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CIVIL ENGINEERING • SURVEYING • LANDSCAPE ARCHITECTURE

STORMWATER MANAGEMENT REPORT

For

SMITH CEMETERY
WINDHAM, MAINE

Prepared for:

TOWN OF WINDHAM
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September, 2025

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STORMWATER MANAGEMENT REPORT
SMITH CEMETERY
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1. Introduction

This Stormwater Management 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.

This Stormwater Report has been prepared to address the standards of the Town of Windham Site Plan Approval Ordinance 120-802(A)(4). The project classifies as a Major Site Development per Town ordinance 120-805(A)(2)(c) as it will develop more than 1 acre of land.

2. Existing and Proposed Conditions

The project site consists of a developed field located at 513 Gray Road in Windham Maine. The property is approximately 24 acres and contains a cemetery, paved areas, lawn areas (mowed more than twice a year) and wetland area. The disturbed area for the project is approximately 1.7 acres. The site is bound by US Route 302 and an existing house lot to the North; the existing house lot and a field to the East; Wetlands and an existing cemetery to the South; An existing field to the West.

Slopes on the existing site generally range from 1% to 20%. The runoff from the property generally flows from west to east and enters the wetlands to the east of the project site. The ground cover consists of mostly grass area with some wooded sections along the property edge and paved sections in the existing cemetery.

Slopes on the proposed property generally remain the same, with some sections as steep as 33%. The watershed flow path generally remains the same as in the existing condition with runoff flowing to the western wetlands. The ground cover remains the same as in the existing condition with the addition of approximately 0.5 acres of impervious paved area.

The site is tributary to Black Brook on the southeast side of the project area. Black Brook is tributary to the Presumpscot River which is tributary to Casco Bay. The site is not tributary to any Urban Impaired Streams or Lakes Most at Risk identified by the Maine Department of Environmental Protection (MDEP).

The proposed development is not located in an identified flood zone per the FEMA Flood Insurance Rate Map for the Town of Windham, 23005C0492F, 6/20/2024.

3. Soils

Soil characteristics were obtained from the USDA NRCS Web Soil Survey. The Hydrologic Groups (HSG) of the soils is classified by Technical Release TR-55 of the Soil Conservation Service as follows:

Soil Map Symbol	Soil Name	Slope (%)	HSG
BGB	Nicholville very fine sandy loam	0-8	C
HIC	Hinkley loamy sand	8-15	A
HIB	Hinkley loamy sand	3-8	A
HnC	Hinckley-Suffield complex	8-15	A
HrB	Lyman-Tunbridge complex	0-8	D
HnB	Hinckley-Suffield complex	3-8	A
MkB	Merrimac fine sandy loam	3-8	A
PbB	Paxton fine sandy loam	3-8	C
PbC	Paxton fine sandy loam	8-15	C
Sn	Scantic silt loam	0-3	D

Hydrologic Soil Group boundaries are delineated on the Watershed Map. A copy of the Class D Intensity Soil Survey is included as Appendix 4.

4. Proposed Site Improvements

The development is intended to expand the existing Smith Cemetery to provide additional burial and cremation storage areas. The proposed development will consist of constructing a 14-foot-wide paved roadway for approximately 1,300 linear feet. The development also proposes constructing landscaped areas, a veteran's memorial and columbaria. Construction will include grade changes to accommodate the design of the road and stormwater management. For stormwater treatment the proposed development includes two meadow buffers that meet the Maine Department of Environmental Protection (MDEP) Chapter 500 standards. The proposed development includes installation of electrical and water lines to the site and building a small equipment shed. The project will result in the creation of approximately 0.5 acres of non-vegetated area and a reduction of approximately 0.4 acres of developed area as a section of the property will be returned to a meadow condition.

5. Existing Conditions Model

The existing conditions watershed plan consists of three subcatchments labeled 1.1S, 1.2S and 1.3S in the HydroCAD model. Four locations were identified as Points of Analysis (POA) for comparing peak runoff rates. POAs' 1 through 3 represent locations where flow leaves

the site. POA's 2 and 3 flow through reaches and then into a section of Black Brook which is represented by a pond labeled POA-4. POA 1 flows through a reach into Black Brook (POA-4). POA 4 represents the flow from the modeled area reaching a culvert at the downstream end of Black Brook near 382 Roosevelt Trail.

POA-1: This point of analysis is located in the southerly corner of the lot where runoff leaves the site via a wetland complex represented by 1.1R. Watershed 1.1S contributes runoff to this study point with an overall runoff area of approximately 2.3 acres.

POA-2: This point of analysis is located along the eastern edge of the lot where runoff leaves the property and enters a wooded flow path via a small depression represented by 1.2R. Watershed 1.2S contributes runoff to this study pint with an overall runoff area of approximately 1.4 acres.

POA-3: This point of analysis is located along the eastern corner of the property near US Route 302 and the existing house lot, where runoff leaves the property and enters a wooded flow path via a depression represented by 1.3R. Watershed 1.3S contributes runoff to this study point. Watershed 1.3S contributes runoff to this study pint with an overall runoff area of approximately 7.6 acres.

POA-4: All subcatchment areas flow to POA-4 which represents the ponded section of Black Brook. POA's 1, 2 and 3 flow through a series of reaches to POA 4 where it enters Black Brook and exits the property via a culvert. The overall modeled area to POA 4 is approximately 11 acres.

6. Proposed Conditions Model

The proposed condition watershed area consists of the same overall area as the existing condition plan, however, the existing condition subcatchments have been broken into smaller watersheds as a result of the proposed development.

POA-1: Proposed condition subcatchment 1.1S represents a portion of the existing and proposed cemetery, as well as a portion of the proposed roadway. This subcatchment has a drainage area of approximately 1.9 acres. This subcatchment is directed to a swale along the edge of the roadway and then to a culvert inlet modeled as a reach 1.1R. 1.1R is modeled as a 12" pipe that outlets into a level spreader and enters Meadow Buffer 1. The flow through the buffer is modeled as another reach, 2.1R. The runoff from 1.1S is treated by the BMP before exiting the site to the Black Brook wetlands via reach 3.1R. Subcatchment 2.1S represents a portion of the existing cemetery and a section of field. Subcatchment 2.1S has an area of 2.1 acres and flows to POA-1. Subcatchment 3.1S represents the runoff areas of field and roadway that are directed by a swale to Meadow Buffer 2. Subcatchment 3.1S has an approximate area of 0.6 acres. Flow from subcatchment 3.1S is directed to the meadow buffer and sent to POA-1.

Subcatchment 2.3S represents the lower section of the roadway and associated grassed areas. It has an area of approximately 1.4 acres. Subcatchment 2.3S is tributary to pond 2.3P which is a depression with a 15" stormdrain inlet that flows to Meadow Buffer 2 and then to POA-1. Pond 2.3P is designed so that overtopping of the depression is able to spill out into POA-3. The overall tributary area associated with POA-1 is approximately 5.9 acres which is an increase from the existing condition.

POA-2: Proposed condition subcatchment 1.2S represents a portion of the proposed cemetery and discharges to POA-2. 1.2S has a runoff area of approximately 0.2 acres. The overall tributary area associated with POA-2 is 0.20 acres which is a reduction from the existing condition.

POA-3: Proposed condition subcatchments 1.3S, 2.3S, 3.3S and 4.3S contribute runoff to POA-3. Subcatchment 1.3S consists of grass and gravel areas from the abutting property to the west and has an area of 4.3 acres. 1.3S is collected in a series of reach' and sent to pond 4.3P. 4.3P is a small depression with a 0.3 foot berm at the outlet. The small pond flows to POA-3. Subcatchment 2.3S is directed to a 15" stormdrain (2.3P) and piped to Meadow Buffer 2 but in high flow events 2.3P will flood and overflow directly into POA-3. Subcatchment 3.3S consists of pavement, roof, developed and undeveloped areas and flow directly to POA-3. Subcatchment 3.3S has an area of 0.65 acres. Subcatchment 4.3 has a tributary area of 0.16 acres and consists of landscaped area. 4.3S flows directly into pond 4.3P which flows to POA-3. The overall tributary area associated with POA-3 is 5.2 acres. Which is less than the existing condition.

The Best Management Practices (Meadow Buffers) have been designed and sized in accordance with DEP BMP standards contained within Chapter 500 and the BMP Manual. Sizing calculations can be found in Appendix 1.

POA-4: All subcatchment areas flow to POA-4 which represents Black Brook exiting the site through a culvert downstream near 382 Roosevelt Trail. POA's 1, 2 and 3 flow through a series of reaches to POA-4 where it exits the site via a culvert. POA-4 is modeled as a pond using the existing topography and field survey. The overall modeled area to POA 4 is approximately 11.3 acres.

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 (BMP) guidelines.

General Standard - Chapter 500, Section 4(C)

The proposed project does not trigger MDEP General Standards, however since the site is classified as a Major development in the Town of Windham Ordinance, MDEP General Standards apply. The standards 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 meadow buffers have been implemented into the stormwater management infrastructure. Buffer BMPs are very effective at removing a wide range of pollutants.

BMP sizing and treatment calculations are provided in Appendix 1.

Through the use of the aforementioned BMP's 98% of new impervious area will be receiving treatment and there will be a net reduction in developed area due to the addition of the meadow buffer. This meets the requirements for the Maine DEP General Standards.

Flooding Standard – Windham Town Ordinance 120-812(E)(a)

The Flooding Standard through the Maine Department of Environmental Protection does not apply to this project as the site does not require a Site Law permit and does not result in more than 3 acres of impervious area or 20 acres of developed area. The town ordinance for Windham requires that stormwater management systems, for minor and major site plans, detain, retain, or result in the infiltration of stormwater from 24-hour storms of the 2, 10, and 25-year frequencies such that the peak flows of stormwater from the project site does not exceed the peak flows of stormwater prior to undertaking the project. This standard was not able to be met by reasonable changes in project layout. Therefore, the project attempted to meet the Discharge to a Wetland standard of MDEP Chapter 500 Section 4(I). This standard requires "the applicant to demonstrate that the project's discharges into wetlands

will not significantly alter the flow of stormwater to the wetland from that which occurred. In general, new or increased stormwater discharges into wetlands must be put into sheet flow using level spreaders designed to meet the requirements in MDEP Chapter 500 Section 4(H)." The standard also requires "the discharge of runoff to a wetland due to a 2-year storm may not increase the mean storage depth within a wetland more than two inches above pre-development levels for more than 24 hours from the end of the storm event, unless otherwise approved by the Department. The Department may consider cumulative impacts due to runoff from other projects when applying this standard to any wetland." As such, a runoff evaluation was performed using the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds - Technical Release #55 (TR-55)". HydroCAD computer software was utilized to perform the calculations.

HydroCAD Stormwater Analysis

Runoff curve numbers were determined for each of the watersheds by measuring the area of each hydrologic soil group within each type of land cover. 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	0.2	0.5
	10-year	1.3	2.9
	25-year	2.6	8.0
POA-2	2-year	0.00	0.00
	10-year	0.05	0.00
	25-year	0.30	0.03
POA-3	2-year	0.7	0.7
	10-year	4.2	3.5
	25-year	8.5	4.8
POA-4	2-year	0.5	0.6
	10-year	3.9	4.4
	25-year	8.8	10.2
POA-4 Outlet	2-year	0.0	0.0
	10-year	0.3	0.4
	25-year	1.0	1.2

	Storm Event	**Pond Elevation Existing Condition**	**Pond Elevation Proposed Condition**	**Change in Elevation, ft (in)**
POA-4	2-year	230.33	230.38	0.05 (0.6”)
	10-year	230.72	230.75	0.03 (0.36”)
	25-year	230.91	230.94	0.03 (0.36”)

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 proposed condition at Points of Analysis 2 and 3 are at or below the existing condition runoff rates for the 2, 10, and 25-year storm events with implementation of the proposed stormwater management practices. The model suggests POA-1 and POA-4 have an increase in flow rates for the 2, 10, and 25-year storm events. The flow out of the wetland represented by POA-4 has a small increase in the 10 and 25 year storms. POA-1, 2 and 3 flow to POA-4 which represents Black Brook. POA-4 does not change elevation more than 2 inches during the 2, 10, or 25 year storm events, which meets the wetland standard. With the aforementioned use of meadow buffers, stormwater runoff is returned to sheet flow component which represents a thin and slow flow of water through the vegetated area. Soil conditions present on-site and in particular in the area of the propsoed meadow buffers have been mapped moderately well drained to excessively well drained. These soils conditions will infiltrate runoff, which has not been modeled, prior to reaching POA-4.

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 98% (95% required) of the new impervious areas, over 100% (80% required) of the new developed area. Runoff discharging from the site will be similar to the existing development conditions for the 2, 10 and 25-year storm events. The impact for any increase in peak flow rates is insignificant, as it does not change the peak elevation more than 2" in a 2-year storm and the areas with increased peak rates are all transferred to sheet flow before entering the wetlands. 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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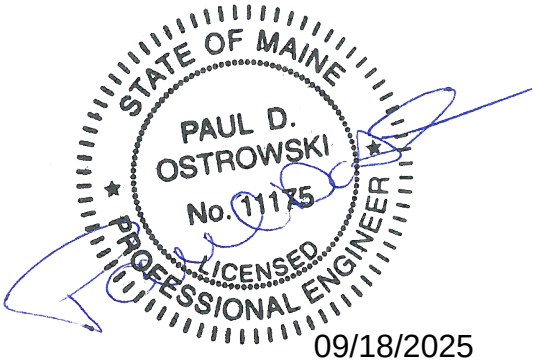

09/18/2025

Appendix 1

Stormwater Quality Calculations

Table 1: MDEP GENERAL STANDARD CALCULATIONS

Job # 240666

AREA ID	WATERSHED SIZE (S.F.)	EXISTING ONSITE IMPERVIOUS AREA TO REMAIN (S.F.)	NEW ONSITE IMPERVIOUS AREA (S.F.)	% of Impervious onsite	EXISTING ONSITE LANDSCAPED AREA TO REMAIN (S.F.)	NEW ONSITE LANDSCAPED AREA (S.F.)	NEW MEADOW AREA (S.F.)	EXISTING UNDEVELOPED TO REMAIN (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
1.1S	81,030	3,160	9,090	0.52	68,780	0	0	0	9,090	71,940	YES	12,250	68,780	81,030	Meadow 1
2.1S	90,530	160	0	0.01	74,330	0	16,040	0	0	74,490	NO	0	0	0	None
3.1S	26,360	0	2,820	0.12	23,540	0	0	0	2,820	23,540	YES	2,820	23,540	26,360	Meadow 2
1.2S	10,140	0	0	0.00	10,140	0	0	0	0	10,140	NO	0	0	0	None
1.3S	189,660	4,530	1,240	0.24	183,890	0	0	0	1,240	188,420	NO	0	0	0	None
2.3S	59,520	0	8,210	0.35	47,420	0	0	3,890	8,210	47,420	YES	8,210	47,420	55,630	Meadow 2
3.3S	28,230	0	850	0.04	13,220	0	0	14,160	850	13,220	NO	0	0	0	None
4.3S	6,910	0	1,380	0.06	5,530	0	0	0	1,380	5,530	NO	0	0	0	None
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
									0	0	NO	0	0	0	
TOTAL (S.F.)	**492,380**	**7,850**	**23,590**		**426,850**	**0**	**16,040**	**18,050**	**23,590**	**434,700**		**23,280**	**139,740**	**163,020**	

TOTAL NEW IMPERVIOUS AREA (S.F.)	**23,590**	**TOTAL NEW DEVELOPED AREA (S.F.)**	**23,590**
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (S.F.)	**23,280**	**TOTAL AREA RECEIVING TREATMENT (S.F.)**	**163,020**
% OF IMPERVIOUS AREA RECEIVING TREATMENT	**98.69%**	**% OF AREA RECEIVING TREATMENT**	**691.06%**

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JOB					
SHEET NO.	1	OF			
JOB	240666				
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CALCULATED BY	NTB	DATE	8/13/2025		
CHECKED BY					
FILE NAME	240666 WQC 8-5-25.xlsx	PRINT DATE	8/15/2025		

Note: Buffers are sized in accordance with Chapter 5 of the Maine Department of Environmental Protection BMPs Technical Design Manual, latest revision.

Wooded Buffer 1 (WB-1)								
Type of Buffer :		Buffer with Stone Bermed Level Spreader						
Existing Cover :		Meadow						
Soils :		Nicholville Very Fine Sandy Loam						
Buffer Slope :		7.8%						
Buffer Length :		180	feet					
Tributary Area								
Impervious :		12,250	sf					
Landscaped :		68,780	sf					
Per Table 5-4 of Manual for Soil Group A Fine Sandy Loam:								
Berm Length per acre of impervious :				100	ft			
Berm Length per acre of landscaped :				30	ft			
Required Level Spreader Berm Length :				75.5	ft	(BMP_{ST})		
Provided Level Spreader Berm Length :				76.0	ft	(BMP_{TF})		
Treatment Factor Calculation								
TF=0.4 * (BMP_{ST}/BMP_{TF})=	**0.40**							

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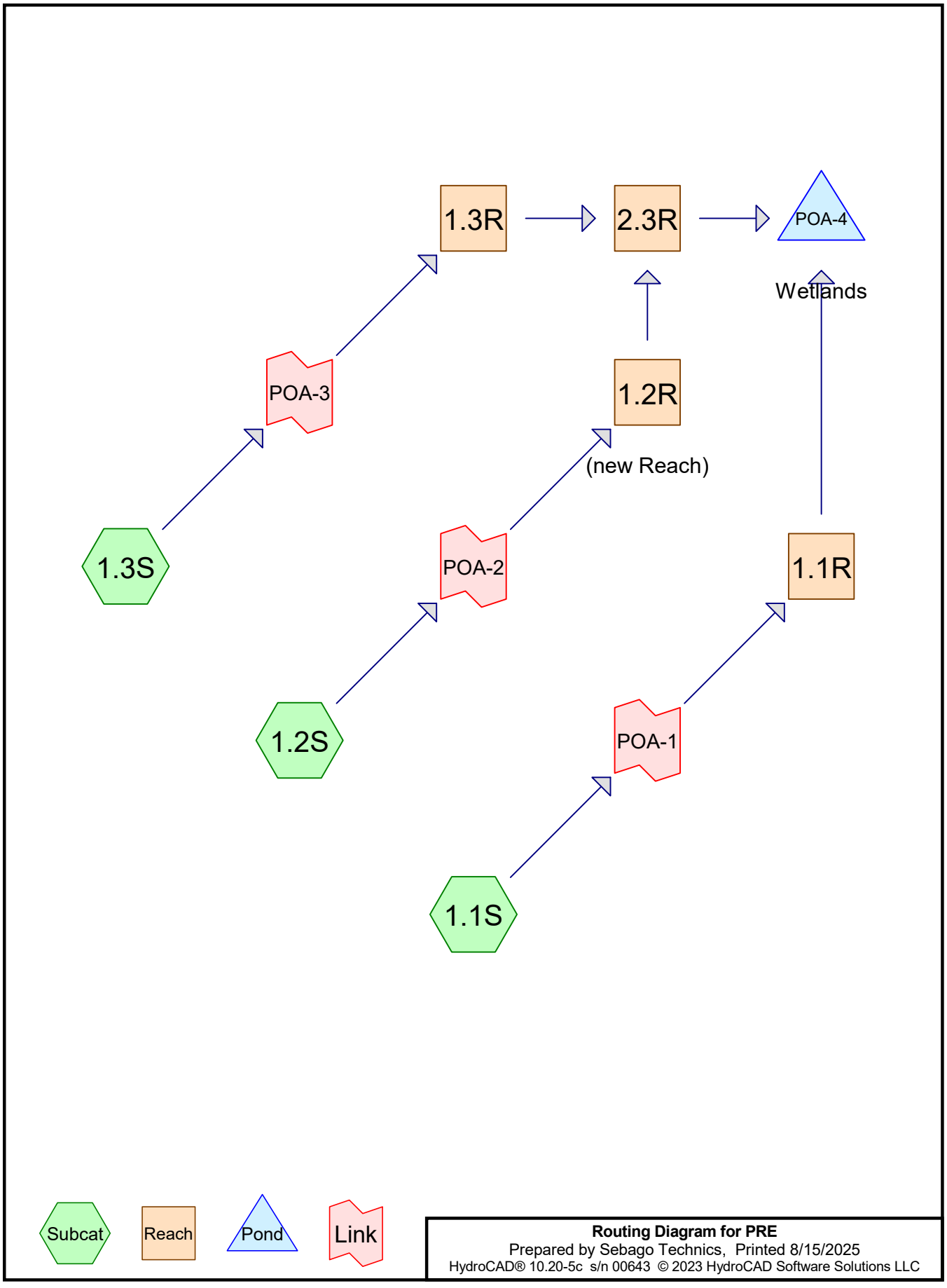
Wooded Buffer 1 (WB-1)						
Type of Buffer :	Buffer with Stone Bermed Level Spreader					
Existing Cover :	Meadow					
Soils :	Nicholville Very Fine Sandy Loam					
Buffer Slope :	6.5%					
Buffer Length :	100	feet				
Tributary Area						
Impervious :	8,210	sf				
Landscaped :	47,420	sf				
Per Table 5-4 of Manual for Soil Group A Fine Sandy Loam:						
Berm Length per acre of impervious :			125	ft		
Berm Length per acre of landscaped :			35	ft		
Required Level Spreader Berm Length :			61.7	ft	(BMP_{ST})	
Provided Level Spreader Berm Length :			62.0	ft	(BMP_{TF})	
Treatment Factor Calculation						
TF=0.4 * (BMPST/BMPTF)=	**0.40**					

Appendix 2A

Existing Conditions HydroCAD Summary



Routing Diagram for PRE
Prepared by Sebago Technics, Printed 8/15/2025

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
299,330	39	>75% Grass cover, Good, HSG A (1.1S, 1.2S, 1.3S)
84,550	74	>75% Grass cover, Good, HSG C (1.1S, 1.2S, 1.3S)
82,410	80	>75% Grass cover, Good, HSG D (1.1S, 1.3S)
530	96	Gravel surface, HSG A (1.3S)
2,170	96	Gravel surface, HSG D (1.3S)
5,340	98	Paved parking, HSG A (1.1S, 1.3S)
18,050	70	Woods, Good, HSG C (1.3S)
492,380	**54**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
305,200	HSG A	1.1S, 1.2S, 1.3S
0	HSG B	
102,600	HSG C	1.1S, 1.2S, 1.3S
84,580	HSG D	1.1S, 1.3S
0	Other	
492,380		**TOTAL AREA**

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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

Subcatchment 1.1S: Runoff Area=98,880 sf 0.26% Impervious Runoff Depth=0.25"
Flow Length=419' Tc=14.8 min CN=56 Runoff=0.22 cfs 2,051 cf

Subcatchment 1.2S: Runoff Area=61,190 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=437' Tc=8.1 min CN=41 Runoff=0.00 cfs 17 cf

Subcatchment 1.3S: Runoff Area=332,310 sf 1.53% Impervious Runoff Depth=0.25"
Flow Length=987' Tc=16.4 min CN=56 Runoff=0.71 cfs 6,894 cf

Reach 1.1R: Avg. Flow Depth=0.02' Max Vel=0.21 fps Inflow=0.22 cfs 2,051 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=0.17 cfs 2,051 cf

Reach 1.2R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.14 fps Inflow=0.00 cfs 17 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.00 cfs 17 cf

Reach 1.3R: Avg. Flow Depth=0.06' Max Vel=0.47 fps Inflow=0.71 cfs 6,894 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=0.46 cfs 6,894 cf

Reach 2.3R: Avg. Flow Depth=0.03' Max Vel=0.29 fps Inflow=0.46 cfs 6,911 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=0.36 cfs 6,911 cf

Pond POA-4: Wetlands Peak Elev=230.33' Storage=8,962 cf Inflow=0.46 cfs 8,962 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.00 cfs 0 cf

Link POA-1: Inflow=0.22 cfs 2,051 cf
Primary=0.22 cfs 2,051 cf

Link POA-2: Inflow=0.00 cfs 17 cf
Primary=0.00 cfs 17 cf

Link POA-3: Inflow=0.71 cfs 6,894 cf
Primary=0.71 cfs 6,894 cf

Total Runoff Area = 492,380 sf Runoff Volume = 8,962 cf Average Runoff Depth = 0.22"
98.92% Pervious = 487,040 sf 1.08% Impervious = 5,340 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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

Subcatchment 1.1S: Runoff Area=98,880 sf 0.26% Impervious Runoff Depth=0.84"
Flow Length=419' Tc=14.8 min CN=56 Runoff=1.30 cfs 6,943 cf

Subcatchment 1.2S: Runoff Area=61,190 sf 0.00% Impervious Runoff Depth=0.18"
Flow Length=437' Tc=8.1 min CN=41 Runoff=0.05 cfs 938 cf

Subcatchment 1.3S: Runoff Area=332,310 sf 1.53% Impervious Runoff Depth=0.84"
Flow Length=987' Tc=16.4 min CN=56 Runoff=4.20 cfs 23,334 cf

Reach 1.1R: Avg. Flow Depth=0.05' Max Vel=0.44 fps Inflow=1.30 cfs 6,943 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=1.15 cfs 6,943 cf

Reach 1.2R: (new Reach) Avg. Flow Depth=0.00' Max Vel=0.14 fps Inflow=0.05 cfs 938 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.03 cfs 938 cf

Reach 1.3R: Avg. Flow Depth=0.21' Max Vel=1.01 fps Inflow=4.20 cfs 23,334 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=3.44 cfs 23,334 cf

Reach 2.3R: Avg. Flow Depth=0.09' Max Vel=0.65 fps Inflow=3.45 cfs 24,272 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=3.01 cfs 24,272 cf

Pond POA-4: Wetlands Peak Elev=230.72' Storage=22,637 cf Inflow=3.87 cfs 31,215 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.29 cfs 13,522 cf

Link POA-1: Inflow=1.30 cfs 6,943 cf
Primary=1.30 cfs 6,943 cf

Link POA-2: Inflow=0.05 cfs 938 cf
Primary=0.05 cfs 938 cf

Link POA-3: Inflow=4.20 cfs 23,334 cf
Primary=4.20 cfs 23,334 cf

Total Runoff Area = 492,380 sf Runoff Volume = 31,215 cf Average Runoff Depth = 0.76"
98.92% Pervious = 487,040 sf 1.08% Impervious = 5,340 sf

Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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

Subcatchment 1.1S: Runoff Area=98,880 sf 0.26% Impervious Runoff Depth=1.48"
Flow Length=419' Tc=14.8 min CN=56 Runoff=2.64 cfs 12,191 cf

Subcatchment 1.2S: Runoff Area=61,190 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=437' Tc=8.1 min CN=41 Runoff=0.30 cfs 2,515 cf

Subcatchment 1.3S: Runoff Area=332,310 sf 1.53% Impervious Runoff Depth=1.48"
Flow Length=987' Tc=16.4 min CN=56 Runoff=8.52 cfs 40,971 cf

Reach 1.1R: Avg. Flow Depth=0.08' Max Vel=0.60 fps Inflow=2.64 cfs 12,191 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=2.44 cfs 12,191 cf

Reach 1.2R: (new Reach) Avg. Flow Depth=0.02' Max Vel=0.21 fps Inflow=0.30 cfs 2,515 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.16 cfs 2,515 cf

Reach 1.3R: Avg. Flow Depth=0.33' Max Vel=1.33 fps Inflow=8.52 cfs 40,971 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=7.37 cfs 40,971 cf

Reach 2.3R: Avg. Flow Depth=0.15' Max Vel=0.89 fps Inflow=7.46 cfs 43,486 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=6.84 cfs 43,486 cf

Pond POA-4: Wetlands Peak Elev=230.91' Storage=30,705 cf Inflow=8.77 cfs 55,677 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.00 cfs 37,569 cf

Link POA-1: Inflow=2.64 cfs 12,191 cf
Primary=2.64 cfs 12,191 cf

Link POA-2: Inflow=0.30 cfs 2,515 cf
Primary=0.30 cfs 2,515 cf

Link POA-3: Inflow=8.52 cfs 40,971 cf
Primary=8.52 cfs 40,971 cf

Total Runoff Area = 492,380 sf Runoff Volume = 55,677 cf Average Runoff Depth = 1.36"
98.92% Pervious = 487,040 sf 1.08% Impervious = 5,340 sf

Summary for Subcatchment 1.1S:

Runoff = 2.64 cfs @ 12.22 hrs, Volume= 12,191 cf, Depth= 1.48"
Routed to Link POA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
51,450	39	>75% Grass cover, Good, HSG A
44,070	74	>75% Grass cover, Good, HSG C
3,100	80	>75% Grass cover, Good, HSG D
260	98	Paved parking, HSG A
98,880	56	Weighted Average
98,620		99.74% Pervious Area
260		0.26% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.0380	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
8.1	202	0.1360	0.41		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.10"
1.2	151	0.0840	2.03		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
14.8	419	Total			

Summary for Subcatchment 1.2S:

Runoff = 0.30 cfs @ 12.34 hrs, Volume= 2,515 cf, Depth= 0.49"
Routed to Link POA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
58,200	39	>75% Grass cover, Good, HSG A
2,990	74	>75% Grass cover, Good, HSG C
61,190	41	Weighted Average
61,190		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	66	0.0454	0.21		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.9	90	0.0610	1.73		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
2.1	281	0.1032	2.25		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
8.1	437	Total			

Summary for Subcatchment 1.3S:

Runoff = 8.52 cfs @ 12.26 hrs, Volume= 40,971 cf, Depth= 1.48"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
5,080	98	Paved parking, HSG A
189,680	39	>75% Grass cover, Good, HSG A
37,490	74	>75% Grass cover, Good, HSG C
79,310	80	>75% Grass cover, Good, HSG D
530	96	Gravel surface, HSG A
2,170	96	Gravel surface, HSG D
18,050	70	Woods, Good, HSG C
332,310	56	Weighted Average
327,230		98.47% Pervious Area
5,080		1.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	67	0.0700	0.26		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.9	101	0.0740	1.90		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.6	87	0.1150	2.37		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
4.9	261	0.0160	0.89		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
2.9	207	0.0280	1.17		**Shallow Concentrated Flow, E-F** Short Grass Pasture Kv= 7.0 fps
2.7	264	0.0549	1.64		**Shallow Concentrated Flow, F-G** Short Grass Pasture Kv= 7.0 fps
16.4	987	Total			

Summary for Reach 1.1R:

Inflow Area = 98,880 sf, 0.26% Impervious, Inflow Depth = 1.48" for 25-yr event
Inflow = 2.64 cfs @ 12.22 hrs, Volume= 12,191 cf
Outflow = 2.44 cfs @ 12.30 hrs, Volume= 12,191 cf, Atten= 7%, Lag= 4.4 min
Routed to Pond POA-4 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.60 fps, Min. Travel Time= 5.6 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 16.1 min

Peak Storage= 820 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.08' , Surface Width= 51.61'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 174.02 cfs

50.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70.00'
Length= 200.0' Slope= 0.0300 '/'
Inlet Invert= 235.00', Outlet Invert= 229.00'

‡

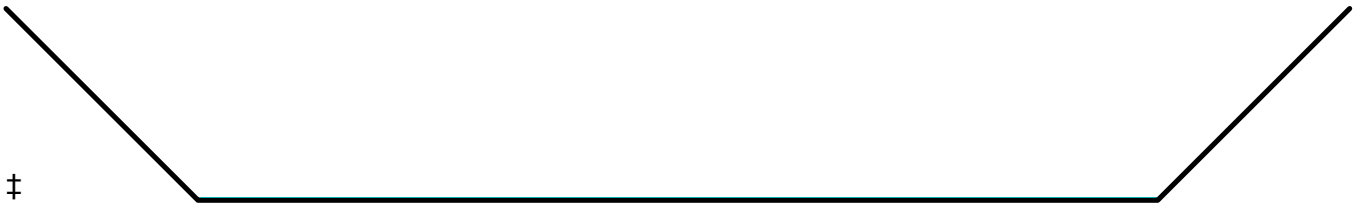
Summary for Reach 1.2R: (new Reach)

Inflow Area = 61,190 sf, 0.00% Impervious, Inflow Depth = 0.49" for 25-yr event
Inflow = 0.30 cfs @ 12.34 hrs, Volume= 2,515 cf
Outflow = 0.16 cfs @ 12.62 hrs, Volume= 2,515 cf, Atten= 45%, Lag= 16.7 min
Routed to Reach 2.3R :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.21 fps, Min. Travel Time= 30.2 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 41.9 min

Peak Storage= 297 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 50.32'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 166.69 cfs

50.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 10.0 '/' Top Width= 70.00'
Length= 372.0' Slope= 0.0430 '/'
Inlet Invert= 247.50', Outlet Invert= 231.50'



‡

Summary for Reach 1.3R:

Inflow Area = 332,310 sf, 1.53% Impervious, Inflow Depth = 1.48" for 25-yr event
Inflow = 8.52 cfs @ 12.26 hrs, Volume= 40,971 cf
Outflow = 7.37 cfs @ 12.37 hrs, Volume= 40,971 cf, Atten= 14%, Lag= 7.0 min
Routed to Reach 2.3R :

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 8.9 min
Avg. Velocity = 0.41 fps, Avg. Travel Time= 28.5 min

Peak Storage= 3,912 cf @ 12.37 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 18.32'
Bank-Full Depth= 2.00' Flow Area= 50.0 sf, Capacity= 186.57 cfs

15.00' x 2.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 35.00'
Length= 707.0' Slope= 0.0255 '/'
Inlet Invert= 249.50', Outlet Invert= 231.50'

‡

Summary for Reach 2.3R:

Inflow Area = 393,500 sf, 1.29% Impervious, Inflow Depth = 1.33" for 25-yr event
Inflow = 7.46 cfs @ 12.38 hrs, Volume= 43,486 cf
Outflow = 6.84 cfs @ 12.50 hrs, Volume= 43,486 cf, Atten= 8%, Lag= 7.3 min
Routed to Pond POA-4 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.89 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 23.9 min

Peak Storage= 3,445 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 51.21'
Bank-Full Depth= 2.00' Flow Area= 116.0 sf, Capacity= 531.82 cfs

50.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 5.0 '/' Top Width= 66.00'
Length= 450.0' Slope= 0.0056 '/'
Inlet Invert= 231.50', Outlet Invert= 229.00'

Summary for Pond POA-4: Wetlands

Inflow Area = 492,380 sf, 1.08% Impervious, Inflow Depth = 1.36" for 25-yr event
Inflow = 8.77 cfs @ 12.47 hrs, Volume= 55,677 cf
Outflow = 1.00 cfs @ 16.15 hrs, Volume= 37,569 cf, Atten= 89%, Lag= 220.7 min
Primary = 1.00 cfs @ 16.15 hrs, Volume= 37,569 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 230.91' @ 16.15 hrs Surf.Area= 44,471 sf Storage= 30,705 cf

Plug-Flow detention time= 427.3 min calculated for 37,569 cf (67% of inflow)
Center-of-Mass det. time= 305.8 min (1,224.7 - 918.9)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	98,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	23,000	0	0
231.00	46,590	34,795	34,795
232.00	79,870	63,230	98,025

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**36.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=1.00 cfs @ 16.15 hrs HW=230.91' (Free Discharge)
1=Culvert (Inlet Controls 1.00 cfs @ 1.72 fps)

Summary for Link POA-1:

Inflow Area = 98,880 sf, 0.26% Impervious, Inflow Depth = 1.48" for 25-yr event
Inflow = 2.64 cfs @ 12.22 hrs, Volume= 12,191 cf
Primary = 2.64 cfs @ 12.22 hrs, Volume= 12,191 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 1.1R :

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 61,190 sf, 0.00% Impervious, Inflow Depth = 0.49" for 25-yr event
Inflow = 0.30 cfs @ 12.34 hrs, Volume= 2,515 cf
Primary = 0.30 cfs @ 12.34 hrs, Volume= 2,515 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 1.2R : (new Reach)

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

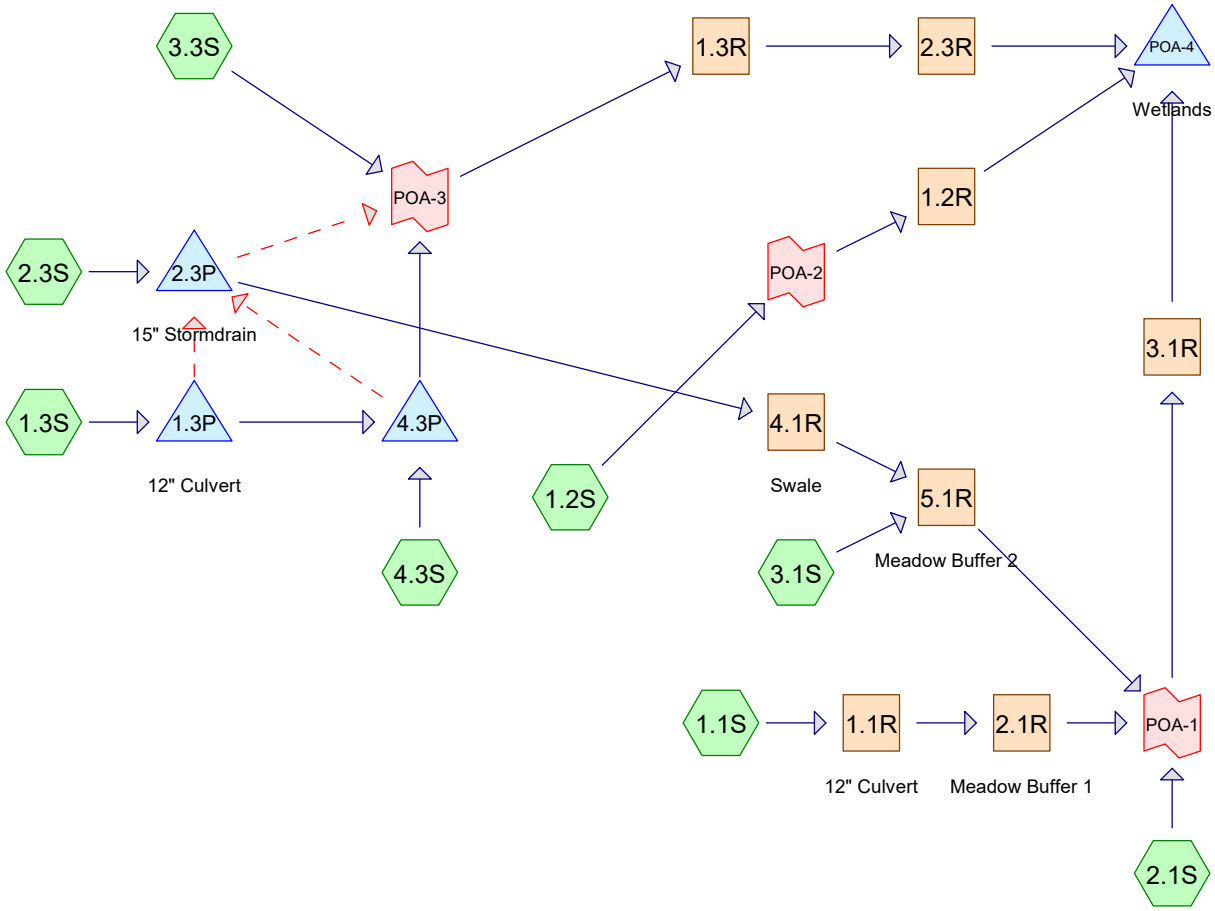
Summary for Link POA-3:

Inflow Area = 332,310 sf, 1.53% Impervious, Inflow Depth = 1.48" for 25-yr event
Inflow = 8.52 cfs @ 12.26 hrs, Volume= 40,971 cf
Primary = 8.52 cfs @ 12.26 hrs, Volume= 40,971 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 1.3R :

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Appendix 2B

Proposed Conditions
HydroCAD Summary



Subcat Reach Pond Link

Routing Diagram for POST

Prepared by Sebago Technics, Printed 8/15/2025

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
284,680	39	>75% Grass cover, Good, HSG A (1.1S, 1.2S, 1.3S, 2.1S, 2.3S, 3.1S, 3.3S, 4.3S)
60,770	74	>75% Grass cover, Good, HSG C (1.3S, 2.1S, 2.3S, 3.1S, 3.3S, 4.3S)
81,400	80	>75% Grass cover, Good, HSG D (1.3S, 2.1S)
760	96	Gravel surface, HSG A (1.3S)
3,180	96	Gravel surface, HSG D (1.3S)
1,320	30	Meadow, non-grazed, HSG A (2.1S)
14,720	71	Meadow, non-grazed, HSG C (2.1S)
18,440	98	Paved parking, HSG A (1.1S, 1.3S, 2.1S, 3.1S, 4.3S)
8,520	98	Paved parking, HSG C (2.3S, 3.3S)
540	98	Roofs, HSG C (3.3S)
18,050	70	Woods, Good, HSG C (2.3S, 3.3S)
492,380	**56**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
305,200	HSG A	1.1S, 1.2S, 1.3S, 2.1S, 2.3S, 3.1S, 3.3S, 4.3S
0	HSG B	
102,600	HSG C	1.3S, 2.1S, 2.3S, 3.1S, 3.3S, 4.3S
84,580	HSG D	1.3S, 2.1S
0	Other	
492,380		**TOTAL AREA**

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1S: Runoff Area=81,030 sf 15.12% Impervious Runoff Depth=0.07"
Flow Length=204' Tc=6.0 min CN=48 Runoff=0.02 cfs 500 cf

Subcatchment 1.2S: Runoff Area=10,140 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=122' Slope=0.0656 '/' Tc=7.3 min CN=39 Runoff=0.00 cfs 0 cf

Subcatchment 1.3S: Runoff Area=189,660 sf 0.96% Impervious Runoff Depth=0.31"
Flow Length=753' Tc=14.0 min CN=58 Runoff=0.60 cfs 4,849 cf

Subcatchment 2.1S: Runoff Area=90,530 sf 0.18% Impervious Runoff Depth=0.28"
Flow Length=419' Tc=14.8 min CN=57 Runoff=0.24 cfs 2,091 cf

Subcatchment 2.3S: Runoff Area=59,520 sf 13.79% Impervious Runoff Depth=0.40"
Flow Length=374' Tc=8.5 min CN=61 Runoff=0.34 cfs 2,003 cf

Subcatchment 3.1S: Runoff Area=26,360 sf 10.70% Impervious Runoff Depth=0.07"
Flow Length=285' Tc=6.2 min CN=48 Runoff=0.01 cfs 163 cf

Subcatchment 3.3S: Runoff Area=28,230 sf 3.01% Impervious Runoff Depth=0.34"
Flow Length=383' Tc=17.9 min CN=59 Runoff=0.10 cfs 795 cf

Subcatchment 4.3S: Runoff Area=6,910 sf 19.97% Impervious Runoff Depth=0.31"
Tc=0.0 min CN=58 Runoff=0.03 cfs 177 cf

Reach 1.1R: 12" Culvert Avg. Flow Depth=0.05' Max Vel=1.25 fps Inflow=0.02 cfs 500 cf
12.0" Round Pipe n=0.013 L=190.0' S=0.0116 '/' Capacity=3.83 cfs Outflow=0.02 cfs 500 cf

Reach 1.2R: Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.00 cfs 0 cf

Reach 1.3R: Avg. Flow Depth=0.06' Max Vel=0.46 fps Inflow=0.71 cfs 5,716 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=0.44 cfs 5,716 cf

Reach 2.1R: Meadow Buffer 1 Avg. Flow Depth=0.00' Max Vel=0.35 fps Inflow=0.02 cfs 500 cf
n=0.035 L=193.0' S=0.0803 '/' Capacity=385.67 cfs Outflow=0.02 cfs 500 cf

Reach 2.3R: Avg. Flow Depth=0.02' Max Vel=0.28 fps Inflow=0.44 cfs 5,716 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=0.33 cfs 5,716 cf

Reach 3.1R: Avg. Flow Depth=0.03' Max Vel=0.30 fps Inflow=0.51 cfs 4,756 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=0.44 cfs 4,756 cf

Reach 4.1R: Swale Avg. Flow Depth=0.11' Max Vel=1.36 fps Inflow=0.34 cfs 2,003 cf
n=0.030 L=84.0' S=0.0179 '/' Capacity=23.56 cfs Outflow=0.34 cfs 2,003 cf

Reach 5.1R: Meadow Buffer 2 Avg. Flow Depth=0.03' Max Vel=0.17 fps Inflow=0.34 cfs 2,166 cf
n=0.240 L=100.0' S=0.0750 '/' Capacity=28.29 cfs Outflow=0.27 cfs 2,166 cf

Pond 1.3P: 12" Culvert Peak Elev=251.44' Storage=25 cf Inflow=0.60 cfs 4,849 cf
Primary=0.60 cfs 4,849 cf Secondary=0.00 cfs 0 cf Outflow=0.60 cfs 4,849 cf

Pond 2.3P: 15" Stormdrain Peak Elev=248.80' Storage=2 cf Inflow=0.34 cfs 2,003 cf
Primary=0.34 cfs 2,003 cf Secondary=0.00 cfs 0 cf Outflow=0.34 cfs 2,003 cf

Pond 4.3P: Peak Elev=250.39' Storage=120 cf Inflow=0.61 cfs 5,025 cf
Primary=0.61 cfs 4,921 cf Secondary=0.00 cfs 0 cf Outflow=0.61 cfs 4,921 cf

Pond POA-4: Wetlands Peak Elev=230.38' Storage=10,472 cf Inflow=0.56 cfs 10,472 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.00 cfs 0 cf

Link POA-1: Inflow=0.51 cfs 4,756 cf
Primary=0.51 cfs 4,756 cf

Link POA-2: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link POA-3: Inflow=0.71 cfs 5,716 cf
Primary=0.71 cfs 5,716 cf

Total Runoff Area = 492,380 sf Runoff Volume = 10,576 cf Average Runoff Depth = 0.26"
94.41% Pervious = 464,880 sf 5.59% Impervious = 27,500 sf

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1S: Runoff Area=81,030 sf 15.12% Impervious Runoff Depth=0.45"
Flow Length=204' Tc=6.0 min CN=48 Runoff=0.39 cfs 3,014 cf

Subcatchment 1.2S: Runoff Area=10,140 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=122' Slope=0.0656 '/' Tc=7.3 min CN=39 Runoff=0.00 cfs 107 cf

Subcatchment 1.3S: Runoff Area=189,660 sf 0.96% Impervious Runoff Depth=0.96"
Flow Length=753' Tc=14.0 min CN=58 Runoff=3.07 cfs 15,106 cf

Subcatchment 2.1S: Runoff Area=90,530 sf 0.18% Impervious Runoff Depth=0.90"
Flow Length=419' Tc=14.8 min CN=57 Runoff=1.31 cfs 6,778 cf

Subcatchment 2.3S: Runoff Area=59,520 sf 13.79% Impervious Runoff Depth=1.14"
Flow Length=374' Tc=8.5 min CN=61 Runoff=1.46 cfs 5,632 cf

Subcatchment 3.1S: Runoff Area=26,360 sf 10.70% Impervious Runoff Depth=0.45"
Flow Length=285' Tc=6.2 min CN=48 Runoff=0.13 cfs 980 cf

Subcatchment 3.3S: Runoff Area=28,230 sf 3.01% Impervious Runoff Depth=1.01"
Flow Length=383' Tc=17.9 min CN=59 Runoff=0.45 cfs 2,386 cf

Subcatchment 4.3S: Runoff Area=6,910 sf 19.97% Impervious Runoff Depth=0.96"
Tc=0.0 min CN=58 Runoff=0.18 cfs 550 cf

Reach 1.1R: 12" Culvert Avg. Flow Depth=0.22' Max Vel=3.15 fps Inflow=0.39 cfs 3,014 cf
12.0" Round Pipe n=0.013 L=190.0' S=0.0116 '/' Capacity=3.83 cfs Outflow=0.39 cfs 3,014 cf

Reach 1.2R: Avg. Flow Depth=0.00' Max Vel=0.14 fps Inflow=0.00 cfs 107 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.00 cfs 107 cf

Reach 1.3R: Avg. Flow Depth=0.19' Max Vel=0.94 fps Inflow=3.52 cfs 17,939 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=2.80 cfs 17,939 cf

Reach 2.1R: Meadow Buffer 1 Avg. Flow Depth=0.01' Max Vel=0.49 fps Inflow=0.39 cfs 3,014 cf
n=0.035 L=193.0' S=0.0803 '/' Capacity=385.67 cfs Outflow=0.37 cfs 3,014 cf

Reach 2.3R: Avg. Flow Depth=0.08' Max Vel=0.59 fps Inflow=2.80 cfs 17,939 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=2.36 cfs 17,939 cf

Reach 3.1R: Avg. Flow Depth=0.09' Max Vel=0.62 fps Inflow=2.95 cfs 16,405 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=2.76 cfs 16,405 cf

Reach 4.1R: Swale Avg. Flow Depth=0.24' Max Vel=2.18 fps Inflow=1.46 cfs 5,632 cf
n=0.030 L=84.0' S=0.0179 '/' Capacity=23.56 cfs Outflow=1.45 cfs 5,632 cf

Reach 5.1R: Meadow Buffer 2 Avg. Flow Depth=0.08' Max Vel=0.32 fps Inflow=1.58 cfs 6,612 cf
n=0.240 L=100.0' S=0.0750 '/' Capacity=28.29 cfs Outflow=1.39 cfs 6,612 cf

Pond 1.3P: 12" Culvert Peak Elev=252.18' Storage=205 cf Inflow=3.07 cfs 15,106 cf
Primary=2.99 cfs 15,106 cf Secondary=0.00 cfs 0 cf Outflow=2.99 cfs 15,106 cf

Pond 2.3P: 15" Stormdrain Peak Elev=249.17' Storage=15 cf Inflow=1.46 cfs 5,632 cf
Primary=1.46 cfs 5,632 cf Secondary=0.00 cfs 0 cf Outflow=1.46 cfs 5,632 cf

Pond 4.3P: Peak Elev=250.54' Storage=150 cf Inflow=3.07 cfs 15,656 cf
Primary=3.07 cfs 15,552 cf Secondary=0.00 cfs 0 cf Outflow=3.07 cfs 15,552 cf

Pond POA-4: Wetlands Peak Elev=230.75' Storage=23,734 cf Inflow=4.41 cfs 34,450 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=0.37 cfs 18,936 cf

Link POA-1: Inflow=2.95 cfs 16,405 cf
Primary=2.95 cfs 16,405 cf

Link POA-2: Inflow=0.00 cfs 107 cf
Primary=0.00 cfs 107 cf

Link POA-3: Inflow=3.52 cfs 17,939 cf
Primary=3.52 cfs 17,939 cf

Total Runoff Area = 492,380 sf Runoff Volume = 34,554 cf Average Runoff Depth = 0.84"
94.41% Pervious = 464,880 sf 5.59% Impervious = 27,500 sf

Time span=1.00-72.00 hrs, dt=0.01 hrs, 7101 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1.1S: Runoff Area=81,030 sf 15.12% Impervious Runoff Depth=0.91"
Flow Length=204' Tc=6.0 min CN=48 Runoff=1.38 cfs 6,162 cf

Subcatchment 1.2S: Runoff Area=10,140 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=122' Slope=0.0656 '/' Tc=7.3 min CN=39 Runoff=0.03 cfs 329 cf

Subcatchment 1.3S: Runoff Area=189,660 sf 0.96% Impervious Runoff Depth=1.63"
Flow Length=753' Tc=14.0 min CN=58 Runoff=5.88 cfs 25,818 cf

Subcatchment 2.1S: Runoff Area=90,530 sf 0.18% Impervious Runoff Depth=1.56"
Flow Length=419' Tc=14.8 min CN=57 Runoff=2.58 cfs 11,738 cf

Subcatchment 2.3S: Runoff Area=59,520 sf 13.79% Impervious Runoff Depth=1.87"
Flow Length=374' Tc=8.5 min CN=61 Runoff=2.60 cfs 9,290 cf

Subcatchment 3.1S: Runoff Area=26,360 sf 10.70% Impervious Runoff Depth=0.91"
Flow Length=285' Tc=6.2 min CN=48 Runoff=0.45 cfs 2,005 cf

Subcatchment 3.3S: Runoff Area=28,230 sf 3.01% Impervious Runoff Depth=1.71"
Flow Length=383' Tc=17.9 min CN=59 Runoff=0.84 cfs 4,028 cf

Subcatchment 4.3S: Runoff Area=6,910 sf 19.97% Impervious Runoff Depth=1.63"
Tc=0.0 min CN=58 Runoff=0.34 cfs 941 cf

Reach 1.1R: 12" Culvert Avg. Flow Depth=0.41' Max Vel=4.48 fps Inflow=1.38 cfs 6,162 cf
12.0" Round Pipe n=0.013 L=190.0' S=0.0116 '/' Capacity=3.83 cfs Outflow=1.38 cfs 6,162 cf

Reach 1.2R: Avg. Flow Depth=0.00' Max Vel=0.14 fps Inflow=0.03 cfs 329 cf
n=0.100 L=372.0' S=0.0430 '/' Capacity=166.69 cfs Outflow=0.01 cfs 329 cf

Reach 1.3R: Avg. Flow Depth=0.23' Max Vel=1.06 fps Inflow=4.83 cfs 28,528 cf
n=0.080 L=707.0' S=0.0255 '/' Capacity=186.57 cfs Outflow=3.96 cfs 28,528 cf

Reach 2.1R: Meadow Buffer 1 Avg. Flow Depth=0.02' Max Vel=0.76 fps Inflow=1.38 cfs 6,162 cf
n=0.035 L=193.0' S=0.0803 '/' Capacity=385.67 cfs Outflow=1.19 cfs 6,162 cf

Reach 2.3R: Avg. Flow Depth=0.11' Max Vel=0.70 fps Inflow=3.96 cfs 28,528 cf
n=0.035 L=450.0' S=0.0056 '/' Capacity=531.82 cfs Outflow=3.74 cfs 28,528 cf

Reach 3.1R: Avg. Flow Depth=0.16' Max Vel=0.93 fps Inflow=7.99 cfs 31,349 cf
n=0.080 L=200.0' S=0.0300 '/' Capacity=174.02 cfs Outflow=7.75 cfs 31,349 cf

Reach 4.1R: Swale Avg. Flow Depth=0.42' Max Vel=2.95 fps Inflow=4.10 cfs 11,444 cf
n=0.030 L=84.0' S=0.0179 '/' Capacity=23.56 cfs Outflow=4.10 cfs 11,444 cf

Reach 5.1R: Meadow Buffer 2 Avg. Flow Depth=0.17' Max Vel=0.50 fps Inflow=4.46 cfs 13,449 cf
n=0.240 L=100.0' S=0.0750 '/' Capacity=28.29 cfs Outflow=4.33 cfs 13,449 cf

Pond 1.3P: 12" Culvert Peak Elev=252.28' Storage=238 cf Inflow=5.88 cfs 25,818 cf
Primary=3.23 cfs 23,438 cf Secondary=2.65 cfs 2,380 cf Outflow=5.88 cfs 25,818 cf

Pond 2.3P: 15" Stormdrain Peak Elev=249.90' Storage=187 cf Inflow=4.80 cfs 11,670 cf
Primary=4.10 cfs 11,444 cf Secondary=0.69 cfs 225 cf Outflow=4.79 cfs 11,670 cf

Pond 4.3P: Peak Elev=250.56' Storage=153 cf Inflow=3.38 cfs 24,378 cf
Primary=3.38 cfs 24,274 cf Secondary=0.00 cfs 0 cf Outflow=3.38 cfs 24,274 cf

Pond POA-4: Wetlands Peak Elev=230.94' Storage=32,224 cf Inflow=10.25 cfs 60,206 cf
36.0" Round Culvert n=0.013 L=50.0' S=0.0100 '/' Outflow=1.17 cfs 44,655 cf

Link POA-1: Inflow=7.99 cfs 31,349 cf
Primary=7.99 cfs 31,349 cf

Link POA-2: Inflow=0.03 cfs 329 cf
Primary=0.03 cfs 329 cf

Link POA-3: Inflow=4.83 cfs 28,528 cf
Primary=4.83 cfs 28,528 cf

Total Runoff Area = 492,380 sf Runoff Volume = 60,310 cf Average Runoff Depth = 1.47"
94.41% Pervious = 464,880 sf 5.59% Impervious = 27,500 sf

Summary for Subcatchment 1.1S:

Runoff = 1.38 cfs @ 12.12 hrs, Volume= 6,162 cf, Depth= 0.91"
Routed to Reach 1.1R : 12" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
68,780	39	>75% Grass cover, Good, HSG A
12,250	98	Paved parking, HSG A
81,030	48	Weighted Average
68,780		84.88% Pervious Area
12,250		15.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	65	0.0461	0.21		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.6	71	0.0915	2.12		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
0.3	68	0.2206	3.29		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
6.0	204	Total			

Summary for Subcatchment 1.2S:

Runoff = 0.03 cfs @ 12.39 hrs, Volume= 329 cf, Depth= 0.39"
Routed to Link POA-2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
10,140	39	>75% Grass cover, Good, HSG A
10,140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	122	0.0656	0.28		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"

Summary for Subcatchment 1.3S:

Runoff = 5.88 cfs @ 12.21 hrs, Volume= 25,818 cf, Depth= 1.63"
Routed to Pond 1.3P : 12" Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
101,440	39	>75% Grass cover, Good, HSG A
4,150	74	>75% Grass cover, Good, HSG C
78,300	80	>75% Grass cover, Good, HSG D
1,830	98	Paved parking, HSG A
760	96	Gravel surface, HSG A
3,180	96	Gravel surface, HSG D
189,660	58	Weighted Average
187,830		99.04% Pervious Area
1,830		0.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	50	0.0800	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
1.0	141	0.1206	2.43		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
5.8	388	0.0258	1.12		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
3.9	174	0.0115	0.75		**Shallow Concentrated Flow, D-E** Short Grass Pasture Kv= 7.0 fps
14.0	753	Total			

Summary for Subcatchment 2.1S:

Runoff = 2.58 cfs @ 12.22 hrs, Volume= 11,738 cf, Depth= 1.56"
Routed to Link POA-1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
41,030	39	>75% Grass cover, Good, HSG A
14,720	71	Meadow, non-grazed, HSG C
160	98	Paved parking, HSG A
1,320	30	Meadow, non-grazed, HSG A
30,200	74	>75% Grass cover, Good, HSG C
3,100	80	>75% Grass cover, Good, HSG D
90,530	57	Weighted Average
90,370		99.82% Pervious Area
160		0.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	66	0.0380	0.20		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
8.1	202	0.1360	0.41		**Sheet Flow, B-C** Grass: Short n= 0.150 P2= 3.10"
1.2	151	0.0840	2.03		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
14.8	419	Total			

Summary for Subcatchment 2.3S:

Runoff = 2.60 cfs @ 12.13 hrs, Volume= 9,290 cf, Depth= 1.87"
Routed to Pond 2.3P : 15" Stormdrain

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
26,840	39	>75% Grass cover, Good, HSG A
20,580	74	>75% Grass cover, Good, HSG C
8,210	98	Paved parking, HSG C
3,890	70	Woods, Good, HSG C
59,520	61	Weighted Average
51,310		86.21% Pervious Area
8,210		13.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	112	0.0669	0.28		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.6	72	0.0903	2.10		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
1.2	190	0.1320	2.54		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
8.5	374	Total			

Summary for Subcatchment 3.1S:

Runoff = 0.45 cfs @ 12.12 hrs, Volume= 2,005 cf, Depth= 0.91"
Routed to Reach 5.1R : Meadow Buffer 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
21,260	39	>75% Grass cover, Good, HSG A
2,280	74	>75% Grass cover, Good, HSG C
2,820	98	Paved parking, HSG A
26,360	48	Weighted Average
23,540		89.30% Pervious Area
2,820		10.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	52	0.0770	0.25		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
2.8	233	0.0386	1.38		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
6.2	285	Total			

Summary for Subcatchment 3.3S:

Runoff = 0.84 cfs @ 12.27 hrs, Volume= 4,028 cf, Depth= 1.71"
Routed to Link POA-3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
11,080	39	>75% Grass cover, Good, HSG A
14,160	70	Woods, Good, HSG C
2,140	74	>75% Grass cover, Good, HSG C
310	98	Paved parking, HSG C
540	98	Roofs, HSG C
28,230	59	Weighted Average
27,380		96.99% Pervious Area
850		3.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	139	0.0860	0.32		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.10"
10.7	244	0.0230	0.38		**Shallow Concentrated Flow,** Forest w/Heavy Litter Kv= 2.5 fps
17.9	383	Total			

Summary for Subcatchment 4.3S:

Runoff = 0.34 cfs @ 12.00 hrs, Volume= 941 cf, Depth= 1.63"
Routed to Pond 4.3P :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-yr Rainfall=5.80"

Area (sf)	CN	Description
1,380	98	Paved parking, HSG A
4,110	39	>75% Grass cover, Good, HSG A
1,420	74	>75% Grass cover, Good, HSG C
6,910	58	Weighted Average
5,530		80.03% Pervious Area
1,380		19.97% Impervious Area

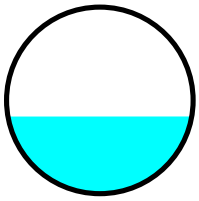
Summary for Reach 1.1R: 12" Culvert

Inflow Area = 81,030 sf, 15.12% Impervious, Inflow Depth = 0.91" for 25-yr event
Inflow = 1.38 cfs @ 12.12 hrs, Volume= 6,162 cf
Outflow = 1.38 cfs @ 12.12 hrs, Volume= 6,162 cf, Atten= 1%, Lag= 0.6 min
Routed to Reach 2.1R : Meadow Buffer 1

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 4.48 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 2.05 fps, Avg. Travel Time= 1.5 min

Peak Storage= 58 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.41' , Surface Width= 0.99'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.83 cfs

12.0" Round Pipe
n= 0.013 Corrugated PE, smooth interior
Length= 190.0' Slope= 0.0116 '/'
Inlet Invert= 252.20', Outlet Invert= 250.00'



Summary for Reach 1.2R:

Inflow Area = 10,140 sf, 0.00% Impervious, Inflow Depth = 0.39" for 25-yr event
Inflow = 0.03 cfs @ 12.39 hrs, Volume= 329 cf
Outflow = 0.01 cfs @ 13.06 hrs, Volume= 329 cf, Atten= 56%, Lag= 40.5 min
Routed to Pond POA-4 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.14 fps, Min. Travel Time= 43.4 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 43.4 min

Peak Storage= 38 cf @ 13.06 hrs
Average Depth at Peak Storage= 0.00' , Surface Width= 50.04'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 166.69 cfs

50.00' x 1.00' deep channel, n= 0.100 Earth, dense brush, high stage
Side Slope Z-value= 10.0 '/' Top Width= 70.00'
Length= 372.0' Slope= 0.0430 '/'
Inlet Invert= 247.50', Outlet Invert= 231.50'

‡

Summary for Reach 1.3R:

Inflow Area = 224,800 sf, 1.81% Impervious, Inflow Depth = 1.52" for 25-yr event
Inflow = 4.83 cfs @ 12.20 hrs, Volume= 28,528 cf
Outflow = 3.96 cfs @ 12.40 hrs, Volume= 28,528 cf, Atten= 18%, Lag= 12.1 min
Routed to Reach 2.3R :

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 1.06 fps, Min. Travel Time= 11.1 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 31.6 min

Peak Storage= 2,631 cf @ 12.40 hrs
Average Depth at Peak Storage= 0.23' , Surface Width= 17.30'
Bank-Full Depth= 2.00' Flow Area= 50.0 sf, Capacity= 186.57 cfs

15.00' x 2.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 5.0 '/' Top Width= 35.00'
Length= 707.0' Slope= 0.0255 '/'
Inlet Invert= 249.50', Outlet Invert= 231.50'

‡

Summary for Reach 2.1R: Meadow Buffer 1

Inflow Area = 81,030 sf, 15.12% Impervious, Inflow Depth = 0.91" for 25-yr event
Inflow = 1.38 cfs @ 12.12 hrs, Volume= 6,162 cf
Outflow = 1.19 cfs @ 12.18 hrs, Volume= 6,162 cf, Atten= 13%, Lag= 3.4 min
Routed to Link POA-1 :

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.76 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 0.37 fps, Avg. Travel Time= 8.6 min

Peak Storage= 303 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 100.31'
Bank-Full Depth= 0.50' Flow Area= 52.5 sf, Capacity= 385.67 cfs

100.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 110.00'
Length= 193.0' Slope= 0.0803 '/'
Inlet Invert= 250.00', Outlet Invert= 234.50'

Summary for Reach 2.3R:

Inflow Area = 224,800 sf, 1.81% Impervious, Inflow Depth = 1.52" for 25-yr event
Inflow = 3.96 cfs @ 12.40 hrs, Volume= 28,528 cf
Outflow = 3.74 cfs @ 12.59 hrs, Volume= 28,528 cf, Atten= 5%, Lag= 11.0 min
Routed to Pond POA-4 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.70 fps, Min. Travel Time= 10.6 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 26.5 min

Peak Storage= 2,390 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 50.84'
Bank-Full Depth= 2.00' Flow Area= 116.0 sf, Capacity= 531.82 cfs

50.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 3.0 5.0 '/' Top Width= 66.00'
Length= 450.0' Slope= 0.0056 '/'
Inlet Invert= 231.50', Outlet Invert= 229.00'

Summary for Reach 3.1R:

Inflow Area = 257,440 sf, 9.11% Impervious, Inflow Depth = 1.46" for 25-yr event
Inflow = 7.99 cfs @ 12.23 hrs, Volume= 31,349 cf
Outflow = 7.75 cfs @ 12.29 hrs, Volume= 31,349 cf, Atten= 3%, Lag= 3.2 min
Routed to Pond POA-4 : Wetlands

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.93 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 12.6 min

Peak Storage= 1,662 cf @ 12.29 hrs
Average Depth at Peak Storage= 0.16' , Surface Width= 53.22'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 174.02 cfs

50.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70.00'
Length= 200.0' Slope= 0.0300 '/'
Inlet Invert= 235.00', Outlet Invert= 229.00'

‡

Summary for Reach 4.1R: Swale

Inflow Area = 59,520 sf, 13.79% Impervious, Inflow Depth = 2.31" for 25-yr event
Inflow = 4.10 cfs @ 12.19 hrs, Volume= 11,444 cf
Outflow = 4.10 cfs @ 12.20 hrs, Volume= 11,444 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach 5.1R : Meadow Buffer 2

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 2.95 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 1.5 min

Peak Storage= 117 cf @ 12.20 hrs
Average Depth at Peak Storage= 0.42' , Surface Width= 4.55'
Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 23.56 cfs

2.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 8.00'
Length= 84.0' Slope= 0.0179 '/'
Inlet Invert= 242.50', Outlet Invert= 241.00'

‡

Summary for Reach 5.1R: Meadow Buffer 2

Inflow Area = 85,880 sf, 12.84% Impervious, Inflow Depth = 1.88" for 25-yr event
Inflow = 4.46 cfs @ 12.19 hrs, Volume= 13,449 cf
Outflow = 4.33 cfs @ 12.26 hrs, Volume= 13,449 cf, Atten= 3%, Lag= 4.0 min
Routed to Link POA-1 :

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Max. Velocity= 0.50 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 14.3 min

Peak Storage= 872 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.17' , Surface Width= 54.98'
Bank-Full Depth= 0.50' Flow Area= 28.8 sf, Capacity= 28.29 cfs

50.00' x 0.50' deep channel, n= 0.240 Sheet flow over Dense Grass
Side Slope Z-value= 15.0 '/' Top Width= 65.00'
Length= 100.0' Slope= 0.0750 '/'
Inlet Invert= 241.00', Outlet Invert= 233.50'

‡

Summary for Pond 1.3P: 12" Culvert

Inflow Area = 189,660 sf, 0.96% Impervious, Inflow Depth = 1.63" for 25-yr event
Inflow = 5.88 cfs @ 12.21 hrs, Volume= 25,818 cf
Outflow = 5.88 cfs @ 12.21 hrs, Volume= 25,818 cf, Atten= 0%, Lag= 0.1 min
Primary = 3.23 cfs @ 12.21 hrs, Volume= 23,438 cf
Routed to Pond 4.3P :
Secondary = 2.65 cfs @ 12.21 hrs, Volume= 2,380 cf
Routed to Pond 2.3P : 15" Stormdrain

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 252.28' @ 12.21 hrs Surf.Area= 315 sf Storage= 238 cf

Plug-Flow detention time= 0.8 min calculated for 25,814 cf (100% of inflow)
Center-of-Mass det. time= 0.8 min (878.8 - 878.1)

Volume	Invert	Avail.Storage	Storage Description
#1	251.05'	465 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
251.05	0	0	0
252.00	315	150	150
253.00	315	315	465

Device	Routing	Invert	Outlet Devices
#1	Primary	251.05'	**12.0" Round Culvert** L= 49.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 251.05' / 250.00' S= 0.0214 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	252.20'	**40.0' long + 66.0 '/' SideZ x 14.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.64 2.67 2.70 2.65 2.64 2.65 2.65 2.63

Primary OutFlow Max=3.23 cfs @ 12.21 hrs HW=252.28' TW=250.56' (Dynamic Tailwater)
↑└**1=Culvert** (Inlet Controls 3.23 cfs @ 4.11 fps)

Secondary OutFlow Max=2.65 cfs @ 12.21 hrs HW=252.28' TW=249.89' (Dynamic Tailwater)
↑└**2=Broad-Crested Rectangular Weir** (Weir Controls 2.65 cfs @ 0.73 fps)

Summary for Pond 2.3P: 15" Stormdrain

Inflow Area = 59,520 sf, 13.79% Impervious, Inflow Depth = 2.35" for 25-yr event
Inflow = 4.80 cfs @ 12.18 hrs, Volume= 11,670 cf
Outflow = 4.79 cfs @ 12.19 hrs, Volume= 11,670 cf, Atten= 0%, Lag= 0.6 min
Primary = 4.10 cfs @ 12.19 hrs, Volume= 11,444 cf
Routed to Reach 4.1R : Swale
Secondary = 0.69 cfs @ 12.19 hrs, Volume= 225 cf
Routed to Link POA-3 :

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 249.90' @ 12.19 hrs Surf.Area= 379 sf Storage= 187 cf

Plug-Flow detention time= 0.3 min calculated for 11,668 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (838.7 - 838.4)

Volume	Invert	Avail.Storage	Storage Description
#1	248.50'	333 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
248.50	0	0	0
249.00	24	6	6
250.00	420	222	228
250.25	420	105	333

Device	Routing	Invert	Outlet Devices
#1	Primary	248.50'	**15.0" Round Culvert** L= 345.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 248.50' / 242.50' S= 0.0174 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Secondary	249.80'	**9.0' long + 3.0 '/' SideZ x 2.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 Coef. (English) 2.48 2.60 2.60 2.60 2.64 2.65 2.68 2.75 2.74 2.76 2.89 3.05 3.19 3.32

Primary OutFlow Max=4.10 cfs @ 12.19 hrs HW=249.90' TW=242.92' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 4.10 cfs @ 3.34 fps)

Secondary OutFlow Max=0.69 cfs @ 12.19 hrs HW=249.90' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Weir Controls 0.69 cfs @ 0.77 fps)

Summary for Pond 4.3P:

Inflow Area = 196,570 sf, 1.63% Impervious, Inflow Depth = 1.49" for 25-yr event
Inflow = 3.38 cfs @ 12.19 hrs, Volume= 24,378 cf
Outflow = 3.38 cfs @ 12.20 hrs, Volume= 24,274 cf, Atten= 0%, Lag= 0.2 min
Primary = 3.38 cfs @ 12.20 hrs, Volume= 24,274 cf
Routed to Link POA-3 :
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0 cf
Routed to Pond 2.3P : 15" Stormdrain

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 250.56' @ 12.20 hrs Surf.Area= 189 sf Storage= 153 cf

Plug-Flow detention time= 3.7 min calculated for 24,274 cf (100% of inflow)
Center-of-Mass det. time= 1.3 min (893.5 - 892.2)

Volume	Invert	Avail.Storage	Storage Description
#1	249.50'	331 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
249.50	0	0	0
250.00	189	47	47
250.50	189	95	142
251.50	189	189	331

Device	Routing	Invert	Outlet Devices
#1	Primary	250.30'	**10.0' long + 3.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#2	Secondary	251.00'	**15.0' long + 3.0 '/' SideZ x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=3.38 cfs @ 12.20 hrs HW=250.56' TW=0.00' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 3.38 cfs @ 1.21 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=249.50' TW=248.50' (Dynamic Tailwater)
2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond POA-4: Wetlands

Inflow Area = 492,380 sf, 5.59% Impervious, Inflow Depth = 1.47" for 25-yr event
Inflow = 10.25 cfs @ 12.35 hrs, Volume= 60,206 cf
Outflow = 1.17 cfs @ 15.76 hrs, Volume= 44,655 cf, Atten= 89%, Lag= 204.9 min
Primary = 1.17 cfs @ 15.76 hrs, Volume= 44,655 cf
Routed to nonexistent node POA 4

Routing by Dyn-Stor-Ind method, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 230.94' @ 15.76 hrs Surf.Area= 45,269 sf Storage= 32,224 cf

Plug-Flow detention time= 488.4 min calculated for 44,655 cf (74% of inflow)
Center-of-Mass det. time= 384.3 min (1,292.2 - 907.9)

Volume	Invert	Avail.Storage	Storage Description
#1	230.00'	98,025 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
230.00	23,000	0	0
231.00	46,590	34,795	34,795
232.00	79,870	63,230	98,025

Device	Routing	Invert	Outlet Devices
#1	Primary	230.50'	**36.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 230.50' / 230.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=1.17 cfs @ 15.76 hrs HW=230.94' (Free Discharge)
1=Culvert (Inlet Controls 1.17 cfs @ 1.79 fps)

Summary for Link POA-1:

Inflow Area = 257,440 sf, 9.11% Impervious, Inflow Depth = 1.46" for 25-yr event
Inflow = 7.99 cfs @ 12.23 hrs, Volume= 31,349 cf
Primary = 7.99 cfs @ 12.23 hrs, Volume= 31,349 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 3.1R :

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Summary for Link POA-2:

Inflow Area = 10,140 sf, 0.00% Impervious, Inflow Depth = 0.39" for 25-yr event
Inflow = 0.03 cfs @ 12.39 hrs, Volume= 329 cf
Primary = 0.03 cfs @ 12.39 hrs, Volume= 329 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 1.2R :

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Summary for Link POA-3:

Inflow Area = 224,800 sf, 1.81% Impervious, Inflow Depth = 1.52" for 25-yr event
Inflow = 4.83 cfs @ 12.20 hrs, Volume= 28,528 cf
Primary = 4.83 cfs @ 12.20 hrs, Volume= 28,528 cf, Atten= 0%, Lag= 0.0 min
Routed to Reach 1.3R :

Primary outflow = Inflow, Time Span= 1.00-72.00 hrs, dt= 0.01 hrs

Appendix 3

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

For:
Smith Cemetery
Windham, 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.

G. BMP Specific Inspection and Maintenance During Construction

- Meadow buffer areas shall be staked out prior to construction to define the limit of disturbance.
- Contractors shall be informed of the limit of disturbance and buffer limits.

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 (>0.5") 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 (>0.5") 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. Level Spread to Meadow Buffer:

- Buffer should be inspected annually for evidence of erosion or concentrated flows through or around the buffer. All eroded areas should be repaired, seeded and mulched.
- Meadow buffers may be mown no more than twice per year. They may not be maintained as a lawn.
- Buffers should not be traversed by all-terrain vehicles or other vehicles. Activities within buffers should be conducted so as not to damage vegetation, disturb any organic duff layer, or expose soil.
- Level spreader shall be inspected at least once a year and following major storms, the level spreader pool should be inspected for sand accumulation and debris that may reduce its capacity.
- Sediment build-up within the swale should be removed when it has accumulated to approximately 25% of design volume or channel capacity. Dispose of the sediments appropriately.
- Remove debris such as leaf litter, branches and tree growth from the spreader.
- Do not store snow within the area of the level spreader.
- The reconstruction of the level spreader may be necessary when sheet flow from the spreader channelize into the buffer.

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.

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.

ATTACHMENT 1 – STORMWATER INSPECTION AND MAINTENANCE LOG

Smith Cemetery
513 Gray Road
Windham, Maine

This log is intended to accompany the Inspection, Maintenance, and Housekeeping Plan for the [brief project description] in [Town, State]. The following items shall be checked, cleaned, and maintained on a regular basis as specified in the Maintenance Plan and as described in the sections below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the [Municipality] and the Maine DEP. Qualified personnel familiar with the drainage systems and soils shall perform all inspections. A copy of the construction and post-construction maintenance logs are provided.

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:	

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)		
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)		

Additional Notes/Observations:

Vegetated Buffer

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:	

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)		
Level Spreader	Sediment Depth (Annually)		
	Check for evidence of channelized flow (monthly)		
	Mow/Remove excessive vegetative growth (semi annually)		
Vegetated Buffer	Remove dead/fallen tree limbs (monthly)		
	Check for evidence of channelized flow (monthly)		

Additional Notes/Observations:

Appendix 4

Subsurface Investigations

United States Department of Agriculture

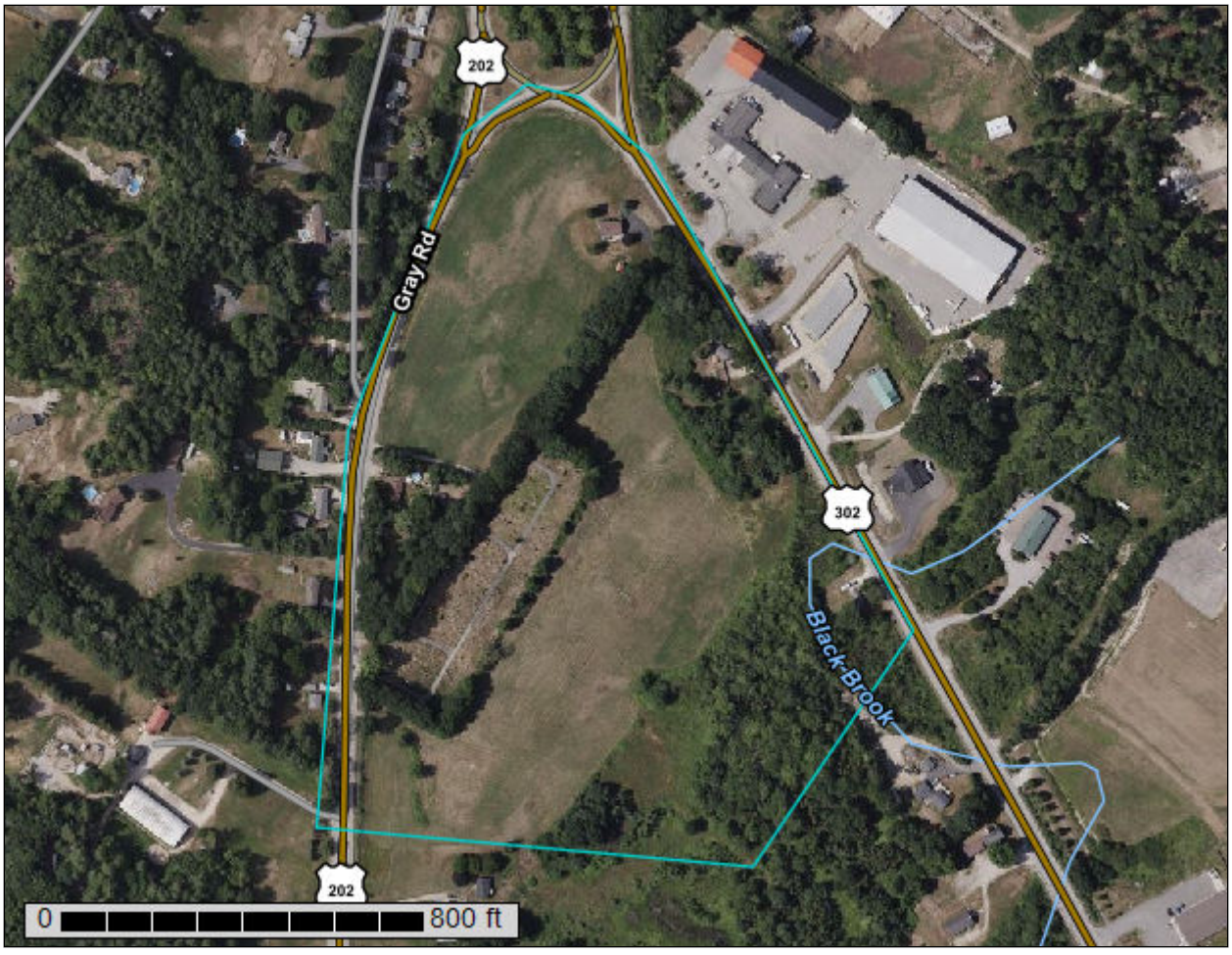
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cumberland County and Part of Oxford County, Maine

Smith Cemetery



August 15, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

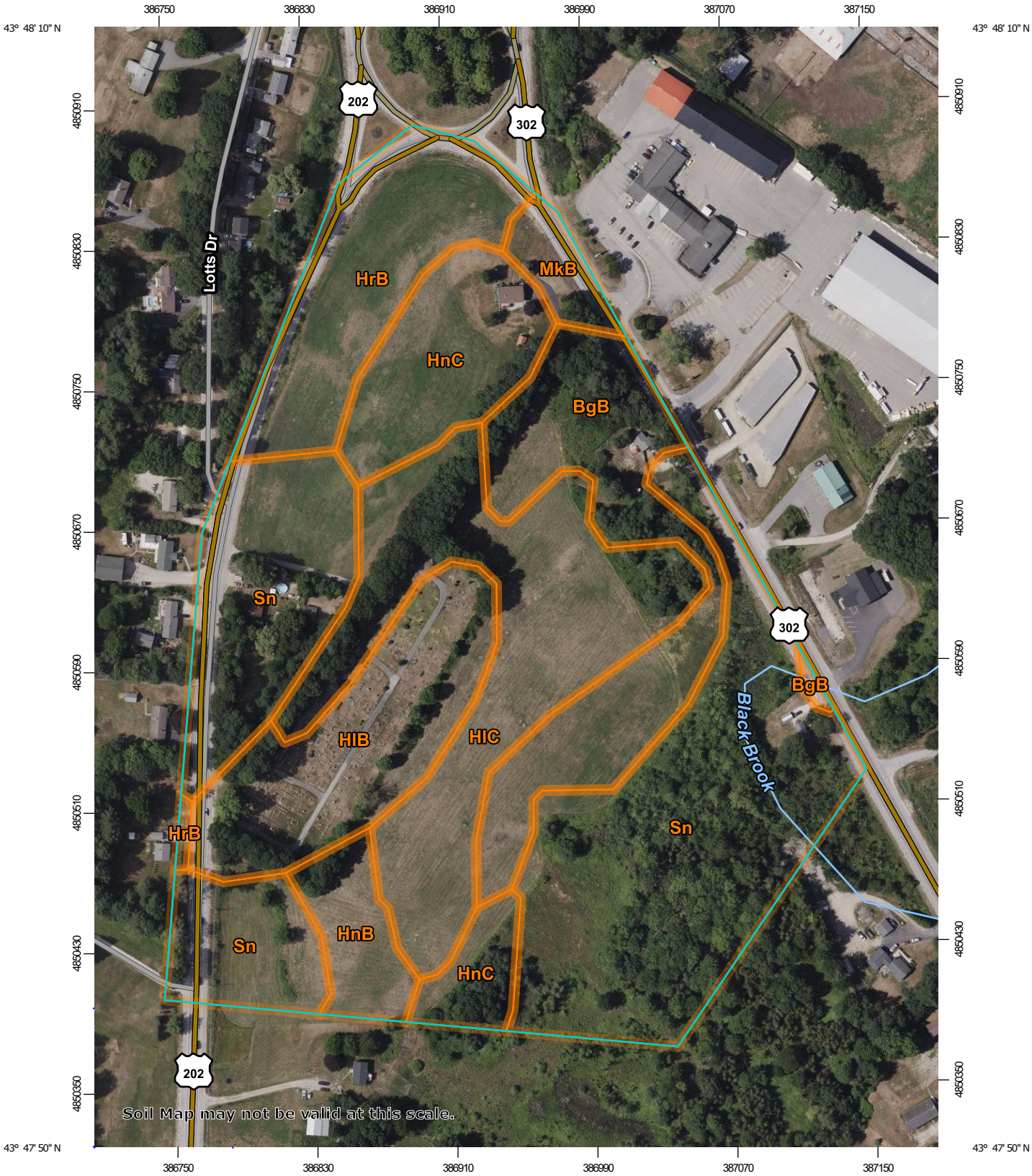
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



Map Scale: 1:3,110 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 21, Aug 26, 2024

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

Date(s) aerial images were photographed: Mar 1, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	4.5	12.8%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	3.6	10.3%
HlC	Hinckley loamy sand, 8 to 15 percent slopes	6.3	18.0%
HnB	Hinckley-Suffield complex, 3 to 8 percent slopes	1.1	3.2%
HnC	Hinckley-Suffield complex, 8 to 15 percent slopes	3.1	9.0%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	3.4	9.6%
MkB	Merrimac fine sandy loam, 3 to 8 percent slopes	0.6	1.8%
Sn	Scantic silt loam, 0 to 3 percent slopes	12.3	35.1%
Totals for Area of Interest		**35.0**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas

are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cumberland County and Part of Oxford County, Maine

BgB—Nicholville very fine sandy loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2yjg5
Elevation: 20 to 2,300 feet
Mean annual precipitation: 34 to 50 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nicholville and similar soils: 85 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nicholville

Setting

Landform: Lakebeds (relict)
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-silty glaciomarine deposits

Typical profile

Ap - 0 to 7 inches: very fine sandy loam
Bs - 7 to 19 inches: very fine sandy loam
BC - 19 to 30 inches: very fine sandy loam
C - 30 to 65 inches: loamy very fine sand

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144BY501ME - Loamy Slope (Northern Hardwoods)
Hydric soil rating: No

Minor Components

Roundabout

Percent of map unit: 2 percent

Landform: Lakebeds (relict)
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: Yes

HIB—Hinckley loamy sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svm8
Elevation: 0 to 1,430 feet
Mean annual precipitation: 36 to 53 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Outwash plains, eskers, moraines, kame terraces, kames, outwash terraces, outwash deltas
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Nose slope, side slope, base slope, crest, riser, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches

Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

HIC—Hinckley loamy sand, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svm9
Elevation: 0 to 1,480 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hinckley and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

HnB—Hinckley-Suffield complex, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2svlw
Elevation: 0 to 270 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Hinckley and similar soils: 65 percent
Suffield and similar soils: 25 percent
Minor components: 2 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kames, eskers, moraines, outwash terraces, outwash deltas, kame terraces, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, tread
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

A - 0 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

Description of Suffield

Setting

Landform: Marine terraces
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty glaciolacustrine deposits over clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 6 inches: silt loam
Bw - 6 to 18 inches: silt loam
2C - 18 to 65 inches: silty clay loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F144BY402ME - Clay Hills
Hydric soil rating: No

Minor Components

Scitico

Percent of map unit: 2 percent
Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

HnC—Hinckley-Suffield complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2svlx
Elevation: 0 to 470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of local importance

Map Unit Composition

Hinckley and similar soils: 60 percent
Suffield and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hinckley

Setting

Landform: Kame terraces, outwash plains, kames, eskers, moraines, outwash terraces, outwash deltas
Landform position (two-dimensional): Shoulder, backslope, footslope
Landform position (three-dimensional): Head slope, nose slope, side slope, crest, riser
Down-slope shape: Concave, convex, linear
Across-slope shape: Convex, linear, concave
Parent material: Sandy and gravelly glaciofluvial deposits derived from gneiss and/or granite and/or schist

Typical profile

A - 0 to 8 inches: loamy sand
Bw1 - 8 to 11 inches: gravelly loamy sand
Bw2 - 11 to 16 inches: gravelly loamy sand
BC - 16 to 19 inches: very gravelly loamy sand
C - 19 to 65 inches: very gravelly sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: F144BY601ME - Dry Sand
Hydric soil rating: No

Description of Suffield

Setting

Landform: Marine terraces
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Silty glaciolacustrine deposits over clayey glaciolacustrine deposits

Typical profile

Ap - 0 to 6 inches: silt loam
Bw - 6 to 18 inches: silt loam
2C - 18 to 65 inches: silty clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 18 to 39 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144BY402ME - Clay Hills
Hydric soil rating: No

HrB—Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky

Map Unit Setting

National map unit symbol: 2x1cx
Elevation: 0 to 520 feet
Mean annual precipitation: 36 to 65 inches
Mean annual air temperature: 36 to 52 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lyman and similar soils: 50 percent
Tunbridge and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lyman

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Nose slope, crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 3 inches: loam
E - 3 to 5 inches: fine sandy loam
Bhs - 5 to 7 inches: loam
Bs1 - 7 to 11 inches: loam
Bs2 - 11 to 18 inches: channery loam
R - 18 to 79 inches: bedrock

Properties and qualities

Slope: 0 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 11 to 24 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144BY702ME - Shallow and Moderately-deep Till
Hydric soil rating: No

Description of Tunbridge

Setting

Landform: Hills, ridges
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Loamy supraglacial till derived from granite and gneiss and/or loamy supraglacial till derived from phyllite and/or loamy supraglacial till derived from mica schist

Typical profile

Oe - 0 to 3 inches: moderately decomposed plant material
Oa - 3 to 5 inches: highly decomposed plant material
E - 5 to 8 inches: fine sandy loam
Bhs - 8 to 11 inches: fine sandy loam
Bs - 11 to 26 inches: fine sandy loam
BC - 26 to 28 inches: fine sandy loam
R - 28 to 79 inches: bedrock

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 1.5 percent
Depth to restrictive feature: 21 to 41 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 14.03 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: F144BY702ME - Shallow and Moderately-deep Till
Hydric soil rating: No

MkB—Merrimac fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2tyqs
Elevation: 0 to 1,290 feet
Mean annual precipitation: 36 to 71 inches

Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Merrimac and similar soils: 86 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Merrimac

Setting

Landform: Kames, eskers, moraines, outwash terraces, outwash plains
Landform position (two-dimensional): Summit, shoulder, backslope, footslope
Landform position (three-dimensional): Side slope, crest, riser, tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy glaciofluvial deposits derived from granite, schist, and gneiss over sandy and gravelly glaciofluvial deposits derived from granite, schist, and gneiss

Typical profile

Ap - 0 to 10 inches: fine sandy loam
Bw1 - 10 to 22 inches: fine sandy loam
Bw2 - 22 to 26 inches: stratified gravel to gravelly loamy sand
2C - 26 to 65 inches: stratified gravel to very gravelly sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (1.42 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 2 percent
Maximum salinity: Nonsaline (0.0 to 1.4 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Ecological site: F145XY008MA - Dry Outwash
Hydric soil rating: No

Minor Components

Walpole

Percent of map unit: 1 percent
Landform: Depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave

Ecological site: F144AY028MA - Wet Outwash
Hydric soil rating: Yes

Sn—Scantic silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2slv3
Elevation: 10 to 900 feet
Mean annual precipitation: 33 to 60 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 160 days
Farmland classification: Farmland of local importance

Map Unit Composition

Scantic and similar soils: 85 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scantic

Setting

Landform: Marine terraces, river valleys
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciomarine deposits

Typical profile

Ap - 0 to 9 inches: silt loam
Bg1 - 9 to 16 inches: silty clay loam
Bg2 - 16 to 29 inches: silty clay
Cg - 29 to 65 inches: silty clay

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: F144BY304ME - Wet Clay Flat
Hydric soil rating: Yes

Minor Components

Biddeford

Percent of map unit: 3 percent
Landform: Marine terraces, river valleys
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave, linear
Ecological site: F144BY002ME - Marine Terrace Depression
Hydric soil rating: Yes

Roundabout

Percent of map unit: 2 percent
Landform: River valleys, marine terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group

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

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

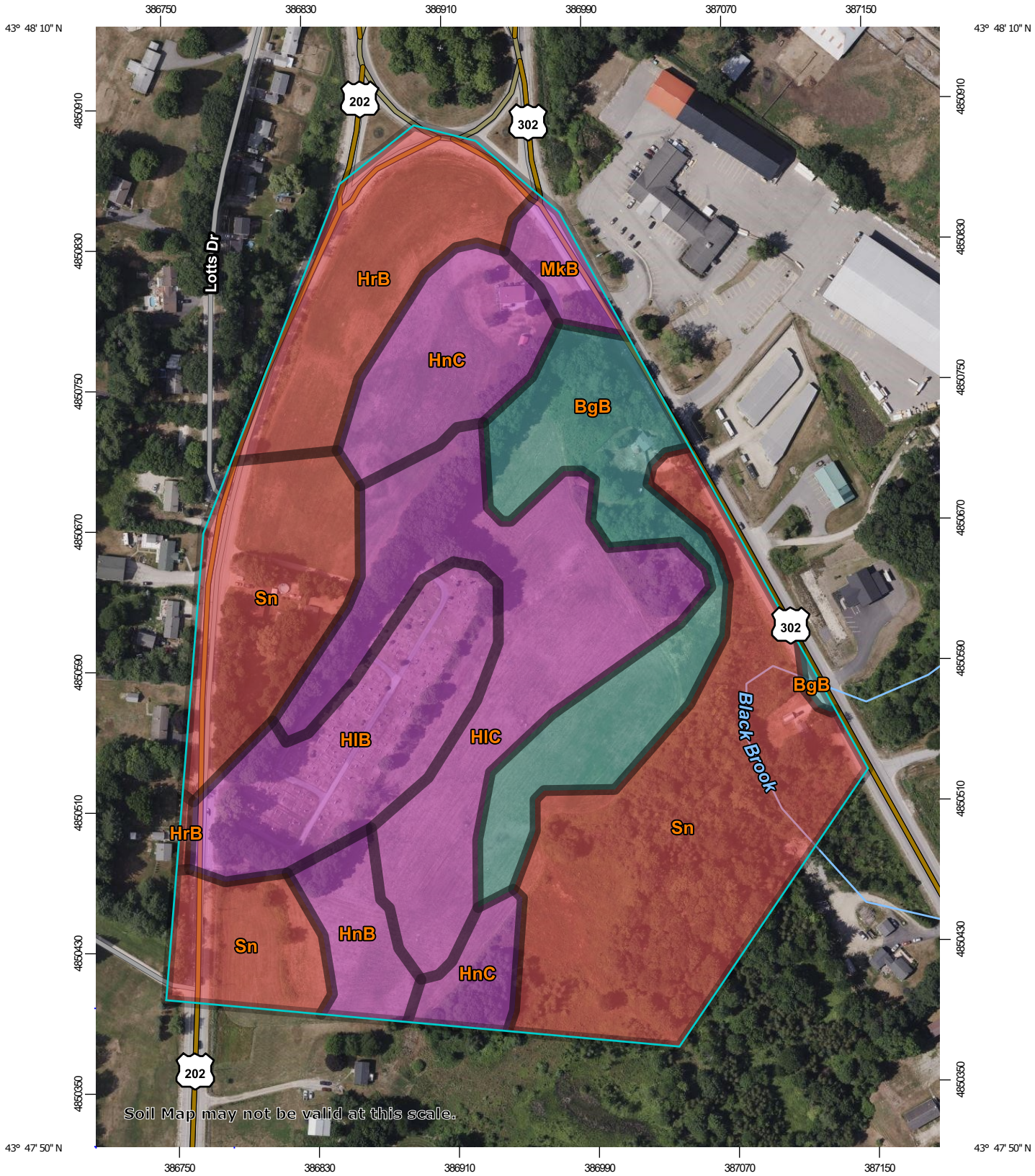
Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

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

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

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

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



Map Scale: 1:3,110 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

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

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 21, Aug 26, 2024

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

Date(s) aerial images were photographed: Mar 1, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	C	4.5	12.8%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	A	3.6	10.3%
HlC	Hinckley loamy sand, 8 to 15 percent slopes	A	6.3	18.0%
HnB	Hinckley-Suffield complex, 3 to 8 percent slopes	A	1.1	3.2%
HnC	Hinckley-Suffield complex, 8 to 15 percent slopes	A	3.1	9.0%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	D	3.4	9.6%
MkB	Merrimac fine sandy loam, 3 to 8 percent slopes	A	0.6	1.8%
Sn	Scantic silt loam, 0 to 3 percent slopes	D	12.3	35.1%
Totals for Area of Interest			**35.0**	**100.0%**

Rating Options—Hydrologic Soil Group

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Appendix 5

Stormwater Management Plans

SYM	SOIL SERIES	PHASE	SLOPE	DRAINAGE CLASS
BgB	NICHOLVILLE	VERY FINE SANDY LOAM	0-8%	MODERATELY WELL DRAINED
HIC	HINKLEY	LOAMY SAND	8-15%	EXCESSIVELY DRAINED
HIB	HINKLEY	LOAMY SAND	3-8%	EXCESSIVELY DRAINED
HnC	HERMON SANDY LOAM	EXTREMLY STONY	3-15%	SOMEWHAT EXCESSIVELY DRAINED
HrB	LYMAN-TURNBRIDGE COMPLEX	ROCKY	0-8%	SOMEWHAT EXCESSIVELY DRAINED
HrC	LYMAN-TURNBRIDGE COMPLEX	ROCKY	8-15%	SOMEWHAT EXCESSIVELY DRAINED
MkB	MERRIMAC	FINE SANDY LOAM	3-8%	SOMEWHAT EXCESSIVELY DRAINED
PbB	PAXTON	FINE SANDY LOAM	3-8%	WELL DRAINED
PbC	PAXTON	FINE SANDY LOAM	8-15%	WELL DRAINED
Sn	SCANTIC SILT LOAM		0-3%	POORLY DRAINED

EXISTING CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- 1.0S — SUBCATCHMENT LABEL
- 1R — REACH
- POA-1 — POINT OF ANALYSIS
- 1P — STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # — SOILS BOUNDARY

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

AMY BELL SEGAL, RLA 2265

PAUL D OSTROWSKI, PE 11175

REV.	BY	DATE	STATUS
B	ABS	09/16/2025	RESUBMIT PER STAFF COMMENTS
A	ABS	08/29/2025	ISSUED FOR SITE PLAN REVIEW

SEBAGO TECHNICS
SEBAGOTECHNICS.COM
75 John Roberts Road, Suite A
South Portland, ME 04106
207-200-2100
South Portland, Bridgton, Sanford and Bath

EXISTING CONDITIONS STORMWATER PLAN
OF:
SMITH CEMETERY
513 GRAY ROAD
WINDHAM, MAINE
FOR:
TOWN OF WINDHAM
185 WINDHAM CENTER ROAD
WINDHAM, ME 04062

DESIGNED	AKH
DRAWN	MRW
CHECKED	ABS
DATE	08/14/2025
SCALE	1" = 80'
PROJECT	240666-01

SHEET 1 OF 2

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240666-01 SWP EC.dwg - TAB:1 OF 2 EXISTING CONDITIONS STORMWATER PLAN

SYM	SOIL SERIES	PHASE	SLOPE	DRAINAGE CLASS
BgB	NICHOLVILLE	VERY FINE SANDY LOAM	0-8%	MODERATELY WELL DRAINED
HIC	HINKLEY	LOAMY SAND	8-15%	EXCESSIVELY DRAINED
HIB	HINKLEY	LOAMY SAND	3-8%	EXCESSIVELY DRAINED
HnC	HERMON SANDY LOAM	EXTREMLY STONY	3-15%	SOMEWHAT EXCESSIVELY DRAINED
HrB	LYMAN-TURNBRIDGE COMPLEX	ROCKY	0-8%	SOMEWHAT EXCESSIVELY DRAINED
HrC	LYMAN-TURNBRIDGE COMPLEX	ROCKY	8-15%	SOMEWHAT EXCESSIVELY DRAINED
MkB	MERRIMAC	FINE SANDY LOAM	3-8%	SOMEWHAT EXCESSIVELY DRAINED
PbB	PAXTON	FINE SANDY LOAM	3-8%	WELL DRAINED
PbC	PAXTON	FINE SANDY LOAM	8-15%	WELL DRAINED
Sn	SCANTIC SILT LOAM		0-3%	POORLY DRAINED

PROPOSED CONDITIONS LEGEND

- WATERSHED BOUNDARY
- TIME OF CONCENTRATION (A, B)
- REACH
- 10.0S — SUBCATCHMENT LABEL
- 10R — REACH
- POA-1 — POINT OF ANALYSIS
- 10P — STORMWATER TREATMENT/DETENTION POND
- HSG # / HSG # — SOILS BOUNDARY

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

AMY BELL SEGAL, RLA 2265

REGISTERED LANDSCAPE ARCHITECT — AMY BELL SEGAL No. 2265 — STATE OF MAINE

PAUL D OSTROWSKI, PE 11175

STATE OF MAINE — REGISTERED PROFESSIONAL ENGINEER — PAUL D OSTROWSKI No. 11175 — 09/18/2025

REV.	BY	DATE	STATUS
A	ABS	08/29/2025	ISSUED FOR SITE PLAN REVIEW
B	ABS	09/16/2025	RESUBMIT PER STAFF COMMENTS

SEBAGO TECHNICS
SEBAGOTECHNICS.COM
55 John Roberts Road, Suite A
South Portland, ME 04106
207-200-2100
South Portland, Bridgton, Sanford and Bath

PROPOSED STORMWATER PLAN

OF:
SMITH CEMETERY
513 GRAY ROAD
WINDHAM, MAINE

FOR:
TOWN OF WINDHAM
185 WINDHAM CENTER ROAD
WINDHAM, ME 04062

DESIGNED	AKH
DRAWN	MRW
CHECKED	ABS
DATE	08/14/2025
SCALE	1" = 80'
PROJECT	240666-01

SHEET 2 OF 2

240666-01 SWP PR.dwg, TAB:2 OF 2 PROPOSED STORMWATER PLAN

F:\Projects\240000\240666\DWG\Design\240666-01 SWP PR.dwg, 9/18/2025 10:09 AM, SHELLY STACEY