SEBAGO TECHNICS

CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT REPORT

For

RAYMOND CAPE ROAD SUBDIVISION
RAYMOND, MAINE

Prepared for:

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40 YEARS OWNERSHIP · GROWTH

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STORMWATER MANAGEMENT REPORT
RAYMOND CAPE ROAD SUBDIVISION
RAYMOND, MAINE

1. Introduction

This Stormwater Management Plan Report has been prepared to present analyses performed to address the potential impacts associated with the project due to proposed modification in stormwater runoff characteristics and land cover changes. The stormwater management controls that are outlined in this report have been designed to suit the proposed development and to comply with applicable regulatory requirements.

2. Existing Conditions

The project site is an approximately 37-acre parcel of undeveloped land on Raymond Cape Road, Raymond. The parcel consists of undeveloped woodland and is located on the eastern side of Raymond Cape Road. The proposed site is identified on the Town of Raymond Tax Map 04 as lot 29. The site generally slopes up from Raymond Cape Road, and typical slopes on the site range from approximately 5-35%.

The proposed site is tributary to Sebago Lake. Sebago Lake is listed as most at risk from new development in the Maine DEP Chapter 502.

The proposed development area of the site is not located in an identified flood zone per the FEMA Flood Insurance Rate Map for the Town of Raymond, Community Panel 2302050020B with an effective date of May 5, 1981. A copy of the flood insurance rate map is attached in Appendix 5.

3. Soils

Soil information for the site was obtained from the Class C Soil Survey performed by Sebago Technics, Inc. The Hydrologic Soil Groups (HSG) of the soils on site as classified by the soil survey are delineated on the stormwater management plans and are as follows:

Soil Map Symbol	Soil Name	Slope (%)	HSG
BeD	Becket	15-25	C
SeA	Sebago	0-3	D
SkB	Skerry	3-8	C
SkC	Skerry	8-15	C
TuC	Tunbridge	8-15	C
TuD	Tunbridge	15-25	C
WeB	Westbury	3-8	D

A copy of the Class C, Medium-High Intensity Soil Survey performed by Sebago Technics, Inc. is included in Appendix 4.

4. Proposed Site Improvements

The proposed project is a residential subdivision consisting of 12 lots with an average lot size of approximately 1.7 acres. Access for the proposed subdivision will be provided by a dead-end private road that runs through the center of the original 37-acre parcel. The private road will extend approximately 2,000 linear feet from Raymond Cape Road to the rear boundary of the existing parcel. Stormwater runoff will be treated by two grassed underdrained soil filters. The proposed site improvements are for the construction of the subdivision road and stormwater control methods only. Development of the individual house lots is not proposed as part of this project. The proposed site improvements will result in a total developed area of approximately 142,505 square feet, and create approximately 42,240 square feet of new impervious area.

5. Existing Conditions Model

The Existing Conditions Stormwater Management Plan consists of five (5) subcatchments labeled 1.0S through 5.0S in the HydroCAD model. Five (5) locations were identified as Points of Analysis (POA) for comparing peak runoff rates.

POA-1 is located in the northwest portion of the site where runoff drains northwest towards the adjacent house lot. Subcatchment 1.0S contributes runoff to this POA with a total runoff area of approximately 4.0 acres. POA-1 and the associated drainage areas are tributary to Sebago Lake.

POA-2 is located at the southwest corner of the parcel in the ditch along Raymond Cape Road. Subcatchment 2.0S contributes runoff to this POA with an overall runoff area of approximately 7.3 acres. POA-2 and the associated drainage area is tributary to Sebago Lake.

POA-3 is located south of the parcel in the existing forested wetland complex. Subcatchment 3.0S contributes runoff to this POA with an overall runoff area of approximately 6.0 acres. POA-3 and the associated drainage area is tributary to Sebago Lake.

POA-4 is located southeast of the parcel in a large existing forested wetland. Subcatchment 4.0S contributes runoff to this POA with an overall runoff area of approximately 23.0 acres. POA-4 and the associated drainage area is tributary to Sebago Lake.

POA-5 is located at the northeast corner of the parcel in the small existing wetland. Subcatchment 5.0S contributes runoff to this POA with an overall runoff area of approximately 1.2 acres. POA-5 and the associated drainage area is tributary to Sebago Lake.

6. Proposed Conditions Model

The Proposed Conditions Stormwater Management Plan consists of the same overall area as the Existing Conditions plan, however, the proposed condition subcatchments have been broken into smaller watersheds as a result of the proposed development. Subcatchment areas have been modeled to account for the future development of each lot, with an assumed developed area of 12,500 SF, of which 3,000 SF is assumed to be impervious. The stormwater BMPs have been designed for control of peak runoff rates from this future development, however stormwater quality treatment is provided for the roadway only.

Subcatchment 10.0S is tributary to POA-1 where runoff from undeveloped woodland area drains northwest towards the adjacent property. This subcatchment is relatively unchanged from existing conditions and is approximately 3.7 acres in size.

POA-2 contains subcatchments 20.0S through 20.6S where runoff drains to the Raymond Cape Road ditch located at the southwest corner of the overall site. Subcatchments 20.0S, 20.1S, and 20.2S receive stormwater quality treatment through the proposed BMP located at the entrance to the site. The total area draining to POA-2 in the proposed conditions is approximately 8.3 acres.

POA-3 contains subcatchment 30.0S and consists of two proposed house lots and open space that drain towards the center of the southern boundary of the overall site. The total area of this subcatchment is approximately 5.2 acres.

Subcatchments 40.0S through 40.6S contribute runoff to POA-4, located near the southeast boundary of the overall site. Water quality treatment is provided to subcatchments 40.0S and 40.1S by the second proposed stormwater BMP located near the rear end of the proposed roadway. The overall area of these subcatchments is approximately 23.0 acres.

Subcatchment 50.0S contains the same 1.2-acre area as the Existing Conditions Model subcatchment 5.0S, and drains to POA-5 located at the northeast corner of the site.

The two Best Management Practices (grassed underdrained soil filters) have been designed and sized in accordance with Maine DEP BMP standards contained within Chapter 500 and the BMP Manual. Sizing calculations can be found in Appendix 1.

7. Stormwater Management

Basic Standard - Chapter 500, Section 4(B)

Since the project will disturb more than one (1) acre of land area, MDEP Basic Standards apply, requiring that grading or other construction activities on the site do not impede or otherwise alter drainage ways to have an unreasonable adverse impact. We have avoided adverse impacts by providing an Erosion & Sedimentation Control Plan, and an Inspection, Maintenance and Housekeeping Plan (Appendix 3) to be implemented during construction and post-construction stabilization of the site. These construction requirements have been developed following Best Management Practice guidelines.

General Standard - Chapter 500, Section 4(C)

Since the project will create more than 20,000 square feet of impervious area in the watershed of a lake most at-risk, MDEP General Standards apply, which require a project's stormwater management system to include treatment measures that will mitigate for the increased frequency and duration of channel erosive flows due to runoff from smaller storms, provide for effective treatment of pollutants in stormwater, and mitigate potential temperature impacts. The General Standards require treatment of no less than 95% of the site's created impervious area and no less than 80% of the site's created developed area (landscaped area and impervious area combined). To mitigate the changes in hydrologic patterns due to the development of this project, two underdrained soil filters have been implemented into the stormwater management infrastructure. Filtration BMPs are very effective at removing a wide range of pollutants through the use of organic soil filter media.

Linear Portion of a Project - Chapter 500, Section 4(C)5(c)

Since the project is for the construction of a road only, it falls under the linear portion exception of the General Standard. This exception reduces the treatment requirements to no less than 75% of the linear portion's impervious area and 50% of the linear portion's developed area. Through the use of the aforementioned BMP's 85.3% of new impervious area and 80.8% of new developed area will be receiving treatment. This meets the requirements for the Maine DEP General Standards, Linear Portion of a Project Exemption. Treatment and BMP calculations are attached to this report as Appendix 1.

Phosphorus Standard - Chapter 500, Section 4(D)

Since the proposed roadway will create less than 3 acres of impervious area and less than 5 acres of developed area in a lake watershed that is not severely blooming, the general standards may be used instead of the phosphorus standard.

Flooding Standard – Chapter 500, Section 4(F)

Since the project results in less than three acres of impervious area and less than 20 acres of developed area, DEP flooding standards do not apply. The flooding standard requires that the peak runoff rates in the proposed conditions do not exceed the existing peak runoff rates in the 24-hour storms of the 2, 10, and 25-year frequencies. However, per Town of Raymond requirements, the peak runoff rates in the fully developed subdivision conditions must be at or below the existing conditions. Since development of the lots is not proposed as part of this project, assumed areas of development had to be used for each lot to analyze these conditions. Lot development was assumed to be 12,500 square feet per lot, with 3,000 square feet assumed to be impervious area. These conditions were modeled using HydroCAD computer software to ensure the proposed stormwater control methods are adequate to maintain peak runoff rates in the fully developed condition that are at or below existing peak rates.

Runoff curve numbers were determined for each of the subcatchment by measuring the area of each hydrologic soil group within each type of land cover. Hydrologic soil groups on the site were determined by the Class C medium-high intensity soil survey performed by Sebago Technics. The type of land cover was determined based on survey data, field reconnaissance, and aerial photography. Times of concentration were determined from site topographic maps in accordance with SCS procedures.

The 24-hour rainfall values utilized in the hydrologic model were obtained from Appendix H of MDEP's Chapter 500: Stormwater Management (effective date August 2015). Rainfall values for Cumberland County are listed in the table below.

Storm Frequency Precipitation (in./24 hr) Cumberland County	
2-year	3.1
10-year	4.6
25-year	5.8

The following table presents the results of the peak runoff calculations at the analysis points for the existing and proposed conditions.

Peak Runoff Rate Summary Table			
Analysis Point	**Storm Event**	**Existing Conditions (cfs)**	**Proposed Conditions (cfs)**
POA-1	2-year	3.4	3.4
	10-year	7.5	7.3
	25-year	11.0	10.6
POA-2	2-year	4.8	4.5
	10-year	11.3	10.7
	25-year	17.2	17.1
POA-3	2-year	4.0	3.8
	10-year	10.0	8.9
	25-year	15.5	13.5
POA-4	2-year	8.9	8.5
	10-year	21.6	21.4
	25-year	33.0	32.9
POA-5	2-year	0.6	0.6
	10-year	1.5	1.5
	25-year	2.3	2.3

The HydroCAD Data output sheets from this analysis are appended to this report (Appendix 2) along with the Stormwater Management Plans (Appendix 5). The model predicts that the peak runoff rates in the fully developed subdivision conditions at all Points of Analysis are at or below existing peak runoff rates for the 2, 10, and 25-year storm events with implementation of the proposed stormwater management practices.

8. Summary

The proposed development has been designed to manage stormwater runoff through Best Management Practices approved by MDEP. Stormwater BMP's provide treatment to 85.3% (75% required) of impervious areas, and 80.8% (50% required) of the total developed area associated with development of the roadway only. Control of stormwater quantity has been designed for both the proposed roadway development and the future lot development at a limit of 12,500 SF per lot (3,000 SF impervious area). Stormwater discharging from the fully developed subdivision will be at or below existing conditions for the 2, 10, and 25-year storm events at all five Points of Analysis. Additionally, erosion and sedimentation controls along with associated maintenance and housekeeping procedures have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

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4/19/22

Appendix 1

Stormwater Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job # 21397

AREA ID	WATERSHED SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NET NEW DEVELOPED AREA (S.F.)	NET EXISTING DEVELOPED AREAS (S.F.)	TREATMENT PROVIDED?	IMPERVIOUS AREA TREATED (S.F.)	LANDSCAPED AREA TREATED (S.F.)	DEVELOPED AREA TREATED (S.F.)	TREATMENT BMP
10.0S	162,904	0	0	0	0	0	0	NO	0	0	0	
20.0S	26,540	0	9,645	0	16,895	26,540	0	YES	9,645	16,895	26,540	UDSF-1
20.1S	31,943	0	8,979	0	22,964	31,943	0	YES	8,979	22,964	31,943	UDSF-1
20.2S	3,333	0	1,046	0	2,287	3,333	0	YES	1,046	2,287	3,333	UDSF-1
20.3S	114,936	0	0	0	0	0	0	NO	0	0	0	
20.4S	36,581	0	0	0	0	0	0	NO	0	0	0	
20.5S	111,066	0	1,301	0	3,062	4,363	0	NO	0	0	0	
20.6S	38,906	0	1,406	0	2,476	3,882	0	NO	0	0	0	
30.0S	224,629	0	1,210	0	1,144	2,354	0	NO	0	0	0	
40.0S	26,154	0	9,523	0	16,631	26,154	0	YES	9,523	16,631	26,154	UDSF-2
40.1S	27,219	0	6,830	0	20,389	27,219	0	YES	6,830	20,389	27,219	UDSF-2
40.2S	15,145	0	0	0	0	0	0	NO	0	0	0	
40.3S	313,659	0	0	0	3,467	3,467	0	NO	0	0	0	
40.4S	104,649	0	0	0	0	0	0	NO	0	0	0	
40.5S	47,186	0	518	0	2,287	2,805	0	NO	0	0	0	
40.6S	469,486	0	1,782	0	8,663	10,445	0	NO	0	0	0	
50.0S	52,286	0	0	0	0	0	0	NO	0	0	0	
TOTAL (S.F.)	**1,806,622**	**0**	**42,240**	**0**	**100,265**	**142,505**	**0**		**36,023**	**79,166**	**115,189**	

TOTAL NEW IMPERVIOUS AREA (S.F.)	**42,240**	**TOTAL DEVELOPED AREA (S.F.)**	**142,505**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**36,023**	**TOTAL AREA RECEIVING TREATMENT (S.F.)**	**115,189**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**85.28%**	**% OF AREA RECEIVING TREATMENT**	**80.83%**

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JOB	21397		
SHEET NO.	1	OF	2
CALCULATED BY	JBP	DATE	3/11/2022
FILE NAME	21397 WQC	PRNT DATE	3/11/2022

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1
   a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter: UDSF-1

Landscaped Area	42,146.00	SF	
Impervious Area	19,670.00	SF	

Minimum Surface Area

Required (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	42,146.00	SF	Area	842.9	SF
Total Impervious Area	19,670.00	SF	Area	983.5	SF
Required Minimum Surface Area				1,826.4	SF
Provided Surface Area				2,916.0	SF

Treatment Volume

Required (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	42,146.00	SF	Volume	1,404.9			
Impervious Area	19,670.00	SF	Volume	1,639.2			
Treatment Volume Required				3,044.0	CF	0.070	AF
Provided Treatment Volume				3,241.0	CF		

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1 "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load:	55 cubic feet per acre per year of sanded area						
Area to be sanded:	19,670.00	SF					
Sediment Volume	25	CF					
Provided	34	CF	6	Inch Deep Forebay	with area of	68	sf

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JOB	21397		
SHEET NO.	2	OF	2
CALCULATED BY	JBP	DATE	3/11/2022
CHECKED BY	RAM		
FILE NAME	21397 WQC	PRINT DATE	3/11/2022

ORIFICE SIZING CALCULATION

Stormwater BMP: UDSF-1

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = 0.6 Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{WQv}{Tcf}$$

TV = Treatment Volume (cf)
T = Target Drain Time (Hours)
cf = Conversion Factor = 3600 sec/hr

TV = 3,044 cf
t = 24 hr

$$Q = \frac{TV}{tCF}$$ 0.04 cfs Target Rate for 24 hour discharge

surface area of filter = 2,916 SF

hmax = 1.04 ft h/2= 0.52 ft

$$A = \frac{Q}{C\sqrt{(2gh)}}$$ A = 0.010 sf = 1.46 sq. in.

Diam = 1.36 in

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JOB	21397		
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FILE NAME	21397 WQC	PRNT DATE	4/18/2022

UNDERDRAINED SOIL FILTER

Task: Calculate water quality volume per MDEP chapter 500 regulations

References

1. Maine DEP Chapter 500, Section 4.C.(3)(b)
   a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"
2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1
   a. "surface should represent 5% of impervious area and 2% of landscaped area"

Tributary to Underdrained Filter: UDSF-2

Landscaped Area	37,020.00	SF	
Impervious Area	16,353.00	SF	

Minimum Surface Area

Required: (2% X Landscaped + 5%" X Impervious)

Total Landscaped Area	37,020.00	SF	Area	740.4	SF
Total Impervious Area	16,353.00	SF	Area	817.7	SF
Required Minimum Surface Area				1,558.1	SF
Provided Surface Area				2,385.0	SF

Treatment Volume

Required: (0.4" X Landscaped + 1.0" X Impervious)

Landscaped Area	37,020.00	SF	Volume	1,234.0			
Impervious Area	16,353.00	SF	Volume	1,362.8			
Treatment Volume Required				2,596.8	CF	0.060	AF
Provided Treatment Volume				2,701.0	CF		

Sediment Pre-Treatment

Per Reference 2, Chapter 7.1: "Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"

Annual Sediment Load:	55 cubic feet per acre per year of sanded area						
Area to be sanded:	16,353.00	SF					
Sediment Volume	21	CF					
Provided	54	CF	6	Inch Deep Forebay	with area of	107	sf

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CHECKED BY	RAM		
FILE NAME	21397 WQC	PRINT DATE	4/18/2022

ORIFICE SIZING CALCULATION

Stormwater BMP: UDSF-2

Orifice Equation $Q = CA\sqrt{(2gh)}$

Q = Rate of Discharge (cfs)
A = Orifice Area (sf)
G = Gravitational Constant (32.2 ft/s^2)
h = Depth of water above the flow line (center) of the orifice (ft)
C = 0.6 Orifice coefficient (usually assumed = 0.6)

Average discharge rate required to drawdown the treatment volume in a desired amount of time is:

$$Q = \frac{WQv}{Tcf}$$

TV = Treatment Volume (cf)
T = Target Drain Time (Hours)
cf = Conversion Factor = 3600 sec/hr

TV = 2,597 cf
t = 24 hr

$$Q = \frac{TV}{tCF}$$ 0.03 cfs Target Rate for 24 hour discharge

surface area of filter = 2,385 SF

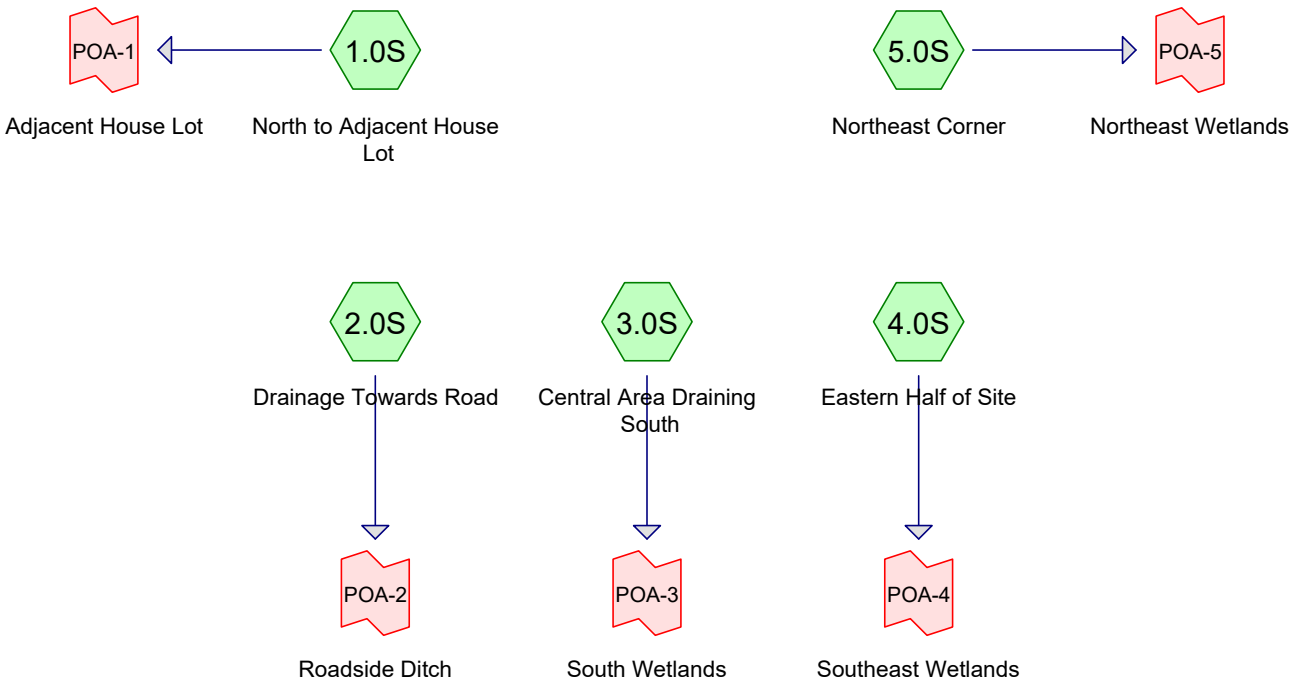
hmax = 1.09 ft h/2= 0.54 ft

$$A = \frac{Q}{C\sqrt{(2gh)}}$$ A = 0.008 sf = 1.22 sq. in.

Diam = 1.25 in

Appendix 2A

Existing Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for 21397 Existing Conditions
Prepared by Sebago Technics, Inc, Printed 4/18/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
33.359	70	Woods, Good, HSG C (1.0S, 2.0S, 3.0S, 4.0S, 5.0S)
8.115	77	Woods, Good, HSG D (1.0S, 2.0S, 3.0S, 4.0S)
41.474	**71**	**TOTAL AREA**

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

Subcatchment1.0S: North to Adjacent Runoff Area=173,412 sf 0.00% Impervious Runoff Depth=3.11"
Flow Length=580' Tc=15.0 min CN=75 Runoff=11.0 cfs 1.033 af

Subcatchment2.0S: Drainage Towards Runoff Area=317,953 sf 0.00% Impervious Runoff Depth=2.83"
Flow Length=1,145' Tc=17.4 min CN=72 Runoff=17.2 cfs 1.722 af

Subcatchment3.0S: Central Area Draining Runoff Area=260,949 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=440' Tc=11.2 min CN=70 Runoff=15.5 cfs 1.322 af

Subcatchment4.0S: Eastern Half of Site Runoff Area=1,002,022 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=1,570' Tc=47.4 min CN=71 Runoff=33.0 cfs 5.249 af

Subcatchment5.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=405' Tc=23.7 min CN=70 Runoff=2.3 cfs 0.265 af

Link POA-1: Adjacent House Lot Inflow=11.0 cfs 1.033 af
Primary=11.0 cfs 1.033 af

Link POA-2: Roadside Ditch Inflow=17.2 cfs 1.722 af
Primary=17.2 cfs 1.722 af

Link POA-3: South Wetlands Inflow=15.5 cfs 1.322 af
Primary=15.5 cfs 1.322 af

Link POA-4: Southeast Wetlands Inflow=33.0 cfs 5.249 af
Primary=33.0 cfs 5.249 af

Link POA-5: Northeast Wetlands Inflow=2.3 cfs 0.265 af
Primary=2.3 cfs 0.265 af

Total Runoff Area = 41.474 ac Runoff Volume = 9.590 af Average Runoff Depth = 2.77"
100.00% Pervious = 41.474 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1.0S: North to Adjacent House Lot

Runoff = 11.0 cfs @ 12.21 hrs, Volume= 1.033 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
41,519	70	Woods, Good, HSG C
131,893	77	Woods, Good, HSG D
173,412	75	Weighted Average
173,412		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.8	80	0.1211	1.74		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
2.7	110	0.0180	0.67		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.7	65	0.1000	1.58		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
6.2	190	0.0105	0.51		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.5	55	0.1640	2.02		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
1.4	60	0.0210	0.72		**Shallow Concentrated Flow, G to H** Woodland Kv= 5.0 fps
15.0	580	Total			

Summary for Subcatchment 2.0S: Drainage Towards Road

Runoff = 17.2 cfs @ 12.24 hrs, Volume= 1.722 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
228,817	70	Woods, Good, HSG C
89,136	77	Woods, Good, HSG D
317,953	72	Weighted Average
317,953		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	15	0.1200	0.11		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
8.3	675	0.0741	1.36		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
3.5	105	0.0100	0.50		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
1.1	115	0.1220	1.75		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
2.2	235	0.0640	1.77		**Shallow Concentrated Flow, E to F** Short Grass Pasture Kv= 7.0 fps
17.4	1,145	Total			

Summary for Subcatchment 3.0S: Central Area Draining South

Runoff = 15.5 cfs @ 12.16 hrs, Volume= 1.322 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
244,072	70	Woods, Good, HSG C
16,877	77	Woods, Good, HSG D
260,949	70	Weighted Average
260,949		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	30	0.0750	0.10		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.6	160	0.1125	1.68		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.5	45	0.0100	0.50		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.6	60	0.1167	1.71		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
2.6	145	0.0357	0.94		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
11.2	440	Total			

Summary for Subcatchment 4.0S: Eastern Half of Site

Runoff = 33.0 cfs @ 12.69 hrs, Volume= 5.249 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
886,427	70	Woods, Good, HSG C
115,595	77	Woods, Good, HSG D
1,002,022	71	Weighted Average
1,002,022		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.6	55	0.1000	1.58		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.1	400	0.0350	0.94		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.7	65	0.1000	1.58		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
13.7	290	0.0050	0.35		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
7.5	560	0.0625	1.25		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
7.1	150	0.0050	0.35		**Shallow Concentrated Flow, G to H** Woodland Kv= 5.0 fps
47.4	1,570	Total			

Summary for Subcatchment 5.0S: Northeast Corner

Runoff = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
52,286	70	Woods, Good, HSG C
52,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	155	0.0840	1.45		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
9.4	200	0.0050	0.35		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
23.7	405	Total			

Summary for Link POA-1: Adjacent House Lot

Inflow Area = 3.981 ac, 0.00% Impervious, Inflow Depth = 3.11" for 25-YR event
Inflow = 11.0 cfs @ 12.21 hrs, Volume= 1.033 af
Primary = 11.0 cfs @ 12.21 hrs, Volume= 1.033 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2: Roadside Ditch

Inflow Area = 7.299 ac, 0.00% Impervious, Inflow Depth = 2.83" for 25-YR event
Inflow = 17.2 cfs @ 12.24 hrs, Volume= 1.722 af
Primary = 17.2 cfs @ 12.24 hrs, Volume= 1.722 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3: South Wetlands

Inflow Area = 5.991 ac, 0.00% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 15.5 cfs @ 12.16 hrs, Volume= 1.322 af
Primary = 15.5 cfs @ 12.16 hrs, Volume= 1.322 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4: Southeast Wetlands

Inflow Area = 23.003 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-YR event
Inflow = 33.0 cfs @ 12.69 hrs, Volume= 5.249 af
Primary = 33.0 cfs @ 12.69 hrs, Volume= 5.249 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-5: Northeast Wetlands

Inflow Area = 1.200 ac, 0.00% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af
Primary = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

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

Subcatchment1.0S: North to Adjacent Runoff Area=173,412 sf 0.00% Impervious Runoff Depth=1.03"
Flow Length=580' Tc=15.0 min CN=75 Runoff=3.4 cfs 0.341 af

Subcatchment2.0S: Drainage Towards Runoff Area=317,953 sf 0.00% Impervious Runoff Depth=0.87"
Flow Length=1,145' Tc=17.4 min CN=72 Runoff=4.8 cfs 0.528 af

Subcatchment3.0S: Central Area Draining Runoff Area=260,949 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=440' Tc=11.2 min CN=70 Runoff=4.0 cfs 0.385 af

Subcatchment4.0S: Eastern Half of Site Runoff Area=1,002,022 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,570' Tc=47.4 min CN=71 Runoff=8.9 cfs 1.569 af

Subcatchment5.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=405' Tc=23.7 min CN=70 Runoff=0.6 cfs 0.077 af

Link POA-1: Adjacent House Lot Inflow=3.4 cfs 0.341 af
Primary=3.4 cfs 0.341 af

Link POA-2: Roadside Ditch Inflow=4.8 cfs 0.528 af
Primary=4.8 cfs 0.528 af

Link POA-3: South Wetlands Inflow=4.0 cfs 0.385 af
Primary=4.0 cfs 0.385 af

Link POA-4: Southeast Wetlands Inflow=8.9 cfs 1.569 af
Primary=8.9 cfs 1.569 af

Link POA-5: Northeast Wetlands Inflow=0.6 cfs 0.077 af
Primary=0.6 cfs 0.077 af

Total Runoff Area = 41.474 ac Runoff Volume = 2.900 af Average Runoff Depth = 0.84"
100.00% Pervious = 41.474 ac 0.00% Impervious = 0.000 ac

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

Subcatchment1.0S: North to Adjacent Runoff Area=173,412 sf 0.00% Impervious Runoff Depth=2.13"
Flow Length=580' Tc=15.0 min CN=75 Runoff=7.5 cfs 0.706 af

Subcatchment2.0S: Drainage Towards Runoff Area=317,953 sf 0.00% Impervious Runoff Depth=1.89"
Flow Length=1,145' Tc=17.4 min CN=72 Runoff=11.3 cfs 1.152 af

Subcatchment3.0S: Central Area Draining Runoff Area=260,949 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=440' Tc=11.2 min CN=70 Runoff=10.0 cfs 0.871 af

Subcatchment4.0S: Eastern Half of Site Runoff Area=1,002,022 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=1,570' Tc=47.4 min CN=71 Runoff=21.6 cfs 3.487 af

Subcatchment5.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=405' Tc=23.7 min CN=70 Runoff=1.5 cfs 0.175 af

Link POA-1: Adjacent House Lot Inflow=7.5 cfs 0.706 af
Primary=7.5 cfs 0.706 af

Link POA-2: Roadside Ditch Inflow=11.3 cfs 1.152 af
Primary=11.3 cfs 1.152 af

Link POA-3: South Wetlands Inflow=10.0 cfs 0.871 af
Primary=10.0 cfs 0.871 af

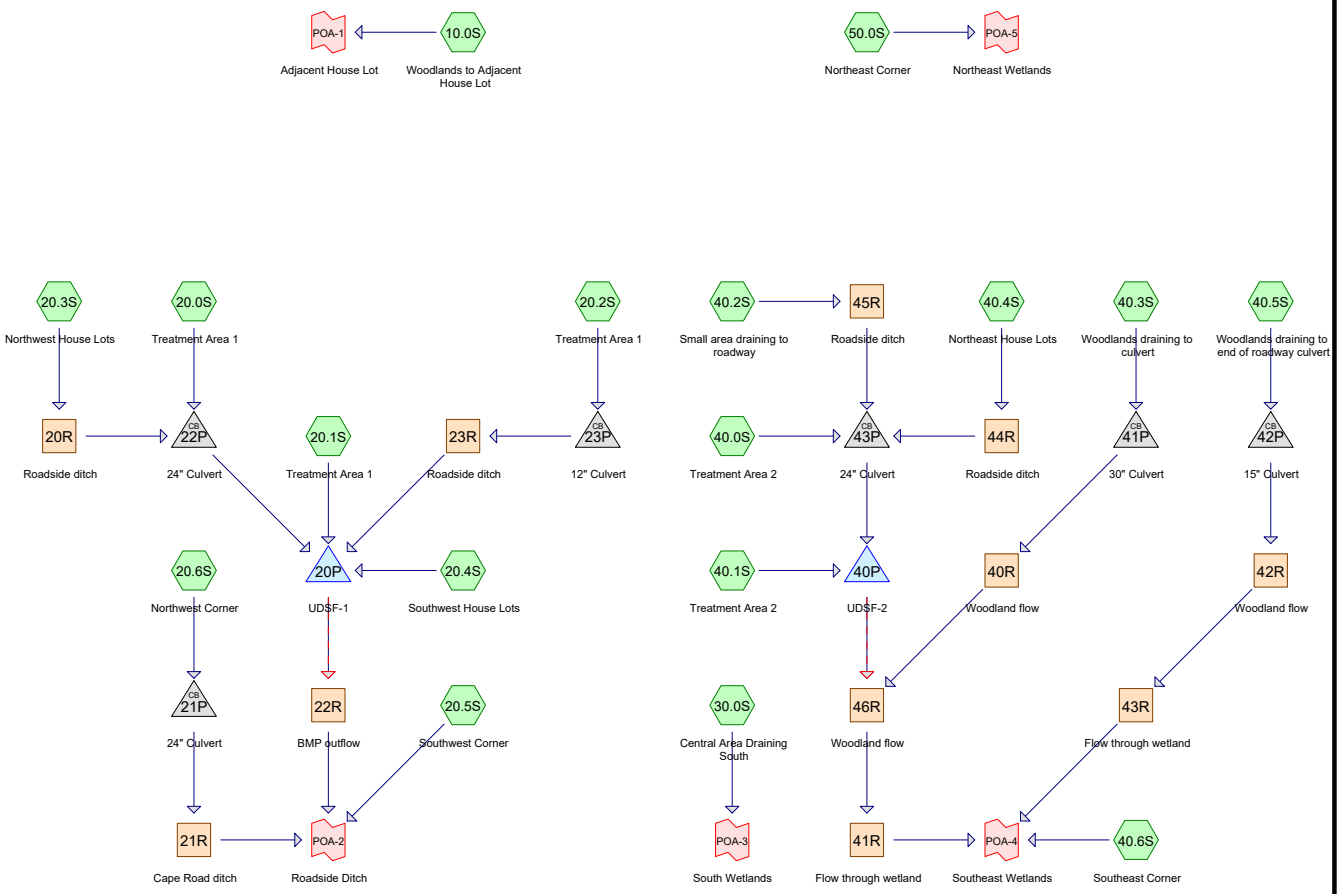
Link POA-4: Southeast Wetlands Inflow=21.6 cfs 3.487 af
Primary=21.6 cfs 3.487 af

Link POA-5: Northeast Wetlands Inflow=1.5 cfs 0.175 af
Primary=1.5 cfs 0.175 af

Total Runoff Area = 41.474 ac Runoff Volume = 6.391 af Average Runoff Depth = 1.85"
100.00% Pervious = 41.474 ac 0.00% Impervious = 0.000 ac

Appendix 2B

Proposed Conditions
HydroCAD Summary



Routing Diagram for 21397 Proposed Conditions
Prepared by Sebago Technics, Inc, Printed 4/18/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.053	74	House lot >75% Grass cover, Good, HSG C (20.3S, 20.4S, 30.0S, 40.4S, 40.6S)
0.564	80	House lot >75% Grass cover, Good, HSG D (20.3S, 20.4S, 30.0S)
0.826	98	House lot impervious (20.3S, 20.4S, 30.0S, 40.4S, 40.6S)
0.970	98	Pavement (20.0S, 20.1S, 20.2S, 20.5S, 20.6S, 30.0S, 40.0S, 40.1S, 40.5S, 40.6S)
27.676	70	Woods, Good, HSG C (10.0S, 20.3S, 20.4S, 20.5S, 20.6S, 30.0S, 40.2S, 40.3S, 40.4S, 40.5S, 40.6S, 50.0S)
7.083	77	Woods, Good, HSG D (10.0S, 20.3S, 20.5S, 20.6S, 30.0S, 40.3S, 40.6S)
1.981	72	Woods/grass comb., Good, HSG C (20.0S, 20.1S, 20.2S, 20.5S, 20.6S, 40.0S, 40.1S, 40.3S, 40.5S, 40.6S)
0.321	79	Woods/grass comb., Good, HSG D (20.0S, 20.1S, 30.0S)
41.474	**73**	**TOTAL AREA**

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

Subcatchment10.0S: Woodlands to Runoff Area=162,904 sf 0.00% Impervious Runoff Depth=3.21"
Flow Length=580' Tc=15.0 min CN=76 Runoff=10.6 cfs 1.000 af

Subcatchment20.0S: Treatment Area 1 Runoff Area=26,540 sf 36.34% Impervious Runoff Depth=3.91"
Flow Length=975' Tc=10.6 min CN=83 Runoff=2.4 cfs 0.198 af

Subcatchment20.1S: Treatment Area 1 Runoff Area=31,943 sf 28.11% Impervious Runoff Depth=3.70"
Flow Length=875' Tc=8.6 min CN=81 Runoff=2.9 cfs 0.226 af

Subcatchment20.2S: Treatment Area 1 Runoff Area=3,333 sf 31.38% Impervious Runoff Depth=3.60"
Tc=6.0 min CN=80 Runoff=0.3 cfs 0.023 af

Subcatchment20.3S: Northwest House Runoff Area=114,936 sf 10.44% Impervious Runoff Depth=3.31"
Flow Length=225' Tc=10.7 min CN=77 Runoff=8.7 cfs 0.727 af

Subcatchment20.4S: Southwest House Runoff Area=36,581 sf 16.40% Impervious Runoff Depth=3.40"
Flow Length=350' Tc=9.0 min CN=78 Runoff=3.0 cfs 0.238 af

Subcatchment20.5S: Southwest Corner Runoff Area=111,066 sf 1.17% Impervious Runoff Depth=2.74"
Flow Length=460' Tc=8.4 min CN=71 Runoff=7.5 cfs 0.582 af

Subcatchment20.6S: Northwest Corner Runoff Area=38,906 sf 3.61% Impervious Runoff Depth=3.11"
Flow Length=300' Tc=9.7 min CN=75 Runoff=2.9 cfs 0.232 af

Subcatchment30.0S: Central Area Runoff Area=224,629 sf 3.21% Impervious Runoff Depth=2.83"
Flow Length=435' Tc=13.2 min CN=72 Runoff=13.5 cfs 1.216 af

Subcatchment40.0S: Treatment Area 2 Runoff Area=26,154 sf 36.41% Impervious Runoff Depth=3.70"
Flow Length=485' Slope=0.0100 '/' Tc=11.4 min CN=81 Runoff=2.2 cfs 0.185 af

Subcatchment40.1S: Treatment Area 2 Runoff Area=27,219 sf 25.09% Impervious Runoff Depth=3.50"
Flow Length=365' Tc=6.0 min CN=79 Runoff=2.6 cfs 0.182 af

Subcatchment40.2S: Small area draining to Runoff Area=15,145 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=220' Tc=11.0 min CN=70 Runoff=0.9 cfs 0.077 af

Subcatchment40.3S: Woodlands draining Runoff Area=313,659 sf 0.00% Impervious Runoff Depth=2.74"
Flow Length=1,025' Tc=34.5 min CN=71 Runoff=12.1 cfs 1.643 af

Subcatchment40.4S: Northeast House Runoff Area=104,649 sf 8.60% Impervious Runoff Depth=2.92"
Flow Length=330' Tc=13.6 min CN=73 Runoff=6.4 cfs 0.585 af

Subcatchment40.5S: Woodlands draining Runoff Area=47,186 sf 1.10% Impervious Runoff Depth=2.65"
Flow Length=400' Tc=13.7 min CN=70 Runoff=2.6 cfs 0.239 af

Subcatchment40.6S: Southeast Corner Runoff Area=469,486 sf 1.02% Impervious Runoff Depth=2.74"
Flow Length=710' Tc=31.8 min CN=71 Runoff=18.9 cfs 2.460 af

Subcatchment50.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=2.65"
Flow Length=405' Tc=23.7 min CN=70 Runoff=2.3 cfs 0.265 af

Reach 20R: Roadside ditch Avg. Flow Depth=0.39' Max Vel=7.09 fps Inflow=8.7 cfs 0.727 af
n=0.025 L=515.0' S=0.0796 '/' Capacity=284.6 cfs Outflow=8.7 cfs 0.727 af

Reach 21R: Cape Road ditch Avg. Flow Depth=0.24' Max Vel=4.27 fps Inflow=2.9 cfs 0.232 af
n=0.025 L=355.0' S=0.0479 '/' Capacity=220.7 cfs Outflow=2.8 cfs 0.232 af

Reach 22R: BMP outflow Avg. Flow Depth=0.36' Max Vel=4.82 fps Inflow=10.5 cfs 1.412 af
n=0.035 L=210.0' S=0.0643 '/' Capacity=18.9 cfs Outflow=10.5 cfs 1.412 af

Reach 23R: Roadside ditch Avg. Flow Depth=0.06' Max Vel=2.11 fps Inflow=0.3 cfs 0.023 af
n=0.025 L=820.0' S=0.0622 '/' Capacity=251.5 cfs Outflow=0.3 cfs 0.023 af

Reach 40R: Woodland flow Avg. Flow Depth=0.31' Max Vel=1.70 fps Inflow=12.1 cfs 1.643 af
n=0.070 L=118.0' S=0.0364 '/' Capacity=100.2 cfs Outflow=12.1 cfs 1.643 af

Reach 41R: Flow through wetland Avg. Flow Depth=0.22' Max Vel=0.44 fps Inflow=15.0 cfs 2.673 af
n=0.070 L=150.0' S=0.0033 '/' Capacity=58.6 cfs Outflow=14.6 cfs 2.673 af

Reach 42R: Woodland flow Avg. Flow Depth=0.11' Max Vel=2.14 fps Inflow=2.6 cfs 0.239 af
n=0.040 L=265.0' S=0.0728 '/' Capacity=11.0 cfs Outflow=2.6 cfs 0.239 af

Reach 43R: Flow through wetland Avg. Flow Depth=0.08' Max Vel=0.14 fps Inflow=2.6 cfs 0.239 af
n=0.070 L=380.0' S=0.0013 '/' Capacity=24.7 cfs Outflow=1.2 cfs 0.239 af

Reach 44R: Roadside ditch Avg. Flow Depth=0.50' Max Vel=3.58 fps Inflow=6.4 cfs 0.585 af
n=0.025 L=395.0' S=0.0152 '/' Capacity=124.3 cfs Outflow=6.4 cfs 0.585 af

Reach 45R: Roadside ditch Avg. Flow Depth=0.12' Max Vel=3.28 fps Inflow=0.9 cfs 0.077 af
n=0.025 L=138.0' S=0.0652 '/' Capacity=257.6 cfs Outflow=0.9 cfs 0.077 af

Reach 46R: Woodland flow Avg. Flow Depth=0.33' Max Vel=1.97 fps Inflow=15.0 cfs 2.673 af
n=0.070 L=196.0' S=0.0459 '/' Capacity=112.5 cfs Outflow=15.0 cfs 2.673 af

Pond 20P: UDSF-1 Peak Elev=311.49' Storage=14,603 cf Inflow=16.9 cfs 1.412 af
Primary=10.5 cfs 1.412 af Secondary=0.0 cfs 0.000 af Outflow=10.5 cfs 1.412 af

Pond 21P: 24" Culvert Peak Elev=308.81' Inflow=2.9 cfs 0.232 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0113 '/' Outflow=2.9 cfs 0.232 af

Pond 22P: 24" Culvert Peak Elev=312.84' Inflow=11.0 cfs 0.925 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0094 '/' Outflow=11.0 cfs 0.925 af

Pond 23P: 12" Culvert Peak Elev=366.32' Inflow=0.3 cfs 0.023 af
12.0" Round Culvert n=0.013 L=56.5' S=0.0088 '/' Outflow=0.3 cfs 0.023 af

Pond 40P: UDSF-2 Peak Elev=351.47' Storage=18,566 cf Inflow=10.8 cfs 1.030 af
Primary=3.4 cfs 1.030 af Secondary=0.0 cfs 0.000 af Outflow=3.4 cfs 1.030 af

Pond 41P: 30" Culvert Peak Elev=349.17' Inflow=12.1 cfs 1.643 af
30.0" Round Culvert n=0.013 L=111.5' S=0.0197 '/' Outflow=12.1 cfs 1.643 af

Pond 42P: 15" Culvert Peak Elev=355.45' Inflow=2.6 cfs 0.239 af
15.0" Round Culvert n=0.013 L=53.4' S=0.0412 '/' Outflow=2.6 cfs 0.239 af

Pond 43P: 24" Culvert Peak Elev=351.61' Inflow=9.2 cfs 0.847 af
24.0" Round Culvert n=0.013 L=56.5' S=0.0124 '/' Outflow=9.2 cfs 0.847 af

Link POA-1: Adjacent House Lot Inflow=10.6 cfs 1.000 af
Primary=10.6 cfs 1.000 af

Link POA-2: Roadside Ditch Inflow=17.1 cfs 2.226 af
Primary=17.1 cfs 2.226 af

Link POA-3: South Wetlands Inflow=13.5 cfs 1.216 af
Primary=13.5 cfs 1.216 af

Link POA-4: Southeast Wetlands Inflow=32.9 cfs 5.371 af
Primary=32.9 cfs 5.371 af

Link POA-5: Northeast Wetlands Inflow=2.3 cfs 0.265 af
Primary=2.3 cfs 0.265 af

Total Runoff Area = 41.474 ac Runoff Volume = 10.078 af Average Runoff Depth = 2.92"
95.67% Pervious = 39.678 ac 4.33% Impervious = 1.796 ac

Summary for Subcatchment 10.0S: Woodlands to Adjacent House Lot

Runoff = 10.6 cfs @ 12.21 hrs, Volume= 1.000 af, Depth= 3.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
31,151	70	Woods, Good, HSG C
131,753	77	Woods, Good, HSG D
162,904	76	Weighted Average
162,904		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.8	80	0.1211	1.74		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
2.7	110	0.0180	0.67		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.7	65	0.1000	1.58		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
6.2	190	0.0105	0.51		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
0.5	55	0.1640	2.02		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
1.4	60	0.0210	0.72		**Shallow Concentrated Flow, G to H** Woodland Kv= 5.0 fps
15.0	580	Total			

Summary for Subcatchment 20.0S: Treatment Area 1

Runoff = 2.4 cfs @ 12.14 hrs, Volume= 0.198 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	9,645	98	Pavement
	10,780	72	Woods/grass comb., Good, HSG C
	6,115	79	Woods/grass comb., Good, HSG D
	26,540	83	Weighted Average
	16,895		63.66% Pervious Area
	9,645		36.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.93		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.10"
5.0	335	0.0250	1.11		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
5.3	625	0.0800	1.98		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
10.6	975	Total			

Summary for Subcatchment 20.1S: Treatment Area 1

Runoff = 2.9 cfs @ 12.12 hrs, Volume= 0.226 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	8,979	98	Pavement
	16,259	72	Woods/grass comb., Good, HSG C
	6,705	79	Woods/grass comb., Good, HSG D
	31,943	81	Weighted Average
	22,964		71.89% Pervious Area
	8,979		28.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	40	0.0300	1.33		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.10"
2.5	165	0.0250	1.11		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
5.6	670	0.0800	1.98		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
8.6	875	Total			

Summary for Subcatchment 20.2S: Treatment Area 1

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 0.023 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,046	98	Pavement
	2,287	72	Woods/grass comb., Good, HSG C
	3,333	80	Weighted Average
	2,287		68.62% Pervious Area
	1,046		31.38% Impervious Area

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

Summary for Subcatchment 20.3S: Northwest House Lots

Runoff = 8.7 cfs @ 12.15 hrs, Volume= 0.727 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	12,000	98	House lot impervious
*	23,750	74	House lot >75% Grass cover, Good, HSG C
*	14,250	80	House lot >75% Grass cover, Good, HSG D
	39,742	70	Woods, Good, HSG C
	25,194	77	Woods, Good, HSG D
	114,936	77	Weighted Average
	102,936		89.56% Pervious Area
	12,000		10.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	80	0.0500	0.16		**Sheet Flow, A to B** Grass: Dense n= 0.240 P2= 3.10"
2.3	145	0.0430	1.04		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
10.7	225	Total			

Summary for Subcatchment 20.4S: Southwest House Lots

Runoff = 3.0 cfs @ 12.13 hrs, Volume= 0.238 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	6,000	98	House lot impervious
*	13,489	74	House lot >75% Grass cover, Good, HSG C
*	5,511	80	House lot >75% Grass cover, Good, HSG D
	11,581	70	Woods, Good, HSG C
	36,581	78	Weighted Average
	30,581		83.60% Pervious Area
	6,000		16.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	30	0.0667	0.10		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	170	0.0500	1.57		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
0.2	35	0.2800	2.65		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
1.9	115	0.0200	0.99		**Shallow Concentrated Flow, D to E** Short Grass Pasture Kv= 7.0 fps
9.0	350	Total			

Summary for Subcatchment 20.5S: Southwest Corner

Runoff = 7.5 cfs @ 12.12 hrs, Volume= 0.582 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,301	98	Pavement
	3,062	72	Woods/grass comb., Good, HSG C
	103,003	70	Woods, Good, HSG C
	3,700	77	Woods, Good, HSG D
	111,066	71	Weighted Average
	109,765		98.83% Pervious Area
	1,301		1.17% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.0	15	0.0667	0.08		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.9	215	0.1440	1.90		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.8	65	0.0150	0.61		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
1.7	165	0.1091	1.65		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
8.4	460	Total			

Summary for Subcatchment 20.6S: Northwest Corner

Runoff = 2.9 cfs @ 12.14 hrs, Volume= 0.232 af, Depth= 3.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,406	98	Pavement
	2,476	72	Woods/grass comb., Good, HSG C
	16,182	70	Woods, Good, HSG C
	18,842	77	Woods, Good, HSG D
	38,906	75	Weighted Average
	37,500		96.39% Pervious Area
	1,406		3.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	25	0.0400	0.08		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	60	0.2333	2.42		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
2.0	70	0.0143	0.60		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.2	40	0.3333	4.04		**Shallow Concentrated Flow, D to E** Short Grass Pasture Kv= 7.0 fps
1.6	105	0.0238	1.08		**Shallow Concentrated Flow, E to F** Short Grass Pasture Kv= 7.0 fps
9.7	300	Total			

Summary for Subcatchment 30.0S: Central Area Draining South

Runoff = 13.5 cfs @ 12.19 hrs, Volume= 1.216 af, Depth= 2.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,210	98	Pavement
	1,144	79	Woods/grass comb., Good, HSG D
*	6,000	98	House lot impervious
*	14,173	74	House lot >75% Grass cover, Good, HSG C
*	4,827	80	House lot >75% Grass cover, Good, HSG D
	183,821	70	Woods, Good, HSG C
	13,454	77	Woods, Good, HSG D
	224,629	72	Weighted Average
	217,419		96.79% Pervious Area
	7,210		3.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	55	0.1091	0.13		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.5	130	0.0308	0.88		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
0.9	95	0.1263	1.78		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
2.9	155	0.0323	0.90		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
13.2	435	Total			

Summary for Subcatchment 40.0S: Treatment Area 2

Runoff = 2.2 cfs @ 12.15 hrs, Volume= 0.185 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	9,523	98	Pavement
	16,631	72	Woods/grass comb., Good, HSG C
	26,154	81	Weighted Average
	16,631		63.59% Pervious Area
	9,523		36.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.8	40	0.0100	0.85		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.10"
10.6	445	0.0100	0.70		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
11.4	485	Total			

Summary for Subcatchment 40.1S: Treatment Area 2

Runoff = 2.6 cfs @ 12.09 hrs, Volume= 0.182 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	6,830	98	Pavement
	20,389	72	Woods/grass comb., Good, HSG C
	27,219	79	Weighted Average
	20,389		74.91% Pervious Area
	6,830		25.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	15	0.0200	0.93		**Sheet Flow, A to B** Smooth surfaces n= 0.011 P2= 3.10"
1.2	100	0.0400	1.40		**Shallow Concentrated Flow, B to C** Short Grass Pasture Kv= 7.0 fps
2.2	250	0.0700	1.85		**Shallow Concentrated Flow, C to D** Short Grass Pasture Kv= 7.0 fps
2.3					**Direct Entry, Direct Entry**
6.0	365	Total			

Summary for Subcatchment 40.2S: Small area draining to roadway

Runoff = 0.9 cfs @ 12.16 hrs, Volume= 0.077 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
15,145	70	Woods, Good, HSG C
15,145		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	60	0.1000	0.13		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
3.4	160	0.0250	0.79		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
11.0	220	Total			

Summary for Subcatchment 40.3S: Woodlands draining to culvert

Runoff = 12.1 cfs @ 12.49 hrs, Volume= 1.643 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
3,467	72	Woods/grass comb., Good, HSG C
262,666	70	Woods, Good, HSG C
47,526	77	Woods, Good, HSG D
313,659	71	Weighted Average
313,659		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	50	0.0300	0.08		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.6	55	0.1000	1.58		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
7.1	400	0.0350	0.94		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
0.7	65	0.1000	1.58		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
13.7	290	0.0050	0.35		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
1.7	165	0.1000	1.58		**Shallow Concentrated Flow, F to G** Woodland Kv= 5.0 fps
34.5	1,025	Total			

Summary for Subcatchment 40.4S: Northeast House Lots

Runoff = 6.4 cfs @ 12.19 hrs, Volume= 0.585 af, Depth= 2.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	9,000	98	House lot impervious
*	28,500	74	House lot >75% Grass cover, Good, HSG C
	67,149	70	Woods, Good, HSG C
	104,649	73	Weighted Average
	95,649		91.40% Pervious Area
	9,000		8.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	45	0.0300	0.08		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.2	175	0.0714	1.34		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.6	110	0.0500	1.12		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
13.6	330	Total			

Summary for Subcatchment 40.5S: Woodlands draining to end of roadway culvert

Runoff = 2.6 cfs @ 12.19 hrs, Volume= 0.239 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	518	98	Pavement
	2,287	72	Woods/grass comb., Good, HSG C
	44,381	70	Woods, Good, HSG C
	47,186	70	Weighted Average
	46,668		98.90% Pervious Area
	518		1.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	50	0.0400	0.09		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
4.2	350	0.0771	1.39		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
13.7	400	Total			

Summary for Subcatchment 40.6S: Southeast Corner

Runoff = 18.9 cfs @ 12.47 hrs, Volume= 2.460 af, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

	Area (sf)	CN	Description
*	1,782	98	Pavement
	8,663	72	Woods/grass comb., Good, HSG C
*	3,000	98	House lot impervious
*	9,500	74	House lot >75% Grass cover, Good, HSG C
	378,473	70	Woods, Good, HSG C
	68,068	77	Woods, Good, HSG D
	469,486	71	Weighted Average
	464,704		98.98% Pervious Area
	4,782		1.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	40	0.0250	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.0	80	0.0690	1.31		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
1.5	60	0.0167	0.65		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
1.8	150	0.0733	1.35		**Shallow Concentrated Flow, D to E** Woodland Kv= 5.0 fps
17.9	380	0.0050	0.35		**Shallow Concentrated Flow, E to F** Woodland Kv= 5.0 fps
31.8	710	Total			

Summary for Subcatchment 50.0S: Northeast Corner

Runoff = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.80"

Area (sf)	CN	Description
52,286	70	Woods, Good, HSG C
52,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.5	50	0.0200	0.07		**Sheet Flow, A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	155	0.0840	1.45		**Shallow Concentrated Flow, B to C** Woodland Kv= 5.0 fps
9.4	200	0.0050	0.35		**Shallow Concentrated Flow, C to D** Woodland Kv= 5.0 fps
23.7	405	Total			

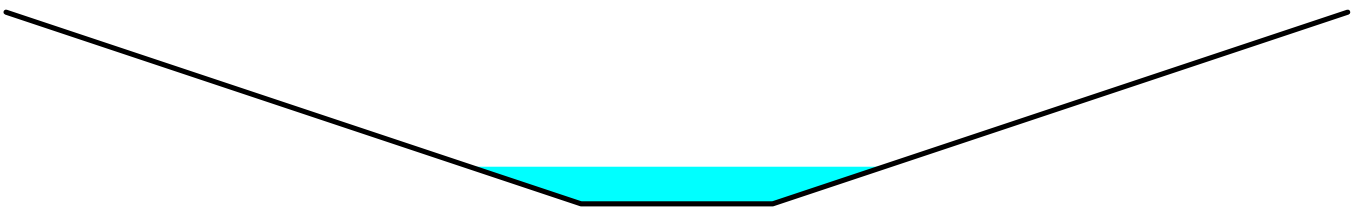
Summary for Reach 20R: Roadside ditch

Inflow Area = 2.639 ac, 10.44% Impervious, Inflow Depth = 3.31" for 25-YR event
Inflow = 8.7 cfs @ 12.15 hrs, Volume= 0.727 af
Outflow = 8.7 cfs @ 12.16 hrs, Volume= 0.727 af, Atten= 1%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 7.09 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 2.37 fps, Avg. Travel Time= 3.6 min

Peak Storage= 629 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 284.6 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 515.0' Slope= 0.0796 '/'
Inlet Invert= 355.00', Outlet Invert= 314.00'



Summary for Reach 21R: Cape Road ditch

Inflow Area = 0.893 ac, 3.61% Impervious, Inflow Depth = 3.11" for 25-YR event
Inflow = 2.9 cfs @ 12.14 hrs, Volume= 0.232 af
Outflow = 2.8 cfs @ 12.15 hrs, Volume= 0.232 af, Atten= 1%, Lag= 1.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.27 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.40 fps, Avg. Travel Time= 4.2 min

Peak Storage= 236 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.24'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 220.7 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 355.0' Slope= 0.0479 '/'
Inlet Invert= 307.00', Outlet Invert= 290.00'

Summary for Reach 22R: BMP outflow

Inflow Area = 4.897 ac, 17.66% Impervious, Inflow Depth = 3.46" for 25-YR event
Inflow = 10.5 cfs @ 12.31 hrs, Volume= 1.412 af
Outflow = 10.5 cfs @ 12.32 hrs, Volume= 1.412 af, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 4.82 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.23 fps, Avg. Travel Time= 2.8 min

Peak Storage= 458 cf @ 12.32 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 0.50' Flow Area= 3.3 sf, Capacity= 18.9 cfs

5.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 210.0' Slope= 0.0643 '/'
Inlet Invert= 304.50', Outlet Invert= 291.00'

‡

Summary for Reach 23R: Roadside ditch

Inflow Area = 0.077 ac, 31.38% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.3 cfs @ 12.14 hrs, Volume= 0.023 af, Atten= 18%, Lag= 3.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.11 fps, Min. Travel Time= 6.5 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 12.4 min

Peak Storage= 103 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 251.5 cfs

2.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 820.0' Slope= 0.0622 '/'
Inlet Invert= 365.00', Outlet Invert= 314.00'

Summary for Reach 40R: Woodland flow

Inflow Area = 7.201 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-YR event
Inflow = 12.1 cfs @ 12.49 hrs, Volume= 1.643 af
Outflow = 12.1 cfs @ 12.50 hrs, Volume= 1.643 af, Atten= 0%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.70 fps, Min. Travel Time= 1.2 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 3.4 min

Peak Storage= 842 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 100.2 cfs

20.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 118.0' Slope= 0.0364 '/'
Inlet Invert= 345.30', Outlet Invert= 341.00'

‡

Summary for Reach 41R: Flow through wetland

Inflow Area = 11.176 ac, 5.21% Impervious, Inflow Depth = 2.87" for 25-YR event
Inflow = 15.0 cfs @ 12.61 hrs, Volume= 2.673 af
Outflow = 14.6 cfs @ 12.65 hrs, Volume= 2.673 af, Atten= 3%, Lag= 2.6 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.44 fps, Min. Travel Time= 5.7 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 26.4 min

Peak Storage= 4,972 cf @ 12.65 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 0.50' Flow Area= 77.5 sf, Capacity= 58.6 cfs

150.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 160.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 332.00', Outlet Invert= 331.50'

‡

Summary for Reach 42R: Woodland flow

Inflow Area = 1.083 ac, 1.10% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 2.6 cfs @ 12.19 hrs, Volume= 0.239 af
Outflow = 2.6 cfs @ 12.22 hrs, Volume= 0.239 af, Atten= 2%, Lag= 1.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.14 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 7.3 min

Peak Storage= 318 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.25' Flow Area= 3.1 sf, Capacity= 11.0 cfs

10.00' x 0.25' deep channel, n= 0.040 Mountain streams
Side Slope Z-value= 10.0 '/' Top Width= 15.00'
Length= 265.0' Slope= 0.0728 '/'
Inlet Invert= 352.30', Outlet Invert= 333.00'

‡

Summary for Reach 43R: Flow through wetland

Inflow Area = 1.083 ac, 1.10% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 2.6 cfs @ 12.22 hrs, Volume= 0.239 af
Outflow = 1.2 cfs @ 12.56 hrs, Volume= 0.239 af, Atten= 54%, Lag= 20.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.14 fps, Min. Travel Time= 44.1 min
Avg. Velocity = 0.03 fps, Avg. Travel Time= 186.8 min

Peak Storage= 3,106 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 0.50' Flow Area= 52.5 sf, Capacity= 24.7 cfs

100.00' x 0.50' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 110.00'
Length= 380.0' Slope= 0.0013 '/'
Inlet Invert= 332.00', Outlet Invert= 331.50'

Summary for Reach 44R: Roadside ditch

Inflow Area = 2.402 ac, 8.60% Impervious, Inflow Depth = 2.92" for 25-YR event
Inflow = 6.4 cfs @ 12.19 hrs, Volume= 0.585 af
Outflow = 6.4 cfs @ 12.21 hrs, Volume= 0.585 af, Atten= 2%, Lag= 1.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.58 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 5.2 min

Peak Storage= 701 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 124.3 cfs

2.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 395.0' Slope= 0.0152 '/'
Inlet Invert= 357.00', Outlet Invert= 351.00'

Summary for Reach 45R: Roadside ditch

Inflow Area = 0.348 ac, 0.00% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 0.9 cfs @ 12.16 hrs, Volume= 0.077 af
Outflow = 0.9 cfs @ 12.16 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 3.28 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 1.8 min

Peak Storage= 38 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00' Flow Area= 16.0 sf, Capacity= 257.6 cfs

2.00' x 2.00' deep channel, n= 0.025
Side Slope Z-value= 3.0 '/' Top Width= 14.00'
Length= 138.0' Slope= 0.0652 '/'
Inlet Invert= 361.00', Outlet Invert= 352.00'

Summary for Reach 46R: Woodland flow

Inflow Area = 11.176 ac, 5.21% Impervious, Inflow Depth = 2.87" for 25-YR event
Inflow = 15.0 cfs @ 12.59 hrs, Volume= 2.673 af
Outflow = 15.0 cfs @ 12.61 hrs, Volume= 2.673 af, Atten= 1%, Lag= 1.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.97 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.54 fps, Avg. Travel Time= 6.0 min

Peak Storage= 1,486 cf @ 12.61 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 112.5 cfs

20.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 10.0 '/' Top Width= 40.00'
Length= 196.0' Slope= 0.0459 '/'
Inlet Invert= 341.00', Outlet Invert= 332.00'

‡

Summary for Pond 20P: UDSF-1

Inflow Area = 4.897 ac, 17.66% Impervious, Inflow Depth = 3.46" for 25-YR event
Inflow = 16.9 cfs @ 12.15 hrs, Volume= 1.412 af
Outflow = 10.5 cfs @ 12.31 hrs, Volume= 1.412 af, Atten= 38%, Lag= 9.7 min
Primary = 10.5 cfs @ 12.31 hrs, Volume= 1.412 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 311.49' @ 12.31 hrs Surf.Area= 5,671 sf Storage= 14,603 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 80.6 min (904.5 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	20,767 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,916	0	0
309.00	3,565	3,241	3,241
309.50	3,910	1,869	5,109
310.00	4,270	2,045	7,154
311.00	5,256	4,763	11,917
311.50	5,678	2,734	14,651
312.00	6,113	2,948	17,599
312.50	6,562	3,169	20,767

Device	Routing	Invert	Outlet Devices
#1	Primary	304.92'	**15.0" Round Culvert** L= 65.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 304.92' / 304.50' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	305.67'	**1.4" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	309.00'	**20.0" W x 6.0" H Vert. OCS Orifice** C= 0.600
#4	Device 1	311.15'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	311.50'	**18.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=10.5 cfs @ 12.31 hrs HW=311.49' TW=304.86' (Dynamic Tailwater)
└**1=Culvert** (Passes 10.5 cfs of 13.6 cfs potential flow)
  ├**2=Header Pipe Orifice** (Orifice Controls 0.1 cfs @ 11.56 fps)
  ├**3=OCS Orifice** (Orifice Controls 6.0 cfs @ 7.21 fps)
  └**4=OCS Grate** (Orifice Controls 4.4 cfs @ 2.81 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=308.00' TW=304.50' (Dynamic Tailwater)
└**5=Emergency Spillway** (Controls 0.0 cfs)

Summary for Pond 21P: 24" Culvert

Inflow Area = 0.893 ac, 3.61% Impervious, Inflow Depth = 3.11" for 25-YR event
Inflow = 2.9 cfs @ 12.14 hrs, Volume= 0.232 af
Outflow = 2.9 cfs @ 12.14 hrs, Volume= 0.232 af, Atten= 0%, Lag= 0.0 min
Primary = 2.9 cfs @ 12.14 hrs, Volume= 0.232 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 308.81' @ 12.14 hrs
Flood Elev= 311.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	308.00'	**24.0" Round Culvert** L= 53.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 308.00' / 307.40' S= 0.0113 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=2.9 cfs @ 12.14 hrs HW=308.81' TW=307.24' (Dynamic Tailwater)
1=Culvert (Inlet Controls 2.9 cfs @ 2.42 fps)

Summary for Pond 22P: 24" Culvert

Inflow Area = 3.248 ac, 15.30% Impervious, Inflow Depth = 3.42" for 25-YR event
Inflow = 11.0 cfs @ 12.16 hrs, Volume= 0.925 af
Outflow = 11.0 cfs @ 12.16 hrs, Volume= 0.925 af, Atten= 0%, Lag= 0.0 min
Primary = 11.0 cfs @ 12.16 hrs, Volume= 0.925 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 312.84' @ 12.16 hrs
Flood Elev= 315.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	311.00'	**24.0" Round Culvert** L= 53.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 311.00' / 310.50' S= 0.0094 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=11.0 cfs @ 12.16 hrs HW=312.84' TW=311.06' (Dynamic Tailwater)
1=Culvert (Inlet Controls 11.0 cfs @ 3.64 fps)

Summary for Pond 23P: 12" Culvert

Inflow Area = 0.077 ac, 31.38% Impervious, Inflow Depth = 3.60" for 25-YR event
Inflow = 0.3 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.3 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min
Primary = 0.3 cfs @ 12.09 hrs, Volume= 0.023 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 366.32' @ 12.09 hrs
Flood Elev= 368.70'

Device	Routing	Invert	Outlet Devices
#1	Primary	366.00'	**12.0" Round Culvert** L= 56.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 366.00' / 365.50' S= 0.0088 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.3 cfs @ 12.09 hrs HW=366.32' TW=365.05' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.3 cfs @ 1.51 fps)

Summary for Pond 40P: UDSF-2

Inflow Area = 3.975 ac, 14.64% Impervious, Inflow Depth = 3.11" for 25-YR event
Inflow = 10.8 cfs @ 12.18 hrs, Volume= 1.030 af
Outflow = 3.4 cfs @ 12.62 hrs, Volume= 1.030 af, Atten= 68%, Lag= 26.5 min
Primary = 3.4 cfs @ 12.62 hrs, Volume= 1.030 af
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 351.47' @ 12.62 hrs Surf.Area= 6,352 sf Storage= 18,566 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 159.9 min (994.4 - 834.5)

Volume	Invert	Avail.Storage	Storage Description
#1	347.00'	23,941 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.00	2,385	0	0
348.00	3,017	2,701	2,701
349.00	3,689	3,353	6,054
350.00	4,890	4,290	10,344
351.00	5,870	5,380	15,724
352.00	6,907	6,389	22,112
352.25	7,721	1,829	23,941

Device	Routing	Invert	Outlet Devices
#1	Primary	343.92'	**15.0" Round Culvert** L= 47.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.92' / 343.60' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	344.67'	**1.3" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	348.00'	**6.0" Vert. OCS Orifice** C= 0.600
#4	Device 1	351.40'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	351.50'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=3.4 cfs @ 12.62 hrs HW=351.47' TW=341.33' (Dynamic Tailwater)
└**1=Culvert** (Passes 3.4 cfs of 15.5 cfs potential flow)
  ├**2=Header Pipe Orifice** (Orifice Controls 0.1 cfs @ 12.50 fps)
  ├**3=OCS Orifice** (Orifice Controls 1.7 cfs @ 8.63 fps)
  └**4=OCS Grate** (Weir Controls 1.6 cfs @ 0.83 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=347.00' TW=341.00' (Dynamic Tailwater)
└**5=Emergency Spillway** (Controls 0.0 cfs)

Summary for Pond 41P: 30" Culvert

Inflow Area = 7.201 ac, 0.00% Impervious, Inflow Depth = 2.74" for 25-YR event
Inflow = 12.1 cfs @ 12.49 hrs, Volume= 1.643 af
Outflow = 12.1 cfs @ 12.49 hrs, Volume= 1.643 af, Atten= 0%, Lag= 0.0 min
Primary = 12.1 cfs @ 12.49 hrs, Volume= 1.643 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 349.17' @ 12.49 hrs
Flood Elev= 354.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	347.50'	**30.0" Round Culvert** L= 111.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 347.50' / 345.30' S= 0.0197 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=12.1 cfs @ 12.49 hrs HW=349.17' TW=345.61' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 12.1 cfs @ 3.48 fps)

Summary for Pond 42P: 15" Culvert

Inflow Area = 1.083 ac, 1.10% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 2.6 cfs @ 12.19 hrs, Volume= 0.239 af
Outflow = 2.6 cfs @ 12.19 hrs, Volume= 0.239 af, Atten= 0%, Lag= 0.0 min
Primary = 2.6 cfs @ 12.19 hrs, Volume= 0.239 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 355.45' @ 12.19 hrs
Flood Elev= 357.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	354.50'	**15.0" Round Culvert** L= 53.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 354.50' / 352.30' S= 0.0412 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.6 cfs @ 12.19 hrs HW=355.45' TW=352.41' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.6 cfs @ 2.61 fps)

Summary for Pond 43P: 24" Culvert

Inflow Area = 3.351 ac, 12.69% Impervious, Inflow Depth = 3.03" for 25-YR event
Inflow = 9.2 cfs @ 12.20 hrs, Volume= 0.847 af
Outflow = 9.2 cfs @ 12.20 hrs, Volume= 0.847 af, Atten= 0%, Lag= 0.0 min
Primary = 9.2 cfs @ 12.20 hrs, Volume= 0.847 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 351.61' @ 12.56 hrs
Flood Elev= 353.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	350.20'	**24.0" Round Culvert** L= 56.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 350.20' / 349.50' S= 0.0124 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=9.2 cfs @ 12.20 hrs HW=351.59' TW=350.16' (Dynamic Tailwater)
1=Culvert (Barrel Controls 9.2 cfs @ 5.56 fps)

Summary for Link POA-1: Adjacent House Lot

Inflow Area = 3.740 ac, 0.00% Impervious, Inflow Depth = 3.21" for 25-YR event
Inflow = 10.6 cfs @ 12.21 hrs, Volume= 1.000 af
Primary = 10.6 cfs @ 12.21 hrs, Volume= 1.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-2: Roadside Ditch

Inflow Area = 8.340 ac, 11.11% Impervious, Inflow Depth = 3.20" for 25-YR event
Inflow = 17.1 cfs @ 12.23 hrs, Volume= 2.226 af
Primary = 17.1 cfs @ 12.23 hrs, Volume= 2.226 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-3: South Wetlands

Inflow Area = 5.157 ac, 3.21% Impervious, Inflow Depth = 2.83" for 25-YR event
Inflow = 13.5 cfs @ 12.19 hrs, Volume= 1.216 af
Primary = 13.5 cfs @ 12.19 hrs, Volume= 1.216 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-4: Southeast Wetlands

Inflow Area = 23.037 ac, 3.05% Impervious, Inflow Depth = 2.80" for 25-YR event
Inflow = 32.9 cfs @ 12.51 hrs, Volume= 5.371 af
Primary = 32.9 cfs @ 12.51 hrs, Volume= 5.371 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

Summary for Link POA-5: Northeast Wetlands

Inflow Area = 1.200 ac, 0.00% Impervious, Inflow Depth = 2.65" for 25-YR event
Inflow = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af
Primary = 2.3 cfs @ 12.35 hrs, Volume= 0.265 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs

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

Subcatchment10.0S: Woodlands to Runoff Area=162,904 sf 0.00% Impervious Runoff Depth=1.08"
Flow Length=580' Tc=15.0 min CN=76 Runoff=3.4 cfs 0.338 af

Subcatchment20.0S: Treatment Area 1 Runoff Area=26,540 sf 36.34% Impervious Runoff Depth=1.53"
Flow Length=975' Tc=10.6 min CN=83 Runoff=0.9 cfs 0.078 af

Subcatchment20.1S: Treatment Area 1 Runoff Area=31,943 sf 28.11% Impervious Runoff Depth=1.39"
Flow Length=875' Tc=8.6 min CN=81 Runoff=1.1 cfs 0.085 af

Subcatchment20.2S: Treatment Area 1 Runoff Area=3,333 sf 31.38% Impervious Runoff Depth=1.33"
Tc=6.0 min CN=80 Runoff=0.1 cfs 0.008 af

Subcatchment20.3S: Northwest House Runoff Area=114,936 sf 10.44% Impervious Runoff Depth=1.14"
Flow Length=225' Tc=10.7 min CN=77 Runoff=2.9 cfs 0.251 af

Subcatchment20.4S: Southwest House Runoff Area=36,581 sf 16.40% Impervious Runoff Depth=1.20"
Flow Length=350' Tc=9.0 min CN=78 Runoff=1.0 cfs 0.084 af

Subcatchment20.5S: Southwest Corner Runoff Area=111,066 sf 1.17% Impervious Runoff Depth=0.82"
Flow Length=460' Tc=8.4 min CN=71 Runoff=2.0 cfs 0.174 af

Subcatchment20.6S: Northwest Corner Runoff Area=38,906 sf 3.61% Impervious Runoff Depth=1.03"
Flow Length=300' Tc=9.7 min CN=75 Runoff=0.9 cfs 0.076 af

Subcatchment30.0S: Central Area Runoff Area=224,629 sf 3.21% Impervious Runoff Depth=0.87"
Flow Length=435' Tc=13.2 min CN=72 Runoff=3.8 cfs 0.373 af

Subcatchment40.0S: Treatment Area 2 Runoff Area=26,154 sf 36.41% Impervious Runoff Depth=1.39"
Flow Length=485' Slope=0.0100 '/' Tc=11.4 min CN=81 Runoff=0.8 cfs 0.070 af

Subcatchment40.1S: Treatment Area 2 Runoff Area=27,219 sf 25.09% Impervious Runoff Depth=1.26"
Flow Length=365' Tc=6.0 min CN=79 Runoff=0.9 cfs 0.066 af

Subcatchment40.2S: Small area draining to Runoff Area=15,145 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=220' Tc=11.0 min CN=70 Runoff=0.2 cfs 0.022 af

Subcatchment40.3S: Woodlands draining Runoff Area=313,659 sf 0.00% Impervious Runoff Depth=0.82"
Flow Length=1,025' Tc=34.5 min CN=71 Runoff=3.3 cfs 0.491 af

Subcatchment40.4S: Northeast House Runoff Area=104,649 sf 8.60% Impervious Runoff Depth=0.92"
Flow Length=330' Tc=13.6 min CN=73 Runoff=1.9 cfs 0.184 af

Subcatchment40.5S: Woodlands draining Runoff Area=47,186 sf 1.10% Impervious Runoff Depth=0.77"
Flow Length=400' Tc=13.7 min CN=70 Runoff=0.7 cfs 0.070 af

Subcatchment40.6S: Southeast Corner Runoff Area=469,486 sf 1.02% Impervious Runoff Depth=0.82"
Flow Length=710' Tc=31.8 min CN=71 Runoff=5.1 cfs 0.735 af

Subcatchment50.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=0.77"
Flow Length=405' Tc=23.7 min CN=70 Runoff=0.6 cfs 0.077 af

Reach 20R: Roadside ditch Avg. Flow Depth=0.21' Max Vel=5.10 fps Inflow=2.9 cfs 0.251 af
n=0.025 L=515.0' S=0.0796 '/' Capacity=284.6 cfs Outflow=2.9 cfs 0.251 af

Reach 21R: Cape Road ditch Avg. Flow Depth=0.13' Max Vel=2.94 fps Inflow=0.9 cfs 0.076 af
n=0.025 L=355.0' S=0.0479 '/' Capacity=220.7 cfs Outflow=0.9 cfs 0.076 af

Reach 22R: BMP outflow Avg. Flow Depth=0.17' Max Vel=3.09 fps Inflow=2.9 cfs 0.506 af
n=0.035 L=210.0' S=0.0643 '/' Capacity=18.9 cfs Outflow=2.9 cfs 0.506 af

Reach 23R: Roadside ditch Avg. Flow Depth=0.03' Max Vel=1.42 fps Inflow=0.1 cfs 0.008 af
n=0.025 L=820.0' S=0.0622 '/' Capacity=251.5 cfs Outflow=0.1 cfs 0.008 af

Reach 40R: Woodland flow Avg. Flow Depth=0.14' Max Vel=1.07 fps Inflow=3.3 cfs 0.491 af
n=0.070 L=118.0' S=0.0364 '/' Capacity=100.2 cfs Outflow=3.3 cfs 0.491 af

Reach 41R: Flow through wetland Avg. Flow Depth=0.10' Max Vel=0.26 fps Inflow=4.0 cfs 0.833 af
n=0.070 L=150.0' S=0.0033 '/' Capacity=58.6 cfs Outflow=3.8 cfs 0.833 af

Reach 42R: Woodland flow Avg. Flow Depth=0.05' Max Vel=1.28 fps Inflow=0.7 cfs 0.070 af
n=0.040 L=265.0' S=0.0728 '/' Capacity=11.0 cfs Outflow=0.6 cfs 0.070 af

Reach 43R: Flow through wetland Avg. Flow Depth=0.03' Max Vel=0.07 fps Inflow=0.6 cfs 0.070 af
n=0.070 L=380.0' S=0.0013 '/' Capacity=24.7 cfs Outflow=0.2 cfs 0.070 af

Reach 44R: Roadside ditch Avg. Flow Depth=0.26' Max Vel=2.50 fps Inflow=1.9 cfs 0.184 af
n=0.025 L=395.0' S=0.0152 '/' Capacity=124.3 cfs Outflow=1.8 cfs 0.184 af

Reach 45R: Roadside ditch Avg. Flow Depth=0.05' Max Vel=2.05 fps Inflow=0.2 cfs 0.022 af
n=0.025 L=138.0' S=0.0652 '/' Capacity=257.6 cfs Outflow=0.2 cfs 0.022 af

Reach 46R: Woodland flow Avg. Flow Depth=0.15' Max Vel=1.24 fps Inflow=4.0 cfs 0.833 af
n=0.070 L=196.0' S=0.0459 '/' Capacity=112.5 cfs Outflow=4.0 cfs 0.833 af

Pond 20P: UDSF-1 Peak Elev=309.74' Storage=6,072 cf Inflow=5.9 cfs 0.506 af
Primary=2.9 cfs 0.506 af Secondary=0.0 cfs 0.000 af Outflow=2.9 cfs 0.506 af

Pond 21P: 24" Culvert Peak Elev=308.44' Inflow=0.9 cfs 0.076 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0113 '/' Outflow=0.9 cfs 0.076 af

Pond 22P: 24" Culvert Peak Elev=311.94' Inflow=3.8 cfs 0.328 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0094 '/' Outflow=3.8 cfs 0.328 af

Pond 23P: 12" Culvert Peak Elev=366.19' Inflow=0.1 cfs 0.008 af
12.0" Round Culvert n=0.013 L=56.5' S=0.0088 '/' Outflow=0.1 cfs 0.008 af

Pond 40P: UDSF-2 Peak Elev=348.81' Storage=5,378 cf Inflow=3.3 cfs 0.342 af
Primary=0.8 cfs 0.342 af Secondary=0.0 cfs 0.000 af Outflow=0.8 cfs 0.342 af

Pond 41P: 30" Culvert Peak Elev=348.31' Inflow=3.3 cfs 0.491 af
30.0" Round Culvert n=0.013 L=111.5' S=0.0197 '/' Outflow=3.3 cfs 0.491 af

Pond 42P: 15" Culvert Peak Elev=354.93' Inflow=0.7 cfs 0.070 af
15.0" Round Culvert n=0.013 L=53.4' S=0.0412 '/' Outflow=0.7 cfs 0.070 af

Pond 43P: 24" Culvert Peak Elev=350.90' Inflow=2.8 cfs 0.276 af
24.0" Round Culvert n=0.013 L=56.5' S=0.0124 '/' Outflow=2.8 cfs 0.276 af

Link POA-1: Adjacent House Lot Inflow=3.4 cfs 0.338 af
Primary=3.4 cfs 0.338 af

Link POA-2: Roadside Ditch Inflow=4.5 cfs 0.756 af
Primary=4.5 cfs 0.756 af

Link POA-3: South Wetlands Inflow=3.8 cfs 0.373 af
Primary=3.8 cfs 0.373 af

Link POA-4: Southeast Wetlands Inflow=8.5 cfs 1.638 af
Primary=8.5 cfs 1.638 af

Link POA-5: Northeast Wetlands Inflow=0.6 cfs 0.077 af
Primary=0.6 cfs 0.077 af

Total Runoff Area = 41.474 ac Runoff Volume = 3.182 af Average Runoff Depth = 0.92"
95.67% Pervious = 39.678 ac 4.33% Impervious = 1.796 ac

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

Subcatchment10.0S: Woodlands to Runoff Area=162,904 sf 0.00% Impervious Runoff Depth=2.21"
Flow Length=580' Tc=15.0 min CN=76 Runoff=7.3 cfs 0.689 af

Subcatchment20.0S: Treatment Area 1 Runoff Area=26,540 sf 36.34% Impervious Runoff Depth=2.81"
Flow Length=975' Tc=10.6 min CN=83 Runoff=1.7 cfs 0.143 af

Subcatchment20.1S: Treatment Area 1 Runoff Area=31,943 sf 28.11% Impervious Runoff Depth=2.63"
Flow Length=875' Tc=8.6 min CN=81 Runoff=2.1 cfs 0.161 af

Subcatchment20.2S: Treatment Area 1 Runoff Area=3,333 sf 31.38% Impervious Runoff Depth=2.55"
Tc=6.0 min CN=80 Runoff=0.2 cfs 0.016 af

Subcatchment20.3S: Northwest House Runoff Area=114,936 sf 10.44% Impervious Runoff Depth=2.29"
Flow Length=225' Tc=10.7 min CN=77 Runoff=6.0 cfs 0.504 af

Subcatchment20.4S: Southwest House Runoff Area=36,581 sf 16.40% Impervious Runoff Depth=2.38"
Flow Length=350' Tc=9.0 min CN=78 Runoff=2.1 cfs 0.166 af

Subcatchment20.5S: Southwest Corner Runoff Area=111,066 sf 1.17% Impervious Runoff Depth=1.82"
Flow Length=460' Tc=8.4 min CN=71 Runoff=4.9 cfs 0.387 af

Subcatchment20.6S: Northwest Corner Runoff Area=38,906 sf 3.61% Impervious Runoff Depth=2.13"
Flow Length=300' Tc=9.7 min CN=75 Runoff=2.0 cfs 0.158 af

Subcatchment30.0S: Central Area Runoff Area=224,629 sf 3.21% Impervious Runoff Depth=1.89"
Flow Length=435' Tc=13.2 min CN=72 Runoff=8.9 cfs 0.814 af

Subcatchment40.0S: Treatment Area 2 Runoff Area=26,154 sf 36.41% Impervious Runoff Depth=2.63"
Flow Length=485' Slope=0.0100 '/' Tc=11.4 min CN=81 Runoff=1.6 cfs 0.132 af

Subcatchment40.1S: Treatment Area 2 Runoff Area=27,219 sf 25.09% Impervious Runoff Depth=2.46"
Flow Length=365' Tc=6.0 min CN=79 Runoff=1.8 cfs 0.128 af

Subcatchment40.2S: Small area draining to Runoff Area=15,145 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=220' Tc=11.0 min CN=70 Runoff=0.6 cfs 0.051 af

Subcatchment40.3S: Woodlands draining Runoff Area=313,659 sf 0.00% Impervious Runoff Depth=1.82"
Flow Length=1,025' Tc=34.5 min CN=71 Runoff=7.9 cfs 1.092 af

Subcatchment40.4S: Northeast House Runoff Area=104,649 sf 8.60% Impervious Runoff Depth=1.97"
Flow Length=330' Tc=13.6 min CN=73 Runoff=4.3 cfs 0.395 af

Subcatchment40.5S: Woodlands draining Runoff Area=47,186 sf 1.10% Impervious Runoff Depth=1.74"
Flow Length=400' Tc=13.7 min CN=70 Runoff=1.7 cfs 0.158 af

Subcatchment40.6S: Southeast Corner Runoff Area=469,486 sf 1.02% Impervious Runoff Depth=1.82"
Flow Length=710' Tc=31.8 min CN=71 Runoff=12.4 cfs 1.634 af

Subcatchment50.0S: Northeast Corner Runoff Area=52,286 sf 0.00% Impervious Runoff Depth=1.74"
Flow Length=405' Tc=23.7 min CN=70 Runoff=1.5 cfs 0.175 af

Reach 20R: Roadside ditch Avg. Flow Depth=0.32' Max Vel=6.37 fps Inflow=6.0 cfs 0.504 af
n=0.025 L=515.0' S=0.0796 '/' Capacity=284.6 cfs Outflow=6.0 cfs 0.504 af

Reach 21R: Cape Road ditch Avg. Flow Depth=0.20' Max Vel=3.78 fps Inflow=2.0 cfs 0.158 af
n=0.025 L=355.0' S=0.0479 '/' Capacity=220.7 cfs Outflow=1.9 cfs 0.158 af

Reach 22R: BMP outflow Avg. Flow Depth=0.24' Max Vel=3.85 fps Inflow=5.4 cfs 0.990 af
n=0.035 L=210.0' S=0.0643 '/' Capacity=18.9 cfs Outflow=5.4 cfs 0.990 af

Reach 23R: Roadside ditch Avg. Flow Depth=0.05' Max Vel=1.85 fps Inflow=0.2 cfs 0.016 af
n=0.025 L=820.0' S=0.0622 '/' Capacity=251.5 cfs Outflow=0.2 cfs 0.016 af

Reach 40R: Woodland flow Avg. Flow Depth=0.24' Max Vel=1.47 fps Inflow=7.9 cfs 1.092 af
n=0.070 L=118.0' S=0.0364 '/' Capacity=100.2 cfs Outflow=7.9 cfs 1.092 af

Reach 41R: Flow through wetland Avg. Flow Depth=0.16' Max Vel=0.37 fps Inflow=9.3 cfs 1.797 af
n=0.070 L=150.0' S=0.0033 '/' Capacity=58.6 cfs Outflow=9.1 cfs 1.797 af

Reach 42R: Woodland flow Avg. Flow Depth=0.08' Max Vel=1.82 fps Inflow=1.7 cfs 0.158 af
n=0.040 L=265.0' S=0.0728 '/' Capacity=11.0 cfs Outflow=1.6 cfs 0.158 af

Reach 43R: Flow through wetland Avg. Flow Depth=0.06' Max Vel=0.11 fps Inflow=1.6 cfs 0.158 af
n=0.070 L=380.0' S=0.0013 '/' Capacity=24.7 cfs Outflow=0.6 cfs 0.158 af

Reach 44R: Roadside ditch Avg. Flow Depth=0.41' Max Vel=3.19 fps Inflow=4.3 cfs 0.395 af
n=0.025 L=395.0' S=0.0152 '/' Capacity=124.3 cfs Outflow=4.2 cfs 0.395 af

Reach 45R: Roadside ditch Avg. Flow Depth=0.09' Max Vel=2.83 fps Inflow=0.6 cfs 0.051 af
n=0.025 L=138.0' S=0.0652 '/' Capacity=257.6 cfs Outflow=0.6 cfs 0.051 af

Reach 46R: Woodland flow Avg. Flow Depth=0.25' Max Vel=1.67 fps Inflow=9.4 cfs 1.797 af
n=0.070 L=196.0' S=0.0459 '/' Capacity=112.5 cfs Outflow=9.3 cfs 1.797 af

Pond 20P: UDSF-1 Peak Elev=310.97' Storage=11,785 cf Inflow=11.8 cfs 0.990 af
Primary=5.4 cfs 0.990 af Secondary=0.0 cfs 0.000 af Outflow=5.4 cfs 0.990 af

Pond 21P: 24" Culvert Peak Elev=308.66' Inflow=2.0 cfs 0.158 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0113 '/' Outflow=2.0 cfs 0.158 af

Pond 22P: 24" Culvert Peak Elev=312.42' Inflow=7.7 cfs 0.647 af
24.0" Round Culvert n=0.013 L=53.0' S=0.0094 '/' Outflow=7.7 cfs 0.647 af

Pond 23P: 12" Culvert Peak Elev=366.26' Inflow=0.2 cfs 0.016 af
12.0" Round Culvert n=0.013 L=56.5' S=0.0088 '/' Outflow=0.2 cfs 0.016 af

Pond 40P: UDSF-2 Peak Elev=350.40' Storage=12,360 cf Inflow=7.3 cfs 0.705 af
Primary=1.5 cfs 0.705 af Secondary=0.0 cfs 0.000 af Outflow=1.5 cfs 0.705 af

Pond 41P: 30" Culvert Peak Elev=348.80' Inflow=7.9 cfs 1.092 af
30.0" Round Culvert n=0.013 L=111.5' S=0.0197 '/' Outflow=7.9 cfs 1.092 af

Pond 42P: 15" Culvert Peak Elev=355.22' Inflow=1.7 cfs 0.158 af
15.0" Round Culvert n=0.013 L=53.4' S=0.0412 '/' Outflow=1.7 cfs 0.158 af

Pond 43P: 24" Culvert Peak Elev=351.29' Inflow=6.2 cfs 0.577 af
24.0" Round Culvert n=0.013 L=56.5' S=0.0124 '/' Outflow=6.2 cfs 0.577 af

Link POA-1: Adjacent House Lot Inflow=7.3 cfs 0.689 af
Primary=7.3 cfs 0.689 af

Link POA-2: Roadside Ditch Inflow=10.7 cfs 1.535 af
Primary=10.7 cfs 1.535 af

Link POA-3: South Wetlands Inflow=8.9 cfs 0.814 af
Primary=8.9 cfs 0.814 af

Link POA-4: Southeast Wetlands Inflow=21.4 cfs 3.588 af
Primary=21.4 cfs 3.588 af

Link POA-5: Northeast Wetlands Inflow=1.5 cfs 0.175 af
Primary=1.5 cfs 0.175 af

Total Runoff Area = 41.474 ac Runoff Volume = 6.801 af Average Runoff Depth = 1.97"
95.67% Pervious = 39.678 ac 4.33% Impervious = 1.796 ac

Summary for Pond 20P: UDSF-1

Inflow Area = 4.897 ac, 17.66% Impervious, Inflow Depth = 3.46" for 25-YR event
Inflow = 16.9 cfs @ 12.15 hrs, Volume= 1.412 af
Outflow = 15.4 cfs @ 12.20 hrs, Volume= 1.076 af, Atten= 9%, Lag= 3.1 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 15.4 cfs @ 12.20 hrs, Volume= 1.076 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 311.98' @ 12.20 hrs Surf.Area= 6,092 sf Storage= 17,449 cf

Plug-Flow detention time= 136.2 min calculated for 1.076 af (76% of inflow)
Center-of-Mass det. time= 50.8 min (874.7 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	20,767 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,916	0	0
309.00	3,565	3,241	3,241
309.50	3,910	1,869	5,109
310.00	4,270	2,045	7,154
311.00	5,256	4,763	11,917
311.50	5,678	2,734	14,651
312.00	6,113	2,948	17,599
312.50	6,562	3,169	20,767

Device	Routing	Invert	Outlet Devices
#1	Primary	304.92'	**15.0" Round Culvert X 0.00** L= 65.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 304.92' / 304.50' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	305.67'	**1.4" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	309.00'	**20.0" W x 6.0" H Vert. OCS Orifice** C= 0.600
#4	Device 1	311.15'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	311.50'	**18.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=308.00' TW=304.50' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.0 cfs)
  - **2=Header Pipe Orifice** (Passes 0.0 cfs of 0.1 cfs potential flow)
  - **3=OCS Orifice** (Controls 0.0 cfs)
  - **4=OCS Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=15.4 cfs @ 12.20 hrs HW=311.98' TW=304.94' (Dynamic Tailwater)
- **5=Emergency Spillway** (Weir Controls 15.4 cfs @ 1.80 fps)

PLUGGED FLOW CONDITION

Summary for Pond 40P: UDSF-2

Inflow Area = 3.975 ac, 14.64% Impervious, Inflow Depth = 3.11" for 25-YR event
Inflow = 10.8 cfs @ 12.18 hrs, Volume= 1.030 af
Outflow = 5.1 cfs @ 12.50 hrs, Volume= 0.598 af, Atten= 53%, Lag= 19.5 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 5.1 cfs @ 12.50 hrs, Volume= 0.598 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 351.72' @ 12.50 hrs Surf.Area= 6,614 sf Storage= 20,202 cf

Plug-Flow detention time= 209.1 min calculated for 0.598 af (58% of inflow)
Center-of-Mass det. time= 97.7 min (932.1 - 834.5)

Volume	Invert	Avail.Storage	Storage Description
#1	347.00'	23,941 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.00	2,385	0	0
348.00	3,017	2,701	2,701
349.00	3,689	3,353	6,054
350.00	4,890	4,290	10,344
351.00	5,870	5,380	15,724
352.00	6,907	6,389	22,112
352.25	7,721	1,829	23,941

Device	Routing	Invert	Outlet Devices
#1	Primary	343.92'	**15.0" Round Culvert X 0.00** L= 47.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.92' / 343.60' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	344.67'	**1.3" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	348.00'	**6.0" Vert. OCS Orifice** C= 0.600
#4	Device 1	351.40'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	351.50'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=347.00' TW=341.00' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.0 cfs)
  - **2=Header Pipe Orifice** (Passes 0.0 cfs of 0.1 cfs potential flow)
  - **3=OCS Orifice** (Controls 0.0 cfs)
  - **4=OCS Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=5.1 cfs @ 12.50 hrs HW=351.72' TW=341.35' (Dynamic Tailwater)
- **5=Emergency Spillway** (Weir Controls 5.1 cfs @ 1.16 fps)

Summary for Pond 20P: UDSF-1

Inflow Area = 4.897 ac, 17.66% Impervious, Inflow Depth = 5.55" for 100-YR event
Inflow = 27.0 cfs @ 12.14 hrs, Volume= 2.265 af
Outflow = 26.1 cfs @ 12.17 hrs, Volume= 1.929 af, Atten= 3%, Lag= 1.7 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 26.1 cfs @ 12.17 hrs, Volume= 1.929 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 312.16' @ 12.17 hrs Surf.Area= 6,258 sf Storage= 18,595 cf

Plug-Flow detention time= 100.9 min calculated for 1.929 af (85% of inflow)
Center-of-Mass det. time= 37.0 min (847.3 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	308.00'	20,767 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
308.00	2,916	0	0
309.00	3,565	3,241	3,241
309.50	3,910	1,869	5,109
310.00	4,270	2,045	7,154
311.00	5,256	4,763	11,917
311.50	5,678	2,734	14,651
312.00	6,113	2,948	17,599
312.50	6,562	3,169	20,767

Device	Routing	Invert	Outlet Devices
#1	Primary	304.92'	**15.0" Round Culvert X 0.00** L= 65.6' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 304.92' / 304.50' S= 0.0064 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	305.67'	**1.4" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	309.00'	**20.0" W x 6.0" H Vert. OCS Orifice** C= 0.600
#4	Device 1	311.15'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	311.50'	**18.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=308.00' TW=304.50' (Dynamic Tailwater)
- **1=Culvert** (Controls 0.0 cfs)
  - **2=Header Pipe Orifice** (Passes 0.0 cfs of 0.1 cfs potential flow)
  - **3=OCS Orifice** (Controls 0.0 cfs)
  - **4=OCS Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=26.1 cfs @ 12.17 hrs HW=312.16' TW=305.10' (Dynamic Tailwater)
- **5=Emergency Spillway** (Weir Controls 26.1 cfs @ 2.19 fps)

Summary for Pond 40P: UDSF-2

Inflow Area = 3.975 ac, 14.64% Impervious, Inflow Depth = 5.12" for 100-YR event
Inflow = 18.0 cfs @ 12.17 hrs, Volume= 1.696 af
Outflow = 16.8 cfs @ 12.23 hrs, Volume= 1.265 af, Atten= 7%, Lag= 3.6 min
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.000 af
Secondary = 16.8 cfs @ 12.23 hrs, Volume= 1.265 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-60.00 hrs, dt= 0.01 hrs
Peak Elev= 351.97' @ 12.23 hrs Surf.Area= 6,875 sf Storage= 21,902 cf

Plug-Flow detention time= 142.8 min calculated for 1.265 af (75% of inflow)
Center-of-Mass det. time= 55.0 min (875.2 - 820.2)

Volume	Invert	Avail.Storage	Storage Description
#1	347.00'	23,941 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
347.00	2,385	0	0
348.00	3,017	2,701	2,701
349.00	3,689	3,353	6,054
350.00	4,890	4,290	10,344
351.00	5,870	5,380	15,724
352.00	6,907	6,389	22,112
352.25	7,721	1,829	23,941

Device	Routing	Invert	Outlet Devices
#1	Primary	343.92'	**15.0" Round Culvert X 0.00** L= 47.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.92' / 343.60' S= 0.0067 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	344.67'	**1.3" Vert. Header Pipe Orifice** C= 0.600
#3	Device 1	348.00'	**6.0" Vert. OCS Orifice** C= 0.600
#4	Device 1	351.40'	**2.5" x 2.5" Horiz. OCS Grate X 6.00 columns** X 6 rows C= 0.600 Limited to weir flow at low heads
#5	Secondary	351.50'	**20.0' long x 10.0' breadth Emergency Spillway** 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

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=347.00' TW=341.00' (Dynamic Tailwater)
└─**1=Culvert** (Controls 0.0 cfs)
  ├─**2=Header Pipe Orifice** (Passes 0.0 cfs of 0.1 cfs potential flow)
  ├─**3=OCS Orifice** (Controls 0.0 cfs)
  └─**4=OCS Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=16.8 cfs @ 12.23 hrs HW=351.97' TW=341.47' (Dynamic Tailwater)
└─**5=Emergency Spillway** (Weir Controls 16.8 cfs @ 1.79 fps)

Appendix 3

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

For:
Raymond Cape Road Subdivision
Raymond, Maine

By:
Sebago Technics, Inc.
75 John Roberts Road, Suite 4A
South Portland, Maine

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the erosion and sedimentation control measures as well as stormwater management facilities for the project. This plan also outlines several housekeeping requirements that shall be followed during and after construction. These procedures shall be followed in order to ensure the intended function of the designed measures and to prevent unreasonably adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional detail on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the Maine Department of Environmental Protection (MDEP).

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event (0.5" of rainfall), and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within 7 calendar days and prior to any storm event (0.5" of rainfall).

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access

points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event (0.5" of rainfall). They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to the requirements of this plan.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.

- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

A. Spill prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

B. Groundwater protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

C. Fugitive sediment and dust: Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.

D. Debris and other materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.

E. Trench or foundation dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

Post-Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection and maintenance procedures outlined in this section. All measures must be maintained in effective operating condition. The owner shall inspect and maintain the BMPs, including but not limited to any parking areas, catch basins, drainage swales, detention basins and ponds, pipes and related structures, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.

2. **Specific Inspection and Maintenance Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection and maintenance tasks to be performed after construction. If the BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator of the BMP shall take corrective action(s) to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective action(s) to the local municipality in the annual report.

   A. Vegetated Areas:

   - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains (>1”) 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.

   B. Ditches, Swales and Other Open Channels:

   - Inspect ditches, swales, level spreaders and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow, and repair any erosion of the ditch lining.
   - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
   - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
   - If the ditch has a riprap lining, replace riprap in areas where any underlying filter

fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains (>1") to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Removal of Winter Sand:

- 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 or other acceptable method.

E. Grassed Underdrained Soil Filter:

- The soil filter outlet structure and outlet of the soil filter should be checked periodically to ensure that flow structures are not blocked by debris. All ditches or pipes connecting soil filters in series should be checked for debris that may obstruct flow. Inspections should be conducted monthly during wet weather conditions from March to November.
- The soil filter and outlet should be inspected bi-annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure. Any signs of erosion shall be immediately repaired to assure stability and proper function.
- The soil filter will be inspected on a bi-annual basis to assure that significant sediment accumulation has not occurred in the pond outlet structure. Whenever the filter bed is inundated with sediment, the accumulated sediment shall be removed and property disposed of.

3. Documentation:

A. The owner or operator of a BMP or a qualified post-construction stormwater inspector hired by that person, shall, as required by the local municipality, provide a completed and signed certification on a form provided by the local municipality, certifying that the person has inspected the BMP(s) and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they required maintenance or repair, including the record of the deficiency and corrective action(s) taken. The permittee shall retain a copy of the logs for a period of at least five (5) years from the completion of permanent stabilization. The stormwater systems shall be re-certified to the DEP by operator every five years.

B. A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. Duration of Maintenance: Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments:

Attachment 1 – Sample Stormwater Inspection and Maintenance Forms

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	
Inspection Notes			
Site Element	**Suggested Maintenance (recm'd frequency)**	**Observations**	**Inspection Notes/Recommended Action**
Vegetated Areas	Inspect Slopes/Embankments for erosion (annually)		
	Replant bare areas or areas of sparse growth (annually)		
Ditches/Swales	Remove obstructions/debris/sediment (monthly)		
	Inspect for erosion/repair as needed (annually)		
	Remove woody vegetation (annually)		
	Mow vegetated ditches (annually)		
Catch Basins	Remove sediment/debris from sump (annually)		
	Remove accumulated debris from inlet grate		
Culverts	Remove sediment/debris from inlet/outlet aprons (annually)		
	Inspect inlet/outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Pipe Outlets	Remove sediment/debris from outlet aprons (annually)		
	Inspect outlet aprons for erosion, repair as needed (annually)		
	Inspect, repair as needed, riprap aprons for dislodged/sparse coverage (annually)		
Inspector shall reference the current edition of the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers for a full list of inspection items.			
Additional Notes/Observations:			

Grass Underdrained Soil Filter

INSPECTION MAINTENANCE AND HOUSEKEEPING FORM			
General Information			
Project Name:		**Inspection Date:**	
Project Location:		**Current Weather:**	
		Date / Amount Last Precip:	
BMP Owner:		**Company conducting inspection:**	
Owner Mailing Address:		**Company Mailing Address**	
Owner Phone #:		**Company Phone #:**	
Owner Email:		**Inspector Name:**	
		Inspector Email:	

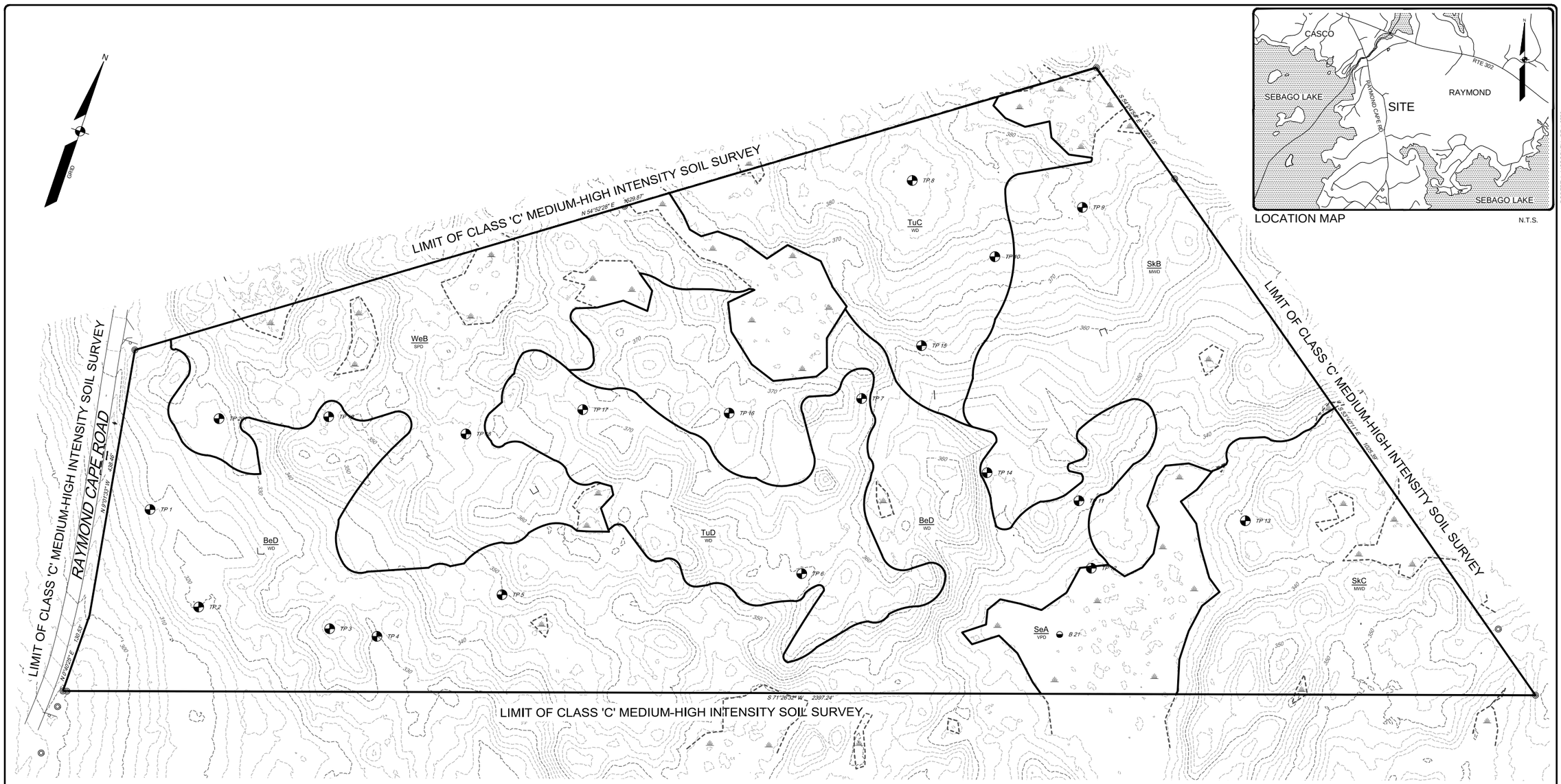
Inspection Notes			
BMP Element	**Suggested Maintenance (recm'd frequency)**	**Observations**	**Inspection Notes/Recommended Action**
Forebay/Pretreatment	Sediment/Debris Removal (Annually)		
	Inspect for bare areas or rill erosion (Annually)		
Outlet Control Structure	Sediment Depth (Annually)		
	Floatables/Debris (Annually)		
Discharge Pipe	Ground Stabilized (>1" rain, Annually)		
Emergency Spillway	Review for signs of erosion (Twice Annually)		
	Review for signs of discharge (>1" rain, twice annually)		
Embankments	Review for signs of erosion (Twice Annually)		
Filter Bed	Trim overgrown vegetation with string trimmer (annually)		
	Review basin for evidence of vehicular traffic or storage of snow within footprint (annually)		
	Confirm pond drains in 24-48 hours for water quality volume (annually)		

Inspector shall reference the current edition of the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers for a full list of inspection items.

Additional Notes/Observations:

Appendix 4

Subsurface Investigations



LOCATION MAP N.T.S.

GRAPHIC SCALE
80 0 40 80 160
(IN FEET)
1 INCH = 80 FT.

LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	EASEMENT	
	SOIL MAP UNITS	
TP 1	TEST PIT	
B-1	BORING	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	EDGE GRAVEL	
	TREELINE	
120	CONTOURS	118

SOIL LEGEND

SYMBOL	SOIL SERIES	PHASE	SLOPE	HSG	DRAINAGE CLASS
BeD	BECKET	SANDY LOAM	15-25%	C	WD (WELL DRAINED)
SeA	SEBAGO	MUCKY PEAT	0-3%	D	VPD (VERY POORLY DRAINED)
SkB	SKERRY	FINE SANDY LOAM	3-8%	C	MWD (MODERATELY WELL DRAINED)
SkC	SKERRY	FINE SANDY LOAM	8-15%	C	MWD (MODERATELY WELL DRAINED)
TuC	TUNBRIDGE	FINE SANDY LOAM	8-15%	C	WD (WELL DRAINED)
TuD	TUNBRIDGE	FINE SANDY LOAM	15-25%	C	WD (WELL DRAINED)
WeB	WESTBURY	SANDY LOAM	3-8%	D	SPD (SOMEWHAT POORLY DRAINED)

NOTE

THIS CLASS 'C' MEDIUM- HIGH INTENSITY SOIL MAP CONFORMS TO THE GUIDELINES FOR MAINE CERTIFIED SOIL SCIENTISTS FOR SOIL IDENTIFICATION AND MAPPING, DATED MARCH 2009 FOR CLASS 'C' MEDIUM-HIGH INTENSITY SOIL SURVEYS. THE SOIL MAP UNITS AS DEPICTED WERE IN PART INFLUENCED BY THE INTENDED USE FOR A PROPOSED RESIDENTIAL SUBDIVISION AND THE SOILS WHICH WERE NON-LIMITING FOR ONE USE MAY BE CONSIDERED LIMITING FOR ANOTHER USE. THEREFORE, THIS CLASS 'C' MEDIUM-HIGH INTENSITY SOILS MAP MAY NOT BE ADEQUATE FOR ANOTHER USE. (REFER TO SOIL NARRATIVE REPORT DATED MARCH 11, 2022 AND SOIL PROFILE DESCRIPTIONS.)

ANNA K. BIDDLE
LICENSED SOIL SCIENTIST #639

03/11/22
DATE

ROBERT A. MCSORLEY, PE # 8558

PROGRESS PRINT

NOT FOR CONSTRUCTION
03/11/2022

REV.	BY	DATE	STATUS
A	RAM	03/11/2022	SUBMISSION TO TOWN OF RAYMOND

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel 207-200-2100

CLASS 'C' MEDIUM-HIGH INTENSITY SOIL SURVEY
OF:
78 RAYMOND CAPE ROAD
78 RAYMOND CAPE ROAD
RAYMOND, ME 04071
FOR:
BRANDON CHASE
15 WASHINGTON COURT
NAPLES, ME 04055

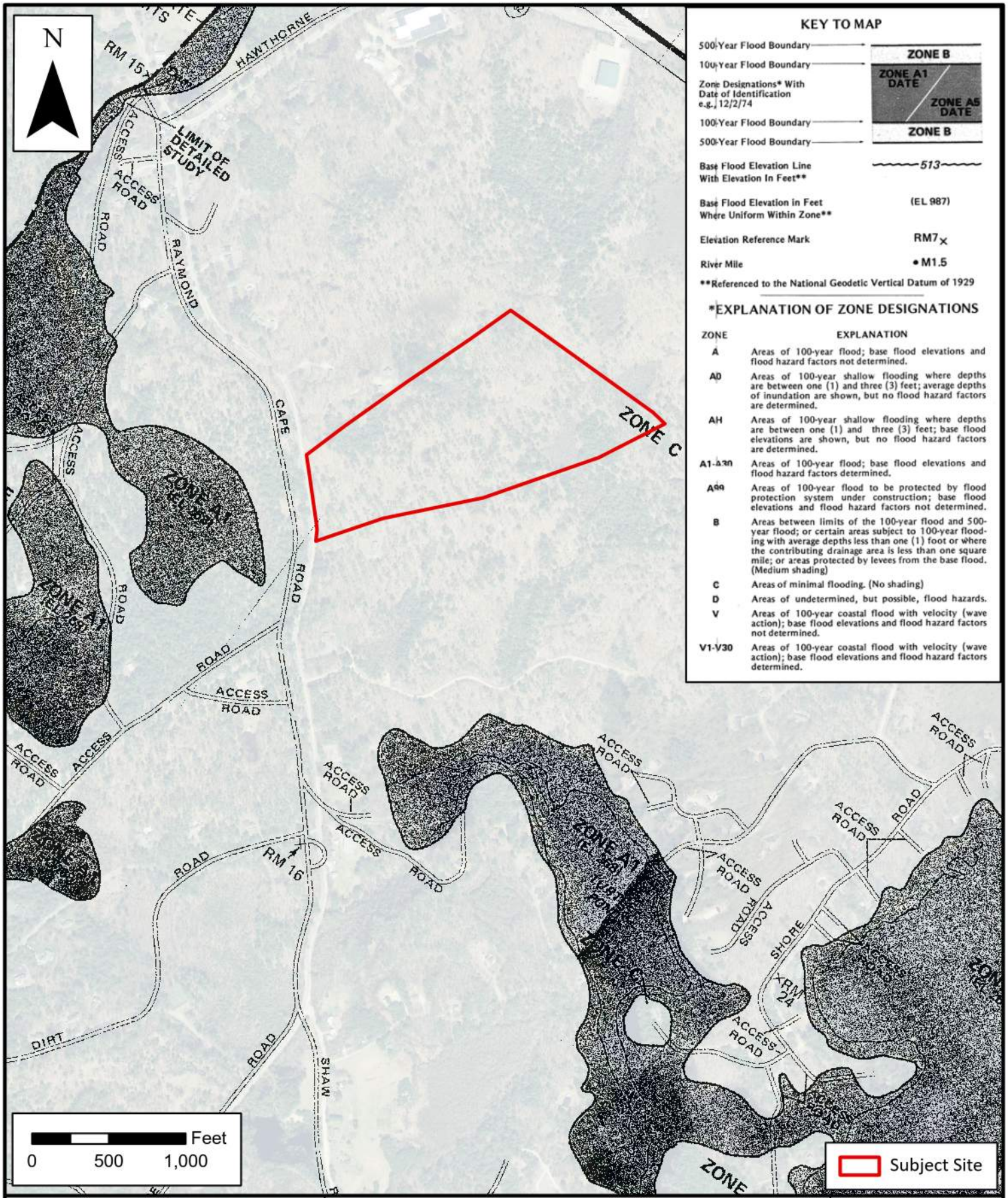
DESIGNED	AKB
DRAWN	DAB
CHECKED	AKB
DATE	11/19/21
SCALE	1" = 80'
PROJECT	21397

SHEET 1 OF 1

21397 SL.dwg TAB:Soils Map

Appendix 5

Flood Insurance Rate Map



SEBAGO TECHNICS

WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. - Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

FEMA NATIONAL FLOOD HAZARDS

RAYMOND CAPE ROAD SUBDIVISION

SCALE: 1:10,000

DATE: 3/7/2022

LOCATION:
RAYMOND CAPE ROAD
RAYMOND, MAINE 04071

INFORMATION:
2018 ORTHOREGIONAL IMAGERY
FEMA FIRM PANEL 230205 0020 B 1981

Appendix 6

Stormwater Management Plans

SOIL LEGEND

SYMBOL	SOIL SERIES	PHASE	SLOPE	HSG	DRAINAGE CLASS
BeD	BECKET	SANDY LOAM	15–25%	C	WD (WELL DRAINED)
SeA	SEBAGO	MUCKY PEAT	0–3%	D	VPD (VERY POORLY DRAINED)
SkB	SKERRY	FINE SANDY LOAM	3–8%	C	MWD (MODERATELY WELL DRAINED)
SkC	SKERRY	FINE SANDY LOAM	8–15%	C	MWD (MODERATELY WELL DRAINED)
TuC	TUNBRIDGE	FINE SANDY LOAM	8–15%	C	WD (WELL DRAINED)
TuD	TUNBRIDGE	FINE SANDY LOAM	15–25%	C	WD (WELL DRAINED)
WeB	WESTBURY	SANDY LOAM	3–8%	D	SPD (SOMEWHAT POORLY DRAINED)

NOTE

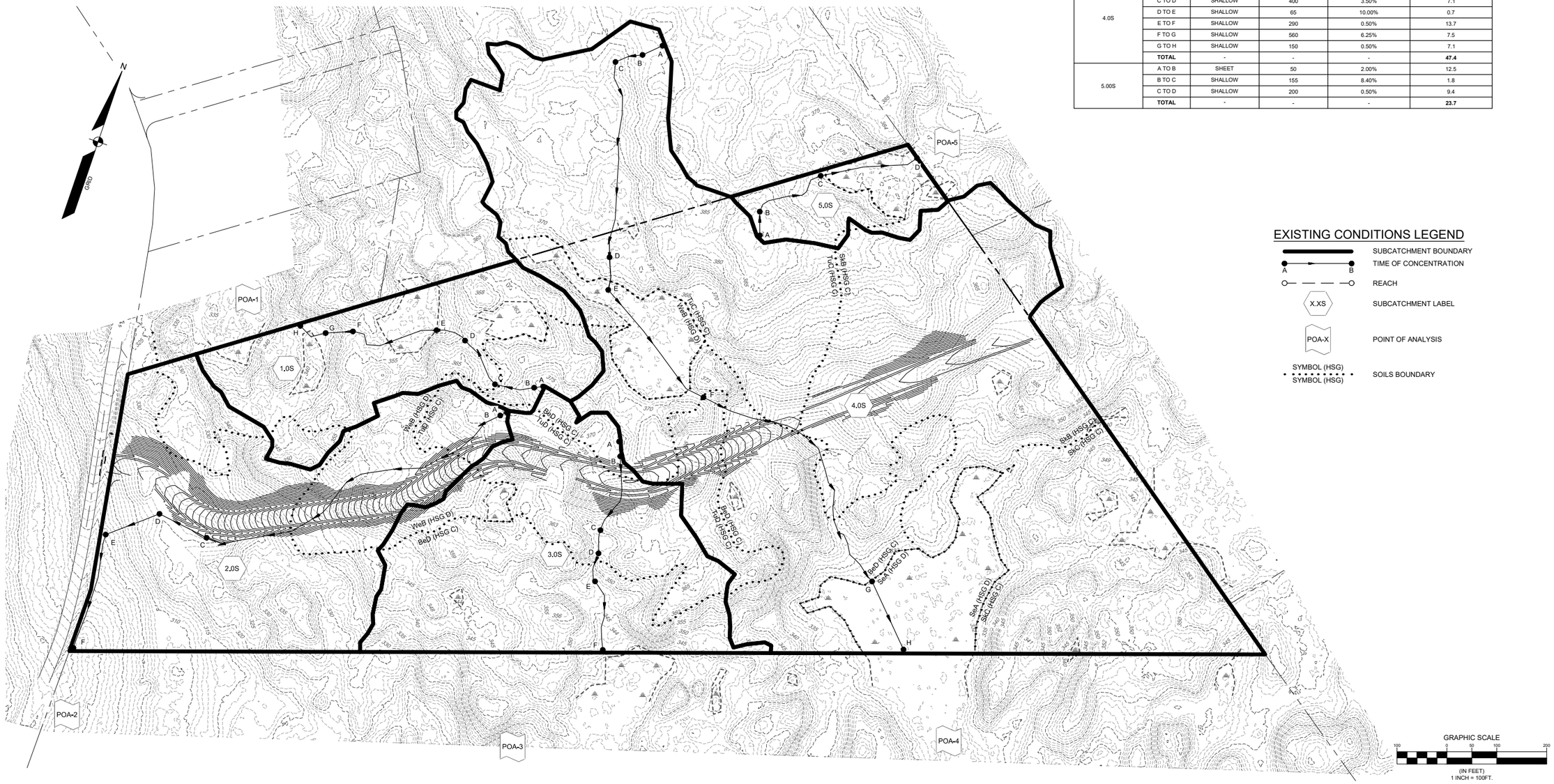
THIS CLASS 'C' MEDIUM–HIGH INTENSITY SOIL MAP CONFORMS TO THE GUIDELINES FOR MAINE CERTIFIED SOIL SCIENTISTS FOR SOIL IDENTIFICATION AND MAPPING, DATED MARCH 2009 FOR CLASS 'C' MEDIUM–HIGH INTENSITY SOIL SURVEYS. THE SOIL MAP UNITS AS DEPICTED WERE IN PART INFLUENCED BY THE INTENDED USE FOR A PROPOSED RESIDENTIAL SUBDIVISION AND THE SOILS WHICH WERE NON–LIMITING FOR ONE USE MAY BE CONSIDERED LIMITING FOR ANOTHER USE. THEREFORE, THIS CLASS 'C' MEDIUM–HIGH INTENSITY SOILS MAP MAY NOT BE ADEQUATE FOR ANOTHER USE. (REFER TO SOIL NARRATIVE REPORT DATED MARCH 11, 2022 AND SOIL PROFILE DESCRIPTIONS.)

STORMWATER PEAK DISCHARGE SUMMARY TABLE

POINT OF ANALYSIS	2-YEAR STORM		10-YEAR STORM		25-YEAR STORM	
	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)
POA-1	3.4	3.4	7.5	7.3	11.0	10.6
POA-2	4.8	4.5	11.3	10.7	17.2	17.1
POA-3	4.0	3.8	10.0	8.9	15.5	13.5
POA-4	8.9	8.5	21.6	21.4	33.0	32.9
POA-5	0.6	0.6	1.5	1.5	2.3	2.3

TIME OF CONCENTRATION PATH TABLE

SUBCATCHMENT	PATH	FLOW TYPE	LENGTH	SLOPE	TIME OF CONCENTRATION (MINUTES)
1.0S	A TO B	SHEET	20	15.00%	2.7
	B TO C	SHALLOW	80	12.11%	0.8
	C TO D	SHALLOW	110	1.80%	2.7
	D TO E	SHALLOW	65	10.00%	0.7
	E TO F	SHALLOW	190	1.05%	6.2
	F TO G	SHALLOW	55	16.40%	0.5
	G TO H	SHALLOW	60	2.10%	1.4
	TOTAL	-	-	-	**15.0**
2.0S	A TO B	SHEET	15	12.00%	2.3
	B TO C	SHALLOW	675	7.41%	8.3
	C TO D	SHALLOW	105	10.00%	3.5
	D TO E	SHALLOW	115	12.20%	1.1
	E TO F	SHALLOW	235	6.40%	2.2
	TOTAL	-	-	-	**17.4**
3.0S	A TO B	SHEET	30	7.50%	4.9
	B TO C	SHALLOW	160	11.25%	1.6
	C TO D	SHALLOW	45	1.00%	1.5
	D TO E	SHALLOW	60	11.67%	0.6
	E TO F	SHALLOW	145	3.57%	2.6
	TOTAL	-	-	-	**11.2**
4.0S	A TO B	SHEET	50	3.00%	10.7
	B TO C	SHALLOW	55	10.00%	0.6
	C TO D	SHALLOW	400	3.50%	7.1
	D TO E	SHALLOW	65	10.00%	0.7
	E TO F	SHALLOW	290	0.50%	13.7
	F TO G	SHALLOW	560	6.25%	7.5
	G TO H	SHALLOW	150	0.50%	7.1
	TOTAL	-	-	-	**47.4**
5.00S	A TO B	SHEET	50	2.00%	12.5
	B TO C	SHALLOW	155	8.40%	1.8
	C TO D	SHALLOW	200	0.50%	9.4
	TOTAL	-	-	-	**23.7**



EXISTING CONDITIONS LEGEND

- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- X.XS — SUBCATCHMENT LABEL
- POA-X — POINT OF ANALYSIS
- SYMBOL (HSG) / SYMBOL (HSG) — SOILS BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 INCH = 100FT.

NOT FOR CONSTRUCTION

ROBERT A. MCSORLEY, PE # 8588

04/19/2022

REV	BY	DATE	STATUS
C	RAM	04/19/2022	RESUBMISSION TO TOWN OF RAYMOND
B	RAM	04/04/2022	RESUBMISSION TO TOWN OF RAYMOND
A	RAM	03/09/2022	SUBMISSION TO TOWN OF RAYMOND

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite A
South Portland, ME 04106
Tel. 207-200-2100

EXISTING CONDITIONS SWM PLAN
OF:
RAYMOND CAPE ROAD SUBDIVISION
RAYMOND CAPE ROAD
RAYMOND, ME 04071
FOR RECORD OWNER:
BRANDON CHASE
15 WASHINGTON COURT
NAPLES, ME 04055

DESIGNED	JBP
DRAWN	MRS
CHECKED	RAM
DATE	11/19/21
SCALE	1" = 100'
PROJECT	21397

21397 SWP-dwg, TAB:EXISTING CONDITIONS

SHEET 1 OF 2

Xref D:\STAMPS\RAM.dwg

SOIL LEGEND

SYMBOL	SOIL SERIES	PHASE	SLOPE	HSG	DRAINAGE CLASS
BeD	BECKET	SANDY LOAM	15–25%	C	WD (WELL DRAINED)
SeA	SEBAGO	MUCKY PEAT	0–3%	D	VPD (VERY POORLY DRAINED)
SkB	SKERRY	FINE SANDY LOAM	3–8%	C	MWD (MODERATELY WELL DRAINED)
SkC	SKERRY	FINE SANDY LOAM	8–15%	C	MWD (MODERATELY WELL DRAINED)
TuC	TUNBRIDGE	FINE SANDY LOAM	8–15%	C	WD (WELL DRAINED)
TuD	TUNBRIDGE	FINE SANDY LOAM	15–25%	C	WD (WELL DRAINED)
WeB	WESTBURY	SANDY LOAM	3–8%	D	SPD (SOMEWHAT POORLY DRAINED)

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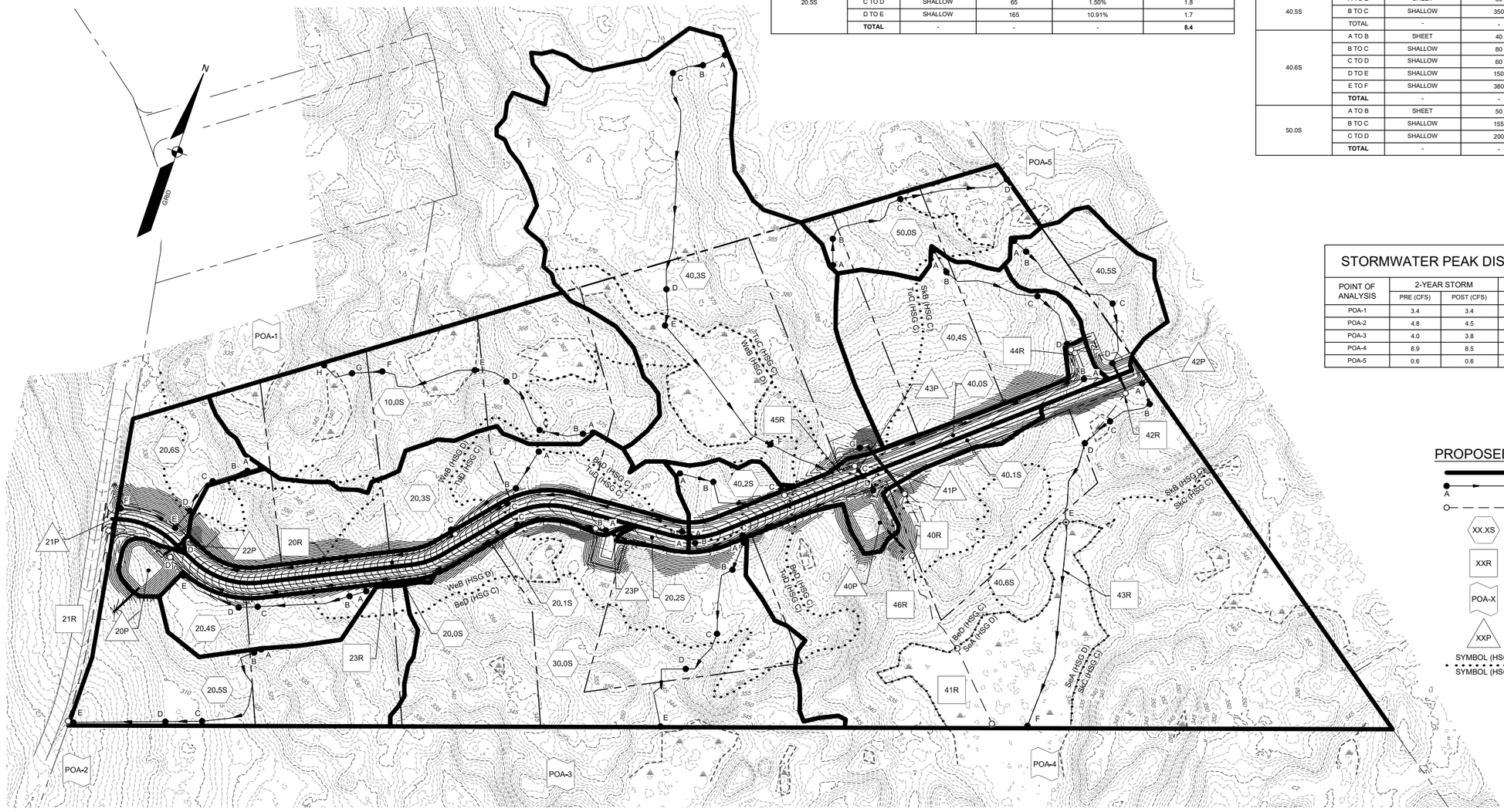
TIME OF CONCENTRATION PATH TABLE

SUBCATCHMENT	PATH	FLOW TYPE	LENGTH	SLOPE	TIME OF CONCENTRATION (MINUTES)
10.0S	A TO B	SHEET	20	15.00%	2.7
	B TO C	SHALLOW	80	12.11%	0.8
	C TO D	SHALLOW	110	1.80%	2.7
	D TO E	SHALLOW	65	10.00%	0.7
	E TO F	SHALLOW	190	1.05%	6.2
	F TO G	SHALLOW	55	16.40%	0.5
	G TO H	SHALLOW	60	2.10%	1.4
	TOTAL	-	-	-	**15.0**
20.0S	A TO B	SHEET	15	2.00%	0.3
	B TO C	SHALLOW	335	2.50%	5.0
	C TO D	SHALLOW	625	8.00%	5.3
	TOTAL	-	-	-	**10.6**
20.1S	A TO B	SHEET	40	3.00%	0.5
	B TO C	SHALLOW	165	2.50%	2.5
	C TO D	SHALLOW	670	8.00%	5.6
	TOTAL	-	-	-	**8.6**
20.2S	DIRECT	DIRECT	-	-	6.0
	TOTAL	-	-	-	**6.0**
20.3S	A TO B	SHEET	80	5.00%	8.4
	B TO C	SHALLOW	145	4.30%	2.3
	TOTAL	-	-	-	**10.7**
20.4S	A TO B	SHEET	30	6.67%	5.1
	B TO C	SHALLOW	170	5.00%	1.8
	C TO D	SHALLOW	35	28.00%	0.2
	D TO E	SHALLOW	115	2.00%	1.9
	TOTAL	-	-	-	**9.0**
20.5S	A TO B	SHEET	15	6.67%	3.0
	B TO C	SHALLOW	215	14.40%	1.9
	C TO D	SHALLOW	65	1.50%	1.8
	D TO E	SHALLOW	165	10.91%	1.7
	TOTAL	-	-	-	**8.4**
20.6S	A TO B	SHEET	25	4.00%	5.5
	B TO C	SHALLOW	60	23.33%	0.4
	C TO D	SHALLOW	70	1.43%	2.0
	D TO E	SHALLOW	40	33.33%	0.2
	E TO F	SHALLOW	105	2.38%	1.6
	TOTAL	-	-	-	**9.7**
30.0S	A TO B	SHEET	55	10.91%	6.9
	B TO C	SHALLOW	130	3.08%	2.5
	C TO D	SHALLOW	95	12.63%	0.9
	D TO E	SHALLOW	155	3.23%	2.9
	TOTAL	-	-	-	**13.2**
40.0S	A TO B	SHEET	40	1.00%	0.8
	B TO C	SHALLOW	350	1.00%	8.3
	TOTAL	-	-	-	**9.1**
40.1S	A TO B	SHEET	15	2.00%	0.3
	B TO C	SHALLOW	100	4.00%	1.2
	C TO D	SHALLOW	250	7.00%	2.2
	DIRECT	DIRECT	-	-	2.3
	TOTAL	-	-	-	**6.0**
40.2S	A TO B	SHEET	60	10.00%	7.6
	B TO C	SHALLOW	160	2.50%	3.4
	TOTAL	-	-	-	**11.0**
40.3S	A TO B	SHEET	50	3.00%	10.7
	B TO C	SHALLOW	55	10.00%	0.6
	C TO D	SHALLOW	400	3.50%	7.1
	D TO E	SHALLOW	65	10.00%	0.7
	E TO F	SHALLOW	290	0.50%	13.7
	F TO G	SHALLOW	165	10.00%	1.7
	TOTAL	-	-	-	**34.5**
40.4S	A TO B	SHEET	45	3.00%	9.8
	B TO C	SHALLOW	175	7.14%	2.2
	C TO D	SHALLOW	110	5.00%	1.6
	TOTAL	-	-	-	**13.6**
40.5S	A TO B	SHEET	50	4.00%	9.5
	B TO C	SHALLOW	350	7.71%	4.2
	TOTAL	-	-	-	**13.7**
40.6S	A TO B	SHEET	40	2.50%	9.6
	B TO C	SHALLOW	80	6.90%	1.0
	C TO D	SHALLOW	60	1.67%	1.5
	D TO E	SHALLOW	150	7.33%	1.8
	E TO F	SHALLOW	380	0.50%	17.9
	TOTAL	-	-	-	**31.8**
50.0S	A TO B	SHEET	50	2.00%	12.5
	B TO C	SHALLOW	155	8.40%	1.8
	C TO D	SHALLOW	200	0.50%	9.4
	TOTAL	-	-	-	**23.7**

STORMWATER PEAK DISCHARGE SUMMARY TABLE

POINT OF ANALYSIS	2-YEAR STORM		10-YEAR STORM		25-YEAR STORM	
	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)	PRE (CFS)	POST (CFS)
POA-1	3.4	3.4	7.5	7.3	11.0	10.6
POA-2	4.8	4.5	11.3	10.7	17.2	17.1
POA-3	4.0	3.8	10.0	8.9	15.5	13.5
POA-4	8.9	8.5	21.6	21.4	33.0	32.9
POA-5	0.6	0.6	1.5	1.5	2.3	2.3



PROPOSED CONDITIONS LEGEND

- SUBCATCHMENT BOUNDARY
- TIME OF CONCENTRATION (A — B)
- REACH
- XX.XS — SUBCATCHMENT LABEL
- XXR — REACH
- POA-X — POINT OF ANALYSIS
- XXP — STORMWATER TREATMENT/DETENTION POND
- SYMBOL (HSG) / SYMBOL (HSG) — SOILS BOUNDARY

GRAPHIC SCALE
100 0 50 100 200
(IN FEET)
1 INCH = 100FT.

NOT FOR CONSTRUCTION

ROBERT A. MCSORLEY, PE # 8588
04/19/2022

REV	BY	DATE	STATUS
C	RAM	04/19/2022	RESUBMISSION TO TOWN OF RAYMOND
B	RAM	04/04/2022	RESUBMISSION TO TOWN OF RAYMOND
A	RAM	03/09/2022	SUBMISSION TO TOWN OF RAYMOND

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

PROPOSED CONDITIONS SWM PLAN

OF:

RAYMOND CAPE ROAD SUBDIVISION

RAYMOND CAPE ROAD
RAYMOND, ME 04071

FOR RECORD OWNER:

BRANDON CHASE
15 WASHINGTON COURT
NAPLES, ME 04055

DESIGNED	JBP
DRAWN	MRS
CHECKED	RAM
DATE	11/19/21
SCALE	1" = 100'
PROJECT	21397

SHEET 2 OF 2

21397 SWP.dwg, TAB:PROPOSED CONDITIONS

Xref D:\STAMPS\RAM.dwg