CHICK CROSSING VILLAGE SUBDIVISION

WELLS, MAINE

STORMWATER MANAGEMENT REPORT

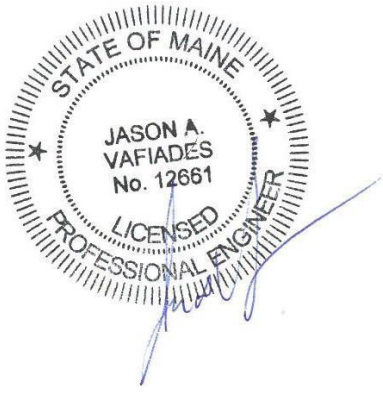
Rev.1

Prepared for: Seacoast Land Acquisitions, LLC.
57 Smutty Lane
Saco, Maine 04072

July 2023

Prepared by:

Atlantic Resource Consultants
Engineering Strategies and Solutions



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INTRODUCTION AND BACKGROUND

Atlantic Resource Consultants (ARC) has prepared the following stormwater management analysis for a proposed 21-lot residential subdivision, located off Chick Crossing Road in the Town of Wells, Maine. The new development will include the construction of approximately 1790 linear feet of new roadway to serve the proposed lots. The developer of the subdivision intends to construct and market the houses, qualifying this subdivision as exceeding 14 lots on an excess of 30 acres. The project infrastructure will result in approximately 1.14 acres of new impervious area associated with the roadway and approximately 1.79 acres of lawn area, including easements and stormwater infrastructure. We anticipate each of the 21 lots will average 3,800 square feet of roof and driveway (2500sf roof, 1300 sf driveway), with an additional 9,000 square feet of lawn and landscape, resulting in an additional 1.83 acres of impervious area and 4.33 acres of additional lawn and landscape. Project totals will be approximately 2.97 acres of impervious and 9.02 acres of developed area. Location maps and background information can be found in the Figures Section of this report.

Site History

The project site is predominantly undeveloped woodland with areas of forested wetlands.

Existing Conditions

The proposed project site occupies approximately 44.1 acres of land located to the northeast of Chick Crossing Road. The area proposed for development is currently undeveloped woodland.

The site generally drains in a north/northeasterly direction through natural drainage ways to the northeastern property boundary where runoff exits the site to Branch Brook.

A high intensity soil survey was performed for the project site by Mark Hampton in the Spring of 2022. A copy of that report is attached with this submission. Soil types outside the limits of the High Intensity Soil Survey were identified by using the Natural Resource Conservation Service (NRCS) Web Soil Survey.

Natural Resource mapping on the site was undertaken in 2021 and 2022 by Mark Hampton to support permitting for this project. The mapping identified freshwater wetlands in the central portion of the site. The mapped freshwater wetlands are depicted on the project drawings. There are only minor wetland impacts proposed as part of this project (project roadway).

Receiving Waters

The site is tributary to Branch Brook. Although Branch Brook is not identified as a Lake Most at Risk or an Urban Impaired stream watershed by the Maine DEP, it is the source of public Drinking Water for the Kennebunk, Kennebunkport and Wells Water District and is within the aquifer protection zone.

Historical Flooding

A portion of the project site is identified within a mapped floodplain as identified on FEMA Flood Insurance Rate Map for the Town of Wells, Maine Panel 10 of 23, Community Panel Number 2301580010D dated January 16, 2003. This area is identified on the project plans.

Alterations to Natural Drainageways

The project will not result in any significant alteration of natural drainageways. Natural drainage ways will be maintained to the extent practical.

PROJECT DESCRIPTION

The proposed project includes the construction of approximately 1790 feet of a new roadway to provide access to the proposed subdivision lots. Stormwater management areas will also be incorporated into the design.

Access to the site will be provide from the Chick Crossing Road as indicated on the project plans. Grading for the new roadway will direct runoff to the project's proposed BMPs. Stormwater quantity and quality control will be primarily provided by four bio-retention basins, three underdrained soil filters, and roof drip line filters. The BMP areas are indicated on the attached plans.

The proposed project will create approximately 2.94 acres of new impervious surface areas. The project will impact 3,566 square feet of wetlands.

The project will be served by private wells and subsurface disposal areas. New underground electric will serve the lots.

STORMWATER MANAGEMENT

The stormwater BMPs proposed to capture and treat runoff from the new developed areas of the site have been sized and designed in accordance with current State of Maine Chapter 500 Stormwater Law. These new stormwater Best Management Practices BMPs have been designed to capture and treat runoff from the new improvements associated with this project as well as the offsite contributing area.

The new stormwater management system will maintain the existing drainage patterns at the site, while protecting water quality and ensuring that there is no increase in the peak rate of runoff from the property during design storm conditions. This stormwater management analysis has been prepared in accordance with the Maine Department of Environmental Protection (MDEP) Chapter 500 Regulations for Basic, General and Flooding Standards to ensure that the planned development will not result in a degradation of water quality or any other significant impacts to locations downstream of the development site as a result of stormwater runoff.

METHODOLOGY AND MODELING ASSUMPTIONS

Runoff and routing calculations have been performed for the watershed areas affected by the proposed development under pre-development and post-development conditions scenarios. Time of concentration and runoff curve number calculations have been performed using the method described in Natural Resource Conservation Service (NRCS) Technical Release 55 (TR-55) – Urban Hydrology for Small Watersheds. The TR-20 based HydroCAD modeling software has been utilized to perform the more complex runoff and routing calculations, some of which are beyond the scope of the TR-55 method. Time of concentration calculations have been amended where the value given by the TR-55 method is less than six minutes (0.1hr). In these cases, a standard minimum value of six minutes has been used to keep this parameter within the acceptable working range of the model and prevent computational errors.

Design rainfall events have been modeled using the SCS Type III Hydrograph for 24-hour duration storms. The rainfall depth for each return period is taken from Maine Department of environmental Protection Chapter 500 Stormwater Management, Appendix H (York County). The rainfall depth values for standard design storm frequencies are shown in the table below.

TABLE 1 - 24-Hr Rainfall Depths for York County at Design Storm Frequencies				
Maine Chapter 500: Stormwater Management, Appendix H				
Frequency	2-Year	10-Year	25-Year	100-Year
Rainfall Depth	3.3 in	4.9 in	6.2 in	8.7 in

Soil types in the area of the site have been identified using either the High Intensity Soil Survey (prepared for this project) or the Natural Resource Conservation Service (NRCS) Web Soil Survey. The existing topography of the site was determined by field survey and the existing vegetative cover was identified by site inspection.

In the pre-development conditions scenario, the site is divided into three subcatchment areas and three Points of Analysis (POA-1 through POA-3).

In the post-development conditions scenario, the site is divided into ten subcatchment areas, draining to the same three Points of Analysis (POA-1 through POA-3). The post-development subcatchments are divided into several smaller areas to model the impact of localized storage within the system. The overall routing configuration remains unchanged. In this way, a direct comparison can be made of pre-development and post-development runoff values at the various Points of Analysis.

Stormwater runoff from the new impervious areas at the project site will be captured and treated in a series of new Best Management Practices (BMPs). These include four bio-retention basins, three underdrained grass filters, and lot drip strip BMPs. The underdrained grass filter is a shallow grassed depression filled with a filtering soil media and planted with native grasses. Runoff directed to the BMPs is detained temporarily and passes slowly through the soil media and the root zone of the planted material before draining into an underdrain system that discharges to an outlet culvert.

STORMWATER QUANTITY ANALYSIS

Pre-development Conditions

The overall model for the site is divided into three contributing subcatchments and one offsite subcatchment. Full details pre-development subcatchment areas, cover conditions and time of concentration flow paths are described in detail in the supporting HydroCAD documentation included in Attachment B of this report. A Predevelopment Conditions Watershed Plan is included in this report.

Post-Development Conditions

The overall model for the site is divided into eleven contributing subcatchments and the same one additional offsite subcatchent. Full details of the post- development subcatchment areas, cover conditions and time of concentration flow paths are described in detail in the supporting HydroCAD documentation included in Attachment C of this report. A Post-Development Conditions Watershed Plan is included in this report.

Water Quantity Analysis Summary

The table below summarizes the peak runoff values for predevelopment and post-development conditions during each of the analyzed design storm events at the design Points of Analysis (POA).

POA	2-Year		10-Year		25-Year		100-Year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
POA-1	3.2	3.4	12.1	12.1	21.9	21.6	44.3	44.1
POA-2	0.5	0.1	2.1	0.7	3.9	2.1	8.0	4.7
POA-3	1.8	1.8	10.3	10.1	20.9	20.8	46.4	45.0

STORMWATER QUALITY ANALYSIS

Water Quality Treatment Measures

The project has been designed in accordance with the Site Location of Development Act and Stormwater Law (Chapter 500), which require water quality treatment for at least 95% of new impervious areas and 80% of new developed areas. Stormwater quality calculations are attached within this report.

SOIL EROSION AND SEDIMENT CONTROL

A comprehensive Soil Erosion and Sediment Control (SESC) narrative has been prepared that includes Best Management Practices (BMPs) associated with the proposed construction activities. The location of SESC BMPs is shown on the accompanying plans. These are further described on the details and notes sheets in the accompanying plan set.

The Erosion and Sediment Control Report outlines the required construction measures and techniques that will reduce potential degradation of the water quality at downstream locations. Temporary erosion control measures will be incorporated during construction, and long-term surface stabilization practices have been designed as part of the site development, thus minimizing the potential for erosion and sediment transport. These measures include the constructed BMPs for filtration of runoff from smaller storm events, riprap, permanent seeding and other vegetative stabilization measures. Detailed information on the specific erosion and sedimentation control practices that are to be used on the site are provided on the following plan sheet, which will be included as part of the construction documents for the project.

STORMWATER MAINTENANCE PLAN

The effectiveness of water quality management provisions and other components of the stormwater management system are dependent on their design, upkeep, and maintenance to assure they meet their intended function over an extended period. It is critical that the stormwater management facilities are regularly inspected, and that maintenance is performed on an as-needed basis.

A Stormwater Management Inspection and Maintenance Plan and Log has been prepared specifically for the project and is included within Attachment D of this report.

CONCLUSIONS

The stormwater management system designed for this project will mitigate impacts of development on stormwater runoff peak discharge rates and provide treatment of non-point source pollutants in the runoff in accordance with Maine's Stormwater Management Act and Regulations.

Stormwater modeling results indicate that the peak rates of runoff in the developed condition, with detention, will be less than or equal to the pre-developed runoff rate for discharge points POA-2 & POA-3 during the, 2- year, 10-year, 25-year, and 100-year storm events. The model indicates a insignificant increase of 0.2 cfs at POA-1 during the 2-year storm event. The 10-year, 25-year, and 100-yr storm events (at POA-1) remain at or below the pre-development rates of runoff.

As previously mentioned, the projects BMPs provides for treatment in excess of 95% of the project's new impervious area and in excess of 80% of the project's total developed area meeting the MDEP Chapter 500 treatment requirements for a project.

Limitations

This analysis is based on the information available to the engineer, on site conditions and has been conducted using standard industry software designed to analyze *comparative* changes in land cover conditions. The

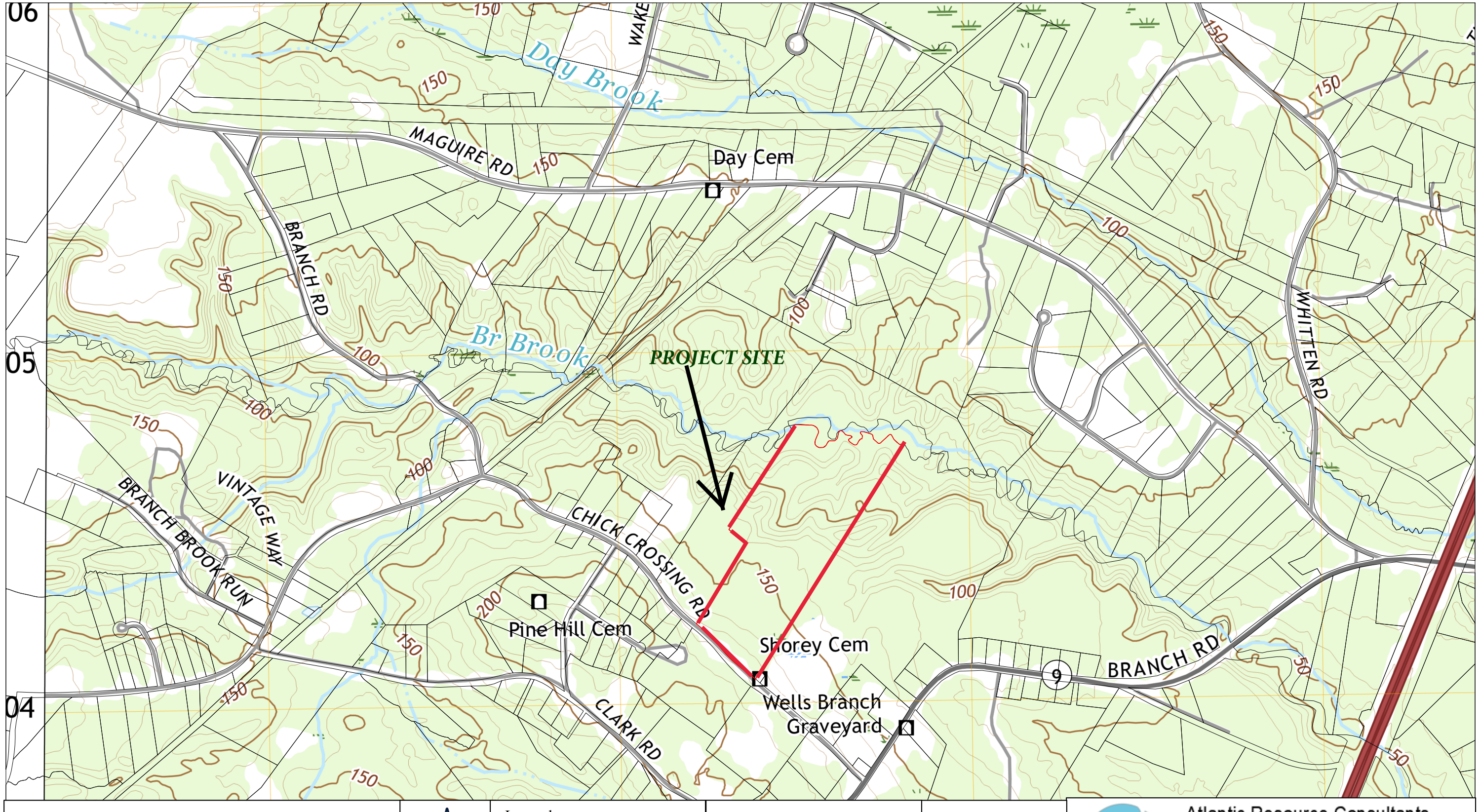
accuracy of the runoff and routing calculations is limited by the methodology used in the software and the results should be viewed as suitable for comparative studies only.

References

1. NRCS Web Soil Survey
2. NRCS TR-378
3. Stormwater Management for Maine BMPs Design Manual
4. Maine Erosion and Sediment Control Best Management Practices (BMPs): Manual for Designers and Engineers (October 2016)

FIGURES

1. Figure 1 USGS Location Map
2. Figure 2 FEMA Flood Map
3. Figure 3 High Intensity Soil Survey & USDA SCS Web Soil Survey Map



0 ft 1000 ft 2000 ft 3000 ft

N

Legend

Project Site

Created By: Kayla Gray
Date Created: 6/27/2022
Source: Trimble MEGIS
Projection: UTM 19N NAD1983
Project # 22-002

LOCATION MAP

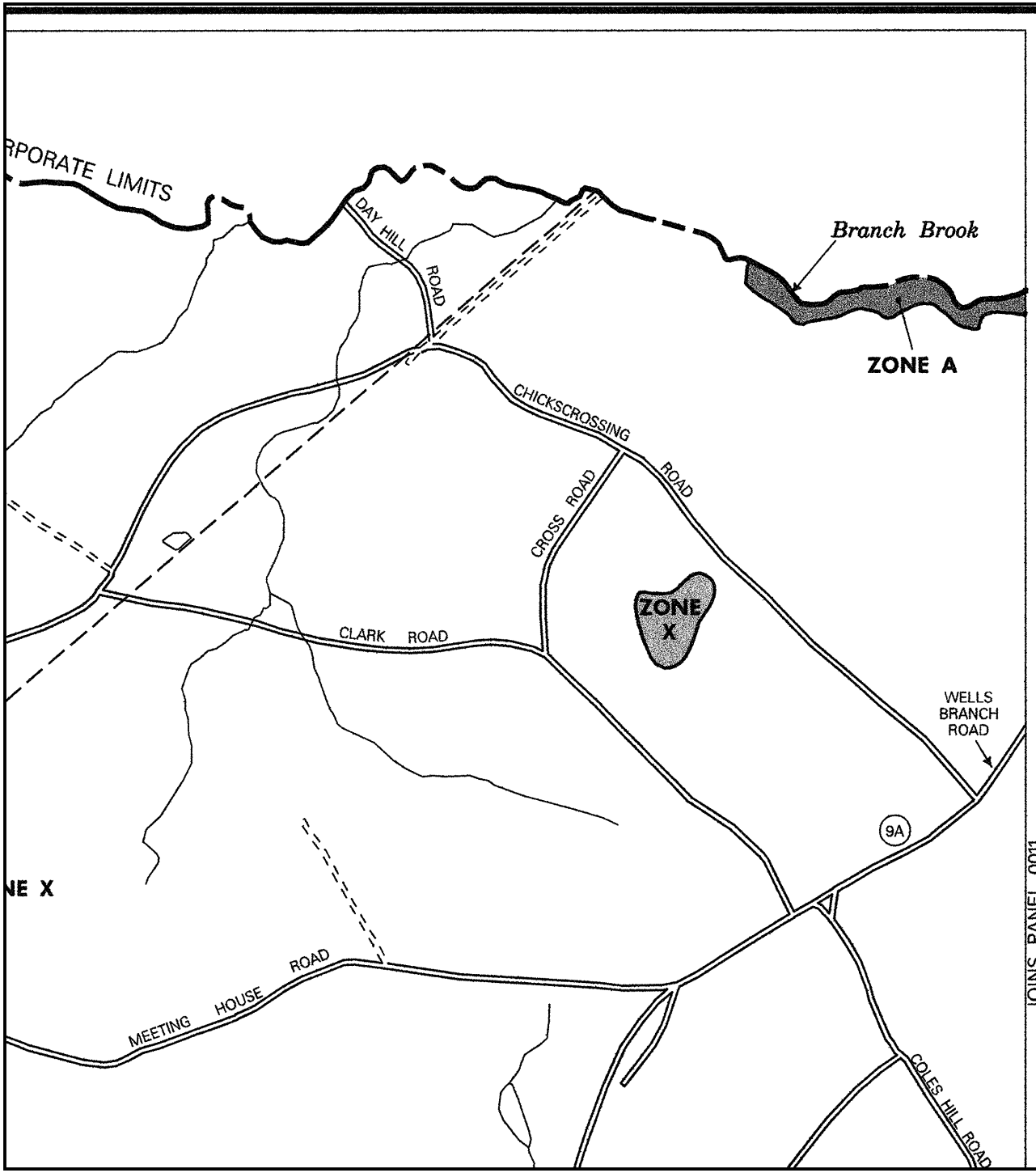
CHICK CROSSING VILLAGE
CHICK CROSSING ROAD
WELLS, ME 04072

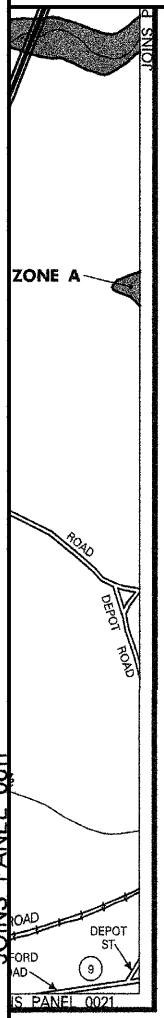
Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

o determine if flood insurance is available in this community, contact your
surance agent or call the National Flood Insurance Program at (800) 638-6620

APPROXIMATE SCALE

1000 0 1000 FEET





NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

TOWN OF
WELLS,
MAINE
YORK COUNTY

PANEL 10 OF 23

(SEE MAP INDEX FOR PANELS NOT PRINTED)

MAP NUMBER
2301580010D

MAP REVISED:
JANUARY 16, 2003

Federal Emergency Management Agency

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Chicks Crossing Village
Chick Crossing Road
Wells, ME
Seacoast Aquisitions LLC

Soil Narrative Report

DATE:	Soil Profiles observed on April 2, 2022
BASE MAP:	Base plan provided by Corner Post Land Surveying, Inc. Scale 1 inch equals 100 feet and two foot contours.
GROUND CONTROL:	Soil survey boundaries located by Mark Hampton Associates, Inc. for Class A Soil Survey

Class A-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1/8 acre or less
Scale of 1"= 100 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits accurately located under direction of professional land surveyor or professional engineer.
Base Map –2 foot contour intervals

Provided:

Mapping units of 1/8 acre or less
Base map scale of 1"= 100 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located under direction of professional land surveyor
Ground topographic survey with two foot contours and ground control provided.

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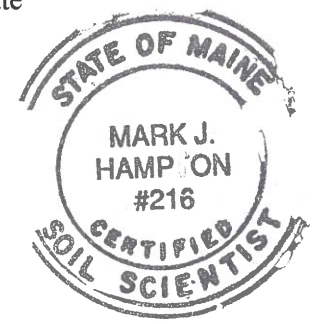
The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

C.S.S. #216, L.S.E. #263

Mark J. Hampton Date



6903

FORM E Rev. 7/21

SOIL CONDITIONS SUMMARY TABLE

SUMMARY LOG OF SUBSURFACE EXPLORATIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisitions LLC	Wells

Lot No.	Exploration Symbol (TP 1, B 2, etc.)	✖ if at SSWD Field	Description of subsurface materials by: ● Soil profile/condition (if by S.E.), ● Soil series name (if by S.S.), or by ● Geologic unit (if by C.G.)	Depths to (inches): Redoximorphic Features	Bedrock	Hydraulically Restrictive Layer	Limit of Exploration	Ground Surface Slope (%)	Ground Surface Elevation
	SS-1	☐	Adams	>48	NA	NA	40	4	
	SS-2	☐	Croghan	33	NA	NA	40	2	
	SS-3	☐	Naumburg	4	NA	NA	28	2	
	SS-4	☐	Croghan	36	NA	NA	40	2	
	SS-5	☐	Croghan	38	NA	NA	40	2	
	SS-6	☐	Croghan	20	NA	NA	40	16	
	SS-7	☐	Adams	>48	NA	NA	40	2	
	SS-8	☐	Naumburg	3	NA	NA	26	2	
	SS-9	☐	Croghan	22	NA	NA	38	16	
	SS-10	☐	Adams	>48	NA	NA	40	3	
	SS-11	☐	Croghan	18	NA	NA	30	18	
	SS-12	☐	Medomak	0	NA	8	24	2	
	SS-13	☐	Adams	>48	NA	NA	40	8	
	SS-14	☐	Croghan	17	NA	NA	30	18	
	SS-15	☐	Adams	>48	NA	NA	40	6	
	SS-16	☐	Adams	>48	NA	NA	40	2	
	SS-17	☐	Croghan	24	NA	NA	36	15	
	SS-18	☐	Croghan	20	NA	NA	32	18	
	SS-19	☐	Naumburg	4	NA	NA	28	2	
		☐							
		☐							
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		☐							

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Mark J. Hampton
Name Printed

☒ Site Evaluator
☒ Soil Scientist
☐ Geologist
☐ Professional Engineer

April 18, 2022
Date

263/216
License No.

STATE OF MAINE
MARK J. HAMPTON
#216
CERTIFIED
SOIL SCIENTIST
affix professional seal

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Chicks Crossing Village
Chick Crossing Road
Wells, ME
Seacoast Aquisistions, LLC

Adams
(Typic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from glacial-fluvial, glacio-lacustrine sand.
LANDFORM:	Outwash plains, deltas, and terraces
POSITION IN LANDSCAPE:	Sidehill, shoulders and plains
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Well drained. Depth to seasonal high watertable greater than 4 feet throughout the year.

TYPICAL PROFILE:

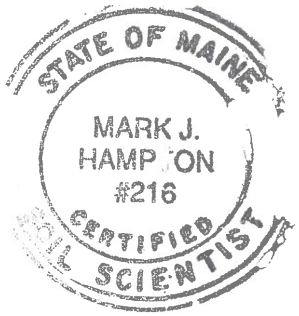
Surface Layer:	Dark Brown loamy sand, 0-8"
Subsurface Layer:	Red Brown loamy sand, 8-20"
Subsoil Layer:	Yellow-brown loamy sand, 20-30"
Substratum:	Gray-brown sand, 30-72"

HYDROLOGIC GROUP:	Group A
SURFACE RUNOFF:	Very slow to medium
PERMEABILITY:	Rapid or very rapid
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Croghan, Au Gres, Naumburg



USE AND MANAGEMENT

DEVELOPEMENT: There are no limiting factors for building site development.

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Chicks Crossing Village
Chick Crossing Road
Wells, ME
Seacoast Aquisistions, LLC

Croghan
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from outwash and deltaic sandy deposits.
LANDFORM:	Outwash plains, deltas, and terraces
POSITION IN LANDSCAPE:	Sidehill, shoulders and plains
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (D) 15-25%

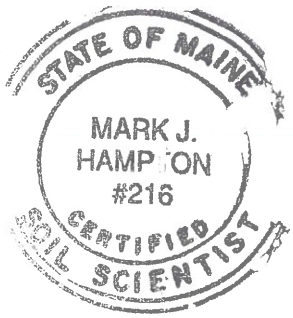
COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Moderately well drained Depth to seasonal high watertable ranges from 1.5 to 2.0 feet below the surface at some time from November to May.

TYPICAL PROFILE:

Surface Layer:	Dark Brown fine sand, 0-7"
Subsurface Layer:	Reddish brown sand, 7-16"
Subsoil Layer:	Brown sand, 16-32"
Substratum:	Gray sand, 32-65"

HYDROLOGIC GROUP:	Group B
SURFACE RUNOFF:	Moderately rapid to rapid
PERMEABILITY:	Rapid or very rapid
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None



INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Au Gres, Naumburg, Adams

USE AND MANAGEMENT

DEVELOPMENT: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.

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6903

Chicks Crossing Village
Chick Crossing Road
Wells, ME
Seacoast Aquisitions LLC

Naumburg
(Typic Endoaquods)

SETTING

PARENT MATERIAL:	Derived from outwash and deltaic sandy deposits.
LANDFORM:	Outwash plains, deltas, and terraces
POSITION IN LANDSCAPE:	Low depressions and plains
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained. Depth to seasonal high watertable ranges from 0.0 to 1.0 feet below the surface at some time from November to May.

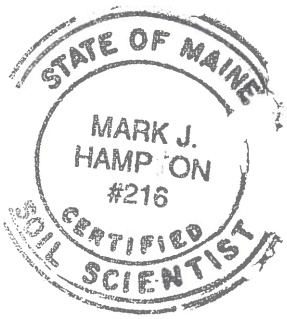
TYPICAL PROFILE:

Surface Layer:	Dark Brown loamy sand, 0-7"
Subsurface Layer:	Reddish brown sand, 8-15"
Subsoil Layer:	Brown fine sand, 15-32"
Substratum:	Gray sand, 42-65"

HYDROLOGIC GROUP:	Group C
SURFACE RUNOFF:	Slow to very slow
PERMEABILITY:	Rapid or very rapid
DEPTH TO BEDROCK:	Greater than 65 inches
HAZARD TO FLOODING:	None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Croghan, Adams, Au Gres



USE AND MANAGEMENT

DEVELOPMENT: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended. Naumburg may be hydric and may be mapped as wetlands.

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Chicks Crossing Village
Chick Crossing Road
Wells, ME
Seacoast Aquisitions, LLC

Medomak
(Fluvaquentic Humaquepts)

SETTING

PARENT MATERIAL:	Derived from recent alluvium on floodplain
LANDFORM:	Floodplain
POSITION IN LANDSCAPE:	Low depressions and plains
SLOPE GRADIENT RANGES:	(A) 0-3%,

COMPOSITION AND SOIL CHARACTERISTICS

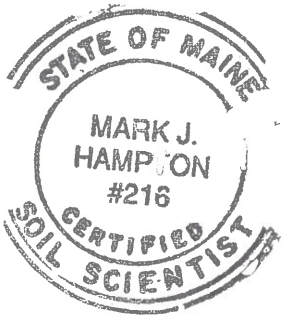
DRAINAGE CLASS:	Very Poorly Drained, runoff is slow to ponded.	
TYPICAL PROFILE:	Surface Layer:	Dark grayish brown silt loam, 0-12"
	Subsurface Layer:	Dark gray silt loam 12-30"
	Substratum:	Olive gray, silt loam, 30-65"
HYDROLOGIC GROUP:	Group D	
SURFACE RUNOFF:	Slow to ponded	
PERMEABILITY:	Moderate in the coarse-silty material and rapid in the lower substratum.	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	Frequent	

INCLUSIONS
(Within Mapping Unit)

CONTRASTING:	Lamoine, Buxton, Scantic

USE AND MANAGEMENT

Development: The limiting factor for building site development is flooding potential



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PAGE ____ OF ____ FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisistions LLC	Wells

Exploration Symbol # SS-1 ☒ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20				None Noted
30	Sand	Friable	Tan	
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor		
5 (Profile)	B (Condition)	4 (Percent)	>48 (Depth)	"	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Adams WD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-2 ☒ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20				
30				
40	Sand	Friable	Olive	Common and Distinct
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor		
5 (Profile)	C (Condition)	2 (Percent)	33 (Depth)	"	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Croghan MWD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-3 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Black	
10	Sand	Friable	Olive Gray	Common and Distinct
20				
30	Sand	Friable	Gray	
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor		
5 (Profile)	E (Condition)	2 (Percent)	6 (Depth)	"	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Naumburg PD ☒ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-4 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20				
30				
40	Sand	Friable	Olive	Common and Distinct
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor		
5 (Profile)	C (Condition)	2 (Percent)	36 (Depth)	"	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Croghan MWD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

affix professional seal

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date
Mark J. Hampton	4/18/2022
Name Printed	**Cert/Lic/Reg. #**
Mark J. Hampton	263/216

Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

PAGE ____ OF ____

6903

FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisistions LLC	Wells

Exploration Symbol # SS-5 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Dark Brown	
10 Sand	Friable	Red Brown	
40 Sand	Friable	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	C	2	38"	☒	☐	☐

Soil Series/Phase Name: Croghan MWD — ☐ Hydric ☒ Non-hydric — Hydrologic Soil Group: ____

Exploration Symbol # SS-6 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Dark Brown	
10 Sand	Friable	Red Brown	
20 Sand	Friable	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	C	16	20"	☒	☐	☐

Soil Series/Phase Name: Croghan MWD — ☐ Hydric ☒ Non-hydric — Hydrologic Soil Group: ____

Exploration Symbol # SS-7 ☒ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Dark Brown	
10 Sand	Friable	Red Brown	
30 Sand	Friable	Tan	None Noted

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	B	2	>48"	☐	☐	☐

Soil Series/Phase Name: Adams WD — ☐ Hydric ☒ Non-hydric — Hydrologic Soil Group: ____

Exploration Symbol # SS-8 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface (inches)

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Black	
10 Sand	Friable	Olive Gray	
40 Sand	Friable	Olive	Common and Distinct

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	E	2	3"	☒	☐	☐

Soil Series/Phase Name: Naumburg PD — ☒ Hydric ☐ Non-hydric — Hydrologic Soil Group: ____

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST affix professional seal

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date
Mark J. Hampton	4/18/2022
Name Printed	**Cert/Lic/Reg. #**
Mark J. Hampton	263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisistions LLC	Wells

Exploration Symbol # SS-9 ☐ Test Pit ☒ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20	Sand	Friable	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	C	16	22 "	☒	☐	☐

Soil Series/Phase Name: Croghan MWD

Hydric: ☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # SS-10 ☐ Test Pit ☒ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20	Sand	Friable	Tan	None Noted
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	B	3	>48 "	☐	☐	☐

Soil Series/Phase Name: Adams WD

Hydric: ☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # SS-11 ☒ Test Pit ☒ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth	Texture	Consistency	Color	Redox Features
0	Loamy Sand	Friable	Dark Brown	
10	Sand	Friable	Red Brown	
20	Sand	Friable	Olive	Common and Distinct
30				
40				
50				
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
5	C	18	18 "	☒	☐	☐

Soil Series/Phase Name: ~~Adams WD~~ Croghan MWD

Hydric: ☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: _____

Exploration Symbol # SS-12 ☐ Test Pit ☒ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Depth	Texture	Consistency	Color	Redox Features
0	Silt Loam	Friable	Black	
10	Silt Loam	Friable	Olive Gray	Common and Distinct
20				
30				
40				
50	Silt Loam	Friable	Olive	
60				

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification: Profile	Condition	Slope: Percent	Limiting Factor: Depth	Groundwater	Restrictive Layer	Bedrock
11	E	2	3 "	☒	☐	☐

Soil Series/Phase Name: Medomak VPD

Hydric: ☒ Hydric ☐ Non-hydric

Hydrologic Soil Group: _____

STATE OF MAINE SOIL SCIENTIST

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date
Mark J. Hampton	4/18/2022
Name Printed	**Cert/Lic/Reg. #**
Mark J. Hampton	263/216

Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

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PAGE ____ OF ____ FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisistions LLC	Wells

Exploration Symbol # SS-13 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 – Loamy Sand	Friable	Dark Brown	
10 – Sand	Friable	Red Brown	
20 – Sand	Friable	Tan	None Noted
30 – 60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	B (Condition)	8 (Percent)	>48 (Depth)	"

☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Adams WD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # SS-14 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 – Loamy Sand	Friable	Dark Brown	
10 – Sand	Friable	Red Brown	
20 – Sand	Friable	Olive	Common and Distinct
30 – 60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	C (Condition)	18 (Percent)	17 (Depth)	"

☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Croghan MWD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # SS-15 ☒ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 – Loamy Sand	Friable	Dark Brown	
10 – Sand	Friable	Red Brown	
20 – Sand	Friable	Tan	None Noted
30 – 60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	B (Condition)	6 (Percent)	>48 (Depth)	"

☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Adams WD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # SS-16 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 – Sand	Friable	Dark Brown	
10 – Sand	Friable	Red Brown	
20 – 30			
40 – Sand	Friable	Tan	None Noted
50 – 60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	B (Condition)	2 (Percent)	>48 (Depth)	"

☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Adams WD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

STATE OF MAINE

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date
	4/18/2022
Name Printed	**Cert/Lic/Reg. #**
Mark J. Hampton	263/216

Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

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PAGE ____ OF ____

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FORM F Rev. 07/11

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name:	Applicant Name:	Project Location (municipality):
Chicks Crossing Village	Seacoast Aquisistions LLC	Wells

Exploration Symbol # SS-17 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Dark Brown	
10 Sand	Friable	Red Brown	
20			
30 Sand	Friable	Olive	Common and Distinct
40			
50			
60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	B (Condition)	15 (Percent)	24 " (Depth)	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Croghan MWD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # SS-18 ☐ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Dark Brown	
10 Sand	Friable	Red Brown	
20			
30 Sand	Friable	Olive	Common and Distinct
40			
50			
60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	C (Condition)	18 (Percent)	20 " (Depth)	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Croghan MWD

☐ Hydric ☒ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # SS-15 ☒ Test Pit ☒ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0 Loamy Sand	Friable	Black	
10 Sand	Friable	Olive	Common and Distinct
20 Sand	Friable	Olive Gray	
30			
40			
50			
60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
5 (Profile)	E (Condition)	2 (Percent)	6 " (Depth)	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: Naumburg PD

☒ Hydric ☐ Non-hydric

Hydrologic Soil Group: ____

Exploration Symbol # ____ ☐ Test Pit ☐ Boring ☐ Probe

____" Organic horizon thickness Ground surface elev. ____

____" Depth of exploration or to refusal

Depth below mineral soil surface *(inches)*

Texture	Consistency	Color	Redox Features
0			
10			
20			
30			
40			
50			
60			

Soil Details by S.E. ▸▸ S.S. ▸▸

Soil Classification		Slope	Limiting Factor	
____ (Profile)	____ (Condition)	____ (Percent)	____ " (Depth)	☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Soil Series/Phase Name: ____

☐ Hydric ☐ Non-hydric

Hydrologic Soil Group: ____

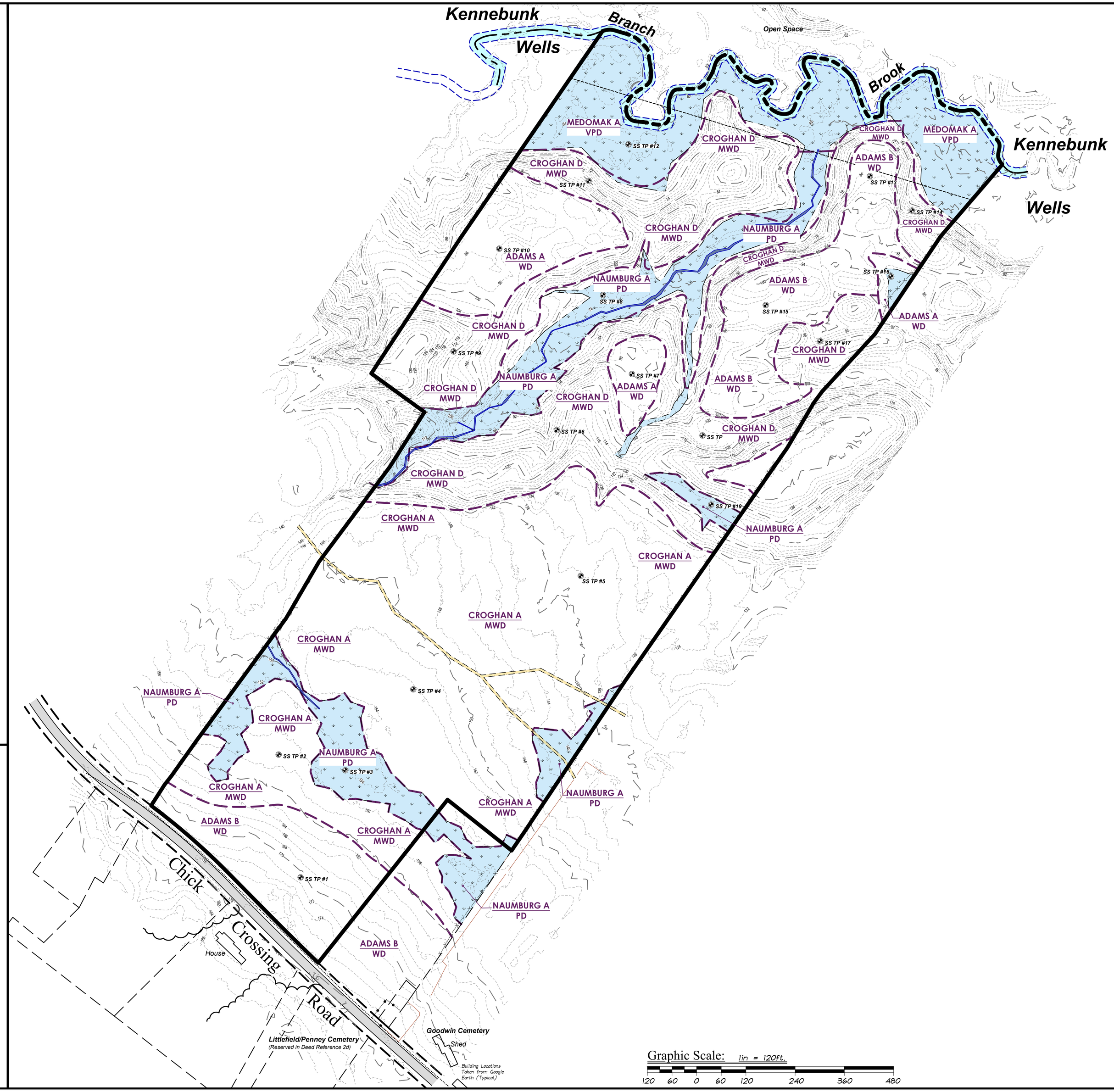
INVESTIGATOR INFORMATION AND SIGNATURE

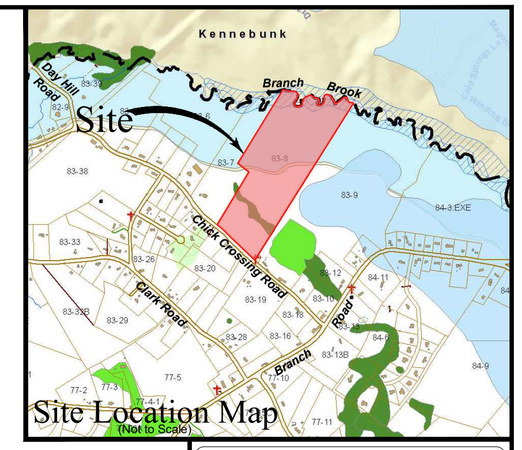
Signature	Date
[signature]	4/18/2022
Name Printed	**Cert/Lic/Reg. #**
Mark J. Hampton	263/216

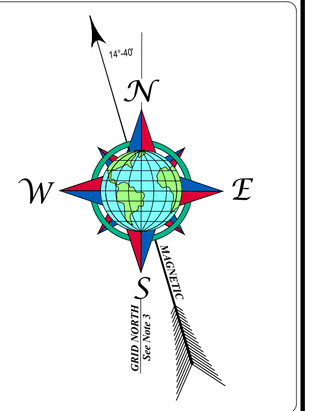
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

certified professional seal







YORK, ss REGISTRY OF DEEDS

Received :

at _____h _____m _____M., and

Filed in Plan Book _____ Page _____

ATTEST:

_____

Register

Survey File Name:	2021100.crd
CAD File Name:	2021100.dwg
Drawn By:	JAH
Job Number:	2021100

Revisions	Date	By

High Intensity Soils Survey
Map Prepared For

Chicks Crossing Village

A 20 Lot Residential
Cluster Subdivision By

Seacoast Land Acquisitions, LLC

57 Smutty Lane - Saco, Maine 04072

Property Located On
Chick Crossing Road &
Branch Brook
In
Wells, Maine

April 21, 2022
Scale: 1in. = 120ft.

MARK HAMPTON ASSOCIATES, INC
Soil Evaluation • Wetland Delineations • Soils Surveys • Wetland Permitting
P.O. Box 1931 Portland, Maine 04104

Mark J. Hampton, C.S.S. #216, L.S.E. #263
04-22-2022

HISS 1 - High Intensity Soil Survey

Legend:

- SS TP #1 — Soil Survey Test Pit & Number
- Pavement
- Gravel
- Boundary Line Of Surveyed Premises
- Abutter Line (See Note 7)
- Right Of Way Line
- 112 — Contour Lines (2' Interval)
- 110 — Contour Lines (10' Interval)
- Upland/Wetland Interface Line
- CROGHAN A MWD — Soil Boundary & Type

EWD	Excessively Well Drained
WD	Well Drained
MWD	Moderately Well Drained
SPD	Somewhat Poorly Drained
PD	Poorly Drained
VPD	Very Poorly Drained
A	0-3% Slope
B	3-8% Slope
C	8-15% Slope
D	15-25% Slope
E	>25% Slope

Graphic Scale: 1in = 120ft.

120 60 0 60 120 240 360 480

MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6903

November 1, 2022

Mr. Jason Labonte
Seacoast Land Acquisitions, LLC
57 Smutty Lane
Saco, ME 04072

Re: Soil Test Pit Evaluation, Stormwater Management, Chick Crossing Road Subdivision, Wells, ME

Dear Jason,

I have completed the evaluation of seven test pits for the proposed stormwater treatment program for the Chick Crossing Road Subdivision, Wells, ME. The soil evaluation was conducted in accordance with Section 7.D.4 of the Stormwater Management Rules. The test pits were dug in the proposed stormwater treatment areas.

The soils evaluated were moderately well drained and somewhat poorly drained glacial outwash soils. The limiting factor in the in all the test pits was a watertable. The soil test pit log descriptions are attached. The hydrological soil group for all the test pits is noted on the log descriptions. Groundwater was observed in all of the test pits.

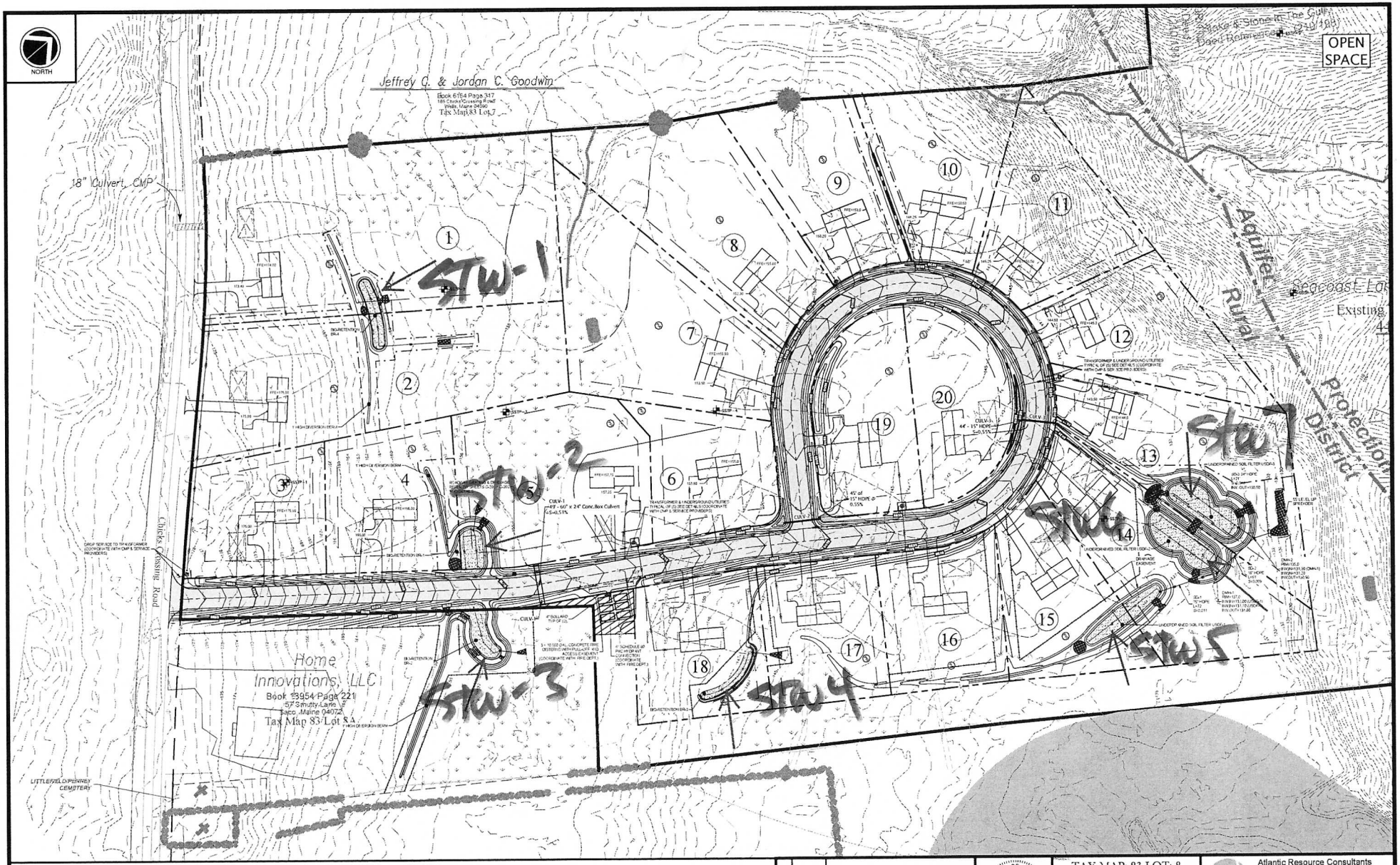
If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton L.S.E., C.S.S.
Licensed Site Evaluator #263
Certified Soil Scientist #216

Enc.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com



GENERAL NOTE:

1. INDIVIDUAL LOTS TO BE SERVICED BY PRIVATE WELLS AND SEPTIC SYSTEMS.

FOR PERMITTING ONLY
NOT FOR CONSTRUCTION

SCALE
0 25 50 100
SCALE in FEET
1"=50'

REV	DATE	DESCRIPTION
C	9-30-2022	ISSUED TO TOWN FOR FINAL SUBDIVISION APPROVAL.
B	9-8-2022	ISSUED FOR PRELIMINARY PRICING.
A	4-8-2022	ISSUED FOR PRELIMINARY SUBDIVISION REVIEW.

REVISIONS

STATE OF MAINE
JASON A. VARIADES
No. 12661
REGISTERED PROFESSIONAL ENGINEER
09/30/2022

TAX MAP: 83 LOT: 8
WELLS, MAINE

OVERALL GRADING AND UTILITY PLAN

SEACOAST LAND ACQUISITIONS, LLC
57 SMUTTY LANE
SACO, MAINE 04072

Atlantic Resource Consultants
541 US Route One
Freeport, ME 04032
Tel: 207.869.9050

DRAWN:	MPV	DATE	APRIL 6, 2022
DESIGNED:	MVJV	SCALE	1" = 40'
CHECKED:	JAV	JOB NO.	22-002
FILE NAME:			
SHEET:	C-101		

S:\22-002 Chicks Crossing\Drawings\22-002 BASE .dwg

6903

PAGE 1 OF 1

FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Chick Crossing Road Subdivision

Applicant Name: Seacoast Land Acquisitions LLC

Project Location (municipality): Wells

Exploration Symbol # STW-1 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

76 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Dark Brown	Fine Sand	Fine Grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine Grand	Friable	
Bs1	Reddish Brown	Fine Sand	Fine Grand	Friable	Common and Distinct
Bs2	Yellow Brown	Sand	Single Grain	Loose	
Cd	Olive Brown	Sand	Single Grain	Loose	

Limit of Excavation 74 inches

Depth below mineral soil horizon *(inches)*

Soil Details

Soil Series/Phase Name: Croghan

Limiting Factor: 16 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 2 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: C Soil Group

Exploration Symbol # STW-2 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

74 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Gray	Fine Sand	Fine grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine grand	Friable	
Bs1	Brown	Sand	Medium grand	Friable	Common and Distinct
Cd	Olive Brown	Sand	Meduim grand	Massive	

Limit of Excavation 75 inches

Depth below mineral soil horizon *(inches)*

Soil Details

Soil Series/Phase Name: Au Gres

Limiting Factor: 14 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD

Slope: 4 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic: Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Name Printed

11/1/22

Date

216

SS License No.

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

Affix professional seal

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PAGE 1 OF 1

FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Chick Crossing Road Subdivision

Applicant Name: Seacoast Land Acquisitions LLC

Project Location (municipality): Wells

Exploration Symbol # STW-3 ☒ Test Pit ☐ Boring ☐ Probe

_____" Organic horizon thickness Ground surface elev. _____

74 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Dark Brown	Fine Sand	Fine Grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine Grand	Friable	
Bs1	Reddish Brown	Fine Sand	Fine Grand	Friable	Common and Distinct
Bs2	Yellow Brown	Sand	Single Grain	Loose	
Cd	Olive Brown	Sand	Single Grain	Loose	

Limit of Excavation 74 inches

Depth below mineral soil horizon *(inches)*

Soil Details

Soil Series/Phase Name: Au Gres

Limiting Factor: 13 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD

Slope: 2 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: C

Exploration Symbol # STW-4 ☒ Test Pit ☐ Boring ☐ Probe

_____" Organic horizon thickness Ground surface elev. _____

62 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Gray	Fine Sand	Fine grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine grand	Friable	
Bs1	Brown	Sand	Medium grand	Friable	Common and Distinct
Cd	Olive Brown	Sand	Meduim grand	Massive	

Limit of Excavation 62 inches

Depth below mineral soil horizon *(inches)*

Soil Details

Soil Series/Phase Name: Au Gres

Limiting Factor: 14 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☒ SPD ☐ PD ☐ VPD

Slope: 4 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group:

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Name Printed

11/1/22

Date

216

SS License No.

STATE OF MAINE
MARK J. HAMPTON #216
CERTIFIED SOIL SCIENTIST
affix professional seal

6903

PAGE 1 OF 1

FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Chick Crossing Road Subdivision

Applicant Name: Seacoast Land Acquisitions LLC

Project Location (municipality): Wells

Exploration Symbol # STW-5 ☒ Test Pit ☐ Boring ☐ Probe

_____" Organic horizon thickness Ground surface elev. _____

74 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Dark Brown	Fine Sand	Fine Grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine Grand	Friable	
Bs1	Reddish Brown	Fine Sand	Fine Grand	Friable	Common and Distinct
Bs2	Yellow Brown	Sand	Single Grain	Loose	
Cd	Olive Brown	Sand	Single Grain	Loose	

Limit of Excavation 74 inches

Depth below mineral soil horizon *(inches)*

Soil Details ▶▶

Soil Series/Phase Name: Croghan

Limiting Factor: 18 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 2 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: C

Exploration Symbol # STW-6 ☒ Test Pit ☐ Boring ☐ Probe

_____" Organic horizon thickness Ground surface elev. _____

72 " Depth: ☒ of exploration, or ☐ to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Gray	Fine Sand	Fine grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine grand	Friable	
Bs1	Brown	Sand	Medium grand	Friable	Common and Distinct
Cd	Olive Brown	Sand	Meduim grand	Massive	

Limit of Excavation 72 inches

Depth below mineral soil horizon *(inches)*

Soil Details ▶▶

Soil Series/Phase Name: Croghan

Limiting Factor: 19 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 2 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: C

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Name Printed

11/1/22

Date

216

SS License No.

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST affix professional seal

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PAGE 1 OF 1

FORM F (SS2) Rev. 7/21

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Chick Crossing Road Subdivision

Applicant Name: Seacoast Land Acquisitions LLC

Project Location (municipality): Wells

Exploration Symbol # STW-7 ☒ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

78 " Depth: ☒ of exploration, or ☐ to refusal

Depth below mineral soil horizon *(inches)*

Horizon	Color	Texture	Structure	Consistence	Redox
A/E	Dark Brown	Fine Sand	Fine Grand	Friable	
Bhs	Dark Reddish Brown	Fine Sand	Fine Grand	Friable	
Bs1	Reddish Brown	Fine Sand	Fine Grand	Friable	Common and Distinct
Bs2	Yellow Brown	Sand	Single Grain	Loose	
Cd	Olive Brown	Sand	Single Grain	Loose	

Limit of Excavation 78 inches

Soil Details

Soil Series/Phase Name: Croghan

Limiting Factor: 22 " Depth ☒ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☒ MWD ☐ SPD ☐ PD ☐ VPD

Slope: 2 Percent

Hydric Soil: ☒ No ☐ Yes

Hydrologic Soil Group: C

Exploration Symbol # _____ ☐ Test Pit ☐ Boring ☐ Probe

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth: ☐ of exploration, or ☐ to refusal

Depth below mineral soil horizon *(inches)*

Horizon	Color	Texture	Structure	Consistence	Redox

Soil Details

Soil Series/Phase Name:

Limiting Factor: " Depth ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Drainage Class: ☐ ED ☐ SED ☐ WD ☐ MWD ☐ SPD ☐ PD ☐ VPD

Slope: Percent

Hydric Soil: ☐ No ☐ Yes

Hydrologic Soil Group:

STATE OF MAINE MARK J. HAMPTON #216 CERTIFIED SOIL SCIENTIST

Affix professional seal

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature

Mark J. Hampton

Name Printed

11/1/22

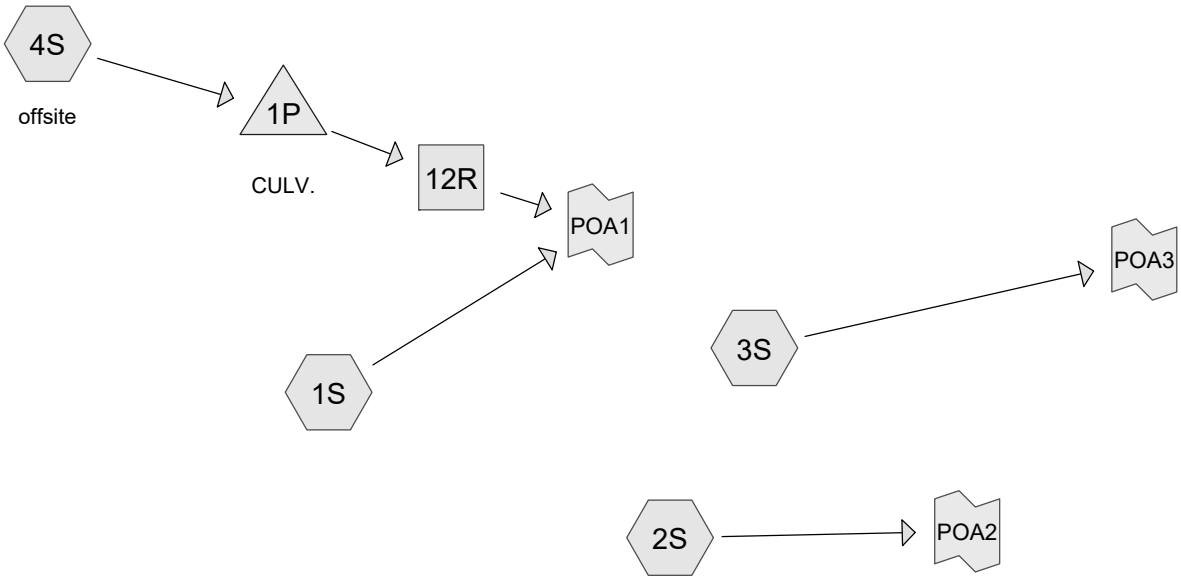
Date

216

SS License No.

ATTACHMENT A -HYDROCAD RUNOFF AND ROUTING CALCULATIONS

ATTACHMENT A (i) -PRE-DEVELOPMENT MODEL RESULTS



Subcat Reach Pond Link

Routing Diagram for 22-002 PRE Rev1 7-10-2023
Prepared by Atlantic Resource Consultants, Printed 7/19/2023

Summary for Subcatchment 1S:

Runoff = 0.2 cfs @ 14.47 hrs, Volume= 5,154 cf, Depth= 0.15"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
163,252	30	Woods, Good, HSG A
94,724	77	Woods, Good, HSG D
155,547	55	Woods, Good, HSG B
413,523	50	Weighted Average
413,523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0400	0.06		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
10.4	351	0.0510	0.56		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
49.3	702	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
81.9	1,128	Total			

Summary for Subcatchment 2S:

Runoff = 0.5 cfs @ 12.81 hrs, Volume= 5,559 cf, Depth= 0.38"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
31,566	70	Woods, Good, HSG C
145,327	55	Woods, Good, HSG B
176,893	58	Weighted Average
176,893		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	84	0.0230	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.9	144	0.0620	0.62		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
9.7	265	0.0330	0.45		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
43.9	493	Total			

Summary for Subcatchment 3S:

Runoff = 1.8 cfs @ 13.18 hrs, Volume= 30,471 cf, Depth= 0.25"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
316,425	70	Woods, Good, HSG C
233,066	30	Woods, Good, HSG A
901,941	55	Woods, Good, HSG B
1,451,432	54	Weighted Average
1,451,432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	77	0.0320	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
25.1	640	0.0290	0.43		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
4.0	224	0.1420	0.94		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
4.5	1,073	0.0400	3.98	8.96	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=3.50' D=0.50' Z= 2.0 '/' Top.W=5.50' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=15.00' D=2.00' Z= 2.0 '/' Top.W=23.00' n= 0.025 Earth, clean & winding
60.1	2,581	Total			

Summary for Subcatchment 4S: offsite

Runoff = 3.3 cfs @ 13.32 hrs, Volume= 44,204 cf, Depth= 0.49"
Routed to Pond 1P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 0.49" for 2-Yr Storm event
Inflow = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf
Outflow = 3.0 cfs @ 13.96 hrs, Volume= 44,204 cf, Atten= 9%, Lag= 38.0 min
Routed to Link POA1 :

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 21.3 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 98.0 min

Peak Storage= 3,870 cf @ 13.60 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 36.79'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 7.9 cfs

25.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 0.49" for 2-Yr Storm event
Inflow = 3.3 cfs @ 13.32 hrs, Volume= 44,204 cf
Outflow = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf, Atten= 0%, Lag= 0.5 min
Primary = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 173.74' @ 13.33 hrs Surf.Area= 204 sf Storage= 94 cf

Plug-Flow detention time= 0.3 min calculated for 44,185 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (979.8 - 979.5)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 13.33 hrs HW=173.74' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Link POA1:

Inflow Area = 1,506,004 sf, 5.14% Impervious, Inflow Depth = 0.39" for 2-Yr Storm event
Inflow = 3.2 cfs @ 13.96 hrs, Volume= 49,357 cf
Primary = 3.2 cfs @ 13.96 hrs, Volume= 49,357 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA2:

Inflow Area = 176,893 sf, 0.00% Impervious, Inflow Depth = 0.38" for 2-Yr Storm event
Inflow = 0.5 cfs @ 12.81 hrs, Volume= 5,559 cf
Primary = 0.5 cfs @ 12.81 hrs, Volume= 5,559 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA3:

Inflow Area = 1,451,432 sf, 0.00% Impervious, Inflow Depth = 0.25" for 2-Yr Storm event
Inflow = 1.8 cfs @ 13.18 hrs, Volume= 30,471 cf
Primary = 1.8 cfs @ 13.18 hrs, Volume= 30,471 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Subcatchment 1S:

Runoff = 1.6 cfs @ 13.38 hrs, Volume= 22,466 cf, Depth= 0.65"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
163,252	30	Woods, Good, HSG A
94,724	77	Woods, Good, HSG D
155,547	55	Woods, Good, HSG B
413,523	50	Weighted Average
413,523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0400	0.06		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
10.4	351	0.0510	0.56		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
49.3	702	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
81.9	1,128	Total			

Summary for Subcatchment 2S:

Runoff = 2.1 cfs @ 12.70 hrs, Volume= 16,425 cf, Depth= 1.11"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
31,566	70	Woods, Good, HSG C
145,327	55	Woods, Good, HSG B
176,893	58	Weighted Average
176,893		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	84	0.0230	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.9	144	0.0620	0.62		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
9.7	265	0.0330	0.45		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
43.9	493	Total			

Summary for Subcatchment 3S:

Runoff = 10.3 cfs @ 12.97 hrs, Volume= 105,481 cf, Depth= 0.87"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
316,425	70	Woods, Good, HSG C
233,066	30	Woods, Good, HSG A
901,941	55	Woods, Good, HSG B
1,451,432	54	Weighted Average
1,451,432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	77	0.0320	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
25.1	640	0.0290	0.43		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
4.0	224	0.1420	0.94		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
4.5	1,073	0.0400	3.98	8.96	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=3.50' D=0.50' Z= 2.0 '/' Top.W=5.50' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=15.00' D=2.00' Z= 2.0 '/' Top.W=23.00' n= 0.025 Earth, clean & winding
60.1	2,581	Total			

Summary for Subcatchment 4S: offsite

Runoff = 11.2 cfs @ 13.17 hrs, Volume= 119,213 cf, Depth= 1.31"
Routed to Pond 1P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
Inflow = 12.7 cfs @ 13.17 hrs, Volume= 119,213 cf
Outflow = 10.6 cfs @ 13.63 hrs, Volume= 119,213 cf, Atten= 17%, Lag= 27.8 min
Routed to Link POA1 :

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 0.49 fps, Min. Travel Time= 14.5 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 77.8 min

Peak Storage= 9,237 cf @ 13.39 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 48.77'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 7.9 cfs

25.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
Inflow = 11.2 cfs @ 13.17 hrs, Volume= 119,213 cf
Outflow = 12.7 cfs @ 13.17 hrs, Volume= 119,213 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.7 cfs @ 13.17 hrs, Volume= 119,213 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 177.09' @ 13.17 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.1 min calculated for 119,163 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (943.5 - 942.4)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=12.7 cfs @ 13.17 hrs HW=177.09' (Free Discharge)
1=Culvert (Inlet Controls 12.7 cfs @ 7.20 fps)

Summary for Link POA1:

Inflow Area = 1,506,004 sf, 5.14% Impervious, Inflow Depth = 1.13" for 10-Yr Storm event
Inflow = 12.1 cfs @ 13.61 hrs, Volume= 141,679 cf
Primary = 12.1 cfs @ 13.61 hrs, Volume= 141,679 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA2:

Inflow Area = 176,893 sf, 0.00% Impervious, Inflow Depth = 1.11" for 10-Yr Storm event
Inflow = 2.1 cfs @ 12.70 hrs, Volume= 16,425 cf
Primary = 2.1 cfs @ 12.70 hrs, Volume= 16,425 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA3:

Inflow Area = 1,451,432 sf, 0.00% Impervious, Inflow Depth = 0.87" for 10-Yr Storm event
Inflow = 10.3 cfs @ 12.97 hrs, Volume= 105,481 cf
Primary = 10.3 cfs @ 12.97 hrs, Volume= 105,481 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Subcatchment 1S:

Runoff = 3.6 cfs @ 13.28 hrs, Volume= 42,808 cf, Depth= 1.24"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
163,252	30	Woods, Good, HSG A
94,724	77	Woods, Good, HSG D
155,547	55	Woods, Good, HSG B
413,523	50	Weighted Average
413,523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0400	0.06		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
10.4	351	0.0510	0.56		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
49.3	702	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
81.9	1,128	Total			

Summary for Subcatchment 2S:

Runoff = 3.9 cfs @ 12.65 hrs, Volume= 27,752 cf, Depth= 1.88"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
31,566	70	Woods, Good, HSG C
145,327	55	Woods, Good, HSG B
176,893	58	Weighted Average
176,893		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	84	0.0230	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.9	144	0.0620	0.62		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
9.7	265	0.0330	0.45		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
43.9	493	Total			

Summary for Subcatchment 3S:

Runoff = 20.9 cfs @ 12.90 hrs, Volume= 187,883 cf, Depth= 1.55"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
316,425	70	Woods, Good, HSG C
233,066	30	Woods, Good, HSG A
901,941	55	Woods, Good, HSG B
1,451,432	54	Weighted Average
1,451,432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	77	0.0320	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
25.1	640	0.0290	0.43		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
4.0	224	0.1420	0.94		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
4.5	1,073	0.0400	3.98	8.96	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=3.50' D=0.50' Z= 2.0 '/' Top.W=5.50' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=15.00' D=2.00' Z= 2.0 '/' Top.W=23.00' n= 0.025 Earth, clean & winding
60.1	2,581	Total			

Summary for Subcatchment 4S: offsite

Runoff = 19.5 cfs @ 13.13 hrs, Volume= 194,872 cf, Depth= 2.14"
Routed to Pond 1P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 2.14" for 25-Yr Storm event
Inflow = 20.9 cfs @ 13.11 hrs, Volume= 194,872 cf
Outflow = 18.6 cfs @ 13.55 hrs, Volume= 194,872 cf, Atten= 11%, Lag= 26.1 min
Routed to Link POA1 :

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 0.55 fps, Min. Travel Time= 13.0 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 69.5 min

Peak Storage= 14,506 cf @ 13.33 hrs
Average Depth at Peak Storage= 0.87' , Surface Width= 59.82'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 7.9 cfs

25.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 2.14" for 25-Yr Storm event
Inflow = 19.5 cfs @ 13.13 hrs, Volume= 194,872 cf
Outflow = 20.9 cfs @ 13.11 hrs, Volume= 194,872 cf, Atten= 0%, Lag= 0.0 min
Primary = 20.9 cfs @ 13.11 hrs, Volume= 194,872 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 183.17' @ 13.11 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.1 min calculated for 194,791 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (927.9 - 926.8)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=20.9 cfs @ 13.11 hrs HW=183.16' (Free Discharge)
1=Culvert (Inlet Controls 20.9 cfs @ 11.82 fps)

Summary for Link POA1:

Inflow Area = 1,506,004 sf, 5.14% Impervious, Inflow Depth = 1.89" for 25-Yr Storm event
Inflow = 21.9 cfs @ 13.51 hrs, Volume= 237,680 cf
Primary = 21.9 cfs @ 13.51 hrs, Volume= 237,680 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA2:

Inflow Area = 176,893 sf, 0.00% Impervious, Inflow Depth = 1.88" for 25-Yr Storm event
Inflow = 3.9 cfs @ 12.65 hrs, Volume= 27,752 cf
Primary = 3.9 cfs @ 12.65 hrs, Volume= 27,752 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA3:

Inflow Area = 1,451,432 sf, 0.00% Impervious, Inflow Depth = 1.55" for 25-Yr Storm event
Inflow = 20.9 cfs @ 12.90 hrs, Volume= 187,883 cf
Primary = 20.9 cfs @ 12.90 hrs, Volume= 187,883 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Subcatchment 1S:

Runoff = 8.9 cfs @ 13.19 hrs, Volume= 92,630 cf, Depth= 2.69"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
163,252	30	Woods, Good, HSG A
94,724	77	Woods, Good, HSG D
155,547	55	Woods, Good, HSG B
413,523	50	Weighted Average
413,523		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	75	0.0400	0.06		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
10.4	351	0.0510	0.56		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
49.3	702	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
81.9	1,128	Total			

Summary for Subcatchment 2S:

Runoff = 8.0 cfs @ 12.63 hrs, Volume= 53,487 cf, Depth= 3.63"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
31,566	70	Woods, Good, HSG C
145,327	55	Woods, Good, HSG B
176,893	58	Weighted Average
176,893		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
30.3	84	0.0230	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.9	144	0.0620	0.62		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
9.7	265	0.0330	0.45		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
43.9	493	Total			

Summary for Subcatchment 3S:

Runoff = 46.4 cfs @ 12.87 hrs, Volume= 381,597 cf, Depth= 3.15"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
316,425	70	Woods, Good, HSG C
233,066	30	Woods, Good, HSG A
901,941	55	Woods, Good, HSG B
1,451,432	54	Weighted Average
1,451,432		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.8	77	0.0320	0.05		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
25.1	640	0.0290	0.43		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
4.0	224	0.1420	0.94		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
4.5	1,073	0.0400	3.98	8.96	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=3.50' D=0.50' Z= 2.0 '/' Top.W=5.50' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=15.00' D=2.00' Z= 2.0 '/' Top.W=23.00' n= 0.025 Earth, clean & winding
60.1	2,581	Total			

Summary for Subcatchment 4S: offsite

Runoff = 38.1 cfs @ 13.08 hrs, Volume= 362,953 cf, Depth= 3.99"
Routed to Pond 1P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 3.99" for 100-Yr Storm event
Inflow = 39.6 cfs @ 13.08 hrs, Volume= 362,953 cf
Outflow = 36.2 cfs @ 13.48 hrs, Volume= 362,953 cf, Atten= 9%, Lag= 24.3 min
Routed to Link POA1 :

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs
Max. Velocity= 0.59 fps, Min. Travel Time= 12.0 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 59.9 min

Peak Storage= 26,109 cf @ 13.28 hrs
Average Depth at Peak Storage= 1.48' , Surface Width= 84.14'
Bank-Full Depth= 0.50' Flow Area= 17.5 sf, Capacity= 7.9 cfs

25.00' x 0.50' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 45.00'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 3.99" for 100-Yr Storm event
Inflow = 38.1 cfs @ 13.08 hrs, Volume= 362,953 cf
Outflow = 39.6 cfs @ 13.08 hrs, Volume= 362,953 cf, Atten= 0%, Lag= 0.0 min
Primary = 39.6 cfs @ 13.08 hrs, Volume= 362,953 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Peak Elev= 208.30' @ 13.08 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.0 min calculated for 362,802 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (909.2 - 908.3)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=39.6 cfs @ 13.08 hrs HW=208.29' (Free Discharge)
1=Culvert (Inlet Controls 39.6 cfs @ 22.42 fps)

Summary for Link POA1:

Inflow Area = 1,506,004 sf, 5.14% Impervious, Inflow Depth = 3.63" for 100-Yr Storm event
Inflow = 44.3 cfs @ 13.44 hrs, Volume= 455,583 cf
Primary = 44.3 cfs @ 13.44 hrs, Volume= 455,583 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA2:

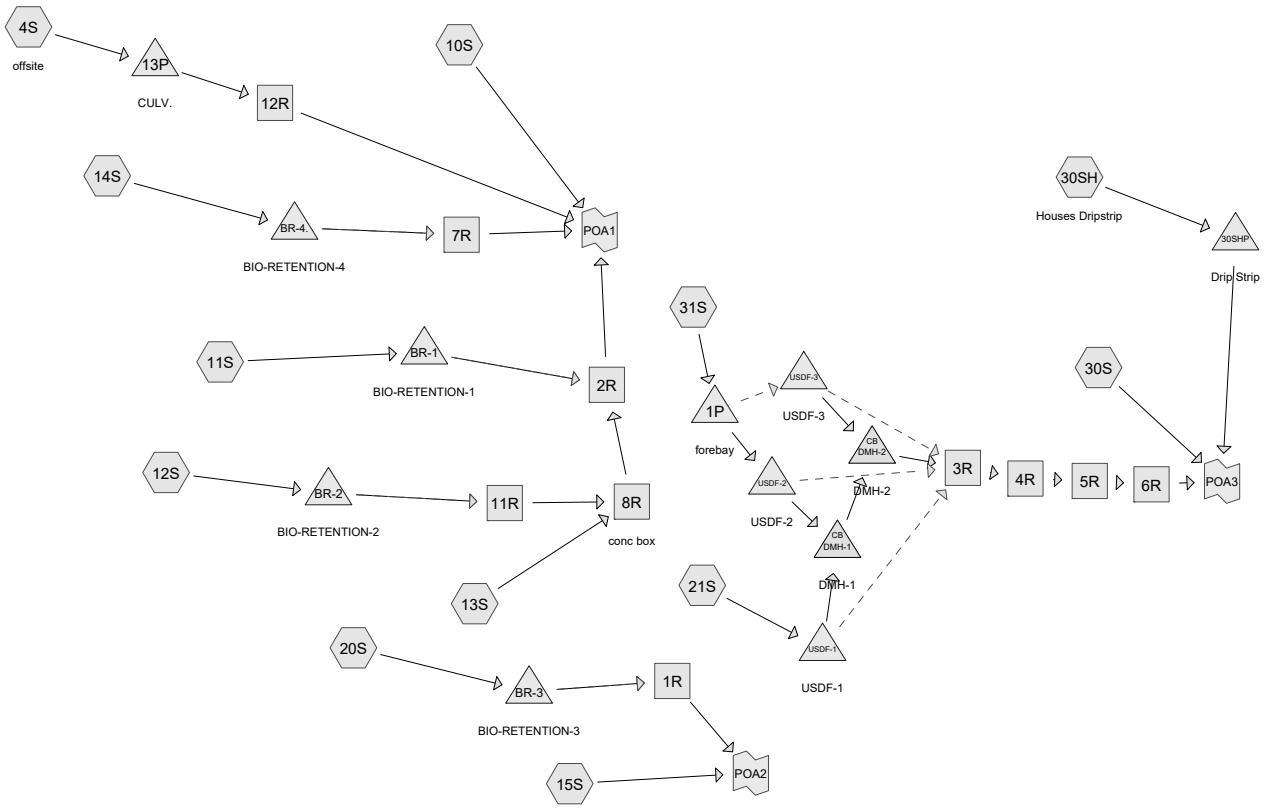
Inflow Area = 176,893 sf, 0.00% Impervious, Inflow Depth = 3.63" for 100-Yr Storm event
Inflow = 8.0 cfs @ 12.63 hrs, Volume= 53,487 cf
Primary = 8.0 cfs @ 12.63 hrs, Volume= 53,487 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs

Summary for Link POA3:

Inflow Area = 1,451,432 sf, 0.00% Impervious, Inflow Depth = 3.15" for 100-Yr Storm event
Inflow = 46.4 cfs @ 12.87 hrs, Volume= 381,597 cf
Primary = 46.4 cfs @ 12.87 hrs, Volume= 381,597 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.03 hrs



Subcat Reach Pond Link

Routing Diagram for 22-002 POST Rev1 7-10-2023
Prepared by Atlantic Resource Consultants, Printed 7/19/2023
HydroCAD® 10.20-2g s/n 08018 © 2022 HydroCAD Software Solutions LLC

Summary for Subcatchment 4S: offsite

Runoff = 3.3 cfs @ 13.32 hrs, Volume= 44,204 cf, Depth= 0.49"
Routed to Pond 13P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Subcatchment 10S:

Runoff = 0.2 cfs @ 13.10 hrs, Volume= 3,715 cf, Depth= 0.25"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
60,946	70	Woods, Good, HSG C
71,062	55	Woods, Good, HSG B
43,325	30	Woods, Good, HSG A
1,612	98	Paved parking, HSG D
176,945	54	Weighted Average
175,333		99.09% Pervious Area
1,612		0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	70	0.0710	0.07		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
7.7	277	0.0570	0.60		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
29.9	425	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
54.3	772	Total			

Summary for Subcatchment 11S:

Runoff = 0.0 cfs @ 12.70 hrs, Volume= 677 cf, Depth= 0.15"
Routed to Pond BR-1 : BIO-RETENTION-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	5,600	98	Paved parking, HSG B
*	2,600	98	Lot 3-4 drives
*	5,000	98	Lot 3-4 Roofs,
	22,400	39	>75% Grass cover, Good, HSG A
	18,755	30	Woods, Good, HSG A
	54,355	50	Weighted Average
	41,155		75.72% Pervious Area
	13,200		24.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
1.2	248	0.0540	3.49		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
21.0	323	Total			

Summary for Subcatchment 12S:

Runoff = 0.0 cfs @ 15.16 hrs, Volume= 459 cf, Depth= 0.07"
Routed to Pond BR-2 : BIO-RETENTION-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	1,300	98	Lot 8A Drive
*	2,500	98	Lot 8A Roofs
	5,600	98	Paved parking, HSG D
	17,423	39	>75% Grass cover, Good, HSG A
	5,267	61	>75% Grass cover, Good, HSG B
	9,953	55	Woods, Good, HSG B
	35,067	30	Woods, Good, HSG A
	77,110	46	Weighted Average
	67,710		87.81% Pervious Area
	9,400		12.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	75	0.0660	0.07		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
8.6	281	0.0480	0.55		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
26.7	356	Total			

Summary for Subcatchment 13S:

Runoff = 0.2 cfs @ 12.95 hrs, Volume= 2,236 cf, Depth= 0.65"
Routed to Reach 8R : conc box

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
26,816	70	Woods, Good, HSG C
3,222	39	>75% Grass cover, Good, HSG A
2,004	61	>75% Grass cover, Good, HSG B
7,654	55	Woods, Good, HSG B
1,612	98	Paved parking, HSG D
41,308	65	Weighted Average
39,696		96.10% Pervious Area
1,612		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.0	70	0.0120	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
26.1	248	0.0040	0.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
60.1	318	Total			

Summary for Subcatchment 14S:

Runoff = 0.1 cfs @ 12.60 hrs, Volume= 1,271 cf, Depth= 0.28"
Routed to Pond BR-4. : BIO-RETENTION-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	11,000	39	>75% Grass cover, Good, HSG A
	7,000	61	>75% Grass cover, Good, HSG B
*	2,600	98	Lot 1&2 driveway
*	5,000	98	Lot 1& 2 roofs, HSG D
	2,895	69	50-75% Grass cover, Fair, HSG B
	15,561	55	Woods, Good, HSG B
	10,202	30	Woods, Good, HSG A
	54,258	55	Weighted Average
	46,658		85.99% Pervious Area
	7,600		14.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
4.0	174	0.0840	0.72		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
1.4	125	0.0100	1.50		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
25.2	374	Total			

Summary for Subcatchment 15S:

Runoff = 0.1 cfs @ 12.65 hrs, Volume= 1,421 cf, Depth= 0.28"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

Area (sf)	CN	Description
827	77	Woods, Good, HSG D
59,815	55	Woods, Good, HSG B
60,642	55	Weighted Average
60,642		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	76	0.1300	0.09		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.2	122	0.0650	0.64		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
11.2	282	0.0280	0.42		**Shallow Concentrated Flow, C-D** Forest w/Heavy Litter Kv= 2.5 fps
28.4	480	Total			

Summary for Subcatchment 20S:

Runoff = 0.2 cfs @ 12.54 hrs, Volume= 1,357 cf, Depth= 0.61"
Routed to Pond BR-3 : BIO-RETENTION-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	2,500	98	Lot 18 roof
*	1,300	98	Lot 18 Drive
	12,772	61	>75% Grass cover, Good, HSG B
	10,269	55	Woods, Good, HSG B
	26,841	64	Weighted Average
	23,041		85.84% Pervious Area
	3,800		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	73	0.0200	0.04		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
2.9	109	0.0640	0.63		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
31.5	182	Total			

Summary for Subcatchment 21S:

Runoff = 1.3 cfs @ 12.19 hrs, Volume= 5,729 cf, Depth= 0.74"
Routed to Pond USDF-1 : USDF-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	7,210	98	Paved parking, HSG D
*	7,500	98	Lots 15-17 Roofs, HSG D
*	3,900	98	Lots 15-17 Drives HSG D
	45,997	61	>75% Grass cover, Good, HSG B
	28,285	55	Woods, Good, HSG B
	92,892	67	Weighted Average
	74,282		79.97% Pervious Area
	18,610		20.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	76	0.0230	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
0.7	144	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.5	158	0.0100	4.81	24.04	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
11.9	378	Total			

Summary for Subcatchment 30S:

Runoff = 1.4 cfs @ 13.48 hrs, Volume= 25,723 cf, Depth= 0.25"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
	241,126	30	Woods, Good, HSG A
	317,526	70	Woods, Good, HSG C
	632,278	55	Woods, Good, HSG B
*	31,500	61	Lots 10-13 lawn, Good, HSG B
	2,862	61	>75% Grass cover, Good, HSG B
	1,225,292	54	Weighted Average
	1,225,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.9	75	0.0050	0.02		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
18.6	279	0.0100	0.25		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
1.3	86	0.1870	1.08		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
2.7	1,035	0.0470	6.29	34.59	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.1	619	0.1100	9.62	52.91	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=15' D=2' Z= 2.0 '/' Top.W=23' n= 0.025 Earth, clean & winding
76.3	2,661	Total			

Summary for Subcatchment 30SH: Houses Dripstrip

Runoff = 0.7 cfs @ 12.08 hrs, Volume= 2,409 cf, Depth= 3.07"
Routed to Pond 30SHP : Drip Strip

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	8,125	98	Lots 10-13 Roof
*	1,300	98	Lot 13 drive
	9,425	98	Weighted Average
	9,425		100.00% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 5.8 cfs @ 12.30 hrs, Volume= 27,462 cf, Depth= 1.48"
Routed to Pond 1P : forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-Yr Storm Rainfall=3.30"

	Area (sf)	CN	Description
*	28,154	98	Paved roads w/curbs & sewers, HSG C/D (Na)
	22,121	79	50-75% Grass cover, Fair, HSG C
*	21,875	98	Lots 5-10,14,19,20 Roof
*	14,300	98	Lots 5-12,14,19,20 drive
*	81,000	74	Lots 5-10, 13,19,20 >75% Grass cover, Good, HSG C
	55,330	70	Woods, Good, HSG C
	222,780	80	Weighted Average
	158,451		71.12% Pervious Area
	64,329		28.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	75	0.0056	0.07		**Sheet Flow, A:B** Grass: Dense n= 0.240 P2= 3.30"
1.1	136	0.0180	2.01		**Shallow Concentrated Flow, B:C** Grassed Waterway Kv= 15.0 fps
1.3	563	0.0240	7.45	37.25	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
21.0	774	Total			

Summary for Reach 1R:

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 0.61" for 2-Yr Storm event
Inflow = 0.0 cfs @ 17.30 hrs, Volume= 1,357 cf
Outflow = 0.0 cfs @ 17.51 hrs, Volume= 1,357 cf, Atten= 0%, Lag= 13.1 min
Routed to Link POA2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 19.0 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 26.9 min

Peak Storage= 22 cf @ 17.51 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 20.15'
Bank-Full Depth= 0.25' Flow Area= 5.6 sf, Capacity= 7.2 cfs

20' x 0' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25'
Length= 150.0' Slope= 0.0067 '/'
Inlet Invert= 100.00', Outlet Invert= 99.00'

‡

Summary for Reach 2R:

Inflow Area = 172,773 sf, 14.01% Impervious, Inflow Depth = 0.23" for 2-Yr Storm event
Inflow = 0.2 cfs @ 12.97 hrs, Volume= 3,373 cf
Outflow = 0.1 cfs @ 13.79 hrs, Volume= 3,373 cf, Atten= 44%, Lag= 48.9 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.13 fps, Min. Travel Time= 69.4 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 104.8 min

Peak Storage= 538 cf @ 13.79 hrs
Average Depth at Peak Storage= 0.02' , Surface Width= 50.40'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 95.3 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 538.0' Slope= 0.0090 '/'
Inlet Invert= 155.00', Outlet Invert= 150.16'

‡

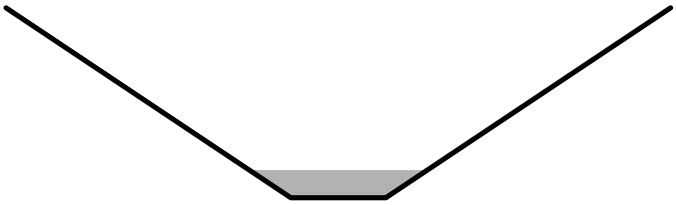
Summary for Reach 3R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
Inflow = 0.7 cfs @ 14.15 hrs, Volume= 32,707 cf
Outflow = 0.7 cfs @ 14.17 hrs, Volume= 32,707 cf, Atten= 0%, Lag= 1.1 min
Routed to Reach 4R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.69 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 2.8 min

Peak Storage= 64 cf @ 14.17 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 1.88'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 38.2 cfs

1' x 2' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 1.5 '/' Top Width= 7'
Length= 153.0' Slope= 0.0684 '/'
Inlet Invert= 116.00', Outlet Invert= 105.53'



Summary for Reach 4R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
Inflow = 0.7 cfs @ 14.17 hrs, Volume= 32,707 cf
Outflow = 0.7 cfs @ 14.22 hrs, Volume= 32,706 cf, Atten= 0%, Lag= 3.0 min
Routed to Reach 5R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 0.95 fps, Avg. Travel Time= 8.4 min

Peak Storage= 198 cf @ 14.22 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 6.27'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 251.3 cfs

6' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 14'
Length= 477.0' Slope= 0.0776 '/'
Inlet Invert= 107.00', Outlet Invert= 70.00'

Summary for Reach 5R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
Inflow = 0.7 cfs @ 14.22 hrs, Volume= 32,706 cf
Outflow = 0.7 cfs @ 14.32 hrs, Volume= 32,704 cf, Atten= 0%, Lag= 5.9 min
Routed to Reach 6R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.23 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 0.63 fps, Avg. Travel Time= 16.4 min

Peak Storage= 355 cf @ 14.32 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 4.11'
Bank-Full Depth= 2.00' Flow Area= 15.0 sf, Capacity= 77.8 cfs

4' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12'
Length= 616.0' Slope= 0.0152 '/'
Inlet Invert= 70.00', Outlet Invert= 60.64'

Summary for Reach 6R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
Inflow = 0.7 cfs @ 14.32 hrs, Volume= 32,704 cf
Outflow = 0.7 cfs @ 14.56 hrs, Volume= 32,699 cf, Atten= 1%, Lag= 14.9 min
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.51 fps, Min. Travel Time= 18.6 min
Avg. Velocity = 0.27 fps, Avg. Travel Time= 35.4 min

Peak Storage= 780 cf @ 14.56 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 15.36'
Bank-Full Depth= 2.00' Flow Area= 38.0 sf, Capacity= 129.4 cfs

15' x 2' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 23'
Length= 564.0' Slope= 0.0018 '/'
Inlet Invert= 60.00', Outlet Invert= 59.00'

‡

Summary for Reach 7R:

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 0.28" for 2-Yr Storm event
Inflow = 0.0 cfs @ 17.01 hrs, Volume= 1,271 cf
Outflow = 0.0 cfs @ 18.25 hrs, Volume= 1,271 cf, Atten= 1%, Lag= 74.7 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.11 fps, Min. Travel Time= 57.8 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 57.8 min

Peak Storage= 85 cf @ 18.25 hrs
Average Depth at Peak Storage= 0.00' , Surface Width= 50.09'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 126.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 377.0' Slope= 0.0159 '/'
Inlet Invert= 157.00', Outlet Invert= 151.00'

‡

Summary for Reach 8R: conc box

Inflow Area = 118,418 sf, 9.30% Impervious, Inflow Depth = 0.27" for 2-Yr Storm event
Inflow = 0.2 cfs @ 12.95 hrs, Volume= 2,695 cf
Outflow = 0.2 cfs @ 12.96 hrs, Volume= 2,695 cf, Atten= 0%, Lag= 0.8 min
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.48 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 0.20 fps, Avg. Travel Time= 4.1 min

Peak Storage= 23 cf @ 12.96 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 5.00'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 19.0 cfs

60.0" W x 24.0" H Box Pipe
n= 0.080 Earth, long dense weeds
Length= 49.0' Slope= 0.0163 '/'
Inlet Invert= 155.60', Outlet Invert= 154.80'

Summary for Reach 11R:

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth = 0.07" for 2-Yr Storm event
Inflow = 0.0 cfs @ 18.99 hrs, Volume= 459 cf
Outflow = 0.0 cfs @ 19.29 hrs, Volume= 459 cf, Atten= 0%, Lag= 17.9 min
Routed to Reach 8R : conc box

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.07 fps, Min. Travel Time= 14.9 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 14.9 min

Peak Storage= 9 cf @ 19.29 hrs
Average Depth at Peak Storage= 0.00' , Surface Width= 50.06'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 80.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 62.0' Slope= 0.0065 '/'
Inlet Invert= 156.00', Outlet Invert= 155.60'

‡

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 0.49" for 2-Yr Storm event
Inflow = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf
Outflow = 3.0 cfs @ 13.60 hrs, Volume= 44,204 cf, Atten= 9%, Lag= 16.2 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 21.3 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 74.1 min

Peak Storage= 3,869 cf @ 13.60 hrs
Average Depth at Peak Storage= 0.29' , Surface Width= 36.79'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 29.8 cfs

25' x 1' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 65'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: forebay

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 1.48" for 2-Yr Storm event
Inflow = 5.8 cfs @ 12.30 hrs, Volume= 27,462 cf
Outflow = 5.8 cfs @ 12.30 hrs, Volume= 26,993 cf, Atten= 0%, Lag= 0.3 min
Primary = 2.9 cfs @ 12.30 hrs, Volume= 13,497 cf
Routed to Pond USDF-2 : USDF-2
Secondary = 2.9 cfs @ 12.30 hrs, Volume= 13,497 cf
Routed to Pond USDF-3 : USDF-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.43' @ 12.30 hrs Surf.Area= 436 sf Storage= 601 cf

Plug-Flow detention time= 14.4 min calculated for 26,993 cf (98% of inflow)
Center-of-Mass det. time= 4.5 min (859.6 - 855.1)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	1,711 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	112	0	0
134.00	211	162	162
135.00	335	273	435
136.00	569	452	887
137.00	1,080	825	1,711

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Secondary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=2.9 cfs @ 12.30 hrs HW=135.43' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 2.9 cfs @ 1.46 fps)

Secondary OutFlow Max=2.9 cfs @ 12.30 hrs HW=135.43' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 2.9 cfs @ 1.46 fps)

Summary for Pond 13P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 0.49" for 2-Yr Storm event
Inflow = 3.3 cfs @ 13.32 hrs, Volume= 44,204 cf
Outflow = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf, Atten= 0%, Lag= 0.6 min
Primary = 3.3 cfs @ 13.33 hrs, Volume= 44,204 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 173.74' @ 13.33 hrs Surf.Area= 204 sf Storage= 94 cf

Plug-Flow detention time= 0.3 min calculated for 44,191 cf (100% of inflow)
Center-of-Mass det. time= 0.3 min (979.8 - 979.5)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.3 cfs @ 13.33 hrs HW=173.74' (Free Discharge)
1=Culvert (Inlet Controls 3.3 cfs @ 2.68 fps)

Summary for Pond 30SHP: Drip Strip

Inflow Area = 9,425 sf,100.00% Impervious, Inflow Depth = 3.07" for 2-Yr Storm event
Inflow = 0.7 cfs @ 12.08 hrs, Volume= 2,409 cf
Outflow = 0.1 cfs @ 11.56 hrs, Volume= 2,409 cf, Atten= 88%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.56 hrs, Volume= 2,409 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 141.68' @ 12.69 hrs Surf.Area= 1,431 sf Storage= 749 cf

Plug-Flow detention time= 59.0 min calculated for 2,409 cf (100% of inflow)
Center-of-Mass det. time= 59.0 min (814.7 - 755.8)

Volume	Invert	Avail.Storage	Storage Description
#1	139.99'	38,222 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.99	1,431	0.0	0	0
140.00	1,431	30.0	4	4
141.50	1,431	30.0	644	648
143.00	1,431	40.0	859	1,507
144.00	18,000	100.0	9,716	11,222
145.00	36,000	100.0	27,000	38,222

Device	Routing	Invert	Outlet Devices
#1	Discarded	139.99'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	144.00'	**450.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.1 cfs @ 11.56 hrs HW=140.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=139.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-1: BIO-RETENTION-1

Inflow Area = 54,355 sf, 24.28% Impervious, Inflow Depth = 0.15" for 2-Yr Storm event
Inflow = 0.0 cfs @ 12.70 hrs, Volume= 677 cf
Outflow = 0.0 cfs @ 17.59 hrs, Volume= 677 cf, Atten= 57%, Lag= 293.4 min
Primary = 0.0 cfs @ 17.59 hrs, Volume= 677 cf
Routed to Reach 2R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 156.58' @ 17.59 hrs Surf.Area= 2,232 sf Storage= 224 cf

Plug-Flow detention time= 244.2 min calculated for 677 cf (100% of inflow)
Center-of-Mass det. time= 244.1 min (1,257.6 - 1,013.5)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	7,428 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	2,232	0.0	0	0
156.67	2,232	40.0	304	304
157.00	2,232	40.0	295	598
157.50	2,232	30.0	335	933
158.00	2,232	30.0	335	1,268
158.50	2,232	30.0	335	1,603
159.00	2,629	100.0	1,215	2,818
160.00	3,151	100.0	2,890	5,708
160.50	3,731	100.0	1,721	7,428

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0165 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

#4	Secondary	160.00'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.0 cfs @ 17.59 hrs HW=156.58' (Free Discharge)
- **1=Culvert** (Passes 0.0 cfs of 0.2 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 2.18 fps)
  - **3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
- **4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-2: BIO-RETENTION-2

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth = 0.07" for 2-Yr Storm event
Inflow = 0.0 cfs @ 15.16 hrs, Volume= 459 cf
Outflow = 0.0 cfs @ 18.99 hrs, Volume= 459 cf, Atten= 38%, Lag= 230.0 min
Primary = 0.0 cfs @ 18.99 hrs, Volume= 459 cf
Routed to Reach 11R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 11R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 156.98' @ 18.99 hrs Surf.Area= 2,235 sf Storage= 135 cf

Plug-Flow detention time= 226.5 min calculated for 459 cf (100% of inflow)
Center-of-Mass det. time= 226.5 min (1,311.1 - 1,084.6)

Volume	Invert	Avail.Storage	Storage Description
#1	156.83'	5,546 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.83	2,235	0.0	0	0
157.16	2,235	40.0	295	295
157.50	2,235	40.0	304	599
158.00	2,235	30.0	335	934
158.50	2,235	30.0	335	1,269
159.00	2,235	30.0	335	1,605
160.00	2,701	100.0	2,468	4,073
160.50	3,193	100.0	1,474	5,546

Device	Routing	Invert	Outlet Devices
#1	Primary	156.83'	**8.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.83' / 156.00' S= 0.0395 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.83'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads
#4 Secondary 160.00' **4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.0 cfs @ 18.99 hrs HW=156.98' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 0.1 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 1.56 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-3: BIO-RETENTION-3

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 0.61" for 2-Yr Storm event
Inflow = 0.2 cfs @ 12.54 hrs, Volume= 1,357 cf
Outflow = 0.0 cfs @ 17.30 hrs, Volume= 1,357 cf, Atten= 90%, Lag= 285.2 min
Primary = 0.0 cfs @ 17.30 hrs, Volume= 1,357 cf
Routed to Reach 1R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 1R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 147.68' @ 17.30 hrs Surf.Area= 855 sf Storage= 712 cf

Plug-Flow detention time= 469.5 min calculated for 1,356 cf (100% of inflow)
Center-of-Mass det. time= 469.9 min (1,390.2 - 920.3)

Volume	Invert	Avail.Storage	Storage Description
#1	145.33'	1,544 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.33	786	0.0	0	0
145.67	786	40.0	107	107
146.00	786	40.0	104	211
146.50	786	30.0	118	329
147.00	786	30.0	118	446
147.50	786	30.0	118	564
148.00	978	100.0	441	1,005
148.50	1,177	100.0	539	1,544

Device	Routing	Invert	Outlet Devices
#1	Primary	145.33'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 145.33' / 145.00' S= 0.0132 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	145.33'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	148.00'	**5.0' long x 2.0' 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
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

#4	Primary	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.0 cfs @ 17.30 hrs HW=147.68' (Free Discharge)
- **1=Culvert** (Passes 0.0 cfs of 1.9 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.33 fps)
- **4=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=145.33' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-4.: BIO-RETENTION-4

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 0.28" for 2-Yr Storm event
Inflow = 0.1 cfs @ 12.60 hrs, Volume= 1,271 cf
Outflow = 0.0 cfs @ 17.01 hrs, Volume= 1,271 cf, Atten= 79%, Lag= 264.4 min
Primary = 0.0 cfs @ 17.01 hrs, Volume= 1,271 cf
Routed to Reach 7R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 7R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 156.99' @ 17.01 hrs Surf.Area= 1,901 sf Storage= 499 cf

Plug-Flow detention time= 285.9 min calculated for 1,271 cf (100% of inflow)
Center-of-Mass det. time= 286.3 min (1,253.2 - 966.9)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	9,100 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	1,901	0.0	0	0
156.66	1,901	40.0	251	251
157.00	1,901	40.0	259	509
157.50	1,901	30.0	285	795
158.00	1,901	30.0	285	1,080
158.50	1,901	30.0	285	1,365
159.00	2,109	100.0	1,003	2,367
160.00	2,577	100.0	2,343	4,710
161.00	3,041	100.0	2,809	7,519
161.50	3,282	100.0	1,581	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.75'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	160.75'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.0 cfs @ 17.01 hrs HW=156.99' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 0.8 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 3.76 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DMH-1: DMH-1

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 0.73" for 2-Yr Storm event
Inflow = 0.4 cfs @ 14.16 hrs, Volume= 19,218 cf
Outflow = 0.4 cfs @ 14.16 hrs, Volume= 19,218 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.4 cfs @ 14.16 hrs, Volume= 19,218 cf
Routed to Pond DMH-2 : DMH-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.91' @ 14.16 hrs
Flood Elev= 137.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.60'	**18.0" Round Culvert** L= 61.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.60' / 131.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=0.4 cfs @ 14.16 hrs HW=131.91' (Free Discharge)
└**1=Culvert** (Inlet Controls 0.4 cfs @ 1.49 fps)

Summary for Pond DMH-2: DMH-2

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.24" for 2-Yr Storm event
Inflow = 0.7 cfs @ 14.15 hrs, Volume= 32,707 cf
Outflow = 0.7 cfs @ 14.15 hrs, Volume= 32,707 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 14.15 hrs, Volume= 32,707 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.29' @ 14.15 hrs
Flood Elev= 135.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	130.90'	**24.0" Round Culvert**

L= 21.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 130.90' / 130.50' S= 0.0190 '/' Cc= 0.900
n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=0.7 cfs @ 14.15 hrs HW=131.29' (Free Discharge)
1=Culvert (Inlet Controls 0.7 cfs @ 1.67 fps)

Summary for Pond USDF-1: USDF-1

Inflow Area = 92,892 sf, 20.03% Impervious, Inflow Depth = 0.74" for 2-Yr Storm event
Inflow = 1.3 cfs @ 12.19 hrs, Volume= 5,729 cf
Outflow = 0.1 cfs @ 17.76 hrs, Volume= 5,729 cf, Atten= 95%, Lag= 334.5 min
Primary = 0.1 cfs @ 17.76 hrs, Volume= 5,729 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.79' @ 17.76 hrs Surf.Area= 2,564 sf Storage= 3,418 cf

Plug-Flow detention time= 644.4 min calculated for 5,729 cf (100% of inflow)
Center-of-Mass det. time= 644.3 min (1,534.2 - 889.9)

Volume	Invert	Avail.Storage	Storage Description
#1	132.83'	10,385 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.83	2,168	0.0	0	0
133.16	2,168	40.0	286	286
133.50	2,168	40.0	295	581
134.00	2,168	30.0	325	906
134.50	2,168	30.0	325	1,231
135.00	2,168	30.0	325	1,557
136.00	2,671	100.0	2,420	3,976
137.00	3,198	100.0	2,935	6,911
138.00	3,751	100.0	3,475	10,385

Device	Routing	Invert	Outlet Devices
#1	Primary	132.83'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.83' / 132.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	132.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	136.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.50'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.1 cfs @ 17.76 hrs HW=135.79' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 7.1 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.21 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=132.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond USDF-2: USDF-2

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 0.73" for 2-Yr Storm event
Inflow = 2.9 cfs @ 12.30 hrs, Volume= 13,497 cf
Outflow = 0.3 cfs @ 14.15 hrs, Volume= 13,489 cf, Atten= 89%, Lag= 110.6 min
Primary = 0.3 cfs @ 14.15 hrs, Volume= 13,489 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.81' @ 14.15 hrs Surf.Area= 3,563 sf Storage= 7,571 cf

Plug-Flow detention time= 803.3 min calculated for 13,485 cf (100% of inflow)
Center-of-Mass det. time= 803.5 min (1,663.1 - 859.6)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.70' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.85'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.3 cfs @ 14.15 hrs HW=135.81' (Free Discharge)
└**1=culvert** (Passes 0.3 cfs of 5.6 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.55 fps)
└**3=Orifice/Grate** (Orifice Controls 0.2 cfs @ 1.91 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=131.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond USDF-3: USDF-3

Inflow = 2.9 cfs @ 12.30 hrs, Volume= 13,497 cf
Outflow = 0.3 cfs @ 14.15 hrs, Volume= 13,489 cf, Atten= 89%, Lag= 110.6 min
Primary = 0.3 cfs @ 14.15 hrs, Volume= 13,489 cf
Routed to Pond DMH-2 : DMH-2
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.81' @ 14.15 hrs Surf.Area= 3,563 sf Storage= 7,571 cf

Plug-Flow detention time= 803.3 min calculated for 13,485 cf (100% of inflow)
Center-of-Mass det. time= 803.5 min (1,663.1 - 859.6)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.20' S= 0.0300 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.75'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.3 cfs @ 14.15 hrs HW=135.81' (Free Discharge)
└**1=culvert** (Passes 0.3 cfs of 5.6 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.55 fps)
└**3=Orifice/Grate** (Orifice Controls 0.2 cfs @ 1.91 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=131.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link POA1:

Inflow Area = 1,496,457 sf, 7.41% Impervious, Inflow Depth = 0.42" for 2-Yr Storm event
Inflow = 3.4 cfs @ 13.60 hrs, Volume= 52,562 cf
Primary = 3.4 cfs @ 13.60 hrs, Volume= 52,562 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA2:

Inflow Area = 87,483 sf, 4.34% Impervious, Inflow Depth = 0.38" for 2-Yr Storm event
Inflow = 0.1 cfs @ 12.66 hrs, Volume= 2,777 cf
Primary = 0.1 cfs @ 12.66 hrs, Volume= 2,777 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA3:

Inflow Area = 1,550,389 sf, 5.96% Impervious, Inflow Depth > 0.45" for 2-Yr Storm event
Inflow = 1.8 cfs @ 14.00 hrs, Volume= 58,422 cf
Primary = 1.8 cfs @ 14.00 hrs, Volume= 58,422 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Subcatchment 4S: offsite

Runoff = 11.2 cfs @ 13.17 hrs, Volume= 119,213 cf, Depth= 1.31"
Routed to Pond 13P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Subcatchment 10S:

Runoff = 1.3 cfs @ 12.87 hrs, Volume= 12,859 cf, Depth= 0.87"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
60,946	70	Woods, Good, HSG C
71,062	55	Woods, Good, HSG B
43,325	30	Woods, Good, HSG A
1,612	98	Paved parking, HSG D
176,945	54	Weighted Average
175,333		99.09% Pervious Area
1,612		0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	70	0.0710	0.07		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
7.7	277	0.0570	0.60		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
29.9	425	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
54.3	772	Total			

Summary for Subcatchment 11S:

Runoff = 0.4 cfs @ 12.43 hrs, Volume= 2,953 cf, Depth= 0.65"
Routed to Pond BR-1 : BIO-RETENTION-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	5,600	98	Paved parking, HSG B
*	2,600	98	Lot 3-4 drives
*	5,000	98	Lot 3-4 Roofs,
	22,400	39	>75% Grass cover, Good, HSG A
	18,755	30	Woods, Good, HSG A
	54,355	50	Weighted Average
	41,155		75.72% Pervious Area
	13,200		24.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
1.2	248	0.0540	3.49		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
21.0	323	Total			

Summary for Subcatchment 12S:

Runoff = 0.3 cfs @ 12.60 hrs, Volume= 2,929 cf, Depth= 0.46"
Routed to Pond BR-2 : BIO-RETENTION-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	1,300	98	Lot 8A Drive
*	2,500	98	Lot 8A Roofs
	5,600	98	Paved parking, HSG D
	17,423	39	>75% Grass cover, Good, HSG A
	5,267	61	>75% Grass cover, Good, HSG B
	9,953	55	Woods, Good, HSG B
	35,067	30	Woods, Good, HSG A
	77,110	46	Weighted Average
	67,710		87.81% Pervious Area
	9,400		12.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	75	0.0660	0.07		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
8.6	281	0.0480	0.55		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
26.7	356	Total			

Summary for Subcatchment 13S:

Runoff = 0.7 cfs @ 12.88 hrs, Volume= 5,464 cf, Depth= 1.59"
Routed to Reach 8R : conc box

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
26,816	70	Woods, Good, HSG C
3,222	39	>75% Grass cover, Good, HSG A
2,004	61	>75% Grass cover, Good, HSG B
7,654	55	Woods, Good, HSG B
1,612	98	Paved parking, HSG D
41,308	65	Weighted Average
39,696		96.10% Pervious Area
1,612		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.0	70	0.0120	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
26.1	248	0.0040	0.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
60.1	318	Total			

Summary for Subcatchment 14S:

Runoff = 0.7 cfs @ 12.43 hrs, Volume= 4,208 cf, Depth= 0.93"
Routed to Pond BR-4. : BIO-RETENTION-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	11,000	39	>75% Grass cover, Good, HSG A
	7,000	61	>75% Grass cover, Good, HSG B
*	2,600	98	Lot 1&2 driveway
*	5,000	98	Lot 1& 2 roofs, HSG D
	2,895	69	50-75% Grass cover, Fair, HSG B
	15,561	55	Woods, Good, HSG B
	10,202	30	Woods, Good, HSG A
	54,258	55	Weighted Average
	46,658		85.99% Pervious Area
	7,600		14.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
4.0	174	0.0840	0.72		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
1.4	125	0.0100	1.50		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
25.2	374	Total			

Summary for Subcatchment 15S:

Runoff = 0.7 cfs @ 12.49 hrs, Volume= 4,703 cf, Depth= 0.93"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

Area (sf)	CN	Description
827	77	Woods, Good, HSG D
59,815	55	Woods, Good, HSG B
60,642	55	Weighted Average
60,642		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	76	0.1300	0.09		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.2	122	0.0650	0.64		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
11.2	282	0.0280	0.42		**Shallow Concentrated Flow, C-D** Forest w/Heavy Litter Kv= 2.5 fps
28.4	480	Total			

Summary for Subcatchment 20S:

Runoff = 0.6 cfs @ 12.49 hrs, Volume= 3,391 cf, Depth= 1.52"
Routed to Pond BR-3 : BIO-RETENTION-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	2,500	98	Lot 18 roof
*	1,300	98	Lot 18 Drive
	12,772	61	>75% Grass cover, Good, HSG B
	10,269	55	Woods, Good, HSG B
	26,841	64	Weighted Average
	23,041		85.84% Pervious Area
	3,800		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	73	0.0200	0.04		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
2.9	109	0.0640	0.63		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
31.5	182	Total			

Summary for Subcatchment 21S:

Runoff = 3.4 cfs @ 12.17 hrs, Volume= 13,421 cf, Depth= 1.73"
Routed to Pond USDF-1 : USDF-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	7,210	98	Paved parking, HSG D
*	7,500	98	Lots 15-17 Roofs, HSG D
*	3,900	98	Lots 15-17 Drives HSG D
	45,997	61	>75% Grass cover, Good, HSG B
	28,285	55	Woods, Good, HSG B
	92,892	67	Weighted Average
	74,282		79.97% Pervious Area
	18,610		20.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	76	0.0230	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
0.7	144	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.5	158	0.0100	4.81	24.04	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
11.9	378	Total			

Summary for Subcatchment 30S:

Runoff = 7.5 cfs @ 13.22 hrs, Volume= 89,047 cf, Depth= 0.87"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
	241,126	30	Woods, Good, HSG A
	317,526	70	Woods, Good, HSG C
	632,278	55	Woods, Good, HSG B
*	31,500	61	Lots 10-13 lawn, Good, HSG B
	2,862	61	>75% Grass cover, Good, HSG B
	1,225,292	54	Weighted Average
	1,225,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.9	75	0.0050	0.02		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
18.6	279	0.0100	0.25		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
1.3	86	0.1870	1.08		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
2.7	1,035	0.0470	6.29	34.59	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.1	619	0.1100	9.62	52.91	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=15' D=2' Z= 2.0 '/' Top.W=23' n= 0.025 Earth, clean & winding
76.3	2,661	Total			

Summary for Subcatchment 30SH: Houses Dripstrip

Runoff = 1.0 cfs @ 12.08 hrs, Volume= 3,663 cf, Depth= 4.66"
Routed to Pond 30SHP : Drip Strip

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	8,125	98	Lots 10-13 Roof
*	1,300	98	Lot 13 drive
	9,425	98	Weighted Average
	9,425		100.00% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 11.1 cfs @ 12.29 hrs, Volume= 52,090 cf, Depth= 2.81"
Routed to Pond 1P : forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Yr Storm Rainfall=4.90"

	Area (sf)	CN	Description
*	28,154	98	Paved roads w/curbs & sewers, HSG C/D (Na)
	22,121	79	50-75% Grass cover, Fair, HSG C
*	21,875	98	Lots 5-10,14,19,20 Roof
*	14,300	98	Lots 5-12,14,19,20 drive
*	81,000	74	Lots 5-10, 13,19,20 >75% Grass cover, Good, HSG C
	55,330	70	Woods, Good, HSG C
	222,780	80	Weighted Average
	158,451		71.12% Pervious Area
	64,329		28.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	75	0.0056	0.07		**Sheet Flow, A:B** Grass: Dense n= 0.240 P2= 3.30"
1.1	136	0.0180	2.01		**Shallow Concentrated Flow, B:C** Grassed Waterway Kv= 15.0 fps
1.3	563	0.0240	7.45	37.25	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
21.0	774	Total			

Summary for Reach 1R:

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 1.52" for 10-Yr Storm event
Inflow = 0.4 cfs @ 12.79 hrs, Volume= 3,391 cf
Outflow = 0.3 cfs @ 12.91 hrs, Volume= 3,391 cf, Atten= 16%, Lag= 7.0 min
Routed to Link POA2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.40 fps, Min. Travel Time= 6.3 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 22.7 min

Peak Storage= 122 cf @ 12.91 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 20.80'
Bank-Full Depth= 0.25' Flow Area= 5.6 sf, Capacity= 7.2 cfs

20' x 0' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25'
Length= 150.0' Slope= 0.0067 '/'
Inlet Invert= 100.00', Outlet Invert= 99.00'

‡

Summary for Reach 2R:

Inflow Area = 172,773 sf, 14.01% Impervious, Inflow Depth = 0.79" for 10-Yr Storm event
Inflow = 0.7 cfs @ 12.90 hrs, Volume= 11,346 cf
Outflow = 0.5 cfs @ 13.36 hrs, Volume= 11,346 cf, Atten= 28%, Lag= 27.5 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.22 fps, Min. Travel Time= 40.2 min
Avg. Velocity = 0.10 fps, Avg. Travel Time= 92.0 min

Peak Storage= 1,220 cf @ 13.36 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 50.90'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 95.3 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 538.0' Slope= 0.0090 '/'
Inlet Invert= 155.00', Outlet Invert= 150.16'

‡

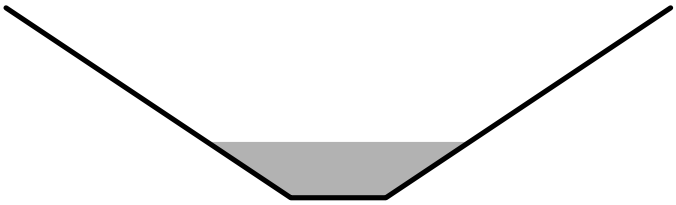
Summary for Reach 3R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.47" for 10-Yr Storm event
Inflow = 2.7 cfs @ 13.13 hrs, Volume= 65,022 cf
Outflow = 2.7 cfs @ 13.15 hrs, Volume= 65,021 cf, Atten= 0%, Lag= 0.8 min
Routed to Reach 4R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.03 fps, Avg. Travel Time= 2.5 min

Peak Storage= 170 cf @ 13.15 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 2.77'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 38.2 cfs

1' x 2' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 1.5 '/' Top Width= 7'
Length= 153.0' Slope= 0.0684 '/'
Inlet Invert= 116.00', Outlet Invert= 105.53'



Summary for Reach 4R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.47" for 10-Yr Storm event
Inflow = 2.7 cfs @ 13.15 hrs, Volume= 65,021 cf
Outflow = 2.7 cfs @ 13.18 hrs, Volume= 65,020 cf, Atten= 0%, Lag= 1.9 min
Routed to Reach 5R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.83 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 7.4 min

Peak Storage= 455 cf @ 13.18 hrs
Average Depth at Peak Storage= 0.15' , Surface Width= 6.60'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 251.3 cfs

6' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 14'
Length= 477.0' Slope= 0.0776 '/'
Inlet Invert= 107.00', Outlet Invert= 70.00'

Summary for Reach 5R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.47" for 10-Yr Storm event
Inflow = 2.7 cfs @ 13.18 hrs, Volume= 65,020 cf
Outflow = 2.7 cfs @ 13.25 hrs, Volume= 65,017 cf, Atten= 0%, Lag= 4.0 min
Routed to Reach 6R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.95 fps, Min. Travel Time= 5.3 min
Avg. Velocity = 0.72 fps, Avg. Travel Time= 14.3 min

Peak Storage= 852 cf @ 13.25 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 4.83'
Bank-Full Depth= 2.00' Flow Area= 15.0 sf, Capacity= 77.8 cfs

4' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12'
Length= 616.0' Slope= 0.0152 '/'
Inlet Invert= 70.00', Outlet Invert= 60.64'

Summary for Reach 6R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.47" for 10-Yr Storm event
Inflow = 2.7 cfs @ 13.25 hrs, Volume= 65,017 cf
Outflow = 2.7 cfs @ 13.40 hrs, Volume= 65,010 cf, Atten= 1%, Lag= 9.5 min
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.85 fps, Min. Travel Time= 11.1 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 30.8 min

Peak Storage= 1,776 cf @ 13.40 hrs
Average Depth at Peak Storage= 0.20' , Surface Width= 15.82'
Bank-Full Depth= 2.00' Flow Area= 38.0 sf, Capacity= 129.4 cfs

15' x 2' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 23'
Length= 564.0' Slope= 0.0018 '/'
Inlet Invert= 60.00', Outlet Invert= 59.00'

‡

Summary for Reach 7R:

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 0.93" for 10-Yr Storm event
Inflow = 0.1 cfs @ 17.88 hrs, Volume= 4,208 cf
Outflow = 0.1 cfs @ 19.31 hrs, Volume= 4,208 cf, Atten= 0%, Lag= 85.9 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.11 fps, Min. Travel Time= 57.8 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 57.8 min

Peak Storage= 178 cf @ 19.31 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 50.19'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 126.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 377.0' Slope= 0.0159 '/'
Inlet Invert= 157.00', Outlet Invert= 151.00'

‡

Summary for Reach 8R: conc box

Inflow Area = 118,418 sf, 9.30% Impervious, Inflow Depth = 0.85" for 10-Yr Storm event
Inflow = 0.7 cfs @ 12.88 hrs, Volume= 8,393 cf
Outflow = 0.7 cfs @ 12.90 hrs, Volume= 8,393 cf, Atten= 0%, Lag= 0.7 min
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.73 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.23 fps, Avg. Travel Time= 3.6 min

Peak Storage= 45 cf @ 12.90 hrs
Average Depth at Peak Storage= 0.18' , Surface Width= 5.00'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 19.0 cfs

60.0" W x 24.0" H Box Pipe
n= 0.080 Earth, long dense weeds
Length= 49.0' Slope= 0.0163 '/'
Inlet Invert= 155.60', Outlet Invert= 154.80'

Summary for Reach 11R:

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth > 0.46" for 10-Yr Storm event
Inflow = 0.0 cfs @ 18.18 hrs, Volume= 2,929 cf
Outflow = 0.0 cfs @ 18.30 hrs, Volume= 2,929 cf, Atten= 0%, Lag= 7.1 min
Routed to Reach 8R : conc box

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.08 fps, Min. Travel Time= 13.3 min
Avg. Velocity = 0.07 fps, Avg. Travel Time= 14.7 min

Peak Storage= 35 cf @ 18.30 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 50.22'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 80.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 62.0' Slope= 0.0065 '/'
Inlet Invert= 156.00', Outlet Invert= 155.60'

‡

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
Inflow = 12.7 cfs @ 13.16 hrs, Volume= 119,213 cf
Outflow = 10.6 cfs @ 13.38 hrs, Volume= 119,213 cf, Atten= 16%, Lag= 13.4 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.49 fps, Min. Travel Time= 14.4 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 59.1 min

Peak Storage= 9,184 cf @ 13.38 hrs
Average Depth at Peak Storage= 0.59' , Surface Width= 48.52'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 29.8 cfs

25' x 1' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 65'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: forebay

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 2.81" for 10-Yr Storm event
Inflow = 11.1 cfs @ 12.29 hrs, Volume= 52,090 cf
Outflow = 11.1 cfs @ 12.29 hrs, Volume= 51,620 cf, Atten= 0%, Lag= 0.2 min
Primary = 5.6 cfs @ 12.29 hrs, Volume= 25,810 cf
Routed to Pond USDF-2 : USDF-2
Secondary = 5.6 cfs @ 12.29 hrs, Volume= 25,810 cf
Routed to Pond USDF-3 : USDF-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.60' @ 12.29 hrs Surf.Area= 475 sf Storage= 677 cf

Plug-Flow detention time= 8.7 min calculated for 51,620 cf (99% of inflow)
Center-of-Mass det. time= 3.2 min (839.8 - 836.6)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	1,711 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	112	0	0
134.00	211	162	162
135.00	335	273	435
136.00	569	452	887
137.00	1,080	825	1,711

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Secondary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=5.6 cfs @ 12.29 hrs HW=135.60' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 5.6 cfs @ 1.86 fps)

Secondary OutFlow Max=5.6 cfs @ 12.29 hrs HW=135.60' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 5.6 cfs @ 1.86 fps)

Summary for Pond 13P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 1.31" for 10-Yr Storm event
Inflow = 11.2 cfs @ 13.17 hrs, Volume= 119,213 cf
Outflow = 12.7 cfs @ 13.16 hrs, Volume= 119,213 cf, Atten= 0%, Lag= 0.0 min
Primary = 12.7 cfs @ 13.16 hrs, Volume= 119,213 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 177.05' @ 13.16 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.1 min calculated for 119,180 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (943.5 - 942.4)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=12.7 cfs @ 13.16 hrs HW=177.05' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 12.7 cfs @ 7.16 fps)

Summary for Pond 30SHP: Drip Strip

Inflow Area = 9,425 sf,100.00% Impervious, Inflow Depth = 4.66" for 10-Yr Storm event
Inflow = 1.0 cfs @ 12.08 hrs, Volume= 3,663 cf
Outflow = 0.1 cfs @ 11.14 hrs, Volume= 3,663 cf, Atten= 92%, Lag= 0.0 min
Discarded = 0.1 cfs @ 11.14 hrs, Volume= 3,663 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 142.71' @ 13.08 hrs Surf.Area= 1,431 sf Storage= 1,338 cf

Plug-Flow detention time= 120.0 min calculated for 3,662 cf (100% of inflow)
Center-of-Mass det. time= 120.0 min (868.3 - 748.4)

Volume	Invert	Avail.Storage	Storage Description
#1	139.99'	38,222 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.99	1,431	0.0	0	0
140.00	1,431	30.0	4	4
141.50	1,431	30.0	644	648
143.00	1,431	40.0	859	1,507
144.00	18,000	100.0	9,716	11,222
145.00	36,000	100.0	27,000	38,222

Device	Routing	Invert	Outlet Devices
#1	Discarded	139.99'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	144.00'	**450.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.1 cfs @ 11.14 hrs HW=140.00' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.1 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=139.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-1: BIO-RETENTION-1

Inflow Area = 54,355 sf, 24.28% Impervious, Inflow Depth = 0.65" for 10-Yr Storm event
Inflow = 0.4 cfs @ 12.43 hrs, Volume= 2,953 cf
Outflow = 0.0 cfs @ 17.49 hrs, Volume= 2,953 cf, Atten= 89%, Lag= 303.4 min
Primary = 0.0 cfs @ 17.49 hrs, Volume= 2,953 cf
Routed to Reach 2R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 158.33' @ 17.49 hrs Surf.Area= 2,232 sf Storage= 1,491 cf

Plug-Flow detention time= 467.9 min calculated for 2,953 cf (100% of inflow)
Center-of-Mass det. time= 467.9 min (1,399.3 - 931.5)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	7,428 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	2,232	0.0	0	0
156.67	2,232	40.0	304	304
157.00	2,232	40.0	295	598
157.50	2,232	30.0	335	933
158.00	2,232	30.0	335	1,268
158.50	2,232	30.0	335	1,603
159.00	2,629	100.0	1,215	2,818
160.00	3,151	100.0	2,890	5,708
160.50	3,731	100.0	1,721	7,428

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0165 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads
#4 Secondary 160.00' **4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.0 cfs @ 17.49 hrs HW=158.33' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.2 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 6.74 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-2: BIO-RETENTION-2

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth = 0.46" for 10-Yr Storm event
Inflow = 0.3 cfs @ 12.60 hrs, Volume= 2,929 cf
Outflow = 0.0 cfs @ 18.18 hrs, Volume= 2,929 cf, Atten= 85%, Lag= 334.7 min
Primary = 0.0 cfs @ 18.18 hrs, Volume= 2,929 cf
Routed to Reach 11R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 11R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 158.74' @ 18.18 hrs Surf.Area= 2,235 sf Storage= 1,429 cf

Plug-Flow detention time= 462.5 min calculated for 2,929 cf (100% of inflow)
Center-of-Mass det. time= 462.5 min (1,424.3 - 961.8)

Volume	Invert	Avail.Storage	Storage Description
#1	156.83'	5,546 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.83	2,235	0.0	0	0
157.16	2,235	40.0	295	295
157.50	2,235	40.0	304	599
158.00	2,235	30.0	335	934
158.50	2,235	30.0	335	1,269
159.00	2,235	30.0	335	1,605
160.00	2,701	100.0	2,468	4,073
160.50	3,193	100.0	1,474	5,546

Device	Routing	Invert	Outlet Devices
#1	Primary	156.83'	**8.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.83' / 156.00' S= 0.0395 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.83'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

#4	Secondary	160.00'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.0 cfs @ 18.18 hrs HW=158.74' (Free Discharge)
└**1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 6.57 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-3: BIO-RETENTION-3

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 1.52" for 10-Yr Storm event
Inflow = 0.6 cfs @ 12.49 hrs, Volume= 3,391 cf
Outflow = 0.4 cfs @ 12.79 hrs, Volume= 3,391 cf, Atten= 32%, Lag= 18.2 min
Primary = 0.2 cfs @ 12.79 hrs, Volume= 2,578 cf
Routed to Reach 1R :
Secondary = 0.2 cfs @ 12.79 hrs, Volume= 813 cf
Routed to Reach 1R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 148.06' @ 12.79 hrs Surf.Area= 1,003 sf Storage= 1,067 cf

Plug-Flow detention time= 357.8 min calculated for 3,391 cf (100% of inflow)
Center-of-Mass det. time= 357.7 min (1,246.3 - 888.6)

Volume	Invert	Avail.Storage	Storage Description
#1	145.33'	1,544 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.33	786	0.0	0	0
145.67	786	40.0	107	107
146.00	786	40.0	104	211
146.50	786	30.0	118	329
147.00	786	30.0	118	446
147.50	786	30.0	118	564
148.00	978	100.0	441	1,005
148.50	1,177	100.0	539	1,544

Device	Routing	Invert	Outlet Devices
#1	Primary	145.33'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 145.33' / 145.00' S= 0.0132 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	145.33'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	148.00'	**5.0' long x 2.0' 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
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

#4	Primary	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.2 cfs @ 12.79 hrs HW=148.06' (Free Discharge)
└─**1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
└─**2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.92 fps)
└─**4=Orifice/Grate** (Weir Controls 0.2 cfs @ 0.82 fps)

Secondary OutFlow Max=0.2 cfs @ 12.79 hrs HW=148.06' (Free Discharge)
└─**3=Broad-Crested Rectangular Weir** (Weir Controls 0.2 cfs @ 0.63 fps)

Summary for Pond BR-4.: BIO-RETENTION-4

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 0.93" for 10-Yr Storm event
Inflow = 0.7 cfs @ 12.43 hrs, Volume= 4,208 cf
Outflow = 0.1 cfs @ 17.88 hrs, Volume= 4,208 cf, Atten= 92%, Lag= 326.8 min
Primary = 0.1 cfs @ 17.88 hrs, Volume= 4,208 cf
Routed to Reach 7R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 7R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 159.01' @ 17.88 hrs Surf.Area= 2,112 sf Storage= 2,381 cf

Plug-Flow detention time= 574.7 min calculated for 4,208 cf (100% of inflow)
Center-of-Mass det. time= 574.6 min (1,487.1 - 912.4)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	9,100 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	1,901	0.0	0	0
156.66	1,901	40.0	251	251
157.00	1,901	40.0	259	509
157.50	1,901	30.0	285	795
158.00	1,901	30.0	285	1,080
158.50	1,901	30.0	285	1,365
159.00	2,109	100.0	1,003	2,367
160.00	2,577	100.0	2,343	4,710
161.00	3,041	100.0	2,809	7,519
161.50	3,282	100.0	1,581	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.75'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	160.75'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.1 cfs @ 17.88 hrs HW=159.01' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 2.0 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 7.81 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DMH-1: DMH-1

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 1.49" for 10-Yr Storm event
Inflow = 1.5 cfs @ 13.20 hrs, Volume= 39,221 cf
Outflow = 1.5 cfs @ 13.20 hrs, Volume= 39,221 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.5 cfs @ 13.20 hrs, Volume= 39,221 cf
Routed to Pond DMH-2 : DMH-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 132.24' @ 13.20 hrs
Flood Elev= 137.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.60'	**18.0" Round Culvert** L= 61.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.60' / 131.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.5 cfs @ 13.20 hrs HW=132.24' (Free Discharge)
└**1=Culvert** (Inlet Controls 1.5 cfs @ 2.15 fps)

Summary for Pond DMH-2: DMH-2

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.47" for 10-Yr Storm event
Inflow = 2.7 cfs @ 13.13 hrs, Volume= 65,022 cf
Outflow = 2.7 cfs @ 13.13 hrs, Volume= 65,022 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.7 cfs @ 13.13 hrs, Volume= 65,022 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.68' @ 13.13 hrs
Flood Elev= 135.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	130.90'	**24.0" Round Culvert**

L= 21.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 130.90' / 130.50' S= 0.0190 '/' Cc= 0.900
n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=2.7 cfs @ 13.13 hrs HW=131.68' (Free Discharge)
1=Culvert (Inlet Controls 2.7 cfs @ 2.38 fps)

Summary for Pond USDF-1: USDF-1

Inflow Area = 92,892 sf, 20.03% Impervious, Inflow Depth = 1.73" for 10-Yr Storm event
Inflow = 3.4 cfs @ 12.17 hrs, Volume= 13,421 cf
Outflow = 0.4 cfs @ 13.49 hrs, Volume= 13,420 cf, Atten= 88%, Lag= 79.1 min
Primary = 0.4 cfs @ 13.49 hrs, Volume= 13,420 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 136.88' @ 13.49 hrs Surf.Area= 3,134 sf Storage= 6,527 cf

Plug-Flow detention time= 617.7 min calculated for 13,416 cf (100% of inflow)
Center-of-Mass det. time= 618.2 min (1,480.3 - 862.1)

Volume	Invert	Avail.Storage	Storage Description
#1	132.83'	10,385 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.83	2,168	0.0	0	0
133.16	2,168	40.0	286	286
133.50	2,168	40.0	295	581
134.00	2,168	30.0	325	906
134.50	2,168	30.0	325	1,231
135.00	2,168	30.0	325	1,557
136.00	2,671	100.0	2,420	3,976
137.00	3,198	100.0	2,935	6,911
138.00	3,751	100.0	3,475	10,385

Device	Routing	Invert	Outlet Devices
#1	Primary	132.83'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.83' / 132.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	132.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	136.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.50'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.4 cfs @ 13.49 hrs HW=136.88' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 8.6 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.63 fps)
└**3=Orifice/Grate** (Orifice Controls 0.3 cfs @ 2.10 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=132.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond USDF-2: USDF-2

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 1.39" for 10-Yr Storm event
Inflow = 5.6 cfs @ 12.29 hrs, Volume= 25,810 cf
Outflow = 1.2 cfs @ 13.01 hrs, Volume= 25,801 cf, Atten= 79%, Lag= 43.0 min
Primary = 1.2 cfs @ 13.01 hrs, Volume= 25,801 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 137.04' @ 13.01 hrs Surf.Area= 4,202 sf Storage= 12,313 cf

Plug-Flow detention time= 475.5 min calculated for 25,794 cf (100% of inflow)
Center-of-Mass det. time= 475.9 min (1,315.7 - 839.8)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.70' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.85'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.2 cfs @ 13.01 hrs HW=137.04' (Free Discharge)
1=culvert (Passes 1.2 cfs of 6.5 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.1 cfs @ 10.93 fps)
3=Orifice/Grate (Orifice Controls 1.1 cfs @ 5.46 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=131.83' (Free Discharge)
4=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond USDF-3: USDF-3

Inflow = 5.6 cfs @ 12.29 hrs, Volume= 25,810 cf
Outflow = 1.2 cfs @ 13.01 hrs, Volume= 25,801 cf, Atten= 79%, Lag= 43.0 min
Primary = 1.2 cfs @ 13.01 hrs, Volume= 25,801 cf
Routed to Pond DMH-2 : DMH-2
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 137.04' @ 13.01 hrs Surf.Area= 4,202 sf Storage= 12,313 cf

Plug-Flow detention time= 475.5 min calculated for 25,794 cf (100% of inflow)
Center-of-Mass det. time= 475.9 min (1,315.7 - 839.8)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.20' S= 0.0300 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.75'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.2 cfs @ 13.01 hrs HW=137.04' (Free Discharge)
└**1=culvert** (Passes 1.2 cfs of 6.5 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 10.93 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.1 cfs @ 5.46 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=131.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Link POA1:

Inflow Area = 1,496,457 sf, 7.41% Impervious, Inflow Depth = 1.18" for 10-Yr Storm event
Inflow = 12.1 cfs @ 13.35 hrs, Volume= 147,626 cf
Primary = 12.1 cfs @ 13.35 hrs, Volume= 147,626 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA2:

Inflow Area = 87,483 sf, 4.34% Impervious, Inflow Depth = 1.11" for 10-Yr Storm event
Inflow = 0.7 cfs @ 12.85 hrs, Volume= 8,094 cf
Primary = 0.7 cfs @ 12.85 hrs, Volume= 8,094 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA3:

Inflow Area = 1,550,389 sf, 5.96% Impervious, Inflow Depth > 1.19" for 10-Yr Storm event
Inflow = 10.1 cfs @ 13.23 hrs, Volume= 154,057 cf
Primary = 10.1 cfs @ 13.23 hrs, Volume= 154,057 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Subcatchment 4S: offsite

Runoff = 19.5 cfs @ 13.14 hrs, Volume= 194,872 cf, Depth= 2.14"
Routed to Pond 13P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Subcatchment 10S:

Runoff = 2.7 cfs @ 12.84 hrs, Volume= 22,905 cf, Depth= 1.55"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
60,946	70	Woods, Good, HSG C
71,062	55	Woods, Good, HSG B
43,325	30	Woods, Good, HSG A
1,612	98	Paved parking, HSG D
176,945	54	Weighted Average
175,333		99.09% Pervious Area
1,612		0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	70	0.0710	0.07		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
7.7	277	0.0570	0.60		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
29.9	425	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
54.3	772	Total			

Summary for Subcatchment 11S:

Runoff = 1.0 cfs @ 12.35 hrs, Volume= 5,627 cf, Depth= 1.24"
Routed to Pond BR-1 : BIO-RETENTION-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	5,600	98	Paved parking, HSG B
*	2,600	98	Lot 3-4 drives
*	5,000	98	Lot 3-4 Roofs,
	22,400	39	>75% Grass cover, Good, HSG A
	18,755	30	Woods, Good, HSG A
	54,355	50	Weighted Average
	41,155		75.72% Pervious Area
	13,200		24.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
1.2	248	0.0540	3.49		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
21.0	323	Total			

Summary for Subcatchment 12S:

Runoff = 0.8 cfs @ 12.49 hrs, Volume= 6,116 cf, Depth= 0.95"
Routed to Pond BR-2 : BIO-RETENTION-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	1,300	98	Lot 8A Drive
*	2,500	98	Lot 8A Roofs
	5,600	98	Paved parking, HSG D
	17,423	39	>75% Grass cover, Good, HSG A
	5,267	61	>75% Grass cover, Good, HSG B
	9,953	55	Woods, Good, HSG B
	35,067	30	Woods, Good, HSG A
	77,110	46	Weighted Average
	67,710		87.81% Pervious Area
	9,400		12.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	75	0.0660	0.07		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
8.6	281	0.0480	0.55		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
26.7	356	Total			

Summary for Subcatchment 13S:

Runoff = 1.1 cfs @ 12.88 hrs, Volume= 8,598 cf, Depth= 2.50"
Routed to Reach 8R : conc box

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
26,816	70	Woods, Good, HSG C
3,222	39	>75% Grass cover, Good, HSG A
2,004	61	>75% Grass cover, Good, HSG B
7,654	55	Woods, Good, HSG B
1,612	98	Paved parking, HSG D
41,308	65	Weighted Average
39,696		96.10% Pervious Area
1,612		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.0	70	0.0120	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
26.1	248	0.0040	0.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
60.1	318	Total			

Summary for Subcatchment 14S:

Runoff = 1.3 cfs @ 12.40 hrs, Volume= 7,388 cf, Depth= 1.63"
Routed to Pond BR-4. : BIO-RETENTION-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	11,000	39	>75% Grass cover, Good, HSG A
	7,000	61	>75% Grass cover, Good, HSG B
*	2,600	98	Lot 1&2 driveway
*	5,000	98	Lot 1& 2 roofs, HSG D
	2,895	69	50-75% Grass cover, Fair, HSG B
	15,561	55	Woods, Good, HSG B
	10,202	30	Woods, Good, HSG A
	54,258	55	Weighted Average
	46,658		85.99% Pervious Area
	7,600		14.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
4.0	174	0.0840	0.72		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
1.4	125	0.0100	1.50		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
25.2	374	Total			

Summary for Subcatchment 15S:

Runoff = 1.4 cfs @ 12.45 hrs, Volume= 8,258 cf, Depth= 1.63"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

Area (sf)	CN	Description
827	77	Woods, Good, HSG D
59,815	55	Woods, Good, HSG B
60,642	55	Weighted Average
60,642		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	76	0.1300	0.09		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.2	122	0.0650	0.64		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
11.2	282	0.0280	0.42		**Shallow Concentrated Flow, C-D** Forest w/Heavy Litter Kv= 2.5 fps
28.4	480	Total			

Summary for Subcatchment 20S:

Runoff = 0.9 cfs @ 12.46 hrs, Volume= 5,384 cf, Depth= 2.41"
Routed to Pond BR-3 : BIO-RETENTION-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	2,500	98	Lot 18 roof
*	1,300	98	Lot 18 Drive
	12,772	61	>75% Grass cover, Good, HSG B
	10,269	55	Woods, Good, HSG B
	26,841	64	Weighted Average
	23,041		85.84% Pervious Area
	3,800		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	73	0.0200	0.04		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
2.9	109	0.0640	0.63		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
31.5	182	Total			

Summary for Subcatchment 21S:

Runoff = 5.4 cfs @ 12.17 hrs, Volume= 20,761 cf, Depth= 2.68"
Routed to Pond USDF-1 : USDF-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	7,210	98	Paved parking, HSG D
*	7,500	98	Lots 15-17 Roofs, HSG D
*	3,900	98	Lots 15-17 Drives HSG D
	45,997	61	>75% Grass cover, Good, HSG B
	28,285	55	Woods, Good, HSG B
	92,892	67	Weighted Average
	74,282		79.97% Pervious Area
	18,610		20.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	76	0.0230	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
0.7	144	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.5	158	0.0100	4.81	24.04	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
11.9	378	Total			

Summary for Subcatchment 30S:

Runoff = 15.1 cfs @ 13.14 hrs, Volume= 158,610 cf, Depth= 1.55"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
	241,126	30	Woods, Good, HSG A
	317,526	70	Woods, Good, HSG C
	632,278	55	Woods, Good, HSG B
*	31,500	61	Lots 10-13 lawn, Good, HSG B
	2,862	61	>75% Grass cover, Good, HSG B
	1,225,292	54	Weighted Average
	1,225,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.9	75	0.0050	0.02		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
18.6	279	0.0100	0.25		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
1.3	86	0.1870	1.08		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
2.7	1,035	0.0470	6.29	34.59	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.1	619	0.1100	9.62	52.91	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=15' D=2' Z= 2.0 '/' Top.W=23' n= 0.025 Earth, clean & winding
76.3	2,661	Total			

Summary for Subcatchment 30SH: Houses Dripstrip

Runoff = 1.3 cfs @ 12.08 hrs, Volume= 4,682 cf, Depth= 5.96"
Routed to Pond 30SHP : Drip Strip

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	8,125	98	Lots 10-13 Roof
*	1,300	98	Lot 13 drive
	9,425	98	Weighted Average
	9,425		100.00% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 15.6 cfs @ 12.29 hrs, Volume= 73,558 cf, Depth= 3.96"
Routed to Pond 1P : forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Yr Storm Rainfall=6.20"

	Area (sf)	CN	Description
*	28,154	98	Paved roads w/curbs & sewers, HSG C/D (Na)
	22,121	79	50-75% Grass cover, Fair, HSG C
*	21,875	98	Lots 5-10,14,19,20 Roof
*	14,300	98	Lots 5-12,14,19,20 drive
*	81,000	74	Lots 5-10, 13,19,20 >75% Grass cover, Good, HSG C
	55,330	70	Woods, Good, HSG C
	222,780	80	Weighted Average
	158,451		71.12% Pervious Area
	64,329		28.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	75	0.0056	0.07		**Sheet Flow, A:B** Grass: Dense n= 0.240 P2= 3.30"
1.1	136	0.0180	2.01		**Shallow Concentrated Flow, B:C** Grassed Waterway Kv= 15.0 fps
1.3	563	0.0240	7.45	37.25	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
21.0	774	Total			

Summary for Reach 1R:

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 2.41" for 25-Yr Storm event
Inflow = 0.9 cfs @ 12.53 hrs, Volume= 5,384 cf
Outflow = 0.8 cfs @ 12.62 hrs, Volume= 5,384 cf, Atten= 7%, Lag= 5.4 min
Routed to Link POA2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.58 fps, Min. Travel Time= 4.3 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 21.1 min

Peak Storage= 220 cf @ 12.62 hrs
Average Depth at Peak Storage= 0.07' , Surface Width= 21.41'
Bank-Full Depth= 0.25' Flow Area= 5.6 sf, Capacity= 7.2 cfs

20' x 0' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25'
Length= 150.0' Slope= 0.0067 '/'
Inlet Invert= 100.00', Outlet Invert= 99.00'

‡

Summary for Reach 2R:

Inflow Area = 172,773 sf, 14.01% Impervious, Inflow Depth > 1.41" for 25-Yr Storm event
Inflow = 1.1 cfs @ 12.89 hrs, Volume= 20,337 cf
Outflow = 0.9 cfs @ 13.22 hrs, Volume= 20,336 cf, Atten= 20%, Lag= 20.3 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.28 fps, Min. Travel Time= 31.9 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 81.5 min

Peak Storage= 1,748 cf @ 13.22 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 51.28'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 95.3 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 538.0' Slope= 0.0090 '/'
Inlet Invert= 155.00', Outlet Invert= 150.16'

‡

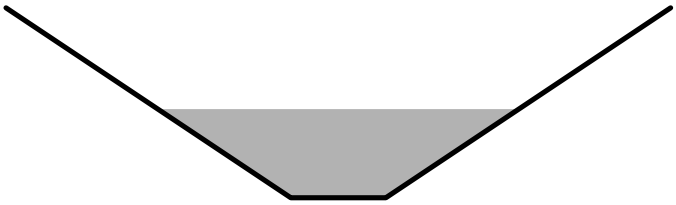
Summary for Reach 3R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 3.57" for 25-Yr Storm event
Inflow = 7.0 cfs @ 12.74 hrs, Volume= 93,828 cf
Outflow = 7.0 cfs @ 12.75 hrs, Volume= 93,828 cf, Atten= 0%, Lag= 0.6 min
Routed to Reach 4R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.11 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 2.4 min

Peak Storage= 343 cf @ 12.75 hrs
Average Depth at Peak Storage= 0.93' , Surface Width= 3.80'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 38.2 cfs

1' x 2' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 1.5 '/' Top Width= 7'
Length= 153.0' Slope= 0.0684 '/'
Inlet Invert= 116.00', Outlet Invert= 105.53'



Summary for Reach 4R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 3.57" for 25-Yr Storm event
Inflow = 7.0 cfs @ 12.75 hrs, Volume= 93,828 cf
Outflow = 6.9 cfs @ 12.77 hrs, Volume= 93,827 cf, Atten= 1%, Lag= 1.4 min
Routed to Reach 5R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.01 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 7.0 min

Peak Storage= 826 cf @ 12.77 hrs
Average Depth at Peak Storage= 0.27' , Surface Width= 7.06'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 251.3 cfs

6' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 14'
Length= 477.0' Slope= 0.0776 '/'
Inlet Invert= 107.00', Outlet Invert= 70.00'

Summary for Reach 5R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 3.57" for 25-Yr Storm event
Inflow = 6.9 cfs @ 12.77 hrs, Volume= 93,827 cf
Outflow = 6.8 cfs @ 12.82 hrs, Volume= 93,823 cf, Atten= 2%, Lag= 3.3 min
Routed to Reach 6R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.61 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 13.4 min

Peak Storage= 1,595 cf @ 12.82 hrs
Average Depth at Peak Storage= 0.56' , Surface Width= 5.74'
Bank-Full Depth= 2.00' Flow Area= 15.0 sf, Capacity= 77.8 cfs

4' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12'
Length= 616.0' Slope= 0.0152 '/'
Inlet Invert= 70.00', Outlet Invert= 60.64'

Summary for Reach 6R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 3.57" for 25-Yr Storm event
Inflow = 6.8 cfs @ 12.82 hrs, Volume= 93,823 cf
Outflow = 6.4 cfs @ 12.92 hrs, Volume= 93,816 cf, Atten= 6%, Lag= 5.9 min
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.18 fps, Min. Travel Time= 7.9 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 28.8 min

Peak Storage= 3,032 cf @ 12.92 hrs
Average Depth at Peak Storage= 0.34' , Surface Width= 16.37'
Bank-Full Depth= 2.00' Flow Area= 38.0 sf, Capacity= 129.4 cfs

15' x 2' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 23'
Length= 564.0' Slope= 0.0018 '/'
Inlet Invert= 60.00', Outlet Invert= 59.00'

‡

Summary for Reach 7R:

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth > 1.63" for 25-Yr Storm event
Inflow = 0.1 cfs @ 19.80 hrs, Volume= 7,387 cf
Outflow = 0.1 cfs @ 20.26 hrs, Volume= 7,387 cf, Atten= 0%, Lag= 27.7 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.12 fps, Min. Travel Time= 54.4 min
Avg. Velocity = 0.11 fps, Avg. Travel Time= 57.1 min

Peak Storage= 200 cf @ 20.26 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 50.21'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 126.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 377.0' Slope= 0.0159 '/'
Inlet Invert= 157.00', Outlet Invert= 151.00'

‡

Summary for Reach 8R: conc box

Inflow Area = 118,418 sf, 9.30% Impervious, Inflow Depth > 1.49" for 25-Yr Storm event
Inflow = 1.1 cfs @ 12.88 hrs, Volume= 14,712 cf
Outflow = 1.1 cfs @ 12.89 hrs, Volume= 14,712 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.88 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 0.26 fps, Avg. Travel Time= 3.1 min

Peak Storage= 61 cf @ 12.89 hrs
Average Depth at Peak Storage= 0.25' , Surface Width= 5.00'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 19.0 cfs

60.0" W x 24.0" H Box Pipe
n= 0.080 Earth, long dense weeds
Length= 49.0' Slope= 0.0163 '/'
Inlet Invert= 155.60', Outlet Invert= 154.80'

Summary for Reach 11R:

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth > 0.95" for 25-Yr Storm event
Inflow = 0.1 cfs @ 21.32 hrs, Volume= 6,114 cf
Outflow = 0.1 cfs @ 21.43 hrs, Volume= 6,113 cf, Atten= 0%, Lag= 6.8 min
Routed to Reach 8R : conc box

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.09 fps, Min. Travel Time= 11.9 min
Avg. Velocity = 0.08 fps, Avg. Travel Time= 13.7 min

Peak Storage= 40 cf @ 21.43 hrs
Average Depth at Peak Storage= 0.01' , Surface Width= 50.26'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 80.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 62.0' Slope= 0.0065 '/'
Inlet Invert= 156.00', Outlet Invert= 155.60'

‡

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 2.14" for 25-Yr Storm event
Inflow = 20.2 cfs @ 13.14 hrs, Volume= 194,872 cf
Outflow = 18.9 cfs @ 13.30 hrs, Volume= 194,872 cf, Atten= 6%, Lag= 9.4 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.58 fps, Min. Travel Time= 12.2 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 52.8 min

Peak Storage= 13,782 cf @ 13.30 hrs
Average Depth at Peak Storage= 0.79' , Surface Width= 56.74'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 29.8 cfs

25' x 1' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 65'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: forebay

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 3.96" for 25-Yr Storm event
Inflow = 15.6 cfs @ 12.29 hrs, Volume= 73,558 cf
Outflow = 15.6 cfs @ 12.29 hrs, Volume= 73,089 cf, Atten= 0%, Lag= 0.2 min
Primary = 7.8 cfs @ 12.29 hrs, Volume= 36,544 cf
Routed to Pond USDF-2 : USDF-2
Secondary = 7.8 cfs @ 12.29 hrs, Volume= 36,544 cf
Routed to Pond USDF-3 : USDF-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.72' @ 12.29 hrs Surf.Area= 503 sf Storage= 736 cf

Plug-Flow detention time= 6.6 min calculated for 73,069 cf (99% of inflow)
Center-of-Mass det. time= 2.7 min (829.4 - 826.7)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	1,711 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	112	0	0
134.00	211	162	162
135.00	335	273	435
136.00	569	452	887
137.00	1,080	825	1,711

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Secondary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=7.8 cfs @ 12.29 hrs HW=135.72' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 7.8 cfs @ 2.11 fps)

Secondary OutFlow Max=7.8 cfs @ 12.29 hrs HW=135.72' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 7.8 cfs @ 2.11 fps)

Summary for Pond 13P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 2.14" for 25-Yr Storm event
Inflow = 19.5 cfs @ 13.14 hrs, Volume= 194,872 cf
Outflow = 20.2 cfs @ 13.14 hrs, Volume= 194,872 cf, Atten= 0%, Lag= 0.2 min
Primary = 20.2 cfs @ 13.14 hrs, Volume= 194,872 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 182.52' @ 13.14 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.1 min calculated for 194,818 cf (100% of inflow)
Center-of-Mass det. time= 1.1 min (927.9 - 926.8)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=20.2 cfs @ 13.14 hrs HW=182.52' (Free Discharge)
1=Culvert (Inlet Controls 20.2 cfs @ 11.42 fps)

Summary for Pond 30SHP: Drip Strip

Inflow Area = 9,425 sf,100.00% Impervious, Inflow Depth = 5.96" for 25-Yr Storm event
Inflow = 1.3 cfs @ 12.08 hrs, Volume= 4,682 cf
Outflow = 0.2 cfs @ 12.62 hrs, Volume= 4,682 cf, Atten= 87%, Lag= 32.4 min
Discarded = 0.2 cfs @ 12.62 hrs, Volume= 4,682 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 143.09' @ 12.62 hrs Surf.Area= 2,971 sf Storage= 1,711 cf

Plug-Flow detention time= 135.8 min calculated for 4,681 cf (100% of inflow)
Center-of-Mass det. time= 135.8 min (880.4 - 744.7)

Volume	Invert	Avail.Storage	Storage Description
#1	139.99'	38,222 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.99	1,431	0.0	0	0
140.00	1,431	30.0	4	4
141.50	1,431	30.0	644	648
143.00	1,431	40.0	859	1,507
144.00	18,000	100.0	9,716	11,222
145.00	36,000	100.0	27,000	38,222

Device	Routing	Invert	Outlet Devices
#1	Discarded	139.99'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	144.00'	**450.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.2 cfs @ 12.62 hrs HW=143.09' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=139.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-1: BIO-RETENTION-1

Inflow Area = 54,355 sf, 24.28% Impervious, Inflow Depth = 1.24" for 25-Yr Storm event
Inflow = 1.0 cfs @ 12.35 hrs, Volume= 5,627 cf
Outflow = 0.1 cfs @ 19.35 hrs, Volume= 5,626 cf, Atten= 94%, Lag= 420.2 min
Primary = 0.1 cfs @ 19.35 hrs, Volume= 5,626 cf
Routed to Reach 2R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 159.26' @ 19.35 hrs Surf.Area= 2,766 sf Storage= 3,524 cf

Plug-Flow detention time= 781.1 min calculated for 5,626 cf (100% of inflow)
Center-of-Mass det. time= 780.9 min (1,686.1 - 905.2)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	7,428 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	2,232	0.0	0	0
156.67	2,232	40.0	304	304
157.00	2,232	40.0	295	598
157.50	2,232	30.0	335	933
158.00	2,232	30.0	335	1,268
158.50	2,232	30.0	335	1,603
159.00	2,629	100.0	1,215	2,818
160.00	3,151	100.0	2,890	5,708
160.50	3,731	100.0	1,721	7,428

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0165 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

#4	Secondary	160.00'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.1 cfs @ 19.35 hrs HW=159.26' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 2.7 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.18 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-2: BIO-RETENTION-2

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth = 0.95" for 25-Yr Storm event
Inflow = 0.8 cfs @ 12.49 hrs, Volume= 6,116 cf
Outflow = 0.1 cfs @ 21.32 hrs, Volume= 6,114 cf, Atten= 93%, Lag= 529.8 min
Primary = 0.1 cfs @ 21.32 hrs, Volume= 6,114 cf
Routed to Reach 11R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 11R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 159.92' @ 21.32 hrs Surf.Area= 2,666 sf Storage= 3,870 cf

Plug-Flow detention time= 825.1 min calculated for 6,114 cf (100% of inflow)
Center-of-Mass det. time= 824.9 min (1,752.2 - 927.3)

Volume	Invert	Avail.Storage	Storage Description
#1	156.83'	5,546 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.83	2,235	0.0	0	0
157.16	2,235	40.0	295	295
157.50	2,235	40.0	304	599
158.00	2,235	30.0	335	934
158.50	2,235	30.0	335	1,269
159.00	2,235	30.0	335	1,605
160.00	2,701	100.0	2,468	4,073
160.50	3,193	100.0	1,474	5,546

Device	Routing	Invert	Outlet Devices
#1	Primary	156.83'	**8.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.83' / 156.00' S= 0.0395 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.83'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

#4	Secondary	160.00'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.1 cfs @ 21.32 hrs HW=159.92' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 2.8 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.41 fps)
  └**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.83' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-3: BIO-RETENTION-3

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 2.41" for 25-Yr Storm event
Inflow = 0.9 cfs @ 12.46 hrs, Volume= 5,384 cf
Outflow = 0.9 cfs @ 12.53 hrs, Volume= 5,384 cf, Atten= 3%, Lag= 4.2 min
Primary = 0.4 cfs @ 12.53 hrs, Volume= 3,495 cf
Routed to Reach 1R :
Secondary = 0.5 cfs @ 12.53 hrs, Volume= 1,889 cf
Routed to Reach 1R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 148.11' @ 12.53 hrs Surf.Area= 1,023 sf Storage= 1,120 cf

Plug-Flow detention time= 232.3 min calculated for 5,384 cf (100% of inflow)
Center-of-Mass det. time= 232.2 min (1,106.6 - 874.4)

Volume	Invert	Avail.Storage	Storage Description
#1	145.33'	1,544 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.33	786	0.0	0	0
145.67	786	40.0	107	107
146.00	786	40.0	104	211
146.50	786	30.0	118	329
147.00	786	30.0	118	446
147.50	786	30.0	118	564
148.00	978	100.0	441	1,005
148.50	1,177	100.0	539	1,544

Device	Routing	Invert	Outlet Devices
#1	Primary	145.33'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 145.33' / 145.00' S= 0.0132 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	145.33'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	148.00'	**5.0' long x 2.0' 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
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

#4	Primary	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.4 cfs @ 12.53 hrs HW=148.11' (Free Discharge)
- **1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 7.99 fps)
- **4=Orifice/Grate** (Weir Controls 0.4 cfs @ 1.10 fps)

Secondary OutFlow Max=0.5 cfs @ 12.53 hrs HW=148.11' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 0.5 cfs @ 0.86 fps)

Summary for Pond BR-4.: BIO-RETENTION-4

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 1.63" for 25-Yr Storm event
Inflow = 1.3 cfs @ 12.40 hrs, Volume= 7,388 cf
Outflow = 0.1 cfs @ 19.80 hrs, Volume= 7,387 cf, Atten= 95%, Lag= 444.2 min
Primary = 0.1 cfs @ 19.80 hrs, Volume= 7,387 cf
Routed to Reach 7R :
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Reach 7R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 160.09' @ 19.80 hrs Surf.Area= 2,620 sf Storage= 4,952 cf

Plug-Flow detention time= 934.8 min calculated for 7,385 cf (100% of inflow)
Center-of-Mass det. time= 935.2 min (1,827.6 - 892.4)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	9,100 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	1,901	0.0	0	0
156.66	1,901	40.0	251	251
157.00	1,901	40.0	259	509
157.50	1,901	30.0	285	795
158.00	1,901	30.0	285	1,080
158.50	1,901	30.0	285	1,365
159.00	2,109	100.0	1,003	2,367
160.00	2,577	100.0	2,343	4,710
161.00	3,041	100.0	2,809	7,519
161.50	3,282	100.0	1,581	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.75'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	160.75'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.1 cfs @ 19.80 hrs HW=160.09' (Free Discharge)
└**1=Culvert** (Passes 0.1 cfs of 2.4 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.28 fps)
└**3=Orifice/Grate** (Controls 0.0 cfs)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=156.33' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond DMH-1: DMH-1

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.10" for 25-Yr Storm event
Inflow = 2.5 cfs @ 12.73 hrs, Volume= 55,278 cf
Outflow = 2.5 cfs @ 12.73 hrs, Volume= 55,278 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.5 cfs @ 12.73 hrs, Volume= 55,278 cf
Routed to Pond DMH-2 : DMH-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 132.43' @ 12.73 hrs
Flood Elev= 137.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.60'	**18.0" Round Culvert** L= 61.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.60' / 131.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.5 cfs @ 12.73 hrs HW=132.43' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.5 cfs @ 2.45 fps)

Summary for Pond DMH-2: DMH-2

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 3.41" for 25-Yr Storm event
Inflow = 4.0 cfs @ 12.73 hrs, Volume= 89,701 cf
Outflow = 4.0 cfs @ 12.73 hrs, Volume= 89,701 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.0 cfs @ 12.73 hrs, Volume= 89,701 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.87' @ 12.73 hrs
Flood Elev= 135.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	130.90'	**24.0" Round Culvert**

L= 21.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 130.90' / 130.50' S= 0.0190 '/' Cc= 0.900
n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.0 cfs @ 12.73 hrs HW=131.87' (Free Discharge)
1=Culvert (Inlet Controls 4.0 cfs @ 2.64 fps)

Summary for Pond USDF-1: USDF-1

Inflow Area = 92,892 sf, 20.03% Impervious, Inflow Depth = 2.68" for 25-Yr Storm event
Inflow = 5.4 cfs @ 12.17 hrs, Volume= 20,761 cf
Outflow = 1.3 cfs @ 12.67 hrs, Volume= 20,760 cf, Atten= 76%, Lag= 30.0 min
Primary = 1.0 cfs @ 12.67 hrs, Volume= 20,349 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 0.3 cfs @ 12.67 hrs, Volume= 411 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 137.59' @ 12.67 hrs Surf.Area= 3,527 sf Storage= 8,909 cf

Plug-Flow detention time= 431.0 min calculated for 20,760 cf (100% of inflow)
Center-of-Mass det. time= 430.9 min (1,280.0 - 849.1)

Volume	Invert	Avail.Storage	Storage Description
#1	132.83'	10,385 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.83	2,168	0.0	0	0
133.16	2,168	40.0	286	286
133.50	2,168	40.0	295	581
134.00	2,168	30.0	325	906
134.50	2,168	30.0	325	1,231
135.00	2,168	30.0	325	1,557
136.00	2,671	100.0	2,420	3,976
137.00	3,198	100.0	2,935	6,911
138.00	3,751	100.0	3,475	10,385

Device	Routing	Invert	Outlet Devices
#1	Primary	132.83'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.83' / 132.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	132.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	136.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.50'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.0 cfs @ 12.67 hrs HW=137.59' (Free Discharge)
└**1=Culvert** (Passes 1.0 cfs of 9.5 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 10.45 fps)
└**3=Orifice/Grate** (Orifice Controls 0.9 cfs @ 4.42 fps)

Secondary OutFlow Max=0.3 cfs @ 12.67 hrs HW=137.59' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.73 fps)

Summary for Pond USDF-2: USDF-2

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 1.97" for 25-Yr Storm event
Inflow = 7.8 cfs @ 12.29 hrs, Volume= 36,544 cf
Outflow = 2.7 cfs @ 12.76 hrs, Volume= 36,534 cf, Atten= 65%, Lag= 28.2 min
Primary = 1.5 cfs @ 12.76 hrs, Volume= 34,929 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 1.2 cfs @ 12.76 hrs, Volume= 1,606 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 138.04' @ 12.76 hrs Surf.Area= 4,755 sf Storage= 16,813 cf

Plug-Flow detention time= 372.0 min calculated for 36,524 cf (100% of inflow)
Center-of-Mass det. time= 372.5 min (1,201.9 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.70' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.85'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.5 cfs @ 12.76 hrs HW=138.04' (Free Discharge)
1=culvert (Passes 1.5 cfs of 7.1 cfs potential flow)
2=Orifice/Grate (Orifice Controls 0.1 cfs @ 11.95 fps)
3=Orifice/Grate (Orifice Controls 1.4 cfs @ 7.29 fps)

Secondary OutFlow Max=1.2 cfs @ 12.76 hrs HW=138.04' (Free Discharge)
4=Broad-Crested Rectangular Weir (Weir Controls 1.2 cfs @ 1.04 fps)

Summary for Pond USDF-3: USDF-3

Inflow = 7.8 cfs @ 12.29 hrs, Volume= 36,544 cf
Outflow = 3.0 cfs @ 12.72 hrs, Volume= 36,534 cf, Atten= 61%, Lag= 26.0 min
Primary = 1.5 cfs @ 12.72 hrs, Volume= 34,424 cf
Routed to Pond DMH-2 : DMH-2
Secondary = 1.5 cfs @ 12.72 hrs, Volume= 2,111 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 137.97' @ 12.72 hrs Surf.Area= 4,718 sf Storage= 16,498 cf

Plug-Flow detention time= 369.8 min calculated for 36,524 cf (100% of inflow)
Center-of-Mass det. time= 370.3 min (1,199.7 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.20' S= 0.0300 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.75'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.5 cfs @ 12.72 hrs HW=137.97' (Free Discharge)
└**1=culvert** (Passes 1.5 cfs of 7.1 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 11.89 fps)
└**3=Orifice/Grate** (Orifice Controls 1.4 cfs @ 7.18 fps)

Secondary OutFlow Max=1.5 cfs @ 12.72 hrs HW=137.97' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 1.5 cfs @ 1.13 fps)

Summary for Link POA1:

Inflow Area = 1,496,457 sf, 7.41% Impervious, Inflow Depth = 1.97" for 25-Yr Storm event
Inflow = 21.7 cfs @ 13.26 hrs, Volume= 245,500 cf
Primary = 21.7 cfs @ 13.26 hrs, Volume= 245,500 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA2:

Inflow Area = 87,483 sf, 4.34% Impervious, Inflow Depth = 1.87" for 25-Yr Storm event
Inflow = 2.1 cfs @ 12.58 hrs, Volume= 13,642 cf
Primary = 2.1 cfs @ 12.58 hrs, Volume= 13,642 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA3:

Inflow Area = 1,550,389 sf, 5.96% Impervious, Inflow Depth > 1.95" for 25-Yr Storm event
Inflow = 20.8 cfs @ 13.04 hrs, Volume= 252,426 cf
Primary = 20.8 cfs @ 13.04 hrs, Volume= 252,426 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Subcatchment 4S: offsite

Runoff = 38.1 cfs @ 13.07 hrs, Volume= 362,953 cf, Depth= 3.99"
Routed to Pond 13P : CULV.

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
232,392	30	Woods, Good, HSG A
59,166	30	Meadow, non-grazed, HSG A
41,105	51	1 acre lots, 20% imp, HSG A
153,306	54	1/2 acre lots, 25% imp, HSG A
507,387	77	Woods, Good, HSG D
90,935	85	1/2 acre lots, 25% imp, HSG D
8,190	98	Paved roads w/curbs & sewers, HSG D
1,092,481	61	Weighted Average
1,015,010		92.91% Pervious Area
77,471		7.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	65	0.0310	0.13		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
3.6	104	0.0380	0.49		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
6.0	178	0.0050	0.49		**Shallow Concentrated Flow, C-D** Short Grass Pasture Kv= 7.0 fps
51.2	595	0.0060	0.19		**Shallow Concentrated Flow, D-E** Forest w/Heavy Litter Kv= 2.5 fps
10.8	373	0.0530	0.58		**Shallow Concentrated Flow, E-F** Forest w/Heavy Litter Kv= 2.5 fps
80.0	1,315	Total			

Summary for Subcatchment 10S:

Runoff = 6.0 cfs @ 12.78 hrs, Volume= 46,521 cf, Depth= 3.15"
Routed to Link POA1 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
60,946	70	Woods, Good, HSG C
71,062	55	Woods, Good, HSG B
43,325	30	Woods, Good, HSG A
1,612	98	Paved parking, HSG D
176,945	54	Weighted Average
175,333		99.09% Pervious Area
1,612		0.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.7	70	0.0710	0.07		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
7.7	277	0.0570	0.60		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
29.9	425	0.0090	0.24		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
54.3	772	Total			

Summary for Subcatchment 11S:

Runoff = 2.4 cfs @ 12.32 hrs, Volume= 12,176 cf, Depth= 2.69"
Routed to Pond BR-1 : BIO-RETENTION-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
	5,600	98	Paved parking, HSG B
*	2,600	98	Lot 3-4 drives
*	5,000	98	Lot 3-4 Roofs,
	22,400	39	>75% Grass cover, Good, HSG A
	18,755	30	Woods, Good, HSG A
	54,355	50	Weighted Average
	41,155		75.72% Pervious Area
	13,200		24.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
1.2	248	0.0540	3.49		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
21.0	323	Total			

Summary for Subcatchment 12S:

Runoff = 2.5 cfs @ 12.43 hrs, Volume= 14,332 cf, Depth= 2.23"
Routed to Pond BR-2 : BIO-RETENTION-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
*	1,300	98	Lot 8A Drive
*	2,500	98	Lot 8A Roofs
	5,600	98	Paved parking, HSG D
	17,423	39	>75% Grass cover, Good, HSG A
	5,267	61	>75% Grass cover, Good, HSG B
	9,953	55	Woods, Good, HSG B
	35,067	30	Woods, Good, HSG A
	77,110	46	Weighted Average
	67,710		87.81% Pervious Area
	9,400		12.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	75	0.0660	0.07		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
8.6	281	0.0480	0.55		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
26.7	356	Total			

Summary for Subcatchment 13S:

Runoff = 1.9 cfs @ 12.82 hrs, Volume= 15,378 cf, Depth= 4.47"
Routed to Reach 8R : conc box

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
26,816	70	Woods, Good, HSG C
3,222	39	>75% Grass cover, Good, HSG A
2,004	61	>75% Grass cover, Good, HSG B
7,654	55	Woods, Good, HSG B
1,612	98	Paved parking, HSG D
41,308	65	Weighted Average
39,696		96.10% Pervious Area
1,612		3.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
34.0	70	0.0120	0.03		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
26.1	248	0.0040	0.16		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
60.1	318	Total			

Summary for Subcatchment 14S:

Runoff = 2.8 cfs @ 12.37 hrs, Volume= 14,798 cf, Depth= 3.27"
Routed to Pond BR-4. : BIO-RETENTION-4

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
	11,000	39	>75% Grass cover, Good, HSG A
	7,000	61	>75% Grass cover, Good, HSG B
*	2,600	98	Lot 1&2 driveway
*	5,000	98	Lot 1& 2 roofs, HSG D
	2,895	69	50-75% Grass cover, Fair, HSG B
	15,561	55	Woods, Good, HSG B
	10,202	30	Woods, Good, HSG A
	54,258	55	Weighted Average
	46,658		85.99% Pervious Area
	7,600		14.01% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.8	75	0.0530	0.06		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
4.0	174	0.0840	0.72		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
1.4	125	0.0100	1.50		**Shallow Concentrated Flow, C-D** Grassed Waterway Kv= 15.0 fps
25.2	374	Total			

Summary for Subcatchment 15S:

Runoff = 3.0 cfs @ 12.42 hrs, Volume= 16,539 cf, Depth= 3.27"
Routed to Link POA2 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

Area (sf)	CN	Description
827	77	Woods, Good, HSG D
59,815	55	Woods, Good, HSG B
60,642	55	Weighted Average
60,642		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.0	76	0.1300	0.09		**Sheet Flow, A-B** Woods: Dense underbrush n= 0.800 P2= 3.30"
3.2	122	0.0650	0.64		**Shallow Concentrated Flow, B-C** Forest w/Heavy Litter Kv= 2.5 fps
11.2	282	0.0280	0.42		**Shallow Concentrated Flow, C-D** Forest w/Heavy Litter Kv= 2.5 fps
28.4	480	Total			

Summary for Subcatchment 20S:

Runoff = 1.7 cfs @ 12.44 hrs, Volume= 9,723 cf, Depth= 4.35"
Routed to Pond BR-3 : BIO-RETENTION-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
*	2,500	98	Lot 18 roof
*	1,300	98	Lot 18 Drive
	12,772	61	>75% Grass cover, Good, HSG B
	10,269	55	Woods, Good, HSG B
	26,841	64	Weighted Average
	23,041		85.84% Pervious Area
	3,800		14.16% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.6	73	0.0200	0.04		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
2.9	109	0.0640	0.63		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
31.5	182	Total			

Summary for Subcatchment 21S:

Runoff = 9.7 cfs @ 12.17 hrs, Volume= 36,450 cf, Depth= 4.71"
Routed to Pond USDF-1 : USDF-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
	7,210	98	Paved parking, HSG D
*	7,500	98	Lots 15-17 Roofs, HSG D
*	3,900	98	Lots 15-17 Drives HSG D
	45,997	61	>75% Grass cover, Good, HSG B
	28,285	55	Woods, Good, HSG B
	92,892	67	Weighted Average
	74,282		79.97% Pervious Area
	18,610		20.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.7	76	0.0230	0.12		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.30"
0.7	144	0.0480	3.29		**Shallow Concentrated Flow, B-C** Grassed Waterway Kv= 15.0 fps
0.5	158	0.0100	4.81	24.04	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
11.9	378	Total			

Summary for Subcatchment 30S:

Runoff = 33.5 cfs @ 13.07 hrs, Volume= 322,143 cf, Depth= 3.15"
Routed to Link POA3 :

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
	241,126	30	Woods, Good, HSG A
	317,526	70	Woods, Good, HSG C
	632,278	55	Woods, Good, HSG B
*	31,500	61	Lots 10-13 lawn, Good, HSG B
	2,862	61	>75% Grass cover, Good, HSG B
	1,225,292	54	Weighted Average
	1,225,292		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
50.9	75	0.0050	0.02		**Sheet Flow, A:B** Woods: Dense underbrush n= 0.800 P2= 3.30"
18.6	279	0.0100	0.25		**Shallow Concentrated Flow, B:C** Forest w/Heavy Litter Kv= 2.5 fps
1.3	86	0.1870	1.08		**Shallow Concentrated Flow, C:D** Forest w/Heavy Litter Kv= 2.5 fps
2.7	1,035	0.0470	6.29	34.59	**Trap/Vee/Rect Channel Flow, D-E** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.1	619	0.1100	9.62	52.91	**Trap/Vee/Rect Channel Flow, E-F** Bot.W=4' D=1' Z= 2.0 '/' Top.W=8' n= 0.040 Earth, cobble bottom, clean sides
1.7	567	0.0050	5.72	217.30	**Trap/Vee/Rect Channel Flow, F-G** Bot.W=15' D=2' Z= 2.0 '/' Top.W=23' n= 0.025 Earth, clean & winding
76.3	2,661	Total			

Summary for Subcatchment 30SH: Houses Dripstrip

Runoff = 1.8 cfs @ 12.08 hrs, Volume= 6,644 cf, Depth= 8.46"
Routed to Pond 30SHP : Drip Strip

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
*	8,125	98	Lots 10-13 Roof
*	1,300	98	Lot 13 drive
	9,425	98	Weighted Average
	9,425		100.00% Impervious Area

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

Summary for Subcatchment 31S:

Runoff = 24.5 cfs @ 12.28 hrs, Volume= 116,665 cf, Depth= 6.28"
Routed to Pond 1P : forebay

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Yr Storm Rainfall=8.70"

	Area (sf)	CN	Description
*	28,154	98	Paved roads w/curbs & sewers, HSG C/D (Na)
	22,121	79	50-75% Grass cover, Fair, HSG C
*	21,875	98	Lots 5-10,14,19,20 Roof
*	14,300	98	Lots 5-12,14,19,20 drive
*	81,000	74	Lots 5-10, 13,19,20 >75% Grass cover, Good, HSG C
	55,330	70	Woods, Good, HSG C
	222,780	80	Weighted Average
	158,451		71.12% Pervious Area
	64,329		28.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	75	0.0056	0.07		**Sheet Flow, A:B** Grass: Dense n= 0.240 P2= 3.30"
1.1	136	0.0180	2.01		**Shallow Concentrated Flow, B:C** Grassed Waterway Kv= 15.0 fps
1.3	563	0.0240	7.45	37.25	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=2' D=1' Z= 3.0 '/' Top.W=8' n= 0.022 Earth, clean & straight
21.0	774	Total			

Summary for Reach 1R:

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 4.35" for 100-Yr Storm event
Inflow = 1.7 cfs @ 12.47 hrs, Volume= 9,723 cf
Outflow = 1.7 cfs @ 12.50 hrs, Volume= 9,723 cf, Atten= 1%, Lag= 2.3 min
Routed to Link POA2 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.76 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 19.0 min

Peak Storage= 339 cf @ 12.50 hrs
Average Depth at Peak Storage= 0.11' , Surface Width= 22.15'
Bank-Full Depth= 0.25' Flow Area= 5.6 sf, Capacity= 7.2 cfs

20' x 0' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 25'
Length= 150.0' Slope= 0.0067 '/'
Inlet Invert= 100.00', Outlet Invert= 99.00'

‡

Summary for Reach 2R:

Inflow Area = 172,773 sf, 14.01% Impervious, Inflow Depth > 2.91" for 100-Yr Storm event
Inflow = 3.3 cfs @ 12.87 hrs, Volume= 41,873 cf
Outflow = 2.7 cfs @ 13.16 hrs, Volume= 41,865 cf, Atten= 19%, Lag= 17.3 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.43 fps, Min. Travel Time= 21.0 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 70.6 min

Peak Storage= 3,356 cf @ 13.16 hrs
Average Depth at Peak Storage= 0.12' , Surface Width= 52.44'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 95.3 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 538.0' Slope= 0.0090 '/'
Inlet Invert= 155.00', Outlet Invert= 150.16'

‡

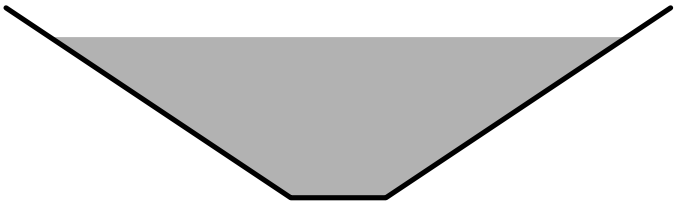
Summary for Reach 3R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth = 5.80" for 100-Yr Storm event
Inflow = 25.9 cfs @ 12.41 hrs, Volume= 152,622 cf
Outflow = 25.9 cfs @ 12.42 hrs, Volume= 152,622 cf, Atten= 0%, Lag= 0.5 min
Routed to Reach 4R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 4.34 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 2.2 min

Peak Storage= 915 cf @ 12.42 hrs
Average Depth at Peak Storage= 1.69' , Surface Width= 6.07'
Bank-Full Depth= 2.00' Flow Area= 8.0 sf, Capacity= 38.2 cfs

1' x 2' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 1.5 '/' Top Width= 7'
Length= 153.0' Slope= 0.0684 '/'
Inlet Invert= 116.00', Outlet Invert= 105.53'



Summary for Reach 4R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth = 5.80" for 100-Yr Storm event
Inflow = 25.9 cfs @ 12.42 hrs, Volume= 152,622 cf
Outflow = 25.8 cfs @ 12.44 hrs, Volume= 152,621 cf, Atten= 0%, Lag= 0.9 min
Routed to Reach 5R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 6.32 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 1.22 fps, Avg. Travel Time= 6.5 min

Peak Storage= 1,950 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.57' , Surface Width= 8.29'
Bank-Full Depth= 2.00' Flow Area= 20.0 sf, Capacity= 251.3 cfs

6' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 14'
Length= 477.0' Slope= 0.0776 '/'
Inlet Invert= 107.00', Outlet Invert= 70.00'

Summary for Reach 5R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth = 5.80" for 100-Yr Storm event
Inflow = 25.8 cfs @ 12.44 hrs, Volume= 152,621 cf
Outflow = 25.3 cfs @ 12.47 hrs, Volume= 152,617 cf, Atten= 2%, Lag= 2.3 min
Routed to Reach 6R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 3.84 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 12.5 min

Peak Storage= 4,067 cf @ 12.47 hrs
Average Depth at Peak Storage= 1.14' , Surface Width= 8.07'
Bank-Full Depth= 2.00' Flow Area= 15.0 sf, Capacity= 77.8 cfs

4' x 2' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 2.0 '/' Top Width= 12'
Length= 616.0' Slope= 0.0152 '/'
Inlet Invert= 70.00', Outlet Invert= 60.64'

Summary for Reach 6R:

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth = 5.80" for 100-Yr Storm event
Inflow = 25.3 cfs @ 12.47 hrs, Volume= 152,617 cf
Outflow = 24.1 cfs @ 12.54 hrs, Volume= 152,609 cf, Atten= 5%, Lag= 4.1 min
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.93 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 0.35 fps, Avg. Travel Time= 26.7 min

Peak Storage= 7,028 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.75' , Surface Width= 18.02'
Bank-Full Depth= 2.00' Flow Area= 38.0 sf, Capacity= 129.4 cfs

15' x 2' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 2.0 '/' Top Width= 23'
Length= 564.0' Slope= 0.0018 '/'
Inlet Invert= 60.00', Outlet Invert= 59.00'

‡

Summary for Reach 7R:

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth > 3.27" for 100-Yr Storm event
Inflow = 0.7 cfs @ 13.15 hrs, Volume= 14,788 cf
Outflow = 0.5 cfs @ 13.57 hrs, Volume= 14,785 cf, Atten= 27%, Lag= 25.4 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.26 fps, Min. Travel Time= 23.8 min
Avg. Velocity = 0.12 fps, Avg. Travel Time= 51.3 min

Peak Storage= 716 cf @ 13.57 hrs
Average Depth at Peak Storage= 0.04' , Surface Width= 50.75'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 126.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 377.0' Slope= 0.0159 '/'
Inlet Invert= 157.00', Outlet Invert= 151.00'

‡

Summary for Reach 8R: conc box

Inflow Area = 118,418 sf, 9.30% Impervious, Inflow Depth = 3.01" for 100-Yr Storm event
Inflow = 3.2 cfs @ 12.86 hrs, Volume= 29,707 cf
Outflow = 3.2 cfs @ 12.87 hrs, Volume= 29,707 cf, Atten= 0%, Lag= 0.4 min
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.31 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 0.30 fps, Avg. Travel Time= 2.8 min

Peak Storage= 121 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.49' , Surface Width= 5.00'
Bank-Full Depth= 2.00' Flow Area= 10.0 sf, Capacity= 19.0 cfs

60.0" W x 24.0" H Box Pipe
n= 0.080 Earth, long dense weeds
Length= 49.0' Slope= 0.0163 '/'
Inlet Invert= 155.60', Outlet Invert= 154.80'

Summary for Reach 11R:

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth > 2.23" for 100-Yr Storm event
Inflow = 1.4 cfs @ 12.81 hrs, Volume= 14,329 cf
Outflow = 1.3 cfs @ 12.87 hrs, Volume= 14,329 cf, Atten= 4%, Lag= 3.3 min
Routed to Reach 8R : conc box

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.29 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.09 fps, Avg. Travel Time= 11.9 min

Peak Storage= 277 cf @ 12.87 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 51.76'
Bank-Full Depth= 1.00' Flow Area= 60.0 sf, Capacity= 80.7 cfs

50' x 1' deep channel, n= 0.080 Earth, long dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 70'
Length= 62.0' Slope= 0.0065 '/'
Inlet Invert= 156.00', Outlet Invert= 155.60'

‡

Summary for Reach 12R:

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 3.99" for 100-Yr Storm event
Inflow = 40.3 cfs @ 13.08 hrs, Volume= 362,953 cf
Outflow = 37.0 cfs @ 13.24 hrs, Volume= 362,953 cf, Atten= 8%, Lag= 9.4 min
Routed to Link POA1 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Max. Velocity= 0.70 fps, Min. Travel Time= 10.1 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 45.2 min

Peak Storage= 22,507 cf @ 13.24 hrs
Average Depth at Peak Storage= 1.12' , Surface Width= 69.91'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 29.8 cfs

25' x 1' deep channel, n= 0.400 Sheet flow: Woods+light brush
Side Slope Z-value= 20.0 '/' Top Width= 65'
Length= 425.0' Slope= 0.0518 '/'
Inlet Invert= 172.00', Outlet Invert= 150.00'

‡

Summary for Pond 1P: forebay

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 6.28" for 100-Yr Storm event
Inflow = 24.5 cfs @ 12.28 hrs, Volume= 116,665 cf
Outflow = 24.5 cfs @ 12.29 hrs, Volume= 116,195 cf, Atten= 0%, Lag= 0.2 min
Primary = 12.3 cfs @ 12.29 hrs, Volume= 58,098 cf
Routed to Pond USDF-2 : USDF-2
Secondary = 12.3 cfs @ 12.29 hrs, Volume= 58,098 cf
Routed to Pond USDF-3 : USDF-3

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 135.94' @ 12.29 hrs Surf.Area= 554 sf Storage= 851 cf

Plug-Flow detention time= 4.7 min calculated for 116,195 cf (100% of inflow)
Center-of-Mass det. time= 2.1 min (815.8 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	1,711 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	112	0	0
134.00	211	162	162
135.00	335	273	435
136.00	569	452	887
137.00	1,080	825	1,711

Device	Routing	Invert	Outlet Devices
#1	Primary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32
#2	Secondary	135.10'	**6.0' long x 3.0' 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 Coef. (English) 2.44 2.58 2.68 2.67 2.65 2.64 2.64 2.68 2.68 2.72 2.81 2.92 2.97 3.07 3.32

Primary OutFlow Max=12.2 cfs @ 12.29 hrs HW=135.94' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 12.2 cfs @ 2.44 fps)

Secondary OutFlow Max=12.2 cfs @ 12.29 hrs HW=135.94' (Free Discharge)
2=Broad-Crested Rectangular Weir (Weir Controls 12.2 cfs @ 2.44 fps)

Summary for Pond 13P: CULV.

Inflow Area = 1,092,481 sf, 7.09% Impervious, Inflow Depth = 3.99" for 100-Yr Storm event
Inflow = 38.1 cfs @ 13.07 hrs, Volume= 362,953 cf
Outflow = 40.3 cfs @ 13.08 hrs, Volume= 362,953 cf, Atten= 0%, Lag= 0.3 min
Primary = 40.3 cfs @ 13.08 hrs, Volume= 362,953 cf
Routed to Reach 12R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 209.43' @ 13.08 hrs Surf.Area= 2,075 sf Storage= 1,321 cf

Plug-Flow detention time= 1.0 min calculated for 362,853 cf (100% of inflow)
Center-of-Mass det. time= 1.0 min (909.2 - 908.3)

Volume	Invert	Avail.Storage	Storage Description
#1	173.00'	1,321 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
173.00	50	0	0
174.00	258	154	154
175.00	2,075	1,167	1,321

Device	Routing	Invert	Outlet Devices
#1	Primary	172.75'	**18.0" Round Culvert** L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 172.75' / 172.00' S= 0.0214 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=40.3 cfs @ 13.08 hrs HW=209.41' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 40.3 cfs @ 22.78 fps)

Summary for Pond 30SHP: Drip Strip

Inflow Area = 9,425 sf,100.00% Impervious, Inflow Depth = 8.46" for 100-Yr Storm event
Inflow = 1.8 cfs @ 12.08 hrs, Volume= 6,644 cf
Outflow = 0.3 cfs @ 12.54 hrs, Volume= 6,644 cf, Atten= 83%, Lag= 27.3 min
Discarded = 0.3 cfs @ 12.54 hrs, Volume= 6,644 cf
Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf
Routed to Link POA3 :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 143.26' @ 12.54 hrs Surf.Area= 5,716 sf Storage= 2,431 cf

Plug-Flow detention time= 128.1 min calculated for 6,644 cf (100% of inflow)
Center-of-Mass det. time= 128.1 min (868.3 - 740.2)

Volume	Invert	Avail.Storage	Storage Description
#1	139.99'	38,222 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
139.99	1,431	0.0	0	0
140.00	1,431	30.0	4	4
141.50	1,431	30.0	644	648
143.00	1,431	40.0	859	1,507
144.00	18,000	100.0	9,716	11,222
145.00	36,000	100.0	27,000	38,222

Device	Routing	Invert	Outlet Devices
#1	Discarded	139.99'	**2.410 in/hr Exfiltration over Surface area**
#2	Primary	144.00'	**450.0' long x 2.0' 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 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

Discarded OutFlow Max=0.3 cfs @ 12.54 hrs HW=143.26' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.3 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=139.99' (Free Discharge)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond BR-1: BIO-RETENTION-1

Inflow Area = 54,355 sf, 24.28% Impervious, Inflow Depth = 2.69" for 100-Yr Storm event
Inflow = 2.4 cfs @ 12.32 hrs, Volume= 12,176 cf
Outflow = 0.4 cfs @ 13.44 hrs, Volume= 12,165 cf, Atten= 83%, Lag= 67.5 min
Primary = 0.2 cfs @ 13.44 hrs, Volume= 10,344 cf
Routed to Reach 2R :
Secondary = 0.2 cfs @ 13.44 hrs, Volume= 1,821 cf
Routed to Reach 2R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 160.07' @ 13.44 hrs Surf.Area= 3,229 sf Storage= 5,923 cf

Plug-Flow detention time= 764.6 min calculated for 12,165 cf (100% of inflow)
Center-of-Mass det. time= 764.1 min (1,643.0 - 878.9)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	7,428 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	2,232	0.0	0	0
156.67	2,232	40.0	304	304
157.00	2,232	40.0	295	598
157.50	2,232	30.0	335	933
158.00	2,232	30.0	335	1,268
158.50	2,232	30.0	335	1,603
159.00	2,629	100.0	1,215	2,818
160.00	3,151	100.0	2,890	5,708
160.50	3,731	100.0	1,721	7,428

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 20.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0165 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads
#4 Secondary 160.00' **4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.2 cfs @ 13.44 hrs HW=160.07' (Free Discharge)
└**1=Culvert** (Passes 0.2 cfs of 3.1 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 9.25 fps)
└**3=Orifice/Grate** (Weir Controls 0.2 cfs @ 0.85 fps)

Secondary OutFlow Max=0.2 cfs @ 13.44 hrs HW=160.07' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.2 cfs @ 0.62 fps)

Summary for Pond BR-2: BIO-RETENTION-2

Inflow Area = 77,110 sf, 12.19% Impervious, Inflow Depth = 2.23" for 100-Yr Storm event
Inflow = 2.5 cfs @ 12.43 hrs, Volume= 14,332 cf
Outflow = 1.4 cfs @ 12.81 hrs, Volume= 14,329 cf, Atten= 45%, Lag= 23.2 min
Primary = 0.7 cfs @ 12.81 hrs, Volume= 10,612 cf
Routed to Reach 11R :
Secondary = 0.6 cfs @ 12.81 hrs, Volume= 3,717 cf
Routed to Reach 11R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 160.16' @ 12.81 hrs Surf.Area= 2,860 sf Storage= 4,523 cf

Plug-Flow detention time= 414.9 min calculated for 14,325 cf (100% of inflow)
Center-of-Mass det. time= 415.4 min (1,310.9 - 895.5)

Volume	Invert	Avail.Storage	Storage Description
#1	156.83'	5,546 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.83	2,235	0.0	0	0
157.16	2,235	40.0	295	295
157.50	2,235	40.0	304	599
158.00	2,235	30.0	335	934
158.50	2,235	30.0	335	1,269
159.00	2,235	30.0	335	1,605
160.00	2,701	100.0	2,468	4,073
160.50	3,193	100.0	1,474	5,546

Device	Routing	Invert	Outlet Devices
#1	Primary	156.83'	**8.0" Round Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.83' / 156.00' S= 0.0395 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	156.83'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.00'	**12.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

#4	Secondary	160.00'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.7 cfs @ 12.81 hrs HW=160.16' (Free Discharge)
└**1=Culvert** (Passes 0.7 cfs of 2.9 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.73 fps)
  └**3=Orifice/Grate** (Weir Controls 0.7 cfs @ 1.32 fps)

Secondary OutFlow Max=0.6 cfs @ 12.81 hrs HW=160.16' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.6 cfs @ 0.95 fps)

Summary for Pond BR-3: BIO-RETENTION-3

Inflow Area = 26,841 sf, 14.16% Impervious, Inflow Depth = 4.35" for 100-Yr Storm event
Inflow = 1.7 cfs @ 12.44 hrs, Volume= 9,723 cf
Outflow = 1.7 cfs @ 12.47 hrs, Volume= 9,723 cf, Atten= 0%, Lag= 1.4 min
Primary = 0.8 cfs @ 12.47 hrs, Volume= 5,477 cf
Routed to Reach 1R :
Secondary = 0.9 cfs @ 12.47 hrs, Volume= 4,246 cf
Routed to Reach 1R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 148.18' @ 12.47 hrs Surf.Area= 1,048 sf Storage= 1,184 cf

Plug-Flow detention time= 133.9 min calculated for 9,723 cf (100% of inflow)
Center-of-Mass det. time= 133.8 min (990.9 - 857.1)

Volume	Invert	Avail.Storage	Storage Description
#1	145.33'	1,544 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
145.33	786	0.0	0	0
145.67	786	40.0	107	107
146.00	786	40.0	104	211
146.50	786	30.0	118	329
147.00	786	30.0	118	446
147.50	786	30.0	118	564
148.00	978	100.0	441	1,005
148.50	1,177	100.0	539	1,544

Device	Routing	Invert	Outlet Devices
#1	Primary	145.33'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 145.33' / 145.00' S= 0.0132 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	145.33'	**0.7" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	148.00'	**5.0' long x 2.0' 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
Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32

#4	Primary	148.00'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.8 cfs @ 12.47 hrs HW=148.18' (Free Discharge)
- **1=Culvert** (Passes 0.0 cfs of 2.1 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 0.0 cfs @ 8.08 fps)
- **4=Orifice/Grate** (Weir Controls 0.8 cfs @ 1.37 fps)

Secondary OutFlow Max=0.9 cfs @ 12.47 hrs HW=148.18' (Free Discharge)
- **3=Broad-Crested Rectangular Weir** (Weir Controls 0.9 cfs @ 1.07 fps)

Summary for Pond BR-4.: BIO-RETENTION-4

Inflow Area = 54,258 sf, 14.01% Impervious, Inflow Depth = 3.27" for 100-Yr Storm event
Inflow = 2.8 cfs @ 12.37 hrs, Volume= 14,798 cf
Outflow = 0.7 cfs @ 13.15 hrs, Volume= 14,788 cf, Atten= 76%, Lag= 46.7 min
Primary = 0.4 cfs @ 13.15 hrs, Volume= 12,375 cf
Routed to Reach 7R :
Secondary = 0.3 cfs @ 13.15 hrs, Volume= 2,413 cf
Routed to Reach 7R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 160.85' @ 13.15 hrs Surf.Area= 2,971 sf Storage= 7,063 cf

Plug-Flow detention time= 782.2 min calculated for 14,784 cf (100% of inflow)
Center-of-Mass det. time= 782.4 min (1,653.0 - 870.6)

Volume	Invert	Avail.Storage	Storage Description
#1	156.33'	9,100 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
156.33	1,901	0.0	0	0
156.66	1,901	40.0	251	251
157.00	1,901	40.0	259	509
157.50	1,901	30.0	285	795
158.00	1,901	30.0	285	1,080
158.50	1,901	30.0	285	1,365
159.00	2,109	100.0	1,003	2,367
160.00	2,577	100.0	2,343	4,710
161.00	3,041	100.0	2,809	7,519
161.50	3,282	100.0	1,581	9,100

Device	Routing	Invert	Outlet Devices
#1	Primary	156.33'	**8.0" Round Culvert** L= 66.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 156.33' / 156.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf

#2	Device 1	156.33'	**1.1" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	160.75'	**12.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	160.75'	**4.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.4 cfs @ 13.15 hrs HW=160.85' (Free Discharge)
└**1=Culvert** (Passes 0.4 cfs of 2.7 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 10.18 fps)
└**3=Orifice/Grate** (Weir Controls 0.3 cfs @ 1.02 fps)

Secondary OutFlow Max=0.3 cfs @ 13.15 hrs HW=160.85' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.3 cfs @ 0.74 fps)

Summary for Pond DMH-1: DMH-1

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 2.67" for 100-Yr Storm event
Inflow = 2.8 cfs @ 12.40 hrs, Volume= 70,305 cf
Outflow = 2.8 cfs @ 12.40 hrs, Volume= 70,305 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.8 cfs @ 12.40 hrs, Volume= 70,305 cf
Routed to Pond DMH-2 : DMH-2

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 132.50' @ 12.40 hrs
Flood Elev= 137.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	131.60'	**18.0" Round Culvert** L= 61.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.60' / 131.00' S= 0.0098 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.8 cfs @ 12.40 hrs HW=132.50' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.8 cfs @ 2.54 fps)

Summary for Pond DMH-2: DMH-2

Inflow Area = 315,672 sf, 26.27% Impervious, Inflow Depth > 4.30" for 100-Yr Storm event
Inflow = 4.4 cfs @ 12.41 hrs, Volume= 113,086 cf
Outflow = 4.4 cfs @ 12.41 hrs, Volume= 113,086 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.4 cfs @ 12.41 hrs, Volume= 113,086 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 131.93' @ 12.41 hrs
Flood Elev= 135.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	130.90'	**24.0" Round Culvert**

L= 21.0' CPP, projecting, no headwall, Ke= 0.900
Inlet / Outlet Invert= 130.90' / 130.50' S= 0.0190 '/' Cc= 0.900
n= 0.012, Flow Area= 3.14 sf

Primary OutFlow Max=4.4 cfs @ 12.41 hrs HW=131.93' (Free Discharge)
1=Culvert (Inlet Controls 4.4 cfs @ 2.73 fps)

Summary for Pond USDF-1: USDF-1

Inflow Area = 92,892 sf, 20.03% Impervious, Inflow Depth = 4.71" for 100-Yr Storm event
Inflow = 9.7 cfs @ 12.17 hrs, Volume= 36,450 cf
Outflow = 10.0 cfs @ 12.24 hrs, Volume= 36,449 cf, Atten= 0%, Lag= 4.4 min
Primary = 1.2 cfs @ 12.24 hrs, Volume= 26,923 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 8.7 cfs @ 12.24 hrs, Volume= 9,526 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 138.25' @ 12.24 hrs Surf.Area= 3,751 sf Storage= 10,385 cf

Plug-Flow detention time= 265.5 min calculated for 36,449 cf (100% of inflow)
Center-of-Mass det. time= 265.4 min (1,098.2 - 832.7)

Volume	Invert	Avail.Storage	Storage Description
#1	132.83'	10,385 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
132.83	2,168	0.0	0	0
133.16	2,168	40.0	286	286
133.50	2,168	40.0	295	581
134.00	2,168	30.0	325	906
134.50	2,168	30.0	325	1,231
135.00	2,168	30.0	325	1,557
136.00	2,671	100.0	2,420	3,976
137.00	3,198	100.0	2,935	6,911
138.00	3,751	100.0	3,475	10,385

Device	Routing	Invert	Outlet Devices
#1	Primary	132.83'	**15.0" Round Culvert** L= 72.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 132.83' / 132.00' S= 0.0115 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	132.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	136.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.50'	**5.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.2 cfs @ 12.24 hrs HW=138.24' (Free Discharge)
└**1=Culvert** (Passes 1.2 cfs of 10.2 cfs potential flow)
  └**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 11.14 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.2 cfs @ 5.87 fps)

Secondary OutFlow Max=8.5 cfs @ 12.24 hrs HW=138.24' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 8.5 cfs @ 2.31 fps)

Summary for Pond USDF-2: USDF-2

Inflow Area = 222,780 sf, 28.88% Impervious, Inflow Depth = 3.13" for 100-Yr Storm event
Inflow = 12.3 cfs @ 12.29 hrs, Volume= 58,098 cf
Outflow = 10.1 cfs @ 12.43 hrs, Volume= 58,087 cf, Atten= 17%, Lag= 8.4 min
Primary = 1.7 cfs @ 12.43 hrs, Volume= 43,382 cf
Routed to Pond DMH-1 : DMH-1
Secondary = 8.4 cfs @ 12.43 hrs, Volume= 14,705 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 138.50' @ 12.43 hrs Surf.Area= 5,015 sf Storage= 19,050 cf

Plug-Flow detention time= 258.3 min calculated for 58,087 cf (100% of inflow)
Center-of-Mass det. time= 258.1 min (1,074.0 - 815.8)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 10.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.70' S= 0.0130 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.85'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.7 cfs @ 12.43 hrs HW=138.50' (Free Discharge)
└**1=culvert** (Passes 1.7 cfs of 7.4 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 12.39 fps)
  └**3=Orifice/Grate** (Orifice Controls 1.6 cfs @ 7.98 fps)

Secondary OutFlow Max=8.4 cfs @ 12.43 hrs HW=138.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 8.4 cfs @ 2.17 fps)

Summary for Pond USDF-3: USDF-3

Inflow = 12.3 cfs @ 12.29 hrs, Volume= 58,098 cf
Outflow = 10.3 cfs @ 12.42 hrs, Volume= 58,087 cf, Atten= 16%, Lag= 7.9 min
Primary = 1.6 cfs @ 12.42 hrs, Volume= 42,781 cf
Routed to Pond DMH-2 : DMH-2
Secondary = 8.7 cfs @ 12.42 hrs, Volume= 15,306 cf
Routed to Reach 3R :

Routing by Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 138.41' @ 12.42 hrs Surf.Area= 4,965 sf Storage= 18,610 cf

Plug-Flow detention time= 255.7 min calculated for 58,070 cf (100% of inflow)
Center-of-Mass det. time= 256.3 min (1,072.1 - 815.8)

Volume	Invert	Avail.Storage	Storage Description
#1	131.83'	19,057 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
131.83	2,677	0.0	0	0
132.16	2,677	40.0	353	353
132.50	2,677	40.0	364	717
133.00	2,677	30.0	402	1,119
133.50	2,677	30.0	402	1,521
134.00	2,677	30.0	402	1,922
135.00	3,154	100.0	2,916	4,838
136.00	3,657	100.0	3,406	8,243
137.00	4,182	100.0	3,920	12,163
138.00	4,732	100.0	4,457	16,620
138.50	5,016	100.0	2,437	19,057

Device	Routing	Invert	Outlet Devices
#1	Primary	131.83'	**12.0" Round culvert** L= 21.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 131.83' / 131.20' S= 0.0300 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	131.83'	**1.2" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	135.50'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	137.75'	**6.0' long x 6.0' 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) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65
2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.6 cfs @ 12.42 hrs HW=138.41' (Free Discharge)
└**1=culvert** (Passes 1.6 cfs of 7.4 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 12.30 fps)
└**3=Orifice/Grate** (Orifice Controls 1.5 cfs @ 7.85 fps)

Secondary OutFlow Max=8.7 cfs @ 12.42 hrs HW=138.41' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 8.7 cfs @ 2.19 fps)

Summary for Link POA1:

Inflow Area = 1,496,457 sf, 7.41% Impervious, Inflow Depth = 3.74" for 100-Yr Storm event
Inflow = 44.1 cfs @ 13.19 hrs, Volume= 466,124 cf
Primary = 44.1 cfs @ 13.19 hrs, Volume= 466,124 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA2:

Inflow Area = 87,483 sf, 4.34% Impervious, Inflow Depth = 3.60" for 100-Yr Storm event
Inflow = 4.7 cfs @ 12.45 hrs, Volume= 26,262 cf
Primary = 4.7 cfs @ 12.45 hrs, Volume= 26,262 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Link POA3:

Inflow Area = 1,550,389 sf, 5.96% Impervious, Inflow Depth = 3.67" for 100-Yr Storm event
Inflow = 45.0 cfs @ 12.73 hrs, Volume= 474,752 cf
Primary = 45.0 cfs @ 12.73 hrs, Volume= 474,752 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

ATTACHMENT C -STORMWATER QUALITY CALCULATIONS

STORMWATER TREATMENT SUMMARY
CHICK CROSSING VILLAGE

	Square Feet	Acres
Total Area	2,041,848	46.87

Predeveloped Site Summary

	Square Feet	Acres
Developed Area	0	0.00
Impervious Area	0	0.00
Forrested Area	2,041,848	46.87

Proposed Site Summary

	Square Feet	Acres	Percentage of Total Area
Developed Area	396,051	9.09	19%
Impervious Area	129,588	2.97	6%
Forrested Area	1,645,797	37.8	81%
		46.87	

Proposed Treatment Summary

	Impervious Area Treated		Developed Area Treated		BMP
	Square Feet	Percent of Total Impervious	Square Feet	Percent of Total Developed	
SC-10	0	0.0%	0	0.0%	None
SC-11	13,200	10.2%	35,600	9.0%	Bio-Retention BR-1
SC-12	9,400	7.3%	32,090	8.1%	Bio-Retention BR-2
SC-13	0	0.0%	0	0.0%	None
SC-14	7,600	5.9%	28,495	7.2%	Bio-Retetnion BR-4
SC-20	3,800	2.9%	16,572	4.2%	Bio-Retention BR-3
SC-21	18,610	14.4%	64,607	16.3%	USDF-1
SC-30	0	0.0%	0	0.0%	None
SC-31	64,329	49.6%	167,450	42.3%	USDF-2 & USDF-3
SC-30SH	9,425	7.3%	9,425	2.4%	Roof Drip Line Filter
	0	0.0%	0	0.0%	
	0	0.0%	0	0.0%	
PROJECT	**126,364**	**97.5%**	**354,239**	**89.4%**	

Bio-Retention Basin BR-1 Sizing WS-11		Units
Impervious Area	13,200	SF
Landscaped Area	22,400	SF
Storage Volume Required	1,847	CF
Surface Area Required	1,596	SF
Ponding Depth for Water Quality Volume	0.5	In
Bed Surface Area Provided	2,232	SF
Total Water Quality Storage Volume Provided	2,818	CF
Provided		

Orifice Sizing

Bio-Retention BR-1		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.2138
x= Filter surface area in square feet	**2232**	
Y=Orifice diameter (inches)		1 3/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Bio-Retention Basin BR-2 Sizing WS-12		Units
Impervious Area	9,400	SF
Landscaped Area	22,690	SF
Storage Volume Required	1,540	CF
Surface Area Required	1,339	SF
Ponding Depth for Water Quality Volume	0.5	In
Bed Surface Area Provided	2,235	SF
Total Water Quality Storage Volume Provided	2,780	CF
Provided		

Orifice Sizing

Bio-Retention BR-2		**Units**
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.2145
x= Filter surface area in square feet	**2235**	
Y=Orifice diameter (inches)		1 3/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Bio-Retention Basin BR-3 Sizing WS-20		Units
Impervious Area	3,800	SF
Landscaped Area	12,772	SF
Storage Volume Required	742	CF
Surface Area Required	649	SF
Ponding Depth for Water Quality Volume	0.5	In
Bed Surface Area Provided	786	SF
Total Water Quality Storage Volume Provided Provided	1,005	CF

Orifice Sizing

Bio-Retention BR-3		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		0.7511
x= Filter surface area in square feet	**786**	
Y=Orifice diameter (inches)		12/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Bio-Retention Basin BR-4 Sizing WS-14		Units
Impervious Area	7,600	SF
Landscaped Area	20,895	SF
Storage Volume Required	1,330	CF
Surface Area Required	1,159	SF
Ponding Depth for Water Quality Volume	0.5	In
Bed Surface Area Provided	1,901	SF
Total Water Quality Storage Volume Provided	2,367	CF
Provided		

Orifice Sizing

Bio-Retention BR-4		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.1274
x= Filter surface area in square feet	**1901**	
Y=Orifice diameter (inches)		1 2/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Underdrained Soil Filter UDSF-1 Sizing WS-21		Units
Impervious Area	18,610	SF
Landscaped Area	45,997	SF
Storage Volume Required	3,084	CF
Surface Area Required	1,850	SF
Ponding Depth for Water Quality Volume	18	In
Bed Surface Area Provided	2,168	SF
Total Water Quality Storage Volume Provided	3,820	CF

Orifice Sizing Under Drained Filter Basin USDF-1		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.1976
x= Filter surface area in square feet	**2168**	
Y=Orifice diameter (inches)		1 3/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Underdrained Soil Filter USDF-2 Sizing WS-31		Units
Impervious Area	32,165	SF
Landscaped Area	51,561	SF
Storage Volume Required	4,399	CF
Surface Area Required	2,639	SF
Ponding Depth for Water Quality Volume	18	In
Bed Surface Area Provided	2,677	SF
Total Water Quality Storage Volume Provided	4,555	CF

Orifice Sizing Under Drained Filter Basin USDF-2		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.3196
x= Filter surface area in square feet	**2677**	
Y=Orifice diameter (inches)		1 5/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

Underdrained Soil Filter USDF-3 Sizing WS-31		Units
Impervious Area	32,164	SF
Landscaped Area	51,560	SF
Storage Volume Required	4,399	CF
Surface Area Required	2,639	SF
Ponding Depth for Water Quality Volume	18	In
Bed Surface Area Provided	2,677	SF
Total Water Quality Storage Volume Provided	4,555	CF

Orifice Sizing Under Drained Filter Basin USDF-3		Units
Calculate Orifice from Filter Area		
Y=0.035x^0.4599 (decimal)		1.3196
x= Filter surface area in square feet	**2677**	
Y=Orifice diameter (inches)		1 5/16
Calculate Orifice from Water Quality Volume		
Y=0.0137x^0.5372		0
x= Water quality volume in cubic feet	0.0	
Y=Orifice diameter (inches)		0

ATTACHMENT D -STORMWATER MAINTENANCE PLAN AND LOG

CHICK CROSSING VILLAGE SUBDIVISION

WELLS, MAINE

STORMWATER MAINTENANCE PLAN

Introduction

The following plan outlines the anticipated inspection and maintenance procedures for the stormwater management devices (BMPs) for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

Maintenance Responsibilities

During construction activities, the maintenance of all stormwater measures will be the direct responsibility of the Contractor. After acceptance by the Owner, the maintenance of all stormwater management facilities, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook will be the responsibility of Seacoast Land Acquisitions LLC., until such time as the maintenance is transferred to a homeowners' Association. The current contact for Seacoast Land Acquisitions LLC:

Jason Labonte, dba
Seacoast Land Acquisitions, LLC.
57 Smutty Lane
Saco, Maine 04072
jlabonte@maine.rr.com

The procedures outlined in this inspection and maintenance 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).

1. **Documentation:** 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.

2. **Recertification:** A qualified post-construction stormwater inspector hired by the person having control over post-construction BMPs shall provide on or by June 30 of each year a completed and signed certification to the enforcement authority in a form provided by the municipality, certifying

that the post-construction BMPs have been inspected and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, describing any required maintenance and any deficiencies found during inspection of the post construction BMPs and if the post-construction BMPs require maintenance or repair of deficiencies in order to function as intended by the approved post-construction stormwater management plan, that person shall provide a record of the required maintenance or deficiency and corrective action (s) taken.

MDEP Recertification:
Additionally, a certification of the following must also be submitted to the Maine Department of Environmental Protection (MDEP) within three months of the expiration of each five-year interval from the date of issuance of MDEP permits.

A. Identification and repair of erosion problems. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.
B. Inspection and repair of stormwater control system. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.
C. The stormwater maintenance plan for the site is being implemented as approved by the Department, and the maintenance log is being maintained.
D. All proprietary systems have been maintained according to the manufacturer's recommendations. Where required by the Department, the permittee shall execute a 5-year maintenance contract with a qualified professional for the coming 5-year interval. The maintenance contract must include provisions for routine inspections, cleaning, and general maintenance.
E. The Department may waive some or all these recertification requirements on a case-by-case basis for permittees subject to the Department's Multi-Sector General Permit ("MSGP") and/or Maine Pollutant Discharge Elimination System ("MEPDES") programs where it is demonstrated that these programs are providing stormwater control that is at least as effective as required pursuant to this Chapter.

3. **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.

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. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall

conduct the inspections.

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.

Ditches, Swales, and Riprap Aprons

Open swales and ditches shall be inspected monthly or after a major rainfall event to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the structure and proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal vegetation in the ditches as required to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.
Vegetated ditches should be mowed at least three times during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion, should be reseeded, and mulched immediately.
Riprap ditches and aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap and accumulated sediments and debris should be removed on a bi-annual basis.

Drainage Pipes and Culverts

Culverts and piped drainage systems shall be inspected on an annual basis to remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the detention/infiltration pond areas as this will reduce the ponds capacity and ability to infiltrate runoff and will hasten the time when the pond must be cleaned/rehabilitated.

Driveways, Walkways and Paved Areas

Accumulations of winter sand along paved surfaces shall be cleared at least once a year, preferably in the spring, to minimize transportation of sediment during rainfall events. Accumulations on pavement may be removed by pavement sweeping.

Underdrained Soil Filters and Bio-Retention Basins

Inspections of the underdrained filter shall be conducted on a semi-annual basis and following significant rainfall events. Delayed or poor maintenance practices can result in loss of treatment capacity. Records should be kept of all maintenance operations to help plan future work and identify problem areas.
The basin embankments should be maintained to preserve their integrity including, but not limited to, vegetation maintenance (mowing, control of woody vegetation), rodent control, erosion control and repair, and outlet control structure maintenance and repair. The embankment should be inspected annually for erosion or destabilization of side slopes, embankment settling and other signs of overtop structural failure.
Basin plantings, and vegetation should be maintained on a quarterly basis. Regular maintenance activities should include cutting back shrub plantings where necessary to prevent excessive woody growth, removal of dead vegetation and re-planting to maintain good cover and root spread. Shrub or

grass clippings should be removed to minimize the amount of organic material accumulation in the basin.
Sediment and debris should be removed from the sediment forebay at least annually, where applicable.
Bioretention cells and underdrained filters shall not be used for snow storage area. Snow storage should be sited so that snow melt flows to a pretreatment BMP before reaching the infiltration area.
Vehicular equipment used to maintain or rehabilitate the basins should work from the cell perimeter and not enter the basin floor area, as this would compact the soil surface and reduce infiltration.
The surface of the basins may clog with fine sediments over time. Maintenance of good plant or grass cover should minimize this; however, if ponded runoff does not infiltrate within 48 hours, rototilling the top of the soil bed may be required to reestablish the soils infiltration capacity.

Vegetated Buffers

Buffers 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.

Chick Crossing Village

Stormwater Inspection and Maintenance Log

Site Name **Chick Crossing** **Location** **Wells** **Date of Inspection**

BMP	Inspection tasks	Completed	Notes	Maintenance Required	Maintenance Complete
Ditches, swales and open channels	Inspect for debris and channel blockages Check vegetation for overgrowth Inspect for evidence of erosion				
Catch Basins	Check sediment level in sumps Inspect grates, frames and structures				
Pipe Inlet and Outlet	Inspect riprap aprons Look for evidence of erosion				
Filtration Basin Bio-Retention basin	Check plantings/grass cover Inspect soil bed Inspect underdrain outlets Evidence of high water level Verify structure is draining Inspect inlet grate and outlet structure Look for evidence of sedimentation Check stability of side slopes				
Paved areas, walkways	Check for sand and salt accumulation Check integrity of surfaces and edges				
Culverts	Inspect structural integrity Look for joint displacement Inspect inlet and outlet structures Check for sediment accumulation				