 0.576 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=2.94"
Flow Length=253' Tc=7.3 min CN=84 Runoff=1.71 cfs 0.128 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=3.53"
Tc=6.0 min CN=90 Runoff=0.97 cfs 0.071 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=86 Runoff=1.02 cfs 0.073 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=398' Tc=11.2 min CN=57 Runoff=1.08 cfs 0.115 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=2.49"
Flow Length=653' Tc=28.8 min CN=79 Runoff=7.13 cfs 0.881 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: Reach THROUGH SUBCAT 3) Avg. Flow Depth=0.19' Max Vel=0.98 fps Inflow=2.60 cfs 0.427 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=1.14 cfs 0.427 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=41.35 cfs 8.575 af
Outflow=41.35 cfs 8.575 af

Pond 1P: Surface Sand Filter Pond Peak Elev=195.96' Storage=14,262 cf Inflow=6.65 cfs 0.738 af
Discarded=0.71 cfs 0.738 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.738 af

Pond 3AP: 3AP Peak Elev=267.02' Storage=44 cf Inflow=3.70 cfs 0.409 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=3.69 cfs 0.409 af

Pond 3BP: 3BP Peak Elev=247.44' Storage=84 cf Inflow=8.59 cfs 0.985 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=8.59 cfs 0.985 af

Pond 3CP: 3CP Peak Elev=239.53' Storage=79 cf Inflow=10.12 cfs 1.257 af
Outflow=10.12 cfs 1.257 af

Pond 3DP: 3DP Peak Elev=259.47' Storage=3 cf Inflow=0.97 cfs 0.071 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=0.97 cfs 0.071 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.72' Storage=27 cf Inflow=1.98 cfs 0.144 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=1.98 cfs 0.144 af

Pond 3FB: Sed Forbay Peak Elev=214.85' Storage=3,512 cf Inflow=10.12 cfs 1.257 af
Outflow=10.11 cfs 1.187 af

Pond 3FP: Bioretention Pond Peak Elev=215.45' Storage=16,645 cf Inflow=10.96 cfs 1.302 af
Discarded=0.17 cfs 0.449 af Primary=7.84 cfs 0.853 af Outflow=8.01 cfs 1.302 af

Pond 3IP: 3IP Peak Elev=250.12' Storage=19,941 cf Inflow=7.13 cfs 0.881 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=2.60 cfs 0.427 af

Pond DMH1: DMH 1 Peak Elev=224.62' Inflow=10.12 cfs 1.257 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=10.12 cfs 1.257 af

Pond DMH1B: DMH 1B Peak Elev=217.62' Inflow=10.12 cfs 1.257 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=10.12 cfs 1.257 af

Total Runoff Area = 57.359 ac Runoff Volume = 10.286 af Average Runoff Depth = 2.15"
84.88% Pervious = 48.687 ac 15.12% Impervious = 8.673 ac

Summary for Subcatchment 1S: To SSF

Runoff = 6.65 cfs @ 12.31 hrs, Volume= 0.738 af, Depth= 2.76"
Routed to Pond 1P : Surface Sand Filter Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
18,458	74	>75% Grass cover, Good, HSG C
11,633	92	Paved roads w/open ditches, 50% imp, HSG C
56,566	94	Urban commercial, 85% imp, HSG C
51,634	70	Woods, Good, HSG C
1,606	98	Roofs, HSG C
139,897	82	Weighted Average
84,393		60.33% Pervious Area
55,504		39.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	50	0.0400	0.09		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
12.9	918	0.0560	1.18		**Shallow Concentrated Flow, SC to pond** Woodland Kv= 5.0 fps
22.6	968	Total			

Summary for Subcatchment 3: North Parcel area

Runoff = 37.00 cfs @ 12.92 hrs, Volume= 7.295 af, Depth= 2.08"
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
45,998	92	Paved roads w/open ditches, 50% imp, HSG C
31,535	96	Gravel surface, HSG C
17,624	74	>75% Grass cover, Good, HSG C
25,200	65	2 acre lots, 12% imp, HSG B
92,321	77	2 acre lots, 12% imp, HSG C
42,297	68	1 acre lots, 20% imp, HSG B
113,838	80	1/2 acre lots, 25% imp, HSG C
89,867	94	Urban commercial, 85% imp, HSG C
86,235	98	Water Surface, HSG D
1,218,488	70	Woods, Good, HSG C
69,455	55	Woods, Good, HSG B
1,832,858	74	Weighted Average
1,596,216		87.09% Pervious Area
236,642		12.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
2.9	266	0.0960	1.55		**Shallow Concentrated Flow, SC on slope to wetland** Woodland Kv= 5.0 fps
23.9	800	0.0125	0.56		**Shallow Concentrated Flow, SC to swamp** Woodland Kv= 5.0 fps
28.5	587	0.0047	0.34		**Shallow Concentrated Flow, SC through swamp to analysis poi** Woodland Kv= 5.0 fps
68.0	1,703	Total			

Summary for Subcatchment 3A: To Cistern Culv

Runoff = 3.70 cfs @ 12.32 hrs, Volume= 0.409 af, Depth= 2.49"
Routed to Pond 3AP : 3AP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
10,052	92	Paved roads w/open ditches, 50% imp, HSG C
51,070	80	1/2 acre lots, 25% imp, HSG C
24,505	70	Woods, Good, HSG C
85,627	79	Weighted Average
67,834		79.22% Pervious Area
17,794		20.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
8.2	477	0.0377	0.97		**Shallow Concentrated Flow, SC to lot dev area** Woodland Kv= 5.0 fps
0.3	86	0.1200	5.58		**Shallow Concentrated Flow, SC to swale** Unpaved Kv= 16.1 fps
1.2	189	0.0310	2.64		**Shallow Concentrated Flow, SC to analysis point** Grassed Waterway Kv= 15.0 fps
22.4	802	Total			

Summary for Subcatchment 3B: To Culv sta 10+00

Runoff = 4.93 cfs @ 12.37 hrs, Volume= 0.576 af, Depth= 2.08"
Routed to Pond 3BP : 3BP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
7,550	92	Paved roads w/open ditches, 50% imp, HSG C
53,529	79	1 acre lots, 20% imp, HSG C
83,745	70	Woods, Good, HSG C
144,824	74	Weighted Average
130,343		90.00% Pervious Area
14,481		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	50	0.0180	0.06		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
2.5	204	0.0730	1.35		**Shallow Concentrated Flow, SC slope to wetland** Woodland Kv= 5.0 fps
7.9	366	0.0240	0.77		**Shallow Concentrated Flow, SC to lot 42** Woodland Kv= 5.0 fps
1.1	315	0.1070	4.91		**Shallow Concentrated Flow, SC to culv** Grassed Waterway Kv= 15.0 fps
24.8	935	Total			

Summary for Subcatchment 3C: To Culv sta 6+20

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 0.128 af, Depth= 2.94"
Routed to Pond 3CP : 3CP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
15,250	89	Paved roads w/open ditches, 50% imp, HSG B
7,418	74	>75% Grass cover, Good, HSG C
22,668	84	Weighted Average
15,043		66.36% Pervious Area
7,625		33.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0350	0.12		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.00"
0.5	203	0.1870	6.49		**Shallow Concentrated Flow, SC to CB** Grassed Waterway Kv= 15.0 fps
7.3	253	Total			

Summary for Subcatchment 3D: To Culv sta 9+15

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 3.53"
Routed to Pond 3DP : 3DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
9,250	92	Paved roads w/open ditches, 50% imp, HSG C
1,257	74	>75% Grass cover, Good, HSG C
10,507	90	Weighted Average
5,882		55.98% Pervious Area
4,625		44.02% Impervious Area

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

Summary for Subcatchment 3E: To Culv sta 12+40

Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.073 af, Depth= 3.13"
Routed to Pond 3EP : CULV sta 12+40

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
8,402	92	Paved roads w/open ditches, 50% imp, HSG C
3,786	74	>75% Grass cover, Good, HSG C
12,188	86	Weighted Average
7,987		65.53% Pervious Area
4,201		34.47% Impervious Area

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

Summary for Subcatchment 3F: Direct to Bioret pond

Runoff = 1.08 cfs @ 12.18 hrs, Volume= 0.115 af, Depth= 0.92"
Routed to Pond 3FP : Bioretention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
18,488	61	>75% Grass cover, Good, HSG B
46,989	55	Woods, Good, HSG B
65,477	57	Weighted Average
65,477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0650	0.10		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
3.3	348	0.1200	1.73		**Shallow Concentrated Flow, SC on slope to pond** Woodland Kv= 5.0 fps
11.2	398	Total			

Summary for Subcatchment 3I: To CULV STA 6+90

Runoff = 7.13 cfs @ 12.39 hrs, Volume= 0.881 af, Depth= 2.49"
Routed to Pond 3IP : 3IP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
184,533	79	1 acre lots, 20% imp, HSG C
147,626		80.00% Pervious Area
36,907		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0130	0.06		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
13.7	603	0.0110	0.73		**Shallow Concentrated Flow, SC to CULV** Short Grass Pasture Kv= 7.0 fps
28.8	653	Total			

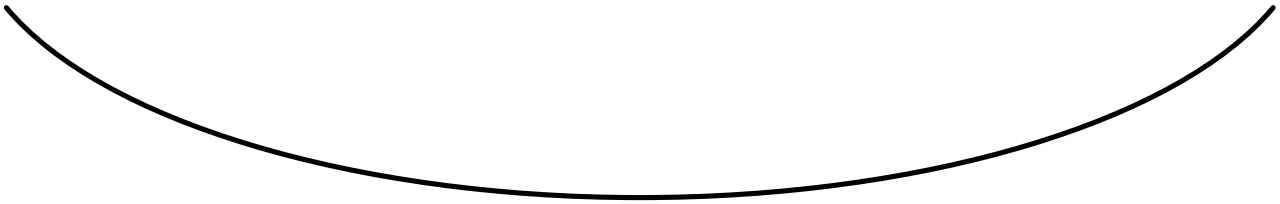
Summary for Reach 3IR: SSF THROUGH SUBCAT 3

Inflow Area = 3.212 ac, 39.67% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 26.7 sf, Capacity= 379.37 cfs

20.00' x 2.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 667.0' Slope= 0.0582 '/'
Inlet Invert= 186.00', Outlet Invert= 147.20'



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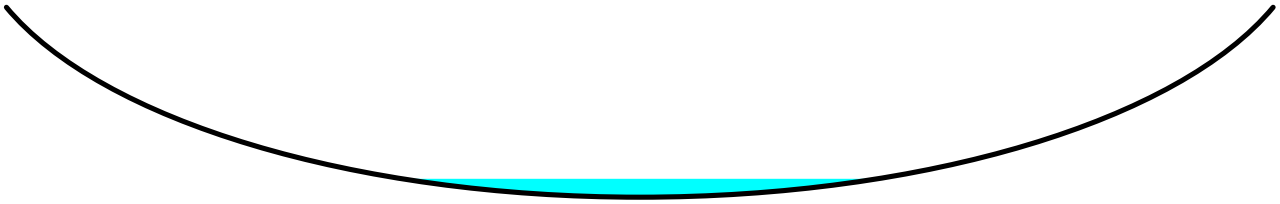
Summary for Reach 3R: Reach THROUGH SUBCAT 3)

Inflow Area = 4.236 ac, 20.00% Impervious, Inflow Depth = 1.21" for 10 YR event
Inflow = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af
Outflow = 1.14 cfs @ 14.22 hrs, Volume= 0.427 af, Atten= 56%, Lag= 76.1 min
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.98 fps, Min. Travel Time= 36.6 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 88.1 min

Peak Storage= 2,511 cf @ 13.61 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 9.24'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 185.81 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 2,144.0' Slope= 0.0433 '/'
Inlet Invert= 240.00', Outlet Invert= 147.20'



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Summary for Reach 300: Northerly Analysis Point Old Green Hill stream crossing

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 57.359 ac, 15.12% Impervious, Inflow Depth = 1.79" for 10 YR event
Inflow = 41.35 cfs @ 12.92 hrs, Volume= 8.575 af
Outflow = 41.35 cfs @ 12.92 hrs, Volume= 8.575 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1P: Surface Sand Filter Pond

Inflow Area = 3.212 ac, 39.67% Impervious, Inflow Depth = 2.76" for 10 YR event
Inflow = 6.65 cfs @ 12.31 hrs, Volume= 0.738 af
Outflow = 0.71 cfs @ 14.04 hrs, Volume= 0.738 af, Atten= 89%, Lag= 103.9 min
Discarded = 0.71 cfs @ 14.04 hrs, Volume= 0.738 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3IR : SSF THROUGH SUBCAT 3
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3IR : SSF THROUGH SUBCAT 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 195.96' @ 14.04 hrs Surf.Area= 10,259 sf Storage= 14,262 cf
Flood Elev= 197.75' Surf.Area= 12,641 sf Storage= 34,750 cf

Plug-Flow detention time= 194.0 min calculated for 0.738 af (100% of inflow)
Center-of-Mass det. time= 193.9 min (1,028.8 - 834.8)

Volume	Invert	Avail.Storage	Storage Description
#1	192.50'	34,750 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.50	9,673	0.0	0	0
193.50	9,673	40.0	3,869	3,869
195.50	9,673	30.0	5,804	9,673
196.00	10,309	100.0	4,996	14,669
197.75	12,641	100.0	20,081	34,750

Device	Routing	Invert	Outlet Devices
#1	Primary	192.00'	**12.0" Round Culvert** L= 35.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 192.00' / 186.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	197.00'	**19.0" x 19.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	197.50'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Discarded	192.50'	**2.987 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.71 cfs @ 14.04 hrs HW=195.96' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.71 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=192.50' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 0.95 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=192.50' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3AP: 3AP

Inflow Area = 1.966 ac, 20.78% Impervious, Inflow Depth = 2.49" for 10 YR event
Inflow = 3.70 cfs @ 12.32 hrs, Volume= 0.409 af
Outflow = 3.69 cfs @ 12.32 hrs, Volume= 0.409 af, Atten= 0%, Lag= 0.1 min
Primary = 3.69 cfs @ 12.32 hrs, Volume= 0.409 af
Routed to Pond 3BP : 3BP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 267.02' @ 12.32 hrs Surf.Area= 77 sf Storage= 44 cf

Plug-Flow detention time= 0.2 min calculated for 0.409 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (843.2 - 843.0)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	8	0	0
268.00	144	152	152
269.00	352	248	400

Device	Routing	Invert	Outlet Devices
#1	Primary	266.00'	**15.0" Round Culvert** L= 108.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 266.00' / 261.50' S= 0.0417 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.69 cfs @ 12.32 hrs HW=267.02' (Free Discharge)
1=Culvert (Inlet Controls 3.69 cfs @ 3.44 fps)

Summary for Pond 3BP: 3BP

Inflow Area = 5.290 ac, 14.00% Impervious, Inflow Depth = 2.23" for 10 YR event
Inflow = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af
Outflow = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af, Atten= 0%, Lag= 0.1 min
Primary = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af
Routed to Pond 3CP : 3CP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 247.44' @ 12.33 hrs Surf.Area= 105 sf Storage= 84 cf

Plug-Flow detention time= 0.2 min calculated for 0.985 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (852.4 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	246.00'	391 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
246.00	12	0	0
248.00	142	154	154
249.00	332	237	391

Device	Routing	Invert	Outlet Devices
#1	Primary	246.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 246.00' / 245.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.59 cfs @ 12.33 hrs HW=247.44' (Free Discharge)
└**1=Culvert** (Barrel Controls 8.59 cfs @ 4.98 fps)

Summary for Pond 3CP: 3CP

[79] Warning: Submerged Pond 3EP Primary device # 1 OUTLET by 0.02'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.2 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond DMH1 : DMH 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 239.53' @ 12.32 hrs Surf.Area= 288 sf Storage= 79 cf
Flood Elev= 241.00' Surf.Area= 1,480 sf Storage= 1,280 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (842.8 - 842.7)

Volume	Invert	Avail.Storage	Storage Description
#1	239.00'	3,231 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
239.00	8	0	0
240.00	536	272	272
242.00	2,423	2,959	3,231

Device	Routing	Invert	Outlet Devices
#1	Primary	234.00'	**18.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.00' / 223.00' S= 0.1571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	239.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.11 cfs @ 12.32 hrs HW=239.53' (Free Discharge)
└**1=Culvert** (Passes 10.11 cfs of 18.60 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 10.11 cfs @ 2.38 fps)

Summary for Pond 3DP: 3DP

Inflow Area = 0.241 ac, 44.02% Impervious, Inflow Depth = 3.53" for 10 YR event
Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af
Routed to Pond 3EP : CULV sta 12+40

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 259.47' @ 12.09 hrs Surf.Area= 8 sf Storage= 3 cf

Plug-Flow detention time= 0.2 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (793.5 - 793.3)

Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	422 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
259.00	6	0	0
260.00	11	9	9
262.00	151	162	171
263.00	352	252	422

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 259.00' / 257.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.96 cfs @ 12.09 hrs HW=259.46' (Free Discharge)
1=Culvert (Inlet Controls 0.96 cfs @ 2.32 fps)

Summary for Pond 3EP: CULV sta 12+40

Inflow Area = 0.521 ac, 38.89% Impervious, Inflow Depth = 3.32" for 10 YR event
Inflow = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.2 min
Primary = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af
Routed to Pond 3CP : 3CP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 240.72' @ 12.09 hrs Surf.Area= 68 sf Storage= 27 cf

Plug-Flow detention time= 0.3 min calculated for 0.144 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (800.8 - 800.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	504 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	8	0	0
242.00	174	182	182
243.00	470	322	504

Device	Routing	Invert	Outlet Devices
#1	Primary	240.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.00' / 239.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.98 cfs @ 12.09 hrs HW=240.72' (Free Discharge)
1=Culvert (Barrel Controls 1.98 cfs @ 3.92 fps)

Summary for Pond 3FB: Sed Forbay

[79] Warning: Submerged Pond DMH1B Primary device # 1 OUTLET by 0.33'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.11 cfs @ 12.33 hrs, Volume= 1.187 af, Atten= 0%, Lag= 0.5 min
Primary = 10.11 cfs @ 12.33 hrs, Volume= 1.187 af
Routed to Pond 3FP : Bioretention Pond

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 214.85' @ 12.33 hrs Surf.Area= 1,969 sf Storage= 3,512 cf
Flood Elev= 215.00' Surf.Area= 2,071 sf Storage= 3,825 cf

Plug-Flow detention time= 44.1 min calculated for 1.187 af (94% of inflow)
Center-of-Mass det. time= 14.0 min (856.8 - 842.8)

Volume	Invert	Avail.Storage	Storage Description
#1	212.00'	3,825 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.00	671	0	0
214.00	1,412	2,083	2,083
215.00	2,071	1,742	3,825

Device	Routing	Invert	Outlet Devices
#1	Primary	214.60'	**35.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=10.10 cfs @ 12.33 hrs HW=214.85' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 10.10 cfs @ 1.18 fps)

Summary for Pond 3FP: Bioretention Pond

[81] Warning: Exceeded Pond 3FB by 0.66' @ 12.61 hrs

Inflow Area = 7.835 ac, 14.28% Impervious, Inflow Depth = 1.99" for 10 YR event
Inflow = 10.96 cfs @ 12.32 hrs, Volume= 1.302 af
Outflow = 8.01 cfs @ 12.54 hrs, Volume= 1.302 af, Atten= 27%, Lag= 13.3 min
Discarded = 0.17 cfs @ 12.54 hrs, Volume= 0.449 af
Primary = 7.84 cfs @ 12.54 hrs, Volume= 0.853 af
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 215.45' @ 12.54 hrs Surf.Area= 10,843 sf Storage= 16,645 cf
Flood Elev= 216.00' Surf.Area= 11,798 sf Storage= 22,868 cf

Plug-Flow detention time= 309.3 min calculated for 1.302 af (100% of inflow)
Center-of-Mass det. time= 309.3 min (1,169.6 - 860.3)

Volume	Invert	Avail.Storage	Storage Description
#1	212.10'	22,868 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.10	9,445	0.0	0	0	9,445
213.10	9,445	40.0	3,778	3,778	9,790
214.60	9,445	30.0	4,250	8,028	10,306
216.00	11,798	100.0	14,840	22,868	12,714

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	212.10'	**0.680 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.17 cfs @ 12.54 hrs HW=215.45' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=7.84 cfs @ 12.54 hrs HW=215.45' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.84 cfs @ 1.74 fps)

Summary for Pond 3IP: 3IP

Inflow Area = 4.236 ac, 20.00% Impervious, Inflow Depth = 2.49" for 10 YR event
Inflow = 7.13 cfs @ 12.39 hrs, Volume= 0.881 af
Outflow = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af, Atten= 64%, Lag= 33.6 min
Primary = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af
Routed to Reach 3R : Reach THROUGH SUBCAT 3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 250.12' @ 12.95 hrs Surf.Area= 422 sf Storage= 19,941 cf
Flood Elev= 252.00' Surf.Area= 2,256 sf Storage= 21,783 cf

Plug-Flow detention time= 244.2 min calculated for 0.427 af (48% of inflow)
Center-of-Mass det. time= 125.5 min (974.4 - 849.0)

Volume	Invert	Avail.Storage	Storage Description
#1	149.50'	21,783 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.50	140	0	0
250.00	256	19,899	19,899
251.50	2,256	1,884	21,783

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	**24.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 249.50' / 242.00' S= 0.0798 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.25 cfs @ 12.95 hrs HW=250.12' (Free Discharge)
1=Culvert (Inlet Controls 2.25 cfs @ 2.69 fps)

Summary for Pond DMH1: DMH 1

[79] Warning: Submerged Pond 3CP Primary device # 1 OUTLET by 1.62'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.0 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond DMH1B : DMH 1B

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 224.62' @ 12.32 hrs
Flood Elev= 228.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.90'	**24.0" Round Culvert** L= 143.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 222.90' / 216.00' S= 0.0483 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.12 cfs @ 12.32 hrs HW=224.62' (Free Discharge)
1=Culvert (Inlet Controls 10.12 cfs @ 3.52 fps)

Summary for Pond DMH1B: DMH 1B

[79] Warning: Submerged Pond DMH1 Primary device # 1 OUTLET by 1.62'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.0 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond 3FB : Sed Forbay

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 217.62' @ 12.32 hrs
Flood Elev= 220.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.90'	**24.0" Round Culvert** L= 138.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 215.90' / 214.52' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.12 cfs @ 12.32 hrs HW=217.62' (Free Discharge)
1=Culvert (Inlet Controls 10.12 cfs @ 3.52 fps)

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 1S: To SSF Runoff Area=139,897 sf 39.67% Impervious Runoff Depth=4.92"
Flow Length=968' Tc=22.6 min CN=82 Runoff=11.71 cfs 1.316 af

Subcatchment 3: North Parcel area Runoff Area=1,832,858 sf 12.91% Impervious Runoff Depth=4.04"
Flow Length=1,703' Tc=68.0 min CN=74 Runoff=73.04 cfs 14.173 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=4.58"
Flow Length=802' Tc=22.4 min CN=79 Runoff=6.76 cfs 0.751 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=4.04"
Flow Length=935' Tc=24.8 min CN=74 Runoff=9.69 cfs 1.120 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=5.14"
Flow Length=253' Tc=7.3 min CN=84 Runoff=2.93 cfs 0.223 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=5.82"
Tc=6.0 min CN=90 Runoff=1.55 cfs 0.117 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=86 Runoff=1.70 cfs 0.125 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=2.31"
Flow Length=398' Tc=11.2 min CN=57 Runoff=3.24 cfs 0.290 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=4.58"
Flow Length=653' Tc=28.8 min CN=79 Runoff=13.08 cfs 1.618 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.12' Max Vel=2.22 fps Inflow=0.89 cfs 0.101 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=0.87 cfs 0.101 af

Reach 3R: Reach THROUGH SUBCAT Avg. Flow Depth=0.46' Max Vel=1.75 fps Inflow=12.42 cfs 1.165 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=7.69 cfs 1.165 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=86.47 cfs 17.522 af
Outflow=86.47 cfs 17.522 af

Pond 1P: Surface Sand Filter Pond Peak Elev=197.12' Storage=27,075 cf Inflow=11.71 cfs 1.316 af
Discarded=0.82 cfs 1.215 af Primary=0.89 cfs 0.101 af Secondary=0.00 cfs 0.000 af Outflow=1.70 cfs 1.316 af

Pond 3AP: 3AP Peak Elev=267.93' Storage=142 cf Inflow=6.76 cfs 0.751 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=6.75 cfs 0.751 af

Pond 3BP: 3BP Peak Elev=248.27' Storage=200 cf Inflow=16.42 cfs 1.871 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=16.41 cfs 1.871 af

Pond 3CP: 3CP Peak Elev=239.96' Storage=251 cf Inflow=18.90 cfs 2.336 af
Outflow=18.87 cfs 2.336 af

Pond 3DP: 3DP Peak Elev=259.60' Storage=5 cf Inflow=1.55 cfs 0.117 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=1.55 cfs 0.117 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.98' Storage=48 cf Inflow=3.26 cfs 0.242 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=3.25 cfs 0.242 af

Pond 3FB: Sed Forbay Peak Elev=214.96' Storage=3,747 cf Inflow=18.87 cfs 2.336 af
Outflow=18.86 cfs 2.266 af

Pond 3FP: Bioretention Pond Peak Elev=215.82' Storage=20,756 cf Inflow=21.06 cfs 2.556 af
Discarded=0.18 cfs 0.472 af Primary=19.92 cfs 2.084 af Outflow=20.10 cfs 2.556 af

Pond 3IP: 3IP Peak Elev=251.21' Storage=21,179 cf Inflow=13.08 cfs 1.618 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=12.42 cfs 1.165 af

Pond DMH1: DMH 1 Peak Elev=226.40' Inflow=18.87 cfs 2.336 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=18.87 cfs 2.336 af

Pond DMH1B: DMH 1B Peak Elev=219.40' Inflow=18.87 cfs 2.336 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=18.87 cfs 2.336 af

Total Runoff Area = 57.359 ac Runoff Volume = 19.733 af Average Runoff Depth = 4.13"
84.88% Pervious = 48.687 ac 15.12% Impervious = 8.673 ac

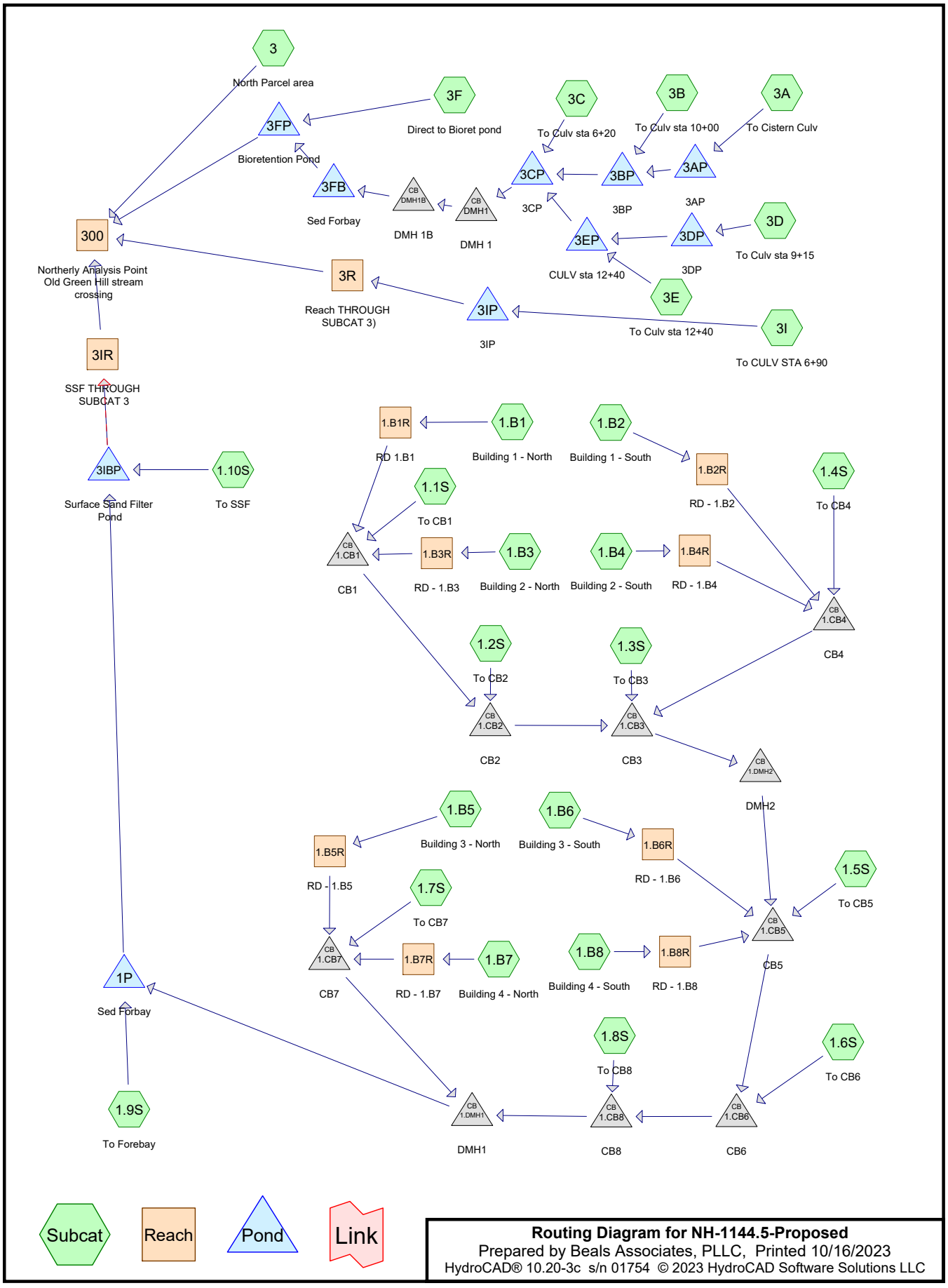
Appendix II

Proposed Conditions Analysis

2-Year 24-Hour Summary

10-Year 24-Hour Complete

50-Year 24-Hour Summary



Routing Diagram for NH-1144.5-Proposed
Prepared by Beals Associates, PLLC, Printed 10/16/2023
HydroCAD® 10.20-3c s/n 01754 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.971	68	1 acre lots, 20% imp, HSG B (3)
5.465	79	1 acre lots, 20% imp, HSG C (3B, 3I)
3.786	80	1/2 acre lots, 25% imp, HSG C (3, 3A)
0.579	65	2 acre lots, 12% imp, HSG B (3)
2.119	77	2 acre lots, 12% imp, HSG C (3)
0.424	61	>75% Grass cover, Good, HSG B (3F)
3.456	74	>75% Grass cover, Good, HSG C (1.10S, 1.1S, 1.4S, 1.5S, 1.6S, 1.7S, 1.9S, 3, 3C, 3D, 3E)
0.724	96	Gravel surface, HSG C (3)
1.194	98	Paved parking, HSG C (1.1S, 1.2S, 1.3S, 1.4S, 1.5S, 1.6S, 1.7S, 1.8S)
0.350	89	Paved roads w/open ditches, 50% imp, HSG B (3C)
2.295	92	Paved roads w/open ditches, 50% imp, HSG C (1.10S, 3, 3A, 3B, 3D, 3E)
0.621	98	Roofs, HSG C (1.4S, 1.B1, 1.B2, 1.B3, 1.B4, 1.B5, 1.B6, 1.B7, 1.B8)
0.292	94	Urban commercial, 85% imp, HSG C (3)
1.980	98	Water Surface, HSG D (3)
2.673	55	Woods, Good, HSG B (3, 3F)
30.431	70	Woods, Good, HSG C (1.10S, 1.4S, 3, 3A, 3B)
57.359	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
4.997	HSG B	3, 3C, 3F
50.383	HSG C	1.10S, 1.1S, 1.2S, 1.3S, 1.4S, 1.5S, 1.6S, 1.7S, 1.8S, 1.9S, 1.B1, 1.B2, 1.B3, 1.B4, 1.B5, 1.B6, 1.B7, 1.B8, 3, 3A, 3B, 3C, 3D, 3E, 3I
1.980	HSG D	3
0.000	Other	
57.359		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchr Numbers
0.000	0.971	5.465	0.000	0.000	6.436	1 acre lots, 20% imp	
0.000	0.000	3.786	0.000	0.000	3.786	1/2 acre lots, 25% imp	
0.000	0.579	2.119	0.000	0.000	2.698	2 acre lots, 12% imp	
0.000	0.424	3.456	0.000	0.000	3.880	>75% Grass cover, Good	
0.000	0.000	0.724	0.000	0.000	0.724	Gravel surface	
0.000	0.000	1.194	0.000	0.000	1.194	Paved parking	
0.000	0.350	2.295	0.000	0.000	2.645	Paved roads w/open ditches, 50% imp	
0.000	0.000	0.621	0.000	0.000	0.621	Roofs	
0.000	0.000	0.292	0.000	0.000	0.292	Urban commercial, 85% imp	
0.000	0.000	0.000	1.980	0.000	1.980	Water Surface	
0.000	2.673	30.431	0.000	0.000	33.104	Woods, Good	
0.000	**4.997**	**50.383**	**1.980**	**0.000**	**57.359**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.10S: To SSF Runoff Area=75,595 sf 12.39% Impervious Runoff Depth=1.19"
Flow Length=755' Tc=21.3 min CN=78 Runoff=1.54 cfs 0.172 af

Subcatchment 1.1S: To CB1 Runoff Area=5,795 sf 90.72% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=96 Runoff=0.38 cfs 0.029 af

Subcatchment 1.2S: To CB2 Runoff Area=6,143 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 1.3S: To CB3 Runoff Area=4,619 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.32 cfs 0.025 af

Subcatchment 1.4S: To CB4 Runoff Area=32,490 sf 24.80% Impervious Runoff Depth=1.25"
Flow Length=302' Tc=22.1 min CN=79 Runoff=0.69 cfs 0.078 af

Subcatchment 1.5S: To CB5 Runoff Area=11,332 sf 59.33% Impervious Runoff Depth=1.89"
Flow Length=139' Tc=11.4 min CN=88 Runoff=0.48 cfs 0.041 af

Subcatchment 1.6S: To CB6 Runoff Area=24,629 sf 48.87% Impervious Runoff Depth=1.73"
Flow Length=246' Tc=18.8 min CN=86 Runoff=0.79 cfs 0.082 af

Subcatchment 1.7S: To CB7 Runoff Area=5,669 sf 90.51% Impervious Runoff Depth=2.63"
Tc=6.0 min CN=96 Runoff=0.37 cfs 0.029 af

Subcatchment 1.8S: To CB8 Runoff Area=5,647 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.031 af

Subcatchment 1.9S: To Forebay Runoff Area=13,764 sf 0.00% Impervious Runoff Depth=0.96"
Flow Length=206' Tc=32.4 min CN=74 Runoff=0.18 cfs 0.025 af

Subcatchment 1.B1: Building 1 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 1.B2: Building 1 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 1.B3: Building 2 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B4: Building 2 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B5: Building 3 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 1.B6: Building 3 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.17 cfs 0.014 af

Subcatchment 1.B7: Building 4 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B8: Building 4 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=2.85"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 3: North Parcel area Runoff Area=1,761,631 sf 9.71% Impervious Runoff Depth=0.91"
Flow Length=1,703' Tc=68.0 min CN=73 Runoff=14.35 cfs 3.056 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=1.25"
Flow Length=802' Tc=22.4 min CN=79 Runoff=1.81 cfs 0.204 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=0.96"
Flow Length=935' Tc=24.8 min CN=74 Runoff=2.15 cfs 0.266 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=1.58"
Flow Length=253' Tc=7.3 min CN=84 Runoff=0.92 cfs 0.069 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=2.06"
Tc=6.0 min CN=90 Runoff=0.58 cfs 0.041 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=1.73"
Tc=6.0 min CN=86 Runoff=0.57 cfs 0.040 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=398' Tc=11.2 min CN=57 Runoff=0.17 cfs 0.034 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=1.25"
Flow Length=653' Tc=28.8 min CN=79 Runoff=3.49 cfs 0.440 af

Reach 1.B1R: RD 1.B1 Avg. Flow Depth=0.15' Max Vel=3.41 fps Inflow=0.17 cfs 0.014 af
6.0" Round Pipe n=0.012 L=75.0' S=0.0200 '/' Capacity=0.86 cfs Outflow=0.17 cfs 0.014 af

Reach 1.B2R: RD - 1.B2 Avg. Flow Depth=0.17' Max Vel=2.97 fps Inflow=0.17 cfs 0.014 af
6.0" Round Pipe n=0.012 L=66.0' S=0.0136 '/' Capacity=0.71 cfs Outflow=0.17 cfs 0.014 af

Reach 1.B3R: RD - 1.B3 Avg. Flow Depth=0.15' Max Vel=5.36 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0500 '/' Capacity=1.36 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B4R: RD - 1.B4 Avg. Flow Depth=0.19' Max Vel=3.76 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=8.0' S=0.0188 '/' Capacity=0.83 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B5R: RD - 1.B5 Avg. Flow Depth=0.20' Max Vel=2.36 fps Inflow=0.17 cfs 0.014 af
6.0" Round Pipe n=0.012 L=69.0' S=0.0072 '/' Capacity=0.52 cfs Outflow=0.17 cfs 0.014 af

Reach 1.B6R: RD - 1.B6 Avg. Flow Depth=0.18' Max Vel=2.67 fps Inflow=0.17 cfs 0.014 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.17 cfs 0.014 af

Reach 1.B7R: RD - 1.B7 Avg. Flow Depth=0.20' Max Vel=3.61 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0167 '/' Capacity=0.78 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B8R: RD - 1.B8 Avg. Flow Depth=0.23' Max Vel=3.00 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.26 cfs 0.021 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: Reach THROUGH SUBCAT 3) Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=0.00 cfs 0.000 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=14.35 cfs 3.208 af
Outflow=14.35 cfs 3.208 af

Pond 1.CB1: CB1 Peak Elev=225.89' Inflow=0.82 cfs 0.064 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0173 '/' Outflow=0.82 cfs 0.064 af

Pond 1.CB2: CB2 Peak Elev=224.03' Inflow=1.24 cfs 0.097 af
12.0" Round Culvert n=0.013 L=97.0' S=0.0149 '/' Outflow=1.24 cfs 0.097 af

Pond 1.CB3: CB3 Peak Elev=220.75' Inflow=2.31 cfs 0.235 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0800 '/' Outflow=2.31 cfs 0.235 af

Pond 1.CB4: CB4 Peak Elev=226.01' Inflow=0.86 cfs 0.112 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0615 '/' Outflow=0.86 cfs 0.112 af

Pond 1.CB5: CB5 Peak Elev=208.30' Inflow=3.16 cfs 0.310 af
18.0" Round Culvert n=0.013 L=103.0' S=0.0097 '/' Outflow=3.16 cfs 0.310 af

Pond 1.CB6: CB6 Peak Elev=207.28' Inflow=3.66 cfs 0.392 af
18.0" Round Culvert n=0.013 L=101.0' S=0.0198 '/' Outflow=3.66 cfs 0.392 af

Pond 1.CB7: CB7 Peak Elev=204.99' Inflow=0.81 cfs 0.063 af
12.0" Round Culvert n=0.013 L=66.0' S=0.1076 '/' Outflow=0.81 cfs 0.063 af

Pond 1.CB8: CB8 Peak Elev=200.02' Inflow=4.03 cfs 0.423 af
24.0" Round Culvert n=0.013 L=52.0' S=0.0327 '/' Outflow=4.03 cfs 0.423 af

Pond 1.DMH1: DMH1 Peak Elev=198.43' Inflow=4.83 cfs 0.486 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0048 '/' Outflow=4.83 cfs 0.486 af

Pond 1.DMH2: DMH2 Peak Elev=216.17' Inflow=2.31 cfs 0.235 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0776 '/' Outflow=2.31 cfs 0.235 af

Pond 1P: Sed Forbay Peak Elev=197.61' Storage=4,695 cf Inflow=4.88 cfs 0.511 af
Outflow=4.59 cfs 0.511 af

Pond 3AP: 3AP Peak Elev=266.66' Storage=20 cf Inflow=1.81 cfs 0.204 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=1.81 cfs 0.204 af

Pond 3BP: 3BP Peak Elev=246.90' Storage=37 cf Inflow=3.93 cfs 0.470 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=3.93 cfs 0.470 af

Pond 3CP: 3CP Peak Elev=239.32' Storage=30 cf Inflow=4.79 cfs 0.620 af
Outflow=4.79 cfs 0.620 af

Pond 3DP: 3DP Peak Elev=259.35' Storage=2 cf Inflow=0.58 cfs 0.041 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=0.58 cfs 0.041 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.52' Storage=15 cf Inflow=1.14 cfs 0.082 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=1.14 cfs 0.082 af

Pond 3FB: Sed Forbay Peak Elev=214.75' Storage=3,328 cf Inflow=4.79 cfs 0.620 af
Outflow=4.79 cfs 0.550 af

Pond 3FP: Bioretention Pond Peak Elev=215.08' Storage=12,747 cf Inflow=4.96 cfs 0.584 af
Discarded=0.16 cfs 0.433 af Primary=0.58 cfs 0.151 af Outflow=0.74 cfs 0.584 af

Pond 3IBP: Surface Sand Filter Pond Peak Elev=195.22' Storage=10,783 cf Inflow=5.62 cfs 0.682 af
Discarded=0.81 cfs 0.682 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.81 cfs 0.682 af

Pond 3IP: 3IP Peak Elev=247.17' Storage=19,180 cf Inflow=3.49 cfs 0.440 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=0.00 cfs 0.000 af

Pond DMH1: DMH 1 Peak Elev=223.97' Inflow=4.79 cfs 0.620 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=4.79 cfs 0.620 af

Pond DMH1B: DMH 1B Peak Elev=216.97' Inflow=4.79 cfs 0.620 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=4.79 cfs 0.620 af

Total Runoff Area = 57.359 ac Runoff Volume = 4.834 af Average Runoff Depth = 1.01"
86.19% Pervious = 49.437 ac 13.81% Impervious = 7.923 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.10S: To SSF Runoff Area=75,595 sf 12.39% Impervious Runoff Depth=2.41"
Flow Length=755' Tc=21.3 min CN=78 Runoff=3.21 cfs 0.348 af

Subcatchment 1.1S: To CB1 Runoff Area=5,795 sf 90.72% Impervious Runoff Depth=4.17"
Tc=6.0 min CN=96 Runoff=0.59 cfs 0.046 af

Subcatchment 1.2S: To CB2 Runoff Area=6,143 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.64 cfs 0.052 af

Subcatchment 1.3S: To CB3 Runoff Area=4,619 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.48 cfs 0.039 af

Subcatchment 1.4S: To CB4 Runoff Area=32,490 sf 24.80% Impervious Runoff Depth=2.49"
Flow Length=302' Tc=22.1 min CN=79 Runoff=1.41 cfs 0.155 af

Subcatchment 1.5S: To CB5 Runoff Area=11,332 sf 59.33% Impervious Runoff Depth=3.33"
Flow Length=139' Tc=11.4 min CN=88 Runoff=0.84 cfs 0.072 af

Subcatchment 1.6S: To CB6 Runoff Area=24,629 sf 48.87% Impervious Runoff Depth=3.13"
Flow Length=246' Tc=18.8 min CN=86 Runoff=1.43 cfs 0.148 af

Subcatchment 1.7S: To CB7 Runoff Area=5,669 sf 90.51% Impervious Runoff Depth=4.17"
Tc=6.0 min CN=96 Runoff=0.58 cfs 0.045 af

Subcatchment 1.8S: To CB8 Runoff Area=5,647 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.59 cfs 0.048 af

Subcatchment 1.9S: To Forebay Runoff Area=13,764 sf 0.00% Impervious Runoff Depth=2.08"
Flow Length=206' Tc=32.4 min CN=74 Runoff=0.42 cfs 0.055 af

Subcatchment 1.B1: Building 1 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B2: Building 1 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B3: Building 2 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.033 af

Subcatchment 1.B4: Building 2 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.033 af

Subcatchment 1.B5: Building 3 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B6: Building 3 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.26 cfs 0.021 af

Subcatchment 1.B7: Building 4 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.033 af

Subcatchment 1.B8: Building 4 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=4.40"
Tc=6.0 min CN=98 Runoff=0.40 cfs 0.033 af

Subcatchment 3: North Parcel area Runoff Area=1,761,631 sf 9.71% Impervious Runoff Depth=2.00"
Flow Length=1,703' Tc=68.0 min CN=73 Runoff=34.06 cfs 6.747 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=2.49"
Flow Length=802' Tc=22.4 min CN=79 Runoff=3.70 cfs 0.409 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=2.08"
Flow Length=935' Tc=24.8 min CN=74 Runoff=4.93 cfs 0.576 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=2.94"
Flow Length=253' Tc=7.3 min CN=84 Runoff=1.71 cfs 0.128 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=3.53"
Tc=6.0 min CN=90 Runoff=0.97 cfs 0.071 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=3.13"
Tc=6.0 min CN=86 Runoff=1.02 cfs 0.073 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=0.92"
Flow Length=398' Tc=11.2 min CN=57 Runoff=1.08 cfs 0.115 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=2.49"
Flow Length=653' Tc=28.8 min CN=79 Runoff=7.13 cfs 0.881 af

Reach 1.B1R: RD 1.B1 Avg. Flow Depth=0.19' Max Vel=3.83 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=75.0' S=0.0200 '/' Capacity=0.86 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B2R: RD - 1.B2 Avg. Flow Depth=0.21' Max Vel=3.33 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=66.0' S=0.0136 '/' Capacity=0.71 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B3R: RD - 1.B3 Avg. Flow Depth=0.19' Max Vel=6.03 fps Inflow=0.40 cfs 0.033 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0500 '/' Capacity=1.36 cfs Outflow=0.40 cfs 0.033 af

Reach 1.B4R: RD - 1.B4 Avg. Flow Depth=0.25' Max Vel=4.20 fps Inflow=0.40 cfs 0.033 af
6.0" Round Pipe n=0.012 L=8.0' S=0.0188 '/' Capacity=0.83 cfs Outflow=0.40 cfs 0.033 af

Reach 1.B5R: RD - 1.B5 Avg. Flow Depth=0.25' Max Vel=2.64 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=69.0' S=0.0072 '/' Capacity=0.52 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B6R: RD - 1.B6 Avg. Flow Depth=0.23' Max Vel=2.99 fps Inflow=0.26 cfs 0.021 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.26 cfs 0.021 af

Reach 1.B7R: RD - 1.B7 Avg. Flow Depth=0.25' Max Vel=4.02 fps Inflow=0.40 cfs 0.033 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0167 '/' Capacity=0.78 cfs Outflow=0.40 cfs 0.033 af

Reach 1.B8R: RD - 1.B8 Avg. Flow Depth=0.30' Max Vel=3.32 fps Inflow=0.40 cfs 0.033 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.40 cfs 0.033 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=0.00 cfs 0.000 af

Reach 3R: Reach THROUGH SUBCAT 3) Avg. Flow Depth=0.19' Max Vel=0.98 fps Inflow=2.60 cfs 0.427 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=1.14 cfs 0.427 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=38.40 cfs 8.026 af
Outflow=38.40 cfs 8.026 af

Pond 1.CB1: CB1 Peak Elev=226.03' Inflow=1.25 cfs 0.100 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0173 '/' Outflow=1.25 cfs 0.100 af

Pond 1.CB2: CB2 Peak Elev=224.23' Inflow=1.89 cfs 0.152 af
12.0" Round Culvert n=0.013 L=97.0' S=0.0149 '/' Outflow=1.89 cfs 0.152 af

Pond 1.CB3: CB3 Peak Elev=221.00' Inflow=3.76 cfs 0.399 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0800 '/' Outflow=3.76 cfs 0.399 af

Pond 1.CB4: CB4 Peak Elev=226.26' Inflow=1.68 cfs 0.209 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0615 '/' Outflow=1.68 cfs 0.209 af

Pond 1.CB5: CB5 Peak Elev=208.63' Inflow=5.15 cfs 0.525 af
18.0" Round Culvert n=0.013 L=103.0' S=0.0097 '/' Outflow=5.15 cfs 0.525 af

Pond 1.CB6: CB6 Peak Elev=207.70' Inflow=6.10 cfs 0.672 af
18.0" Round Culvert n=0.013 L=101.0' S=0.0198 '/' Outflow=6.10 cfs 0.672 af

Pond 1.CB7: CB7 Peak Elev=205.13' Inflow=1.24 cfs 0.099 af
12.0" Round Culvert n=0.013 L=66.0' S=0.1076 '/' Outflow=1.24 cfs 0.099 af

Pond 1.CB8: CB8 Peak Elev=200.32' Inflow=6.66 cfs 0.720 af
24.0" Round Culvert n=0.013 L=52.0' S=0.0327 '/' Outflow=6.66 cfs 0.720 af

Pond 1.DMH1: DMH1 Peak Elev=198.82' Inflow=7.88 cfs 0.819 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0048 '/' Outflow=7.88 cfs 0.819 af

Pond 1.DMH2: DMH2 Peak Elev=216.42' Inflow=3.76 cfs 0.399 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0776 '/' Outflow=3.76 cfs 0.399 af

Pond 1P: Sed Forbay Peak Elev=197.76' Storage=5,091 cf Inflow=8.03 cfs 0.874 af
Outflow=7.67 cfs 0.874 af

Pond 3AP: 3AP Peak Elev=267.02' Storage=44 cf Inflow=3.70 cfs 0.409 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=3.69 cfs 0.409 af

Pond 3BP: 3BP Peak Elev=247.44' Storage=84 cf Inflow=8.59 cfs 0.985 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=8.59 cfs 0.985 af

Pond 3CP: 3CP Peak Elev=239.53' Storage=79 cf Inflow=10.12 cfs 1.257 af
Outflow=10.12 cfs 1.257 af

Pond 3DP: 3DP Peak Elev=259.47' Storage=3 cf Inflow=0.97 cfs 0.071 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=0.97 cfs 0.071 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.72' Storage=27 cf Inflow=1.98 cfs 0.144 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=1.98 cfs 0.144 af

Pond 3FB: Sed Forbay Peak Elev=214.85' Storage=3,512 cf Inflow=10.12 cfs 1.257 af
Outflow=10.11 cfs 1.187 af

Pond 3FP: Bioretention Pond Peak Elev=215.45' Storage=16,645 cf Inflow=10.96 cfs 1.302 af
Discarded=0.17 cfs 0.449 af Primary=7.84 cfs 0.853 af Outflow=8.01 cfs 1.302 af

Pond 3IBP: Surface Sand Filter Pond Peak Elev=196.52' Storage=24,612 cf Inflow=9.99 cfs 1.222 af
Discarded=0.93 cfs 1.222 af Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.93 cfs 1.222 af

Pond 3IP: 3IP Peak Elev=250.12' Storage=19,941 cf Inflow=7.13 cfs 0.881 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=2.60 cfs 0.427 af

Pond DMH1: DMH 1 Peak Elev=224.62' Inflow=10.12 cfs 1.257 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=10.12 cfs 1.257 af

Pond DMH1B: DMH 1B Peak Elev=217.62' Inflow=10.12 cfs 1.257 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=10.12 cfs 1.257 af

Total Runoff Area = 57.359 ac Runoff Volume = 10.221 af Average Runoff Depth = 2.14"
86.19% Pervious = 49.437 ac 13.81% Impervious = 7.923 ac

Summary for Subcatchment 1.10S: To SSF

Runoff = 3.21 cfs @ 12.29 hrs, Volume= 0.348 af, Depth= 2.41"
Routed to Pond 3IBP : Surface Sand Filter Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
52,469	74	>75% Grass cover, Good, HSG C
4,393	70	Woods, Good, HSG C
18,733	92	Paved roads w/open ditches, 50% imp, HSG C
75,595	78	Weighted Average
66,229		87.61% Pervious Area
9,367		12.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0210	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	139	0.1150	2.37		**Shallow Concentrated Flow, Grass flow** Short Grass Pasture Kv= 7.0 fps
2.3	155	0.0520	1.14		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
5.5	411	0.0320	1.25		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.3	755	Total			

Summary for Subcatchment 1.1S: To CB1

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 0.046 af, Depth= 4.17"
Routed to Pond 1.CB1 : CB1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
538	74	>75% Grass cover, Good, HSG C
5,257	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
5,795	96	Weighted Average
538		9.28% Pervious Area
5,257		90.72% Impervious Area

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

Summary for Subcatchment 1.2S: To CB2

Runoff = 0.64 cfs @ 12.08 hrs, Volume= 0.052 af, Depth= 4.40"
Routed to Pond 1.CB2 : CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
0	74	>75% Grass cover, Good, HSG C
6,143	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
6,143	98	Weighted Average
6,143		100.00% Impervious Area

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

Summary for Subcatchment 1.3S: To CB3

Runoff = 0.48 cfs @ 12.08 hrs, Volume= 0.039 af, Depth= 4.40"
Routed to Pond 1.CB3 : CB3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
0	74	>75% Grass cover, Good, HSG C
4,619	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
4,619	98	Weighted Average
4,619		100.00% Impervious Area

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

Summary for Subcatchment 1.4S: To CB4

Runoff = 1.41 cfs @ 12.30 hrs, Volume= 0.155 af, Depth= 2.49"
Routed to Pond 1.CB4 : CB4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

	Area (sf)	CN	Description
*	18,365	74	>75% Grass cover, Good, HSG C
	6,451	98	Paved parking, HSG C
	6,068	70	Woods, Good, HSG C
	1,606	98	Roofs, HSG C
	32,490	79	Weighted Average
	24,433		75.20% Pervious Area
	8,057		24.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	40	0.0500	0.09		**Sheet Flow, pl** Woods: Light underbrush n= 0.400 P2= 3.00"
14.4	201	0.0850	0.23		**Sheet Flow, SC TO PAVE** Grass: Dense n= 0.240 P2= 3.00"
0.3	61	0.0330	3.69		**Shallow Concentrated Flow, PARKING LOT TO CB** Paved Kv= 20.3 fps
22.1	302	Total			

Summary for Subcatchment 1.5S: To CB5

Runoff = 0.84 cfs @ 12.15 hrs, Volume= 0.072 af, Depth= 3.33"
Routed to Pond 1.CB5 : CB5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

	Area (sf)	CN	Description
*	4,609	74	>75% Grass cover, Good, HSG C
	6,723	98	Paved parking, HSG C
	0	70	Woods, Good, HSG C
	0	98	Roofs, HSG C
	11,332	88	Weighted Average
	4,609		40.67% Pervious Area
	6,723		59.33% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.1400	0.21		**Sheet Flow, pl** Grass: Dense n= 0.240 P2= 3.00"
7.4	61	0.0410	0.14		**Sheet Flow, SC TO PAVE** Grass: Dense n= 0.240 P2= 3.00"
0.1	28	0.0350	3.80		**Shallow Concentrated Flow, PARKING LOT TO CB** Paved Kv= 20.3 fps
11.4	139	Total			

Summary for Subcatchment 1.6S: To CB6

Runoff = 1.43 cfs @ 12.26 hrs, Volume= 0.148 af, Depth= 3.13"
Routed to Pond 1.CB6 : CB6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

	Area (sf)	CN	Description
*	12,592	74	>75% Grass cover, Good, HSG C
	12,037	98	Paved parking, HSG C
	0	70	Woods, Good, HSG C
	0	98	Roofs, HSG C
	24,629	86	Weighted Average
	12,592		51.13% Pervious Area
	12,037		48.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.1100	0.13		**Sheet Flow, pl** Woods: Light underbrush n= 0.400 P2= 3.00"
12.3	168	0.0890	0.23		**Sheet Flow, SC TO PAVE** Grass: Dense n= 0.240 P2= 3.00"
0.1	28	0.0350	3.80		**Shallow Concentrated Flow, PARKING LOT TO CB** Paved Kv= 20.3 fps
18.8	246	Total			

Summary for Subcatchment 1.7S: To CB7

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.045 af, Depth= 4.17"
Routed to Pond 1.CB7 : CB7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
538	74	>75% Grass cover, Good, HSG C
5,131	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
5,669	96	Weighted Average
538		9.49% Pervious Area
5,131		90.51% Impervious Area

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

Summary for Subcatchment 1.8S: To CB8

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 0.048 af, Depth= 4.40"
Routed to Pond 1.CB8 : CB8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
0	74	>75% Grass cover, Good, HSG C
5,647	98	Paved parking, HSG C
0	70	Woods, Good, HSG C
5,647	98	Weighted Average
5,647		100.00% Impervious Area

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

Summary for Subcatchment 1.9S: To Forebay

Runoff = 0.42 cfs @ 12.46 hrs, Volume= 0.055 af, Depth= 2.08"
Routed to Pond 1P : Sed Forbay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

	Area (sf)	CN	Description
*	13,764	74	>75% Grass cover, Good, HSG C
	0	98	Paved parking, HSG C
	0	70	Woods, Good, HSG C
	0	98	Roofs, HSG C
	13,764	74	Weighted Average
	13,764		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	50	0.1400	0.21		**Sheet Flow, pl** Grass: Dense n= 0.240 P2= 3.00"
28.5	156	0.0260	0.09		**Sheet Flow, to Forebay** Woods: Light underbrush n= 0.400 P2= 3.00"
32.4	206	Total			

Summary for Subcatchment 1.B1: Building 1 - North

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 4.40"
Routed to Reach 1.B1R : RD 1.B1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
2,496	98	Roofs, HSG C
2,496		100.00% Impervious Area

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

Summary for Subcatchment 1.B2: Building 1 - South

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 4.40"
Routed to Reach 1.B2R : RD - 1.B2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
2,496	98	Roofs, HSG C
2,496		100.00% Impervious Area

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

Summary for Subcatchment 1.B3: Building 2 - North

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 4.40"
Routed to Reach 1.B3R : RD - 1.B3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
3,864	98	Roofs, HSG C
3,864		100.00% Impervious Area

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

Summary for Subcatchment 1.B4: Building 2 - South

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 4.40"
Routed to Reach 1.B4R : RD - 1.B4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
3,864	98	Roofs, HSG C
3,864		100.00% Impervious Area

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

Summary for Subcatchment 1.B5: Building 3 - North

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 4.40"
Routed to Reach 1.B5R : RD - 1.B5

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
2,496	98	Roofs, HSG C
2,496		100.00% Impervious Area

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

Summary for Subcatchment 1.B6: Building 3 - South

Runoff = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af, Depth= 4.40"
Routed to Reach 1.B6R : RD - 1.B6

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
2,496	98	Roofs, HSG C
2,496		100.00% Impervious Area

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

Summary for Subcatchment 1.B7: Building 4 - North

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 4.40"
Routed to Reach 1.B7R : RD - 1.B7

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
3,864	98	Roofs, HSG C
3,864		100.00% Impervious Area

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

Summary for Subcatchment 1.B8: Building 4 - South

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af, Depth= 4.40"
Routed to Reach 1.B8R : RD - 1.B8

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
3,864	98	Roofs, HSG C
3,864		100.00% Impervious Area

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

Summary for Subcatchment 3: North Parcel area

Runoff = 34.06 cfs @ 12.92 hrs, Volume= 6.747 af, Depth= 2.00"
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
45,998	92	Paved roads w/open ditches, 50% imp, HSG C
31,535	96	Gravel surface, HSG C
35,187	74	>75% Grass cover, Good, HSG C
25,200	65	2 acre lots, 12% imp, HSG B
92,321	77	2 acre lots, 12% imp, HSG C
42,297	68	1 acre lots, 20% imp, HSG B
113,838	80	1/2 acre lots, 25% imp, HSG C
12,722	94	Urban commercial, 85% imp, HSG C
86,235	98	Water Surface, HSG D
1,206,843	70	Woods, Good, HSG C
69,455	55	Woods, Good, HSG B
1,761,631	73	Weighted Average
1,590,562		90.29% Pervious Area
171,069		9.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
2.9	266	0.0960	1.55		**Shallow Concentrated Flow, SC on slope to wetland** Woodland Kv= 5.0 fps
23.9	800	0.0125	0.56		**Shallow Concentrated Flow, SC to swamp** Woodland Kv= 5.0 fps
28.5	587	0.0047	0.34		**Shallow Concentrated Flow, SC through swamp to analysis poi** Woodland Kv= 5.0 fps
68.0	1,703	Total			

Summary for Subcatchment 3A: To Cistern Culv

Runoff = 3.70 cfs @ 12.32 hrs, Volume= 0.409 af, Depth= 2.49"
Routed to Pond 3AP : 3AP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
10,052	92	Paved roads w/open ditches, 50% imp, HSG C
51,070	80	1/2 acre lots, 25% imp, HSG C
24,505	70	Woods, Good, HSG C
85,627	79	Weighted Average
67,834		79.22% Pervious Area
17,794		20.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	50	0.0200	0.07		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
8.2	477	0.0377	0.97		**Shallow Concentrated Flow, SC to lot dev area** Woodland Kv= 5.0 fps
0.3	86	0.1200	5.58		**Shallow Concentrated Flow, SC to swale** Unpaved Kv= 16.1 fps
1.2	189	0.0310	2.64		**Shallow Concentrated Flow, SC to analysis point** Grassed Waterway Kv= 15.0 fps
22.4	802	Total			

Summary for Subcatchment 3B: To Culv sta 10+00

Runoff = 4.93 cfs @ 12.37 hrs, Volume= 0.576 af, Depth= 2.08"
Routed to Pond 3BP : 3BP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
7,550	92	Paved roads w/open ditches, 50% imp, HSG C
53,529	79	1 acre lots, 20% imp, HSG C
83,745	70	Woods, Good, HSG C
144,824	74	Weighted Average
130,343		90.00% Pervious Area
14,481		10.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.3	50	0.0180	0.06		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
2.5	204	0.0730	1.35		**Shallow Concentrated Flow, SC slope to wetland** Woodland Kv= 5.0 fps
7.9	366	0.0240	0.77		**Shallow Concentrated Flow, SC to lot 42** Woodland Kv= 5.0 fps
1.1	315	0.1070	4.91		**Shallow Concentrated Flow, SC to culv** Grassed Waterway Kv= 15.0 fps
24.8	935	Total			

Summary for Subcatchment 3C: To Culv sta 6+20

Runoff = 1.71 cfs @ 12.10 hrs, Volume= 0.128 af, Depth= 2.94"
Routed to Pond 3CP : 3CP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
15,250	89	Paved roads w/open ditches, 50% imp, HSG B
7,418	74	>75% Grass cover, Good, HSG C
22,668	84	Weighted Average
15,043		66.36% Pervious Area
7,625		33.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	50	0.0350	0.12		**Sheet Flow, Sheet** Grass: Dense n= 0.240 P2= 3.00"
0.5	203	0.1870	6.49		**Shallow Concentrated Flow, SC to CB** Grassed Waterway Kv= 15.0 fps
7.3	253	Total			

Summary for Subcatchment 3D: To Culv sta 9+15

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 3.53"
Routed to Pond 3DP : 3DP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
9,250	92	Paved roads w/open ditches, 50% imp, HSG C
1,257	74	>75% Grass cover, Good, HSG C
10,507	90	Weighted Average
5,882		55.98% Pervious Area
4,625		44.02% Impervious Area

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

Summary for Subcatchment 3E: To Culv sta 12+40

Runoff = 1.02 cfs @ 12.09 hrs, Volume= 0.073 af, Depth= 3.13"
Routed to Pond 3EP : CULV sta 12+40

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
8,402	92	Paved roads w/open ditches, 50% imp, HSG C
3,786	74	>75% Grass cover, Good, HSG C
12,188	86	Weighted Average
7,987		65.53% Pervious Area
4,201		34.47% Impervious Area

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

Summary for Subcatchment 3F: Direct to Bioret pond

Runoff = 1.08 cfs @ 12.18 hrs, Volume= 0.115 af, Depth= 0.92"
Routed to Pond 3FP : Bioretention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
18,488	61	>75% Grass cover, Good, HSG B
46,989	55	Woods, Good, HSG B
65,477	57	Weighted Average
65,477		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0650	0.10		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
3.3	348	0.1200	1.73		**Shallow Concentrated Flow, SC on slope to pond** Woodland Kv= 5.0 fps
11.2	398	Total			

Summary for Subcatchment 3I: To CULV STA 6+90

Runoff = 7.13 cfs @ 12.39 hrs, Volume= 0.881 af, Depth= 2.49"
Routed to Pond 3IP : 3IP

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 10 YR Rainfall=4.64"

Area (sf)	CN	Description
184,533	79	1 acre lots, 20% imp, HSG C
147,626		80.00% Pervious Area
36,907		20.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	50	0.0130	0.06		**Sheet Flow, Sheet** Woods: Light underbrush n= 0.400 P2= 3.00"
13.7	603	0.0110	0.73		**Shallow Concentrated Flow, SC to CULV** Short Grass Pasture Kv= 7.0 fps
28.8	653	Total			

Summary for Reach 1.B1R: RD 1.B1

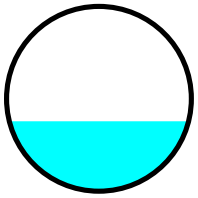
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 1.CB1 : CB1

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.83 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.28 fps, Avg. Travel Time= 1.0 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 0.48'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.86 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 75.0' Slope= 0.0200 '/'
Inlet Invert= 227.00', Outlet Invert= 225.50'



Summary for Reach 1.B2R: RD - 1.B2

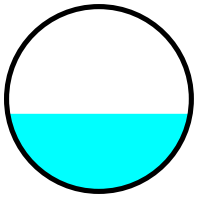
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.6 min
Routed to Pond 1.CB4 : CB4

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.33 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.11 fps, Avg. Travel Time= 1.0 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21' , Surface Width= 0.49'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.71 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 66.0' Slope= 0.0136 '/'
Inlet Invert= 227.00', Outlet Invert= 226.10'



Summary for Reach 1.B3R: RD - 1.B3

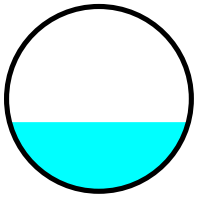
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.089 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.1 min
Routed to Pond 1.CB1 : CB1

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.03 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 0.48'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 1.36 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 30.0' Slope= 0.0500 '/'
Inlet Invert= 227.00', Outlet Invert= 225.50'



Summary for Reach 1.B4R: RD - 1.B4

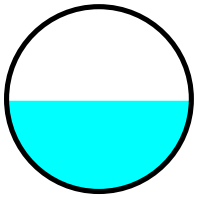
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.089 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.1 min
Routed to Pond 1.CB4 : CB4

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.20 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 1.42 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.83 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 8.0' Slope= 0.0188 '/'
Inlet Invert= 226.25', Outlet Invert= 226.10'



Summary for Reach 1.B5R: RD - 1.B5

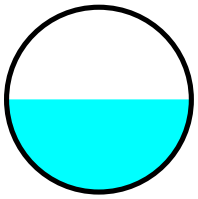
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.26 cfs @ 12.10 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.8 min
Routed to Pond 1.CB7 : CB7

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.64 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 1.3 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.52 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 69.0' Slope= 0.0072 '/'
Inlet Invert= 210.00', Outlet Invert= 209.50'



Summary for Reach 1.B6R: RD - 1.B6

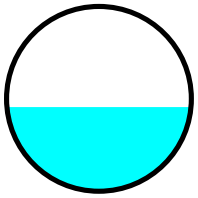
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.057 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.26 cfs @ 12.08 hrs, Volume= 0.021 af
Outflow = 0.26 cfs @ 12.10 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.7 min
Routed to Pond 1.CB5 : CB5

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.99 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.00 fps, Avg. Travel Time= 1.2 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 74.0' Slope= 0.0101 '/'
Inlet Invert= 227.00', Outlet Invert= 226.25'



Summary for Reach 1.B7R: RD - 1.B7

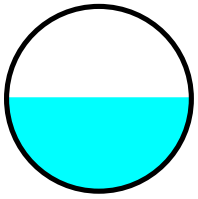
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.089 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.2 min
Routed to Pond 1.CB7 : CB7

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.02 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.36 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.78 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 30.0' Slope= 0.0167 '/'
Inlet Invert= 210.00', Outlet Invert= 209.50'



Summary for Reach 1.B8R: RD - 1.B8

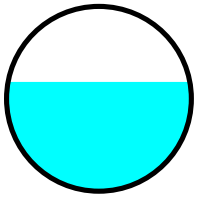
[52] Hint: Inlet/Outlet conditions not evaluated

Inflow Area = 0.089 ac,100.00% Impervious, Inflow Depth = 4.40" for 10 YR event
Inflow = 0.40 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.7 min
Routed to Pond 1.CB5 : CB5

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.32 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 1.1 min

Peak Storage= 9 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 0.49'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012 Corrugated PP, smooth interior
Length= 74.0' Slope= 0.0101 '/'
Inlet Invert= 227.00', Outlet Invert= 226.25'



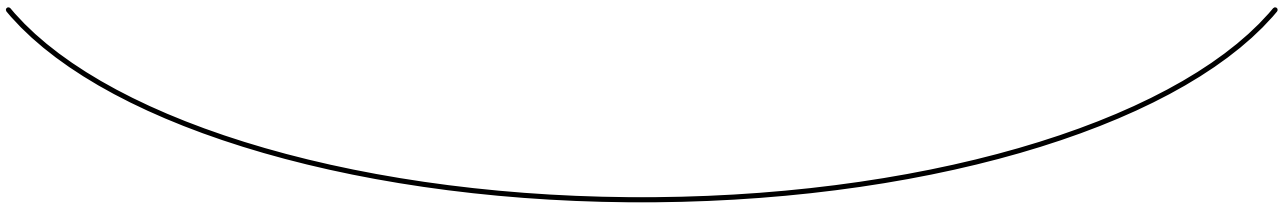
Summary for Reach 3IR: SSF THROUGH SUBCAT 3

Inflow Area = 4.847 ac, 41.88% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 26.7 sf, Capacity= 379.37 cfs

20.00' x 2.00' deep Parabolic Channel, n= 0.030 Earth, grassed & winding
Length= 667.0' Slope= 0.0582 '/'
Inlet Invert= 186.00', Outlet Invert= 147.20'



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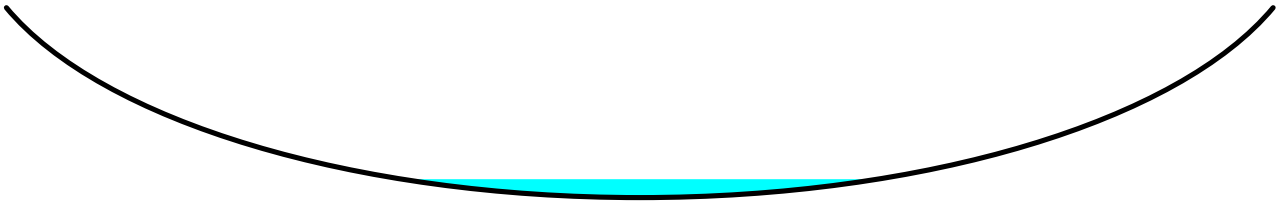
Summary for Reach 3R: Reach THROUGH SUBCAT 3)

Inflow Area = 4.236 ac, 20.00% Impervious, Inflow Depth = 1.21" for 10 YR event
Inflow = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af
Outflow = 1.14 cfs @ 14.22 hrs, Volume= 0.427 af, Atten= 56%, Lag= 76.1 min
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.98 fps, Min. Travel Time= 36.6 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 88.1 min

Peak Storage= 2,511 cf @ 13.61 hrs
Average Depth at Peak Storage= 0.19' , Surface Width= 9.24'
Bank-Full Depth= 2.00' Flow Area= 40.0 sf, Capacity= 185.81 cfs

30.00' x 2.00' deep Parabolic Channel, n= 0.080 Earth, long dense weeds
Length= 2,144.0' Slope= 0.0433 '/'
Inlet Invert= 240.00', Outlet Invert= 147.20'



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Summary for Reach 300: Northerly Analysis Point Old Green Hill stream crossing

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 57.359 ac, 13.81% Impervious, Inflow Depth = 1.68" for 10 YR event
Inflow = 38.40 cfs @ 12.92 hrs, Volume= 8.026 af
Outflow = 38.40 cfs @ 12.92 hrs, Volume= 8.026 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Summary for Pond 1.CB1: CB1

[62] Hint: Exceeded Reach 1.B1R OUTLET depth by 0.34' @ 12.09 hrs
[62] Hint: Exceeded Reach 1.B3R OUTLET depth by 0.35' @ 12.09 hrs

Inflow Area = 0.279 ac, 95.57% Impervious, Inflow Depth = 4.29" for 10 YR event
Inflow = 1.25 cfs @ 12.09 hrs, Volume= 0.100 af
Outflow = 1.25 cfs @ 12.09 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.0 min
Primary = 1.25 cfs @ 12.09 hrs, Volume= 0.100 af
Routed to Pond 1.CB2 : CB2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 226.03' @ 12.09 hrs
Flood Elev= 228.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.40'	**12.0" Round Culvert** L= 110.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 225.40' / 223.50' S= 0.0173 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.25 cfs @ 12.09 hrs HW=226.03' (Free Discharge)
1=Culvert (Inlet Controls 1.25 cfs @ 2.39 fps)

Summary for Pond 1.CB2: CB2

[79] Warning: Submerged Pond 1.CB1 Primary device # 1 OUTLET by 0.72'

Inflow Area = 0.420 ac, 97.06% Impervious, Inflow Depth = 4.33" for 10 YR event
Inflow = 1.89 cfs @ 12.09 hrs, Volume= 0.152 af
Outflow = 1.89 cfs @ 12.09 hrs, Volume= 0.152 af, Atten= 0%, Lag= 0.0 min
Primary = 1.89 cfs @ 12.09 hrs, Volume= 0.152 af
Routed to Pond 1.CB3 : CB3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 224.23' @ 12.09 hrs
Flood Elev= 227.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	223.40'	**12.0" Round Culvert** L= 97.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 223.40' / 221.95' S= 0.0149 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.89 cfs @ 12.09 hrs HW=224.22' (Free Discharge)
1=Culvert (Inlet Controls 1.89 cfs @ 2.73 fps)

Summary for Pond 1.CB3: CB3

Inflow Area = 1.418 ac, 59.57% Impervious, Inflow Depth = 3.38" for 10 YR event
Inflow = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af
Outflow = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af
Routed to Pond 1.DMH2 : DMH2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 221.00' @ 12.09 hrs
Flood Elev= 227.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	220.00'	**18.0" Round Culvert** L= 56.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 220.00' / 215.52' S= 0.0800 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.76 cfs @ 12.09 hrs HW=221.00' (Free Discharge)
1=Culvert (Inlet Controls 3.76 cfs @ 3.00 fps)

Summary for Pond 1.CB4: CB4

[62] Hint: Exceeded Reach 1.B2R OUTLET depth by 0.03' @ 12.30 hrs
[62] Hint: Exceeded Reach 1.B4R OUTLET depth by 0.01' @ 12.30 hrs

Inflow Area = 0.892 ac, 37.11% Impervious, Inflow Depth = 2.81" for 10 YR event
Inflow = 1.68 cfs @ 12.28 hrs, Volume= 0.209 af
Outflow = 1.68 cfs @ 12.28 hrs, Volume= 0.209 af, Atten= 0%, Lag= 0.0 min
Primary = 1.68 cfs @ 12.28 hrs, Volume= 0.209 af
Routed to Pond 1.CB3 : CB3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 226.26' @ 12.28 hrs
Flood Elev= 229.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	225.50'	**12.0" Round Culvert**

L= 65.0' CPP, mitered to conform to fill, Ke= 0.700
Inlet / Outlet Invert= 225.50' / 221.50' S= 0.0615 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.68 cfs @ 12.28 hrs HW=226.26' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.68 cfs @ 2.62 fps)

Summary for Pond 1.CB5: CB5

[79] Warning: Submerged Pond 1.DMH2 Primary device # 1 OUTLET by 1.13'

Inflow Area = 1.824 ac, 62.77% Impervious, Inflow Depth = 3.45" for 10 YR event
Inflow = 5.15 cfs @ 12.10 hrs, Volume= 0.525 af
Outflow = 5.15 cfs @ 12.10 hrs, Volume= 0.525 af, Atten= 0%, Lag= 0.0 min
Primary = 5.15 cfs @ 12.10 hrs, Volume= 0.525 af
Routed to Pond 1.CB6 : CB6

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 208.63' @ 12.10 hrs
Flood Elev= 213.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.40'	**18.0" Round Culvert** L= 103.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 207.40' / 206.40' S= 0.0097 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.15 cfs @ 12.10 hrs HW=208.63' (Free Discharge)
└**1=Culvert** (Inlet Controls 5.15 cfs @ 3.33 fps)

Summary for Pond 1.CB6: CB6

[79] Warning: Submerged Pond 1.CB5 Primary device # 1 INLET by 0.30'

Inflow Area = 2.390 ac, 59.48% Impervious, Inflow Depth = 3.38" for 10 YR event
Inflow = 6.10 cfs @ 12.11 hrs, Volume= 0.672 af
Outflow = 6.10 cfs @ 12.11 hrs, Volume= 0.672 af, Atten= 0%, Lag= 0.0 min
Primary = 6.10 cfs @ 12.11 hrs, Volume= 0.672 af
Routed to Pond 1.CB8 : CB8

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 207.70' @ 12.11 hrs
Flood Elev= 210.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	206.30'	**18.0" Round Culvert** L= 101.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 206.30' / 204.30' S= 0.0198 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.10 cfs @ 12.11 hrs HW=207.70' (Free Discharge)
└**1=Culvert** (Inlet Controls 6.10 cfs @ 3.55 fps)

Summary for Pond 1.CB7: CB7

Inflow Area = 0.276 ac, 95.53% Impervious, Inflow Depth = 4.30" for 10 YR event
Inflow = 1.24 cfs @ 12.09 hrs, Volume= 0.099 af
Outflow = 1.24 cfs @ 12.09 hrs, Volume= 0.099 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.09 hrs, Volume= 0.099 af
Routed to Pond 1.DMH1 : DMH1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 205.13' @ 12.09 hrs
Flood Elev= 211.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	204.50'	**12.0" Round Culvert** L= 66.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 204.50' / 197.40' S= 0.1076 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.23 cfs @ 12.09 hrs HW=205.13' (Free Discharge)
1=Culvert (Inlet Controls 1.23 cfs @ 2.38 fps)

Summary for Pond 1.CB8: CB8

Inflow Area = 2.519 ac, 61.57% Impervious, Inflow Depth = 3.43" for 10 YR event
Inflow = 6.66 cfs @ 12.11 hrs, Volume= 0.720 af
Outflow = 6.66 cfs @ 12.11 hrs, Volume= 0.720 af, Atten= 0%, Lag= 0.0 min
Primary = 6.66 cfs @ 12.11 hrs, Volume= 0.720 af
Routed to Pond 1.DMH1 : DMH1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 200.32' @ 12.11 hrs
Flood Elev= 210.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	199.10'	**24.0" Round Culvert** L= 52.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 199.10' / 197.40' S= 0.0327 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=6.66 cfs @ 12.11 hrs HW=200.32' (Free Discharge)
1=Culvert (Inlet Controls 6.66 cfs @ 3.32 fps)

Summary for Pond 1.DMH1: DMH1

[79] Warning: Submerged Pond 1.CB7 Primary device # 1 OUTLET by 1.42'
[79] Warning: Submerged Pond 1.CB8 Primary device # 1 OUTLET by 1.42'

Inflow Area = 2.795 ac, 64.92% Impervious, Inflow Depth = 3.52" for 10 YR event
Inflow = 7.88 cfs @ 12.10 hrs, Volume= 0.819 af
Outflow = 7.88 cfs @ 12.10 hrs, Volume= 0.819 af, Atten= 0%, Lag= 0.0 min
Primary = 7.88 cfs @ 12.10 hrs, Volume= 0.819 af
Routed to Pond 1P : Sed Forbay

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 198.82' @ 12.10 hrs
Flood Elev= 201.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	197.30'	**24.0" Round Culvert** L= 63.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 197.30' / 197.00' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=7.87 cfs @ 12.10 hrs HW=198.82' (Free Discharge)
1=Culvert (Barrel Controls 7.87 cfs @ 4.26 fps)

Summary for Pond 1.DMH2: DMH2

[58] Hint: Peaked 15.42' above defined flood level
[79] Warning: Submerged Pond 1.CB3 Primary device # 1 OUTLET by 0.90'

Inflow Area = 1.418 ac, 59.57% Impervious, Inflow Depth = 3.38" for 10 YR event
Inflow = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af
Outflow = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af, Atten= 0%, Lag= 0.0 min
Primary = 3.76 cfs @ 12.09 hrs, Volume= 0.399 af
Routed to Pond 1.CB5 : CB5

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 216.42' @ 12.09 hrs
Flood Elev= 201.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.42'	**18.0" Round Culvert** L= 102.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 215.42' / 207.50' S= 0.0776 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=3.76 cfs @ 12.09 hrs HW=216.42' (Free Discharge)
1=Culvert (Inlet Controls 3.76 cfs @ 3.00 fps)

Summary for Pond 1P: Sed Forbay

[79] Warning: Submerged Pond 1.DMH1 Primary device # 1 INLET by 0.46'

Inflow Area = 3.111 ac, 58.33% Impervious, Inflow Depth = 3.37" for 10 YR event
Inflow = 8.03 cfs @ 12.10 hrs, Volume= 0.874 af
Outflow = 7.67 cfs @ 12.14 hrs, Volume= 0.874 af, Atten= 4%, Lag= 2.2 min
Primary = 7.67 cfs @ 12.14 hrs, Volume= 0.874 af
Routed to Pond 3IBP : Surface Sand Filter Pond

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Starting Elev= 196.00' Surf.Area= 1,598 sf Storage= 1,338 cf
Peak Elev= 197.76' @ 12.14 hrs Surf.Area= 2,662 sf Storage= 5,091 cf (3,754 cf above start)
Flood Elev= 198.50' Surf.Area= 3,145 sf Storage= 7,228 cf (5,891 cf above start)

Plug-Flow detention time= 118.7 min calculated for 0.843 af (96% of inflow)
Center-of-Mass det. time= 82.6 min (874.0 - 791.4)

Volume	Invert	Avail.Storage	Storage Description
#1	195.00'	7,228 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
195.00	1,077	0	0
196.00	1,598	1,338	1,338
198.00	2,805	4,403	5,741
198.50	3,145	1,488	7,228

Device	Routing	Invert	Outlet Devices
#1	Primary	196.00'	**24.0" Round Culvert** L= 30.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 196.00' / 195.50' S= 0.0167 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	197.25'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	196.00'	**2.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=7.67 cfs @ 12.14 hrs HW=197.76' (Free Discharge)
↑└**1=Culvert** (Passes 7.67 cfs of 11.69 cfs potential flow)
↑└**2=Orifice/Grate** (Weir Controls 7.54 cfs @ 2.34 fps)
└**3=Orifice/Grate** (Orifice Controls 0.14 cfs @ 6.24 fps)

Summary for Pond 3AP: 3AP

Inflow Area = 1.966 ac, 20.78% Impervious, Inflow Depth = 2.49" for 10 YR event
Inflow = 3.70 cfs @ 12.32 hrs, Volume= 0.409 af
Outflow = 3.69 cfs @ 12.32 hrs, Volume= 0.409 af, Atten= 0%, Lag= 0.1 min
Primary = 3.69 cfs @ 12.32 hrs, Volume= 0.409 af
Routed to Pond 3BP : 3BP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 267.02' @ 12.32 hrs Surf.Area= 77 sf Storage= 44 cf

Plug-Flow detention time= 0.2 min calculated for 0.409 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (843.2 - 843.0)

Volume	Invert	Avail.Storage	Storage Description
#1	266.00'	400 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
266.00	8	0	0
268.00	144	152	152
269.00	352	248	400

Device	Routing	Invert	Outlet Devices
#1	Primary	266.00'	**15.0" Round Culvert** L= 108.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 266.00' / 261.50' S= 0.0417 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.69 cfs @ 12.32 hrs HW=267.02' (Free Discharge)
1=Culvert (Inlet Controls 3.69 cfs @ 3.44 fps)

Summary for Pond 3BP: 3BP

Inflow Area = 5.290 ac, 14.00% Impervious, Inflow Depth = 2.23" for 10 YR event
Inflow = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af
Outflow = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af, Atten= 0%, Lag= 0.1 min
Primary = 8.59 cfs @ 12.33 hrs, Volume= 0.985 af
Routed to Pond 3CP : 3CP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 247.44' @ 12.33 hrs Surf.Area= 105 sf Storage= 84 cf

Plug-Flow detention time= 0.2 min calculated for 0.985 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (852.4 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	246.00'	391 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
246.00	12	0	0
248.00	142	154	154
249.00	332	237	391

Device	Routing	Invert	Outlet Devices
#1	Primary	246.00'	**24.0" Round Culvert** L= 40.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 246.00' / 245.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=8.59 cfs @ 12.33 hrs HW=247.44' (Free Discharge)
1=Culvert (Barrel Controls 8.59 cfs @ 4.98 fps)

Summary for Pond 3CP: 3CP

[79] Warning: Submerged Pond 3EP Primary device # 1 OUTLET by 0.02'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.2 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond DMH1 : DMH 1

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 239.53' @ 12.32 hrs Surf.Area= 288 sf Storage= 79 cf
Flood Elev= 241.00' Surf.Area= 1,480 sf Storage= 1,280 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.1 min (842.8 - 842.7)

Volume	Invert	Avail.Storage	Storage Description
#1	239.00'	3,231 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
239.00	8	0	0
240.00	536	272	272
242.00	2,423	2,959	3,231

Device	Routing	Invert	Outlet Devices
#1	Primary	234.00'	**18.0" Round Culvert** L= 70.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 234.00' / 223.00' S= 0.1571 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	239.00'	**24.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=10.11 cfs @ 12.32 hrs HW=239.53' (Free Discharge)
↑**1=Culvert** (Passes 10.11 cfs of 18.60 cfs potential flow)
↑**2=Orifice/Grate** (Weir Controls 10.11 cfs @ 2.38 fps)

Summary for Pond 3DP: 3DP

Inflow Area = 0.241 ac, 44.02% Impervious, Inflow Depth = 3.53" for 10 YR event
Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af
Outflow = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min
Primary = 0.97 cfs @ 12.09 hrs, Volume= 0.071 af
Routed to Pond 3EP : CULV sta 12+40

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 259.47' @ 12.09 hrs Surf.Area= 8 sf Storage= 3 cf

Plug-Flow detention time= 0.2 min calculated for 0.071 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (793.5 - 793.3)

Volume	Invert	Avail.Storage	Storage Description
#1	259.00'	422 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
259.00	6	0	0
260.00	11	9	9
262.00	151	162	171
263.00	352	252	422

Device	Routing	Invert	Outlet Devices
#1	Primary	259.00'	**15.0" Round Culvert** L= 55.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 259.00' / 257.90' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.96 cfs @ 12.09 hrs HW=259.46' (Free Discharge)
1=Culvert (Inlet Controls 0.96 cfs @ 2.32 fps)

Summary for Pond 3EP: CULV sta 12+40

Inflow Area = 0.521 ac, 38.89% Impervious, Inflow Depth = 3.32" for 10 YR event
Inflow = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af
Outflow = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.2 min
Primary = 1.98 cfs @ 12.09 hrs, Volume= 0.144 af
Routed to Pond 3CP : 3CP

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 240.72' @ 12.09 hrs Surf.Area= 68 sf Storage= 27 cf

Plug-Flow detention time= 0.3 min calculated for 0.144 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (800.8 - 800.5)

Volume	Invert	Avail.Storage	Storage Description
#1	240.00'	504 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
240.00	8	0	0
242.00	174	182	182
243.00	470	322	504

Device	Routing	Invert	Outlet Devices
#1	Primary	240.00'	**15.0" Round Culvert** L= 49.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 240.00' / 239.51' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.98 cfs @ 12.09 hrs HW=240.72' (Free Discharge)
1=Culvert (Barrel Controls 1.98 cfs @ 3.92 fps)

Summary for Pond 3FB: Sed Forbay

[79] Warning: Submerged Pond DMH1B Primary device # 1 OUTLET by 0.33'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.11 cfs @ 12.33 hrs, Volume= 1.187 af, Atten= 0%, Lag= 0.5 min
Primary = 10.11 cfs @ 12.33 hrs, Volume= 1.187 af
Routed to Pond 3FP : Bioretention Pond

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 214.85' @ 12.33 hrs Surf.Area= 1,969 sf Storage= 3,512 cf
Flood Elev= 215.00' Surf.Area= 2,071 sf Storage= 3,825 cf

Plug-Flow detention time= 44.1 min calculated for 1.187 af (94% of inflow)
Center-of-Mass det. time= 14.0 min (856.8 - 842.8)

Volume	Invert	Avail.Storage	Storage Description
#1	212.00'	3,825 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
212.00	671	0	0
214.00	1,412	2,083	2,083
215.00	2,071	1,742	3,825

Device	Routing	Invert	Outlet Devices
#1	Primary	214.60'	**35.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=10.10 cfs @ 12.33 hrs HW=214.85' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 10.10 cfs @ 1.18 fps)

Summary for Pond 3FP: Bioretention Pond

[81] Warning: Exceeded Pond 3FB by 0.66' @ 12.61 hrs

Inflow Area = 7.835 ac, 14.28% Impervious, Inflow Depth = 1.99" for 10 YR event
Inflow = 10.96 cfs @ 12.32 hrs, Volume= 1.302 af
Outflow = 8.01 cfs @ 12.54 hrs, Volume= 1.302 af, Atten= 27%, Lag= 13.3 min
Discarded = 0.17 cfs @ 12.54 hrs, Volume= 0.449 af
Primary = 7.84 cfs @ 12.54 hrs, Volume= 0.853 af
Routed to Reach 300 : Northerly Analysis Point Old Green Hill stream crossing

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 215.45' @ 12.54 hrs Surf.Area= 10,843 sf Storage= 16,645 cf
Flood Elev= 216.00' Surf.Area= 11,798 sf Storage= 22,868 cf

Plug-Flow detention time= 309.3 min calculated for 1.302 af (100% of inflow)

Center-of-Mass det. time= 309.3 min (1,169.6 - 860.3)

Volume	Invert	Avail.Storage	Storage Description
#1	212.10'	22,868 cf	**Custom Stage Data (Conic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
212.10	9,445	0.0	0	0	9,445
213.10	9,445	40.0	3,778	3,778	9,790
214.60	9,445	30.0	4,250	8,028	10,306
216.00	11,798	100.0	14,840	22,868	12,714

Device	Routing	Invert	Outlet Devices
#1	Primary	215.00'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	212.10'	**0.680 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.17 cfs @ 12.54 hrs HW=215.45' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 0.17 cfs)

Primary OutFlow Max=7.84 cfs @ 12.54 hrs HW=215.45' (Free Discharge)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 7.84 cfs @ 1.74 fps)

Summary for Pond 3IBP: Surface Sand Filter Pond

[79] Warning: Submerged Pond 1P Primary device # 1 INLET by 0.52'

Inflow Area = 4.847 ac, 41.88% Impervious, Inflow Depth = 3.03" for 10 YR event
Inflow = 9.99 cfs @ 12.17 hrs, Volume= 1.222 af
Outflow = 0.93 cfs @ 14.44 hrs, Volume= 1.222 af, Atten= 91%, Lag= 136.3 min
Discarded = 0.93 cfs @ 14.44 hrs, Volume= 1.222 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3IR : SSF THROUGH SUBCAT 3
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 3IR : SSF THROUGH SUBCAT 3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 196.52' @ 14.44 hrs Surf.Area= 13,422 sf Storage= 24,612 cf
Flood Elev= 197.75' Surf.Area= 15,413 sf Storage= 42,366 cf

Plug-Flow detention time= 259.8 min calculated for 1.222 af (100% of inflow)
Center-of-Mass det. time= 259.8 min (1,125.4 - 865.7)

Volume	Invert	Avail.Storage	Storage Description
#1	192.50'	42,366 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
192.50	11,778	0.0	0	0
193.50	11,778	40.0	4,711	4,711
195.50	11,778	30.0	7,067	11,778
196.00	12,584	100.0	6,091	17,869
197.75	15,413	100.0	24,497	42,366

Device	Routing	Invert	Outlet Devices
#1	Primary	192.00'	**12.0" Round Culvert** L= 35.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 192.00' / 186.00' S= 0.1714 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	197.00'	**19.0" x 19.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	197.50'	**8.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#4	Discarded	192.50'	**2.987 in/hr Exfiltration over Surface area** Phase-In= 0.01'

Discarded OutFlow Max=0.93 cfs @ 14.44 hrs HW=196.52' (Free Discharge)
└**4=Exfiltration** (Exfiltration Controls 0.93 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=192.50' (Free Discharge)
└**1=Culvert** (Passes 0.00 cfs of 0.95 cfs potential flow)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=192.50' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 3IP: 3IP

Inflow Area = 4.236 ac, 20.00% Impervious, Inflow Depth = 2.49" for 10 YR event
Inflow = 7.13 cfs @ 12.39 hrs, Volume= 0.881 af
Outflow = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af, Atten= 64%, Lag= 33.6 min
Primary = 2.60 cfs @ 12.95 hrs, Volume= 0.427 af
Routed to Reach 3R : Reach THROUGH SUBCAT 3)

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 250.12' @ 12.95 hrs Surf.Area= 422 sf Storage= 19,941 cf
Flood Elev= 252.00' Surf.Area= 2,256 sf Storage= 21,783 cf

Plug-Flow detention time= 244.2 min calculated for 0.427 af (48% of inflow)
Center-of-Mass det. time= 125.5 min (974.4 - 849.0)

Volume	Invert	Avail.Storage	Storage Description
#1	149.50'	21,783 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
149.50	140	0	0
250.00	256	19,899	19,899
251.50	2,256	1,884	21,783

Device	Routing	Invert	Outlet Devices
#1	Primary	249.50'	**24.0" Round Culvert** L= 94.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 249.50' / 242.00' S= 0.0798 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.25 cfs @ 12.95 hrs HW=250.12' (Free Discharge)
1=Culvert (Inlet Controls 2.25 cfs @ 2.69 fps)

Summary for Pond DMH1: DMH 1

[79] Warning: Submerged Pond 3CP Primary device # 1 OUTLET by 1.62'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.0 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond DMH1B : DMH 1B

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 224.62' @ 12.32 hrs
Flood Elev= 228.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	222.90'	**24.0" Round Culvert** L= 143.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 222.90' / 216.00' S= 0.0483 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.12 cfs @ 12.32 hrs HW=224.62' (Free Discharge)
1=Culvert (Inlet Controls 10.12 cfs @ 3.52 fps)

Summary for Pond DMH1B: DMH 1B

[79] Warning: Submerged Pond DMH1 Primary device # 1 OUTLET by 1.62'

Inflow Area = 6.332 ac, 17.67% Impervious, Inflow Depth = 2.38" for 10 YR event
Inflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Outflow = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af, Atten= 0%, Lag= 0.0 min
Primary = 10.12 cfs @ 12.32 hrs, Volume= 1.257 af
Routed to Pond 3FB : Sed Forbay

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Peak Elev= 217.62' @ 12.32 hrs
Flood Elev= 220.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	215.90'	**24.0" Round Culvert** L= 138.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 215.90' / 214.52' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.12 cfs @ 12.32 hrs HW=217.62' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 10.12 cfs @ 3.52 fps)

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1.10S: To SSF Runoff Area=75,595 sf 12.39% Impervious Runoff Depth=4.47"
Flow Length=755' Tc=21.3 min CN=78 Runoff=5.97 cfs 0.647 af

Subcatchment 1.1S: To CB1 Runoff Area=5,795 sf 90.72% Impervious Runoff Depth=6.52"
Tc=6.0 min CN=96 Runoff=0.91 cfs 0.072 af

Subcatchment 1.2S: To CB2 Runoff Area=6,143 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.97 cfs 0.079 af

Subcatchment 1.3S: To CB3 Runoff Area=4,619 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.73 cfs 0.060 af

Subcatchment 1.4S: To CB4 Runoff Area=32,490 sf 24.80% Impervious Runoff Depth=4.58"
Flow Length=302' Tc=22.1 min CN=79 Runoff=2.58 cfs 0.285 af

Subcatchment 1.5S: To CB5 Runoff Area=11,332 sf 59.33% Impervious Runoff Depth=5.59"
Flow Length=139' Tc=11.4 min CN=88 Runoff=1.37 cfs 0.121 af

Subcatchment 1.6S: To CB6 Runoff Area=24,629 sf 48.87% Impervious Runoff Depth=5.37"
Flow Length=246' Tc=18.8 min CN=86 Runoff=2.40 cfs 0.253 af

Subcatchment 1.7S: To CB7 Runoff Area=5,669 sf 90.51% Impervious Runoff Depth=6.52"
Tc=6.0 min CN=96 Runoff=0.89 cfs 0.071 af

Subcatchment 1.8S: To CB8 Runoff Area=5,647 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.89 cfs 0.073 af

Subcatchment 1.9S: To Forebay Runoff Area=13,764 sf 0.00% Impervious Runoff Depth=4.04"
Flow Length=206' Tc=32.4 min CN=74 Runoff=0.82 cfs 0.106 af

Subcatchment 1.B1: Building 1 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af

Subcatchment 1.B2: Building 1 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af

Subcatchment 1.B3: Building 2 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af

Subcatchment 1.B4: Building 2 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af

Subcatchment 1.B5: Building 3 - North Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af

Subcatchment 1.B6: Building 3 - South Runoff Area=2,496 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.39 cfs 0.032 af

Subcatchment 1.B7: Building 4 - North Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af

Subcatchment 1.B8: Building 4 - South Runoff Area=3,864 sf 100.00% Impervious Runoff Depth=6.76"
Tc=6.0 min CN=98 Runoff=0.61 cfs 0.050 af

Subcatchment 3: North Parcel area Runoff Area=1,761,631 sf 9.71% Impervious Runoff Depth=3.94"
Flow Length=1,703' Tc=68.0 min CN=73 Runoff=68.31 cfs 13.262 af

Subcatchment 3A: To Cistern Culv Runoff Area=85,627 sf 20.78% Impervious Runoff Depth=4.58"
Flow Length=802' Tc=22.4 min CN=79 Runoff=6.76 cfs 0.751 af

Subcatchment 3B: To Culv sta 10+00 Runoff Area=144,824 sf 10.00% Impervious Runoff Depth=4.04"
Flow Length=935' Tc=24.8 min CN=74 Runoff=9.69 cfs 1.120 af

Subcatchment 3C: To Culv sta 6+20 Runoff Area=22,668 sf 33.64% Impervious Runoff Depth=5.14"
Flow Length=253' Tc=7.3 min CN=84 Runoff=2.93 cfs 0.223 af

Subcatchment 3D: To Culv sta 9+15 Runoff Area=10,507 sf 44.02% Impervious Runoff Depth=5.82"
Tc=6.0 min CN=90 Runoff=1.55 cfs 0.117 af

Subcatchment 3E: To Culv sta 12+40 Runoff Area=12,188 sf 34.47% Impervious Runoff Depth=5.37"
Tc=6.0 min CN=86 Runoff=1.70 cfs 0.125 af

Subcatchment 3F: Direct to Bioret pond Runoff Area=65,477 sf 0.00% Impervious Runoff Depth=2.31"
Flow Length=398' Tc=11.2 min CN=57 Runoff=3.24 cfs 0.290 af

Subcatchment 3I: To CULV STA 6+90 Runoff Area=184,533 sf 20.00% Impervious Runoff Depth=4.58"
Flow Length=653' Tc=28.8 min CN=79 Runoff=13.08 cfs 1.618 af

Reach 1.B1R: RD 1.B1 Avg. Flow Depth=0.24' Max Vel=4.28 fps Inflow=0.39 cfs 0.032 af
6.0" Round Pipe n=0.012 L=75.0' S=0.0200 '/' Capacity=0.86 cfs Outflow=0.39 cfs 0.032 af

Reach 1.B2R: RD - 1.B2 Avg. Flow Depth=0.27' Max Vel=3.71 fps Inflow=0.39 cfs 0.032 af
6.0" Round Pipe n=0.012 L=66.0' S=0.0136 '/' Capacity=0.71 cfs Outflow=0.39 cfs 0.032 af

Reach 1.B3R: RD - 1.B3 Avg. Flow Depth=0.23' Max Vel=6.73 fps Inflow=0.61 cfs 0.050 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0500 '/' Capacity=1.36 cfs Outflow=0.61 cfs 0.050 af

Reach 1.B4R: RD - 1.B4 Avg. Flow Depth=0.32' Max Vel=4.63 fps Inflow=0.61 cfs 0.050 af
6.0" Round Pipe n=0.012 L=8.0' S=0.0188 '/' Capacity=0.83 cfs Outflow=0.61 cfs 0.050 af

Reach 1.B5R: RD - 1.B5 Avg. Flow Depth=0.33' Max Vel=2.90 fps Inflow=0.39 cfs 0.032 af
6.0" Round Pipe n=0.012 L=69.0' S=0.0072 '/' Capacity=0.52 cfs Outflow=0.39 cfs 0.032 af

Reach 1.B6R: RD - 1.B6 Avg. Flow Depth=0.29' Max Vel=3.31 fps Inflow=0.39 cfs 0.032 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.39 cfs 0.032 af

Reach 1.B7R: RD - 1.B7 Avg. Flow Depth=0.33' Max Vel=4.41 fps Inflow=0.61 cfs 0.050 af
6.0" Round Pipe n=0.012 L=30.0' S=0.0167 '/' Capacity=0.78 cfs Outflow=0.61 cfs 0.050 af

Reach 1.B8R: RD - 1.B8 Avg. Flow Depth=0.41' Max Vel=3.55 fps Inflow=0.61 cfs 0.050 af
6.0" Round Pipe n=0.012 L=74.0' S=0.0101 '/' Capacity=0.61 cfs Outflow=0.61 cfs 0.050 af

Reach 3IR: SSF THROUGH SUBCAT 3 Avg. Flow Depth=0.27' Max Vel=3.80 fps Inflow=5.05 cfs 0.445 af
n=0.030 L=667.0' S=0.0582 '/' Capacity=379.37 cfs Outflow=5.00 cfs 0.445 af

Reach 3R: Reach THROUGH SUBCAT Avg. Flow Depth=0.46' Max Vel=1.75 fps Inflow=12.42 cfs 1.165 af
n=0.080 L=2,144.0' S=0.0433 '/' Capacity=185.81 cfs Outflow=7.69 cfs 1.165 af

Reach 300: Northerly Analysis Point Old Green Hill stream crossing Inflow=86.47 cfs 16.956 af
Outflow=86.47 cfs 16.956 af

Pond 1.CB1: CB1 Peak Elev=226.23' Inflow=1.91 cfs 0.155 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0173 '/' Outflow=1.91 cfs 0.155 af

Pond 1.CB2: CB2 Peak Elev=224.64' Inflow=2.87 cfs 0.234 af
12.0" Round Culvert n=0.013 L=97.0' S=0.0149 '/' Outflow=2.87 cfs 0.234 af

Pond 1.CB3: CB3 Peak Elev=221.38' Inflow=6.02 cfs 0.661 af
18.0" Round Culvert n=0.013 L=56.0' S=0.0800 '/' Outflow=6.02 cfs 0.661 af

Pond 1.CB4: CB4 Peak Elev=226.80' Inflow=2.99 cfs 0.367 af
12.0" Round Culvert n=0.013 L=65.0' S=0.0615 '/' Outflow=2.99 cfs 0.367 af

Pond 1.CB5: CB5 Peak Elev=209.35' Inflow=8.24 cfs 0.865 af
18.0" Round Culvert n=0.013 L=103.0' S=0.0097 '/' Outflow=8.24 cfs 0.865 af

Pond 1.CB6: CB6 Peak Elev=208.78' Inflow=9.89 cfs 1.117 af
18.0" Round Culvert n=0.013 L=101.0' S=0.0198 '/' Outflow=9.89 cfs 1.117 af

Pond 1.CB7: CB7 Peak Elev=205.32' Inflow=1.88 cfs 0.153 af
12.0" Round Culvert n=0.013 L=66.0' S=0.1076 '/' Outflow=1.88 cfs 0.153 af

Pond 1.CB8: CB8 Peak Elev=200.75' Inflow=10.73 cfs 1.190 af
24.0" Round Culvert n=0.013 L=52.0' S=0.0327 '/' Outflow=10.73 cfs 1.190 af

Pond 1.DMH1: DMH1 Peak Elev=199.38' Inflow=12.57 cfs 1.343 af
24.0" Round Culvert n=0.013 L=63.0' S=0.0048 '/' Outflow=12.57 cfs 1.343 af

Pond 1.DMH2: DMH2 Peak Elev=216.80' Inflow=6.02 cfs 0.661 af
18.0" Round Culvert n=0.013 L=102.0' S=0.0776 '/' Outflow=6.02 cfs 0.661 af

Pond 1P: Sed Forbay Peak Elev=197.96' Storage=5,632 cf Inflow=12.90 cfs 1.450 af
Outflow=12.47 cfs 1.450 af

Pond 3AP: 3AP Peak Elev=267.93' Storage=142 cf Inflow=6.76 cfs 0.751 af
15.0" Round Culvert n=0.013 L=108.0' S=0.0417 '/' Outflow=6.75 cfs 0.751 af

Pond 3BP: 3BP Peak Elev=248.27' Storage=200 cf Inflow=16.42 cfs 1.871 af
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 '/' Outflow=16.41 cfs 1.871 af

Pond 3CP: 3CP Peak Elev=239.96' Storage=251 cf Inflow=18.90 cfs 2.336 af
Outflow=18.87 cfs 2.336 af

Pond 3DP: 3DP Peak Elev=259.60' Storage=5 cf Inflow=1.55 cfs 0.117 af
15.0" Round Culvert n=0.013 L=55.0' S=0.0200 '/' Outflow=1.55 cfs 0.117 af

Pond 3EP: CULV sta 12+40 Peak Elev=240.98' Storage=48 cf Inflow=3.26 cfs 0.242 af
15.0" Round Culvert n=0.013 L=49.0' S=0.0100 '/' Outflow=3.25 cfs 0.242 af

Pond 3FB: Sed Forbay Peak Elev=214.96' Storage=3,747 cf Inflow=18.87 cfs 2.336 af
Outflow=18.86 cfs 2.266 af

Pond 3FP: Bioretention Pond Peak Elev=215.82' Storage=20,756 cf Inflow=21.06 cfs 2.556 af
Discarded=0.18 cfs 0.472 af Primary=19.92 cfs 2.084 af Outflow=20.10 cfs 2.556 af

Pond 3IBP: Surface Sand Filter Pond Peak Elev=197.39' Storage=36,904 cf Inflow=16.95 cfs 2.097 af
Discarded=1.03 cfs 1.652 af Primary=5.05 cfs 0.445 af Secondary=0.00 cfs 0.000 af Outflow=6.08 cfs 2.097 af

Pond 3IP: 3IP Peak Elev=251.21' Storage=21,179 cf Inflow=13.08 cfs 1.618 af
24.0" Round Culvert n=0.013 L=94.0' S=0.0798 '/' Outflow=12.42 cfs 1.165 af

Pond DMH1: DMH 1 Peak Elev=226.40' Inflow=18.87 cfs 2.336 af
24.0" Round Culvert n=0.013 L=143.0' S=0.0483 '/' Outflow=18.87 cfs 2.336 af

Pond DMH1B: DMH 1B Peak Elev=219.40' Inflow=18.87 cfs 2.336 af
24.0" Round Culvert n=0.013 L=138.0' S=0.0100 '/' Outflow=18.87 cfs 2.336 af

Total Runoff Area = 57.359 ac Runoff Volume = 19.603 af Average Runoff Depth = 4.10"
86.19% Pervious = 49.437 ac 13.81% Impervious = 7.923 ac

Appendix III

Charts, Graphs, and Calculations

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point

Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.230 degrees North
Longitude	70.99 degrees West
Elevation	60 feet
Date/Time	Wed Aug 16 2023 13:04:30 GMT-0400 (Eastern Daylight Time)

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	0.49	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.53	1.97	2.56	2.82	**1yr**	2.26	2.71	3.12	3.85	4.41	**1yr**
2yr	0.32	0.49	0.61	0.80	1.01	1.28	**2yr**	0.87	1.16	1.49	1.89	2.41	3.08	3.44	**2yr**	2.73	3.30	3.80	4.53	5.16	**2yr**
5yr	0.37	0.57	0.72	0.96	1.23	1.57	**5yr**	1.06	1.44	1.84	2.36	3.03	3.89	4.39	**5yr**	3.44	4.22	4.84	5.71	6.45	**5yr**
10yr	0.40	0.63	0.80	1.09	1.42	1.84	**10yr**	1.22	1.69	2.17	2.80	3.60	4.64	5.29	**10yr**	4.11	5.09	5.82	6.80	7.65	**10yr**
25yr	0.46	0.74	0.94	1.30	1.73	2.27	**25yr**	1.49	2.08	2.69	3.50	4.54	5.86	6.77	**25yr**	5.19	6.51	7.43	8.57	9.57	**25yr**
50yr	0.52	0.83	1.07	1.49	2.01	2.67	**50yr**	1.73	2.45	3.17	4.15	5.40	7.00	8.17	**50yr**	6.19	7.85	8.94	10.22	11.35	**50yr**
100yr	0.58	0.94	1.21	1.72	2.33	3.13	**100yr**	2.01	2.88	3.74	4.92	6.42	8.36	9.85	**100yr**	7.40	9.48	10.75	12.20	13.47	**100yr**
200yr	0.65	1.06	1.37	1.97	2.72	3.69	**200yr**	2.35	3.39	4.43	5.85	7.66	9.99	11.89	**200yr**	8.84	11.43	12.94	14.56	15.99	**200yr**
500yr	0.76	1.26	1.64	2.38	3.33	4.56	**500yr**	2.87	4.21	5.50	7.32	9.65	12.64	15.25	**500yr**	11.19	14.67	16.55	18.40	20.08	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.24	0.36	0.44	0.60	0.73	0.90	**1yr**	0.63	0.88	0.91	1.25	1.51	1.95	2.48	**1yr**	1.73	2.39	2.93	3.28	3.97	**1yr**
2yr	0.31	0.48	0.59	0.81	0.99	1.18	**2yr**	0.86	1.15	1.35	1.81	2.34	2.99	3.34	**2yr**	2.65	3.21	3.69	4.41	5.03	**2yr**
5yr	0.35	0.54	0.67	0.91	1.16	1.40	**5yr**	1.00	1.37	1.61	2.14	2.77	3.61	4.06	**5yr**	3.20	3.90	4.52	5.34	6.04	**5yr**
10yr	0.38	0.59	0.73	1.02	1.32	1.60	**10yr**	1.14	1.56	1.81	2.43	3.12	4.14	4.70	**10yr**	3.66	4.52	5.25	6.17	6.92	**10yr**
25yr	0.44	0.67	0.83	1.19	1.56	1.91	**25yr**	1.35	1.87	2.12	2.83	3.62	4.95	5.70	**25yr**	4.38	5.48	6.41	7.44	8.22	**25yr**
50yr	0.49	0.74	0.92	1.33	1.78	2.19	**50yr**	1.54	2.14	2.37	3.20	4.05	5.66	6.58	**50yr**	5.01	6.33	7.46	8.58	9.47	**50yr**
100yr	0.54	0.82	1.03	1.49	2.04	2.52	**100yr**	1.76	2.46	2.67	3.59	4.51	6.45	7.59	**100yr**	5.71	7.30	8.69	9.89	10.81	**100yr**
200yr	0.61	0.91	1.16	1.68	2.34	2.89	**200yr**	2.02	2.82	3.00	4.04	5.03	7.36	8.77	**200yr**	6.51	8.43	10.13	11.40	12.36	**200yr**
500yr	0.71	1.06	1.36	1.98	2.82	3.49	**500yr**	2.43	3.42	3.51	4.72	5.82	8.71	10.60	**500yr**	7.71	10.20	12.41	13.77	14.70	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.28	0.43	0.53	0.71	0.87	1.07	**1yr**	0.75	1.05	1.23	1.72	2.18	2.76	3.01	**1yr**	2.44	2.90	3.34	4.14	4.73	**1yr**
2yr	0.33	0.50	0.62	0.84	1.03	1.24	**2yr**	0.89	1.21	1.46	1.94	2.50	3.19	3.55	**2yr**	2.82	3.41	3.92	4.67	5.32	**2yr**
5yr	0.39	0.60	0.75	1.02	1.30	1.57	**5yr**	1.12	1.53	1.83	2.47	3.16	4.17	4.71	**5yr**	3.69	4.53	5.18	6.07	6.83	**5yr**
10yr	0.45	0.70	0.87	1.21	1.56	1.90	**10yr**	1.35	1.86	2.21	3.01	3.80	5.14	5.85	**10yr**	4.55	5.63	6.42	7.41	8.29	**10yr**
25yr	0.55	0.84	1.05	1.49	1.97	2.44	**25yr**	1.70	2.38	2.84	3.91	4.88	6.80	7.81	**25yr**	6.02	7.51	8.50	9.79	10.75	**25yr**
50yr	0.64	0.97	1.21	1.74	2.34	2.93	**50yr**	2.02	2.87	3.44	4.75	5.92	8.40	9.73	**50yr**	7.44	9.36	10.54	12.01	13.18	**50yr**
100yr	0.74	1.13	1.41	2.04	2.79	3.53	**100yr**	2.41	3.45	4.17	5.81	7.19	10.39	12.13	**100yr**	9.20	11.66	13.04	14.76	16.09	**100yr**
200yr	0.87	1.30	1.65	2.39	3.33	4.27	**200yr**	2.87	4.17	5.06	7.09	8.71	12.89	15.14	**200yr**	11.41	14.56	16.15	18.13	19.67	**200yr**
500yr	1.06	1.57	2.02	2.94	4.18	5.46	**500yr**	3.61	5.33	6.53	9.25	11.26	17.18	20.29	**500yr**	15.20	19.51	21.43	23.83	25.67	**500yr**

Powered by ACIS Northeast Regional Climate Center

The project proposes a surface sand filter and sediment forebay to meet the GRV requirements per AoT. The pond is designed with a sediment forebay as pretreatment devices.

1.0 Location of Practice

A surface sand filter filtration basin is located south west of the cul-de-sac on lot #C4.

2.0 Existing topography at the location of the practice

The surface sand filter basin on commercial lot #C4 is designed in an area with a topographic slope of approximately 6% that is forested and HSG C soils.

3.0 Test Pit/boring locations

The surface sand filter basin on lot #C4 is 9,673 s.f. in area at the floor and the ESHWT, etc. was based on Test Pits conducted on 2-19-19 and 9-3-21 field located as shown on the drainage area plans.

4.0 Seasonal high-water table (SHWT) and bedrock elevations

The surface sand filter basin on lot #C4 has a bottom of practice elevation of 192.5'(bottom of filter course = 193.5') , TP #D2-2 showed no ESHWT to 67", the high existing ground surface under the basin = 197.0, SHWT = 191.41'.
Bedrock not found to 67" or deeper than 191.41'

5.0 Profile descriptions

Logged by Christian Smith, PE. Designer #1543 on 2-19-2019
Test Pit#: D3 (Pond 3IBP)

Depth (inches)	**Description**	
2" – 0"		Forest Mat
0" - 3"	10YR 3/3	Dark Brown, Fine Sandy Loam, Granular, Friable
3" - 17"	10YR 4/4	Dark Yellowish Brown, Fine Sandy Loam, Granular, Friable
17" - 33"	10YR 5/6	Yellowish Brown, Fine Sandy Loam, Blocky, Friable
33" – 65"	2.5Y 5/6	Light Olive Brown, Fine Sand Massive, Friable W/ Redox

ESHWT = 33 Inches
Roots to 36 Inches
Observed Ground Water - None
Restrictive - None
Refusal - None

(please see the test pit data performed by Tom Sokoloski, CSS, CWS at the end of this report)

6.0 Soil Plan in the area of the proposed practices

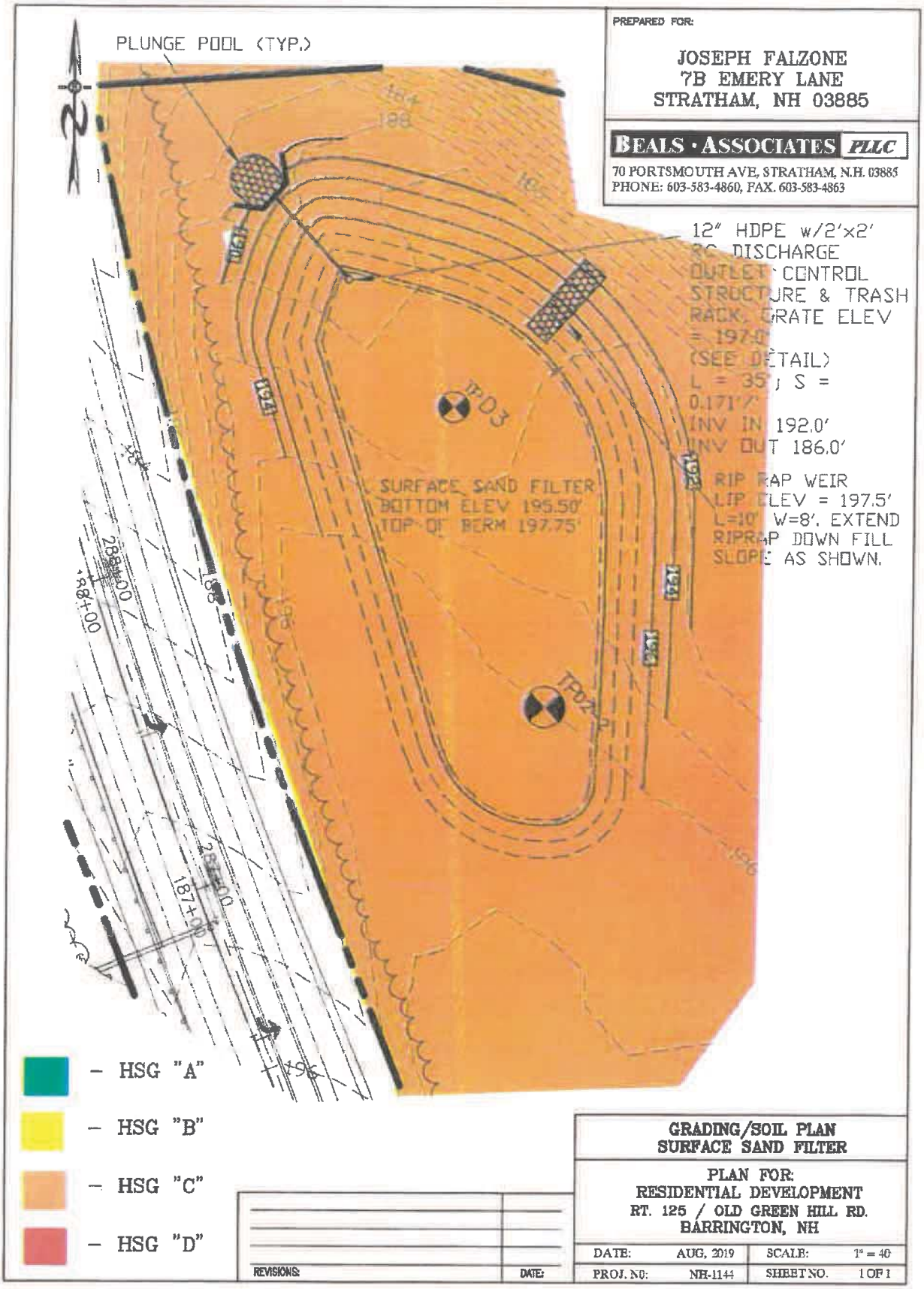
Grading/Soil Plans appears at the end of this report.

7.0 Summary of data used to determine infiltration rate

All infiltration rates calculated by Christian Smith, P.E.

The infiltration Rates were determined using amoozemeter testing results provided by TES Environmental Consultants, performed on 9-3-21 and 11-2-21. The Surface Sand Filter 3IBP is in native material identified as SSS 29 or Woodbridge soil. Three complete amoozemeter test were conducted which resulted in average infiltration rates of 7.0 in/hr + 6.06 in/hr + 4.86 in/hr = (17.92in/hour)/3 = 5.97 in/hr averaged. Applying the required factor of safety of 2 gives the design rate of 2.99 in/hr.

(Amoozemeter field data sheets for all test appear at the end of this report behind the respective soil plans with the TES test pit logs)



PREPARED FOR:

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70 PORTSMOUTH AVE, STRATHAM, N.H. 03885
PHONE: 603-583-4860, FAX. 603-583-4863

REVISIONS:	DATE:

GRADING/SOIL PLAN
SURFACE SAND FILTER

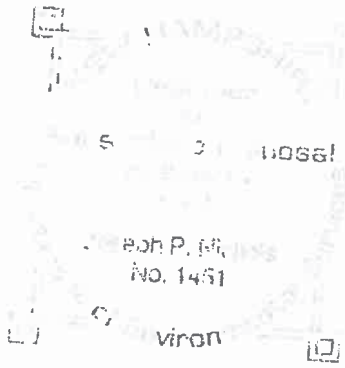
PLAN FOR:
RESIDENTIAL DEVELOPMENT
RT. 125 / OLD GREEN HILL RD.
BARRINGTON, NH

DATE:	AUG. 2019	SCALE:	1" = 40
PROJ. NO:	NH-1144	SHEET NO.	1 OF 1

Test Pits – NH-1144 – Barrington, NH Located Off Route 125 & Green Hill Road
Conducted by Joseph P. Nichols - Beals Associates, PLLC - #1451 Date: 2/19/19
Conducted by Christian O Smith - Beals Associates, PLLC - #1543 Date: 2/19/19 & 2/20/19

Test Pit # D3

2" – 0"		Forest Mat
0" - 3"	10YR 3/3	Dark Brown, Fine Sandy Loam, Granular, Friable
3" - 17"	10YR 4/4	Dark Yellowish Brown, Fine Sandy Loam, Granular, Friable
17" - 33"	10YR 5/6	Yellowish Brown, Fine Sandy Loam, Blocky, Friable
33" – 65"	2.5Y 5/6	Light Olive Brown, Fine Sand Massive, Friable W/ Redox



ESHWT = 33 Inches
Roots to 36 Inches
Observed Ground Water - None
Restrictive - None
Refusal - None
(Perc Rate 8 MPI)

Test Pit # D4

2" – 0"		Forest Mat
0" - 6"	10YR 3/2	Very Dark Grayish Brown, Fine Sandy Loam, Granular, Friable
6" - 24"	10YR 5/4	Yellowish Brown, Fine Loamy Sand, Massive, Friable
24" - 47"	2.5Y 5/3	Light Olive Brown, Fine Loamy Sand, Massive, Friable W/ Redox
47" – 62"	2.5Y 5/2	Grayish Brown, Fine Loamy Sand Massive, Firm W/ Redox

ESHWT = 24 Inches
Roots to 24 Inches
Observed Ground Water @ 40 Inches
Restrictive @ 47 Inches
Refusal – None
(Perc Rate 6 MPI)

TES

TES ENVIRONMENTAL CONSULTANTS, L.L.C.

TEST PIT LOG SHEET

Date: 9/3/2021	Project No: 21-0070	Lot: Lot C-4
CSS: Thomas E. Sokoloski	Project Name: Beals/Falzone/Rt. 125/Barrington	Test Pit No: D2-2

HOR	DEPTH	COLOR	TEXTURE	STRUCTURE	CONSISTENCY	REDOX FEATURES	NOTES
Oe	0-1"	10YR 3/2	--	--	--	--	Many fine and medium roots
A	1-6"	10YR 3/2	Fine sandy loam	Weak granular	Very friable	None	Many fine, medium and coarse roots
Bw1	6-18"	10YR 5/6	Sandy loam	Subangular blocky	Friable	None	Common fine and medium roots
Bw2	18-34"	10YR 5/4	Loamy sand	Subangular blocky	Friable	None	Few fine and medium roots
C	34-67"	2.5Y 5/4	Loamy sand	Massive	Friable	None	No roots

ESHWT: N/O

ROOTS: 30"

OBSERVED WATER: N/O

LEDGE: N/O

RESTRICTIVE LAYER: N/O

NOTES:

STATE OF NEW HAMPSHIRE
THOMAS E. SOKOLOSKI
No. 069
9/11/2021
CERTIFIED SOIL SCIENTIST

CSS STAMP

Amoozemeter Field Data Sheet

TES Environmental Consultants, LLC

DATE: 9/13/21		PERMEAMETER NO.: 1523	
LOCATION: Tax map 26 Rt. 28, Raymond		AIR TEMPERATURE: BEGIN 70°F FINAL 70°F	
TEST BY: Tom Sokolski			
SOIL MAP UNIT: 29B	NOTES: Test Pit D2 2 Proposed stormwater basin in proposed Lot C4		
HORIZON: B			
DISTURBED SITE: No			
SOIL LOG RECORDED: Yes			

SETUP CALCULATIONS			
HOLE DEPTH	d=	57	(BOTTOM OF HOLE TO SURFACE)
SURFACE TO REF. LINE	+	5	(ON AMOOZEMETER)
DEPTH OF H20 IN HOLE	H-	15	(15 CM MIN. – 5.9")
CHT TUBE SETTING	H1=	47	(SET TUBE FROM WATER LEVEL DOWN)

OUTFLOW CHAMBERS USED — 1 on = 20cm² CF

& associated Conversion Factor — 2 on = 105cm² CF

FIELD TEST 4 OF 9

DROP IN WATER LEVEL IN FLOW RES. (1)	ELAPSED TIME (2)		OUTFLOW CHAMBER(S) USED (3)	OUTFLOW (Q) (1*3)/2 = (Q)	SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT}) = Q * Coeff A) A= 0.001163 when H=15cm	
cm	min	min/hr	(CF)	cm³/hr.	(cm / hr)	(in / hr)
1.7	0.5	0.0083	105	3150	24.91	9.81
1.7	0.5	0.0083	105	3150	24.91	9.81
1.8	0.5	0.0083	105	3360	26.58	10.38
1.8	0.5	0.0083	105	3360	26.58	10.38
				Mean K_{SAT}	26.74	10.10
				StDev K_{SAT}	0.85	0.33

Amoozemeter Field Data Sheet

TES Environmental Consultants, LLC

DATE: 9/23/21		PERMEAMETER NO.: 1523	
LOCATION: Tax map 303 Lot 26 Rt. 125, Barrington		AIR TEMPERATURE: BEGIN	70°F
		FINAL	70°F
TEST BY: Tom Sokoloski			
SOIL MAP UNIT: 29B		NOTES: Test Pit D2-2 Proposed stormwater basin on proposed Lot C4	
HORIZON: Bw1 / Bw2			
DISTURBED SITE: No			
SOIL LOG RECORDED: Yes			

SETUP CALCULATIONS			
HOLE DEPTH	d+	48	(BOTTOM OF HOLE TO SURFACE)
SURFACE TO REF. LINE	+	5	(ON AMOOZEMETER)
DEPTH OF H20 IN HOLE	H-	15	(15 CM MIN. ~5.9")
CHT TUBE SETTING	H1=	38	(SET TUBE FROM WATER LEVEL DOWN)

OUTFLOW CHAMBERS USED — 1 on = 20cm² CF

& associated Conversion Factor — 2 on = 105cm² CF

FIELD TEST 5 OF 9

DROP IN WATER LEVEL IN FLOW RES. (1)	ELAPSED TIME (2)		2 OUTFLOW CHAMBER(S) USED (3)	OUTFLOW (Q) (1*3)/2 = (Q)	SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT}) = Q * Coeff A) A= 0.001163 when H=15cm	
cm	min	min/hr	(CF)	cm³/hr.	(cm / hr)	(in / hr)
1.6	0.5	0.0083	105	1530	17.58	6.92
1.4	0.5	0.0083	105	1260	20.52	8.08
1.2	0.5	0.0083	105	1050	12.58	6.92
1.2	0.5	0.0083	105	1050	17.58	6.92
				Mean K_{SAT}	18.32	7.21
				StDev K_{SAT}	1.47	0.58

Amoozemeter Field Data Sheet

TES Environmental Consultants, LLC

DATE: 9/3/21		PERMEAMETER NO.: 1523	
LOCATION: Tax Map 27 Lot 26 Rt. 125 Barrington		AIR TEMPERATURE: BEGIN	72°F
		FINAL	~0°F
TEST BY: Tom Sokoloski			
SOIL MAP UNIT: 29 B		NOTES: Test pit D2-2 Proposed stormwater basin on proposed Lot C4	
HORIZON: Bw1			
DISTURBED SITE: No			
SOIL LOG RECORDED: Yes			

SETUP CALCULATIONS			
HOLE DEPTH	d+	40	(BOTTOM OF HOLE TO SURFACE)
SURFACE TO REF. LINE	+	5	(ON AMOOZEMETER)
DEPTH OF H20 IN HOLE	H -	15	(15 CM MIN. – 5.9")
CHT TUBE SETTING	H1=	30	(SET TUBE FROM WATER LEVEL DOWN)

OUTFLOW CHAMBERS USED — 1 on = 20cm² CF

& associated Conversion Factor — 2 on = 105cm² CF

FIELD TEST	6	OF 9

DROP IN WATER LEVEL IN FLOW RES. (1)	ELAPSED TIME (2)		2 OUTFLOW CHAMBER(S) USED (3)	OUTFLOW (Q) (1*3)/2 = (Q)	SATURATED HYDRAULIC CONDUCTIVITY (K_{SAT}) = Q * Coeff A) A= 0.001163 when H=15cm	
cm	min	min/hr	(CF)	cm³/hr.	(cm / hr)	(in / hr)
1.3	1	0.017	105	8190	9.52	3.75
1.3	1	0.017	105	8190	9.52	3.75
1.2	1	0.015	105	7560	8.79	3.46
1.3	1	0.016	105	8190	9.52	3.75
				Mean K_{SAT}	9.34	3.68
				StDev K_{SAT}	0.37	0.14

$\frac{1}{2}(4-6) = 7.00$ in/hr.

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Surface Sand Filter (1P)**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
4.85	ac	A = Area draining to the practice	
2.03	ac	A_I = Impervious area draining to the practice	
0.42	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.43	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
2.07	ac-in	WQV= 1" x Rv x A	
7,512	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,878	cf	25% x WQV (check calc for sediment forebay volume)	
5,634	cf	75% x WQV (check calc for surface sand filter volume)	
N/A		Method of Pretreatment? (not required for clean or roof runoff)	
7,228	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	**≥ 25%WQV**
Calculate time to drain if system IS NOT underdrained:			
11,778	sf	A_{SA} = Surface area of the practice	
2.99	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
2.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	**≤ 72-hrs**
Calculate time to drain if system IS underdrained:			
N/A	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
N/A	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	**≤ 72-hrs**
193.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
N/A	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
190.41	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
190.41	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
#VALUE!	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	**≥ 1'**
3.09	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	**≥ 1'**
3.09	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	**≥ 1'**
197.39	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
197.75	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	**← yes**
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	**< 10 ac**
42,366	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ 75%WQV**
24.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet	5	Note what sheet in the plan set contains the filter course specification.	
yes	Yes/No	Access grate provided?	**← yes**

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
-	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes:

StoneArch Development Corporation
Residential Development
NH-1144.5

STORMWATER MANAGEMENT/BMP OPERATION & MAINTENANCE PLAN

Proper construction, inspections, maintenance and repair are key elements in maintaining a successful stormwater management program on a developed property. Routine inspections ensure permit compliance and reduce the potential for deterioration of infrastructure or reduced water quality.

For the purpose of this Stormwater Management Program, a significant rainfall event is considered and event of three (3) inches in a 24-hour period or 0.5 inches in a one-hour period. During construction, inspections should be conducted every two weeks or after a 0.25" rainfall event in a 24-hour period per the EPA NPDES Phase II SWPPP, until the entire disturbed area is fully restabilized. Upon full stabilization of the project and filing of an NOI, inspections need only be conducted after a significant rainfall event as described above or as described in the maintenance guidelines below.

During construction activities StoneArch Development Corporation, at 42J Dover Point Road, Dover, NH 03820 with a phone number (978) 375-3153 or it's heirs and/or assigns, shall be responsible for inspections and maintenance activities. StoneArch Development Corporation shall be responsible for ongoing inspection and maintenance of BMP drainage structures and treatment areas.

Documentation:
A maintenance log will be kept (i.e. report) summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task (see Stormwater Construction Site Inspection Report attached). If a maintenance task requires the clean-out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. During inspections, photographs of each BMP shall be taken and kept with the inspection logs.

BMP Maintenance Guidelines
The following provides a list of recommendations and guidelines for managing the Stormwater facilities. The cited areas, facilities, and measures will be inspected and the identified deficiencies will be corrected. Clean-out must include the removal and legal disposal of any accumulated sediments and debris.

DURING CONSTRUCTION:
1. STABILIZED CONSTRUCTION ENTRANCE

A temporary gravel construction entrance provides an area where mud can be dislodged from tires before the vehicle leaves the construction site to reduce the amount of mud and sediment transported onto paved municipal and state roads. The stone size for the pad should be between 1 and 2-inch coarse aggregate, and the pad itself constructed to a minimum length of 50' for the full width of the access road. The aggregate should be placed at least six inches thick. A plan view and profile are shown on Sheet E1 - Sediment and Erosion Control Detail Plan.

1a. ENVIRONMENTAL DUST CONTROL

Dust will be controlled on the site by the use of multiple Best Management Practices. Mulching and temporary seeding will be the first line of protection to be utilized where problems occur. If dust problems are not solved by these applications, the use of water and calcium chloride can be applied. Calcium chloride will be applied at a rate that will keep the surface moist but not cause pollution.

1b. TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES

Function – Temporary erosion and sediment control devices are utilized during construction period to divert, store and filter stormwater from non-stabilized surfaces. These devices include, but are not limited to: silt fences, hay bales, filters, sediment traps, stone check dams, mulch and erosion control blankets.

Maintenance – Temporary erosion and sediment control devices shall be inspected and maintained on a weekly basis and following a significant storm event (>0.5-inch rain event) throughout the construction period to ensure that they still have integrity and are not allowing sediment to pass. Sediment build-up in swales will be removed if it is deeper than six inches. Sediment is to be removed from sumps in the catch basin semi-annually. Refer to the Site Plan drawings for the maintenance of temporary erosion and sediment control devices.

ONGOING POST-CONSTRUCTION (Note inspections shall require photographs of each BMP):

2. Catch Basins:

Inspect catch basins 2 times per year (preferably in spring and fall) to ensure that the catch basins are working in their intended fashion and that they are free of debris. Clean structures when sediment depths reach 12" from invert of outlet. If the basin outlet is designed with a hood to trap floatable materials (i.e. Snout), check to ensure watertight seal is working. At a minimum, remove floating debris and hydrocarbons at the time of the inspection.

3. Culverts:

Inspect culverts 2 times per year (preferably in spring and fall) to ensure that the culverts are working in their intended fashion and that they are free of debris. Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit and to repair any erosion damage at the culvert's inlet and outlet.

4. Stormwater Infiltration/Filtration Facilities:

Inspect all upstream pre-treatment measures for sediment and floatables accumulation. Remove and dispose of sediments or debris as needed (see details below).

Surface:

The infiltration facility will be inspected within the first three months after construction; thereafter the filter will be inspected 2 times per year to ensure that the filter is draining within 72 hours of a rain event equivalent to 1/2" or more. Failure to drain in 72 hours will require part or all of the top 3 inches of the infiltration area to be removed and replaced with new like material. Vegetated infiltration ponds or swales will be mowed at least annually or otherwise maintained to control the growth of woody vegetation and to control the accumulation of sediments in order to maintain the water quality volume.

Any woody vegetation or accumulated sediment must be removed. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

5. Pretreatment Structures
Inspect all upstream pre-treatment measures (forebays, etc.) for sediment and floatables accumulation. Remove and dispose of sediments or debris as needed. Inspect structure on a semiannual basis by using inspection port and/or access structure. Remove sediment as needed when average depths reach 1".

6. Riprap Weir – Maintenance

- Inspect at least once annually for accumulation of sediment and debris and for signs of erosion within approach channel, spreader channel or down-slope of the spreader.
- Remove debris whenever observed during inspection.
- Remove sediment when accumulation exceeds 25% of spreader channel depth.
- Mow as required by landscaping design. At a minimum, mow annually to control woody vegetation within the spreader.
- Snow should not be stored within or down-slope of the level spreader or its approach channel.
- Repair any erosion and re-grade or replace stone berm material, as warranted by inspection.
- Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

7. Vegetated Areas:
Inspect slopes and embankments early in the growing season to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows. The facilities will be inspected after major storms and any identified deficiencies will be corrected.

8. Driveways and Parking Surfaces: Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

9. Invasive Species:
During maintenance activities, check for the presence of invasive plants and
remove in a safe manner as described on the following pages. They should be controlled as described on the following pages.
Background:
Invasive plants are introduced, alien, or non-native plants, which have been
moved by people from their native habitat to a new area. Some exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as "hitchhikers" among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm
by:
becoming weedy and overgrown;
killing established shade trees;
obstructing pipes and drainage systems;

forming dense beds in water;
lowering water levels in lakes, streams, and wetlands;
destroying natural communities;
promoting erosion on stream banks and hillsides; and
resisting control except by hazardous chemical.

Methods for Disposing Non-Native Invasive Plants
Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and
A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 3: 282.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non- native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces indicates its method of spread and helps determine

the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non- viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

How and When to Dispose of Invasives?
To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Bagging (solarization): Use this technique with softer- tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic

Japanese knotweed
Polygonum cuspidatum USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. An illustrated flora of the northern United States, Canada and the British Possessions. Vol. 1: 676.

and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let the material dry for several weeks, or until it is clearly nonviable.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well- rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants nonviable before composting. Closely examine the plant before composting and avoid composting seeds.

Be diligent looking for seedlings for years in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Woody Plants	Method of Reproducing	Methods of Disposal
Norway maple (Acer platanoides) European barberry (Berberis vulgaris) Japanese barberry (Berberis thunbergii) autumn olive (Elaeagnus umbellata) burning bush (Euonymus alatus) Morrow's honeysuckle (Lonicera morrowii) Tatarian honeysuckle (Lonicera tatarica) showy bush honeysuckle (Lonicera x bella) common buckthorn (Rhamnus cathartica) glossy buckthorn (Frangula alnus)	Fruit and Seeds	Prior to fruit/seed ripening Seedlings and small plants Pull or cut and leave on site with roots exposed. No special care needed. Larger plants Use as firewood. Make a brush pile. Chip. Burn.
		After fruit/seed is ripe Don't remove from site. Burn. Make a covered brush pile. Chip once all fruit has dropped from branches. Leave resulting chips on site and monitor.
oriental bittersweet (Celastrus orbiculatus) multiflora rose (Rosa multiflora)	Fruits, Seeds, Plant Fragments	Prior to fruit/seed ripening Seedlings and small plants Pull or cut and leave on site with roots exposed. No special care needed. Larger plants Make a brush pile. Burn.
		After fruit/seed is ripe Don't remove from site. Burn. Make a covered brush pile. Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

	Method of Reproducing	Methods of Disposal
garlic mustard (Alliaria petiolata) spotted knapweed (Centaurea maculosa) Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. black swallow-wort (Cynanchum nigrum) May cause skin rash. Wear gloves and long sleeves when handling. pale swallow-wort (Cynanchum rossicum) giant hogweed (Heracleum mantegazzianum) Can cause major skin rash. Wear gloves and long sleeves when handling. dame's rocket (Hesperis matronalis) perennial pepperweed (Lepidium latifolium) purple loosestrife (Lythrum salicaria) Japanese stilt grass (Microstegium vimineum) mile-a-minute weed	Fruits and Seeds	Prior to flowering Depends on scale of infestation Small infestation Pull or cut plant and leave on site with roots exposed. Large infestation Pull or cut plant and pile. (You can pile onto or cover with plastic sheeting). Monitor. Remove any re-sprouting material. During and following flowering Do nothing until the following year or remove flowering heads and bag and let rot. Small infestation Pull or cut plant and leave on site with roots exposed. Large infestation Pull or cut plant and pile remaining material. (You can pile onto plastic or cover with plastic sheeting). Monitor. Remove any re-sprouting material.
common reed (Phragmites australis) Japanese knotweed (Polygonum cuspidatum) Bohemian knotweed (Polygonum x bohemicum)	Fruits, Seeds, Plant Fragments Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.	Small infestation Bag all plant material and let rot. Never pile and use resulting material as compost. Burn. Large infestation Remove material to unsuitable habitat (dry, hot and sunny or dry and shaded location) and scatter or pile. Monitor and remove any sprouting material. Pile, let dry, and burn.

In the event that invasive species are noticed growing in any of the stormwater management practices, the invasive vegetation shall be removed completely to include root matter and disposed of properly. Prior to disposal, the vegetation shall be placed on and completely cover with a plastic tarp for a period of two – three weeks until plants are completely dead. If necessary or to expedite the process, spray only the invasive vegetation and roots with a systemic nonselective herbicide after placement on the tarp (to prevent chemical migration) and then cover as described above.

Annual Report:
Description: The owner is responsible to keep an **I & M** Activity Log that documents inspection, maintenance and repairs to the storm water management system, and a
Deicing Log to track the amount and type of deicing material applied to the site. The original owner is responsible to ensure that any subsequent owner (s) have copies of the Stormwater System Operation and Maintenance Plan & Inspection and Maintenance Manual, copies of past logs and check lists. This includes any owner association for potential condominium conversion of the property. The Annual Report will be prepared and submitted to the Town of Barrington DPW and/or NHDES AoT upon request.

STORMWATER SYSTEM OPERATION AND MAINTENANCE PLAN

Inspection & Maintenance Manual Checklist

StoneArch Development Corporation – Residential Development
Route 125
Barrington, NH

BMP / System	Minimum Inspection Frequency	Minimum Inspection Requirements	Maintenance / Cleanout Threshold
Pavement Sweeping	Two Times Per Year	N/A	N/A
Litter/Trash Removal	Routinely	Inspect dumpsters, outdoor waste receptacles area, and yard areas.	Parcel will be free of litter/trash.
Deicing Agents	N/A	N/A	Use salt as the primary agent for roadway safety during winter.
Drainage System:			
Drainage Pipes/Catch Basins & DMH's	1 time per 2 years	Check for sediment accumulation & clogging.	Less than 2" sediment depth
Drainage Swales	2 times per year	Check for sediment and debris accumulation buildup.	Remove sediment & debris when required.

Surface Sand Filter	Twice Annually After every 2.5” of rain or greater.	Monitoring and evaluation of wetland vegetation, inspection of sediment on pond surface, inlet/outlet and appurtenance structure evaluation.	Remove dead & diseased vegetation along with all debris; take corrective measures, reseed and repair inlet/outlet structures and appurtenances if required.

Inspection Notes:

Stormwater System operation and maintenance plan

Inspection & Maintenance Manual Log Form
Residential Development
Rt 125 Residential Development, Barrington, NH - Lots 26.58 & 26.59

BMP / System	Date Inspected	Inspector	Cleaning/Repair (List Items & Comments)	Repair Date	Performed By:

INSPECTION CHECKLIST AND MAINTENANCE GUIDANCE - SURFACE SAND FILTER

INSPECTION CHECKLIST

Location:

Owner Change since last inspection? Y N

Owner Name, Address, Phone:

Date: Time: Site conditions:

Inspection Items	Satisfactory (S) or Unsatisfactory (U)	Comments/Corrective Action
Sand Filter Inspection List		
Complete drainage of the filter in about 40 hours after a rain event?		
Clogging of filter surface?		
Clogging of inlet/outlet structures?		
Clogging of filter fabric?		
Filter clear of debris and functional?		
Leaks or seeps in filter?		
Obstructions of spillway(s)?		
Animal burrows in filter?		
Sediment accumulation in filter bed (less than 50% is acceptable)?		
Cracking, spalling, bulging or deterioration of concrete?		
Erosion in area draining to sand filter?		
Erosion around inlets, filter bed, or outlets?		
Pipes and other structures in good condition?		
Undesirable vegetation growth?		
Other (describe)?		
Hazards		
Have there been complaints from residents?		
Public hazards noted?		

If any of the above inspection items are **UNSATISFACTORY**, list corrective actions and the corresponding completion dates below:

Corrective Action Needed	Due Date

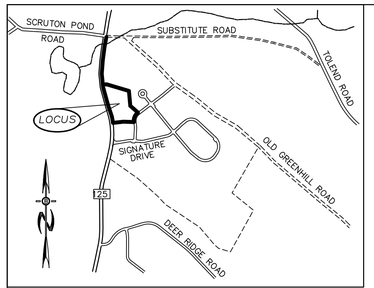
Inspector Signature:

Inspector Name (printed)

Anti-icing Data Log Form			
Truck:			
Date:			
Air Temperature	Pavement Temperature	Sky	
Reason for applying:			
Road Name:			
Chemical: Sand/Salt - Salt - Other (List below) (Circle one)			
Application Time:			
Application Amount:			
Name:			

Appendix IV

Plans



LOCATION MAP
1"=1500'

LEGEND

- UTILITY POLE
- TP#A — TEST PIT W/ NO.
- STONE WALL
- TREE LINE
- EXISTING CONTOUR – 10'
- EXISTING CONTOUR – 2'
- OHW — OVERHEAD UTILITIES
- SOILS BOUNDARY LINE
- BUILDING SETBACK LINE
- WETLAND BOUNDARY
- PRIME WETLAND BOUNDARY
- ABUTTING PROPERTY LINE
- EXISTING PROPERTY LINE

HISS STANDARDS:

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, INTENDED FOR INFILTRATION REQUIREMENTS BY THE NH DES ALTERATION OF TERRAIN BUREAU. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCES CONSERVATION SERVICE. THERE IS A REPORT THAT ACCOMPANIES THIS MAP.
THE SITE SPECIFIC SOIL SURVEY WAS PRODUCED MARCH 2019, AND WAS PREPARED BY LUKE HURLEY, OF GOVE ENVIRONMENTAL SERVICES, INC. SOILS WERE IDENTIFIED WITH THE NEW HAMPSHIRE STATE-WIDE NUMERICAL SOILS LEGEND, USDA NRCS, DURHAM, NH. ISSUE # 10, JANUARY 2011.

SOIL SERIES	MAP UNIT	HIGH INTENSITY SOIL TYPES	HYDROLOGIC GROUP
NEWFIELDS	444	(321)	B
PAXTON	66	(223)	C
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DRAINAGE CLASS: P = POORLY DRAINED, VP = VERY POORLY DRAINED

PREPARED FOR:

STONEARCH DEVEL. CORP.
42J DOVER POINT ROAD
DOVER, NH 03820

BA BEALS ASSOCIATES, PLLC
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THIRD FLOOR, SUITE 2
STRATHAM, N.H. 03885
PHONE: 603-583-4860,
FAX. 603-583-4863

**THIS DRAWING IS FOR DRAINAGE PURPOSES ONLY

WATERSHED KEY

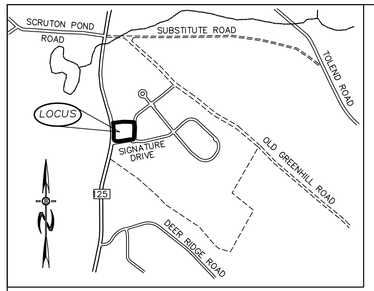
- 4 — SUBCATCHMENT
- 4 — REACH
- 4 — POND
- LIMIT OF SUBCATCHMENT
- FLOW PATH

REVISIONS:	DATE:

EXISTING WATERSHED PLAN – W1

FOR:
COMMERCIAL DEVELOPMENT
ROUTE 125
BARRINGTON, NH

DATE:	OCTOBER 18, 2023	SCALE:	1"=50'
PROJ. N0:	NH-1144.5	SHEET NO.	1 of 2



LOCATION MAP
1"=1500'

LEGEND

- UTILITY POLE
- TP#1A — TEST PIT W/ NO.
- STONE WALL
- TREE LINE
- EXISTING CONTOUR – 10'
- EXISTING CONTOUR – 2'
- OVERHEAD UTILITIES
- BUILDING SETBACK LINE
- WETLAND SETBACK LINE
- WETLAND BOUNDARY
- ABUTTING PROPERTY LINE
- EXISTING PROPERTY LINE
- 4000 SF SEPTIC RESERVE AREA
- PROP. WELL W/ 75' PROTECTIVE RAD.

HISS STANDARDS:

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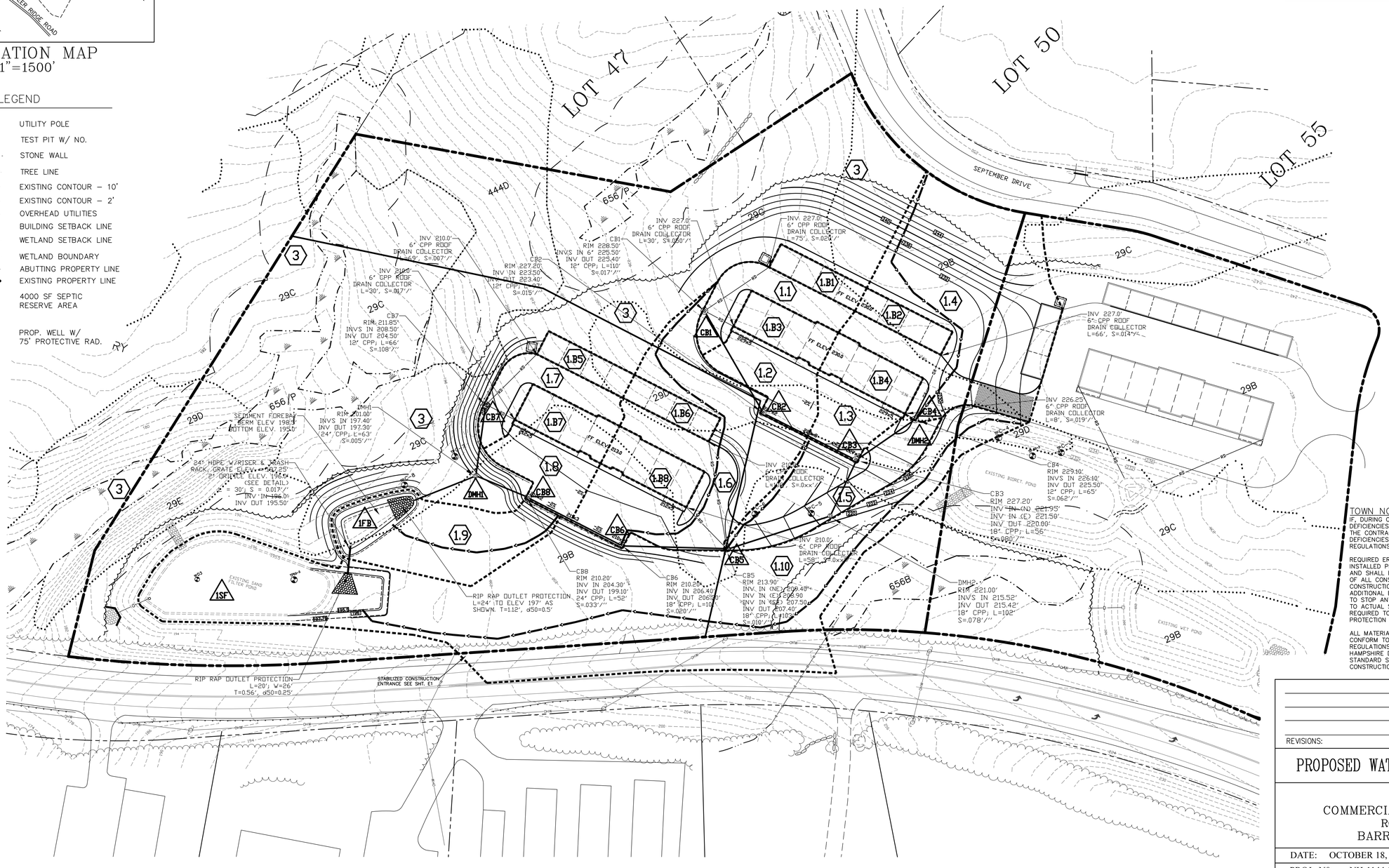

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WATERSHED KEY

- 4 — SUBCATCHMENT
- 4 — REACH
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- FLOW PATH

TOWN NOTES

IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE CONTRACTOR SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN

REQUIRED EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE OF THE SITE AND SHALL BE MAINTAINED THROUGH THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.

ALL MATERIALS AND METHODS OF CONSTRUCTION SHALL CONFORM TO TOWN OF BARRINGTON SUBDIVISION REGULATIONS AND THE LATEST EDITION OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION.

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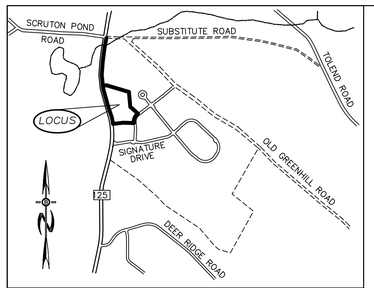
REVISIONS:	DATE:

PROPOSED WATERSHED PLAN – W2

FOR:
COMMERCIAL DEVELOPMENT
ROUTE 125
BARRINGTON, NH

DATE:	OCTOBER 18, 2023	SCALE:	1"=50'
PROJ. NO:	NH-1144.5	SHEET NO.	2 of 2



LOCATION MAP
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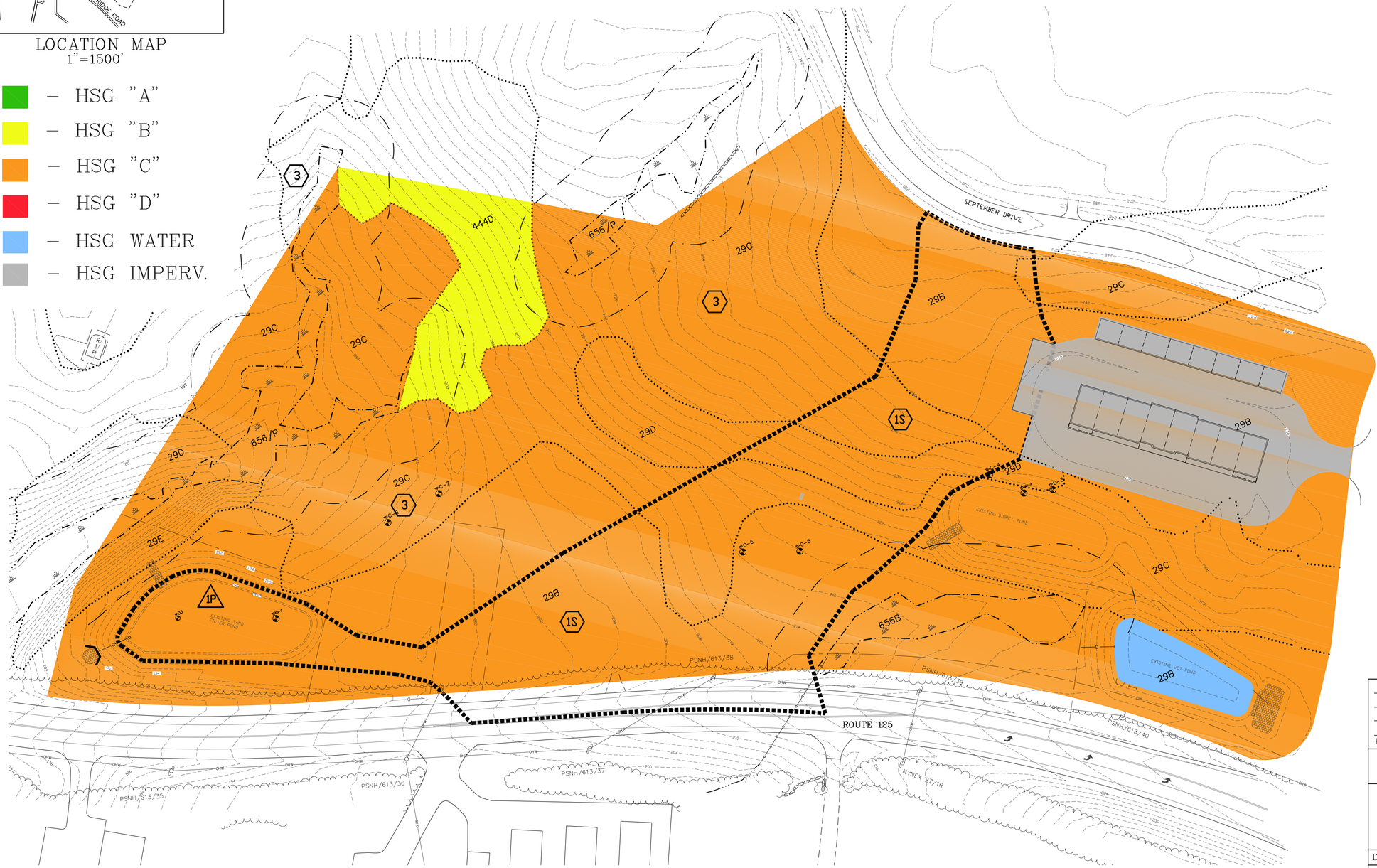
- HSG "C"
- HSG "D"
- HSG WATER
- HSG IMPERV.



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STATE OF NEW HAMPSHIRE
LUKE D. HURLEY
no. 095
CERTIFIED SOIL SCIENTIST
3/15/21

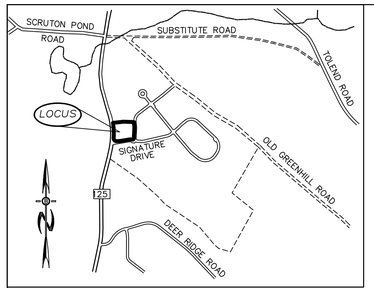
STATE OF NEW HAMPSHIRE
LUKE HURLEY
3/16/21
No. 232
CERTIFIED WETLAND SCIENTIST

REVISIONS:	DATE:

EXISTING CONDITIONS COLOR SOILS PLAN

FOR:
COMMERCIAL DEVELOPMENT
ROUTE 125
BARRINGTON, NH

DATE:	OCTOBER 18, 2023	SCALE:	1"=50'
PROJ. N0:	NH-1144.5	SHEET NO.	1 of 2



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