STORMWATER MANAGEMENT REPORT

FOR

ASHWORTH HILLS

RESIDENTIAL DEVELOPMENT

AT

0 ASHWORTH DRIVE & 191 SOUTHBRIDGE ROAD

OXFORD, MA

NOVEMBER 15, 2024

Applicant:

Eastland Partners, Inc.
997 Millbury Street
Worcester, MA 01607

Prepared By:

TURNING POINT ENGINEERING
CIVIL SITE DESIGN

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TABLE OF CONTENTS

Part IV – Maps

Pre-Development Watershed Map
Post-Development Watershed Map
Catch Basin Drainage Area Map

PART 1 – SUMMARY

1.0 PROJECT DESCRIPTION

Existing Property Description

The subject property is located at 0 Ashworth Drive, is shown in the Oxford Assessor's records as map 3, parcel A05, and is situated in the Multi-Family (R-4) zoning district (the "Site"). The Site is a 152.89-acre partially undeveloped parcel of land with varying topography and mixtures of hardwood and evergreen trees. In addition to the subject parcel, a commercially zoned parcel shown as Oxford Assessor's records as map 6, parcel A01, containing approximately 26 acres will be utilized to provide access to Southbridge Road (Route 20). The Site is bounded on the north by the Massachusetts Turnpike Authority; on the east by partially developed land also owner by the Applicant; on the south by Southbridge Road (Route 20), Charter Communications and Thayer Pond Village; and on the west by Thayer Pond Village and Texas Pond.

As part of the original approved plans, considerable alterations occurred to the site in 2008 and 2009 as construction on the approved site commenced. This work included tree and vegetation removal, stripping of topsoil and subsoil, and significant earthwork and blasting along the main road through the site connecting Route 20 to Ashworth Drive, a secondary road that runs westerly off the main connecting road, and the northeast area of the property that lies in Auburn. Since 2009, the vegetation throughout much of the site has begun to recover and can be classified as sparse shrubs consisting of early successional species.

The subject property contains numerous wetland resource areas which were delineated by B&C Associates, Inc. and Ecotec, Inc. in 2018 and 2019 and field located. Specific wetland resource areas were confirmed by the issuance of an Order of Resource Area Delineation (ORAD) for DEP File #255-796 by the Oxford Conservation Commission on June 5, 2019 and recorded in the Worcester District Registry of Deeds in Book 60711, Page 266. Upon a thorough site inspection, the ORAD was extended by the Oxford Conservation Commission on June 15, 2022 and recorded in the Worcester District Registry of Deed in Book 67843, Page 1.

The property does not have any known water protection districts or wellhead protection areas, areas of critical environmental concerns (ACEC's), NHESP Estimated or Priority Habitats, Certified Vernal Pools, or Activity and Use Limitation (AUL) areas.

Proposed Project Description

Eastland proposes to construct a multi-phase 320 duplex-style townhouse community with associated earthwork, roadways, utilities, landscaping, and stormwater management facilities. Eastland has permitted and constructed many successful duplex-style communities similar to Ashworth Hills. Examples of these include Walden Woods in Milford, Rogerson Crossing in Uxbridge and Clearview in Millbury.

The Ashworth Hills would permanently alter approximately 92 acres of land, which represents 60% of the project site. Of the 59.6 acres of undisturbed land, approximately 50 acres will remain as protected

open space in perpetuity. The overall area of site alteration has been reduced from the original approved plans, and proposed grading has been improved to utilize existing grades to the maximum extent practicable. Ashworth Hills proposes duplex homes fronting directly on a newly aligned roadway system. This minimizes land alteration by keeping units close to the road and close to each other. As part of the site design, major roads in the community were placed within the previously disturbed areas and connect to the main roadway that currently exists through the site.

2.0 BACKGROUND DATA

Soils explorations were performed on the property by Turning Point Engineering on May 30, 2024 and witnessed by Graves Engineering, Inc. and the results of the test pits are provided on the site development plans. The U.S. Natural Resources Conservation Service (NRCS), formerly SCS Soil Survey Maps indicate that soils with hydrologic soil group classification A, B, C and D are present on the site, see Part III of this report.

3.0 COMPLIANCE WITH STORMWATER STANDARDS

3.1 Untreated Stormwater (Standard 1)

The project is designed so that new stormwater conveyances (outfalls/ discharges) do not discharge untreated stormwater into, or cause erosion to, wetlands.

Standard #1 is met.

3.2 Post-Development Peak Rates (Standard 2)

Hydrologic calculations were performed to determine the rate of runoff for the 2, 10, 25 and 100-year storm events under pre-development (present) conditions. This value was established as the future (post-development) maximum allowable rate. Unmitigated post-development rates were then computed in a similar manner. It is the intent of the stormwater management system to minimize impacts to drainage patterns of downstream property and wetlands while simultaneously providing water quality treatment to runoff prior to its release from the site or discharge to wetlands.

The U.S.D.A. Soil Conservation Service (SCS) Technical Release 55 (TR-55), 1986, was used as the procedure for estimating runoff. A SCS TR-20-based computer program, "HydroCAD," was used for estimating peak discharges. TR-55 is a generally accepted model for use on small sites that begins with a rainfall amount uniformly imposed on the watershed over a specified time distribution. Mass rainfall is converted to mass runoff by using a runoff curve number (CN). CN is based on soils, ground cover, impervious areas, interception and surface storage. Runoff is then transformed into a hydrograph that depends on runoff travel time through segments of the watershed.

Development in a watershed changes its response to precipitation. The most common effects are reduced infiltration and decreased travel time, which result in significantly

higher peak rates of runoff. The volume of runoff is determined primarily by the amount of precipitation and by infiltration characteristics related to soil type, antecedent rainfall, and type of vegetative cover, impervious surfaces, and surface retention. Travel time is determined primarily by slope, flow length, depth of flow surfaces. Peak rates of discharge are based on the relationship of the above parameters as well as the total drainage area of the watershed, the location of the development in relation to the total drainage area, and the effect of any flood control works or other manmade storage. Peak rates of discharge are also influenced by the distribution of rainfall within a given storm event.

Stormwater management computations for the project site were performed using SCS-based HydroCAD for existing and proposed conditions, curve numbers, time of concentration, and unit hydrograph computations. The following were considered as part of runoff calculations.

Since urban areas are seldom completely covered by impervious structure, soils and soil properties are an important factor in estimating the total volume of direct runoff. The infiltration and percolation rates of soils indicate their potential to absorb rainfall and thereby reduce the amount of direct runoff. Soils having a high infiltration rate (sands or gravels) have a low runoff potential, and soils having a low infiltration rate (clays) have a high runoff potential. Urbanization on soils with a high infiltration rate increases the volume of runoff and peak discharge more than urbanization on soils with a low infiltration rate.

The type of surface cover and its hydrologic condition affects runoff volume through its influence on the infiltration rate of the soil. Unused cultivated land yields more runoff than forested land for a given soil type. Covering areas with impervious material reduces surface storage and infiltration and increases the volume of runoff.

Some rainfall is retained on the ground surface and by vegetation before runoff begins. Interception is rainfall that is caught by foliage, twigs, branches, leaves, etc. This rainfall is lost to evaporation and thus never reaches the ground surface. Increasing the vegetative cover increases the amount of interception. Surface depression storage begins when precipitation exceeds infiltration. Overland flow starts when the surface depressions are full. The water in depression storage is not available as direct runoff.

Initial abstraction is the sum of interception, depression, storage, and infiltration before runoff begins. It occurs on all types of cover, from lawn in good condition to pavement. However, the amount of initial abstraction is less on pavement than on lawn.

Travel time (Tt) is the time it takes water to travel from one location to another in a watershed. Tt is a component of time of concentration (Tc) that is the time for runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. Tc is computed by summing all the travel time for consecutive components of the drainage conveyance system.

Tc influences the shape and peak of the runoff hydrograph. Urbanization usually decreases Tc thereby increasing the peak discharge. Development can change the effective slope of

a watershed if flow paths are altered by channeling and by changing the surface grading for building lots, roads and ditches. The slopes of street gutters, roads and overland flow areas as well as stream channels are significant in determining travel times through urban watersheds.

Flow length may be reduced if natural meandering streams are changed to straight channels. It may be increased if overland flows are diverted through ditches, storm drains, or street gutters to larger collections systems.

Surface roughness is also a consideration. Flow velocity normally increases significantly when the flow path is changed from flow over rough surfaces of woodland, grassland and natural channels to sheet flow over smooth surfaces of parking lots, storm drains, gutters and lined channels.

3.2.1 Design Storms and Rainfall Depth

The stormwater management system was analyzed for the 2, 10, 25 and 100-year storm events. The following table from NOAA Atlas 14 illustrates the rainfall intensities used for each storm event.

Table 1

Duration	Average recurrence interval (years)						
	1	2	5	10	25	50	100
5-min	0.341 (0.272-0.421)	0.402 (0.321-0.497)	0.502 (0.399-0.623)	0.585 (0.462-0.731)	0.699 (0.532-0.919)	0.785 (0.584-1.06)	0.874 (0.627-1.23)
10-min	0.483 (0.386-0.596)	0.569 (0.455-0.704)	0.710 (0.565-0.882)	0.828 (0.655-1.04)	0.990 (0.753-1.30)	1.11 (0.827-1.50)	1.24 (0.889-1.74)
15-min	0.568 (0.454-0.702)	0.670 (0.535-0.828)	0.836 (0.665-1.04)	0.974 (0.770-1.22)	1.16 (0.886-1.53)	1.31 (0.972-1.76)	1.46 (1.05-2.05)
30-min	0.776 (0.621-0.959)	0.916 (0.731-1.13)	1.14 (0.910-1.42)	1.33 (1.06-1.67)	1.59 (1.21-2.10)	1.79 (1.33-2.42)	2.00 (1.43-2.81)
60-min	0.984 (0.787-1.22)	1.16 (0.928-1.44)	1.45 (1.16-1.80)	1.69 (1.34-2.12)	2.02 (1.54-2.66)	2.27 (1.69-3.07)	2.53 (1.82-3.57)
2-hr	1.25 (1.01-1.54)	1.48 (1.19-1.82)	1.86 (1.49-2.30)	2.18 (1.73-2.70)	2.61 (2.00-3.42)	2.93 (2.20-3.95)	3.27 (2.38-4.61)
3-hr	1.44 (1.16-1.75)	1.71 (1.38-2.09)	2.15 (1.73-2.64)	2.52 (2.01-3.12)	3.02 (2.33-3.96)	3.40 (2.57-4.58)	3.81 (2.78-5.37)
6-hr	1.79 (1.46-2.18)	2.15 (1.75-2.62)	2.74 (2.22-3.35)	3.23 (2.60-3.97)	3.91 (3.04-5.08)	4.40 (3.35-5.90)	4.94 (3.64-6.95)
12-hr	2.20 (1.81-2.66)	2.68 (2.20-3.24)	3.46 (2.83-4.19)	4.11 (3.33-5.01)	5.00 (3.91-6.46)	5.65 (4.32-7.52)	6.37 (4.72-8.90)
24-hr	2.62 (2.16-3.13)	3.22 (2.66-3.85)	4.19 (3.45-5.05)	5.00 (4.09-6.06)	6.12 (4.82-7.87)	6.94 (5.34-9.19)	7.84 (5.85-10.9)

3.2.2 Existing Conditions

Under the pre-development scenario, the watershed has been identified as seven (7) subcatchment (SC) areas outlining runoff to seven (7) analysis points as shown on the plan entitled "PRE-DEVELOPMENT DRAINAGE MAP", included within the attached Maps.

Subcatchment SC-1 is a watershed at the northerly end of the property that extends to the eastern property boundary along the Oxford/Auburn town line and generally slopes from west to east. The watershed is comprised largely of previously disturbed vegetation and a portion of mature forest. The watershed flows easterly to a large wetland system in Auburn.

Subcatchment SC-2 is a watershed at the northerly end of the property the generally slopes from east to west. The watershed is comprised of developed residential properties. The watershed flows westerly to a large wetland system that drains into the French River, which flows to Texas Pond.

Subcatchment SC-3 is a large watershed towards the center of the property that extends to the western property boundary and generally slopes from east to west. The watershed is comprised of a mix of previously disturbed vegetation and mature forest. The watershed flows westerly to a large wetland system that drains into Texas Pond.

Subcatchment SC-4 is a small watershed in the southwestern portion of the property that abuts Thayer Pond Village and generally slopes from east to west. The watershed is comprised of a mixed mature forest. The watershed flows to Texas Pond.

Subcatchment SC-5 is a watershed towards the center of the property that extends to the eastern property boundary along the Oxford/Auburn town line and generally slopes from west to east. The watershed is comprised of a mixed mature forest. The watershed flows easterly to a large wetland

Subcatchment SC-6 is a watershed at the southerly end of the property along Route 20 and generally slopes from north to south. The watershed is comprised partially of a commercial site currently under construction and partially of a mixed mature forest. The watershed flows southwesterly to Route 20.

Subcatchment SC-7 is a watershed at the southerly end of the property along Route 20 and generally slopes from north to south. The watershed is comprised partially of a commercial site currently under construction and partially of a mixed mature forest. The watershed flows southeasterly to Route 20.

3.2.3 Proposed Conditions

The project proposes nine (9) infiltration basins with sediment forebays and two (2) detention basins to accommodate stormwater runoff and provide recharge and water quality. A number of Best Management Practices (BMP's) have been proposed, including deep sump catch basins, sediment forebays and infiltration basins.

Under the post-development scenario, the site has been divided into several drainage subcatchments, shown on the plan entitled "POST-DEVELOPMENT DRAINAGE MAP", included within Part II – Pre & Post Construction Computations. There is no increase in contributing watershed area due to the development and peak runoff rates and volumes are mitigated through the construction of the proposed stormwater management system.

Post-development peak rates were determined and routed through infiltration basins with the resulting hydrographs added to the hydrographs for the overland areas. Based upon these analyses, the peak rates of runoff for the 2, 10, 25 and 100-year storm events are as follows:

Table 2

*	2-YEAR	3.22"			10-YEAR	5.0"		
	PRE	POST			PRE	POST		
AP1	14.5	11.6	-2.9	AP1	43.2	39.5	-3.7	AP1
AP2	8.3	5.2	-3.1	AP2	19.1	11.8	-7.3	AP2
AP3	48.7	33.4	-15.3	AP3	154.6	103.4	-51.2	AP3
AP4	1.9	0.2	-1.7	AP4	7.5	1.2	-6.3	AP4
AP5	10.3	8.0	-2.3	AP5	31.1	24.6	-6.5	AP5
AP6	2.6	0.8	-1.8	AP6	15.1	5.1	-10.0	AP6
AP7	2.0	1.0	-1.0	AP7	13.8	3.2	-10.6	AP7

*	25-YEAR	6.12"			100-YEAR	7.84"		
	PRE	POST			PRE	POST		
AP1	64.5	58.5	-6.0	AP1	99.5	98.2	-1.3	AP1
AP2	26.5	16.2	-10.3	AP2	38.2	23.3	-14.9	AP2
AP3	233.5	152.0	-81.5	AP3	365.1	233.8	-131.3	AP3
AP4	11.9	2.1	-9.8	AP4	19.4	3.6	-15.8	AP4
AP5	46.3	35.4	-10.9	AP5	71.5	56.0	-15.5	AP5
AP6	26.2	9.1	-17.1	AP6	45.7	19.8	-25.9	AP6
AP7	24.5	5.6	-18.9	AP7	43.4	10.4	-33.0	AP7

Standard #2 is met.

3.3 Recharge to Groundwater (Standard 3)

At a minimum, the annual recharge from the post-development site shall approximate the annual recharge from pre-development conditions based on soil type. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Hydrologic Soil Group	Volume to Recharge (x Total Impervious Area)
A	0.60 inches of runoff
B	0.35 inches of runoff
C	0.25 inches of runoff
D	0.10 inches of runoff

The recharge calculations can be found in Part III – Supplemental Documentation.

Drawdown Time

To determine whether an infiltration BMP will drain within 72 hours, the following formula must be used;

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

The drawdown calculations can be found in Part III – Supplemental Documentation.

Stormwater basins are within four (4) feet of estimated groundwater, however the basins were modeled without exfiltration for all design storms. For those basins providing recharge (static storage) a minimum two (2) groundwater separation is proposed. Therefore, no groundwater analysis is required for this project.

Standard #3 is met.

3.4 Removal of 80% TSS (Standard 4)

Stormwater management systems shall be designed to remove 80% of the average annual post-construction load of Total Suspended Solids (TSS).

The proposed stormwater management system design calls for 4' deep sump catch basins to collect runoff from the roadway. Stormwater runoff from pavement areas will then be conveyed by a closed pipe system to sediment forebays followed by infiltration basins. Calculations for removal rates for all paved runoff are below. These calculations are shown on the attached TSS Calculation Worksheets.

Deep Sump Catch Basins	25%
Infiltration Basin w/ Sediment Forebay	80%

The TSS removal calculations can be found in Part III – Supplemental Documentation.

Water Quality Volume Provided

Outlets in the stormwater basins are set at an elevation above the required WQV. The water quality calculations can be found in Part III – Supplemental Documentation.

Forebay Sizing

The forebay volume is based on 0.1-inch over the contributing impervious areas. The forebays for each basin have been sized accordingly and calculations can be found in Part II – Pre & Post-Construction Computations.

Standard #4 is met.

3.5 Land Uses with Higher Potential (Standard 5)

This project does not contain areas with higher potential for pollution.

Standard #5 is met.

3.6 Critical Areas (Standard 6 – Water Quality Treatments)

The subject property does not discharge stormwater within the Zone II or Interim Wellhead Protection Area of a public water supply or to any other critical area.

Standard #6 is met.

3.7 Redevelopment (Standard 7)

Redevelopment projects are those that involve development, rehabilitation or expansion on previously developed sites provided the redevelopment results in no net increase in impervious area. Furthermore, components of redevelopment project, which include development of previously undeveloped sites, do not fall under Standard 7. In addition, redevelopment of previously developed sites must meet the Stormwater Management Standards to the maximum extent practicable. However, if it is not practicable to meet all the Standards, new (retrofitted or expanded) stormwater management systems must be designed to improve existing conditions.

This site is not a redevelopment project. Standard #7 is not applicable.

3.8 Erosion and Sedimentation Controls (Standard 8)

A separate Operation & Maintenance Plan has been provided.

Standard #8 is met.

3.9 Operation and Maintenance Plan (Standard 9)

A separate Operation & Maintenance Plan has been provided.

Standard #9 is met.

3.10 Illicit Discharges (Standard 10)

See Illicit Discharge statement on following page.

Standard #10 is met.

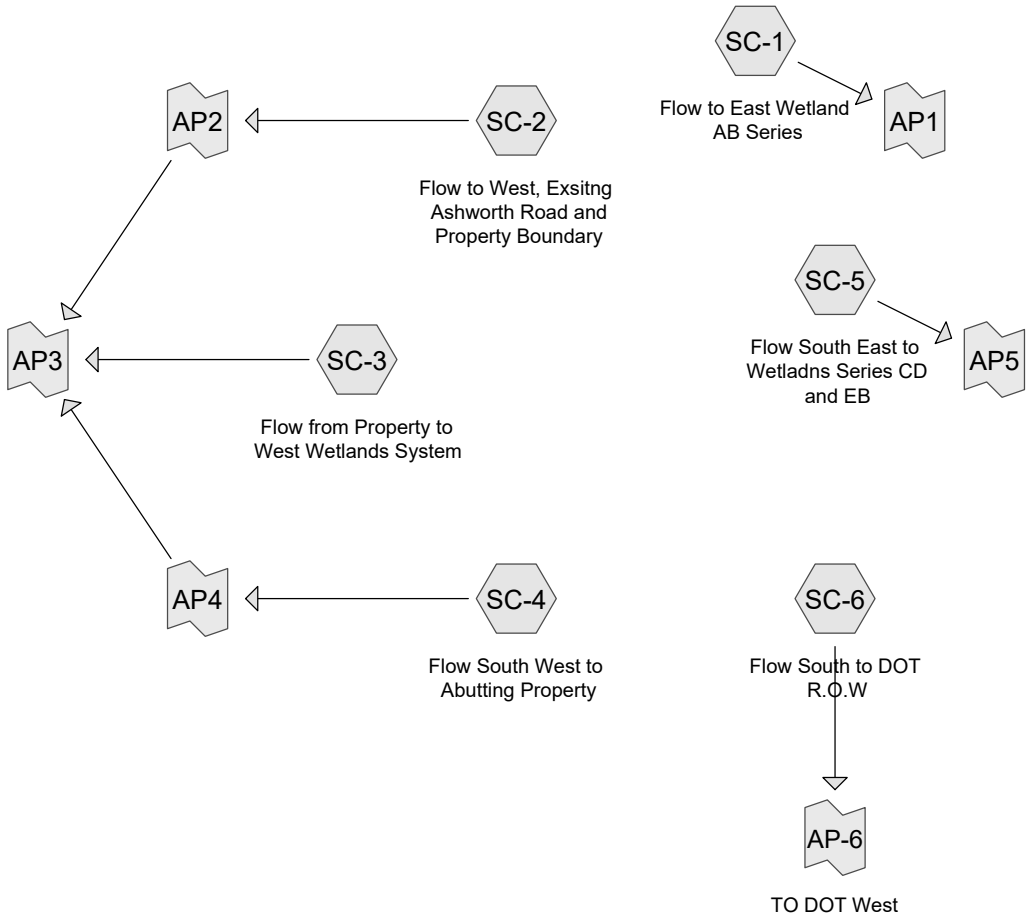
Attachment
Illicit Discharge Compliance Statement

It is the intent of the Applicant, Eastland Partners, Inc., to control illicit disposal into the storm drainage system. There will be no connection to the storm water system to inadvertently direct other types of liquids, chemicals or solids into the storm drainage system. The Applicant will also promote a clean Green Environment by mitigating spills onto pavements; oils, soda, chemicals, pet waste, debris and litter.

Respectfully Acknowledged,

Eastland Partners, Inc.

PART II – PRE & POST-CONSTRUCTION COMPUTATIONS



Subcat Reach Pond Link

Routing Diagram for 1001-PRE-REV0
Prepared by TURNING POINT ENGINEERING

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
93,968	61	>75% Grass cover, Good, HSG B (SC-7)
217,330	74	>75% Grass cover, Good, HSG C (SC-1, SC-2, SC-3, SC-7)
3,320	80	>75% Grass cover, Good, HSG D (SC-3)
88,436	48	Brush, Good, HSG B (SC-3, SC-4)
894,990	65	Brush, Good, HSG C (SC-1, SC-2, SC-3)
30,300	73	Brush, Good, HSG D (SC-2, SC-3)
11,535	76	Gravel roads, HSG A (SC-6, SC-7)
173,707	85	Gravel roads, HSG B (SC-1, SC-3, SC-6, SC-7)
139,812	89	Gravel roads, HSG C (SC-1, SC-2, SC-3)
21,962	91	Gravel roads, HSG D (SC-2, SC-3)
4,291	96	Gravel surface, HSG B (SC-5)
4,184	96	Gravel surface, HSG C (SC-5)
3,042	98	Paved parking, HSG A (SC-6)
6,878	98	Paved parking, HSG B (SC-6, SC-7)
62,959	98	Paved parking, HSG C (SC-1, SC-2, SC-3, SC-7)
724	98	Roofs, HSG C (SC-3)
3,274	98	Unconnected roofs, HSG C (SC-1)
109,985	36	Woods, Fair, HSG A (SC-6, SC-7)
3,737,277	55	Woods, Good, HSG B (SC-1, SC-3, SC-4, SC-5, SC-6, SC-7)
2,203,979	70	Woods, Good, HSG C (SC-1, SC-2, SC-3, SC-5)
992,123	77	Woods, Good, HSG D (SC-2, SC-3, SC-4, SC-5)
8,804,076	**64**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
124,562	HSG A	SC-6, SC-7
4,104,557	HSG B	SC-1, SC-3, SC-4, SC-5, SC-6, SC-7
3,527,252	HSG C	SC-1, SC-2, SC-3, SC-5, SC-7
1,047,705	HSG D	SC-2, SC-3, SC-4, SC-5
0	Other	
8,804,076		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	93,968	217,330	3,320	0	314,618	>75% Grass cover, Good	
0	88,436	894,990	30,300	0	1,013,726	Brush, Good	
11,535	173,707	139,812	21,962	0	347,016	Gravel roads	
0	4,291	4,184	0	0	8,475	Gravel surface	
3,042	6,878	62,959	0	0	72,879	Paved parking	
0	0	724	0	0	724	Roofs	
0	0	3,274	0	0	3,274	Unconnected roofs	
109,985	0	0	0	0	109,985	Woods, Fair	
0	3,737,277	2,203,979	992,123	0	6,933,379	Woods, Good	
124,562	**4,104,557**	**3,527,252**	**1,047,705**	**0**	**8,804,076**	**TOTAL AREA**	

Time span=5.00-120.00 hrs, dt=0.04 hrs, 2876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentSC-1: Flow to East Runoff Area=1,322,765 sf 0.87% Impervious Runoff Depth=0.70"
Flow Length=1,322' Tc=18.0 min CN=67 Runoff=14.5 cfs 76,895 cf

SubcatchmentSC-2: Flow to West, Runoff Area=374,598 sf 12.25% Impervious Runoff Depth=1.11"
Flow Length=810' Tc=13.9 min CN=75 Runoff=8.3 cfs 34,572 cf

SubcatchmentSC-3: Flow from Property Runoff Area=4,465,323 sf 0.07% Impervious Runoff Depth=0.61"
Flow Length=2,361' Tc=18.3 min CN=65 Runoff=39.9 cfs 227,031 cf

SubcatchmentSC-4: Flow South West to Runoff Area=255,851 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=616' Tc=11.5 min CN=62 Runoff=1.9 cfs 10,438 cf

SubcatchmentSC-5: Flow South East to Runoff Area=819,770 sf 0.00% Impervious Runoff Depth=0.70"
Flow Length=1,200' Tc=12.2 min CN=67 Runoff=10.3 cfs 47,655 cf

SubcatchmentSC-6: Flow South to DOT Runoff Area=848,591 sf 0.80% Impervious Runoff Depth=0.32"
Flow Length=1,410' Tc=17.0 min CN=57 Runoff=2.6 cfs 22,374 cf

SubcatchmentSC-7: Flow South to DOT Runoff Area=717,178 sf 1.36% Impervious Runoff Depth=0.29"
Flow Length=1,050' Tc=11.0 min CN=56 Runoff=2.0 cfs 17,087 cf

Link AP-6: TO DOT West Inflow=2.6 cfs 22,374 cf
Primary=2.6 cfs 22,374 cf

Link AP-7: TO DOT East Inflow=2.0 cfs 17,087 cf
Primary=2.0 cfs 17,087 cf

Link AP1: Inflow=14.5 cfs 76,895 cf
Primary=14.5 cfs 76,895 cf

Link AP2: Inflow=8.3 cfs 34,572 cf
Primary=8.3 cfs 34,572 cf

Link AP3: Inflow=48.7 cfs 272,041 cf
Primary=48.7 cfs 272,041 cf

Link AP4: Inflow=1.9 cfs 10,438 cf
Primary=1.9 cfs 10,438 cf

Link AP5: Inflow=10.3 cfs 47,655 cf
Primary=10.3 cfs 47,655 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 436,053 cf Average Runoff Depth = 0.59"
99.13% Pervious = 8,727,199 sf 0.87% Impervious = 76,877 sf

Time span=5.00-120.00 hrs, dt=0.04 hrs, 2876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentSC-1: Flow to East Runoff Area=1,322,765 sf 0.87% Impervious Runoff Depth=1.80"
Flow Length=1,322' Tc=18.0 min CN=67 Runoff=43.2 cfs 198,749 cf

SubcatchmentSC-2: Flow to West, Runoff Area=374,598 sf 12.25% Impervious Runoff Depth=2.45"
Flow Length=810' Tc=13.9 min CN=75 Runoff=19.1 cfs 76,458 cf

SubcatchmentSC-3: Flow from Property Runoff Area=4,465,323 sf 0.07% Impervious Runoff Depth=1.65"
Flow Length=2,361' Tc=18.3 min CN=65 Runoff=130.8 cfs 615,295 cf

SubcatchmentSC-4: Flow South West to Runoff Area=255,851 sf 0.00% Impervious Runoff Depth=1.44"
Flow Length=616' Tc=11.5 min CN=62 Runoff=7.5 cfs 30,667 cf

SubcatchmentSC-5: Flow South East to Runoff Area=819,770 sf 0.00% Impervious Runoff Depth=1.80"
Flow Length=1,200' Tc=12.2 min CN=67 Runoff=31.1 cfs 123,172 cf

SubcatchmentSC-6: Flow South to DOT Runoff Area=848,591 sf 0.80% Impervious Runoff Depth=1.10"
Flow Length=1,410' Tc=17.0 min CN=57 Runoff=15.1 cfs 78,108 cf

SubcatchmentSC-7: Flow South to DOT Runoff Area=717,178 sf 1.36% Impervious Runoff Depth=1.04"
Flow Length=1,050' Tc=11.0 min CN=56 Runoff=13.8 cfs 62,251 cf

Link AP-6: TO DOT West Inflow=15.1 cfs 78,108 cf
Primary=15.1 cfs 78,108 cf

Link AP-7: TO DOT East Inflow=13.8 cfs 62,251 cf
Primary=13.8 cfs 62,251 cf

Link AP1: Inflow=43.2 cfs 198,749 cf
Primary=43.2 cfs 198,749 cf

Link AP2: Inflow=19.1 cfs 76,458 cf
Primary=19.1 cfs 76,458 cf

Link AP3: Inflow=154.6 cfs 722,420 cf
Primary=154.6 cfs 722,420 cf

Link AP4: Inflow=7.5 cfs 30,667 cf
Primary=7.5 cfs 30,667 cf

Link AP5: Inflow=31.1 cfs 123,172 cf
Primary=31.1 cfs 123,172 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 1,184,700 cf Average Runoff Depth = 1.61"
99.13% Pervious = 8,727,199 sf 0.87% Impervious = 76,877 sf

Time span=5.00-120.00 hrs, dt=0.04 hrs, 2876 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentSC-1: Flow to East Runoff Area=1,322,765 sf 0.87% Impervious Runoff Depth=2.62"
Flow Length=1,322' Tc=18.0 min CN=67 Runoff=64.5 cfs 288,908 cf

SubcatchmentSC-2: Flow to West, Runoff Area=374,598 sf 12.25% Impervious Runoff Depth=3.38"
Flow Length=810' Tc=13.9 min CN=75 Runoff=26.5 cfs 105,654 cf

SubcatchmentSC-3: Flow from Property Runoff Area=4,465,323 sf 0.07% Impervious Runoff Depth=2.44"
Flow Length=2,361' Tc=18.3 min CN=65 Runoff=199.1 cfs 907,558 cf

SubcatchmentSC-4: Flow South West to Runoff Area=255,851 sf 0.00% Impervious Runoff Depth=2.17"
Flow Length=616' Tc=11.5 min CN=62 Runoff=11.9 cfs 46,330 cf

SubcatchmentSC-5: Flow South East to Runoff Area=819,770 sf 0.00% Impervious Runoff Depth=2.62"
Flow Length=1,200' Tc=12.2 min CN=67 Runoff=46.3 cfs 179,047 cf

SubcatchmentSC-6: Flow South to DOT Runoff Area=848,591 sf 0.80% Impervious Runoff Depth=1.75"
Flow Length=1,410' Tc=17.0 min CN=57 Runoff=26.2 cfs 123,706 cf

SubcatchmentSC-7: Flow South to DOT Runoff Area=717,178 sf 1.36% Impervious Runoff Depth=1.67"
Flow Length=1,050' Tc=11.0 min CN=56 Runoff=24.5 cfs 99,672 cf

Link AP-6: TO DOT West Inflow=26.2 cfs 123,706 cf
Primary=26.2 cfs 123,706 cf

Link AP-7: TO DOT East Inflow=24.5 cfs 99,672 cf
Primary=24.5 cfs 99,672 cf

Link AP1: Inflow=64.5 cfs 288,908 cf
Primary=64.5 cfs 288,908 cf

Link AP2: Inflow=26.5 cfs 105,654 cf
Primary=26.5 cfs 105,654 cf

Link AP3: Inflow=233.5 cfs 1,059,542 cf
Primary=233.5 cfs 1,059,542 cf

Link AP4: Inflow=11.9 cfs 46,330 cf
Primary=11.9 cfs 46,330 cf

Link AP5: Inflow=46.3 cfs 179,047 cf
Primary=46.3 cfs 179,047 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 1,750,875 cf Average Runoff Depth = 2.39"
99.13% Pervious = 8,727,199 sf 0.87% Impervious = 76,877 sf

Summary for Subcatchment SC-1: Flow to East Wetland AB Series

Runoff = 99.5 cfs @ 12.25 hrs, Volume= 439,694 cf, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
761,590	65	Brush, Good, HSG C
44,876	74	>75% Grass cover, Good, HSG C
14,922	85	Gravel roads, HSG B
65,727	89	Gravel roads, HSG C
8,276	98	Paved parking, HSG C
3,274	98	Unconnected roofs, HSG C
116,000	55	Woods, Good, HSG B
308,100	70	Woods, Good, HSG C
1,322,765	67	Weighted Average
1,311,215		99.13% Pervious Area
11,550		0.87% Impervious Area
3,274		28.35% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow, Segment A** Woods: Light underbrush n= 0.400 P2= 3.20"
5.7	1,272	0.0530	3.71		**Shallow Concentrated Flow, Segment B** Unpaved Kv= 16.1 fps
18.0	1,322	Total			

Summary for Subcatchment SC-2: Flow to West, Exsitng Ashworth Road and Property Boundary

Runoff = 38.2 cfs @ 12.19 hrs, Volume= 152,884 cf, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
82,795	65	Brush, Good, HSG C
11,833	73	Brush, Good, HSG D
153,434	74	>75% Grass cover, Good, HSG C
8,568	89	Gravel roads, HSG C
45,872	98	Paved parking, HSG C
52,971	70	Woods, Good, HSG C
18,488	77	Woods, Good, HSG D
637	91	Gravel roads, HSG D
374,598	75	Weighted Average
328,726		87.75% Pervious Area
45,872		12.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	50	0.0414	0.09		**Sheet Flow, SEGMENT A** Woods: Light underbrush n= 0.400 P2= 3.20"
4.7	760	0.0280	2.69		**Shallow Concentrated Flow, SEGMENT B** Unpaved Kv= 16.1 fps
13.9	810	Total			

Summary for Subcatchment SC-3: Flow from Property to West Wetlands System

Runoff = 314.0 cfs @ 12.26 hrs, Volume= 1,401,092 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
74,445	48	Brush, Good, HSG B
50,605	65	Brush, Good, HSG C
18,467	73	Brush, Good, HSG D
5,547	74	>75% Grass cover, Good, HSG C
3,320	80	>75% Grass cover, Good, HSG D
78,518	85	Gravel roads, HSG B
65,517	89	Gravel roads, HSG C
21,325	91	Gravel roads, HSG D
2,220	98	Paved parking, HSG C
724	98	Roofs, HSG C
2,027,638	55	Woods, Good, HSG B
1,277,753	70	Woods, Good, HSG C
839,244	77	Woods, Good, HSG D
4,465,323	65	Weighted Average
4,462,379		99.93% Pervious Area
2,944		0.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow, SEGMENT A** Woods: Light underbrush n= 0.400 P2= 3.20"
2.6	721	0.0850	4.69		**Shallow Concentrated Flow, SEGMENT B** Unpaved Kv= 16.1 fps
2.2	300	0.0233	2.29		**Shallow Concentrated Flow, SEGMENT C** Grassed Waterway Kv= 15.0 fps
1.6	500	0.1040	5.19		**Shallow Concentrated Flow, SEGMENT D** Unpaved Kv= 16.1 fps
4.0	790	0.0481	3.29		**Shallow Concentrated Flow, SEGMENT E** Grassed Waterway Kv= 15.0 fps
18.3	2,361	Total			

Summary for Subcatchment SC-4: Flow South West to Abutting Property

Runoff = 19.4 cfs @ 12.17 hrs, Volume= 73,195 cf, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
158,303	55	Woods, Good, HSG B
83,557	77	Woods, Good, HSG D
13,991	48	Brush, Good, HSG B
255,851	62	Weighted Average
255,851		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.3	50	0.0400	0.09		**Sheet Flow, SEGMENT A** Woods: Light underbrush n= 0.400 P2= 3.20"
2.2	566	0.0740	4.38		**Shallow Concentrated Flow, SEGMENT B** Unpaved Kv= 16.1 fps
11.5	616	Total			

Summary for Subcatchment SC-5: Flow South East to Wetladns Series CD and EB

Runoff = 71.5 cfs @ 12.17 hrs, Volume= 272,496 cf, Depth= 3.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
4,291	96	Gravel surface, HSG B
4,184	96	Gravel surface, HSG C
195,306	55	Woods, Good, HSG B
565,155	70	Woods, Good, HSG C
50,834	77	Woods, Good, HSG D
819,770	67	Weighted Average
819,770		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1	50	0.0800	0.12		**Sheet Flow, Segmant A** Woods: Light underbrush n= 0.400 P2= 3.20"
5.1	1,150	0.0550	3.78		**Shallow Concentrated Flow, SEGMENT B** Unpaved Kv= 16.1 fps
12.2	1,200	Total			

Summary for Subcatchment SC-6: Flow South to DOT R.O.W

Runoff = 45.7 cfs @ 12.25 hrs, Volume= 204,295 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
734,368	55	Woods, Good, HSG B
2,704	76	Gravel roads, HSG A
68,050	85	Gravel roads, HSG B
3,042	98	Paved parking, HSG A
3,709	98	Paved parking, HSG B
36,718	36	Woods, Fair, HSG A
848,591	57	Weighted Average
841,840		99.20% Pervious Area
6,751		0.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	50	0.0200	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
4.7	1,360	0.0897	4.82		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
17.0	1,410	Total			

Summary for Subcatchment SC-7: Flow South to DOT R.O.W

Runoff = 43.4 cfs @ 12.16 hrs, Volume= 166,254 cf, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
505,662	55	Woods, Good, HSG B
8,831	76	Gravel roads, HSG A
12,217	85	Gravel roads, HSG B
3,169	98	Paved parking, HSG B
6,591	98	Paved parking, HSG C
93,968	61	>75% Grass cover, Good, HSG B
13,473	74	>75% Grass cover, Good, HSG C
73,267	36	Woods, Fair, HSG A
717,178	56	Weighted Average
707,418		98.64% Pervious Area
9,760		1.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	50	0.0600	0.10		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.20"
3.1	1,000	0.1100	5.34		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
11.0	1,050	Total			

Summary for Link AP-6: TO DOT West

Inflow Area = 848,591 sf, 0.80% Impervious, Inflow Depth = 2.89" for 100-Year event
Inflow = 45.7 cfs @ 12.25 hrs, Volume= 204,295 cf
Primary = 45.7 cfs @ 12.25 hrs, Volume= 204,295 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP-7: TO DOT East

Inflow Area = 717,178 sf, 1.36% Impervious, Inflow Depth = 2.78" for 100-Year event
Inflow = 43.4 cfs @ 12.16 hrs, Volume= 166,254 cf
Primary = 43.4 cfs @ 12.16 hrs, Volume= 166,254 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP1:

Inflow Area = 1,322,765 sf, 0.87% Impervious, Inflow Depth = 3.99" for 100-Year event
Inflow = 99.5 cfs @ 12.25 hrs, Volume= 439,694 cf
Primary = 99.5 cfs @ 12.25 hrs, Volume= 439,694 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP2:

Inflow Area = 374,598 sf, 12.25% Impervious, Inflow Depth = 4.90" for 100-Year event
Inflow = 38.2 cfs @ 12.19 hrs, Volume= 152,884 cf
Primary = 38.2 cfs @ 12.19 hrs, Volume= 152,884 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP3:

Inflow Area = 5,095,772 sf, 0.96% Impervious, Inflow Depth = 3.83" for 100-Year event
Inflow = 365.1 cfs @ 12.25 hrs, Volume= 1,627,170 cf
Primary = 365.1 cfs @ 12.25 hrs, Volume= 1,627,170 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP4:

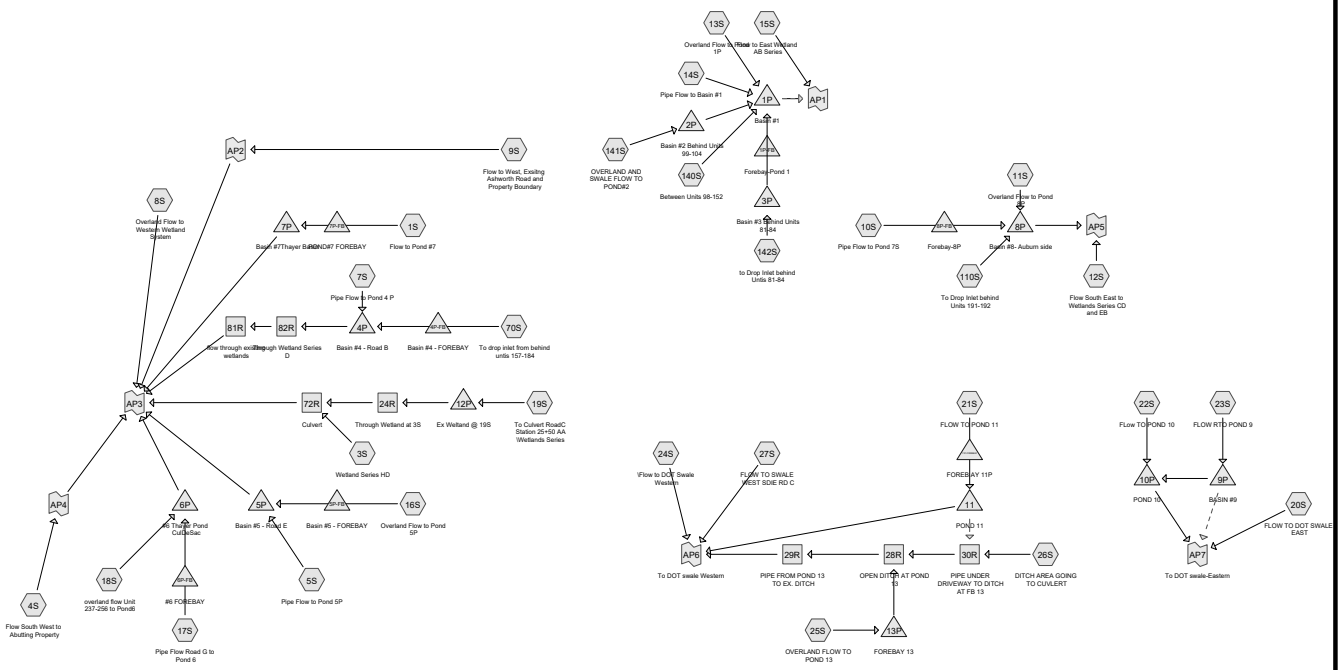
Inflow Area = 255,851 sf, 0.00% Impervious, Inflow Depth = 3.43" for 100-Year event
Inflow = 19.4 cfs @ 12.17 hrs, Volume= 73,195 cf
Primary = 19.4 cfs @ 12.17 hrs, Volume= 73,195 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs

Summary for Link AP5:

Inflow Area = 819,770 sf, 0.00% Impervious, Inflow Depth = 3.99" for 100-Year event
Inflow = 71.5 cfs @ 12.17 hrs, Volume= 272,496 cf
Primary = 71.5 cfs @ 12.17 hrs, Volume= 272,496 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-120.00 hrs, dt= 0.04 hrs



Subcat Reach Pond Link

Routing Diagram for 1001-POST REV0
Prepared by TURNING POINT ENGINEERING
HydroCAD® 10.00-20 s/n 10079 © 2017 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
201,553	89	75% imp, HSG B (21S)
124,562	39	>75% Grass cover, Good, HSG A (20S, 21S, 22S, 23S, 24S, 26S)
1,466,503	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 10S, 11S, 14S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 27S, 70S, 110S, 142S)
1,489,736	74	>75% Grass cover, Good, HSG C (3S, 5S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 19S, 23S, 70S, 110S, 140S, 141S, 142S)
334,331	80	>75% Grass cover, Good, HSG D (3S, 5S, 7S, 8S, 12S, 14S, 17S, 18S, 21S, 141S)
166,300	65	Brush, Good, HSG C (9S, 15S)
10,890	85	Gravel roads, HSG B (1S, 4S, 8S, 11S, 18S, 19S)
21,177	89	Gravel roads, HSG C (11S, 12S, 13S, 14S, 15S)
3,089	91	Gravel roads, HSG D (11S, 12S, 14S)
79,054	98	Ledge Face, HSG B (23S)
138,708	98	Paved parking, HSG B (14S, 17S, 21S, 24S, 25S)
230,264	98	Paved parking, HSG C (8S, 9S, 13S, 14S)
27,097	98	Paved parking, HSG D (14S, 17S)
137,838	98	Paved roads w/curbs & sewers, HSG B (1S, 5S, 7S, 10S)
165,305	98	Paved roads w/curbs & sewers, HSG C (5S, 7S, 10S)
15,628	98	Paved roads w/curbs & sewers, HSG D (1S, 5S)
247,579	98	Roofs, HSG B (1S, 3S, 5S, 7S, 8S, 10S, 14S, 16S, 17S, 18S, 23S, 70S, 110S, 142S)
534,716	98	Roofs, HSG C (3S, 5S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 23S, 70S, 110S, 140S, 141S, 142S)
90,496	98	Roofs, HSG D (1S, 3S, 5S, 7S, 8S, 14S, 17S, 18S, 141S)
1,822,432	55	Woods, Good, HSG B (1S, 3S, 4S, 5S, 8S, 11S, 12S, 15S, 18S, 19S, 21S, 23S, 24S, 27S, 110S)
919,754	70	Woods, Good, HSG C (3S, 8S, 9S, 11S, 12S, 14S, 15S, 19S)
577,064	77	Woods, Good, HSG D (8S, 12S, 14S, 18S)
8,804,076	**72**	**TOTAL AREA**

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
124,562	HSG A	20S, 21S, 22S, 23S, 24S, 26S
4,104,557	HSG B	1S, 3S, 4S, 5S, 7S, 8S, 10S, 11S, 12S, 14S, 15S, 16S, 17S, 18S, 19S, 20S, 21S, 22S, 23S, 24S, 25S, 27S, 70S, 110S, 142S
3,527,252	HSG C	3S, 5S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 19S, 23S, 70S, 110S, 140S, 141S, 142S
1,047,705	HSG D	1S, 3S, 5S, 7S, 8S, 11S, 12S, 14S, 17S, 18S, 21S, 141S
0	Other	
8,804,076		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover
0	201,553	0	0	0	201,553	75% imp
124,562	1,466,503	1,489,736	334,331	0	3,415,132	>75% Grass cover, Good
0	0	166,300	0	0	166,300	Brush, Good
0	10,890	21,177	3,089	0	35,156	Gravel roads
0	79,054	0	0	0	79,054	Ledge Face
0	138,708	230,264	27,097	0	396,069	Paved parking
0	137,838	165,305	15,628	0	318,771	Paved roads w/curbs & sewers
0	247,579	534,716	90,496	0	872,791	Roofs
0	1,822,432	919,754	577,064	0	3,319,250	Woods, Good
124,562	**4,104,557**	**3,527,252**	**1,047,705**	**0**	**8,804,076**	**TOTAL AREA**

Time span=0.00-160.00 hrs, dt=0.02 hrs, 8001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Flow to Pond #7 Runoff Area=143,088 sf 41.99% Impervious Runoff Depth=1.17"
Tc=6.9 min CN=76 Runoff=4.2 cfs 13,903 cf

Subcatchment3S: Wetland Series HD Runoff Area=308,408 sf 11.40% Impervious Runoff Depth=0.94"
Flow Length=935' Slope=0.0500 '/' Tc=17.0 min CN=72 Runoff=5.2 cfs 24,212 cf

Subcatchment4S: Flow South West to Runoff Area=48,140 sf 0.00% Impervious Runoff Depth=0.32"
Flow Length=210' Slope=0.1600 '/' Tc=6.0 min CN=57 Runoff=0.2 cfs 1,269 cf

Subcatchment5S: Pipe Flow to Pond 5P Runoff Area=412,005 sf 45.38% Impervious Runoff Depth=1.35"
Tc=8.3 min CN=79 Runoff=13.6 cfs 46,411 cf

Subcatchment7S: Pipe Flow to Pond 4 P Runoff Area=211,415 sf 50.32% Impervious Runoff Depth=1.85"
Tc=7.6 min CN=86 Runoff=10.0 cfs 32,637 cf

Subcatchment8S: Overland Flow to Runoff Area=2,459,782 sf 2.78% Impervious Runoff Depth=0.65"
Flow Length=2,165' Slope=0.0540 '/' Tc=37.6 min CN=66 Runoff=18.1 cfs 133,880 cf

Subcatchment9S: Flow to West, Exsitng Runoff Area=198,495 sf 17.45% Impervious Runoff Depth=1.17"
Flow Length=360' Slope=0.0250 '/' Tc=10.0 min CN=76 Runoff=5.2 cfs 19,286 cf

Subcatchment10S: Pipe Flow to Pond 7S Runoff Area=282,758 sf 68.79% Impervious Runoff Depth=2.19"
Tc=8.6 min CN=90 Runoff=15.0 cfs 51,536 cf

Subcatchment11S: Overland Flow to Runoff Area=210,636 sf 10.97% Impervious Runoff Depth=1.11"
Tc=7.5 min CN=75 Runoff=5.7 cfs 19,440 cf

Subcatchment12S: Flow South East to Runoff Area=176,101 sf 11.45% Impervious Runoff Depth=1.23"
Flow Length=400' Slope=0.1450 '/' Tc=6.0 min CN=77 Runoff=5.6 cfs 17,993 cf

Subcatchment13S: Overland Flow to Runoff Area=138,445 sf 5.79% Impervious Runoff Depth=1.17"
Flow Length=406' Slope=0.0320 '/' Tc=9.7 min CN=76 Runoff=3.7 cfs 13,452 cf

Subcatchment14S: Pipe Flow to Basin #1 Runoff Area=619,646 sf 64.59% Impervious Runoff Depth=2.10"
Tc=10.5 min CN=89 Runoff=29.9 cfs 108,428 cf

Subcatchment15S: Flow to East Wetland Runoff Area=515,370 sf 8.70% Impervious Runoff Depth=0.94"
Flow Length=675' Slope=0.0710 '/' Tc=11.0 min CN=72 Runoff=10.2 cfs 40,460 cf

Subcatchment16S: Overland Flow to Runoff Area=24,053 sf 12.01% Impervious Runoff Depth=0.61"
Tc=6.0 min CN=65 Runoff=0.3 cfs 1,223 cf

Subcatchment17S: Pipe Flow Road G to Runoff Area=124,956 sf 73.88% Impervious Runoff Depth=2.19"
Tc=7.2 min CN=90 Runoff=7.0 cfs 22,775 cf

Subcatchment18S: overland flow Unit Runoff Area=361,191 sf 11.58% Impervious Runoff Depth=1.11"
Tc=7.1 min CN=75 Runoff=9.9 cfs 33,335 cf

Subcatchment19S: To Culvert RoadC Runoff Area=205,391 sf 0.00% Impervious Runoff Depth=0.57"
Flow Length=525' Slope=0.0630 '/' Tc=11.8 min CN=64 Runoff=1.9 cfs 9,731 cf

Subcatchment20S: FLOW TO DOT SWALE Runoff Area=78,109 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=135' Slope=0.2800 '/' Tc=6.0 min CN=41 Runoff=0.0 cfs 52 cf

Subcatchment21S: FLOW TO POND 11 Runoff Area=470,027 sf 44.94% Impervious Runoff Depth=1.23"
Tc=6.0 min CN=77 Runoff=15.1 cfs 48,026 cf

Subcatchment22S: FLow TO POND 10 Runoff Area=50,747 sf 0.00% Impervious Runoff Depth=0.20"
Flow Length=180' Slope=0.0167 '/' Tc=12.9 min CN=53 Runoff=0.1 cfs 858 cf

Subcatchment23S: FLOW RTO POND 9 Runoff Area=649,080 sf 13.68% Impervious Runoff Depth=0.61"
Flow Length=638' Tc=23.1 min CN=65 Runoff=5.3 cfs 33,001 cf

Subcatchment24S: \Flow to DOT Swale Runoff Area=162,032 sf 2.49% Impervious Runoff Depth=0.29"
Flow Length=765' Slope=0.0970 '/' Tc=15.8 min CN=56 Runoff=0.4 cfs 3,861 cf

Subcatchment25S: OVERLAND FLOW TO Runoff Area=35,268 sf 42.09% Impervious Runoff Depth=1.23"
Flow Length=245' Slope=0.0490 '/' Tc=6.0 min CN=77 Runoff=1.1 cfs 3,604 cf

Subcatchment26S: DITCH AREA GOING TO Runoff Area=7,983 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=116' Slope=0.1100 '/' Tc=6.0 min CN=39 Runoff=0.0 cfs 0 cf

Subcatchment27S: FLOW TO SWALE Runoff Area=148,697 sf 0.00% Impervious Runoff Depth=0.26"
Flow Length=678' Slope=0.1000 '/' Tc=14.5 min CN=55 Runoff=0.3 cfs 3,182 cf

Subcatchment70S: To drop inlet from Runoff Area=148,787 sf 25.32% Impervious Runoff Depth=1.00"
Flow Length=280' Slope=0.0290 '/' Tc=8.3 min CN=73 Runoff=3.4 cfs 12,344 cf

Subcatchment110S: To Drop Inlet behind Runoff Area=243,640 sf 19.54% Impervious Runoff Depth=0.84"
Flow Length=335' Slope=0.1300 '/' Tc=6.0 min CN=70 Runoff=4.9 cfs 17,050 cf

Subcatchment140S: Between Units Runoff Area=143,379 sf 30.60% Impervious Runoff Depth=1.48"
Tc=6.0 min CN=81 Runoff=5.7 cfs 17,741 cf

Subcatchment141S: OVERLAND AND Runoff Area=155,940 sf 19.78% Impervious Runoff Depth=1.42"
Flow Length=750' Slope=0.0240 '/' Tc=16.3 min CN=80 Runoff=4.3 cfs 18,418 cf

Subcatchment142S: to Drop Inlet behind Runoff Area=70,507 sf 27.43% Impervious Runoff Depth=1.05"
Flow Length=300' Slope=0.0660 '/' Tc=6.0 min CN=74 Runoff=1.9 cfs 6,174 cf

Reach 24R: Through Wetland at 3S Avg. Flow Depth=0.07' Max Vel=0.93 fps Inflow=1.9 cfs 9,731 cf
n=0.035 L=420.0' S=0.0190 '/' Capacity=206.2 cfs Outflow=1.6 cfs 9,731 cf

Reach 28R: OPEN DITCH AT POND 13 Avg. Flow Depth=0.00' Max Vel=0.14 fps Inflow=0.0 cfs 0 cf
n=0.030 L=50.0' S=0.0100 '/' Capacity=4.7 cfs Outflow=0.0 cfs 0 cf

Reach 29R: PIPE FROM POND 13 TO EX. Avg. Flow Depth=0.00' Max Vel=0.41 fps Inflow=0.0 cfs 0 cf
15.0" Round Pipe n=0.013 L=130.0' S=0.0077 '/' Capacity=5.7 cfs Outflow=0.0 cfs 0 cf

Reach 30R: PIPE UNDER DRIVEWAY TO Avg. Flow Depth=0.00' Max Vel=0.46 fps Inflow=0.0 cfs 0 cf
12.0" Round Pipe n=0.012 L=135.0' S=0.0111 '/' Capacity=4.1 cfs Outflow=0.0 cfs 0 cf

Reach 72R: Culvert Avg. Flow Depth=0.64' Max Vel=6.03 fps Inflow=6.0 cfs 33,943 cf
30.0" Round Pipe n=0.012 L=68.0' S=0.0088 '/' Capacity=41.7 cfs Outflow=6.0 cfs 33,943 cf

Reach 81R: flow through existing Avg. Flow Depth=0.09' Max Vel=2.07 fps Inflow=1.0 cfs 38,061 cf
n=0.035 L=1,665.0' S=0.0649 '/' Capacity=75.2 cfs Outflow=1.0 cfs 38,061 cf

Reach 82R: Through Wetland Series D Avg. Flow Depth=0.03' Max Vel=0.57 fps Inflow=1.0 cfs 38,062 cf
n=0.035 L=475.0' S=0.0168 '/' Capacity=420.5 cfs Outflow=1.0 cfs 38,061 cf

Pond 1P: Basin #1 Peak Elev=689.18' Storage=78,059 cf Inflow=40.3 cfs 164,212 cf
Primary=0.0 cfs 0 cf Tertiary=6.8 cfs 129,241 cf Outflow=6.8 cfs 129,241 cf

Pond 1P-FB: Forebay-Pond1 Peak Elev=0.00' Storage=0 cf

Pond 2P: Basin #2 Behind Units 99-104 Peak Elev=698.74' Storage=4,865 cf Inflow=4.3 cfs 18,418 cf
Outflow=1.3 cfs 18,418 cf

Pond 3P: Basin #3 Behind Units 81-84 Peak Elev=732.19' Storage=1,384 cf Inflow=1.9 cfs 6,174 cf
Outflow=0.6 cfs 6,174 cf

Pond 4P: Basin #4 - Road B Peak Elev=724.46' Storage=24,555 cf Inflow=13.3 cfs 44,982 cf
Outflow=1.0 cfs 38,062 cf

Pond 4P-FB: Basin #4 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 5P: Basin #5 - Road E Peak Elev=683.90' Storage=18,440 cf Inflow=13.9 cfs 47,634 cf
Outflow=3.6 cfs 39,169 cf

Pond 5P-FB: Basin #5 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 6P: #6 Thayer Pond CulDeSac Peak Elev=668.93' Storage=23,571 cf Inflow=16.9 cfs 56,110 cf
Outflow=4.2 cfs 50,382 cf

Pond 6P-FB: #6 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 7P: Basin #7Thayer Basin Peak Elev=627.86' Storage=3,546 cf Inflow=4.2 cfs 13,903 cf
Outflow=2.7 cfs 11,090 cf

Pond 7P-FB: POND#7 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 8P: Basin #8- Auburn side Peak Elev=686.15' Storage=37,327 cf Inflow=25.6 cfs 88,025 cf
Outflow=6.4 cfs 76,865 cf

Pond 8P-FB: Forebay-8P Peak Elev=0.00' Storage=0 cf

Pond 9P: BASIN #9 Peak Elev=634.77' Storage=11,064 cf Inflow=5.3 cfs 33,001 cf
Primary=1.2 cfs 33,000 cf Secondary=0.0 cfs 0 cf Outflow=1.2 cfs 33,000 cf

Pond 10P: POND 10 Peak Elev=629.67' Storage=5,603 cf Inflow=1.2 cfs 33,858 cf
Outflow=1.0 cfs 33,845 cf

Pond 11: POND 11 Peak Elev=634.80' Storage=48,025 cf Inflow=15.1 cfs 48,026 cf
Primary=0.0 cfs 0 cf Secondary=0.0 cfs 0 cf Outflow=0.0 cfs 0 cf

Pond 11P-FOREBAY: FOREB AY 11P Peak Elev=0.00' Storage=0 cf

Pond 12P: Ex Weltand @ 19S Peak Elev=740.01' Storage=80 cf Inflow=1.9 cfs 9,731 cf
24.0" Round Culvert n=0.013 L=95.0' S=0.0158 '/' Outflow=1.9 cfs 9,731 cf

Pond 13P: FOREBAY 13 Peak Elev=624.09' Storage=2,361 cf Inflow=1.1 cfs 3,604 cf
Discarded=0.0 cfs 3,604 cf Primary=0.0 cfs 0 cf Outflow=0.0 cfs 3,604 cf

Link AP1: Inflow=11.6 cfs 169,701 cf
Primary=11.6 cfs 169,701 cf

Link AP2: Inflow=5.2 cfs 19,286 cf
Primary=5.2 cfs 19,286 cf

Link AP3: Inflow=33.4 cfs 327,081 cf
Primary=33.4 cfs 327,081 cf

Link AP4: Inflow=0.2 cfs 1,269 cf
Primary=0.2 cfs 1,269 cf

Link AP5: Inflow=8.0 cfs 94,858 cf
Primary=8.0 cfs 94,858 cf

Link AP6: To DOT swale Western Inflow=0.8 cfs 7,043 cf
Primary=0.8 cfs 7,043 cf

Link AP7: To DOT swale-Eastern Inflow=1.0 cfs 33,897 cf
Primary=1.0 cfs 33,897 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 754,280 cf Average Runoff Depth = 1.03"
79.35% Pervious = 6,986,226 sf 20.65% Impervious = 1,817,850 sf

Time span=0.00-160.00 hrs, dt=0.02 hrs, 8001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Flow to Pond #7 Runoff Area=143,088 sf 41.99% Impervious Runoff Depth=2.54"
Tc=6.9 min CN=76 Runoff=9.4 cfs 30,234 cf

Subcatchment3S: Wetland Series HD Runoff Area=308,408 sf 11.40% Impervious Runoff Depth=2.20"
Flow Length=935' Slope=0.0500 '/' Tc=17.0 min CN=72 Runoff=12.9 cfs 56,487 cf

Subcatchment4S: Flow South West to Runoff Area=48,140 sf 0.00% Impervious Runoff Depth=1.10"
Flow Length=210' Slope=0.1600 '/' Tc=6.0 min CN=57 Runoff=1.2 cfs 4,431 cf

Subcatchment5S: Pipe Flow to Pond 5P Runoff Area=412,005 sf 45.38% Impervious Runoff Depth=2.80"
Tc=8.3 min CN=79 Runoff=28.7 cfs 96,191 cf

Subcatchment7S: Pipe Flow to Pond 4 P Runoff Area=211,415 sf 50.32% Impervious Runoff Depth=3.47"
Tc=7.6 min CN=86 Runoff=18.4 cfs 61,081 cf

Subcatchment8S: Overland Flow to Runoff Area=2,459,782 sf 2.78% Impervious Runoff Depth=1.73"
Flow Length=2,165' Slope=0.0540 '/' Tc=37.6 min CN=66 Runoff=55.5 cfs 354,142 cf

Subcatchment9S: Flow to West, Exsitng Runoff Area=198,495 sf 17.45% Impervious Runoff Depth=2.54"
Flow Length=360' Slope=0.0250 '/' Tc=10.0 min CN=76 Runoff=11.8 cfs 41,941 cf

Subcatchment10S: Pipe Flow to Pond 7S Runoff Area=282,758 sf 68.79% Impervious Runoff Depth=3.88"
Tc=8.6 min CN=90 Runoff=26.0 cfs 91,338 cf

Subcatchment11S: Overland Flow to Runoff Area=210,636 sf 10.97% Impervious Runoff Depth=2.45"
Tc=7.5 min CN=75 Runoff=13.1 cfs 42,992 cf

Subcatchment12S: Flow South East to Runoff Area=176,101 sf 11.45% Impervious Runoff Depth=2.62"
Flow Length=400' Slope=0.1450 '/' Tc=6.0 min CN=77 Runoff=12.4 cfs 38,493 cf

Subcatchment13S: Overland Flow to Runoff Area=138,445 sf 5.79% Impervious Runoff Depth=2.54"
Flow Length=406' Slope=0.0320 '/' Tc=9.7 min CN=76 Runoff=8.3 cfs 29,252 cf

Subcatchment14S: Pipe Flow to Basin #1 Runoff Area=619,646 sf 64.59% Impervious Runoff Depth=3.77"
Tc=10.5 min CN=89 Runoff=52.6 cfs 194,772 cf

Subcatchment15S: Flow to East Wetland Runoff Area=515,370 sf 8.70% Impervious Runoff Depth=2.20"
Flow Length=675' Slope=0.0710 '/' Tc=11.0 min CN=72 Runoff=25.5 cfs 94,393 cf

Subcatchment16S: Overland Flow to Runoff Area=24,053 sf 12.01% Impervious Runoff Depth=1.65"
Tc=6.0 min CN=65 Runoff=1.0 cfs 3,314 cf

Subcatchment17S: Pipe Flow Road G to Runoff Area=124,956 sf 73.88% Impervious Runoff Depth=3.88"
Tc=7.2 min CN=90 Runoff=12.0 cfs 40,364 cf

Subcatchment18S: overland flow Unit Runoff Area=361,191 sf 11.58% Impervious Runoff Depth=2.45"
Tc=7.1 min CN=75 Runoff=22.8 cfs 73,721 cf

Subcatchment19S: To Culvert RoadC Runoff Area=205,391 sf 0.00% Impervious Runoff Depth=1.58"
Flow Length=525' Slope=0.0630 '/' Tc=11.8 min CN=64 Runoff=6.8 cfs 27,053 cf

Subcatchment20S: FLOW TO DOT SWALE Runoff Area=78,109 sf 0.00% Impervious Runoff Depth=0.27"
Flow Length=135' Slope=0.2800 '/' Tc=6.0 min CN=41 Runoff=0.1 cfs 1,775 cf

Subcatchment21S: FLOW TO POND 11 Runoff Area=470,027 sf 44.94% Impervious Runoff Depth=2.62"
Tc=6.0 min CN=77 Runoff=33.1 cfs 102,740 cf

Subcatchment22S: FLow TO POND 10 Runoff Area=50,747 sf 0.00% Impervious Runoff Depth=0.86"
Flow Length=180' Slope=0.0167 '/' Tc=12.9 min CN=53 Runoff=0.7 cfs 3,640 cf

Subcatchment23S: FLOW RTO POND 9 Runoff Area=649,080 sf 13.68% Impervious Runoff Depth=1.65"
Flow Length=638' Tc=23.1 min CN=65 Runoff=17.3 cfs 89,439 cf

Subcatchment24S: \Flow to DOT Swale Runoff Area=162,032 sf 2.49% Impervious Runoff Depth=1.04"
Flow Length=765' Slope=0.0970 '/' Tc=15.8 min CN=56 Runoff=2.7 cfs 14,064 cf

Subcatchment25S: OVERLAND FLOW TO Runoff Area=35,268 sf 42.09% Impervious Runoff Depth=2.62"
Flow Length=245' Slope=0.0490 '/' Tc=6.0 min CN=77 Runoff=2.5 cfs 7,709 cf

Subcatchment26S: DITCH AREA GOING TO Runoff Area=7,983 sf 0.00% Impervious Runoff Depth=0.20"
Flow Length=116' Slope=0.1100 '/' Tc=6.0 min CN=39 Runoff=0.0 cfs 133 cf

Subcatchment27S: FLOW TO SWALE Runoff Area=148,697 sf 0.00% Impervious Runoff Depth=0.98"
Flow Length=678' Slope=0.1000 '/' Tc=14.5 min CN=55 Runoff=2.4 cfs 12,143 cf

Subcatchment70S: To drop inlet from Runoff Area=148,787 sf 25.32% Impervious Runoff Depth=2.28"
Flow Length=280' Slope=0.0290 '/' Tc=8.3 min CN=73 Runoff=8.4 cfs 28,275 cf

Subcatchment110S: To Drop Inlet behind Runoff Area=243,640 sf 19.54% Impervious Runoff Depth=2.04"
Flow Length=335' Slope=0.1300 '/' Tc=6.0 min CN=70 Runoff=13.1 cfs 41,344 cf

Subcatchment140S: Between Units Runoff Area=143,379 sf 30.60% Impervious Runoff Depth=2.99"
Tc=6.0 min CN=81 Runoff=11.5 cfs 35,669 cf

Subcatchment141S: OVERLAND AND Runoff Area=155,940 sf 19.78% Impervious Runoff Depth=2.89"
Flow Length=750' Slope=0.0240 '/' Tc=16.3 min CN=80 Runoff=8.9 cfs 37,593 cf

Subcatchment142S: to Drop Inlet behind Runoff Area=70,507 sf 27.43% Impervious Runoff Depth=2.36"
Flow Length=300' Slope=0.0660 '/' Tc=6.0 min CN=74 Runoff=4.5 cfs 13,891 cf

Reach 24R: Through Wetland at 3S Avg. Flow Depth=0.14' Max Vel=1.48 fps Inflow=5.8 cfs 27,053 cf
n=0.035 L=420.0' S=0.0190 '/' Capacity=206.2 cfs Outflow=5.7 cfs 27,053 cf

Reach 28R: OPEN DITCH AT POND 13 Avg. Flow Depth=0.08' Max Vel=0.82 fps Inflow=0.1 cfs 1,116 cf
n=0.030 L=50.0' S=0.0100 '/' Capacity=4.7 cfs Outflow=0.1 cfs 1,116 cf

Reach 29R: PIPE FROM POND 13 TO EX. Avg. Flow Depth=0.14' Max Vel=1.97 fps Inflow=0.1 cfs 1,116 cf
15.0" Round Pipe n=0.013 L=130.0' S=0.0077 '/' Capacity=5.7 cfs Outflow=0.1 cfs 1,116 cf

Reach 30R: PIPE UNDER DRIVEWAY TO Avg. Flow Depth=0.03' Max Vel=0.96 fps Inflow=0.0 cfs 133 cf
12.0" Round Pipe n=0.012 L=135.0' S=0.0111 '/' Capacity=4.1 cfs Outflow=0.0 cfs 133 cf

Reach 72R: Culvert Avg. Flow Depth=1.14' Max Vel=8.18 fps Inflow=17.9 cfs 83,540 cf
30.0" Round Pipe n=0.012 L=68.0' S=0.0088 '/' Capacity=41.7 cfs Outflow=17.9 cfs 83,540 cf

Reach 81R: flow through existing Avg. Flow Depth=0.27' Max Vel=4.04 fps Inflow=6.8 cfs 82,436 cf
n=0.035 L=1,665.0' S=0.0649 '/' Capacity=75.2 cfs Outflow=6.7 cfs 82,435 cf

Reach 82R: Through Wetland Series D Avg. Flow Depth=0.11' Max Vel=1.16 fps Inflow=7.0 cfs 82,436 cf
n=0.035 L=475.0' S=0.0168 '/' Capacity=420.5 cfs Outflow=6.8 cfs 82,436 cf

Pond 1P: Basin #1 Peak Elev=690.58' Storage=126,859 cf Inflow=72.7 cfs 311,178 cf
Primary=10.3 cfs 46,311 cf Tertiary=12.1 cfs 229,895 cf Outflow=22.4 cfs 276,206 cf

Pond 1P-FB: Forebay-Pond1 Peak Elev=0.00' Storage=0 cf

Pond 2P: Basin #2 Behind Units 99-104 Peak Elev=699.88' Storage=13,390 cf Inflow=8.9 cfs 37,593 cf
Outflow=1.6 cfs 37,593 cf

Pond 3P: Basin #3 Behind Units 81-84 Peak Elev=732.58' Storage=4,699 cf Inflow=4.5 cfs 13,891 cf
Outflow=0.7 cfs 13,891 cf

Pond 4P: Basin #4 - Road B Peak Elev=725.54' Storage=40,614 cf Inflow=26.7 cfs 89,357 cf
Outflow=7.0 cfs 82,436 cf

Pond 4P-FB: Basin #4 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 5P: Basin #5 - Road E Peak Elev=684.63' Storage=24,420 cf Inflow=29.6 cfs 99,506 cf
Outflow=25.2 cfs 91,040 cf

Pond 5P-FB: Basin #5 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 6P: #6 Thayer Pond CulDeSac Peak Elev=670.09' Storage=38,497 cf Inflow=34.9 cfs 114,085 cf
Outflow=14.5 cfs 108,359 cf

Pond 6P-FB: #6 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 7P: Basin #7Thayer Basin Peak Elev=628.06' Storage=4,462 cf Inflow=9.4 cfs 30,234 cf
Outflow=8.7 cfs 27,420 cf

Pond 7P-FB: POND#7 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 8P: Basin #8- Auburn side Peak Elev=687.44' Storage=64,227 cf Inflow=51.9 cfs 175,674 cf
Outflow=19.7 cfs 164,514 cf

Pond 8P-FB: Forebay-8P Peak Elev=0.00' Storage=0 cf

Pond 9P: BASIN #9 Peak Elev=636.19' Storage=33,117 cf Inflow=17.3 cfs 89,439 cf
Primary=4.2 cfs 89,438 cf Secondary=0.0 cfs 0 cf Outflow=4.2 cfs 89,438 cf

Pond 10P: POND 10 Peak Elev=630.90' Storage=18,694 cf Inflow=4.3 cfs 93,078 cf
Outflow=3.1 cfs 93,064 cf

Pond 11: POND 11 Peak Elev=636.91' Storage=102,739 cf Inflow=33.1 cfs 102,740 cf
Primary=0.0 cfs 0 cf Secondary=0.0 cfs 0 cf Outflow=0.0 cfs 0 cf

Pond 11P-FOREBAY: FOREB AY 11P Peak Elev=0.00' Storage=0 cf

Pond 12P: Ex Weltand @ 19S Peak Elev=740.05' Storage=583 cf Inflow=6.8 cfs 27,053 cf
24.0" Round Culvert n=0.013 L=95.0' S=0.0158 '/' Outflow=5.8 cfs 27,053 cf

Pond 13P: FOREBAY 13 Peak Elev=625.51' Storage=4,745 cf Inflow=2.5 cfs 7,709 cf
Discarded=0.0 cfs 6,726 cf Primary=0.1 cfs 982 cf Outflow=0.2 cfs 7,709 cf

Link AP1: Inflow=39.5 cfs 370,599 cf
Primary=39.5 cfs 370,599 cf

Link AP2: Inflow=11.8 cfs 41,941 cf
Primary=11.8 cfs 41,941 cf

Link AP3: Inflow=103.4 cfs 793,308 cf
Primary=103.4 cfs 793,308 cf

Link AP4: Inflow=1.2 cfs 4,431 cf
Primary=1.2 cfs 4,431 cf

Link AP5: Inflow=24.6 cfs 203,006 cf
Primary=24.6 cfs 203,006 cf

Link AP6: To DOT swale Western Inflow=5.1 cfs 27,323 cf
Primary=5.1 cfs 27,323 cf

Link AP7: To DOT swale-Eastern Inflow=3.2 cfs 94,839 cf
Primary=3.2 cfs 94,839 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 1,668,615 cf Average Runoff Depth = 2.27"
79.35% Pervious = 6,986,226 sf 20.65% Impervious = 1,817,850 sf

Time span=0.00-160.00 hrs, dt=0.02 hrs, 8001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Flow to Pond #7 Runoff Area=143,088 sf 41.99% Impervious Runoff Depth=3.48"
Tc=6.9 min CN=76 Runoff=13.0 cfs 41,542 cf

Subcatchment3S: Wetland Series HD Runoff Area=308,408 sf 11.40% Impervious Runoff Depth=3.09"
Flow Length=935' Slope=0.0500 '/' Tc=17.0 min CN=72 Runoff=18.4 cfs 79,457 cf

Subcatchment4S: Flow South West to Runoff Area=48,140 sf 0.00% Impervious Runoff Depth=1.75"
Flow Length=210' Slope=0.1600 '/' Tc=6.0 min CN=57 Runoff=2.1 cfs 7,018 cf

Subcatchment5S: Pipe Flow to Pond 5P Runoff Area=412,005 sf 45.38% Impervious Runoff Depth=3.79"
Tc=8.3 min CN=79 Runoff=38.6 cfs 130,021 cf

Subcatchment7S: Pipe Flow to Pond 4 P Runoff Area=211,415 sf 50.32% Impervious Runoff Depth=4.52"
Tc=7.6 min CN=86 Runoff=23.7 cfs 79,696 cf

Subcatchment8S: Overland Flow to Runoff Area=2,459,782 sf 2.78% Impervious Runoff Depth=2.53"
Flow Length=2,165' Slope=0.0540 '/' Tc=37.6 min CN=66 Runoff=83.3 cfs 518,499 cf

Subcatchment9S: Flow to West, Exsitng Runoff Area=198,495 sf 17.45% Impervious Runoff Depth=3.48"
Flow Length=360' Slope=0.0250 '/' Tc=10.0 min CN=76 Runoff=16.2 cfs 57,628 cf

Subcatchment10S: Pipe Flow to Pond 7S Runoff Area=282,758 sf 68.79% Impervious Runoff Depth=4.96"
Tc=8.6 min CN=90 Runoff=32.9 cfs 116,940 cf

Subcatchment11S: Overland Flow to Runoff Area=210,636 sf 10.97% Impervious Runoff Depth=3.38"
Tc=7.5 min CN=75 Runoff=18.2 cfs 59,409 cf

Subcatchment12S: Flow South East to Runoff Area=176,101 sf 11.45% Impervious Runoff Depth=3.58"
Flow Length=400' Slope=0.1450 '/' Tc=6.0 min CN=77 Runoff=17.0 cfs 52,597 cf

Subcatchment13S: Overland Flow to Runoff Area=138,445 sf 5.79% Impervious Runoff Depth=3.48"
Flow Length=406' Slope=0.0320 '/' Tc=9.7 min CN=76 Runoff=11.4 cfs 40,194 cf

Subcatchment14S: Pipe Flow to Basin #1 Runoff Area=619,646 sf 64.59% Impervious Runoff Depth=4.85"
Tc=10.5 min CN=89 Runoff=66.9 cfs 250,530 cf

Subcatchment15S: Flow to East Wetland Runoff Area=515,370 sf 8.70% Impervious Runoff Depth=3.09"
Flow Length=675' Slope=0.0710 '/' Tc=11.0 min CN=72 Runoff=36.2 cfs 132,779 cf

Subcatchment16S: Overland Flow to Runoff Area=24,053 sf 12.01% Impervious Runoff Depth=2.44"
Tc=6.0 min CN=65 Runoff=1.5 cfs 4,889 cf

Subcatchment17S: Pipe Flow Road G to Runoff Area=124,956 sf 73.88% Impervious Runoff Depth=4.96"
Tc=7.2 min CN=90 Runoff=15.2 cfs 51,678 cf

Subcatchment18S: overland flow Unit Runoff Area=361,191 sf 11.58% Impervious Runoff Depth=3.38"
Tc=7.1 min CN=75 Runoff=31.6 cfs 101,872 cf

Subcatchment19S: To Culvert RoadC Runoff Area=205,391 sf 0.00% Impervious Runoff Depth=2.35"
Flow Length=525' Slope=0.0630 '/' Tc=11.8 min CN=64 Runoff=10.4 cfs 40,211 cf

Subcatchment20S: FLOW TO DOT SWALE Runoff Area=78,109 sf 0.00% Impervious Runoff Depth=0.60"
Flow Length=135' Slope=0.2800 '/' Tc=6.0 min CN=41 Runoff=0.5 cfs 3,880 cf

Subcatchment21S: FLOW TO POND 11 Runoff Area=470,027 sf 44.94% Impervious Runoff Depth=3.58"
Tc=6.0 min CN=77 Runoff=45.3 cfs 140,384 cf

Subcatchment22S: FLow TO POND 10 Runoff Area=50,747 sf 0.00% Impervious Runoff Depth=1.43"
Flow Length=180' Slope=0.0167 '/' Tc=12.9 min CN=53 Runoff=1.3 cfs 6,046 cf

Subcatchment23S: FLOW RTO POND 9 Runoff Area=649,080 sf 13.68% Impervious Runoff Depth=2.44"
Flow Length=638' Tc=23.1 min CN=65 Runoff=26.4 cfs 131,923 cf

Subcatchment24S: \Flow to DOT Swale Runoff Area=162,032 sf 2.49% Impervious Runoff Depth=1.67"
Flow Length=765' Slope=0.0970 '/' Tc=15.8 min CN=56 Runoff=4.8 cfs 22,519 cf

Subcatchment25S: OVERLAND FLOW TO Runoff Area=35,268 sf 42.09% Impervious Runoff Depth=3.58"
Flow Length=245' Slope=0.0490 '/' Tc=6.0 min CN=77 Runoff=3.4 cfs 10,534 cf

Subcatchment26S: DITCH AREA GOING TO Runoff Area=7,983 sf 0.00% Impervious Runoff Depth=0.48"
Flow Length=116' Slope=0.1100 '/' Tc=6.0 min CN=39 Runoff=0.0 cfs 320 cf

Subcatchment27S: FLOW TO SWALE Runoff Area=148,697 sf 0.00% Impervious Runoff Depth=1.59"
Flow Length=678' Slope=0.1000 '/' Tc=14.5 min CN=55 Runoff=4.3 cfs 19,668 cf

Subcatchment70S: To drop inlet from Runoff Area=148,787 sf 25.32% Impervious Runoff Depth=3.19"
Flow Length=280' Slope=0.0290 '/' Tc=8.3 min CN=73 Runoff=11.8 cfs 39,533 cf

Subcatchment110S: To Drop Inlet behind Runoff Area=243,640 sf 19.54% Impervious Runoff Depth=2.90"
Flow Length=335' Slope=0.1300 '/' Tc=6.0 min CN=70 Runoff=18.9 cfs 58,894 cf

Subcatchment140S: Between Units Runoff Area=143,379 sf 30.60% Impervious Runoff Depth=3.99"
Tc=6.0 min CN=81 Runoff=15.3 cfs 47,712 cf

Subcatchment141S: OVERLAND AND Runoff Area=155,940 sf 19.78% Impervious Runoff Depth=3.89"
Flow Length=750' Slope=0.0240 '/' Tc=16.3 min CN=80 Runoff=11.9 cfs 50,547 cf

Subcatchment142S: to Drop Inlet behind Runoff Area=70,507 sf 27.43% Impervious Runoff Depth=3.29"
Flow Length=300' Slope=0.0660 '/' Tc=6.0 min CN=74 Runoff=6.2 cfs 19,307 cf

Reach 24R: Through Wetland at 3S Avg. Flow Depth=0.16' Max Vel=1.61 fps Inflow=7.4 cfs 40,211 cf
n=0.035 L=420.0' S=0.0190 '/' Capacity=206.2 cfs Outflow=7.3 cfs 40,211 cf

Reach 28R: OPEN DITCH AT POND 13 Avg. Flow Depth=0.25' Max Vel=1.61 fps Inflow=1.2 cfs 3,937 cf
n=0.030 L=50.0' S=0.0100 '/' Capacity=4.7 cfs Outflow=1.2 cfs 3,937 cf

Reach 29R: PIPE FROM POND 13 TO EX. Avg. Flow Depth=0.39' Max Vel=3.67 fps Inflow=1.2 cfs 3,937 cf
15.0" Round Pipe n=0.013 L=130.0' S=0.0077 '/' Capacity=5.7 cfs Outflow=1.2 cfs 3,937 cf

Reach 30R: PIPE UNDER DRIVEWAY TO Avg. Flow Depth=0.07' Max Vel=1.61 fps Inflow=0.0 cfs 320 cf
12.0" Round Pipe n=0.012 L=135.0' S=0.0111 '/' Capacity=4.1 cfs Outflow=0.0 cfs 320 cf

Reach 72R: Culvert Avg. Flow Depth=1.37' Max Vel=8.83 fps Inflow=24.4 cfs 119,669 cf
30.0" Round Pipe n=0.012 L=68.0' S=0.0088 '/' Capacity=41.7 cfs Outflow=24.3 cfs 119,669 cf

Reach 81R: flow through existing Avg. Flow Depth=0.34' Max Vel=4.58 fps Inflow=9.9 cfs 112,307 cf
n=0.035 L=1,665.0' S=0.0649 '/' Capacity=75.2 cfs Outflow=9.8 cfs 112,307 cf

Reach 82R: Through Wetland Series D Avg. Flow Depth=0.13' Max Vel=1.33 fps Inflow=10.0 cfs 112,307 cf
n=0.035 L=475.0' S=0.0168 '/' Capacity=420.5 cfs Outflow=9.9 cfs 112,307 cf

Pond 1P: Basin #1 Peak Elev=691.40' Storage=158,337 cf Inflow=93.4 cfs 408,291 cf
Primary=17.0 cfs 87,678 cf Tertiary=14.4 cfs 285,641 cf Outflow=31.3 cfs 373,319 cf

Pond 1P-FB: Forebay-Pond1 Peak Elev=0.00' Storage=0 cf

Pond 2P: Basin #2 Behind Units 99-104 Peak Elev=700.61' Storage=19,625 cf Inflow=11.9 cfs 50,547 cf
Outflow=1.8 cfs 50,547 cf

Pond 3P: Basin #3 Behind Units 81-84 Peak Elev=732.86' Storage=7,324 cf Inflow=6.2 cfs 19,307 cf
Outflow=0.7 cfs 19,307 cf

Pond 4P: Basin #4 - Road B Peak Elev=726.23' Storage=51,935 cf Inflow=35.4 cfs 119,229 cf
Outflow=10.0 cfs 112,307 cf

Pond 4P-FB: Basin #4 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 5P: Basin #5 - Road E Peak Elev=684.84' Storage=26,293 cf Inflow=40.1 cfs 134,910 cf
Outflow=36.7 cfs 126,444 cf

Pond 5P-FB: Basin #5 - FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 6P: #6 Thayer Pond CulDeSac Peak Elev=670.64' Storage=46,499 cf Inflow=46.8 cfs 153,550 cf
Outflow=25.6 cfs 147,827 cf

Pond 6P-FB: #6 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 7P: Basin #7Thayer Basin Peak Elev=628.14' Storage=4,890 cf Inflow=13.0 cfs 41,542 cf
Outflow=12.1 cfs 38,728 cf

Pond 7P-FB: POND#7 FOREBAY Peak Elev=0.00' Storage=0 cf

Pond 8P: Basin #8- Auburn side Peak Elev=688.19' Storage=81,732 cf Inflow=69.4 cfs 235,243 cf
Outflow=26.4 cfs 224,081 cf

Pond 8P-FB: Forebay-8P Peak Elev=0.00' Storage=0 cf

Pond 9P: BASIN #9 Peak Elev=637.38' Storage=53,125 cf Inflow=26.4 cfs 131,923 cf
Primary=5.6 cfs 131,922 cf Secondary=0.0 cfs 0 cf Outflow=5.6 cfs 131,922 cf

Pond 10P: POND 10 Peak Elev=631.04' Storage=20,288 cf Inflow=5.8 cfs 137,968 cf
Outflow=5.5 cfs 137,954 cf

Pond 11: POND 11 Peak Elev=637.12' Storage=108,994 cf Inflow=45.3 cfs 140,384 cf
Primary=1.8 cfs 34,978 cf Secondary=0.0 cfs 0 cf Outflow=1.8 cfs 34,978 cf

Pond 11P-FOREBAY: FOREB AY 11P Peak Elev=0.00' Storage=0 cf

Pond 12P: Ex Weltand @ 19S Peak Elev=740.21' Storage=2,428 cf Inflow=10.4 cfs 40,211 cf
24.0" Round Culvert n=0.013 L=95.0' S=0.0158 '/' Outflow=7.4 cfs 40,211 cf

Pond 13P: FOREBAY 13 Peak Elev=625.55' Storage=4,824 cf Inflow=3.4 cfs 10,534 cf
Discarded=0.0 cfs 6,917 cf Primary=1.2 cfs 3,617 cf Outflow=1.2 cfs 10,534 cf

Link AP1: Inflow=58.5 cfs 506,098 cf
Primary=58.5 cfs 506,098 cf

Link AP2: Inflow=16.2 cfs 57,628 cf
Primary=16.2 cfs 57,628 cf

Link AP3: Inflow=152.0 cfs 1,128,120 cf
Primary=152.0 cfs 1,128,120 cf

Link AP4: Inflow=2.1 cfs 7,018 cf
Primary=2.1 cfs 7,018 cf

Link AP5: Inflow=35.4 cfs 276,677 cf
Primary=35.4 cfs 276,677 cf

Link AP6: To DOT swale Western Inflow=9.1 cfs 81,101 cf
Primary=9.1 cfs 81,101 cf

Link AP7: To DOT swale-Eastern Inflow=5.6 cfs 141,834 cf
Primary=5.6 cfs 141,834 cf

Total Runoff Area = 8,804,076 sf Runoff Volume = 2,316,225 cf Average Runoff Depth = 3.16"
79.35% Pervious = 6,986,226 sf 20.65% Impervious = 1,817,850 sf

Summary for Subcatchment 1S: Flow to Pond #7

Runoff = 18.6 cfs @ 12.10 hrs, Volume= 59,769 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
15,949	98	Roofs, HSG B
42,409	98	Paved roads w/curbs & sewers, HSG B
57,961	61	>75% Grass cover, Good, HSG B
800	98	Roofs, HSG D
928	98	Paved roads w/curbs & sewers, HSG D
2,645	85	Gravel roads, HSG B
22,396	55	Woods, Good, HSG B
143,088	76	Weighted Average
83,002		58.01% Pervious Area
60,086		41.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9					**Direct Entry, Diect From Ratial FES#14**

Summary for Subcatchment 3S: Wetland Series HD

Runoff = 27.2 cfs @ 12.23 hrs, Volume= 117,049 cf, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
6,351	98	Roofs, HSG B
46,072	55	Woods, Good, HSG B
30,433	61	>75% Grass cover, Good, HSG B
23,063	98	Roofs, HSG C
90,874	70	Woods, Good, HSG C
90,481	74	>75% Grass cover, Good, HSG C
5,756	98	Roofs, HSG D
15,378	80	>75% Grass cover, Good, HSG D
308,408	72	Weighted Average
273,238		88.60% Pervious Area
35,170		11.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.0	935	0.0500	0.92		**Lag/CN Method,**

Summary for Subcatchment 4S: Flow South West to Abutting Property

Runoff = 3.6 cfs @ 12.09 hrs, Volume= 11,590 cf, Depth= 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
633	85	Gravel roads, HSG B
13,501	61	>75% Grass cover, Good, HSG B
34,006	55	Woods, Good, HSG B
48,140	57	Weighted Average
48,140		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	210	0.1600	0.82		**Lag/CN Method,**
4.3	210	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 5S: Pipe Flow to Pond 5P

Runoff = 54.2 cfs @ 12.12 hrs, Volume= 183,998 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
32,030	98	Roofs, HSG B
57,435	98	Paved roads w/curbs & sewers, HSG B
75,794	55	Woods, Good, HSG B
91,185	61	>75% Grass cover, Good, HSG B
27,855	98	Roofs, HSG C
41,012	98	Paved roads w/curbs & sewers, HSG C
48,517	74	>75% Grass cover, Good, HSG C
9,548	80	>75% Grass cover, Good, HSG D
13,929	98	Roofs, HSG D
14,700	98	Paved roads w/curbs & sewers, HSG D
412,005	79	Weighted Average
225,044		54.62% Pervious Area
186,961		45.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3					**Direct Entry, Direct From Eation FES#9**

Summary for Subcatchment 7S: Pipe Flow to Pond 4 P

Runoff = 31.9 cfs @ 12.11 hrs, Volume= 108,815 cf, Depth= 6.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
6,587	98	Roofs, HSG B
10,435	98	Paved roads w/curbs & sewers, HSG B
14,922	61	>75% Grass cover, Good, HSG B
39,581	98	Roofs, HSG C
47,686	98	Paved roads w/curbs & sewers, HSG C
59,168	74	>75% Grass cover, Good, HSG C
30,951	80	>75% Grass cover, Good, HSG D
2,085	98	Roofs, HSG D
211,415	86	Weighted Average
105,041		49.68% Pervious Area
106,374		50.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6					**Direct Entry, From Rational FES#6**

Summary for Subcatchment 8S: Overland Flow to Western Wetland System

Runoff = 129.7 cfs @ 12.53 hrs, Volume= 794,686 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
1,104,807	55	Woods, Good, HSG B
29,236	98	Roofs, HSG B
111,264	61	>75% Grass cover, Good, HSG B
491,190	70	Woods, Good, HSG C
24,358	98	Roofs, HSG C
1,758	98	Paved parking, HSG C
110,207	74	>75% Grass cover, Good, HSG C
522,631	77	Woods, Good, HSG D
13,119	98	Roofs, HSG D
50,320	80	>75% Grass cover, Good, HSG D
892	85	Gravel roads, HSG B
2,459,782	66	Weighted Average
2,391,311		97.22% Pervious Area
68,471		2.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.6	2,165	0.0540	0.96		**Lag/CN Method,**

Summary for Subcatchment 9S: Flow to West, Exsitng Ashworth Road and Property Boundary

Runoff = 23.3 cfs @ 12.14 hrs, Volume= 82,913 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
6,502	98	Roofs, HSG C
28,138	98	Paved parking, HSG C
92,000	74	>75% Grass cover, Good, HSG C
48,437	65	Brush, Good, HSG C
23,418	70	Woods, Good, HSG C
198,495	76	Weighted Average
163,855		82.55% Pervious Area
34,640		17.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	360	0.0250	0.60		**Lag/CN Method,**

Summary for Subcatchment 10S: Pipe Flow to Pond 7S

Runoff = 43.3 cfs @ 12.12 hrs, Volume= 156,650 cf, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
27,559	98	Paved roads w/curbs & sewers, HSG B
18,076	61	>75% Grass cover, Good, HSG B
66,994	98	Roofs, HSG C
76,607	98	Paved roads w/curbs & sewers, HSG C
70,186	74	>75% Grass cover, Good, HSG C
23,336	98	Roofs, HSG B
282,758	90	Weighted Average
88,262		31.21% Pervious Area
194,496		68.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.6					**Direct Entry, Taken from Tc Rational Calcs**

Summary for Subcatchment 11S: Overland Flow to Pond 8P

Runoff = 26.2 cfs @ 12.11 hrs, Volume= 85,966 cf, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
7,236	55	Woods, Good, HSG B
1,207	85	Gravel roads, HSG B
23,104	98	Roofs, HSG C
136,839	74	>75% Grass cover, Good, HSG C
34,565	70	Woods, Good, HSG C
2,593	89	Gravel roads, HSG C
2,980	61	>75% Grass cover, Good, HSG B
1,129	91	Gravel roads, HSG D
983	74	>75% Grass cover, Good, HSG C
210,636	75	Weighted Average
187,532		89.03% Pervious Area
23,104		10.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.5					**Direct Entry, From Rational-YD#12toDMH72B**

Summary for Subcatchment 12S: Flow South East to Wetlands Series CD and EB

Runoff = 24.1 cfs @ 12.09 hrs, Volume= 75,251 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
20,162	98	Roofs, HSG C
63,740	74	>75% Grass cover, Good, HSG C
42,307	70	Woods, Good, HSG C
33,251	77	Woods, Good, HSG D
14,148	80	>75% Grass cover, Good, HSG D
603	55	Woods, Good, HSG B
1,323	91	Gravel roads, HSG D
567	89	Gravel roads, HSG C
176,101	77	Weighted Average
155,939		88.55% Pervious Area
20,162		11.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	400	0.1450	1.52		**Lag/CN Method,**
4.4	400	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 13S: Overland Flow to Pond 1P

Runoff = 16.4 cfs @ 12.13 hrs, Volume= 57,830 cf, Depth= 5.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
4,791	98	Roofs, HSG C
121,219	74	>75% Grass cover, Good, HSG C
9,208	89	Gravel roads, HSG C
3,227	98	Paved parking, HSG C
138,445	76	Weighted Average
130,427		94.21% Pervious Area
8,018		5.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	406	0.0320	0.69		**Lag/CN Method,**

Summary for Subcatchment 14S: Pipe Flow to Basin #1

Runoff = 88.6 cfs @ 12.14 hrs, Volume= 337,184 cf, Depth= 6.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
28,343	98	Roofs, HSG B
26,953	98	Paved parking, HSG B
24,152	61	>75% Grass cover, Good, HSG B
133,016	98	Roofs, HSG C
197,141	98	Paved parking, HSG C
168,654	74	>75% Grass cover, Good, HSG C
6,253	89	Gravel roads, HSG C
10,952	98	Roofs, HSG D
3,822	98	Paved parking, HSG D
4,732	80	>75% Grass cover, Good, HSG D
10,500	70	Woods, Good, HSG C
4,491	77	Woods, Good, HSG D
637	91	Gravel roads, HSG D
619,646	89	Weighted Average
219,419		35.41% Pervious Area
400,227		64.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5					**Direct Entry, Direct Entry from Rational Calcs-TC FES3**

Summary for Subcatchment 15S: Flow to East Wetland AB Series

Runoff = 53.4 cfs @ 12.15 hrs, Volume= 195,597 cf, Depth= 4.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
19,111	55	Woods, Good, HSG B
44,817	98	Roofs, HSG C
2,556	89	Gravel roads, HSG C
205,459	74	>75% Grass cover, Good, HSG C
117,863	65	Brush, Good, HSG C
125,564	70	Woods, Good, HSG C
515,370	72	Weighted Average
470,553		91.30% Pervious Area
44,817		8.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	675	0.0710	1.02		**Lag/CN Method,**

Summary for Subcatchment 16S: Overland Flow to Pond 5P

Runoff = 2.4 cfs @ 12.09 hrs, Volume= 7,547 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
2,888	98	Roofs, HSG B
21,165	61	>75% Grass cover, Good, HSG B
24,053	65	Weighted Average
21,165		87.99% Pervious Area
2,888		12.01% Impervious Area

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

Summary for Subcatchment 17S: Pipe Flow Road G to Pond 6

Runoff = 20.1 cfs @ 12.10 hrs, Volume= 69,227 cf, Depth= 6.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
14,875	98	Roofs, HSG B
32,807	98	Paved parking, HSG B
19,953	61	>75% Grass cover, Good, HSG B
21,357	98	Roofs, HSG D
23,275	98	Paved parking, HSG D
12,689	80	>75% Grass cover, Good, HSG D
124,956	90	Weighted Average
32,642		26.12% Pervious Area
92,314		73.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2					**Direct Entry, Direct from Rational fes#11**

Summary for Subcatchment 18S: overland flow Unit 237-256 to Pond6

Runoff = 45.6 cfs @ 12.10 hrs, Volume= 147,412 cf, Depth= 4.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
26,686	98	Roofs, HSG B
121,892	61	>75% Grass cover, Good, HSG B
15,151	98	Roofs, HSG D
172,407	80	>75% Grass cover, Good, HSG D
6,597	55	Woods, Good, HSG B
1,767	85	Gravel roads, HSG B
16,691	77	Woods, Good, HSG D
361,191	75	Weighted Average
319,354		88.42% Pervious Area
41,837		11.58% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.1					**Direct Entry, Direct from Ratioanl FES#17**

Summary for Subcatchment 19S: To Culvert RoadC Station 25+50 AA \Wetlands Series

Runoff = 16.6 cfs @ 12.17 hrs, Volume= 62,543 cf, Depth= 3.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
82,160	55	Woods, Good, HSG B
101,336	70	Woods, Good, HSG C
7,030	61	>75% Grass cover, Good, HSG B
11,119	74	>75% Grass cover, Good, HSG C
3,746	85	Gravel roads, HSG B
205,391	64	Weighted Average
205,391		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	525	0.0630	0.74		**Lag/CN Method,**

Summary for Subcatchment 20S: FLOW TO DOT SWALE EAST

Runoff = 1.9 cfs @ 12.11 hrs, Volume= 8,281 cf, Depth= 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
72,220	39	>75% Grass cover, Good, HSG A
5,889	61	>75% Grass cover, Good, HSG B
78,109	41	Weighted Average
78,109		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.4	135	0.2800	0.66		**Lag/CN Method,**
3.4	135	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 21S: FLOW TO POND 11

Runoff = 64.3 cfs @ 12.09 hrs, Volume= 200,850 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

	Area (sf)	CN	Description
	19,017	55	Woods, Good, HSG B
	60,074	98	Paved parking, HSG B
	6,241	39	>75% Grass cover, Good, HSG A
	179,698	61	>75% Grass cover, Good, HSG B
	3,444	80	>75% Grass cover, Good, HSG D
*	201,553	89	75% imp, HSG B
	470,027	77	Weighted Average
	258,788		55.06% Pervious Area
	211,239		44.94% Impervious Area

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

Summary for Subcatchment 22S: FLow TO POND 10

Runoff = 2.5 cfs @ 12.19 hrs, Volume= 10,421 cf, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
18,782	39	>75% Grass cover, Good, HSG A
31,965	61	>75% Grass cover, Good, HSG B
50,747	53	Weighted Average
50,747		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	180	0.0167	0.23		**Lag/CN Method,**

Summary for Subcatchment 23S: FLOW RTO POND 9

Runoff = 41.4 cfs @ 12.33 hrs, Volume= 203,663 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

	Area (sf)	CN	Description
	10,413	39	>75% Grass cover, Good, HSG A
	450,575	61	>75% Grass cover, Good, HSG B
	6,592	98	Roofs, HSG C
	13,472	74	>75% Grass cover, Good, HSG C
	85,805	55	Woods, Good, HSG B
	3,169	98	Roofs, HSG B
*	79,054	98	Ledge Face, HSG B
	649,080	65	Weighted Average
	560,265		86.32% Pervious Area
	88,815		13.68% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.8	380	0.0260	0.46		**Lag/CN Method,**
9.3	258	0.0310	0.46		**Lag/CN Method,**
23.1	638	Total			

Summary for Subcatchment 24S: \Flow to DOT Swale Western

Runoff = 8.6 cfs @ 12.23 hrs, Volume= 37,562 cf, Depth= 2.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
134,215	55	Woods, Good, HSG B
4,029	98	Paved parking, HSG B
8,923	39	>75% Grass cover, Good, HSG A
14,865	61	>75% Grass cover, Good, HSG B
162,032	56	Weighted Average
158,003		97.51% Pervious Area
4,029		2.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	765	0.0970	0.81		**Lag/CN Method,**

Summary for Subcatchment 25S: OVERLAND FLOW TO POND 13

Runoff = 4.8 cfs @ 12.09 hrs, Volume= 15,071 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
14,845	98	Paved parking, HSG B
20,423	61	>75% Grass cover, Good, HSG B
35,268	77	Weighted Average
20,423		57.91% Pervious Area
14,845		42.09% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	245	0.0490	0.80		**Lag/CN Method,**
5.1	245	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 26S: DITCH AREA GOING TO CUVLERT

Runoff = 0.1 cfs @ 12.12 hrs, Volume= 726 cf, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
7,983	39	>75% Grass cover, Good, HSG A
7,983		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	116	0.1100	0.38		**Lag/CN Method,**
5.1	116	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 27S: FLOW TO SWALE WEST SDIE RD C

Runoff = 7.8 cfs @ 12.21 hrs, Volume= 33,150 cf, Depth= 2.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
145,347	55	Woods, Good, HSG B
3,350	61	>75% Grass cover, Good, HSG B
148,697	55	Weighted Average
148,697		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.5	678	0.1000	0.78		**Lag/CN Method,**

Summary for Subcatchment 70S: To drop inlet from behind untis 157-184

Runoff = 17.2 cfs @ 12.12 hrs, Volume= 57,883 cf, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
23,466	98	Roofs, HSG B
14,208	98	Roofs, HSG C
79,068	61	>75% Grass cover, Good, HSG B
32,045	74	>75% Grass cover, Good, HSG C
148,787	73	Weighted Average
111,113		74.68% Pervious Area
37,674		25.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	280	0.0290	0.56		**Lag/CN Method,**

Summary for Subcatchment 110S: To Drop Inlet behind Units 191-192

Runoff = 28.3 cfs @ 12.09 hrs, Volume= 87,855 cf, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
24,521	98	Roofs, HSG C
23,091	98	Roofs, HSG B
39,266	55	Woods, Good, HSG B
108,297	61	>75% Grass cover, Good, HSG B
48,465	74	>75% Grass cover, Good, HSG C
243,640	70	Weighted Average
196,028		80.46% Pervious Area
47,612		19.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	335	0.1300	1.14		**Lag/CN Method,**
4.9	335	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 140S: Between Units 98-152

Runoff = 21.2 cfs @ 12.09 hrs, Volume= 66,808 cf, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
43,879	98	Roofs, HSG C
99,500	74	>75% Grass cover, Good, HSG C
143,379	81	Weighted Average
99,500		69.40% Pervious Area
43,879		30.60% Impervious Area

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

Summary for Subcatchment 141S: OVERLAND AND SWALE FLOW TO POND#2

Runoff = 16.7 cfs @ 12.22 hrs, Volume= 71,150 cf, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
23,504	98	Roofs, HSG C
7,347	98	Roofs, HSG D
104,375	74	>75% Grass cover, Good, HSG C
20,714	80	>75% Grass cover, Good, HSG D
155,940	80	Weighted Average
125,089		80.22% Pervious Area
30,851		19.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.3	750	0.0240	0.77		**Lag/CN Method,**

Summary for Subcatchment 142S: to Drop Inlet behind Untis 81-84

Runoff = 9.0 cfs @ 12.09 hrs, Volume= 28,102 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
11,572	98	Roofs, HSG B
7,769	98	Roofs, HSG C
13,307	74	>75% Grass cover, Good, HSG C
37,859	61	>75% Grass cover, Good, HSG B
70,507	74	Weighted Average
51,166		72.57% Pervious Area
19,341		27.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	300	0.0660	0.89		**Lag/CN Method,**
5.6	300	Total, Increased to minimum Tc = 6.0 min			

Summary for Reach 24R: Through Wetland at 3S

Inflow Area = 205,391 sf, 0.00% Impervious, Inflow Depth = 3.65" for 100-Year event
Inflow = 10.6 cfs @ 12.34 hrs, Volume= 62,543 cf
Outflow = 10.5 cfs @ 12.46 hrs, Volume= 62,543 cf, Atten= 1%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.83 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 0.60 fps, Avg. Travel Time= 11.6 min

Peak Storage= 2,418 cf @ 12.39 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 1.00' Flow Area= 45.0 sf, Capacity= 206.2 cfs

25.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 20.0 '/' Top Width= 65.00'
Length= 420.0' Slope= 0.0190 '/'
Inlet Invert= 730.00', Outlet Invert= 722.00'

‡

Summary for Reach 28R: OPEN DITCH AT POND 13

Inflow Area = 43,251 sf, 34.32% Impervious, Inflow Depth = 2.43" for 100-Year event
Inflow = 4.3 cfs @ 12.14 hrs, Volume= 8,747 cf
Outflow = 4.3 cfs @ 12.15 hrs, Volume= 8,747 cf, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.30 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 0.68 fps, Avg. Travel Time= 1.2 min

Peak Storage= 95 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 4.7 cfs

2.00' x 0.50' deep channel, n= 0.030 Stream, clean & straight
Side Slope Z-value= 4.0 '/' Top Width= 6.00'
Length= 50.0' Slope= 0.0100 '/'
Inlet Invert= 625.50', Outlet Invert= 625.00'

‡

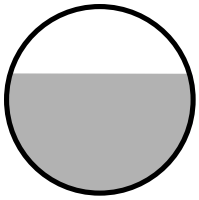
Summary for Reach 29R: PIPE FROM POND 13 TO EX. DITCH

Inflow Area = 43,251 sf, 34.32% Impervious, Inflow Depth = 2.43" for 100-Year event
Inflow = 4.3 cfs @ 12.15 hrs, Volume= 8,747 cf
Outflow = 4.2 cfs @ 12.17 hrs, Volume= 8,747 cf, Atten= 3%, Lag= 1.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.68 fps, Avg. Travel Time= 1.3 min

Peak Storage= 108 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.80'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.7 cfs

15.0" Round Pipe
n= 0.013
Length= 130.0' Slope= 0.0077 '/'
Inlet Invert= 625.00', Outlet Invert= 624.00'



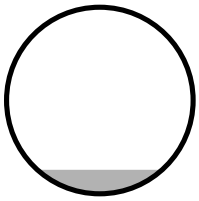
Summary for Reach 30R: PIPE UNDER DRIVEWAY TO DITCH AT FB 13

Inflow Area = 7,983 sf, 0.00% Impervious, Inflow Depth = 1.09" for 100-Year event
Inflow = 0.1 cfs @ 12.12 hrs, Volume= 726 cf
Outflow = 0.1 cfs @ 12.15 hrs, Volume= 726 cf, Atten= 2%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 2.44 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 1.9 min

Peak Storage= 8 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.1 cfs

12.0" Round Pipe
n= 0.012
Length= 135.0' Slope= 0.0111 '/'
Inlet Invert= 627.00', Outlet Invert= 625.50'



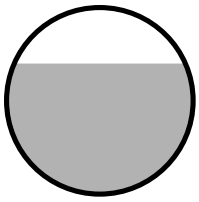
Summary for Reach 72R: Culvert

Inflow Area = 513,799 sf, 6.85% Impervious, Inflow Depth = 4.19" for 100-Year event
Inflow = 35.0 cfs @ 12.26 hrs, Volume= 179,592 cf
Outflow = 35.0 cfs @ 12.26 hrs, Volume= 179,592 cf, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 9.52 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 3.60 fps, Avg. Travel Time= 0.3 min

Peak Storage= 250 cf @ 12.26 hrs
Average Depth at Peak Storage= 1.75'
Bank-Full Depth= 2.50' Flow Area= 4.9 sf, Capacity= 41.7 cfs

30.0" Round Pipe
n= 0.012
Length= 68.0' Slope= 0.0088 '/'
Inlet Invert= 691.60', Outlet Invert= 691.00'



Summary for Reach 81R: flow through existing wetlands

Inflow Area = 360,202 sf, 39.99% Impervious, Inflow Depth = 5.32" for 100-Year event
Inflow = 18.7 cfs @ 12.52 hrs, Volume= 159,778 cf
Outflow = 18.1 cfs @ 12.67 hrs, Volume= 159,777 cf, Atten= 3%, Lag= 8.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 5.54 fps, Min. Travel Time= 5.0 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 36.6 min

Peak Storage= 5,438 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 1.00' Flow Area= 9.0 sf, Capacity= 75.2 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 4.0 '/' Top Width= 13.00'
Length= 1,665.0' Slope= 0.0649 '/'
Inlet Invert= 712.00', Outlet Invert= 604.00'

‡

Summary for Reach 82R: Through Wetland Series D

Inflow Area = 360,202 sf, 39.99% Impervious, Inflow Depth = 5.32" for 100-Year event
Inflow = 19.3 cfs @ 12.38 hrs, Volume= 159,778 cf
Outflow = 18.7 cfs @ 12.52 hrs, Volume= 159,778 cf, Atten= 3%, Lag= 8.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Max. Velocity= 1.65 fps, Min. Travel Time= 4.8 min
Avg. Velocity = 0.31 fps, Avg. Travel Time= 25.8 min

Peak Storage= 5,379 cf @ 12.44 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 100.0 sf, Capacity= 420.5 cfs

50.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 50.0 '/' Top Width= 150.00'
Length= 475.0' Slope= 0.0168 '/'
Inlet Invert= 720.00', Outlet Invert= 712.00'

‡

Summary for Pond 1P: Basin #1

Inflow Area = 1,127,917 sf, 44.53% Impervious, Inflow Depth = 5.97" for 100-Year event
Inflow = 125.3 cfs @ 12.13 hrs, Volume= 561,074 cf
Outflow = 63.4 cfs @ 12.35 hrs, Volume= 526,102 cf, Atten= 49%, Lag= 13.4 min
Primary = 47.5 cfs @ 12.35 hrs, Volume= 166,622 cf
Tertiary = 16.0 cfs @ 12.35 hrs, Volume= 359,480 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 692.06' @ 12.35 hrs Surf.Area= 41,454 sf Storage= 185,267 cf
Flood Elev= 692.15' Surf.Area= 41,703 sf Storage= 188,814 cf

Plug-Flow detention time= 149.8 min calculated for 526,036 cf (94% of inflow)
Center-of-Mass det. time= 117.5 min (938.3 - 820.8)

Volume	Invert	Avail.Storage	Storage Description
#1	686.50'	225,328 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
686.50	22,675	0	0	22,675
687.00	27,094	12,426	12,426	27,103
688.00	29,807	28,440	40,866	29,881
690.00	35,404	65,131	105,996	35,622
692.00	41,266	76,595	182,592	41,646
693.00	44,223	42,736	225,328	44,693

Device	Routing	Invert	Outlet Devices
#1	Tertiary	687.80'	**18.0" Round Culvert** L= 64.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 687.80' / 686.00' S= 0.0281 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	680.15'	**30.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 680.15' / 679.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#3	Device 2	689.25'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#4	Device 2	691.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	692.10'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=47.4 cfs @ 12.35 hrs HW=692.06' (Free Discharge)
- **2=Culvert** (Passes 47.4 cfs of 77.2 cfs potential flow)
  - **3=Orifice/Grate** (Orifice Controls 17.3 cfs @ 7.32 fps)
  - **4=Orifice/Grate** (Weir Controls 30.2 cfs @ 2.95 fps)
- **5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Tertiary OutFlow Max=16.0 cfs @ 12.35 hrs HW=692.06' (Free Discharge)
- **1=Culvert** (Inlet Controls 16.0 cfs @ 9.03 fps)

Summary for Pond 1P-FB: Forebay-Pond 1

Volume	Invert	Avail.Storage	Storage Description
#1	687.00'	5,246 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
687.00	2,340	0	0
688.00	2,620	2,480	2,480
689.00	2,912	2,766	5,246

Summary for Pond 2P: Basin #2 Behind Units 99-104

Inflow Area = 155,940 sf, 19.78% Impervious, Inflow Depth = 5.48" for 100-Year event
Inflow = 16.7 cfs @ 12.22 hrs, Volume= 71,150 cf
Outflow = 2.0 cfs @ 13.24 hrs, Volume= 71,150 cf, Atten= 88%, Lag= 61.3 min
Primary = 2.0 cfs @ 13.24 hrs, Volume= 71,150 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 701.71' @ 13.24 hrs Surf.Area= 10,196 sf Storage= 30,144 cf

Plug-Flow detention time= 148.0 min calculated for 71,150 cf (100% of inflow)
Center-of-Mass det. time= 148.0 min (961.2 - 813.2)

Volume	Invert	Avail.Storage	Storage Description
#1	698.00'	33,175 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
698.00	6,170	0	0
700.00	8,237	14,407	14,407
702.00	10,531	18,768	33,175

Device	Routing	Invert	Outlet Devices
#1	Primary	696.50'	**8.0" Round Culvert** L= 207.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 696.50' / 695.47' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 0.35 sf
#2	Device 1	698.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.0 cfs @ 13.24 hrs HW=701.71' (Free Discharge)
↑—**1=Culvert** (Barrel Controls 2.0 cfs @ 5.61 fps)
↑—**2=Orifice/Grate** (Passes 2.0 cfs of 29.1 cfs potential flow)

Summary for Pond 3P: Basin #3 Behind Units 81-84

Inflow Area = 70,507 sf, 27.43% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 9.0 cfs @ 12.09 hrs, Volume= 28,102 cf
Outflow = 0.8 cfs @ 13.16 hrs, Volume= 28,102 cf, Atten= 92%, Lag= 64.1 min
Primary = 0.8 cfs @ 13.16 hrs, Volume= 28,102 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 733.30' @ 13.16 hrs Surf.Area= 11,202 sf Storage= 11,902 cf

Plug-Flow detention time= 147.8 min calculated for 28,098 cf (100% of inflow)
Center-of-Mass det. time= 147.8 min (965.0 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	732.00'	20,566 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
732.00	7,172	0	0
734.00	13,394	20,566	20,566

Device	Routing	Invert	Outlet Devices
#1	Primary	730.50'	**6.0" Round Culvert** L= 204.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 730.50' / 729.07' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	732.00'	**24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.8 cfs @ 13.16 hrs HW=733.30' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.8 cfs @ 3.92 fps)
└**2=Orifice/Grate** (Passes 0.8 cfs of 17.2 cfs potential flow)

Summary for Pond 4P: Basin #4 - Road B

Inflow Area = 360,202 sf, 39.99% Impervious, Inflow Depth = 5.55" for 100-Year event
Inflow = 49.0 cfs @ 12.11 hrs, Volume= 166,698 cf
Outflow = 19.3 cfs @ 12.38 hrs, Volume= 159,778 cf, Atten= 61%, Lag= 16.1 min
Primary = 19.3 cfs @ 12.38 hrs, Volume= 159,778 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 4
Peak Elev= 727.09' @ 12.38 hrs Surf.Area= 18,472 sf Storage= 67,225 cf
Flood Elev= 727.10' Surf.Area= 18,484 sf Storage= 67,351 cf

Plug-Flow detention time= 184.4 min calculated for 159,778 cf (96% of inflow)
Center-of-Mass det. time= 160.6 min (961.5 - 800.9)

Volume	Invert	Avail.Storage	Storage Description
#1	722.50'	84,711 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
722.50	11,005	0	0	11,005
724.00	13,317	18,214	18,214	13,390
726.00	16,596	29,853	48,067	16,781
728.00	20,104	36,644	84,711	20,418

Device	Routing	Invert	Outlet Devices
#1	Primary	722.00'	**24.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 722.00' / 721.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	723.10'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	724.50'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	726.80'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Primary	727.10'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=19.3 cfs @ 12.38 hrs HW=727.09' (Free Discharge)
└**1=Culvert** (Passes 19.3 cfs of 30.6 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 1.8 cfs @ 9.32 fps)
└**3=Orifice/Grate** (Orifice Controls 10.9 cfs @ 6.97 fps)
└**4=Orifice/Grate** (Weir Controls 6.5 cfs @ 1.77 fps)
└**5=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 4P-FB: Basin #4 - FOREBAY

Volume	Invert	Avail.Storage	Storage Description
#1	722.50'	2,715 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
722.50	1,440	0	0	1,440
724.00	2,207	2,715	2,715	2,240

Summary for Pond 5P: Basin #5 - Road E

Inflow Area = 436,058 sf, 43.54% Impervious, Inflow Depth = 5.27" for 100-Year event
Inflow = 56.5 cfs @ 12.11 hrs, Volume= 191,546 cf
Outflow = 52.6 cfs @ 12.15 hrs, Volume= 183,082 cf, Atten= 7%, Lag= 2.2 min
Primary = 52.6 cfs @ 12.15 hrs, Volume= 183,082 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 9
Peak Elev= 685.10' @ 12.15 hrs Surf.Area= 9,208 sf Storage= 28,611 cf
Flood Elev= 685.10' Surf.Area= 9,213 sf Storage= 28,654 cf

Plug-Flow detention time= 68.8 min calculated for 183,082 cf (96% of inflow)
Center-of-Mass det. time= 43.6 min (852.8 - 809.2)

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	37,427 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
681.00	4,926	0	0	4,926
682.00	5,886	5,399	5,399	5,921
684.00	7,976	13,809	19,208	8,092
686.00	10,292	18,219	37,427	10,505

Device	Routing	Invert	Outlet Devices
#1	Primary	677.50'	**36.0" Round Culvert** L= 58.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 677.50' / 677.20' S= 0.0052 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	682.50'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	684.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Primary	685.10'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=52.4 cfs @ 12.15 hrs HW=685.09' (Free Discharge)
- **1=Culvert** (Passes 52.4 cfs of 84.0 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 5.5 cfs @ 6.96 fps)
  - **3=Orifice/Grate** (Weir Controls 46.9 cfs @ 3.42 fps)
- **4=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 5P-FB: Basin #5 - FOREBAY

Volume	Invert	Avail.Storage	Storage Description
#1	681.00'	1,872 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
681.00	750	0	0
682.00	931	841	841
683.00	1,132	1,032	1,872

Summary for Pond 6P: #6 Thayer Pond CulDeSac

Inflow Area = 486,147 sf, 27.59% Impervious, Inflow Depth = 5.35" for 100-Year event
Inflow = 65.7 cfs @ 12.10 hrs, Volume= 216,639 cf
Outflow = 48.5 cfs @ 12.18 hrs, Volume= 210,910 cf, Atten= 26%, Lag= 4.8 min
Primary = 48.5 cfs @ 12.18 hrs, Volume= 210,910 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 671.09' @ 12.18 hrs Surf.Area= 16,191 sf Storage= 53,607 cf
Flood Elev= 671.10' Surf.Area= 16,210 sf Storage= 53,742 cf

Plug-Flow detention time= 90.2 min calculated for 210,884 cf (97% of inflow)
Center-of-Mass det. time= 75.3 min (879.0 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	666.50'	69,275 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
666.50	7,574	0	0	7,574
668.00	10,240	13,310	13,310	10,287
670.00	13,795	23,947	37,257	13,925
672.00	18,330	32,018	69,275	18,548

Device	Routing	Invert	Outlet Devices
#1	Primary	664.00'	**30.0" Round Culvert** L= 133.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 664.00' / 662.50' S= 0.0113 '/' Cc= 0.900 n= 0.012, Flow Area= 4.91 sf
#2	Device 1	667.20'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	668.50'	**12.0" Vert. Orifice/Grate X 3.00** C= 0.600
#4	Device 1	670.30'	**48.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=48.5 cfs @ 12.18 hrs HW=671.09' (Free Discharge)
└**1=Culvert** (Passes 48.5 cfs of 57.1 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.2 cfs @ 9.08 fps)
  ├**3=Orifice/Grate** (Orifice Controls 16.4 cfs @ 6.96 fps)
  └**4=Orifice/Grate** (Weir Controls 28.9 cfs @ 2.91 fps)

Summary for Pond 6P-FB: #6 FOREBAY

Volume	Invert	Avail.Storage	Storage Description
#1	666.50'	2,430 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
666.50	1,103	0	0	1,103
667.00	1,544	659	659	1,549
668.00	2,008	1,771	2,430	2,036

Summary for Pond 7P: Basin #7Thayer Basin

Inflow Area = 143,088 sf, 41.99% Impervious, Inflow Depth = 5.01" for 100-Year event
Inflow = 18.6 cfs @ 12.10 hrs, Volume= 59,769 cf
Outflow = 17.6 cfs @ 12.13 hrs, Volume= 56,955 cf, Atten= 5%, Lag= 1.7 min
Primary = 17.6 cfs @ 12.13 hrs, Volume= 56,955 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 628.27' @ 12.13 hrs Surf.Area= 5,082 sf Storage= 5,510 cf
Flood Elev= 628.30' Surf.Area= 5,120 sf Storage= 5,676 cf

Plug-Flow detention time= 43.7 min calculated for 56,955 cf (95% of inflow)
Center-of-Mass det. time= 17.3 min (830.9 - 813.6)

Volume	Invert	Avail.Storage	Storage Description
#1	627.00'	9,554 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
627.00	3,635	0	0	3,635
628.00	4,775	4,192	4,192	4,798
629.00	5,971	5,362	9,554	6,022

Device	Routing	Invert	Outlet Devices
#1	Primary	624.00'	**24.0" Round Culvert** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 624.00' / 623.50' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Device 1	627.70'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	628.30'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir**

Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=17.5 cfs @ 12.13 hrs HW=628.27' (Free Discharge)
└**1=Culvert** (Passes 17.5 cfs of 21.6 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 17.5 cfs @ 2.46 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 7P-FB: POND#7 FOREBAY

Volume	Invert	Avail.Storage	Storage Description
#1	627.00'	814 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
627.00	663	0	0
628.00	964	814	814

Summary for Pond 8P: Basin #8- Auburn side

Inflow Area = 737,034 sf, 35.98% Impervious, Inflow Depth = 5.38" for 100-Year event
Inflow = 97.0 cfs @ 12.11 hrs, Volume= 330,471 cf
Outflow = 45.8 cfs @ 12.31 hrs, Volume= 319,303 cf, Atten= 53%, Lag= 12.3 min
Primary = 45.8 cfs @ 12.31 hrs, Volume= 319,303 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 4
Peak Elev= 689.11' @ 12.31 hrs Surf.Area= 26,061 sf Storage= 104,585 cf
Flood Elev= 689.10' Surf.Area= 26,044 sf Storage= 104,390 cf

Plug-Flow detention time= 100.8 min calculated for 319,263 cf (97% of inflow)
Center-of-Mass det. time= 81.9 min (883.0 - 801.1)

Volume	Invert	Avail.Storage	Storage Description
#1	684.00'	128,762 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
684.00	15,227	0	0	15,227
686.00	19,209	34,359	34,359	19,316
688.00	23,603	42,737	77,096	23,830
690.00	28,130	51,667	128,762	28,498

Device	Routing	Invert	Outlet Devices
#1	Primary	683.90'	**36.0" Round Culvert** L= 65.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 683.90' / 683.50' S= 0.0062 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	684.70'	**15.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	685.80'	**12.0" Vert. Orifice/Grate X 2.00** C= 0.600
#4	Device 1	686.55'	**15.0" Vert. Orifice/Grate** C= 0.600

#5	Device 1	688.70'	**60.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#6	Primary	689.10'	**10.0' long x 12.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=45.7 cfs @ 12.31 hrs HW=689.11' (Free Discharge)
- **1=Culvert** (Passes 45.7 cfs of 65.5 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 11.5 cfs @ 9.36 fps)
  - **3=Orifice/Grate** (Orifice Controls 12.7 cfs @ 8.07 fps)
  - **4=Orifice/Grate** (Orifice Controls 8.2 cfs @ 6.69 fps)
  - **5=Orifice/Grate** (Weir Controls 13.3 cfs @ 2.08 fps)
- **6=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.21 fps)

Summary for Pond 8P-FB: Forebay-8P

Volume	Invert	Avail.Storage	Storage Description
#1	684.00'	3,379 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
684.00	1,435	0	0
685.00	1,686	1,561	1,561
686.00	1,950	1,818	3,379

Summary for Pond 9P: BASIN #9

Inflow Area = 649,080 sf, 13.68% Impervious, Inflow Depth = 3.77" for 100-Year event
Inflow = 41.4 cfs @ 12.33 hrs, Volume= 203,663 cf
Outflow = 11.8 cfs @ 12.93 hrs, Volume= 203,660 cf, Atten= 72%, Lag= 36.1 min
Primary = 7.1 cfs @ 12.93 hrs, Volume= 195,251 cf
Secondary = 4.7 cfs @ 12.93 hrs, Volume= 8,408 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 639.10' @ 12.93 hrs Surf.Area= 19,336 sf Storage= 84,814 cf
Flood Elev= 639.10' Surf.Area= 19,337 sf Storage= 84,841 cf

Plug-Flow detention time= 164.9 min calculated for 203,660 cf (100% of inflow)
Center-of-Mass det. time= 164.8 min (1,017.0 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	634.00'	102,690 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
634.00	14,038	0	0
636.00	16,034	30,072	30,072
638.00	18,129	34,163	64,235
640.00	20,326	38,455	102,690

Device	Routing	Invert	Outlet Devices
#1	Primary	631.00'	**15.0" Round Culvert** L= 97.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 631.00' / 630.00' S= 0.0103 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Secondary	638.85'	**15.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Device 1	634.60'	**8.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	634.00'	**8.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=7.1 cfs @ 12.93 hrs HW=639.10' (Free Discharge)
└**1=Culvert** (Passes 7.1 cfs of 12.8 cfs potential flow)
  └**3=Orifice/Grate** (Orifice Controls 3.4 cfs @ 9.83 fps)
  └**4=Orifice/Grate** (Orifice Controls 3.7 cfs @ 10.51 fps)

Secondary OutFlow Max=4.7 cfs @ 12.93 hrs HW=639.10' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 4.7 cfs @ 1.25 fps)

Summary for Pond 10P: POND 10

Inflow Area = 699,827 sf, 12.69% Impervious, Inflow Depth = 3.53" for 100-Year event
Inflow = 7.6 cfs @ 12.81 hrs, Volume= 205,672 cf
Outflow = 7.3 cfs @ 13.43 hrs, Volume= 205,658 cf, Atten= 4%, Lag= 37.4 min
Primary = 7.3 cfs @ 13.43 hrs, Volume= 205,658 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs / 3
Peak Elev= 631.11' @ 13.43 hrs Surf.Area= 11,466 sf Storage= 21,055 cf

Plug-Flow detention time= 79.7 min calculated for 205,633 cf (100% of inflow)
Center-of-Mass det. time= 79.5 min (1,098.6 - 1,019.1)

Volume	Invert	Avail.Storage	Storage Description
#1	629.10'	31,647 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
629.10	9,452	0	0
630.00	10,387	8,928	8,928
632.00	12,332	22,719	31,647

Device	Routing	Invert	Outlet Devices
#1	Primary	629.10'	**18.0" Round Culvert** L= 23.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 629.10' / 628.90' S= 0.0087 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Primary	631.10'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#3	Device 1	629.10'	**10.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	630.90'	**48.0" Horiz. Orifice/Grate** C= 0.600

Limited to weir flow at low heads

Primary OutFlow Max=7.3 cfs @ 13.43 hrs HW=631.11' (Free Discharge)
└**1=Culvert** (Passes 7.3 cfs of 8.8 cfs potential flow)
  └**3=Orifice/Grate** (Orifice Controls 3.3 cfs @ 6.08 fps)
  └**4=Orifice/Grate** (Weir Controls 4.0 cfs @ 1.50 fps)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.0 cfs @ 0.25 fps)

Summary for Pond 11: POND 11

Inflow Area = 470,027 sf, 44.94% Impervious, Inflow Depth = 5.13" for 100-Year event
Inflow = 64.3 cfs @ 12.09 hrs, Volume= 200,850 cf
Outflow = 8.3 cfs @ 12.68 hrs, Volume= 95,443 cf, Atten= 87%, Lag= 35.5 min
Primary = 8.3 cfs @ 12.68 hrs, Volume= 95,443 cf
Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 637.34' @ 12.68 hrs Surf.Area= 29,564 sf Storage= 115,414 cf
Flood Elev= 637.50' Surf.Area= 29,937 sf Storage= 120,078 cf

Plug-Flow detention time= 267.3 min calculated for 95,431 cf (48% of inflow)
Center-of-Mass det. time= 152.3 min (962.9 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	632.50'	135,343 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
632.50	18,351	0	0
634.00	21,552	29,927	29,927
636.00	26,369	47,921	77,848
638.00	31,126	57,495	135,343

Device	Routing	Invert	Outlet Devices
#1	Primary	630.00'	**15.0" Round Culvert** L= 140.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 630.00' / 626.00' S= 0.0286 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	637.00'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	637.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=8.3 cfs @ 12.68 hrs HW=637.34' (Free Discharge)
└**1=Culvert** (Passes 8.3 cfs of 15.1 cfs potential flow)
  └**2=Orifice/Grate** (Weir Controls 8.3 cfs @ 1.92 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=632.50' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 11P-FOREBAY: FOREB AY 11P

Volume	Invert	Avail.Storage	Storage Description
#1	632.50'	2,442 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
632.50	1,339	0	0
634.00	1,917	2,442	2,442

Summary for Pond 12P: Ex Weltand @ 19S

Inflow Area = 205,391 sf, 0.00% Impervious, Inflow Depth = 3.65" for 100-Year event
Inflow = 16.6 cfs @ 12.17 hrs, Volume= 62,543 cf
Outflow = 10.6 cfs @ 12.34 hrs, Volume= 62,543 cf, Atten= 36%, Lag= 10.6 min
Primary = 10.6 cfs @ 12.34 hrs, Volume= 62,543 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 740.51' @ 12.34 hrs Surf.Area= 12,236 sf Storage= 6,058 cf

Plug-Flow detention time= 3.4 min calculated for 62,535 cf (100% of inflow)
Center-of-Mass det. time= 3.4 min (847.2 - 843.8)

Volume	Invert	Avail.Storage	Storage Description
#1	740.00'	32,406 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
740.00	11,568	0	0
741.00	12,881	12,225	12,225
742.00	27,481	20,181	32,406

Device	Routing	Invert	Outlet Devices
#1	Primary	739.00'	**24.0" Round Culvert** L= 95.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 739.00' / 737.50' S= 0.0158 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.6 cfs @ 12.34 hrs HW=740.51' (Free Discharge)
↑—**1=Culvert** (Inlet Controls 10.6 cfs @ 4.18 fps)

Summary for Pond 13P: FOREBAY 13

Inflow Area = 35,268 sf, 42.09% Impervious, Inflow Depth = 5.13" for 100-Year event
Inflow = 4.8 cfs @ 12.09 hrs, Volume= 15,071 cf
Outflow = 4.2 cfs @ 12.14 hrs, Volume= 15,071 cf, Atten= 12%, Lag= 3.1 min
Discarded = 0.0 cfs @ 12.14 hrs, Volume= 7,050 cf
Primary = 4.2 cfs @ 12.14 hrs, Volume= 8,021 cf

Routing by Stor-Ind method, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs
Peak Elev= 625.65' @ 12.14 hrs Surf.Area= 1,963 sf Storage= 5,016 cf

Plug-Flow detention time= 576.0 min calculated for 15,071 cf (100% of inflow)
Center-of-Mass det. time= 575.9 min (1,386.5 - 810.5)

Volume	Invert	Avail.Storage	Storage Description
#1	622.00'	5,733 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
622.00	827	0	0
624.00	1,412	2,239	2,239
626.00	2,082	3,494	5,733

Device	Routing	Invert	Outlet Devices
#1	Primary	625.33'	**36.0" Round Culvert** L= 265.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 625.33' / 624.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 7.07 sf
#2	Device 1	637.10'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Discarded	622.00'	**1.020 in/hr Exfiltration over Surface area**
#4	Primary	625.50'	**30.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.0 cfs @ 12.14 hrs HW=625.65' (Free Discharge)
└**3=Exfiltration** (Exfiltration Controls 0.0 cfs)

Primary OutFlow Max=3.9 cfs @ 12.14 hrs HW=625.65' (Free Discharge)
├**1=Culvert** (Passes 0.0 cfs of 0.6 cfs potential flow)
│ └**2=Orifice/Grate** (Controls 0.0 cfs)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 3.9 cfs @ 0.91 fps)

Summary for Link AP1:

Inflow Area = 1,643,287 sf, 33.30% Impervious, Inflow Depth = 5.27" for 100-Year event
Inflow = 98.2 cfs @ 12.26 hrs, Volume= 721,699 cf
Primary = 98.2 cfs @ 12.26 hrs, Volume= 721,699 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP2:

Inflow Area = 198,495 sf, 17.45% Impervious, Inflow Depth = 5.01" for 100-Year event
Inflow = 23.3 cfs @ 12.14 hrs, Volume= 82,913 cf
Primary = 23.3 cfs @ 12.14 hrs, Volume= 82,913 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP3:

Inflow Area = 4,645,711 sf, 14.34% Impervious, Inflow Depth = 4.34" for 100-Year event
Inflow = 233.8 cfs @ 12.20 hrs, Volume= 1,679,506 cf
Primary = 233.8 cfs @ 12.20 hrs, Volume= 1,679,506 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP4:

Inflow Area = 48,140 sf, 0.00% Impervious, Inflow Depth = 2.89" for 100-Year event
Inflow = 3.6 cfs @ 12.09 hrs, Volume= 11,590 cf
Primary = 3.6 cfs @ 12.09 hrs, Volume= 11,590 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP5:

Inflow Area = 913,135 sf, 31.25% Impervious, Inflow Depth = 5.19" for 100-Year event
Inflow = 56.0 cfs @ 12.29 hrs, Volume= 394,554 cf
Primary = 56.0 cfs @ 12.29 hrs, Volume= 394,554 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP6: To DOT swale Western

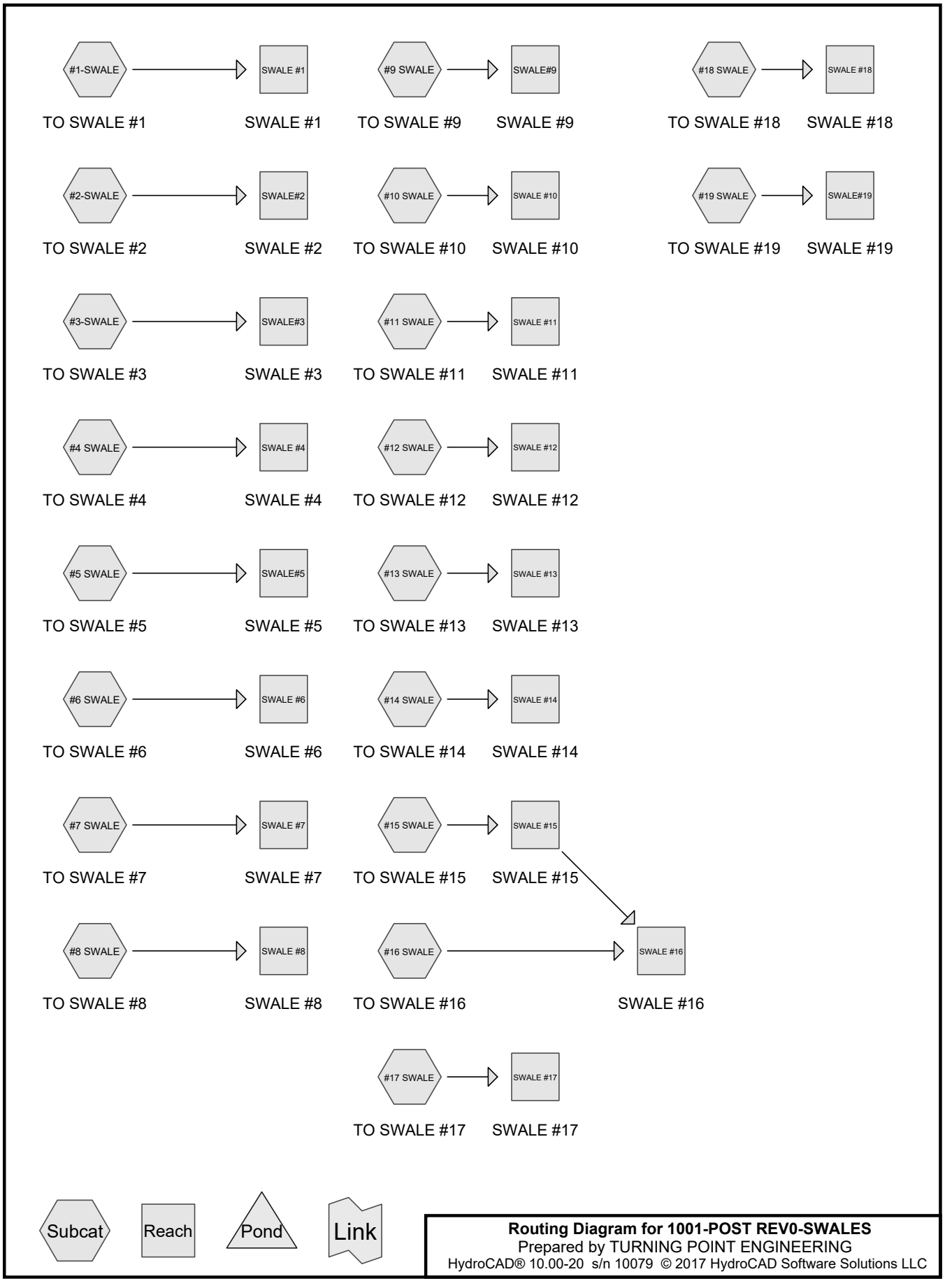
Inflow Area = 824,007 sf, 27.93% Impervious, Inflow Depth = 2.55" for 100-Year event
Inflow = 19.8 cfs @ 12.20 hrs, Volume= 174,902 cf
Primary = 19.8 cfs @ 12.20 hrs, Volume= 174,902 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs

Summary for Link AP7: To DOT swale-Eastern

Inflow Area = 777,936 sf, 11.42% Impervious, Inflow Depth = 3.43" for 100-Year event
Inflow = 10.4 cfs @ 13.10 hrs, Volume= 222,348 cf
Primary = 10.4 cfs @ 13.10 hrs, Volume= 222,348 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-160.00 hrs, dt= 0.02 hrs



Routing Diagram for 1001-POST REV0-SWALES
Prepared by TURNING POINT ENGINEERING

Summary for Subcatchment #1-SWALE: TO SWALE #1

Runoff = 11.5 cfs @ 12.09 hrs, Volume= 36,422 cf, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
20,216	98	Roofs, HSG C
59,610	74	
79,826	80	Weighted Average
59,610		74.67% Pervious Area
20,216		25.33% Impervious Area

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

Summary for Subcatchment #10 SWALE: TO SWALE #10

Runoff = 2.8 cfs @ 12.09 hrs, Volume= 8,835 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
22,167	74	>75% Grass cover, Good, HSG C
22,167		100.00% Pervious Area

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

Summary for Subcatchment #11 SWALE: TO SWALE #11

Runoff = 4.7 cfs @ 12.09 hrs, Volume= 14,710 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
36,908	74	>75% Grass cover, Good, HSG C
36,908		100.00% Pervious Area

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

Summary for Subcatchment #12 SWALE: TO SWALE #12

Runoff = 2.7 cfs @ 12.09 hrs, Volume= 8,575 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
21,514	74	>75% Grass cover, Good, HSG C
21,514		100.00% Pervious Area

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

Summary for Subcatchment #13 SWALE: TO SWALE #13

Runoff = 6.8 cfs @ 12.09 hrs, Volume= 21,272 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
53,370	74	>75% Grass cover, Good, HSG C
53,370		100.00% Pervious Area

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

Summary for Subcatchment #14 SWALE: TO SWALE #14

Runoff = 11.4 cfs @ 12.09 hrs, Volume= 36,174 cf, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
54,530	74	>75% Grass cover, Good, HSG C
23,104	98	Roofs, HSG C
77,634	81	Weighted Average
54,530		70.24% Pervious Area
23,104		29.76% Impervious Area

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

Summary for Subcatchment #15 SWALE: TO SWALE #15

Runoff = 13.7 cfs @ 12.09 hrs, Volume= 43,176 cf, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
81,533	74	>75% Grass cover, Good, HSG C
17,280	98	Roofs, HSG C
98,813	78	Weighted Average
81,533		82.51% Pervious Area
17,280		17.49% Impervious Area

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

Summary for Subcatchment #16 SWALE: TO SWALE #16

Runoff = 1.9 cfs @ 12.09 hrs, Volume= 5,883 cf, Depth= 5.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
12,324	74	>75% Grass cover, Good, HSG C
1,444	98	Roofs, HSG C
13,768	77	Weighted Average
12,324		89.51% Pervious Area
1,444		10.49% Impervious Area

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

Summary for Subcatchment #17 SWALE: TO SWALE #17

Runoff = 18.4 cfs @ 12.09 hrs, Volume= 57,581 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
36,713	74	>75% Grass cover, Good, HSG C
10,108	98	Roofs, HSG C
6,351	98	Roofs, HSG B
46,072	55	Woods, Good, HSG B
30,433	61	>75% Grass cover, Good, HSG B
38,802	70	Woods, Good, HSG C
168,479	68	Weighted Average
152,020		90.23% Pervious Area
16,459		9.77% Impervious Area

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

Summary for Subcatchment #18 SWALE: TO SWALE #18

Runoff = 17.0 cfs @ 12.54 hrs, Volume= 104,903 cf, Depth= 3.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

	Area (sf)	CN	Description
	281,296	61	>75% Grass cover, Good, HSG B
*	43,410	98	EXPOSED LEDGED, HSG B
	324,706	66	Weighted Average
	281,296		86.63% Pervious Area
	43,410		13.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
38.0	900	0.0130	0.39		**Lag/CN Method,**

Summary for Subcatchment #19 SWALE: TO SWALE #19

Runoff = 11.5 cfs @ 12.51 hrs, Volume= 68,885 cf, Depth= 4.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

	Area (sf)	CN	Description
*	195,553	67	WEIGHT CN FOR SUBCAT 23
*	6,000	98	LEDGE FACE, HSG B
	201,553	68	Weighted Average
	195,553		97.02% Pervious Area
	6,000		2.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
36.0	940	0.0140	0.44		**Lag/CN Method,**

Summary for Subcatchment #2-SWALE: TO SWALE #2

Runoff = 5.9 cfs @ 12.09 hrs, Volume= 18,621 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
46,719	74	>75% Grass cover, Good, HSG C
46,719		100.00% Pervious Area

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

Summary for Subcatchment #3-SWALE: TO SWALE #3

Runoff = 10.3 cfs @ 12.09 hrs, Volume= 32,092 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
80,519	74	>75% Grass cover, Good, HSG C
80,519		100.00% Pervious Area

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

Summary for Subcatchment #4 SWALE: TO SWALE #4

Runoff = 6.1 cfs @ 12.09 hrs, Volume= 19,199 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
48,170	74	>75% Grass cover, Good, HSG C
48,170		100.00% Pervious Area

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

Summary for Subcatchment #5 SWALE: TO SWALE #5

Runoff = 2.8 cfs @ 12.09 hrs, Volume= 8,769 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
22,000	74	>75% Grass cover, Good, HSG C
22,000		100.00% Pervious Area

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

Summary for Subcatchment #6 SWALE: TO SWALE #6

Runoff = 7.3 cfs @ 12.09 hrs, Volume= 22,718 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
56,999	74	>75% Grass cover, Good, HSG C
56,999		100.00% Pervious Area

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

Summary for Subcatchment #7 SWALE: TO SWALE #7

Runoff = 11.3 cfs @ 12.09 hrs, Volume= 35,606 cf, Depth= 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
68,494	74	>75% Grass cover, Good, HSG C
12,996	98	Roofs, HSG C
81,490	78	Weighted Average
68,494		84.05% Pervious Area
12,996		15.95% Impervious Area

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

Summary for Subcatchment #8 SWALE: TO SWALE #8

Runoff = 5.0 cfs @ 12.09 hrs, Volume= 15,690 cf, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
27,912	74	>75% Grass cover, Good, HSG C
7,220	98	Roofs, HSG C
35,132	79	Weighted Average
27,912		79.45% Pervious Area
7,220		20.55% Impervious Area

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

Summary for Subcatchment #9 SWALE: TO SWALE #9

Runoff = 2.6 cfs @ 12.09 hrs, Volume= 8,148 cf, Depth= 4.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Type III 24-hr 100-Year Rainfall=7.84"

Area (sf)	CN	Description
20,444	74	>75% Grass cover, Good, HSG C
20,444		100.00% Pervious Area

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

Summary for Reach SWALE #1: SWALE #1

Inflow Area = 79,826 sf, 25.33% Impervious, Inflow Depth = 5.48" for 100-Year event
Inflow = 11.5 cfs @ 12.09 hrs, Volume= 36,422 cf
Outflow = 10.5 cfs @ 12.17 hrs, Volume= 36,422 cf, Atten= 9%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.82 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.96 fps, Avg. Travel Time= 11.9 min

Peak Storage= 1,915 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 48.0 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 685.0' Slope= 0.0234 '/'
Inlet Invert= 724.00', Outlet Invert= 708.00'

‡

Summary for Reach SWALE #10: SWALE #10

Inflow Area = 22,167 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 2.8 cfs @ 12.09 hrs, Volume= 8,835 cf
Outflow = 2.7 cfs @ 12.13 hrs, Volume= 8,835 cf, Atten= 4%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 5.1 min

Peak Storage= 227 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 72.4 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 260.0' Slope= 0.0531 '/'
Inlet Invert= 687.00', Outlet Invert= 673.20'

‡

Summary for Reach SWALE #11: SWALE #11

Inflow Area = 36,908 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 4.7 cfs @ 12.09 hrs, Volume= 14,710 cf
Outflow = 4.5 cfs @ 12.13 hrs, Volume= 14,710 cf, Atten= 5%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.16 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 5.7 min

Peak Storage= 420 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 55.3 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 291.0' Slope= 0.0309 '/'
Inlet Invert= 696.00', Outlet Invert= 687.00'

‡

Summary for Reach SWALE #12: SWALE #12

Inflow Area = 21,514 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 2.7 cfs @ 12.09 hrs, Volume= 8,575 cf
Outflow = 2.6 cfs @ 12.12 hrs, Volume= 8,575 cf, Atten= 4%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.55 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 0.69 fps, Avg. Travel Time= 4.2 min

Peak Storage= 184 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 53.1 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 175.0' Slope= 0.0286 '/'
Inlet Invert= 701.00', Outlet Invert= 696.00'

‡

Summary for Reach SWALE #13: SWALE #13

Inflow Area = 53,370 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 6.8 cfs @ 12.09 hrs, Volume= 21,272 cf
Outflow = 6.5 cfs @ 12.12 hrs, Volume= 21,272 cf, Atten= 4%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.33 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 0.91 fps, Avg. Travel Time= 3.7 min

Peak Storage= 401 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 49.6 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 201.0' Slope= 0.0249 '/'
Inlet Invert= 706.00', Outlet Invert= 701.00'

‡

Summary for Reach SWALE #14: SWALE #14

Inflow Area = 77,634 sf, 29.76% Impervious, Inflow Depth = 5.59" for 100-Year event
Inflow = 11.4 cfs @ 12.09 hrs, Volume= 36,174 cf
Outflow = 10.9 cfs @ 12.12 hrs, Volume= 36,174 cf, Atten= 4%, Lag= 2.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.72 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 4.1 min

Peak Storage= 716 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 64.9 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 305.0' Slope= 0.0426 '/'
Inlet Invert= 684.00', Outlet Invert= 671.00'

‡

Summary for Reach SWALE #15: SWALE #15

Inflow Area = 98,813 sf, 17.49% Impervious, Inflow Depth = 5.24" for 100-Year event
Inflow = 13.7 cfs @ 12.09 hrs, Volume= 43,176 cf
Outflow = 13.2 cfs @ 12.11 hrs, Volume= 43,176 cf, Atten= 3%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 6.00 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 1.62 fps, Avg. Travel Time= 2.7 min

Peak Storage= 597 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.37'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 84.2 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 265.0' Slope= 0.0717 '/'
Inlet Invert= 723.00', Outlet Invert= 704.00'

‡

Summary for Reach SWALE #16: SWALE #16

Inflow Area = 112,581 sf, 16.63% Impervious, Inflow Depth = 5.23" for 100-Year event
Inflow = 15.0 cfs @ 12.11 hrs, Volume= 49,059 cf
Outflow = 14.8 cfs @ 12.12 hrs, Volume= 49,059 cf, Atten= 2%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 1.27 fps, Avg. Travel Time= 2.2 min

Peak Storage= 533 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 54.7 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 165.0' Slope= 0.0303 '/'
Inlet Invert= 704.00', Outlet Invert= 699.00'

‡

Summary for Reach SWALE #17: SWALE #17

Inflow Area = 168,479 sf, 9.77% Impervious, Inflow Depth = 4.10" for 100-Year event
Inflow = 18.4 cfs @ 12.09 hrs, Volume= 57,581 cf
Outflow = 18.3 cfs @ 12.10 hrs, Volume= 57,581 cf, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 7.26 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.12 fps, Avg. Travel Time= 0.6 min

Peak Storage= 190 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 96.0 cfs

5.00' x 1.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 75.0' Slope= 0.0933 '/'
Inlet Invert= 706.00', Outlet Invert= 699.00'

‡

Summary for Reach SWALE #18: SWALE #18

Inflow Area = 324,706 sf, 13.37% Impervious, Inflow Depth = 3.88" for 100-Year event
Inflow = 17.0 cfs @ 12.54 hrs, Volume= 104,903 cf
Outflow = 17.0 cfs @ 12.61 hrs, Volume= 104,903 cf, Atten= 1%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.96 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 1.04 fps, Avg. Travel Time= 7.2 min

Peak Storage= 2,576 cf @ 12.57 hrs
Average Depth at Peak Storage= 0.97'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 18.1 cfs

3.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 450.0' Slope= 0.0067 '/'
Inlet Invert= 642.00', Outlet Invert= 639.00'

‡

Summary for Reach SWALE #4: SWALE #4

Inflow Area = 48,170 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 6.1 cfs @ 12.09 hrs, Volume= 19,199 cf
Outflow = 5.9 cfs @ 12.11 hrs, Volume= 19,199 cf, Atten= 3%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 0.7 min
Avg. Velocity = 0.94 fps, Avg. Travel Time= 2.7 min

Peak Storage= 269 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 54.1 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 152.0' Slope= 0.0296 '/'
Inlet Invert= 740.00', Outlet Invert= 735.50'

‡

Summary for Reach SWALE #6: SWALE #6

Inflow Area = 56,999 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 7.3 cfs @ 12.09 hrs, Volume= 22,718 cf
Outflow = 7.0 cfs @ 12.11 hrs, Volume= 22,718 cf, Atten= 3%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.13 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 2.8 min

Peak Storage= 332 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 66.1 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 192.0' Slope= 0.0443 '/'
Inlet Invert= 730.00', Outlet Invert= 721.50'

‡

Summary for Reach SWALE #7: SWALE #7

Inflow Area = 81,490 sf, 15.95% Impervious, Inflow Depth = 5.24" for 100-Year event
Inflow = 11.3 cfs @ 12.09 hrs, Volume= 35,606 cf
Outflow = 11.1 cfs @ 12.10 hrs, Volume= 35,606 cf, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 4.08 fps, Min. Travel Time= 0.4 min
Avg. Velocity = 1.12 fps, Avg. Travel Time= 1.4 min

Peak Storage= 253 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 51.8 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 92.0' Slope= 0.0272 '/'
Inlet Invert= 721.50', Outlet Invert= 719.00'

‡

Summary for Reach SWALE #8: SWALE #8

Inflow Area = 35,132 sf, 20.55% Impervious, Inflow Depth = 5.36" for 100-Year event
Inflow = 5.0 cfs @ 12.09 hrs, Volume= 15,690 cf
Outflow = 4.7 cfs @ 12.14 hrs, Volume= 15,690 cf, Atten= 5%, Lag= 3.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.74 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 7.1 min

Peak Storage= 525 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 43.3 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 300.0' Slope= 0.0190 '/'
Inlet Invert= 744.00', Outlet Invert= 738.30'

‡

Summary for Reach SWALE#19: SWALE #19

Inflow Area = 201,553 sf, 2.98% Impervious, Inflow Depth = 4.10" for 100-Year event
Inflow = 11.5 cfs @ 12.51 hrs, Volume= 68,885 cf
Outflow = 11.3 cfs @ 12.63 hrs, Volume= 68,885 cf, Atten= 2%, Lag= 7.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.39 fps, Min. Travel Time= 4.2 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 13.2 min

Peak Storage= 2,847 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 15.7 cfs

3.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 600.0' Slope= 0.0050 '/'
Inlet Invert= 638.00', Outlet Invert= 635.00'

‡

Summary for Reach SWALE#2: SWALE #2

Inflow Area = 46,719 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 5.9 cfs @ 12.09 hrs, Volume= 18,621 cf
Outflow = 5.6 cfs @ 12.15 hrs, Volume= 18,621 cf, Atten= 5%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.21 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 7.3 min

Peak Storage= 664 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 50.2 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 372.0' Slope= 0.0255 '/'
Inlet Invert= 728.00', Outlet Invert= 718.50'

‡

Summary for Reach SWALE#3: SWALE #3

Inflow Area = 80,519 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 10.3 cfs @ 12.09 hrs, Volume= 32,092 cf
Outflow = 9.8 cfs @ 12.13 hrs, Volume= 32,092 cf, Atten= 4%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.43 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.93 fps, Avg. Travel Time= 4.9 min

Peak Storage= 801 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.46'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 42.4 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 275.0' Slope= 0.0182 '/'
Inlet Invert= 740.00', Outlet Invert= 735.00'

‡

Summary for Reach SWALE#5: SWALE #5

Inflow Area = 22,000 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 2.8 cfs @ 12.09 hrs, Volume= 8,769 cf
Outflow = 2.7 cfs @ 12.10 hrs, Volume= 8,769 cf, Atten= 3%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 1.9 min

Peak Storage= 87 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 73.7 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 100.0' Slope= 0.0550 '/'
Inlet Invert= 735.50', Outlet Invert= 730.00'

‡

Summary for Reach SWALE#9: SWALE #9

Inflow Area = 20,444 sf, 0.00% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 2.6 cfs @ 12.09 hrs, Volume= 8,148 cf
Outflow = 2.5 cfs @ 12.13 hrs, Volume= 8,148 cf, Atten= 4%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-72.00 hrs, dt= 0.04 hrs
Max. Velocity= 2.43 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.66 fps, Avg. Travel Time= 4.7 min

Peak Storage= 193 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.19'
Bank-Full Depth= 1.00' Flow Area= 8.0 sf, Capacity= 50.6 cfs

5.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 11.00'
Length= 185.0' Slope= 0.0259 '/'
Inlet Invert= 738.30', Outlet Invert= 733.50'

‡

STAGE-STORAGE & SEDIMENT FOREBAY SIZING

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
62,011	61	>75% Grass cover, Good, HSG B (14S, 142S)
712,514	74	>75% Grass cover, Good, HSG C (13S, 14S, 15S, 140S, 141S, 142S)
25,446	80	>75% Grass cover, Good, HSG D (14S, 141S)
117,863	65	Brush, Good, HSG C (15S)
18,017	89	Gravel roads, HSG C (13S, 14S, 15S)
637	91	Gravel roads, HSG D (14S)
26,953	98	Paved parking, HSG B (14S)
200,368	98	Paved parking, HSG C (13S, 14S)
3,822	98	Paved parking, HSG D (14S)
39,915	98	Roofs, HSG B (14S, 142S)
257,776	98	Roofs, HSG C (13S, 14S, 15S, 140S, 141S, 142S)
18,299	98	Roofs, HSG D (14S, 141S)
19,111	55	Woods, Good, HSG B (15S)
136,064	70	Woods, Good, HSG C (14S, 15S)
4,491	77	Woods, Good, HSG D (14S)
1,643,287	**81**	**TOTAL AREA**

TOTAL IMPERVIOUS TO DESIGN POINT AP1
547,133 SF = 12.56 ACRES

AP-1 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
62,011	61	>75% Grass cover, Good, HSG B (14S, 142S)
507,055	74	>75% Grass cover, Good, HSG C (13S, 14S, 140S, 141S, 142S)
25,446	80	>75% Grass cover, Good, HSG D (14S, 141S)
15,461	89	Gravel roads, HSG C (13S, 14S)
637	91	Gravel roads, HSG D (14S)
26,953	98	Paved parking, HSG B (14S)
200,368	98	Paved parking, HSG C (13S, 14S)
3,822	98	Paved parking, HSG D (14S)
39,915	98	Roofs, HSG B (14S, 142S)
212,959	98	Roofs, HSG C (13S, 14S, 140S, 141S, 142S)
18,299	98	Roofs, HSG D (14S, 141S)
10,500	70	Woods, Good, HSG C (14S)
4,491	77	Woods, Good, HSG D (14S)
1,127,917	**84**	**TOTAL AREA**

TOTAL IMPERVIOUS TO DESIGN POINT AP1
502,316 SF = 11.53 ACRES

AP-1 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP

Stage-Area-Storage for Pond 1P: Basin #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
686.50	22,675	0
686.52	22,844	455
686.54	23,014	914
686.56	23,185	1,376
686.58	23,356	1,841
686.60	23,527	2,310
686.62	23,700	2,782
686.64	23,873	3,258
686.66	24,046	3,737
686.68	24,221	4,220
686.70	24,395	4,706
686.72	24,571	5,196
686.74	24,747	5,689
686.76	24,924	6,186
686.78	25,101	6,686
686.80	25,279	7,190
686.82	25,458	7,697
686.84	25,637	8,208
686.86	25,817	8,722
68		9,241
68		9,762
68		10,288
68		10,817
686.96	26,726	11,349
686.98	26,910	11,886
687.00	27,094	12,426
687.02	27,147	12,968
687.04	27,200	13,512
687.06	27,253	14,056
687.08	27,306	14,602
687.10	27,359	15,149
687.12	27,413	15,696
687.14	27,466	16,245
687.16	27,519	16,795
687.18	27,573	17,346
687.20	27,626	17,898
687.22	27,680	18,451
687.24	27,733	19,005
687.26	27,787	19,560
687.28	27,841	20,116
687.30	27,894	20,674
687.32	27,948	21,232
687.34	28,002	21,792
687.36	28,056	22,352
687.38	28,110	22,914
687.40	28,164	23,477
687.42	28,218	24,041
687.44	28,272	24,605
687.46	28,326	25,171
687.48	28,380	25,738
687.50	28,434	26,307
687.52	28,489	26,876

STATIC STORAGE VOLUME AT LOWEST OUTLET ELEV. (687.80)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
687.54	28,543	27,446
687.56	28,597	28,018
687.58	28,652	28,590
687.60	28,706	29,164
687.62	28,761	29,738
687.64	28,815	30,314
687.66	28,870	30,891
687.68	28,925	31,469
687.70	28,980	32,048
687.72	29,034	32,628
687.74	29,089	33,209
687.76	29,144	33,792
687.78	29,199	34,375
687.80	29,254	34,960
687.82	29,309	35,545
687.84	29,364	36,132
687.86	29,419	36,720
687.88	29,475	37,309
687.90	29,530	37,899
687.92	29,585	38,490
687.94	29,641	39,082
687.96	29,696	39,676
687.98	29,751	40,270
688.00	29,807	40,866
688.02	29,861	41,462
688.04	29,914	42,060
688.06	29,968	42,659
688.08	30,022	43,259
688.10	30,075	43,860
688.12	30,129	44,462
688.14	30,183	45,065
688.16	30,237	45,669
688.18	30,291	46,274
688.20	30,345	46,881
688.22	30,399	47,488
688.24	30,453	48,097
688.26	30,507	48,706
688.28	30,562	49,317
688.30	30,616	49,929
688.32	30,670	50,542
688.34	30,725	51,156
688.36	30,779	51,771
688.38	30,833	52,387
688.40	30,888	53,004
688.42	30,942	53,622
688.44	30,997	54,242
688.46	31,052	54,862
688.48	31,106	55,484
688.50	31,161	56,106
688.52		
688.54		
688.56		

AP-1 DESIGN POINT

RECHARGE AND WATER QUALITY VOLUME POND#1

Stage-Area-Storage for Pond 1P-FB: Forebay-Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
687.00	2,340	0
687.10	2,368	235
687.20	2,396	474
687.30	2,424	715
687.40	2,452	958
687.50	2,480	1,205
687.60	2,508	1,454
687.70	2,536	1,707
687.80	2,564	1,962
687.90	2,592	2,219
688.00	2,620	2,480
688.10	2,649	2,743
688.20	2,678	3,010
688.30	2,708	3,279
688.40	2,737	3,551
688.50	2,766	3,827
688.60	2,795	4,105
688.70	2,824	4,386
688.80	2,854	4,669
688.90	2,883	4,956
689.00	**2,912**	**5,246**

WQV-PRETREATMENT PROVIDED BELOW FOREBAY SPILL WAY

AP-1 DESIGN POINT

FOREBAY SIZING POND #1

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
568,374	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 16S, 17S, 18S, 19S, 70S)
443,537	74	>75% Grass cover, Good, HSG C (3S, 5S, 7S, 8S, 9S, 19S, 70S)
291,293	80	>75% Grass cover, Good, HSG D (3S, 5S, 7S, 8S, 17S, 18S)
48,437	65	Brush, Good, HSG C (9S)
9,683	85	Gravel roads, HSG B (1S, 4S, 8S, 18S, 19S)
32,807	98	Paved parking, HSG B (17S)
29,896	98	Paved parking, HSG C (8S, 9S)
23,275	98	Paved parking, HSG D (17S)
110,279	98	Paved roads w/curbs & sewers, HSG B (1S, 5S, 7S)
88,698	98	Paved roads w/curbs & sewers, HSG C (5S, 7S)
15,628	98	Paved roads w/curbs & sewers, HSG D (1S, 5S)
158,068	98	Roofs, HSG B (1S, 3S, 5S, 7S, 8S, 16S, 17S, 18S, 70S)
135,567	98	Roofs, HSG C (3S, 5S, 7S, 8S, 9S, 70S)
72,197	98	Roofs, HSG D (1S, 3S, 5S, 7S, 8S, 17S, 18S)
1,371,832	55	Woods, Good, HSG B (1S, 3S, 4S, 5S, 8S, 18S, 19S)
706,818	70	Woods, Good, HSG C (3S, 8S, 9S, 19S)
539,322	77	Woods, Good, HSG D (8S, 18S)
4,645,711	**70**	**TOTAL AREA**

TOTAL IMPERVIOUS AREA FROM DEVELOPMENT SITE TO DP AP3
666,415 SF = 15.3 AC

AP-3 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

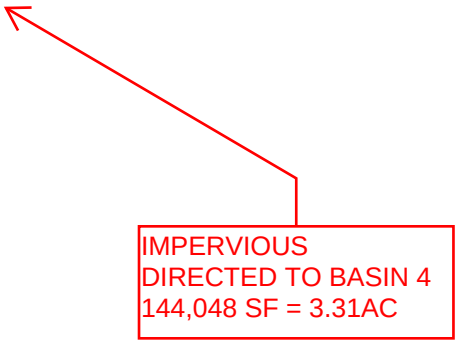
Area (sq-ft)	CN	Description (subcatchment-numbers)
406,146	61	>75% Grass cover, Good, HSG B (1S, 5S, 7S, 16S, 17S, 18S, 70S)
139,730	74	>75% Grass cover, Good, HSG C (5S, 7S, 70S)
225,595	80	>75% Grass cover, Good, HSG D (5S, 7S, 17S, 18S)
4,412	85	Gravel roads, HSG B (1S, 18S)
32,807	98	Paved parking, HSG B (17S)
23,275	98	Paved parking, HSG D (17S)
110,279	98	Paved roads w/curbs & sewers, HSG B (1S, 5S, 7S)
88,698	98	Paved roads w/curbs & sewers, HSG C (5S, 7S)
15,628	98	Paved roads w/curbs & sewers, HSG D (1S, 5S)
122,481	98	Roofs, HSG B (1S, 5S, 7S, 16S, 17S, 18S, 70S)
81,644	98	Roofs, HSG C (5S, 7S, 70S)
53,322	98	Roofs, HSG D (1S, 5S, 7S, 17S, 18S)
104,787	55	Woods, Good, HSG B (1S, 5S, 18S)
16,691	77	Woods, Good, HSG D (18S)
1,425,495	**79**	**TOTAL AREA**

IMPERVIOUS DIRECTED TO INFILTRATION/TREATMENT BMPS = 528,134 SF

AP-3 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP'S

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
93,990	61	>75% Grass cover, Good, HSG B (7S, 70S)
91,213	74	>75% Grass cover, Good, HSG C (7S, 70S)
30,951	80	>75% Grass cover, Good, HSG D (7S)
10,435	98	Paved roads w/curbs & sewers, HSG B (7S)
47,686	98	Paved roads w/curbs & sewers, HSG C (7S)
30,053	98	Roofs, HSG B (7S, 70S)
53,789	98	Roofs, HSG C (7S, 70S)
2,085	98	Roofs, HSG D (7S)
360,202	**81**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#4

Stage-Area-Storage for Pond 4P: Basin #4 - Road B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
722.50	11,005	0
722.60	11,152	1,108
722.70	11,301	2,230
722.80	11,450	3,368
722.90	11,600	4,520
723.00	11,751	5,688
723.10	11,903	6,871
723.20	12,057	8,069
723.30	12,211	9,282
723.40	12,366	10,511
723.50	12,522	11,755
723.60	12,679	13,015
723.70	12,837	14,291
723.80	12,996	15,583
723.90	13,156	16,890
724.00	13,317	18,214
724.10	13,472	19,553
724.20	13,629	20,908
724.30	13,786	22,279
724.40	13,944	23,666
724.50	14,103	25,068
724.60	14,263	26,486
724.70	14,424	27,921
724.80	14,585	29,371
724.90	14,748	30,838
725.00	14,911	32,321
725.10	15,076	33,820
725.20	15,241	35,336
725.30	15,407	36,868
725.40	15,574	38,417
725.50	15,742	39,983
725.60	15,911	41,566
725.70	16,081	43,166
725.80	16,252	44,782
725.90	16,423	46,416
726.00	16,596	48,067
726.10	16,763	49,735
726.20	16,932	51,420
726.30	17,101	53,121
726.40	17,271	54,840
726.50	17,441	56,575
726.60	17,613	58,328
726.70	17,786	60,098
726.80	17,959	61,885
726.90	18,133	63,690
727.00	18,308	65,512
727.10	18,484	67,351
727.20	18,660	69,209
727.30	18,838	71,084
727.40	19,016	72,976
727.50	19,195	74,887
727.60	19,376	76,815
727.70	19,556	78,762
727.80	19,738	80,727
727.90	19,921	82,710
728.00	**20,104**	**84,711**

STATIC STORAGE VOLUME BELOW LOWEST OUTLET INVERT

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#4

Stage-Area-Storage for Pond 4P-FB: Basin #4 - FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
722.50	1,440	0
722.60	1,486	146
722.70	1,533	297
722.80	1,580	453
722.90	1,629	613
723.00	1,678	779
723.10	1,727	949
723.20	1,778	1,124
723.30	1,829	1,304
723.40	1,881	1,490
723.50	1,933	1,681
723.60	1,987	1,877
723.70	2,041	2,078
723.80	2,095	2,285
723.90	2,151	2,497
724.00	**2,207**	**2,715**
724.10	2,207	2,715
724.20	2,207	2,715
724.30	2,207	2,715
724.40	2,207	2,715
724.50	2,207	2,715
724.60	2,207	2,715
724.70	2,207	2,715
724.80	2,207	2,715
724.90	2,207	2,715
725.00	2,207	2,715
725.10	2,207	2,715
725.20	2,207	2,715
725.30	2,207	2,715
725.40	2,207	2,715
725.50	2,207	2,715
725.60	2,207	2,715
725.70	2,207	2,715
725.80	2,207	2,715
725.90	2,207	2,715
726.00	2,207	2,715
726.10	2,207	2,715
726.20	2,207	2,715
726.30	2,207	2,715
726.40	2,207	2,715
726.50	2,207	2,715
726.60	2,207	2,715
726.70	2,207	2,715
726.80	2,207	2,715
726.90	2,207	2,715
727.00	2,207	2,715
727.10	2,207	2,715

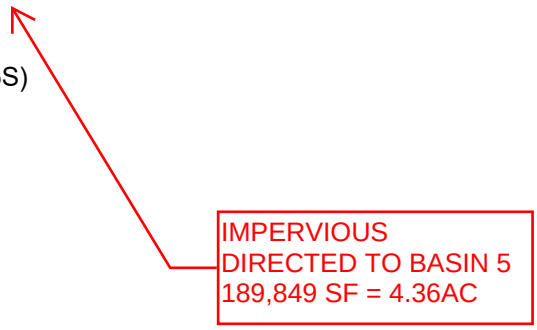
FOREBAY #6 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #4

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
112,350	61	>75% Grass cover, Good, HSG B (5S, 16S)
48,517	74	>75% Grass cover, Good, HSG C (5S)
9,548	80	>75% Grass cover, Good, HSG D (5S)
57,435	98	Paved roads w/curbs & sewers, HSG B (5S)
41,012	98	Paved roads w/curbs & sewers, HSG C (5S)
14,700	98	Paved roads w/curbs & sewers, HSG D (5S)
34,918	98	Roofs, HSG B (5S, 16S)
27,855	98	Roofs, HSG C (5S)
13,929	98	Roofs, HSG D (5S)
75,794	55	Woods, Good, HSG B (5S)
436,058	**78**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#5

Stage-Area-Storage for Pond 5P: Basin #5 - Road E

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
681.00	4,926	0
681.10	5,018	497
681.20	5,111	1,004
681.30	5,205	1,519
681.40	5,300	2,045
681.50	5,395	2,579
681.60	5,492	3,124
681.70	5,589	3,678
681.80	5,687	4,242
681.90	5,786	4,815
682.00	5,886	5,399
682.10	5,983	5,992
682.20	6,081	6,596
682.30	6,179	7,208
682.40	6,279	7,831
682.50	6,379	8,464
682.60	6,480	9,107
682.70	6,581	9,760
682.80	6,684	10,423
682.90	6,787	11,097
683.00	6,891	11,781
683.10	6,996	12,475
683.20	7,102	13,180
683.30	7,208	13,896
683.40	7,316	14,622
683.50	7,424	15,359
683.60	7,533	16,107
683.70	7,642	16,865
683.80	7,753	17,635
683.90	7,864	18,416
684.00	7,976	19,208
684.10	8,085	20,011
684.20	8,194	20,825
684.30	8,305	21,650
684.40	8,416	22,486
684.50	8,527	23,333
684.60	8,640	24,191
684.70	8,753	25,061
684.80	8,867	25,942
684.90	8,982	26,835
685.00	9,097	27,738
685.10	9,213	28,654
685.20	9,330	29,581
685.30	9,448	30,520
685.40	9,566	31,471
685.50	9,685	32,433
685.60	9,805	33,408
685.70	9,926	34,394
685.80	10,047	35,393
685.90	10,169	36,404
686.00	**10,292**	**37,427**

STATIC STORAGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-3 DESIGN POINT
RECHARGE AND WATER
QUALITY VOLUME POND#5

Stage-Area-Storage for Pond 5P-FB: Basin #5 - FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
681.00	750	0
681.10	768	76
681.20	786	154
681.30	804	233
681.40	822	314
681.50	841	398
681.60	859	483
681.70	877	569
681.80	895	658
681.90	913	748
682.00	931	841
682.10	951	935
682.20	971	1,031
682.30	991	1,129
682.40	1,011	1,229
682.50	1,032	1,331
682.60	1,052	1,435
682.70	1,072	1,541
682.80	1,092	1,650
682.90	1,112	1,760
683.00	**1,132**	**1,872**

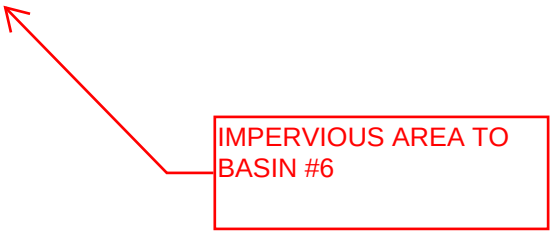
FOREBAY #5 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #5

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
141,845	61	>75% Grass cover, Good, HSG B (17S, 18S)
185,096	80	>75% Grass cover, Good, HSG D (17S, 18S)
1,767	85	Gravel roads, HSG B (18S)
32,807	98	Paved parking, HSG B (17S)
23,275	98	Paved parking, HSG D (17S)
41,561	98	Roofs, HSG B (17S, 18S)
36,508	98	Roofs, HSG D (17S, 18S)
6,597	55	Woods, Good, HSG B (18S)
16,691	77	Woods, Good, HSG D (18S)
486,147	**79**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#6

Stage-Area-Storage for Pond 6P: #6 Thayer Pond CulDeSac

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
666.50	7,574	7,574	0
666.60	7,739	7,742	766
666.70	7,906	7,912	1,548
666.80	8,075	8,084	2,347
666.90	8,246	8,257	3,163
667.00	8,418	8,433	3,996
667.10	8,592	8,610	4,847
667.20	8,768	8,789	5,715
667.30	8,946	8,970	6,600
667.40	9,125	9,153	7,504
667.50	9,307	9,337	8,426
667.60	9,490	9,523	9,365
667.70	9,675	9,711	10,324
667.80	9,861	9,901	11,300
667.90	10,050	10,093	12,296
668.00	10,240	10,287	13,310
668.10	10,405	10,456	14,343
668.20	10,572	10,626	15,391
668.30	10,740	10,798	16,457
668.40	10,909	10,971	17,539
668.50	11,079	11,145	18,639
668.60	11,251	11,321	19,755
668.70	11,424	11,498	20,889
668.80	11,599	11,677	22,040
668.90	11,774	11,857	23,209
669.00	11,951	12,038	24,395
669.10	12,130	12,221	25,599
669.20	12,310	12,405	26,821
669.30	12,491	12,590	28,061
669.40	12,673	12,777	29,319
669.50	12,857	12,965	30,596
669.60	13,042	13,154	31,891
669.70	13,228	13,345	33,204
669.80	13,416	13,537	34,536
669.90	13,605	13,730	35,887
670.00	13,795	13,925	37,257
670.10	14,006	14,141	38,647
670.20	14,220	14,358	40,059
670.30	14,434	14,577	41,491
670.40	14,651	14,797	42,945
670.50	14,868	15,019	44,421
670.60	15,088	15,243	45,919
670.70	15,309	15,468	47,439
670.80	15,532	15,695	48,981
670.90	15,756	15,924	50,545
671.00	15,982	16,154	52,132
671.10	16,210	16,386	53,742
671.20	16,439	16,620	55,374
671.30	16,670	16,855	57,030
671.40	16,902	17,092	58,708
671.50	17,136	17,331	60,410
671.60	17,372	17,571	62,136

STATIC STORAGE VOLUME BELOW LOWEST BASIN OUTLET ELEVATION

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#6

Stage-Area-Storage for Pond 6P-FB: #6 FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
666.50	1,103	0
666.60	1,185	114
666.70	1,271	237
666.80	1,359	369
666.90	1,450	509
667.00	1,544	659
667.10	1,588	815
667.20	1,632	976
667.30	1,677	1,142
667.40	1,722	1,312
667.50	1,768	1,486
667.60	1,815	1,665
667.70	1,862	1,849
667.80	1,910	2,038
667.90	1,959	2,231
668.00	**2,008**	**2,430**
668.10	2,008	2,430
668.20	2,008	2,430
668.30	2,008	2,430
668.40	2,008	2,430
668.50	2,008	2,430
668.60	2,008	2,430
668.70	2,008	2,430
668.80	2,008	2,430
668.90	2,008	2,430
669.00	2,008	2,430
669.10	2,008	2,430
669.20	2,008	2,430
669.30	2,008	2,430
669.40	2,008	2,430
669.50	2,008	2,430
669.60	2,008	2,430
669.70	2,008	2,430
669.80	2,008	2,430
669.90	2,008	2,430
670.00	2,008	2,430
670.10	2,008	2,430
670.20	2,008	2,430
670.30	2,008	2,430
670.40	2,008	2,430
670.50	2,008	2,430
670.60	2,008	2,430
670.70	2,008	2,430
670.80	2,008	2,430
670.90	2,008	2,430
671.00	2,008	2,430
671.10	2,008	2,430

FOREBAY #6 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #6

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
57,961	61	>75% Grass cover, Good, HSG B (1S)
2,645	85	Gravel roads, HSG B (1S)
42,409	98	Paved roads w/curbs & sewers, HSG B (1S)
928	98	Paved roads w/curbs & sewers, HSG D (1S)
15,949	98	Roofs, HSG B (1S)
800	98	Roofs, HSG D (1S)
22,396	55	Woods, Good, HSG B (1S)
143,088	**76**	**TOTAL AREA**

AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#7

Stage-Area-Storage for Pond 7P: Basin #7Thayer Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
627.00	3,635	0
627.10	3,742	369
627.20	3,851	748
627.30	3,961	1,139
627.40	4,072	1,541
627.50	4,186	1,954
627.60	4,300	2,378
627.70	4,417	2,814
627.80	4,535	3,261
627.90	4,654	3,721
628.00	4,775	4,192
628.10	4,889	4,675
628.20	5,004	5,170
628.30	5,120	5,676
628.40	5,237	6,194
628.50	5,356	6,723
628.60	5,477	7,265
628.70	5,598	7,819
628.80	5,721	8,385
628.90	5,845	8,963
629.00	**5,971**	**9,554**

STATIC STORAGE VOLUME BELOW LOWEST BASIN OUTLET ELEVATION

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#7

Stage-Area-Storage for Pond 7P-FB: POND#7 FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
627.00	663	0
627.10	693	68
627.20	723	139
627.30	753	212
627.40	783	289
627.50	814	369
627.60	844	452
627.70	874	538
627.80	904	627
627.90	934	719
628.00	**964**	**814**

AP-3 DESIGN POINT

FOREBAY SIZING
POND #7

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
129,353	61	>75% Grass cover, Good, HSG B (10S, 11S, 110S)
320,213	74	>75% Grass cover, Good, HSG C (10S, 11S, 12S, 110S)
14,148	80	>75% Grass cover, Good, HSG D (12S)
1,207	85	Gravel roads, HSG B (11S)
3,160	89	Gravel roads, HSG C (11S, 12S)
2,452	91	Gravel roads, HSG D (11S, 12S)
27,559	98	Paved roads w/curbs & sewers, HSG B (10S)
76,607	98	Paved roads w/curbs & sewers, HSG C (10S)
46,427	98	Roofs, HSG B (10S, 110S)
134,781	98	Roofs, HSG C (10S, 11S, 12S, 110S)
47,105	55	Woods, Good, HSG B (11S, 12S, 110S)
76,872	70	Woods, Good, HSG C (11S, 12S)
33,251	77	Woods, Good, HSG D (12S)
913,135	**79**	**TOTAL AREA**

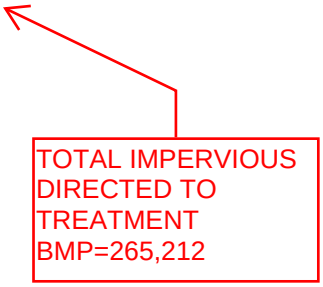
TOTAL IMPERVIOUS AREA TO DESIGN POINT AP5=285,374

AP-5 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
129,353	61	>75% Grass cover, Good, HSG B (10S, 11S, 110S)
256,473	74	>75% Grass cover, Good, HSG C (10S, 11S, 110S)
1,207	85	Gravel roads, HSG B (11S)
2,593	89	Gravel roads, HSG C (11S)
1,129	91	Gravel roads, HSG D (11S)
27,559	98	Paved roads w/curbs & sewers, HSG B (10S)
76,607	98	Paved roads w/curbs & sewers, HSG C (10S)
46,427	98	Roofs, HSG B (10S, 110S)
114,619	98	Roofs, HSG C (10S, 11S, 110S)
46,502	55	Woods, Good, HSG B (11S, 110S)
34,565	70	Woods, Good, HSG C (11S)
737,034	**79**	**TOTAL AREA**



AP-5 DESIGN POINT
TOTAL IMPERVIOUS AREAS
DIRECTED TO BMP'S

Stage-Area-Storage for Pond 8P: Basin #8- Auburn side

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
684.00	15,227	0
684.02	15,265	305
684.04	15,302	611
684.06	15,340	917
684.08	15,377	1,224
684.10	15,415	1,532
684.12	15,453	1,841
684.14	15,491	2,150
684.16	15,529	2,460
684.18	15,566	2,771
684.20	15,604	3,083
684.22	15,642	3,396
684.24	15,680	3,709
684.26	15,719	4,023
684.28	15,757	4,338
684.30	15,795	4,653
684.32	15,833	4,969
684.34	15,871	5,286
684.36	15,910	5,604
684.38	15,948	5,923
684.40	15,986	6,242
684.42	16,025	6,562
684.44	16,063	6,883
684.46	16,102	7,205
684.48	16,141	7,527
684.50	16,179	7,850
684.52	16,218	8,174
684.54	16,257	8,499
684.56	16,295	8,825
684.58	16,334	9,151
684.60	16,373	9,478
684.62	16,412	9,806
684.64	16,451	10,134
684.66	16,490	10,464
684.68	16,529	10,794
684.70	16,568	11,125
684.72	16,607	11,457
684.74	16,646	11,789
684.76	16,686	12,123
684.78	16,725	12,457
684.80	16,764	12,792
684.82	16,804	13,127
684.84	16,843	13,464
684.86	16,883	13,801
684.88	16,922	14,139
684.90	16,962	14,478
684.92	17,001	14,818
684.94	17,041	15,158
684.96	17,081	15,499
684.98	17,120	15,841
685.00	17,160	16,184
685.02	17,200	16,528

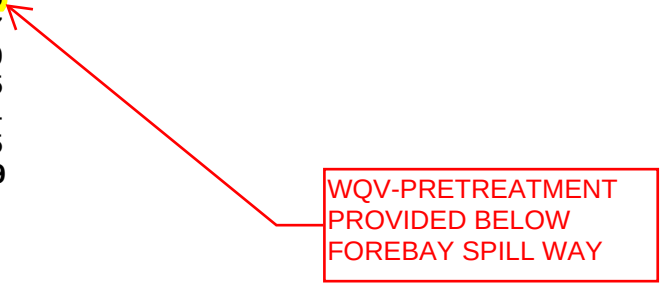
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
685.04	17,240	16,872
685.06	17,280	17,217
685.08	17,320	17,563
685.10	17,360	17,910
685.12	17,400	18,258
685.14	17,440	18,606
685.16	17,480	18,955
685.18	17,521	19,305
685.20	17,561	19,656
685.22	17,601	20,008
685.24	17,641	20,360
685.26	17,682	20,713
685.28	17,722	21,067
685.30	17,763	21,422
685.32	17,803	21,778
685.34	17,844	22,134
685.36	17,884	22,492
685.38	17,925	22,850
685.40	17,966	23,209
685.42	18,007	23,568
685.44	18,047	23,929
685.46	18,088	24,290
685.48	18,129	24,652
685.50	18,170	25,015
685.52	18,211	25,379
685.54	18,252	25,744
685.56	18,293	26,109
685.58	18,334	26,476
685.60	18,376	26,843
685.62		
685.64		
685.66		
685.68		
685.70		
685.72	18,624	29,063
685.74	18,665	29,436
685.76	18,707	29,809
685.78	18,748	30,184
685.80	18,790	30,559
685.82	18,832	30,935
685.84	18,873	31,312
685.86	18,915	31,690
685.88	18,957	32,069
685.90	18,999	32,449
685.92	19,041	32,829
685.94	19,083	33,210
685.96	19,125	33,592
685.98	19,167	33,975
686		
686		
686		

STATIC STORAGE RECHARGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-5 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#8

Stage-Area-Storage for Pond 8P-FB: Forebay-8P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
684.00	1,435	0
684.10	1,460	145
684.20	1,485	292
684.30	1,510	442
684.40	1,535	594
684.50	1,561	749
684.60	1,586	906
684.70	1,611	1,066
684.80	1,636	1,228
684.90	1,661	1,393
685.00	1,686	1,561
685.10	1,712	1,730
685.20	1,739	1,903
685.30	1,765	2,078
685.40	1,792	2,256
685.50	1,818	2,437
685.60	1,844	2,620
685.70	1,871	2,805
685.80	1,897	2,994
685.90	1,924	3,185
686.00	**1,950**	**3,379**



AP-5 DESIGN POINT

FOREBAY SIZING
POND #8

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
201,553	89	75% imp, HSG B (21S)
23,147	39	>75% Grass cover, Good, HSG A (21S, 24S, 26S)
218,336	61	>75% Grass cover, Good, HSG B (21S, 24S, 25S, 27S)
3,444	80	>75% Grass cover, Good, HSG D (21S)
78,948	98	Paved parking, HSG B (21S, 24S, 25S)
298,579	55	Woods, Good, HSG B (21S, 24S, 27S)
824,007	**69**	**TOTAL AREA**

(0.75)*201,553=151,164 sf of impervious

TOTAL IMPERVIOUS AREA TO DESIGN POINT AP6 = SUM = 230,112

AP-6 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
201,553	89	75% imp, HSG B (21S)
6,241	39	>75% Grass cover, Good, HSG A (21S)
179,698	61	>75% Grass cover, Good, HSG B (21S)
3,444	80	>75% Grass cover, Good, HSG D (21S)
60,074	98	Paved parking, HSG B (21S)
19,017	55	Woods, Good, HSG B (21S)
470,027	**77**	**TOTAL AREA**

(0.75)*201,553=151,164 sf of impervious

TOTAL IMPERVIOUS DIRECTED TO RECHARGE BMP AT AP6= sum = 211,238 SF

AP-6 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP'S

Stage-Area-Storage for Pond 11: POND 11 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
636.66	27,939	95,770
636.68	27,986	96,329
636.70	28,034	96,889
636.72	28,082	97,450
636.74	28,129	98,013
636.76	28,177	98,576
636.78	28,224	99,140
636.80	28,272	99,705
636.82	28,319	100,270
636.84	28,367	100,837
636.86	28,415	101,405
636.88	28,462	101,974
636.90	28,510	102,544
636.92	28,557	103,114
636.94	28,605	103,686
636.96	28,652	104,259
636.98	28,700	104,832
637.00	28,748	105,407
637.02	28,795	105,982
637.04	28,843	106,558
637.06	28,890	107,136
637.08	28,938	107,714
637.10	28,985	108,293
637.12	29,033	108,873
637.14	29,080	109,454
637.16	29,128	110,037
637.18	29,176	110,620
637.20	29,223	111,204
637.22	29,271	111,789
637.24	29,318	112,374
637.26	29,366	112,961
637.28	29,413	113,549
637.30	29,461	114,138
637.32	29,509	114,727
637.34	29,556	115,318
637.36	29,604	115,910
637.38	29,651	116,502
637.40	29,699	117,096
637.42	29,746	117,690
637.44	29,794	118,286
637.46	29,842	118,882
637.48	29,889	119,479
637.50	29,937	120,078
637.52	29,984	120,677
637.54	30,032	121,277
637.56	30,079	121,878
637.58	30,127	122,480
637.60	30,175	123,083
637.62	30,222	123,687
637.64	30,270	124,292
637.66	30,317	124,898
637.68	30,365	125,505
637.70	30,412	126,112
637.72	30,460	126,721
637.74	30,508	127,331
637.76	30,555	127,942
637.78	30,603	128,553
637.80	30,650	129,166
637.82	30,698	129,779
637.84	30,745	130,394
637.86	30,793	131,009
637.88	30,841	131,625
637.90	30,888	132,243
637.92	30,936	132,861
637.94	30,983	133,480
637.96	31,031	134,100
637.98	31,078	134,721
638.00	**31,126**	**135,343**

STATIC STORAGE RECHARGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-6 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#11

Stage-Area-Storage for Pond 11P-FOREBAY: FOREB AY 11P (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
633.54	1,740	1,601
633.55	1,744	1,618
633.56	1,747	1,636
633.57	1,751	1,653
633.58	1,755	1,671
633.59	1,759	1,688
633.60	1,763	1,706
633.61	1,767	1,724
633.62	1,771	1,741
633.63	1,774	1,759
633.64	1,778	1,777
633.65	1,782	1,795
633.66	1,786	1,812
633.67	1,790	1,830
633.68	1,794	1,848
633.69	1,798	1,866
633.70	1,801	1,884
633.71	1,805	1,902
633.72	1,809	1,920
633.73	1,813	1,938
633.74	1,817	1,957
633.75	1,821	1,975
633.76	1,825	1,993
633.77	1,828	2,011
633.78	1,832	2,030
633.79	1,836	2,048
633.80	1,840	2,066
633.81	1,844	2,085
633.82	1,848	2,103
633.83	1,851	2,122
633.84	1,855	2,140
633.85	1,859	2,159
633.86	1,863	2,177
633.87	1,867	2,196
633.88	1,871	2,215
633.89	1,875	2,233
633.90	1,878	2,252
633.91	1,882	2,271
633.92	1,886	2,290
633.93	1,890	2,309
633.94	1,894	2,328
633.95	1,898	2,347
633.96	1,902	2,366
633.97	1,905	2,385
633.98	1,909	2,404
633.99	1,913	2,423
634.00	**1,917**	**2,442**

WQV-PRETREATMENT PROVIDED BELOW FOREBAY SPILL WAY

AP-5 DESIGN POINT

FOREBAY SIZING
POND #11

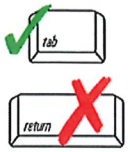
PART III - SUPPLEMENTAL DOCUMENTATION

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

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[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

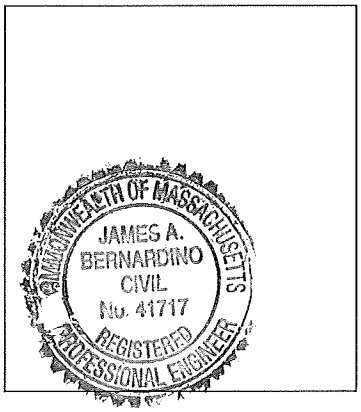
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



Signature and Date 11/15/24

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☒ New development

☐ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☒ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☒ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☒ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☒ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☒ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☒ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☐ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Custom Soil Resource Report
Soil Map (ASHWORTH HILLS SOIL REPORT)

Map Scale: 1:12,200 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1000 2000 3000

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

Map Unit Legend (ASHWORTH HILLS SOIL REPORT)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1	Water	11.9	1.8%
3A	Scarboro and Walpole soils, 0 to 3 percent slopes	5.9	0.9%
51A	Swansea muck, 0 to 1 percent slopes	2.2	0.3%
71A	Ridgebury fine sandy loam, 0 to 3 percent slopes, extremely stony	22.1	3.3%
102C	Chatfield-Hollis-Rock outcrop complex, 0 to 15 percent slopes	36.4	5.5%
102E	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	28.5	4.3%
254A	Merrimac fine sandy loam, 0 to 3 percent slopes	12.8	1.9%
254B	Merrimac fine sandy loam, 3 to 8 percent slopes	82.3	12.4%
300B	Montauk fine sandy loam, 3 to 8 percent slopes	51.1	7.7%
302B	Montauk fine sandy loam, 0 to 8 percent slopes, extremely stony	10.8	1.6%
302C	Montauk fine sandy loam, 8 to 15 percent slopes, extremely stony	11.4	1.7%
302E	Montauk fine sandy loam, 15 to 35 percent slopes, extremely stony	16.4	2.5%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	20.0	3.0%
307B	Paxton fine sandy loam, 0 to 8 percent slopes, extremely stony	13.7	2.1%
307C	Paxton fine sandy loam, 8 to 15 percent slopes, extremely stony	10.0	1.5%
307E	Paxton fine sandy loam, 15 to 35 percent slopes, extremely stony	21.4	3.2%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	2.1	0.3%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	8.3	1.3%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
317B	Scituate fine sandy loam, 3 to 8 percent slopes, extremely stony	39.2	5.9%
420B	Canton fine sandy loam, 3 to 8 percent slopes	89.8	13.5%
420C	Canton fine sandy loam, 8 to 15 percent slopes	18.3	2.8%
422B	Canton fine sandy loam, 0 to 8 percent slopes, extremely stony	93.0	14.0%
422C	Canton fine sandy loam, 8 to 15 percent slopes, extremely stony	37.9	5.7%
422E	Canton fine sandy loam, 15 to 35 percent slopes, extremely stony	18.0	2.7%
Totals for Area of Interest		**663.6**	**100.0%**

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
TO BASIN #1 - ASHWORTH HILL DRIVE TO ROAD A																					
EX. DMH	DMH1A	1.32	0.49	0.65	0.65	44.08	6.00	0.17	25	6.30	4.08	15	0.0054	0.0120	5.16	4.21	700.79	695.49	700.10	695.25	
DMH1A	DMH1	--	--	--	0.65	44.87	6.00	0.18	25	6.30	4.08	15	0.0056	0.0120	5.22	4.26	700.10	695.15	700.98	694.90	
CB1	DMH1	0.31	0.49	0.15	0.15	9.45	6.00	0.02	25	6.30	0.95	8	0.0434	0.012	2.73	7.81	700.48	696.81	700.98	696.40	
CB2	DMH1	0.42	0.44	0.18	0.18	9.45	6.00	0.02	25	6.30	1.15	8	0.0434	0.012	2.73	7.81	700.48	696.81	700.98	696.40	
DMH1	DMH2	--	--	--	0.98	280.03	6.00	1.03	25	6.30	6.18	18	0.0050	0.0120	8.05	4.55	700.98	694.80	705.43	693.40	
TO BASIN #1 ROAD D TO ROAD B THEN TO ROAD A																					
DCB21	DMH22	0.53	0.66	0.35	0.35	13.20	6.00	0.03	25	6.30	2.18	8	0.0477	0.012	2.86	8.19	750.66	746.63	750.36	746.00	
DCB22	DMH22	0.47	0.78	0.37	0.37	8.81	6.00	0.01	25	6.30	2.32	8	0.0715	0.012	3.50	10.03	750.66	746.63	750.36	746.00	
DMH22	DMH21	--	--	--	0.71	126.39	6.03	0.19	25	6.30	4.50	12	0.0526	0.0120	8.85	11.27	750.36	745.50	743.21	738.85	
DMH21	DMH20	--	--	--	0.71	150.72	6.21	0.26	25	6.30	4.50	12	0.0391	0.0120	7.64	9.72	743.21	738.75	737.13	732.85	
CB20	DMH20	0.39	0.72	0.28	0.28	8.81	6.00	0.02	25	6.30	1.77	8	0.0397	0.0120	2.61	7.48	737.08	733.20	737.13	732.85	
CB19	DMH20	0.45	0.70	0.32	0.32	13.20	6.00	0.04	25	6.30	2.00	8	0.0265	0.0120	2.13	6.11	737.08	733.20	737.13	732.85	
DMH20	DMH19	--	--	--	1.31	35.03	6.47	0.09	25	6.25	8.21	15	0.0143	0.0120	8.36	6.81	737.13	732.60	737.51	732.10	
DMH19	DMH18	--	--	--	1.31	216.85	6.56	0.54	25	6.25	8.21	15	0.0138	0.0120	8.23	6.71	737.51	732.10	734.96	729.10	
CB18	DMH18	0.40	0.51	0.20	0.20	13.92	6.00	0.04	25	6.30	1.29	8.00	0.0194	0.0120	1.82	5.22	734.82	731.12	734.96	730.85	
CB17	DMH18	0.28	0.81	0.23	0.23	9.67	6.00	0.03	25	6.30	1.42	8	0.0279	0.0120	2.19	6.27	734.82	731.12	734.96	730.85	
DMH18	DMH17	--	--	--	1.74	132.28	7.10	0.36	25	6.10	10.64	18	0.0091	0.0120	10.84	6.13	734.96	729.10	733.62	727.90	
DCB16	DMH17	0.71	0.48	0.34	0.34	12.96	6.00	0.03	25	6.30	2.14	8.00	0.0386	0.0120	2.57	7.37	733.33	729.50	733.62	729.00	
DCB15	DMH17	0.47	0.80	0.37	0.37	9.18	6.00	0.02	25	6.30	2.34	8	0.0545	0.0120	3.06	8.75	733.33	729.50	733.62	729.00	
DMH17	DMH15	--	--	--	2.46	83.42	7.46	0.24	25	6.00	14.73	24	0.0054	0.0120	18.00	5.73	733.62	727.65	734.58	727.20	
OCS3	DMH15	1.62	0.46	0.75	0.75	204.00	100 year outflow from basin #3				0.80	6	0.0074	0.0120	(0.52)	2.65	732.00	730.50	734.58	729.00	
DMH15	DMH13	--	--	--	2.46	145.47	7.70	0.42	25	6.00	15.53	24	0.0055	0.0120	18.17	5.79	734.58	727.10	737.99	726.30	0.8 cfs added t
TO BASIN #1 - ROAD A																					
CB14	DMH14	0.23	0.73	0.17	0.17	13.93	6.00	0.05	25	6.30	1.04	8.00	0.0144	0.0120	1.57	4.49	739.01	735.00	738.93	734.80	
CB13	DMH14	0.38	0.76	0.29	0.29	9.67	6.00	0.03	25	6.30	1.80	8	0.0207	0.0120	1.88	5.39	739.01	735.00	738.93	734.80	
DMH14	DMH13	--	--	--	0.45	22.75	6.05	0.05	25	6.30	2.84	12	0.0202	0.0120	5.49	6.99	738.93	734.00	737.99	733.54	
DMH13	DMH12	--	--	--	2.91	113.24	8.12	0.31	25	5.90	17.95	24	0.0062	0.0120	19.27	6.13	737.99	726.20	733.83	725.50	0.8 cfs added t
CB12	DMH12	0.18	0.71	0.13	0.13	14.03	6.00	0.04	25	6.30	0.81	8.00	0.0192	0.0120	1.82	5.20	733.94	730.27	733.83	730.00	
CB11	DMH12	0.12	0.82	0.10	0.10	9.46	6.00	0.02	25	6.30	0.63	8	0.0285	0.0120	2.21	6.34	733.94	730.27	733.83	730.00	
DMH12	DMH11	--	--	--	3.13	242.03	8.43	0.35	25	5.90	19.29	24	0.0223	0.0120	36.61	11.65	733.83	725.40	725.09	720.00	0.8 cfs added t
CB10	DMH11	0.40	0.78	0.31	0.31	14.03	6.00	0.03	25	6.30	1.95	8.00	0.0356	0.0120	2.47	7.08	725.16	721.50	725.09	721.00	
DCB9	DMH11	0.43	0.79	0.34	0.34	9.56	6.00	0.02	25	6.30	2.14	8	0.0523	0.0120	2.99	8.58	725.16	721.50	725.09	721.00	
DMH11	DMH10	--	--	--	3.78	129.45	8.77	0.18	25	5.80	22.74	24	0.0236	0.0120	37.62	11.97	725.09	717.25	720.33	714.20	0.8 cfs added t
DMH10	DMH9	--	--	--	3.78	173.13	8.95	0.24	25	5.80	22.74	24	0.0231	0.0120	37.25	11.86	720.33	712.50	714.03	708.50	0.8 cfs added t
DCB8	DMH9	0.45	0.75	0.34	0.34	14.06	6.00	0.03	25	6.30	2.14	8.00	0.0462	0.0120	2.81	8.06	714.12	710.50	714.03	709.85	
DCB7	DMH9	0.53	0.78	0.42	0.42	9.76	6.00	0.02	25	6.30	2.64	8	0.0666	0.0120	3.38	9.68	714.12	710.50	714.03	709.85	
DMH9	DMH8	--	--	--	4.54	50.02	9.20	0.08	25	5.75	26.91	24	0.0200	0.0120	34.65	11.03	714.03	707.50	712.06	706.50	0.8 cfs added t

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
TO BASIN #1 ROAD B TO ROAD A																					
CB32	DMH30	0.31	0.77	0.24	0.24	10.00	6.00	0.02	25	6.30	1.51	8.00	0.0450	0.0120	2.78	7.96	731.83	728.05	731.86	727.60	
CB31	DMH30	0.41	0.72	0.29	0.29	14.00	6.00	0.03	25	6.30	1.85	8	0.0321	0.0120	2.35	6.72	731.83	728.05	731.86	727.60	
DMH30	DMH29	--	--	--	0.53	75.81	6.03	0.24	25	6.30	3.36	12	0.0112	0.0120	4.09	5.20	731.94	727.35	730.91	726.50	
DMH29	DMH28	--	--	--	0.53	170.63	6.28	0.48	25	6.30	3.36	12	0.0144	0.0120	4.62	5.89	730.91	726.40	728.50	723.95	
CB30	DMH28	0.41	0.77	0.31	0.31	11.63	6.00	0.03	25	6.30	1.96	8.00	0.0344	0.0120	2.43	6.96	728.27	724.50	728.50	724.10	
CB29	DMH28	0.40	0.70	0.28	0.28	12.10	6.00	0.03	25	6.30	1.76	8	0.0331	0.0120	2.38	6.82	728.27	724.50	728.50	724.10	
DMH28	DMH27	--	--	--	1.12	234.35	6.76	0.49	25	6.15	6.91	15	0.0192	0.0120	9.70	7.90	728.50	723.85	723.82	719.35	
CB28	DMH27	0.34	0.70	0.24	0.24	9.45	6.00	0.02	25	6.30	1.50	8.00	0.0423	0.0120	2.69	7.72	723.78	719.90	723.82	719.50	
DCB27	DMH27	0.41	0.80	0.33	0.33	14.03	6.00	0.04	25	6.30	2.07	8	0.0285	0.0120	2.21	6.33	723.78	719.90	723.82	719.50	
DMH27	DMH26	--	--	--	1.69	92.61	7.25	0.18	25	6.00	10.15	15	0.0227	0.0120	10.54	8.59	723.82	719.25	721.43	717.15	
Overland	YD#2	1.22	0.30	0.36	0.36	0.00	6.00		25	6.30	2.30										
YD#2	YD#1	2.23	0.57	1.28	1.28	372.00	6.00	0.68	25	6.30	8.04	15	0.0255	0.0120	11.18	9.11	728.00	725.00	718.50	715.50	
Overland	YD#1	1.07	0.30	0.32	0.32	0.00	6.00		25	6.30	2.03										
YD1	DMH26	3.30	0.48	1.60	1.60	141.98	6.00	0.36	25	6.30	10.06	18	0.0102	0.0120	11.50	6.51	718.50	715.25	721.43	713.80	
DMH26	DMH25	--	--	--	3.29	103.99	7.43	0.27	25	6.00	19.73	24	0.0067	0.0120	20.11	6.40	721.43	713.70	718.77	713.00	
CB26	DMH25	0.38	0.78	0.30	0.30	9.50	6.00	0.03	25	6.30	1.88	8.00	0.0211	0.0120	1.90	5.44	718.73	714.70	718.77	714.50	
CB25	DMH25	0.29	0.64	0.18	0.18	13.64	6.00	0.05	25	6.30	1.16	8	0.0147	0.0120	1.59	4.54	718.73	714.70	718.77	714.50	
DMH25	DMH24	--	--	--	3.77	72.21	7.71	0.11	25	5.90	22.25	24	0.0194	0.0120	34.12	10.86	718.77	712.90	716.90	711.50	
DMH24	DMH23	--	--	--	3.77	178.91	7.82	0.25	25	5.90	22.25	24	0.0235	0.0120	37.55	11.95	716.90	711.30	712.38	707.10	
CB24	DMH23	0.35	0.71	0.25	0.25	8.95	6.00	0.03	25	6.30	1.59	8.00	0.0223	0.0120	1.96	5.61	712.34	708.20	712.38	708.00	
CB23	DMH23	0.30	0.68	0.20	0.20	13.27	6.00	0.05	25	6.30	1.28	8	0.0151	0.0120	1.61	4.60	712.32	708.20	712.38	708.00	
DMH23	DMH8	--	--	--	4.23	25.22	8.07	0.05	25	5.90	24.93	24	0.0119	0.0120	26.73	8.51	712.38	707.00	712.06	706.70	
DMH8	DMH7	--	--	--	8.77	155.19	9.27	0.25	25	5.75	51.21	30	0.0135	0.0120	51.69	10.53	712.06	701.80	706.46	699.70	0.8 cfs added t
CB6	DMH7	0.31	0.64	0.20	0.20	13.97	6.00	0.03	25	6.30	1.27	8.00	0.0408	0.0120	2.64	7.58	706.54	702.87	706.46	702.30	
CB5	DMH7	0.37	0.79	0.29	0.29	9.49	6.00	0.02	25	6.30	1.82	8	0.0601	0.0120	3.21	9.19	706.54	702.87	706.46	702.30	
DMH7	DMH6	--	--	--	9.26	100.93	9.52	0.15	25	5.75	54.03	30	0.0149	0.0120	54.17	11.04	706.46	698.80	703.33	697.30	0.8 cfs added t
DMH6	DMH5	--	--	--	9.26	81.54	9.67	0.12	25	5.75	54.03	30	0.0153	0.0120	55.02	11.21	703.33	697.25	702.74	696.00	0.8 cfs added t
DCB4	DMH5	0.70	0.65	0.46	0.46	13.45	6.00	0.04	25	6.30	2.88	12.00	0.0149	0.0120	4.71	5.99	702.43	698.40	702.74	698.20	
DCB3	DMH5	0.88	0.78	0.68	0.68	9.13	6.00	0.02	25	6.30	4.30	12	0.0219	0.0120	5.71	7.27	702.43	698.40	702.74	698.20	
DMH5	DMH4	--	--	--	10.40	111.61	9.79	0.21	25	5.75	60.58	36	0.0072	0.0120	61.17	8.65	702.74	695.50	704.04	694.70	0.8 cfs added t
DMH4	DMH2	--	--	--	10.40	99.26	10.01	0.19	25	5.40	56.94	36	0.0071	0.0120	60.68	8.58	704.04	694.60	705.22	693.90	0.8 cfs added t
OCS2	DMH 2	3.58	0.42	1.50	1.50	207.00	100 year outflow from basin #2				2.00	8	0.0181	0.0120	(1.76)	5.05	698.00	696.50	705.22	692.75	
DMH2	DMH3	--	--	--	11.38	144.45	10.20	0.29	25	5.40	64.24	42	0.0055	0.0120	81.11	8.43	705.22	692.20	699.50	691.40	0.8 and 2.0 add
DMH3	FES3	--	--	--	11.38	82.13	10.48	0.17	25	5.40	64.24	42	0.0049	0.0120	76.06	7.91	699.50	687.40		687.00	0.8 and 2.0 add

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
TO BASIN #4 ROAD B																					
DCB42	DMH38	0.48	0.73	0.35	0.35	9.48	6.00	0.02	25	6.30	2.20	8.00	0.0316	0.0120	2.33	6.67	742.67	739.00	742.82	738.70	
CB41	DMH38	0.43	0.58	0.25	0.25	13.81	6.00	0.04	25	6.30	1.56	8	0.0217	0.0120	1.93	5.53	742.67	739.00	742.82	738.70	
DMH38	DMH37	--	--	--	0.60	116.84	6.04	0.37	25	6.30	3.75	12	0.0116	0.0120	4.15	5.28	742.82	738.10	741.19	736.75	
CB40	DMH37	0.13	0.76	0.10	0.10	13.81	6.00	0.06	25	6.30	0.64	8.00	0.0123	0.0120	1.45	4.16	741.04	737.37	741.19	737.20	
CB39	DMH37	0.13	0.72	0.09	0.09	9.48	6.00	0.03	25	6.30	0.57	8	0.0179	0.0120	1.75	5.02	741.04	737.37	741.19	737.20	
DMH37	DMH36	--	--	--	0.79	290.86	6.41	0.72	25	6.25	4.92	15	0.0138	0.0120	8.21	6.69	741.19	736.65	737.20	732.65	
DCB38	DMH36	0.56	0.75	0.42	0.42	14.03	6.00	0.03	25	6.30	2.66	8.00	0.0428	0.0120	2.71	7.76	737.05	733.50	737.20	732.90	
CB37	DMH36	0.24	0.78	0.19	0.19	9.45	6.00	0.02	25	6.30	1.19	8	0.0317	0.0120	2.33	6.68	737.05	733.50	737.20	733.20	
DMH36	DMH35	--	--	--	1.40	34.34	7.14	0.07	25	6.05	8.46	15	0.0189	0.0120	9.63	7.85	737.20	732.40	736.68	731.75	
Overland	YD#4	0.70	0.30	0.21	0.21	9.45	6.00		25	6.30	1.32										
YD#4	YD#3	1.03	0.49	0.51	0.51	275.00	6.00	0.66	25	6.30	3.20	12	0.0200	0.0120	5.46	6.95	740.00	737.00	735.00	731.50	
Overland	YD#3	1.85	0.30	0.55	0.55		6.00		25	6.30	3.49										
YD#3	DMH35	3.48	0.46	1.60	1.60	150.00	6.66	0.43	25	6.20	9.91	18	0.0080	0.0120	10.18	5.76	735.00	731.50	736.68	730.30	
DMH35	DMH34	--	--	--	3.00	97.23	7.21	0.16	25	6.00	17.98	18	0.0257	0.0120	18.25	10.33	736.68	730.30	735.28	727.80	
CB36	DMH34	0.25	0.75	0.19	0.19	12.96	6.00	0.05	25	6.30	1.18	8.00	0.0154	0.0120	1.63	4.66	735.14	731.40	735.28	731.20	
CB35	DMH34	0.20	0.73	0.15	0.15	9.41	6.00	0.03	25	6.30	0.91	8	0.0213	0.0120	1.91	5.47	735.14	731.40	735.28	731.20	
DMH34	DMH32	--	--	--	3.33	22.06	7.37	0.03	25	6.00	19.98	18	0.0317	0.0120	20.27	11.47	735.28	726.80	734.93	726.10	
TO BASIN #4 - ROAD A TO ROAD B																					
DCB34	DMH33	0.51	0.67	0.34	0.34	17.15	6.00	0.04	25	6.30	2.15	8.00	0.0292	0.0120	2.24	6.40	735.23	731.55	735.01	731.05	
CB33	DMH33	0.19	0.75	0.14	0.14	7.35	6.00	0.01	25	6.30	0.91	8	0.0680	0.0120	3.41	9.78	735.23	731.55	735.01	731.05	
DMH33	DMH32	--	--	--	0.49	25.07	6.04	0.05	25	6.30	3.06	12	0.0239	0.0120	5.97	7.60	735.01	730.50	734.93	729.90	
ROAD B TO BASIN #4																					
DMH32	DMH31	--	--	--	3.81	108.58	7.40	0.24	25	6.00	22.89	24	0.0092	0.0120	23.52	7.49	734.93	725.90	730.60	724.90	
DMH31	FES6	--	--	--	3.81	70.00	7.64	0.15	25	6.00	22.89	24	0.0100	0.0120	24.51	7.80	730.60	723.70	724.00	723.00	
TO BASIN #8 - ROAD D TO ROAD B																					
CB44	DMH62	0.38	0.79	0.30	0.30	10.87	6.00	0.03	25	6.30	1.88	8.00	0.0368	0.0120	2.51	7.19	755.80	751.90	755.77	751.50	
CB43	DMH62	0.39	0.72	0.28	0.28	10.87	6.00	0.03	25	6.30	1.75	8	0.0368	0.0120	2.51	7.19	755.80	751.90	755.77	751.50	
DMH62	DMH63	--	--	--	0.58	135.74	6.03	0.25	25	6.30	3.63	12	0.0346	0.0120	7.18	9.14	755.77	751.20	750.51	746.50	
DMH63	DMH64	--	--	--	0.58	79.92	6.27	0.14	25	6.30	3.63	12	0.0394	0.0120	7.66	9.76	750.51	746.40	747.26	743.25	
CB46	DMH64	0.31	0.71	0.22	0.22	8.81	6.00	0.02	25	6.30	1.40	8.00	0.0284	0.0120	2.21	6.32	747.38	743.50	747.26	743.25	
CB45	DMH64	0.35	0.78	0.27	0.27	13.20	6.00	0.04	25	6.30	1.72	8	0.0189	0.0120	1.80	5.16	747.38	743.50	747.26	743.25	
DMH64	DMH65	--	--	--	1.07	26.23	6.41	0.04	25	6.25	6.69	15	0.0305	0.0120	12.22	9.96	747.26	743.00	746.91	742.20	
DMH65	DMH66	--	--	--	1.07	128.34	6.45	0.33	25	6.25	6.69	15	0.0132	0.0120	8.05	6.56	746.91	742.10	744.65	740.40	
DMH66	DMH67	--	--	--	1.07	135.84	6.78	0.30	25	6.15	6.58	15	0.0180	0.0120	9.40	7.66	744.65	740.30	742.17	737.85	
CB48	DMH67	0.27	0.61	0.16	0.16	13.96	6.00	0.06	25	6.30	1.01	8.00	0.0122	0.0120	1.44	4.14	742.07	738.40	742.17	738.23	
CB47	DMH67	0.24	0.76	0.18	0.18	9.59	6.00	0.03	25	6.30	1.15	8	0.0177	0.0120	1.74	4.99	742.07	738.40	742.17	738.23	
DMH67	DMH68	--	--	--	1.41	138.33	7.07	0.29	25	6.10	8.63	15	0.0188	0.0120	9.59	7.82	742.17	737.75	739.53	735.15	
DMH68	DMH69	--	--	--	1.41	139.03	7.37	0.29	25	6.00	8.49	15	0.0191	0.0120	9.66	7.87	739.53	735.05	736.88	732.40	
DCB50	DMH69	0.50	0.71	0.35	0.35	13.94	6.00	0.03	25	6.30	2.23	8.00	0.0359	0.0120	2.48	7.10	736.78	732.90	736.88	732.40	
DCB49	DMH69	0.49	0.76	0.38	0.38	9.64	6.00	0.02	25	6.30	2.37	8	0.0519	0.0120	2.98	8.54	736.78	732.90	736.88	732.40	
DMH69	DMH70	--	--	--	2.15	114.05	7.66	0.18	25	6.00	12.87	15	0.0342	0.0120	12.94	10.55	736.88	732.30	734.53	728.40	
DMH70	DMH71	--	--	--	2.15	138.41	7.84	0.22	25	5.90	12.66	15	0.0332	0.0120	12.76	10.40	734.53	728.30	729.11	723.70	
CB52	DMH71	0.38	0.69	0.26	0.26	13.97	6.00	0.04	25	6.30	1.66	8.00	0.0215	0.0120	1.92	5.50	729.28	725.30	729.11	725.00	
DCB51	DMH71	0.47	0.77	0.36	0.36	9.54	6.00	0.02	25	6.30	2.30	8	0.0314	0.0120	2.32	6.65	729.28	725.30	729.11	725.00	
DMH71	DMH72	--	--	--	2.77	214.00	8.07	0.31	25	5.90	16.36	18	0.0327	0.0120	20.58	11.65	729.11	722.00	719.79	715.00	

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
TO BASIN #8 - ROAD D TO ROAD B																					
CB56	DMH75	0.41	0.79	0.32	0.32	9.49	6.00	0.02	25	6.30	2.04	8.00	0.0316	0.0120	2.33	6.67	727.10	723.10	726.86	722.80	
CB55	DMH75	0.41	0.53	0.22	0.22	13.93	6.00	0.04	25	6.30	1.36	8	0.0215	0.0120	1.92	5.50	727.10	723.10	726.86	722.80	
DMH75	DMH74	--	--	--	0.54	91.28	6.04	0.13	25	6.30	3.40	12	0.0548	0.0120	9.03	11.50	726.86	722.50	721.92	717.50	
DMH74	DMH73	--	--	--	0.54	129.58	6.17	0.26	25	6.30	3.40	15	0.0216	0.0120	10.29	8.38	721.92	717.40	718.97	714.60	
DCB54	DMH73	0.85	0.76	0.64	0.64	8.06	6.00	0.02	25	6.30	4.05	12.00	0.0248	0.0120	6.08	7.74	718.68	714.80	718.97	714.60	
DCB53	DMH73	1.04	0.64	0.66	0.66	12.92	6.00	0.04	25	6.30	4.17	12	0.0155	0.0120	4.80	6.11	718.68	714.80	718.97	714.60	
DMH73	DMH73B				1.84	11.00	6.43	0.02	25	6.25	11.53	15	0.0273	0.0120	11.56	9.42	718.97	714.60	719.06	714.30	
OVERLAND	YD#7	1.11	0.30	0.33	0.33		6.00		25	6.30	2.09										
YD#7A	YD#7	0.43	0.90	0.39	0.39	230.00	6.00	0.47	25	6.30	2.44	12	0.0278	0.0120	6.44	8.20	741.90	738.90	735.50	732.50	
YD#7	YD#6	1.54	0.47	0.72	0.72	100.00	6.47	0.17	25	6.25	4.50	12	0.0385	0.0120	7.57	9.64	735.50	730.85	CP	727.00	
OVERLAND	YD#6	0.51	0.30	0.15	0.15		6.00		25	6.30	0.95										
YD#6	YD#5	2.14	0.45	0.96	0.96	192.00	6.64	0.31	25	6.20	5.96	12	0.0443	0.0120	8.12	10.34	730.00	727.00	721.50	718.50	
OVERLAND	YD#5	1.31	0.30	0.39	0.39		6.00		25	6.30	2.47										
YD#5	YD#5A	3.68	0.42	1.56	1.56	92.00	6.95	0.16	25	6.10	9.53	15	0.0299	0.0120	12.10	9.86	721.50	718.50	719.00	715.75	
OVERLAND	YD#5A	1.87	0.40	0.74	0.74		6.00		25	6.30	4.66										
YD5A	DMH73A	5.69	0.46	2.60	2.60	122.00	7.11	0.37	25	6.05	15.73	24	0.0049	0.0120	17.19	5.47	719.00	715.00	719.75	714.40	
DMH73A	DMH 73B				2.60	37.00	7.48	0.03	25	6.00	15.60	24	0.0676	0.0120	63.70	20.28	719.75	714.40	719.06	711.90	
DMH73B	DMH72	--	--	--	4.45	38.00	7.51	0.07	25	6.00	26.67	24	0.0132	0.0120	28.11	8.95	719.06	714.20	719.79	713.70	
DMH72	DMH72A	--	--	--	7.22	77.00	8.37	0.09	25	5.90	42.59	24	0.0312	0.0120	43.27	13.77	719.79	711.40	714.00	709.00	
DMH72A	DMH72B	--	--	--	7.22	53.00	8.47	0.06	25	5.90	42.59	24	0.0358	0.0120	46.40	14.77	714.00	703.40	706.00	701.50	
OVERLAND	YD#8	0.81	0.42	0.34	0.34		6.00		25	6.30	2.15										
YD#8	YD#9	0.97	0.50	0.49	0.49	179.00	6.00	0.37	25	6.30	3.09	12	0.0268	0.0120	6.32	8.05	738.30	735.30	733.50	730.50	
OVERLAND	YD#9	0.47	0.30	0.14	0.14		6.00		25	6.30	0.89										
YD#9	YD#10	1.51	0.46	0.69	0.69	176.00	6.37	0.50	25	6.25	4.32	12	0.0142	0.0120	4.60	5.86	733.50	730.50	732.20	728.00	
YD#10	YD#11	1.61	0.49	0.78	0.78	77.00	6.87	0.20	25	6.10	4.76	12	0.0169	0.0120	5.02	6.39	724.00	719.00	722.20	717.70	
YD#11	YD#12	1.74	0.48	0.84	0.84	199.00	7.07	0.38	25	6.10	5.13	12	0.0312	0.0120	6.81	8.67	722.20	717.70	716.30	711.50	
YD#12	DMH 72B	1.74	0.48	0.84	0.84	44.00	7.45	0.05	25	6.00	5.04	12	0.0761	0.0120	10.65	13.56	716.30	704.85	706.00	701.50	
DMH72B	DMH72C	--	--	--	8.06	56.00	8.53	0.06	25	5.80	46.74	30	0.0268	0.0120	72.72	14.82	707.50	694.50	698.00	693.00	
DMH72C	DMH72D	--	--	--	8.06	48.00	8.59	0.05	25	5.80	46.74	30	0.0260	0.0120	71.71	14.61	698.00	687.00	691.50	685.75	
DMH72D	FES4	--	--	--	8.06	70.00	8.64	0.17	25	5.80	46.74	36	0.0043	0.0120	47.30	6.69	691.50	685.75	688.45	685.45	
TO BASIN #5 ROAD E																					
CB58	DMH47	0.31	0.79	0.25	0.25	14.15	6.00	0.04	25	6.30	1.54	8.00	0.0247	0.0120	2.06	5.90	727.96	723.95	727.63	723.60	
CB57	DMH47	0.43	0.77	0.33	0.33	10.27	6.00	0.02	25	6.30	2.07	8	0.0341	0.0120	2.42	6.92	727.96	723.95	727.63	723.60	
DMH47	DMH46	--	--	--	0.57	104.30	6.02	0.15	25	6.30	3.61	12	0.0594	0.0120	9.41	11.98	727.63	723.30	721.42	717.10	
CB60	DMH46	0.22	0.76	0.17	0.17	14.03	6.00	0.04	25	6.30	1.05	8.00	0.0214	0.0120	1.91	5.48	721.71	717.70	721.42	717.40	
CB59	DMH46	0.24	0.78	0.18	0.18	9.45	6.00	0.02	25	6.30	1.16	8	0.0317	0.0120	2.33	6.68	721.71	717.70	721.42	717.40	
DMH46	DMH45	--	--	--	0.92	26.92	6.17	0.04	25	6.30	5.82	12	0.0594	0.0120	9.41	11.98	721.42	716.90	719.64	715.30	
DMH45	DMH48	--	--	--	0.92	167.25	6.21	0.34	25	6.30	5.82	12	0.0281	0.0120	6.47	8.24	719.64	715.20	714.75	710.50	
CB68	DMH48	0.28	0.75	0.21	0.21	20.41	6.00	0.04	25	6.30	1.33	8.00	0.0441	0.0120	2.75	7.88	707.79	703.70	706.94	702.80	
CB67	DMH48	0.35	0.77	0.27	0.27	18.34	6.00	0.04	25	6.30	1.70	8	0.0491	0.0120	2.90	8.31	707.79	703.70	706.94	702.80	
DMH48	DMH49	--	--	--	1.41	229.56	6.04	0.52	25	6.30	8.86	12	0.0227	0.0120	(5.81)	7.40	706.94	701.00	700.19	695.80	
DCB70	DMH49	0.51	0.75	0.38	0.38	14.51	6.00	0.05	25	6.30	2.41	12.00	0.0103	0.0120	3.92	5.00	699.90	695.90	700.19	695.75	
DCB69	DMH49	0.69	0.79	0.55	0.55	10.63	6.00	0.03	25	6.30	3.43	12	0.0141	0.0120	4.58	5.84	699.90	695.90	700.19	695.75	
DMH49	DMH50	--	--	--	2.33	75.47	6.56	0.16	25	6.25	14.59	15	0.0199	0.0120	(9.87)	8.04	700.19	695.50	701.24	694.00	

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
TO BASIN #5 ROAD C TO ROAD E																					
CB82	DMH61	0.20	0.54	0.11	0.11	9.68	6.00	0.02	25	6.30	0.68	8.00	0.0517	0.0120	2.98	8.52	741.23	737.50	741.21	737.00	
CB81	DMH61	0.18	0.71	0.13	0.13	14.76	6.00	0.04	25	6.30	0.80	8	0.0339	0.0120	2.41	6.90	741.23	737.50	741.21	737.00	
DMH61	DMH60	--	--	--	0.23	101.97	6.04	0.19	25	6.30	1.48	12	0.0319	0.0120	6.89	8.77	741.21	736.65	737.44	733.40	
DMH60	DMH59	--	--	--	0.23	182.73	6.23	0.41	25	6.30	1.48	12	0.0233	0.0120	5.89	7.49	737.44	733.30	733.80	729.05	
CB80	DMH59	0.76	0.45	0.34	0.34	11.20	6.00	0.03	25	6.30	2.16	8.00	0.0357	0.0120	2.47	7.09	733.39	729.70	733.80	729.30	
CB79	DMH59	0.26	0.82	0.21	0.21	12.62	6.00	0.03	25	6.30	1.35	8	0.0317	0.0120	2.33	6.68	733.39	729.70	733.80	729.30	
DMH59	DMH57	--	--	--	0.79	30.83	6.64	0.09	25	6.20	4.91	15	0.0097	0.0120	6.90	5.63	733.80	728.80	734.01	728.50	
CB78	DMH58	0.84	0.37	0.31	0.31	11.90	6.00	0.03	25	6.30	1.96	8.00	0.0252	0.0120	2.08	5.95	734.39	731.20	734.60	730.90	
CB77	DMH58	0.29	0.43	0.13	0.13	9.59	6.00	0.02	25	6.30	0.80	8	0.0313	0.0120	2.32	6.63	734.39	731.20	734.60	730.90	
DMH58	DMH57	--	--	--	0.44	26.39	6.02	0.06	25	6.30	2.76	12	0.0227	0.0120	5.82	7.41	734.60	730.60	734.01	730.00	
DMH57	DMH56	--	--	--	1.23	178.73	6.73	0.48	25	6.15	7.56	15	0.0117	0.0120	7.59	6.18	734.01	728.40	730.58	726.30	
DMH56	DMH55	--	--	--	1.23	108.80	7.21	0.19	25	6.00	7.38	15	0.0267	0.0120	11.43	9.31	730.58	726.20	727.55	723.30	
CB76	DMH55	0.46	0.68	0.32	0.32	9.78	6.00	0.03	25	6.30	1.99	8.00	0.0256	0.0120	2.09	6.00	727.63	723.95	727.55	723.70	
CB75	DMH55	0.44	0.47	0.20	0.20	13.82	6.00	0.05	25	6.30	1.29	8	0.0181	0.0120	1.76	5.04	727.63	723.95	727.55	723.70	
DMH55	DMH55A				1.75	53.00	7.40	0.10	25	6.00	10.50	15	0.0226	0.0120	10.53	8.58	727.55	722.00	725.29	720.80	
CB75B	DMH55B	0.45	0.65	0.29	0.29	134.00	6.00	0.30	25	6.30	1.85	8	0.0388	0.0120	2.58	7.39	731.25	727.50	726.55	722.30	
CB75A	DMH55B	0.49	0.75	0.37	0.37	8.00	6.00	0.02	25	6.30	2.31	8	0.0375	0.0120	2.54	7.26	726.30	722.60	726.40	722.30	
DMH55B	DMH55A				0.66	30.00	6.30	0.06	25	6.25	4.13	12	0.0333	0.0120	7.05	8.97	726.55	722.00	725.29	721.00	
DMH55A	DMH54	--	--	--	2.41	64.00	7.40	0.09	25	6.00	14.46	15	0.0437	0.0120	14.64	11.93	725.29	720.80	722.66	718.00	
DMH54	DMH53	--	--	--	2.41	136.42	7.49	0.19	25	6.00	14.46	15	0.0429	0.0120	14.49	11.81	722.66	718.00	717.05	712.15	
CB74	DMH53	0.32	0.81	0.26	0.26	9.45	6.00	0.02	25	6.30	1.61	8.00	0.0529	0.0120	3.01	8.63	717.17	713.50	717.05	713.00	
DCB73	DMH53	0.68	0.50	0.34	0.34	14.03	6.00	0.03	25	6.30	2.11	8	0.0356	0.0120	2.47	7.08	717.17	713.50	717.05	713.00	
DMH53	DMH52	--	--	--	3.00	141.08	7.69	0.19	25	6.00	18.00	18	0.0358	0.0120	21.53	12.18	717.05	711.75	711.23	706.70	
DMH52	DMH51	--	--	--	3.00	128.66	7.88	0.17	25	5.90	17.70	18	0.0404	0.0120	22.88	12.95	711.23	706.60	705.91	701.40	
CB72	DMH51	0.40	0.71	0.28	0.28	9.45	6.00	0.02	25	6.30	1.78	12.00	0.0212	0.0120	5.62	7.15	706.03	702.00	705.91	701.80	
DCB71	DMH51	1.51	0.38	0.58	0.58	14.03	6.00	0.04	25	6.30	3.66	12	0.0143	0.0120	4.61	5.87	706.03	702.00	705.91	701.80	
DMH51	DMH50	--	--	--	3.86	125.07	8.04	0.16	25	5.90	22.80	18	0.0408	0.0120	22.98	13.00	705.91	701.40	701.24	696.30	
DMH50	DMH50A	--	--	--	6.20	57.75	8.20	0.08	25	5.90	36.57	24	0.0234	0.0120	37.47	11.93	701.24	693.65	699.42	692.30	
DMH50A	DMH50B	--	--	--	6.20	57.75	8.29	0.08	25	5.90	36.57	24	0.0234	0.0120	37.47	11.93	699.42	688.75	692.45	687.40	
DMH50B	FES9	--	--	--	6.20	49.00	8.29	0.09	25	5.90	36.57	30	0.0102	0.0120	44.89	9.14	692.45	682.50	683.75	682.00	

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
ROAD F																					
CB84	DMH76	0.06	0.79	0.05	0.05	8.81	6.00	0.02	25	6.30	0.29	8.00	0.0568	0.0120	3.12	8.93	708.48	704.50	708.05	704.00	
CB83	DMH76	0.27	0.72	0.19	0.19	13.20	6.00	0.03	25	6.30	1.20	8	0.0379	0.0120	2.55	7.30	708.48	704.50	708.05	704.00	
DMH76	DMH77	--	--	--	0.24	120.85	6.03	0.16	25	6.30	1.50	12	0.0670	0.0120	9.99	12.72	708.05	703.40	699.63	695.30	
DMH77	DMH78	--	--	--	0.24	128.66	6.19	0.17	25	6.30	1.50	12	0.0668	0.0120	9.98	12.71	699.63	693.10	688.59	684.50	
CB86	DMH78	0.25	0.81	0.20	0.20	8.81	6.00	0.02	25	6.30	1.27	8.00	0.0568	0.0120	3.12	8.93	689.01	685.00	688.59	684.50	
CB85	DMH78	0.43	0.69	0.30	0.30	13.20	6.00	0.03	25	6.30	1.88	8	0.0379	0.0120	2.55	7.30	689.01	685.00	688.59	684.50	
DMH78	DMH 78A	--	--	--	0.74	88.00	6.36	0.09	25	6.25	4.60	12	0.0659	0.0120	9.91	12.62	688.59	684.10	682.33	678.30	
DMH 78A	DMH 78B	--	--	--	0.74	131.00	6.45	0.02	25	6.25	4.60	12	0.0725	0.0120	10.39	13.23	682.33	675.00	669.31	665.50	
DMH 78B	DMH79	--	--	--	0.74	71.00	6.47	0.01	25	6.25	4.60	12	0.0732	0.0120	10.45	13.30	669.31	661.20	660.06	656.00	
CB88	DMH79	0.46	0.58	0.26	0.26	15.67	6.00	0.03	25	6.30	1.66	8.00	0.0447	0.0120	2.77	7.93	661.12	657.00	660.06	656.30	
CB87	DMH79	0.31	0.67	0.21	0.21	7.49	6.00	0.01	25	6.30	1.31	8	0.0935	0.0120	4.00	11.47	661.12	657.00	660.06	656.30	
DMH79	DMH80	--	--	--	1.21	107.69	6.48	0.13	25	6.25	7.55	12	0.0771	0.0120	10.72	13.64	660.06	651.00	646.98	642.70	
CB90	DMH80	0.23	0.43	0.10	0.10	15.72	6.00	0.03	25	6.30	0.62	8.00	0.0445	0.0120	2.76	7.91	647.92	644.00	646.98	643.30	
CB89	DMH80	0.06	0.71	0.04	0.04	7.18	6.00	0.01	25	6.30	0.25	8	0.0975	0.0120	4.09	11.71	647.92	644.00	646.98	643.30	
DMH80	DMH81	--	--	--	1.35	179.16	6.61	0.26	25	6.20	8.34	12	0.0558	0.0120	9.12	11.61	646.98	637.70	631.72	627.70	
CB92	DMH81	0.13	0.63	0.08	0.08	9.96	6.00	0.02	25	6.30	0.51	8.00	0.0502	0.0120	2.93	8.40	632.24	628.50	631.72	628.00	
CB91	DMH81	0.79	0.37	0.29	0.29	15.59	6.00	0.04	25	6.30	1.85	8	0.0321	0.0120	2.34	6.72	632.24	628.50	631.72	628.00	
DMH81	FES14	--	--	--	1.72	27.99	6.87	0.08	25	6.10	10.50	18	0.0089	0.0120	10.75	6.09	631.72	627.25		627.00	
ROAD G																					
CB94	DMH82	0.02	0.89	0.02	0.02	13.69	6.00	0.03	25	6.30	0.11	8.00	0.0365	0.0120	2.50	7.17	711.36	707.50	711.20	707.00	
CB93	DMH82	0.36	0.63	0.23	0.23	8.29	6.00	0.02	25	6.30	1.45	8	0.0603	0.0120	3.22	9.21	711.36	707.50	711.20	707.00	
DMH82	DMH83	--	--	--	0.25	59.77	6.03	0.10	25	6.30	1.56	12	0.0376	0.0120	7.49	9.53	711.20	706.75	708.74	704.50	
DMH83	DMH84	--	--	--	0.25	231.41	6.14	0.40	25	6.30	1.56	12	0.0387	0.0120	7.59	9.66	708.74	704.40	699.51	695.45	
CB96	DMH84	0.35	0.77	0.27	0.27	13.20	6.00	0.04	25	6.30	1.70	8.00	0.0227	0.0120	1.97	5.65	699.66	696.00	699.51	695.70	
DCB95	DMH84	0.54	0.67	0.36	0.36	8.81	6.00	0.02	25	6.30	2.28	8	0.0341	0.0120	2.42	6.92	699.66	696.00	699.51	695.70	
DMH84	DMH85	--	--	--	0.88	112.47	6.54	0.19	25	6.25	5.50	12	0.0409	0.0120	7.81	9.94	699.51	695.35	694.93	690.75	
DMH85	DMH86	--	--	--	0.88	170.42	6.72	0.29	25	6.15	5.41	12	0.0405	0.0120	7.77	9.89	694.93	690.65	688.06	683.75	
CB98	DMH86	0.47	0.76	0.36	0.36	8.81	6.00	0.02	25	6.30	2.27	8.00	0.0568	0.0120	3.12	8.93	688.21	684.50	688.06	684.00	
CB97	DMH86	0.37	0.79	0.30	0.30	13.20	6.00	0.03	25	6.30	1.86	8	0.0379	0.0120	2.55	7.30	688.21	684.50	688.06	684.00	
DMH86	DMH87	--	--	--	1.54	84.21	7.01	0.15	25	6.10	9.36	15	0.0267	0.0120	11.44	9.32	688.06	682.50	684.66	680.25	
DMH87	DMH88	--	--	--	1.54	106.00	7.16	0.19	25	6.05	9.29	15	0.0259	0.0120	11.27	9.19	684.66	677.75	680.10	675.00	
CB100	DMH88	0.41	0.81	0.33	0.33	14.00	6.00	0.02	25	6.30	2.08	8.00	0.0750	0.0120	3.59	10.27	680.05	676.30	679.59	675.25	
CB99	DMH88	0.32	0.84	0.27	0.27	27.00	6.00	0.08	25	6.30	1.68	8	0.0204	0.0120	1.87	5.35	679.00	675.80	679.59	675.25	
DMH88	FES11	--	--	--	2.13	85.00	7.16	0.14	25	6.05	12.90	18	0.0235	0.0120	17.46	9.88	679.59	669.50	669.50	667.50	

Pipe Calculations

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	Pipe Length (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
ROAD G - SWALE WITH INLETS																					
Overland	YD#13	2.02	0.42	0.85	0.85		6.00		25	6.30	5.35										
YD#13	YD#14	2.02	0.42	0.85	0.85	265.00	6.00	0.53	25	6.30	5.35	12	0.0292	0.0120	6.60	8.40	708.50	705.00	701.00	697.25	
Overland	YD#14	1.23	0.30	0.37	0.37		6.00		25	6.30	2.33										
YD#14	YD#15	3.56	0.42	1.49	1.49	174.00	6.00	0.30	25	6.30	9.41	15	0.0287	0.0120	11.86	9.67	701.00	697.25	696.00	692.25	
Overland	YD#15	0.49	0.30	0.15	0.15		6.00		25	6.30	0.93										
YD#15	YD#16	4.30	0.43	1.86	1.86	291.00	6.30	0.48	25	6.30	11.71	15	0.0309	0.0120	12.31	10.03	696.00	692.25	687.00	683.25	
Overland	YD#16	0.85	0.30	0.25	0.25		6.00		25	6.30	1.60										
YD#16	YD#17	5.26	0.42	2.22	2.22	247.00	6.78	0.31	25	6.15	13.67	15	0.0557	0.0120	16.51	13.45	687.00	683.25	673.20	669.50	
Overland	YD#17	0.51	0.30	0.15	0.15		6.00		25	6.30	0.96										
YD#17	FES17	5.81	0.41	2.41	2.41	90.00	7.09	0.18	25	6.10	14.67	18	0.0167	0.0120	14.69	8.31	673.20	669.50	670.00	668.00	
BASIN - FES - MISC DATA																					
18" Culvert	FES1-BASIN #1					64.00			100 YR		16.10	18	0.0203	0.012	16.22	9.18	0.00	687.80	0.00	686.50	
OSC 1	FES2	0.00	0.00	0.00	0.00	65.00			100 YR		40.50	30	0.0100	0.012	44.44	9.05	0.00	680.15	0.00	679.50	
OSC 8	FES5	0.00	0.00	0.00	0.00	65.00			100 YR		45.70	36	0.0062	0.012	56.68	8.02		683.90		683.50	
OSC 4	FES7	--	--	--	0.00	50.00			100 YR		19.20	24	0.0100	0.0120	24.51	7.80		722.00		721.50	
OSC 5	FES10					58			100 YR		51.50	36	0.0052	0.0120	51.97	7.35		677.50		677.20	
OSC 6	DMH 78C					133.00	0.00	0.00	100 YR		46.10	30	0.0113	0.012	47.19	9.61		664.00	668.00	662.50	
DMH 78C	DMH 78D					49.00	0.00	0.00	100 YR		46.30	30	0.0112	0.012	47.08	9.59	668.00	656.60	665.00	656.05	
DMH 78D	FES 12					60.00	0.00	0.00	100 YR		46.30	30	0.0117	0.012	48.00	9.78	665.00	656.05		655.35	
OSC 7	FES 13			0.00	0.00	50.00	0.00	0.00	100 YR		17.10	24	0.0100	0.012	24.51	7.80		624.00		623.50	
YD18	BASIN 7	1.11	0.30	0.33	0.33	55.00	7.10	0.25	25	6.05	2.01	12	0.0055	0.0120	2.85	3.63	629.80	627.30		627.00	
POND 12P	FES 15	--	--	--	0.33	95.00			100 YR		10.60	24	0.0158	0.0120	30.80	9.80		739.00		737.50	
HW#1	DMH49A					10.00			100 YR		35.00	30	0.0150	0.0120	54.42	11.09		694.50		694.35	
DMH49A	FES 16					68.00					35.00	30	0.0088	0.0120	41.74	8.50		691.60		691.00	
DMH93	FES 19					134.00			100 YR		12.10	18	0.0149	0.0120	13.90	7.87		626.00		624.00	
OSC#10	FES 20					23.00			100 YR		7.30	18	0.0087	0.0120	10.61	6.00		629.10		628.90	
OSC#9	FES 21					97.00			100 YR		7.10	15	0.0103	0.0120	7.11	5.79		631.00		630.00	
ROAD C - TOP POND 11																					
CB101	DMH83	0.56	0.42	0.24	0.24	10.60	6.00	0.02	25	6.30	1.49	12	0.0236	0.0120	5.93	7.55	726.63	722.50	726.38	722.25	
CB102	DMH83	0.34	0.71	0.24	0.24	10.60	6.00	0.02	25	6.30	1.54	12	0.0236	0.0120	5.93	7.55	726.63	722.50	726.38	722.25	
DMH83	DMH84	--	--	--	0.48	145.50	6.02	0.23	25	6.30	3.02	12	0.0464	0.0120	8.31	10.58	726.38	719.25	716.63	712.50	
DMH84	DMH85	--	--	--	0.48	146.00	6.02	0.23	25	6.30	3.02	12	0.0462	0.0120	8.30	10.57	716.63	709.50	706.88	702.75	
CB103	DMH85	0.34	0.56	0.19	0.19	10.60	6.00	0.02	25	6.30	1.20	12	0.0236	0.0120	5.93	7.55	707.13	703.00	706.88	702.75	
CB104	DMH85	0.58	0.40	0.23	0.23	10.60	6.00	0.02	25	6.30	1.45	12	0.0236	0.0120	5.93	7.55	707.13	703.00	706.88	702.75	
DMH85	DMH86	--	--	--	0.90	146.80	6.25	0.23	25	6.30	5.67	12	0.0460	0.0120	8.28	10.54	706.88	699.75	697.05	693.00	
DMH86	DMH87	--	--	--	0.90	144.80	6.49	0.23	25	6.25	5.63	12	0.0466	0.0120	8.33	10.61	697.05	690.00	687.38	683.25	
CB105	DMH87	0.30	0.59	0.18	0.18	10.60	6.00	0.02	25	6.30	1.13	12	0.0236	0.0120	5.93	7.55	687.63	683.50	687.38	683.25	
CB106	DMH87	0.60	0.40	0.24	0.24	10.60	6.00	0.02	25	6.30	1.50	12	0.0236	0.0120	5.93	7.55	687.63	683.50	687.38	683.25	
DMH87	DMH88	--	--	--	1.32	146.00	6.71	0.23	25	6.15	8.11	12	0.0462	0.0120	8.30	10.57	687.38	680.25	677.57	673.50	
DMH88	DMH89	--	--	--	1.32	146.00	6.94	0.23	25	6.10	8.04	12	0.0462	0.0120	8.30	10.57	677.57	670.50	667.83	663.75	
CB107	DMH89	0.31	0.59	0.18	0.18	11.60	6.00	0.03	25	6.30	1.15	12	0.0216	0.0120	5.67	7.21	668.13	664.00	667.83	663.75	
CB108	DMH89	0.67	0.38	0.26	0.26	11.60	6.00	0.03	25	6.30	1.63	12	0.0216	0.0120	5.67	7.21	668.13	664.00	667.83	663.75	
DMH89	DMH90	--	--	--	1.76	111.70	7.17	0.16	25	6.05	10.65	15	0.0425	0.0120	14.43	11.76	667.83	659.75	659.53	655.00	
DMH90	DMH91	--	--	--	1.76	181.70	7.33	0.26	25	6.00	10.56	15	0.0427	0.0120	14.45	11.78	659.53	650.00	646.60	642.25	
CB109	DMH91	0.32	0.58	0.19	0.19	12.60	6.00	0.02	25	6.30	1.17	12	0.0397	0.0120	7.69	9.79	647.68	643.00	646.60	642.50	
CB110	DMH91	0.56	0.40	0.22	0.22	15.50	6.00	0.03	25	6.30	1.40	12	0.0323	0.0120	6.93	8.83	647.35	643.00	646.60	642.50	

OXFORD, MA
NOVEMBER 2024

From	To	Area (AC.) Incremental	Weighted Runoff Coefficient "C"	CxA	Cumulative CxA	**Pipe Length** (Feet)	Flow Time (min) To Inlet	Flow Time (min) In Channel	Design Storm (Year)	Intensity (IN/HR)	Q (CFS)	Size (IN)	Slope (FT/FT)	Mannings n	Full Capacity (cfs)	Full Velocity (fps)	Upper End Rim	Upper End Invert	Lower End Rim	Lower End Invert	NOTES
DMH91	DMH92	--	--	--	2.17	104.30	7.59	0.17	25	6.00	13.01	18	0.0264	0.0120	18.48	10.46	646.60	636.50	638.70	633.75	
CB111	DMH92	0.13	0.55	0.07	0.07	5.50	6.00	0.01	25	6.30	0.43	12	0.0455	0.0120	8.23	10.48	638.00	634.50	638.70	634.25	
CB112	DMH92	0.32	0.58	0.19	0.19	50.00	6.00	0.24	25	6.30	1.17	12	0.0050	0.0120	2.73	3.47	638.00	634.50	638.70	634.25	
DMH92	FES8	--	--	--	2.42	55.50	7.76	0.10	25	5.90	14.29	24	0.0135	0.0120	28.49	9.07	638.70	633.25		632.50	

Pipe Calculations

RIP RAP SIZING

NOVEMBER 2024

FES#1	18" OUT FROM	BASIN	1				
D	Inside Pipe Diameter			in	18		
Q	Flow			cfs	16.0	100 YR.-HydroCAD	
La	Length of Pad			ft	27	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	5	(3D)	
W2	width down grade			Ft	31	(3D+La)	
VELOCITY at DISCHARGE		9.05	FPS	Per HydroCAD 100-YR Calc			
MIN. RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		16.0	cfs	100 YR.	
	D	Diameter of outlet		1.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.92	FT	11	INCHES
MAX	1.5*d50			1.4	FT	17	INCHES

FES#2	30" FES FROM OSC1	BASIN	1				
D	Inside Pipe Diameter			in	30		
Q	Flow			cfs	40.5	100 YR.-HydroCAD	
La	Length of Pad			ft	37	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	8	(3D)	
W2	width down grade			Ft	45	(3D+La)	
VELOCITY at DISCHARGE		9.05	FPS	Per RATIONAL CALC			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		40.5	cfs	100 YR.	
	D	Diameter of outlet		2.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.18	FT	14	INCHES
MAX	1.5*d50			1.8	FT	21	INCHES

FES#3	FROM DMH#3	BASIN	1				
D	Inside Pipe Diameter			in	42		
Q	Flow			cfs	64.2	PER 25 YR. RATIONAL	
La	Length of Pad			ft	45	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	11	(3D)	
W2	width down grade			Ft	55	(3D+La)	
VELOCITY at DISCHARGE		7.91	FPS	PER 25 YR. RATIONAL			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		64.2	cfs	100 YR.	
	D	Diameter of outlet		3.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.19	FT	14	INCHES
MAX	1.5*d50			1.8	FT	21	INCHES

RIP RAP SIZING

NOVEMBER 2024

FES#4	FROM DMH 72D	BASIN	8				
D	Inside Pipe Diameter			in	36		
Q	Flow			cfs	46.7	PER 25 YR. RATIONAL	
La	Length of Pad			ft	39	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	9	(3D)	
W2	width down grade			Ft	48	(3D+La)	
VELOCITY at DISCHARGE		6.69	FPS	PER 25 YR. RATIONAL			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		46.7	cfs	100 YR.	
	D	Diameter of outlet		3	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.07	FT	13	INCHES
MAX	1.5*d50			1.6	FT	19	INCHES

FES#5	OUT FROM OSC8	BASIN	8				
D	Inside Pipe Diameter			in	36		
Q	Flow			cfs	45.7	100 YR.-HydroCAD	
La	Length of Pad			ft	39	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	9	(3D)	
W2	width down grade			Ft	48	(3D+La)	
VELOCITY at DISCHARGE		8.02	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		45.7	cfs	100 YR.	
	D	Diameter of outlet		3	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.04	FT	13	INCHES
MAX	1.5*d50			1.6	FT	19	INCHES

FES#6	OUT FROM DMH 31	BASIN	4				
D	Inside Pipe Diameter			in	24		
Q	Flow			cfs	23	PER 25 YR. RATIONAL	
La	Length of Pad			ft	30	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	6	(3D)	
W2	width down grade			Ft	36	(3D+La)	
VELOCITY at DISCHARGE		8.02	FPS	PER 25 YR. RATIONAL			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		22.9	cfs	100 YR.	
	D	Diameter of outlet		2	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.90	FT	11	INCHES
MAX	1.5*d50			1.3	FT	16	INCHES

FES#7	OUT FROM OCS#4	BASIN	4				
D	Inside Pipe Diameter			in	24		
Q	Flow			cfs	19.2	100 YR.-HydroCAD	
La	Length of Pad			ft	28	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	6	(3D)	
W2	width down grade			Ft	34	(3D+La)	
VELOCITY at DISCHARGE		7.8	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		19.2	cfs	100 YR.	
	D	Diameter of outlet		2	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.75	FT	9	INCHES
MAX	1.5*d50			1.1	FT	14	INCHES

RIP RAP SIZING

NOVEMBER 2024

FES#8	FROM DMH 89	BASIN	11				
ROAD H							
D	Inside Pipe Diameter			in	24		
Q	Flow			cfs	14.3	PER 25 YR. RATIONAL	
La	Length of Pad			ft	25	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	6	(3D)	
W2	width down grade			Ft	31	(3D+La)	
VELOCITY at DISCHARGE		9.07	FPS	PER RATIONAL-25 YR.			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		14.3	cfs	25 YR.	
	D	Diameter of outlet		2	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.56	FT	7	INCHES
MAX	1.5*d50			0.8	FT	10	INCHES

FES#9	OUT FROM DMH 50B	BASIN 5					
D	Inside Pipe Diameter			in	30		
Q	CP			cfs	36.6	PER 25 YR. RATIONAL	
La	Length of Pad			ft	36	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	8	(3D)	
W2	width down grade			Ft	43	(3D+La)	
VELOCITY at DISCHARGE		9.14	FPS	PER RATIONAL-25 YR.			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		36.6	cfs	25YR RATIONAL	
	D	Diameter of outlet		2.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.06	FT	13	INCHES
MAX	1.5*d50			1.6	FT	19	INCHES

FES#10	FROM OCS #5	BASIN 5					
D	Inside Pipe Diameter			in	36		
Q	Flow	m		cfs	51.5	100 YR.-HydroCAD	
La	Length of Pad			ft	41	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	9	(3D)	
W2	width down grade			Ft	50	(3D+La)	
VELOCITY at DISCHARGE		7.35	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		51.5	cfs	100 YR.	
	D	Diameter of outlet		3	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.18	FT	14	INCHES
MAX	1.5*d50			1.8	FT	21	INCHES

FES11	FROM DMH #88	BASIN 6					
D	Inside Pipe Diameter			in	18		
Q	Flow			cfs	12.9	PER 25 YR. RATIONAL	
La	Length of Pad			ft	24	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	5	(3D)	
W2	width down grade			Ft	28	(3D+La)	
VELOCITY at DISCHARGE		9.88	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		12.9	cfs	25YR RATIONAL	
	D	Diameter of outlet		1.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.74	FT	9	INCHES
MAX	1.5*d50			1.1	FT	13	INCHES

RIP RAP SIZING

NOVEMBER 2024

FES12	OCS #6	BASIN 6					
D	Inside Pipe Diameter			in	30		
Q	Flow			cfs	46.1	100 YR.-HydroCAD	
La	Length of Pad			ft	40	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	8	(3D)	
W2	width down grade			Ft	47	(3D+La)	
VELOCITY at DISCHARGE		9.61	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		46.1	cfs	100 YR.	
	D	Diameter of outlet		2.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.34	FT	16	INCHES
MAX	1.5*d50			2.0	FT	24	INCHES

FES13	OCS #7	BASIN 7					
D	Inside Pipe Diameter			in	24		
Q	Flow			cfs	17.1	100 YR.-HydroCAD	
La	Length of Pad			ft	26	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	6	(3D)	
W2	width down grade			Ft	32	(3D+La)	
VELOCITY at DISCHARGE		7.8	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		17.1	cfs	100 YR.	
	D	Diameter of outlet		2	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.67	FT	8	INCHES
MAX	1.5*d50			1.0	FT	12	INCHES

FES14	FROM DMH 81	BASIN 7					
D	Inside Pipe Diameter			in	18		
Q	Flow			cfs	10.5	25 year Rational	
La	Length of Pad			ft	22	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	5	(3D)	
W2	width down grade			Ft	26	(3D+La)	
VELOCITY at DISCHARGE		6.09	FPS	PER RATIONAL-25 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		10.5	cfs	25YR RATIONAL	
	D	Diameter of outlet		1.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.60	FT	7	INCHES
MAX	1.5*d50			0.9	FT	11	INCHES

FES15	From existng Wetlands	Pond 12 P					
D	Inside Pipe Diameter			in	24		
Q	Flow			cfs	10.6	100 YR.-HydroCAD	
La	Length of Pad			ft	22	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	6	(3D)	
W2	width down grade			Ft	28	(3D+La)	
VELOCITY at DISCHARGE		9.8	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		10.6	cfs	100 YR.	
	D	Diameter of outlet		2	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.42	FT	5	INCHES
MAX	1.5*d50			0.6	FT	7	INCHES

RIP RAP SIZING

NOVEMBER 2024

FES#16	HEADWALL #1 RD B	TO DMH49A					
D	Inside Pipe Diameter			in	30		
Q	Flow			cfs	35.0	100 YR.-HydroCAD	
La	Length of Pad			ft	35	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	8	(3D)	
W2	width down grade			Ft	43	(3D+La)	
VELOCITY at DISCHARGE		8.5	FPS	PER RATIONAL-100 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		35.0	cfs	100 YR.	
	D	Diameter of outlet		2.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			1.02	FT	12	INCHES
MAX	1.5*d50			1.5	FT	18	INCHES

FES17	YD#17	TO BASIN #6					
D	Inside Pipe Diameter			in	18		
Q	Flow			cfs	14.7	25YR RATIONAL	
La	Length of Pad			ft	26	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	5	(3D)	
W2	width down grade			Ft	30	(3D+La)	
VELOCITY at DISCHARGE		8.31	FPS	PER RATIONAL-25 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		14.7	cfs	25YR RATIONAL	
	D	Diameter of outlet		1.5	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.84	FT	10	INCHES
MAX	1.5*d50			1.3	FT	15	INCHES

FES18	FROM YD#18 TO	TO BASIN #7					
D	Inside Pipe Diameter			in	12		
Q	Flow			cfs	2.1	25YR RATIONAL	
La	Length of Pad			ft	12	La=(1.7Q/Do^1.5) + 8D	
W1	Width of pad at outlet			ft	3	(3D)	
W2	width down grade			Ft	15	(3D+La)	
VELOCITY at DISCHARGE		3.63	FPS	PER RATIONAL-25 YR. FLOW			
MEDIAN RIP RAP SIZE				d50=.2D[Q/(g^.5*D^2.5)]^4/3[D/tw]			
	Q	Flow		2.1	cfs	25YR RATIONAL	
	D	Diameter of outlet		1	ft		
	TW	Tail Water		0.2	ft	no Tail water expected; use 0.2	
	g	Gravity		32.2	ft/sec^2		
d50	MEDIAN RIP RAP SIZE			0.21	FT	2	INCHES
MAX	1.5*d50			0.3	FT	4	INCHES

STAGE-STORAGE & SEDIMENT FOREBAY SIZING

1001-POST REV0-WORKING

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
62,011	61	>75% Grass cover, Good, HSG B (14S, 142S)
712,514	74	>75% Grass cover, Good, HSG C (13S, 14S, 15S, 140S, 141S, 142S)
25,446	80	>75% Grass cover, Good, HSG D (14S, 141S)
117,863	65	Brush, Good, HSG C (15S)
18,017	89	Gravel roads, HSG C (13S, 14S, 15S)
637	91	Gravel roads, HSG D (14S)
26,953	98	Paved parking, HSG B (14S)
200,368	98	Paved parking, HSG C (13S, 14S)
3,822	98	Paved parking, HSG D (14S)
39,915	98	Roofs, HSG B (14S, 142S)
257,776	98	Roofs, HSG C (13S, 14S, 15S, 140S, 141S, 142S)
18,299	98	Roofs, HSG D (14S, 141S)
19,111	55	Woods, Good, HSG B (15S)
136,064	70	Woods, Good, HSG C (14S, 15S)
4,491	77	Woods, Good, HSG D (14S)
1,643,287	**81**	**TOTAL AREA**

TOTAL IMPERVIOUS TO DESIGN POINT AP1
547,133 SF = 12.56 ACRES

AP-1 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
62,011	61	>75% Grass cover, Good, HSG B (14S, 142S)
507,055	74	>75% Grass cover, Good, HSG C (13S, 14S, 140S, 141S, 142S)
25,446	80	>75% Grass cover, Good, HSG D (14S, 141S)
15,461	89	Gravel roads, HSG C (13S, 14S)
637	91	Gravel roads, HSG D (14S)
26,953	98	Paved parking, HSG B (14S)
200,368	98	Paved parking, HSG C (13S, 14S)
3,822	98	Paved parking, HSG D (14S)
39,915	98	Roofs, HSG B (14S, 142S)
212,959	98	Roofs, HSG C (13S, 14S, 140S, 141S, 142S)
18,299	98	Roofs, HSG D (14S, 141S)
10,500	70	Woods, Good, HSG C (14S)
4,491	77	Woods, Good, HSG D (14S)
1,127,917	**84**	**TOTAL AREA**

TOTAL IMPERVIOUS TO DESIGN POINT AP1
502,316 SF = 11.53 ACRES

AP-1 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP

Stage-Area-Storage for Pond 1P: Basin #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
686.50	22,675	0
686.52	22,844	455
686.54	23,014	914
686.56	23,185	1,376
686.58	23,356	1,841
686.60	23,527	2,310
686.62	23,700	2,782
686.64	23,873	3,258
686.66	24,046	3,737
686.68	24,221	4,220
686.70	24,395	4,706
686.72	24,571	5,196
686.74	24,747	5,689
686.76	24,924	6,186
686.78	25,101	6,686
686.80	25,279	7,190
686.82	25,458	7,697
686.84	25,637	8,208
686.86	25,817	8,722
68		9,241
68		9,762
68		10,288
68		10,817
686.96	26,726	11,349
686.98	26,910	11,886
687.00	27,094	12,426
687.02	27,147	12,968
687.04	27,200	13,512
687.06	27,253	14,056
687.08	27,306	14,602
687.10	27,359	15,149
687.12	27,413	15,696
687.14	27,466	16,245
687.16	27,519	16,795
687.18	27,573	17,346
687.20	27,626	17,898
687.22	27,680	18,451
687.24	27,733	19,005
687.26	27,787	19,560
687.28	27,841	20,116
687.30	27,894	20,674
687.32	27,948	21,232
687.34	28,002	21,792
687.36	28,056	22,352
687.38	28,110	22,914
687.40	28,164	23,477
687.42	28,218	24,041
687.44	28,272	24,605
687.46	28,326	25,171
687.48	28,380	25,738
687.50	28,434	26,307
687.52	28,489	26,876

STATIC STORAGE VOLUME AT LOWEST OUTLET ELEV. (687.80)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
687.54	28,543	27,446
687.56	28,597	28,018
687.58	28,652	28,590
687.60	28,706	29,164
687.62	28,761	29,738
687.64	28,815	30,314
687.66	28,870	30,891
687.68	28,925	31,469
687.70	28,980	32,048
687.72	29,034	32,628
687.74	29,089	33,209
687.76	29,144	33,792
687.78	29,199	34,375
687.80	29,254	34,960
687.82	29,309	35,545
687.84	29,364	36,132
687.86	29,419	36,720
687.88	29,475	37,309
687.90	29,530	37,899
687.92	29,585	38,490
687.94	29,641	39,082
687.96	29,696	39,676
687.98	29,751	40,270
688.00	29,807	40,866
688.02	29,861	41,462
688.04	29,914	42,060
688.06	29,968	42,659
688.08	30,022	43,259
688.10	30,075	43,860
688.12	30,129	44,462
688.14	30,183	45,065
688.16	30,237	45,669
688.18	30,291	46,274
688.20	30,345	46,881
688.22	30,399	47,488
688.24	30,453	48,097
688.26	30,507	48,706
688.28	30,562	49,317
688.30	30,616	49,929
688.32	30,670	50,542
688.34	30,725	51,156
688.36	30,779	51,771
688.38	30,833	52,387
688.40	30,888	53,004
688.42	30,942	53,622
688.44	30,997	54,242
688.46	31,052	54,862
688.48	31,106	55,484
688.50	31,161	56,106
688.52		
688.54		
688.56		

AP-1 DESIGN POINT

RECHARGE AND WATER QUALITY VOLUME POND#1

Stage-Area-Storage for Pond 1P-FB: Forebay-Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
687.00	2,340	0
687.10	2,368	235
687.20	2,396	474
687.30	2,424	715
687.40	2,452	958
687.50	2,480	1,205
687.60	2,508	1,454
687.70	2,536	1,707
687.80	2,564	1,962
687.90	2,592	2,219
688.00	2,620	2,480
688.10	2,649	2,743
688.20	2,678	3,010
688.30	2,708	3,279
688.40	2,737	3,551
688.50	2,766	3,827
688.60	2,795	4,105
688.70	2,824	4,386
688.80	2,854	4,669
688.90	2,883	4,956
689.00	**2,912**	**5,246**

WQV-PRETREATMENT PROVIDED BELOW FOREBAY SPILL WAY

AP-1 DESIGN POINT

FOREBAY SIZING POND #1

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
568,374	61	>75% Grass cover, Good, HSG B (1S, 3S, 4S, 5S, 7S, 8S, 16S, 17S, 18S, 19S, 70S)
443,537	74	>75% Grass cover, Good, HSG C (3S, 5S, 7S, 8S, 9S, 19S, 70S)
291,293	80	>75% Grass cover, Good, HSG D (3S, 5S, 7S, 8S, 17S, 18S)
48,437	65	Brush, Good, HSG C (9S)
9,683	85	Gravel roads, HSG B (1S, 4S, 8S, 18S, 19S)
32,807	98	Paved parking, HSG B (17S)
29,896	98	Paved parking, HSG C (8S, 9S)
23,275	98	Paved parking, HSG D (17S)
110,279	98	Paved roads w/curbs & sewers, HSG B (1S, 5S, 7S)
88,698	98	Paved roads w/curbs & sewers, HSG C (5S, 7S)
15,628	98	Paved roads w/curbs & sewers, HSG D (1S, 5S)
158,068	98	Roofs, HSG B (1S, 3S, 5S, 7S, 8S, 16S, 17S, 18S, 70S)
135,567	98	Roofs, HSG C (3S, 5S, 7S, 8S, 9S, 70S)
72,197	98	Roofs, HSG D (1S, 3S, 5S, 7S, 8S, 17S, 18S)
1,371,832	55	Woods, Good, HSG B (1S, 3S, 4S, 5S, 8S, 18S, 19S)
706,818	70	Woods, Good, HSG C (3S, 8S, 9S, 19S)
539,322	77	Woods, Good, HSG D (8S, 18S)
4,645,711	**70**	**TOTAL AREA**

TOTAL IMPERVIOUS AREA FROM DEVELOPMENT SITE TO DP AP3
666,415 SF = 15.3 AC

AP-3 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

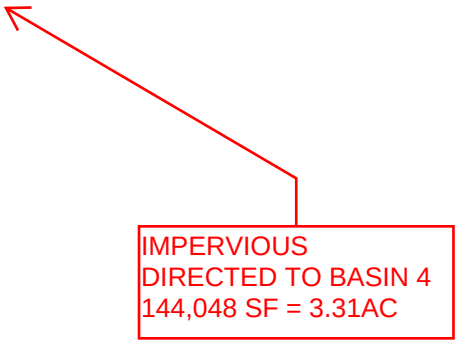
Area (sq-ft)	CN	Description (subcatchment-numbers)
406,146	61	>75% Grass cover, Good, HSG B (1S, 5S, 7S, 16S, 17S, 18S, 70S)
139,730	74	>75% Grass cover, Good, HSG C (5S, 7S, 70S)
225,595	80	>75% Grass cover, Good, HSG D (5S, 7S, 17S, 18S)
4,412	85	Gravel roads, HSG B (1S, 18S)
32,807	98	Paved parking, HSG B (17S)
23,275	98	Paved parking, HSG D (17S)
110,279	98	Paved roads w/curbs & sewers, HSG B (1S, 5S, 7S)
88,698	98	Paved roads w/curbs & sewers, HSG C (5S, 7S)
15,628	98	Paved roads w/curbs & sewers, HSG D (1S, 5S)
122,481	98	Roofs, HSG B (1S, 5S, 7S, 16S, 17S, 18S, 70S)
81,644	98	Roofs, HSG C (5S, 7S, 70S)
53,322	98	Roofs, HSG D (1S, 5S, 7S, 17S, 18S)
104,787	55	Woods, Good, HSG B (1S, 5S, 18S)
16,691	77	Woods, Good, HSG D (18S)
1,425,495	**79**	**TOTAL AREA**

IMPERVIOUS DIRECTED TO INFILTRATION/TREATMENT BMPS = 528,134 SF

AP-3 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP'S

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
93,990	61	>75% Grass cover, Good, HSG B (7S, 70S)
91,213	74	>75% Grass cover, Good, HSG C (7S, 70S)
30,951	80	>75% Grass cover, Good, HSG D (7S)
10,435	98	Paved roads w/curbs & sewers, HSG B (7S)
47,686	98	Paved roads w/curbs & sewers, HSG C (7S)
30,053	98	Roofs, HSG B (7S, 70S)
53,789	98	Roofs, HSG C (7S, 70S)
2,085	98	Roofs, HSG D (7S)
360,202	**81**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#4

Stage-Area-Storage for Pond 4P: Basin #4 - Road B

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
722.50	11,005	0
722.60	11,152	1,108
722.70	11,301	2,230
722.80	11,450	3,368
722.90	11,600	4,520
723.00	11,751	5,688
723.10	11,903	6,871
723.20	12,057	8,069
723.30	12,211	9,282
723.40	12,366	10,511
723.50	12,522	11,755
723.60	12,679	13,015
723.70	12,837	14,291
723.80	12,996	15,583
723.90	13,156	16,890
724.00	13,317	18,214
724.10	13,472	19,553
724.20	13,629	20,908
724.30	13,786	22,279
724.40	13,944	23,666
724.50	14,103	25,068
724.60	14,263	26,486
724.70	14,424	27,921
724.80	14,585	29,371
724.90	14,748	30,838
725.00	14,911	32,321
725.10	15,076	33,820
725.20	15,241	35,336
725.30	15,407	36,868
725.40	15,574	38,417
725.50	15,742	39,983
725.60	15,911	41,566
725.70	16,081	43,166
725.80	16,252	44,782
725.90	16,423	46,416
726.00	16,596	48,067
726.10	16,763	49,735
726.20	16,932	51,420
726.30	17,101	53,121
726.40	17,271	54,840
726.50	17,441	56,575
726.60	17,613	58,328
726.70	17,786	60,098
726.80	17,959	61,885
726.90	18,133	63,690
727.00	18,308	65,512
727.10	18,484	67,351
727.20	18,660	69,209
727.30	18,838	71,084
727.40	19,016	72,976
727.50	19,195	74,887
727.60	19,376	76,815
727.70	19,556	78,762
727.80	19,738	80,727
727.90	19,921	82,710
728.00	**20,104**	**84,711**

STATIC STORAGE VOLUME BELOW LOWEST OUTLET INVERT

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#4

Stage-Area-Storage for Pond 4P-FB: Basin #4 - FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
722.50	1,440	0
722.60	1,486	146
722.70	1,533	297
722.80	1,580	453
722.90	1,629	613
723.00	1,678	779
723.10	1,727	949
723.20	1,778	1,124
723.30	1,829	1,304
723.40	1,881	1,490
723.50	1,933	1,681
723.60	1,987	1,877
723.70	2,041	2,078
723.80	2,095	2,285
723.90	2,151	2,497
724.00	**2,207**	**2,715**
724.10	2,207	2,715
724.20	2,207	2,715
724.30	2,207	2,715
724.40	2,207	2,715
724.50	2,207	2,715
724.60	2,207	2,715
724.70	2,207	2,715
724.80	2,207	2,715
724.90	2,207	2,715
725.00	2,207	2,715
725.10	2,207	2,715
725.20	2,207	2,715
725.30	2,207	2,715
725.40	2,207	2,715
725.50	2,207	2,715
725.60	2,207	2,715
725.70	2,207	2,715
725.80	2,207	2,715
725.90	2,207	2,715
726.00	2,207	2,715
726.10	2,207	2,715
726.20	2,207	2,715
726.30	2,207	2,715
726.40	2,207	2,715
726.50	2,207	2,715
726.60	2,207	2,715
726.70	2,207	2,715
726.80	2,207	2,715
726.90	2,207	2,715
727.00	2,207	2,715
727.10	2,207	2,715

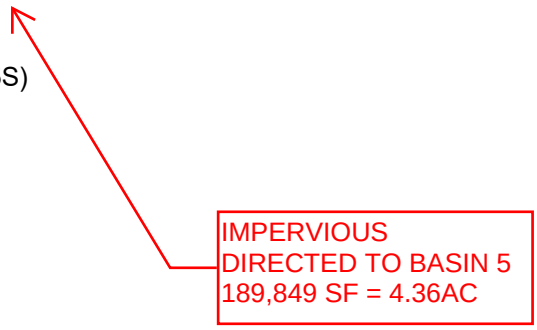
FOREBAY #6 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #4

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
112,350	61	>75% Grass cover, Good, HSG B (5S, 16S)
48,517	74	>75% Grass cover, Good, HSG C (5S)
9,548	80	>75% Grass cover, Good, HSG D (5S)
57,435	98	Paved roads w/curbs & sewers, HSG B (5S)
41,012	98	Paved roads w/curbs & sewers, HSG C (5S)
14,700	98	Paved roads w/curbs & sewers, HSG D (5S)
34,918	98	Roofs, HSG B (5S, 16S)
27,855	98	Roofs, HSG C (5S)
13,929	98	Roofs, HSG D (5S)
75,794	55	Woods, Good, HSG B (5S)
436,058	**78**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#5

Stage-Area-Storage for Pond 5P: Basin #5 - Road E

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
681.00	4,926	0
681.10	5,018	497
681.20	5,111	1,004
681.30	5,205	1,519
681.40	5,300	2,045
681.50	5,395	2,579
681.60	5,492	3,124
681.70	5,589	3,678
681.80	5,687	4,242
681.90	5,786	4,815
682.00	5,886	5,399
682.10	5,983	5,992
682.20	6,081	6,596
682.30	6,179	7,208
682.40	6,279	7,831
682.50	6,379	8,464
682.60	6,480	9,107
682.70	6,581	9,760
682.80	6,684	10,423
682.90	6,787	11,097
683.00	6,891	11,781
683.10	6,996	12,475
683.20	7,102	13,180
683.30	7,208	13,896
683.40	7,316	14,622
683.50	7,424	15,359
683.60	7,533	16,107
683.70	7,642	16,865
683.80	7,753	17,635
683.90	7,864	18,416
684.00	7,976	19,208
684.10	8,085	20,011
684.20	8,194	20,825
684.30	8,305	21,650
684.40	8,416	22,486
684.50	8,527	23,333
684.60	8,640	24,191
684.70	8,753	25,061
684.80	8,867	25,942
684.90	8,982	26,835
685.00	9,097	27,738
685.10	9,213	28,654
685.20	9,330	29,581
685.30	9,448	30,520
685.40	9,566	31,471
685.50	9,685	32,433
685.60	9,805	33,408
685.70	9,926	34,394
685.80	10,047	35,393
685.90	10,169	36,404
686.00	**10,292**	**37,427**

STATIC STORAGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-3 DESIGN POINT
RECHARGE AND WATER
QUALITY VOLUME POND#5

Stage-Area-Storage for Pond 5P-FB: Basin #5 - FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
681.00	750	0
681.10	768	76
681.20	786	154
681.30	804	233
681.40	822	314
681.50	841	398
681.60	859	483
681.70	877	569
681.80	895	658
681.90	913	748
682.00	931	841
682.10	951	935
682.20	971	1,031
682.30	991	1,129
682.40	1,011	1,229
682.50	1,032	1,331
682.60	1,052	1,435
682.70	1,072	1,541
682.80	1,092	1,650
682.90	1,112	1,760
683.00	**1,132**	**1,872**

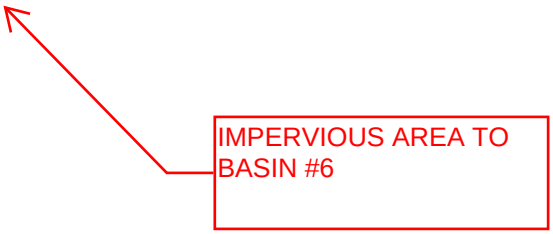
FOREBAY #5 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #5

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
141,845	61	>75% Grass cover, Good, HSG B (17S, 18S)
185,096	80	>75% Grass cover, Good, HSG D (17S, 18S)
1,767	85	Gravel roads, HSG B (18S)
32,807	98	Paved parking, HSG B (17S)
23,275	98	Paved parking, HSG D (17S)
41,561	98	Roofs, HSG B (17S, 18S)
36,508	98	Roofs, HSG D (17S, 18S)
6,597	55	Woods, Good, HSG B (18S)
16,691	77	Woods, Good, HSG D (18S)
486,147	**79**	**TOTAL AREA**



AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#6

Stage-Area-Storage for Pond 6P: #6 Thayer Pond CulDeSac

Elevation (feet)	Surface (sq-ft)	Wetted (sq-ft)	Storage (cubic-feet)
666.50	7,574	7,574	0
666.60	7,739	7,742	766
666.70	7,906	7,912	1,548
666.80	8,075	8,084	2,347
666.90	8,246	8,257	3,163
667.00	8,418	8,433	3,996
667.10	8,592	8,610	4,847
667.20	8,768	8,789	5,715
667.30	8,946	8,970	6,600
667.40	9,125	9,153	7,504
667.50	9,307	9,337	8,426
667.60	9,490	9,523	9,365
667.70	9,675	9,711	10,324
667.80	9,861	9,901	11,300
667.90	10,050	10,093	12,296
668.00	10,240	10,287	13,310
668.10	10,405	10,456	14,343
668.20	10,572	10,626	15,391
668.30	10,740	10,798	16,457
668.40	10,909	10,971	17,539
668.50	11,079	11,145	18,639
668.60	11,251	11,321	19,755
668.70	11,424	11,498	20,889
668.80	11,599	11,677	22,040
668.90	11,774	11,857	23,209
669.00	11,951	12,038	24,395
669.10	12,130	12,221	25,599
669.20	12,310	12,405	26,821
669.30	12,491	12,590	28,061
669.40	12,673	12,777	29,319
669.50	12,857	12,965	30,596
669.60	13,042	13,154	31,891
669.70	13,228	13,345	33,204
669.80	13,416	13,537	34,536
669.90	13,605	13,730	35,887
670.00	13,795	13,925	37,257
670.10	14,006	14,141	38,647
670.20	14,220	14,358	40,059
670.30	14,434	14,577	41,491
670.40	14,651	14,797	42,945
670.50	14,868	15,019	44,421
670.60	15,088	15,243	45,919
670.70	15,309	15,468	47,439
670.80	15,532	15,695	48,981
670.90	15,756	15,924	50,545
671.00	15,982	16,154	52,132
671.10	16,210	16,386	53,742
671.20	16,439	16,620	55,374
671.30	16,670	16,855	57,030
671.40	16,902	17,092	58,708
671.50	17,136	17,331	60,410
671.60	17,372	17,571	62,136

STATIC STORAGE VOLUME BELOW LOWEST BASIN OUTLET ELEVATION

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#6

Stage-Area-Storage for Pond 6P-FB: #6 FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
666.50	1,103	0
666.60	1,185	114
666.70	1,271	237
666.80	1,359	369
666.90	1,450	509
667.00	1,544	659
667.10	1,588	815
667.20	1,632	976
667.30	1,677	1,142
667.40	1,722	1,312
667.50	1,768	1,486
667.60	1,815	1,665
667.70	1,862	1,849
667.80	1,910	2,038
667.90	1,959	2,231
668.00	**2,008**	**2,430**
668.10	2,008	2,430
668.20	2,008	2,430
668.30	2,008	2,430
668.40	2,008	2,430
668.50	2,008	2,430
668.60	2,008	2,430
668.70	2,008	2,430
668.80	2,008	2,430
668.90	2,008	2,430
669.00	2,008	2,430
669.10	2,008	2,430
669.20	2,008	2,430
669.30	2,008	2,430
669.40	2,008	2,430
669.50	2,008	2,430
669.60	2,008	2,430
669.70	2,008	2,430
669.80	2,008	2,430
669.90	2,008	2,430
670.00	2,008	2,430
670.10	2,008	2,430
670.20	2,008	2,430
670.30	2,008	2,430
670.40	2,008	2,430
670.50	2,008	2,430
670.60	2,008	2,430
670.70	2,008	2,430
670.80	2,008	2,430
670.90	2,008	2,430
671.00	2,008	2,430
671.10	2,008	2,430

FOREBAY #6 STORAGE VOLUME, SPILLWAY ELEVATION

AP-3 DESIGN POINT

FOREBAY SIZING
POND #6

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
57,961	61	>75% Grass cover, Good, HSG B (1S)
2,645	85	Gravel roads, HSG B (1S)
42,409	98	Paved roads w/curbs & sewers, HSG B (1S)
928	98	Paved roads w/curbs & sewers, HSG D (1S)
15,949	98	Roofs, HSG B (1S)
800	98	Roofs, HSG D (1S)
22,396	55	Woods, Good, HSG B (1S)
143,088	**76**	**TOTAL AREA**

AP-3 DESIGN POINT
IMPERVIOUS AREAS
DIRECTED TO POND#7

Stage-Area-Storage for Pond 7P: Basin #7Thayer Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
627.00	3,635	0
627.10	3,742	369
627.20	3,851	748
627.30	3,961	1,139
627.40	4,072	1,541
627.50	4,186	1,954
627.60	4,300	2,378
627.70	4,417	2,814
627.80	4,535	3,261
627.90	4,654	3,721
628.00	4,775	4,192
628.10	4,889	4,675
628.20	5,004	5,170
628.30	5,120	5,676
628.40	5,237	6,194
628.50	5,356	6,723
628.60	5,477	7,265
628.70	5,598	7,819
628.80	5,721	8,385
628.90	5,845	8,963
629.00	**5,971**	**9,554**

STATIC STORAGE VOLUME BELOW LOWEST BASIN OUTLET ELEVATION

AP-3 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#7

Stage-Area-Storage for Pond 7P-FB: POND#7 FOREBAY

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
627.00	663	0
627.10	693	68
627.20	723	139
627.30	753	212
627.40	783	289
627.50	814	369
627.60	844	452
627.70	874	538
627.80	904	627
627.90	934	719
628.00	**964**	**814**

AP-3 DESIGN POINT

FOREBAY SIZING
POND #7

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
129,353	61	>75% Grass cover, Good, HSG B (10S, 11S, 110S)
320,213	74	>75% Grass cover, Good, HSG C (10S, 11S, 12S, 110S)
14,148	80	>75% Grass cover, Good, HSG D (12S)
1,207	85	Gravel roads, HSG B (11S)
3,160	89	Gravel roads, HSG C (11S, 12S)
2,452	91	Gravel roads, HSG D (11S, 12S)
27,559	98	Paved roads w/curbs & sewers, HSG B (10S)
76,607	98	Paved roads w/curbs & sewers, HSG C (10S)
46,427	98	Roofs, HSG B (10S, 110S)
134,781	98	Roofs, HSG C (10S, 11S, 12S, 110S)
47,105	55	Woods, Good, HSG B (11S, 12S, 110S)
76,872	70	Woods, Good, HSG C (11S, 12S)
33,251	77	Woods, Good, HSG D (12S)
913,135	**79**	**TOTAL AREA**

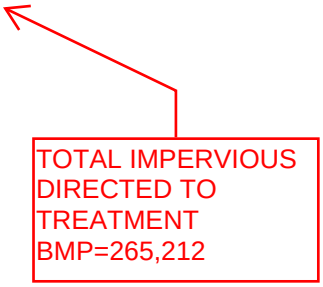
TOTAL IMPERVIOUS AREA TO DESIGN POINT AP5=285,374

AP-5 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
129,353	61	>75% Grass cover, Good, HSG B (10S, 11S, 110S)
256,473	74	>75% Grass cover, Good, HSG C (10S, 11S, 110S)
1,207	85	Gravel roads, HSG B (11S)
2,593	89	Gravel roads, HSG C (11S)
1,129	91	Gravel roads, HSG D (11S)
27,559	98	Paved roads w/curbs & sewers, HSG B (10S)
76,607	98	Paved roads w/curbs & sewers, HSG C (10S)
46,427	98	Roofs, HSG B (10S, 110S)
114,619	98	Roofs, HSG C (10S, 11S, 110S)
46,502	55	Woods, Good, HSG B (11S, 110S)
34,565	70	Woods, Good, HSG C (11S)
737,034	**79**	**TOTAL AREA**



AP-5 DESIGN POINT
TOTAL IMPERVIOUS AREAS
DIRECTED TO BMP'S

Stage-Area-Storage for Pond 8P: Basin #8- Auburn side

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
684.00	15,227	0
684.02	15,265	305
684.04	15,302	611
684.06	15,340	917
684.08	15,377	1,224
684.10	15,415	1,532
684.12	15,453	1,841
684.14	15,491	2,150
684.16	15,529	2,460
684.18	15,566	2,771
684.20	15,604	3,083
684.22	15,642	3,396
684.24	15,680	3,709
684.26	15,719	4,023
684.28	15,757	4,338
684.30	15,795	4,653
684.32	15,833	4,969
684.34	15,871	5,286
684.36	15,910	5,604
684.38	15,948	5,923
684.40	15,986	6,242
684.42	16,025	6,562
684.44	16,063	6,883
684.46	16,102	7,205
684.48	16,141	7,527
684.50	16,179	7,850
684.52	16,218	8,174
684.54	16,257	8,499
684.56	16,295	8,825
684.58	16,334	9,151
684.60	16,373	9,478
684.62	16,412	9,806
684.64	16,451	10,134
684.66	16,490	10,464
684.68	16,529	10,794
684.70	16,568	11,125
684.72	16,607	11,457
684.74	16,646	11,789
684.76	16,686	12,123
684.78	16,725	12,457
684.80	16,764	12,792
684.82	16,804	13,127
684.84	16,843	13,464
684.86	16,883	13,801
684.88	16,922	14,139
684.90	16,962	14,478
684.92	17,001	14,818
684.94	17,041	15,158
684.96	17,081	15,499
684.98	17,120	15,841
685.00	17,160	16,184
685.02	17,200	16,528

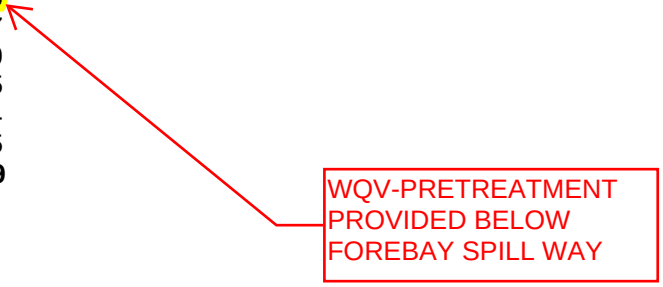
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
685.04	17,240	16,872
685.06	17,280	17,217
685.08	17,320	17,563
685.10	17,360	17,910
685.12	17,400	18,258
685.14	17,440	18,606
685.16	17,480	18,955
685.18	17,521	19,305
685.20	17,561	19,656
685.22	17,601	20,008
685.24	17,641	20,360
685.26	17,682	20,713
685.28	17,722	21,067
685.30	17,763	21,422
685.32	17,803	21,778
685.34	17,844	22,134
685.36	17,884	22,492
685.38	17,925	22,850
685.40	17,966	23,209
685.42	18,007	23,568
685.44	18,047	23,929
685.46	18,088	24,290
685.48	18,129	24,652
685.50	18,170	25,015
685.52	18,211	25,379
685.54	18,252	25,744
685.56	18,293	26,109
685.58	18,334	26,476
685.60	18,376	26,843
685.62		
685.64		
685.66		
685.68		
685.70		
685.72	18,624	29,063
685.74	18,665	29,436
685.76	18,707	29,809
685.78	18,748	30,184
685.80	18,790	30,559
685.82	18,832	30,935
685.84	18,873	31,312
685.86	18,915	31,690
685.88	18,957	32,069
685.90	18,999	32,449
685.92	19,041	32,829
685.94	19,083	33,210
685.96	19,125	33,592
685.98	19,167	33,975
686		
686		
686		

STATIC STORAGE RECHARGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-5 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#8

Stage-Area-Storage for Pond 8P-FB: Forebay-8P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
684.00	1,435	0
684.10	1,460	145
684.20	1,485	292
684.30	1,510	442
684.40	1,535	594
684.50	1,561	749
684.60	1,586	906
684.70	1,611	1,066
684.80	1,636	1,228
684.90	1,661	1,393
685.00	1,686	1,561
685.10	1,712	1,730
685.20	1,739	1,903
685.30	1,765	2,078
685.40	1,792	2,256
685.50	1,818	2,437
685.60	1,844	2,620
685.70	1,871	2,805
685.80	1,897	2,994
685.90	1,924	3,185
686.00	**1,950**	**3,379**



AP-5 DESIGN POINT

FOREBAY SIZING
POND #8

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
201,553	89	75% imp, HSG B (21S)
23,147	39	>75% Grass cover, Good, HSG A (21S, 24S, 26S)
218,336	61	>75% Grass cover, Good, HSG B (21S, 24S, 25S, 27S)
3,444	80	>75% Grass cover, Good, HSG D (21S)
78,948	98	Paved parking, HSG B (21S, 24S, 25S)
298,579	55	Woods, Good, HSG B (21S, 24S, 27S)
824,007	**69**	**TOTAL AREA**

(0.75)*201,553=151,164 sf of impervious

TOTAL IMPERVIOUS AREA TO DESIGN POINT AP6 = SUM = 230,112

AP-6 DESIGN POINT

TOTAL IMPERVIOUS AREAS

Area Listing (selected nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
201,553	89	75% imp, HSG B (21S)
6,241	39	>75% Grass cover, Good, HSG A (21S)
179,698	61	>75% Grass cover, Good, HSG B (21S)
3,444	80	>75% Grass cover, Good, HSG D (21S)
60,074	98	Paved parking, HSG B (21S)
19,017	55	Woods, Good, HSG B (21S)
470,027	**77**	**TOTAL AREA**

(0.75)*201,553=151,164 sf of impervious

TOTAL IMPERVIOUS DIRECTED TO RECHARGE BMP AT AP6= sum = 211,238 SF

AP-6 DESIGN POINT
TOTAL IMPERVIOUS AREAS DIRECTED TO BMP'S

Stage-Area-Storage for Pond 11: POND 11 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
636.66	27,939	95,770
636.68	27,986	96,329
636.70	28,034	96,889
636.72	28,082	97,450
636.74	28,129	98,013
636.76	28,177	98,576
636.78	28,224	99,140
636.80	28,272	99,705
636.82	28,319	100,270
636.84	28,367	100,837
636.86	28,415	101,405
636.88	28,462	101,974
636.90	28,510	102,544
636.92	28,557	103,114
636.94	28,605	103,686
636.96	28,652	104,259
636.98	28,700	104,832
637.00	28,748	105,407
637.02	28,795	105,982
637.04	28,843	106,558
637.06	28,890	107,136
637.08	28,938	107,714
637.10	28,985	108,293
637.12	29,033	108,873
637.14	29,080	109,454
637.16	29,128	110,037
637.18	29,176	110,620
637.20	29,223	111,204
637.22	29,271	111,789
637.24	29,318	112,374
637.26	29,366	112,961
637.28	29,413	113,549
637.30	29,461	114,138
637.32	29,509	114,727
637.34	29,556	115,318
637.36	29,604	115,910
637.38	29,651	116,502
637.40	29,699	117,096
637.42	29,746	117,690
637.44	29,794	118,286
637.46	29,842	118,882
637.48	29,889	119,479
637.50	29,937	120,078
637.52	29,984	120,677
637.54	30,032	121,277
637.56	30,079	121,878
637.58	30,127	122,480
637.60	30,175	123,083
637.62	30,222	123,687
637.64	30,270	124,292
637.66	30,317	124,898
637.68	30,365	125,505
637.70	30,412	126,112
637.72	30,460	126,721
637.74	30,508	127,331
637.76	30,555	127,942
637.78	30,603	128,553
637.80	30,650	129,166
637.82	30,698	129,779
637.84	30,745	130,394
637.86	30,793	131,009
637.88	30,841	131,625
637.90	30,888	132,243
637.92	30,936	132,861
637.94	30,983	133,480
637.96	31,031	134,100
637.98	31,078	134,721
638.00	**31,126**	**135,343**

STATIC STORAGE RECHARGE VOLUME BELOW LOWEST OUTLET ELEVATION

AP-6 DESIGN POINT RECHARGE AND WATER QUALITY VOLUME POND#11

Stage-Area-Storage for Pond 11P-FOREBAY: FOREB AY 11P (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
633.54	1,740	1,601
633.55	1,744	1,618
633.56	1,747	1,636
633.57	1,751	1,653
633.58	1,755	1,671
633.59	1,759	1,688
633.60	1,763	1,706
633.61	1,767	1,724
633.62	1,771	1,741
633.63	1,774	1,759
633.64	1,778	1,777
633.65	1,782	1,795
633.66	1,786	1,812
633.67	1,790	1,830
633.68	1,794	1,848
633.69	1,798	1,866
633.70	1,801	1,884
633.71	1,805	1,902
633.72	1,809	1,920
633.73	1,813	1,938
633.74	1,817	1,957
633.75	1,821	1,975
633.76	1,825	1,993
633.77	1,828	2,011
633.78	1,832	2,030
633.79	1,836	2,048
633.80	1,840	2,066
633.81	1,844	2,085
633.82	1,848	2,103
633.83	1,851	2,122
633.84	1,855	2,140
633.85	1,859	2,159
633.86	1,863	2,177
633.87	1,867	2,196
633.88	1,871	2,215
633.89	1,875	2,233
633.90	1,878	2,252
633.91	1,882	2,271
633.92	1,886	2,290
633.93	1,890	2,309
633.94	1,894	2,328
633.95	1,898	2,347
633.96	1,902	2,366
633.97	1,905	2,385
633.98	1,909	2,404
633.99	1,913	2,423
634.00	**1,917**	**2,442**

WQV-PRETREATMENT PROVIDED BELOW FOREBAY SPILL WAY

AP-5 DESIGN POINT

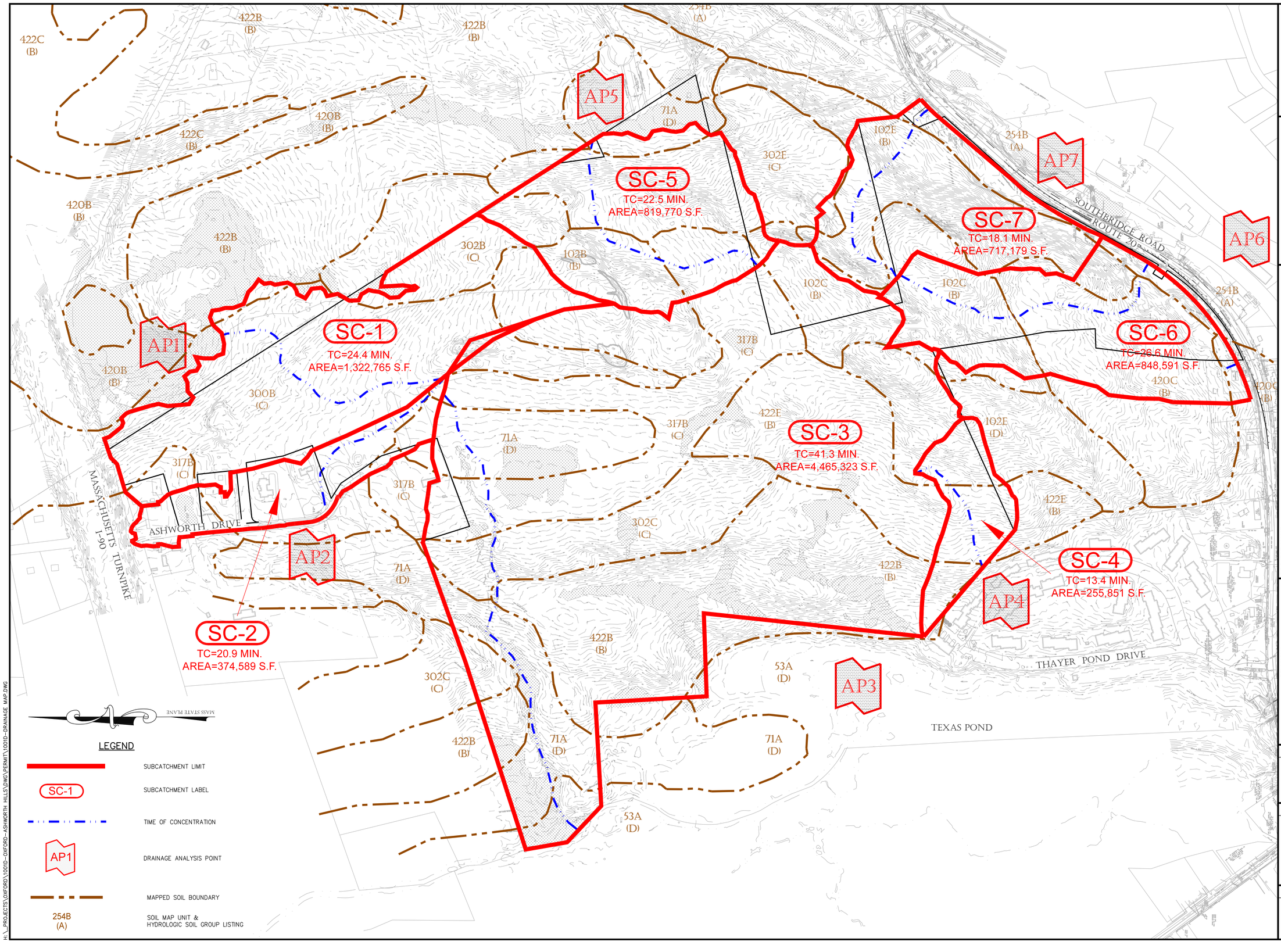
FOREBAY SIZING
POND #11

TSS REMOVAL WORKSHEET PRIOR TO DISCHARGE (Inf. Basins)

A	B	C	D	E
BMP	**TSS Removal Rate**	**Starting TSS Load***	**Amount Removed (B x C)**	**Remaining Load (C - D)**
Deep sump CB's w/ hoods	25.0%	100.0%	25.0%	75.0%
Infiltration Basin w/ sediment forebay	80.0%	75.0%	60.0%	15.0%
		Total TSS Removal =	85.0%	

* Equals remaining load from previous BMP (E)

PART IV – MAPS



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P.(508) 381-1515 F.(508) 647-0189
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PROJECT NAME
ASHWORTH HILLS
RESIDENTIAL DEVELOPMENT
#0 ASHWORTH DRIVE & #191 SOUTHBRIDGE ROAD
ASSESSOR'S MAP 3 LOT A05 AND MAP 6 LOT A01
OXFORD, MASSACHUSETTS

PREPARED FOR
Eastland

Eastland Partners, Inc.
997 Millbury Street
Worcester, MA 01607

REVISIONS

REV.	DATE	DESCRIPTION

PROJECT NO.	TPE-1001D
DESIGNED BY	JAB, TRB
CHECKED BY	JAB
DATE	NOVEMBER 15, 2024
CAD FILE	H:\PERMIT\1001D-DRAINAGE MAP

GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 inch = 200 feet

SHEET TITLE
PRE-DEVELOPMENT DRAINAGE MAP

SHEET NO.
D-1.0

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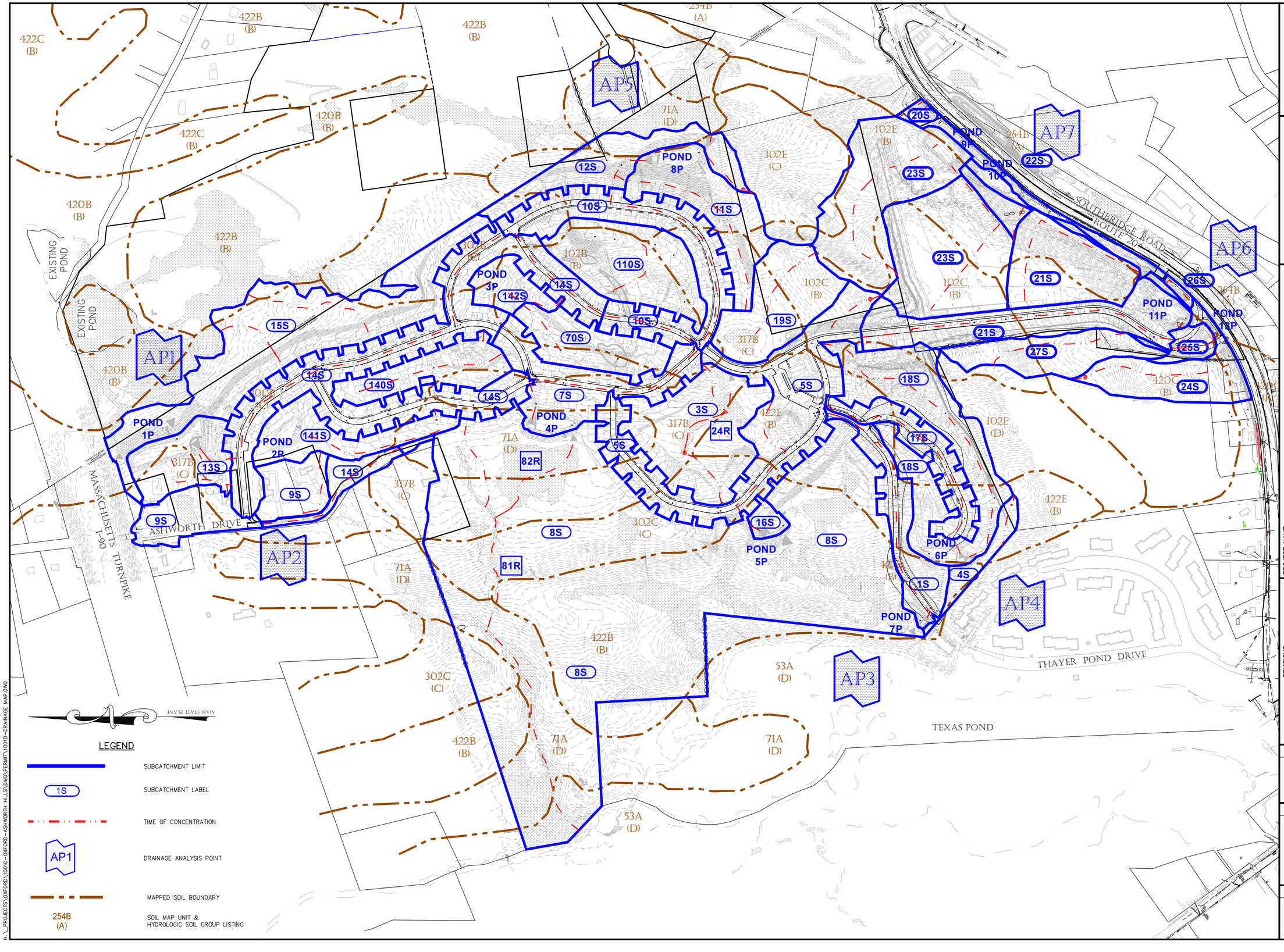

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Worcester, MA 01607

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REV.	DATE	DESCRIPTION

PROJECT NO.	TPE-1001D
DESIGNED BY	JAB, TRB
CHECKED BY	JAB
DATE	NOVEMBER 15, 2024
CAD FILE	H:\PERMIT\1001D-DRAINAGE MAP

GRAPHIC SCALE
200 0 100 200 400
(IN FEET)
1 inch = 200 feet

SHEET TITLE
POST-DEVELOPMENT DRAINAGE MAP

SHEET NO.
D-2.0

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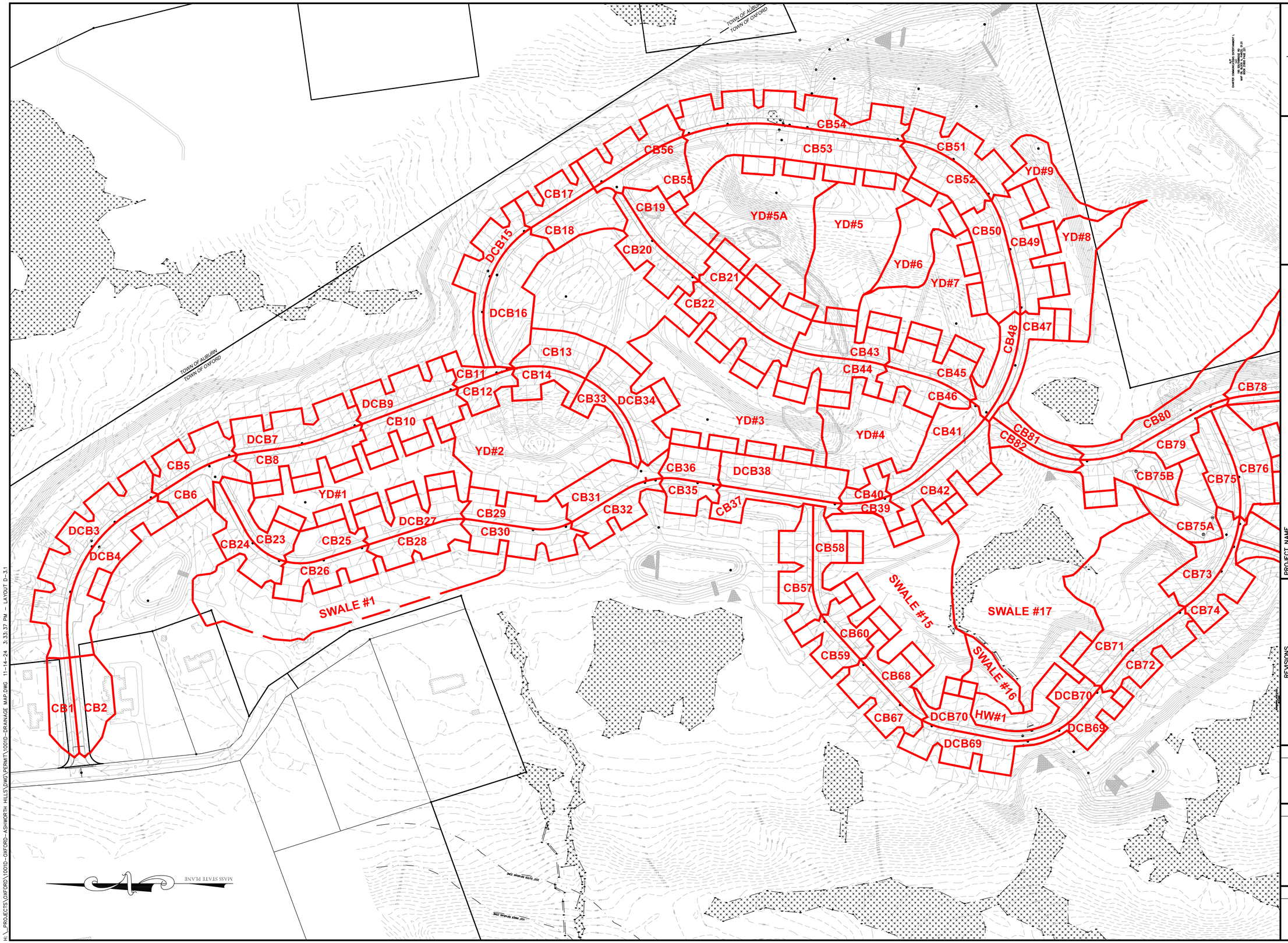

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ASHWORTH HILLS

RESIDENTIAL DEVELOPMENT

#0 ASHWORTH DRIVE & #191 SOUTHBRIDGE ROAD
ASSESSOR'S MAP 3 LOT A05 AND MAP 6 LOT A01
OXFORD, MASSACHUSETTS

PREPARED FOR

Eastland Partners, Inc.
997 Millbury Street
Worcester, MA 01607

REVISIONS

REV.	DATE	DESCRIPTION

PROJECT NO.	TPE-1001D
DESIGNED BY	JAB, TRB
CHECKED BY	JAB
DATE	NOVEMBER 15, 2024
CAD FILE	H:\PERMIT\1001D-DRAINAGE MAP

GRAPHIC SCALE

100 0 50 100 200
(IN FEET)
1 inch = 100 feet

SHEET TITLE

CATCH BASIN
DRAINAGE AREA MAP

SHEET 1 OF 2

SHEET NO.

D-3.1

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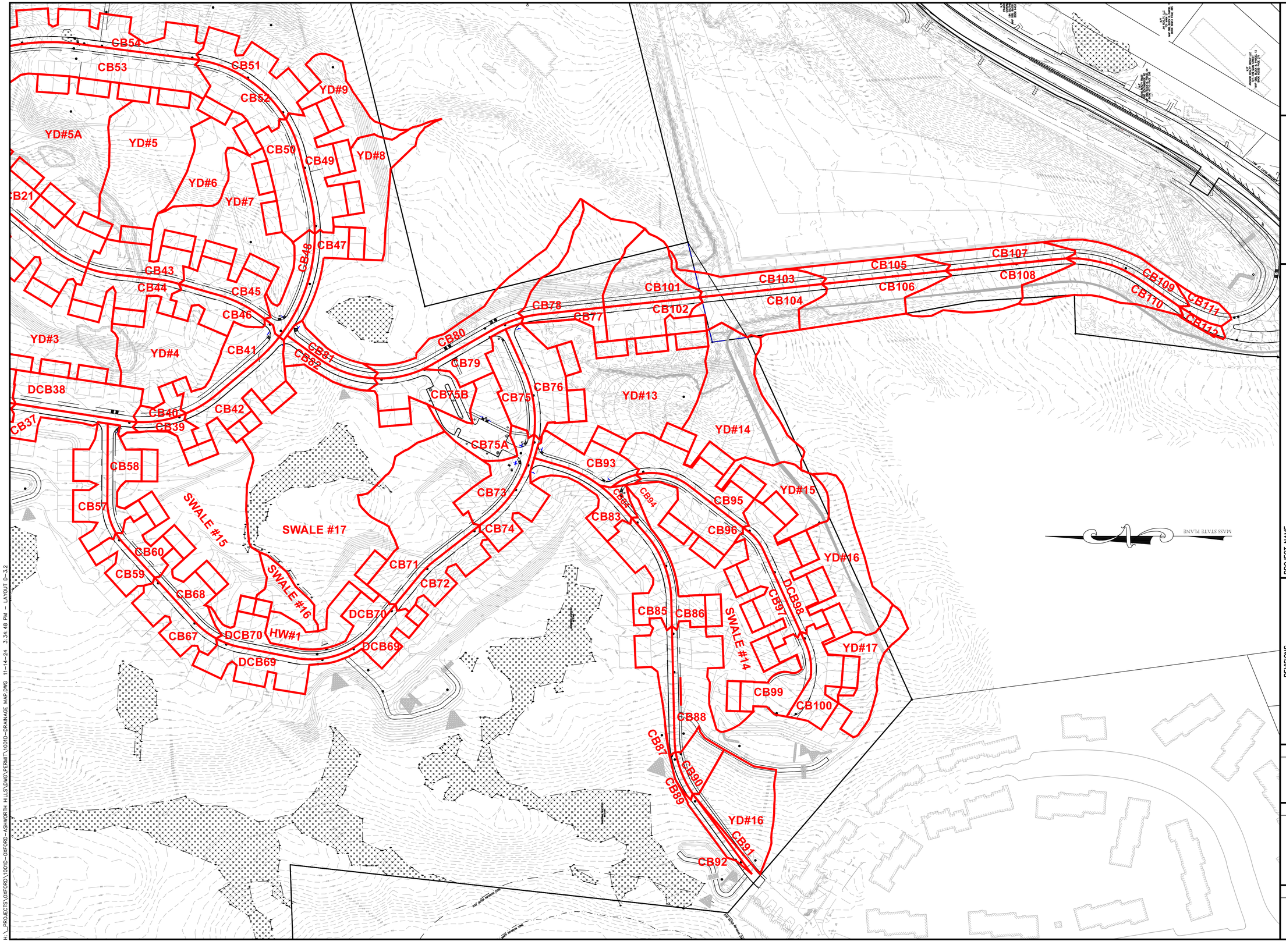

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PROJECT NAME

ASHWORTH HILLS

RESIDENTIAL DEVELOPMENT

#0 ASHWORTH DRIVE & #191 SOUTHBRIDGE ROAD
ASSESSOR'S MAP 3 LOT A05 AND MAP 6 LOT A01
OXFORD, MASSACHUSETTS

PREPARED FOR

Eastland Partners, Inc.
997 Millbury Street
Worcester, MA 01607

REVISIONS

REV.	DATE	DESCRIPTION

PROJECT NO.	TPE-1001D
DESIGNED BY	JAB, TRB
CHECKED BY	JAB
DATE	NOVEMBER 15, 2024
CAD FILE	H:\PERMIT\1001D-DRAINAGE MAP

GRAPHIC SCALE

100 0 50 100 200
(IN FEET)
1 inch = 100 feet

SHEET TITLE

CATCH BASIN
DRAINAGE AREA MAP

SHEET 2 OF 2

SHEET NO.

D-3.2

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