

Stormwater Management Narrative

HOFFMAN CAR WASH

1387 ROUTE 9

Town of Moreau

Saratoga County, New York

Applicant:

Hoffman Development Corp.

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Albany, NY 12205

July 2021

Prepared By:

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**ENVIRONMENTAL DESIGN
PARTNERSHIP, LLP.**

Shaping the physical environment

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1.0 Introduction

Hoffman Development Corp. is proposing to redevelop an existing commercial site located on an existing 1.65± acre parcel on the northern side of NYS Route 9 in the Town of Moreau, New York as a full-service car wash facility. The proposed site development will include the construction of a 6,400± SF car wash facility with three queuing lanes, a single full access driveway on Route 9, 20 vacuum parking spaces and 6 employee parking spaces. The project will disturb approximately 2.00± acres and will add approximately 0.42 acres of impervious area.

The stormwater management system has been designed to provide pollutant removal, reduce channel erosion, prevent overbank flooding, and safely control extreme flood events in accordance with the NYS Stormwater Management Design Manual (Design Manual). The proposed stormwater management system for the project will include two infiltration basins with a total storage on the order of 0.36 acr-ft.

This narrative presents a review of the design concepts and parameters of the stormwater management system for the proposed development. The purpose of the stormwater management narrative is to assure that changes in the surface runoff characteristics, as a result of the proposed construction, will not adversely impact adjacent or downstream properties. On-site stormwater management will be implemented in accordance with the Design Manual to accommodate both additional stormwater runoff and to provide water quality treatment according to the green infrastructure standards.

2.0 Existing Conditions

The existing site consists of an existing vacant garage and parking area with some open lawn and wooded areas. There are no wetlands located on the site. The site topography is flat with slopes ranging from 1% to 5%, with several soil stockpiles on site. Elevations at the site vary between 343 to 353 feet above sea level.

The site is bounded by private property to the north and east, by NYS Route 9 to the south and private property to the west.

2.1 Soil and Groundwater Conditions

The USDA Natural Resources Conservation Service Soil Survey (Soil Survey) identifies one soil group; WnA – Windsor Loamy Sand at 0 to 3 percent slopes.

The Windsor Loamy Sand series (WnA) generally consist of very deep, excessively drained soil. The surface runoff for the Windsor series is considered slow and the erosion hazard is considered light.

The Soil Survey categorizes the Windsor series as Hydrological Soil Group (HSG) “A”.

Test pits will be performed throughout the site to verify soil conditions.

3.0 Predevelopment Stormwater Analysis

The existing hydrologic conditions, in the area to be disturbed as a result of the proposed construction, were analyzed using Applied Microcomputer Systems' "HydroCAD" computer modeling program. The HydroCAD stormwater modeling program employs the United States Department of Agriculture's Soil Conservation Service (SCS) Technical Release 20 (TR-20) method for stormwater analysis. Using this modeling technique, the site is divided into "subcatchments" that represent specific areas contributing stormwater runoff to an existing, or proposed drainage feature. The subcatchments typically flow through "reaches" (i.e., swales, channels, or pipes) that convey the stormwater to storm basins or discharge areas.

Four (4) subcatchments were used to represent the existing drainage condition, see Figure 2. The existing site consists of two (2) drainage corridors; one towards a low point off site to the west and the other to an existing roadside ditch to the southeast.

The existing parameters of topography, vegetation, slope and soil type are all incorporated into the predevelopment model.

Table 1 presents a summary of the pre-development stormwater peak discharge for the 1 year, 10 year and 100-year design storm events at the respective Design Points. As will be discussed in subsequent sections, the post development stormwater discharge rate has been limited to the predevelopment discharge rate for the 1-year, 10-year, and 100-year storm events.

Table 1: Pre-Development Runoff Rates

Storm Event	Design Point Discharge (cfs)		Total Discharge offsite (cfs)
	OFF1	OFF2	
1-Year (2.23")	0.00	0.02	0.02
10-Year (3.71")	0.00	0.36	0.36
100-Year (6.22")	0.25	1.41	1.66

The pre-development Curve Number (CN) for the existing impervious, wooded, and grassy areas was established as 98, 30 and 39, respectively. The weighted predevelopment curve number was established as 52. The HydroCAD model results for the pre-development conditions are included within Attachment B.

4.0 Stormwater Management Planning and Practice Selection

The site layout and stormwater design for this project was completed while taking into consideration the potential impacts on the existing site and downstream hydrology. The existing site consists of well drained soils; therefore, the proposed system will rely on infiltration practices to the greatest extent possible.

Various measures were taken to help ensure that the post-development hydrology of the site will closely resemble the pre-development hydrology. These measures soil restoration and locating the development in less sensitive areas.

The proposed development will occur in an area of existing development with no wetlands or steep slopes.

Soil restoration has been called for throughout the site in accordance with Chapter 5 of the Design Manual. The soils on the site are classified as HSG A and need aeration and topsoil in areas of cut or fill. In high traffic areas that are to remain pervious, the soils shall be fully restored by tilling compost into the sub-soils prior to applying topsoil and vegetating. By applying these methods to the soils on the site, the original properties and porosity of the soils will be recovered, which will allow for an improvement in the soil infiltration as well as lawn and landscaping sustainability.

Stormwater management on the site will be managed with infiltration practices. Infiltration practices are considered a standard SMP with RRv Capacity by the Design Manual. By using infiltration practices that are located relatively close to the source of runoff the post-development hydrology will more closely match the pre-development hydrology.

5.0 Post-Development Stormwater Analysis

The post-development conditions were also modelled using HydroCAD. Six (6) subcatchments were used to represent the post development drainage conditions of the site. Site improvements to the property will include the construction of a 6,400± SF car wash facility with three queuing lanes, a single full access driveway on Route 9, 20 vacuum parking spaces and 6 employee parking spaces and municipal water and sewer connections. Stormwater management practices have been designed to provide storage, infiltration, and attenuation of stormwater runoff from the proposed impervious surfaces on the site.

Stormwater runoff from the site will be managed with two infiltration basins. Runoff from the parking lot, drive aisles, sidewalks and rooftops will be directed to shallow, vegetated swales to the infiltration basins. The car wash facility will be fully enclosed to keep any wash water separate from the stormwater and out of the infiltration basins.

A post-development Curve Number (CN) of 98 was assigned to all impervious surface within the project area. A post-development CN of 39 was assigned to all new grassed areas directly

contributing to the proposed stormwater devices. The weighted CN for the post-development conditions for the site is approximately 64. The HydroCAD model results for the post-development conditions are included within Attachment B.

5.1 Stormwater Management Area #1 – Infiltration Basin

Stormwater Management Area #1 (SMA #1) will provide treatment and attenuation for portions of the building, drive aisles and sidewalks on the site. The stormwater runoff will sheet flow to SMA #1. The total usable storage volume of SMA #1 will include 5,845 cubic-feet; the contributing area to SMA #1 includes approximately 1.39 acres with approximately 0.61 acres of impervious area.

SMA#1 has been designed as an infiltration basin. Chapter 3 of the Design Manual recognizes infiltration basins as a standard treatment practice with RRv capacity when all the required elements, design guidance, soil testing and maintenance requirements are followed.

SMA #1 has been designed with two sediment forebays to provide pretreatment and storage for 100 percent of the contributing water quality volume. The Design Manual requires pretreatment of 100 percent of the contributing water quality volume when infiltration rates are greater than 8 inches per hour.

The proposed basin will be located on the southeastern portion of the site. The main infiltration basin will have a rip-rap overflow weir. Stormwater modelling indicates that the water elevations in SMA#1 will not exceed or reach the elevation of the rip-rap overflow weir for storm events up to and including the 100-year storm event. For larger storm events some discharge out of the overflow weir is anticipated.

SMA #1 has been designed to fully attenuate and infiltrate runoff for storm events up to and including the 100-year design storm. It is anticipated that SMA #1 will fully drain in 11.9 hours.

5.2 Stormwater Management Area #2 – Infiltration Basin

Stormwater Management Area #2 (SMA #2) will provide treatment and attenuation for portions of the building, drive aisles and sidewalks on the site. The stormwater runoff will sheet flow to SMA #2. The total usable storage volume of SMA #2 will include 9,656 cubic-feet; the contributing area to SMA #2 includes approximately 0.97 acres with approximately 0.51 acres of impervious area.

SMA#2 has been designed as an infiltration basin. Chapter 3 of the Design Manual recognizes infiltration basins as a standard treatment practice with RRv capacity when all the required elements, design guidance, soil testing and maintenance requirements are followed.

SMA #2 has been designed with two sediment forebays to provide pretreatment and storage for 100 percent of the contributing water quality volume. The Design Manual requires

pretreatment of 100 percent of the contributing water quality volume when infiltration rates are greater than 8 inches per hour.

The proposed basin will be located on the southeastern portion of the site. The main infiltration basin will have a rip-rap overflow weir. Stormwater modelling indicates that the water elevations in SMA#2 will not exceed or reach the elevation of the rip-rap overflow weir for storm events up to and including the 100-year storm event. For larger storm events some discharge out of the overflow weir is anticipated.

SMA #2 has been designed to fully attenuate and infiltrate runoff for storm events up to and including the 100-year design storm. It is anticipated that SMA #1 will fully drain in 4.9 hours.

5.3 NYS Unified Stormwater Sizing Criteria

The area to be disturbed as a result of the proposed development was modeled in HydroCAD under the post-development conditions using seven subcatchments (Figure 3) routed into the stormwater management areas. The contributing area of each stormwater management area is identified on Figure 3. The post-development stormwater management system has been designed based on the Unified Stormwater Sizing Criteria as described in the following sections.

5.3.1 Water Quality (WQ_v)

In general, small storm events and the initial runoff from larger storm events are an environmental concern as this stormwater runoff typically contains roadway pollutants and thermal energy stored by the asphalt. In accordance with the Design Manual, this initial runoff is designated as the Water Quality Volume (WQ_v) and special attention is given to this volume of runoff to meet water quality objectives.

The Design Manual identifies several standard practices, such as the proposed infiltration basin and micropool extended detention pond, which are acceptable for water quality treatment. These acceptable Stormwater Management Practices (SMPs) can capture and treat the full water quality volume (WQ_v), are capable of 80% TSS removal and 40% TP removal, have acceptable longevity in the field, and have pretreatment mechanism.

The water quality storage volume, WQ_v, is calculated as follows:

$$WQ_v = \frac{P \cdot R_v \cdot A}{12}$$

Where: WQ_v = water quality volume (acre-feet)

P = 90% rainfall event number

R_v = 0.05+0.009(I), where I is percent impervious cover

A = site area (acres), impervious area used with I = 100%

Table 2: Required Water Quality Volume

Drainage Area	P	R _v	A (SF)	Required WQ _v (cf)	Provided WQ _v (cf) In Forebays
SMA #1	1.1	0.46	53,532	2,252	2,497
SMA #2	1.1	0.54	21,372	1,606	4,021

5.3.1.1 Pretreatment Practices

In accordance with the Design Manual, the required pre-treatment for infiltration practices is equivalent to 100% of the contributing WQ_v, when the infiltration rate is greater than 5 inches per hour. The proposed pre-treatment practices include sediment forebays as well as gravel diaphragm.

5.3.2 Runoff Reduction Volume (RR_v)

The Design Manual specifies that runoff shall be reduced by 100% of the site WQ_v using standard SMPs with RR_v capacity and green infrastructure techniques. The proposed drainage area is approximately 2.60 acres. The total post-development impervious area on the order of 1.12 acres (43.1%). The resulting WQ_v for these site coverages is computed as 4,546 CF. Runoff reduction will be provided by a combination of standard SMP's with RR_v capacity and green infrastructure. (See Appendix A for summary of calculations)

5.3.2.1 Stormwater Management Practices (SMP's)

Standard Stormwater Management Practices were sufficient to handle RR_v capacity for this site so green infrastructure practices were not needed. Two Stormwater Infiltration Basins have been proposed to collect, treat and infiltrate the stormwater runoff from the parking lot, drive aisle, building and grass areas. The Infiltration Basins is considered a standard SMP with RR_v capacity. The RR_v provided by the infiltration basins is on the order of 6,518 CF.

Table 3: Runoff Reduction Volume Summary

Runoff Reduction Technique	RR _v (cf)
Infiltration Basins	6,518
Total Site Reduction	6,518
% WQ_v. Reduction	100%

The green infrastructure practices recommended in the Design Manual were not applied to the stormwater management design on this site due to either site restrictions or the use of more feasible stormwater management practices in place of the more restrictive and/or maintenance intensive practices.

5.3.3 Channel Protection (C_p)

In accordance with the Design Manual, stream channel protection, designed to protect stream channels from erosion, is accomplished by providing 24-hour extended detention of the one-year, 24-hour storm event. The C_p requirement is typically satisfied by providing additional storage above the water quality (WQ_v) volume.

The one-year storm event was analyzed using the HydroCAD stormwater modeling program (TR-20) under the post development drainage conditions shown on Figure 3. Using a one-year, 24-hour design storm of 2.23 inches the required C_p was calculated as presented in Table 6.

Table 4: Channel Protection Volume Summary

	1-Year Design Storm (in)	Required C_p (ft ³)	C_p (provided) (ft ³)
SMA#1	2.23	1,198	5,845
SMA#2	2.23	1,306	9,656

5.3.4 Overbank Flood (Q_p)

Overbank Flood Control Criteria has been established to limit the frequency and magnitude of out-of-bank flooding generated through changes in runoff characteristics as a result of increased impervious surface area. In accordance with the Design Manual, providing sufficient storage volume to attenuate the post development 10-year, 24-hour peak discharge rate to the equivalent pre-development discharge rate controls overbank flooding.

The 10-year design storm event was analyzed using the HydroCAD stormwater modeling program (TR-20) under the post-development drainage conditions shown on Figure 3. Using a 10-year, 24-hour design storm of 3.71 inches, the stormwater management areas were designed with sufficient storage volume to limit the post-development 10-year, 24-hour peak discharge rate to the pre-development discharge rate. The following table presents the pre- and post-development discharge rates for the offsite discharge. As indicated, the post-development discharge rate is less than the pre-development rate as required.

Table 5: Overbank Flow Runoff Summary

Design Point	10-year (3.71") runoff rate (cfs)	
	Predevelopment	Post-Development
OFF1	0.00	0.00
OFF2	0.36	0.00
T (TOTAL)	0.36	0.00

5.3.5 Extreme Storm (Q_f)

In accordance with the Design Manual, the stormwater management system must attenuate the post development 100-year, 24-hour peak discharge rate to the predevelopment rate while providing safe passage of this storm event.

The 100-year storm event was analyzed using the HydroCAD stormwater modeling program (TR-20) under the post-development drainage conditions shown in Figure 3. Using a 100-year, 24-hour design storm of 6.22 inches, the stormwater management areas were designed with sufficient storage volume to limit the post-development 100-year, 24-hour peak discharge rate to the predevelopment discharge rate. The following table presents the pre- and post-development discharge rates for the offsite discharge. As indicated, the post-development discharge rate is less than the predevelopment rate as required.

Table 6: Extreme Storm Runoff Summary

Design Point	100-year (6.22") runoff rate (cfs)	
	Predevelopment	Post-Development
OFF1	0.25	0.01
OFF2	1.41	0.00
T (TOTAL)	1.66	0.01

6.0 Summary

Development of the proposed property will change the stormwater drainage characteristics of the site; impervious area will be added and the site will be re-graded to support the proposed improvements. Changes to the stormwater drainage characteristics of the site have been evaluated in accordance with the Design Manual. The proposed stormwater management system has been designed to comply with the recommendations in the Design Manual related to water quality, runoff reduction, channel protection, overbank flood control and extreme flood control for new development projects.

The proposed stormwater management system has been designed to attenuate and treat the stormwater runoff generated from the contributing areas for storm events up to and including the 100-year design storm event. The proposed stormwater management design includes the use of two infiltration basins. Stormwater modeling results, based on the proposed site layout, indicate the ability to maintain the overall post-development discharge rate from the site as summarized in Table 7.

Table 7: Post Development Stormwater Peak Discharge Rates

Peak Discharge Rates in cfs	1-Year Storm	10-Year Storm	100-Year Storm
Pre-Development	0.02	0.36	1.66
Post-Development	0.00	0.00	0.01
Overall Reduction (cfs)	0.02	0.36	1.65

Through the implementation of acceptable stormwater management practices, recommended by the NYS Stormwater Management Design Manual, the proposed project will not adversely affect adjacent or downstream properties.

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Checked By:



Brandon M. Ferguson, P.E.

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Figures

1. Site Location map
2. Pre-Development Drainage Map
3. Post Development Drainage Map

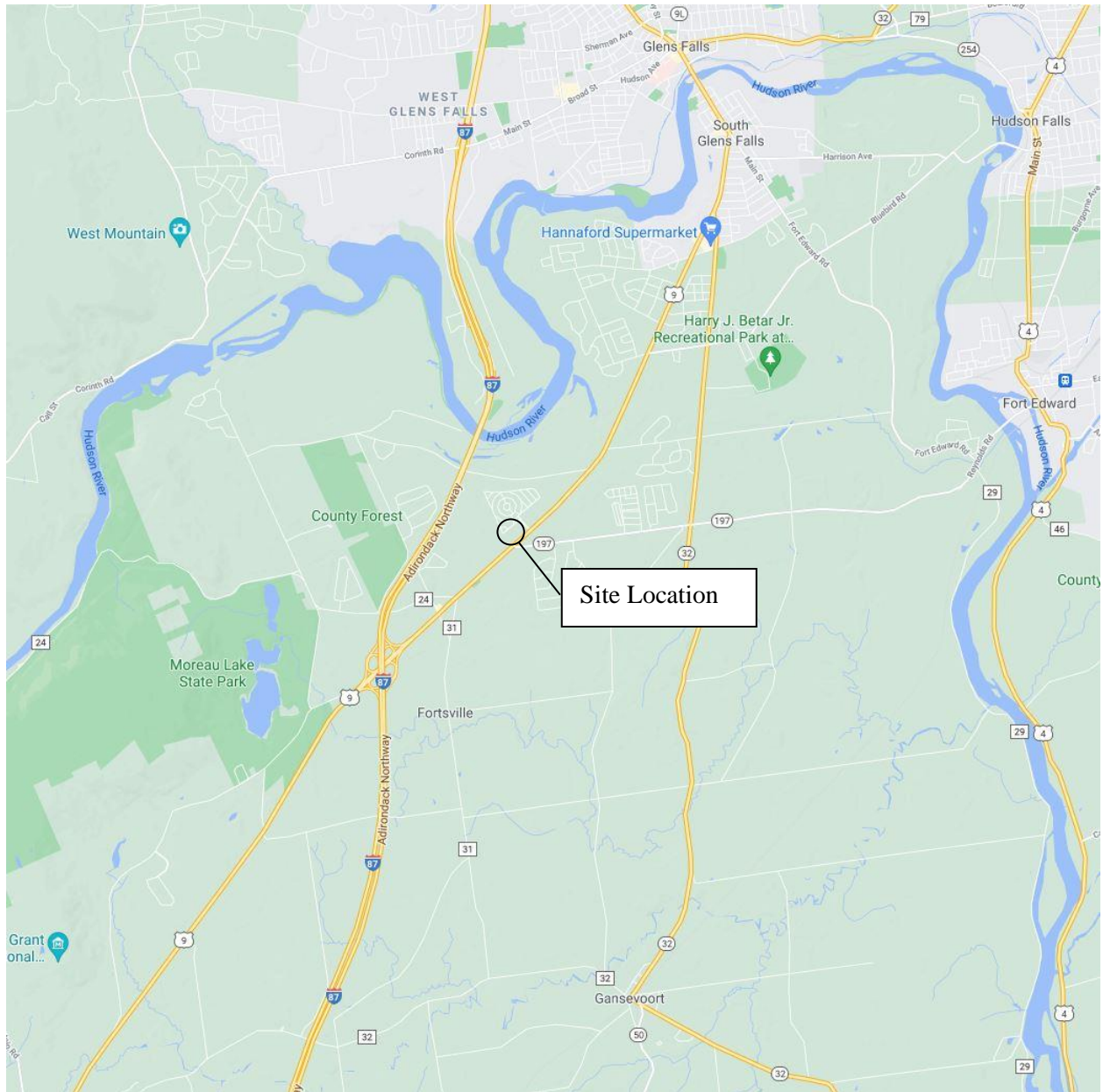
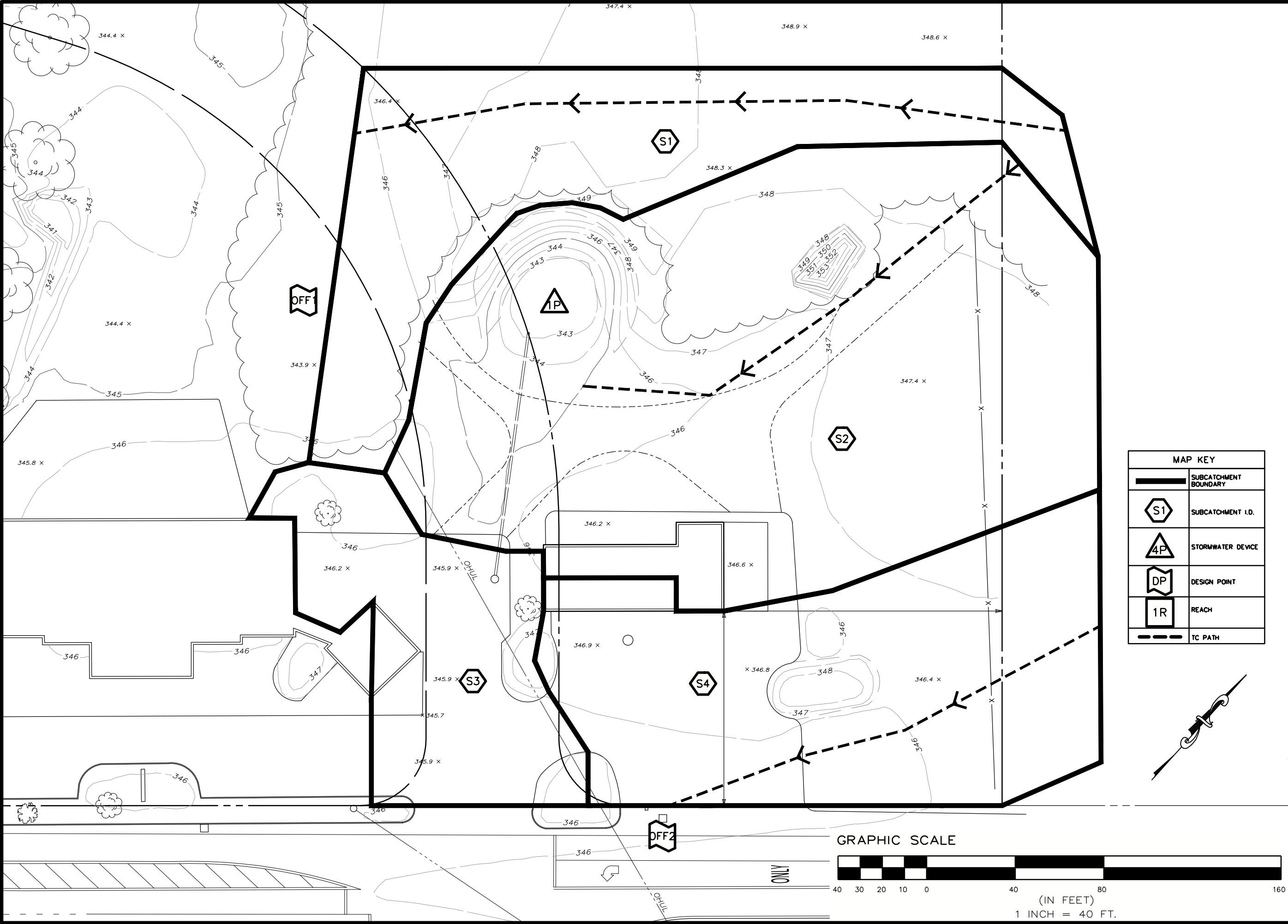


Figure 1: Site Location Map



HOFFMAN CAR WASH

1387 NYS ROUTE 9
TOWN OF MOREAU
SARATOGA COUNTY, NEW YORK

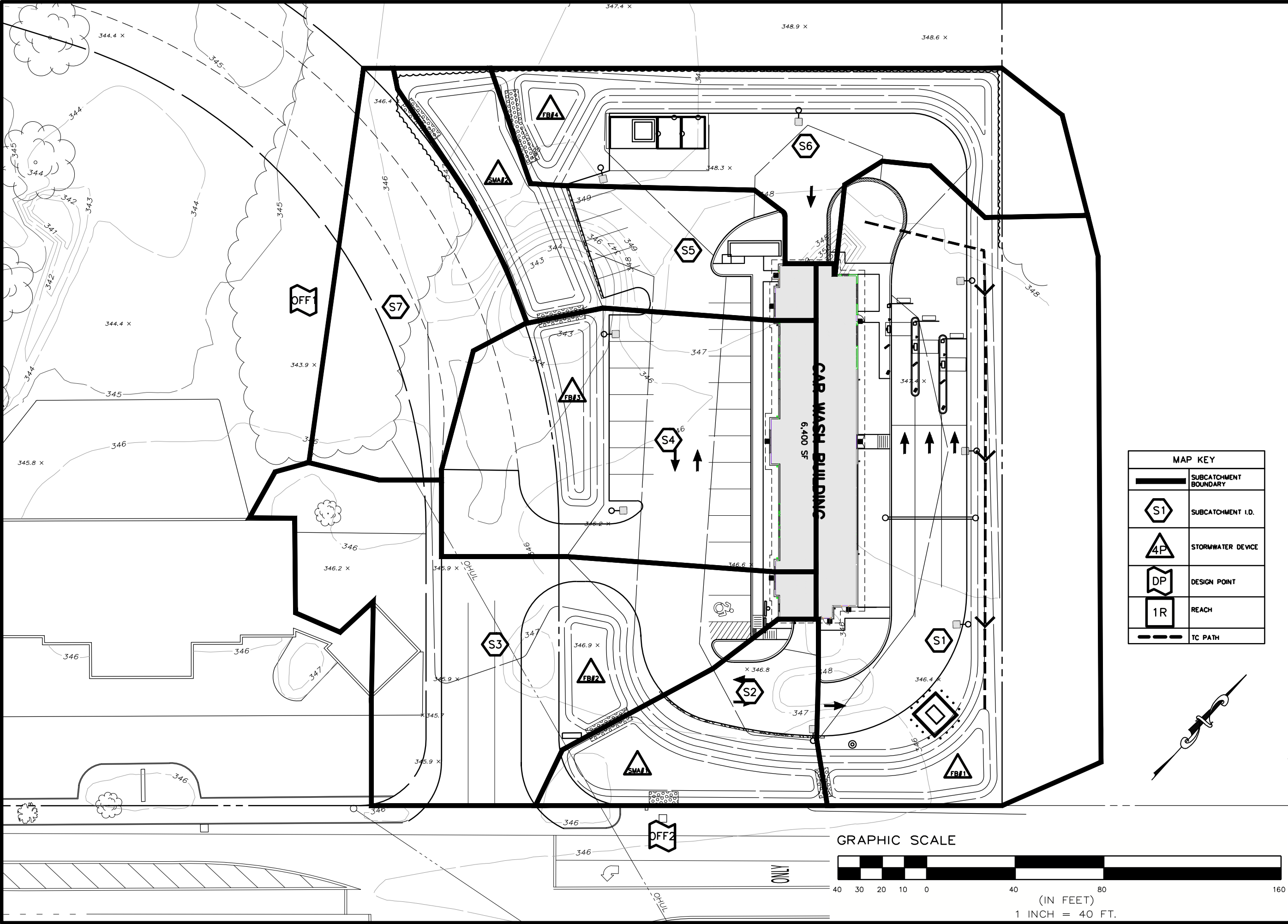
TAX MAP. No. 63.03-1-13.1
JULY 14, 2021

REVISION	DATE	BY

SCALE:
1" = 40'

SHEET TITLE:
PREDEVELOPMENT

SHEET NO.
2

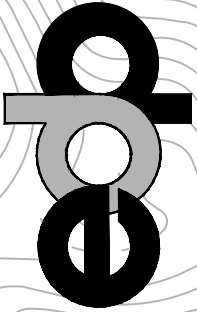


MAP KEY	
	SUBCATCHMENT BOUNDARY
	SUBCATCHMENT I.D.
	STORMWATER DEVICE
	DESIGN POINT
	REACH
	TC PATH

GRAPHIC SCALE



1 INCH = 40 FT.



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HOFFMAN CAR WASH

TAX MAP. No. 63.03-1-13.1
JULY 14, 2021

1387 NYS ROUTE 9
TOWN OF MOREAU
SARATOGA COUNTY, NEW YORK

REVISION	DATE	BY

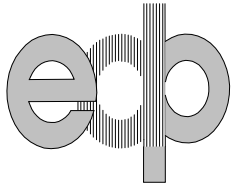
SCALE:
1" = 40'

SHEET TITLE:
POSTDEVELOPMENT

SHEET NO.
3

Attachment A

Water Quality Calculation



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Water Quality Volume (WQv) Calculations

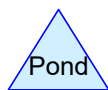
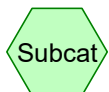
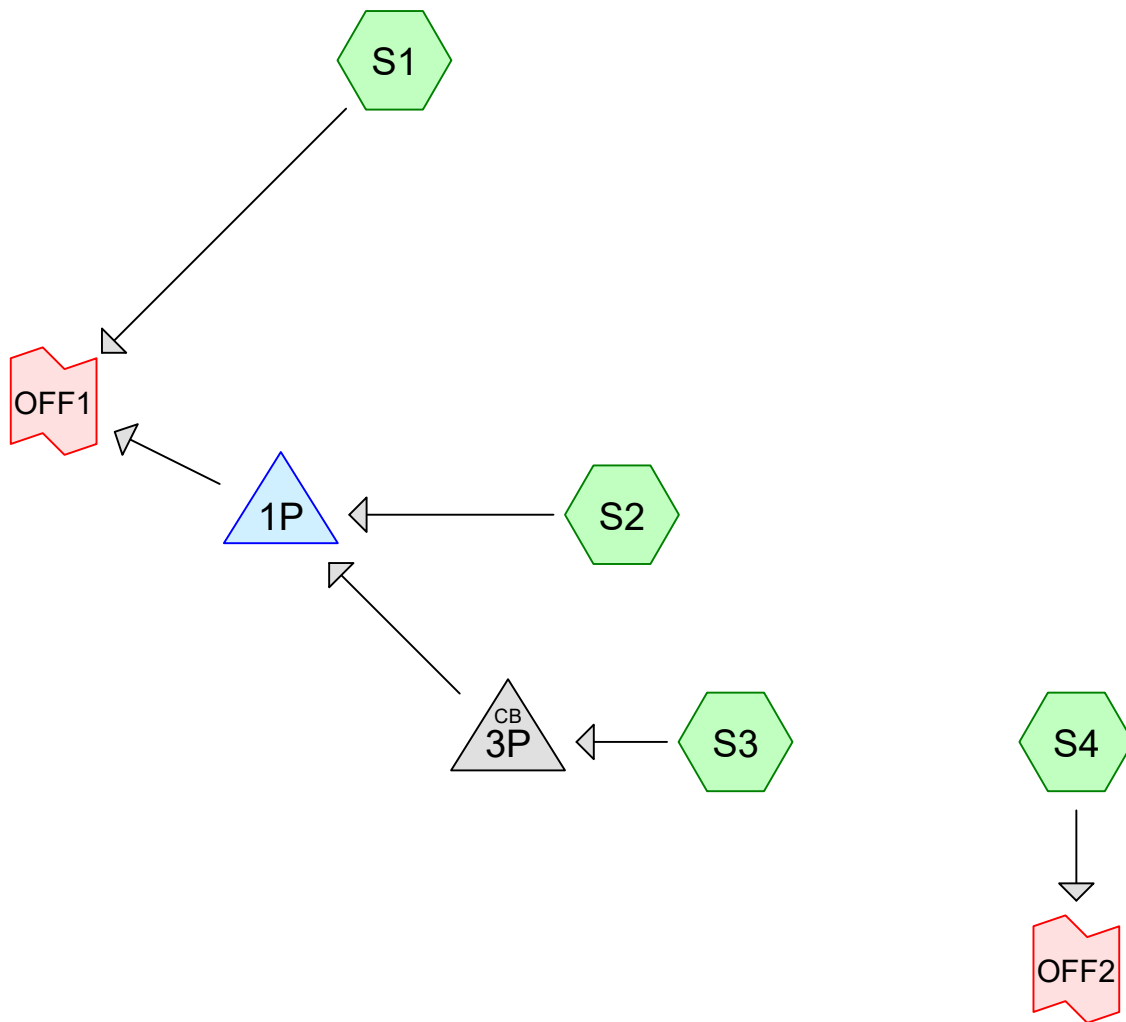
Project: Hoffman Car Wash Moreau

Date: 7/28/2021

SMA I.D.	AREA (SF)	I (SF)	I (%)	Rv	WQv (cu-ft)	WQv Provided (cu-ft)
FB #1	34,374	12,395	36%	0.37	1,180	1,394
FB #2	19,158	11,925	62%	0.61	1,072	1,103
FB #3	18,005	11,824	66%	0.64	1,058	2,361
FB #4	14,474	5,836	40%	0.41	548	1,660
Totals	86,011	41,980			3,858	6,518

Attachment B

Stormwater Modeling Calculations



Routing Diagram for PREDEVELOPMENT

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PREDEVELOPMENT

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 YR	Type II 24-hr		Default	24.00	1	2.23	2
2	10 YR	Type II 24-hr		Default	24.00	1	3.71	2
3	100 YR	Type II 24-hr		Default	24.00	1	6.22	2

PREDEVELOPMENT

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
52,487	39	>75% Grass cover, Good, HSG A (S1, S2, S3, S4)
29,977	98	Paved parking, HSG A (S1, S2, S3, S4)
30,938	30	Woods, Good, HSG A (S1, S2)
113,402	52	TOTAL AREA

PREDEVELOPMENT

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
113,402	HSG A	S1, S2, S3, S4
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
113,402		TOTAL AREA

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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
52,487	0	0	0	0	52,487	>75% Grass cover, Good
29,977	0	0	0	0	29,977	Paved parking
30,938	0	0	0	0	30,938	Woods, Good
113,402	0	0	0	0	113,402	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	3P	343.31	342.05	110.0	0.0115	0.012	10.0	0.0	0.0

PREDEVELOPMENT

Type II 24-hr 1 YR Rainfall=2.23"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1:	Runoff Area=22,224 sf 0.12% Impervious Runoff Depth=0.00" Flow Length=323' Tc=52.4 min CN=31 Runoff=0.00 cfs 0 cf
Subcatchment S2:	Runoff Area=52,195 sf 21.18% Impervious Runoff Depth=0.01" Flow Length=233' Tc=29.3 min CN=50 Runoff=0.00 cfs 22 cf
Subcatchment S3:	Runoff Area=13,072 sf 70.72% Impervious Runoff Depth=0.76" Tc=0.0 min CN=81 Runoff=0.47 cfs 823 cf
Subcatchment S4:	Runoff Area=25,911 sf 37.25% Impervious Runoff Depth=0.12" Flow Length=212' Tc=18.8 min CN=61 Runoff=0.02 cfs 266 cf
Pond 1P:	Peak Elev=343.19' Storage=845 cf Inflow=0.47 cfs 845 cf Outflow=0.00 cfs 0 cf
Pond 3P:	Peak Elev=343.67' Inflow=0.47 cfs 823 cf 10.0" Round Culvert n=0.012 L=110.0' S=0.0115 '/' Outflow=0.47 cfs 823 cf
Link OFF1:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
Link OFF2:	Inflow=0.02 cfs 266 cf Primary=0.02 cfs 266 cf
Total Runoff Area = 113,402 sf Runoff Volume = 1,111 cf Average Runoff Depth = 0.12" 73.57% Pervious = 83,425 sf 26.43% Impervious = 29,977 sf	

PREDEVELOPMENT

Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Subcatchment S1:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
20,701	30	Woods, Good, HSG A
1,496	39	>75% Grass cover, Good, HSG A
27	98	Paved parking, HSG A
22,224	31	Weighted Average
22,197		99.88% Pervious Area
27		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	100	0.0040	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
7.0	223	0.0112	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
52.4	323	Total			

Summary for Subcatchment S2:

Runoff = 0.00 cfs @ 24.04 hrs, Volume= 22 cf, Depth= 0.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
10,237	30	Woods, Good, HSG A
30,905	39	>75% Grass cover, Good, HSG A
11,053	98	Paved parking, HSG A
52,195	50	Weighted Average
41,142		78.82% Pervious Area
11,053		21.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	33	0.0040	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
9.4	67	0.0130	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.2	133	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
29.3	233	Total			

PREDEVELOPMENT

Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Subcatchment S3:

Runoff = 0.47 cfs @ 11.90 hrs, Volume= 823 cf, Depth= 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
9,244	98	Paved parking, HSG A
3,828	39	>75% Grass cover, Good, HSG A
13,072	81	Weighted Average
3,828		29.28% Pervious Area
9,244		70.72% Impervious Area

Summary for Subcatchment S4:

Runoff = 0.02 cfs @ 12.27 hrs, Volume= 266 cf, Depth= 0.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
9,653	98	Paved parking, HSG A
16,258	39	>75% Grass cover, Good, HSG A
25,911	61	Weighted Average
16,258		62.75% Pervious Area
9,653		37.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0060	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	48	0.0068	1.24		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.6	64	0.0068	1.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
18.8	212	Total			

Summary for Pond 1P:

Inflow Area = 65,267 sf, 31.10% Impervious, Inflow Depth = 0.16" for 1 YR event

Inflow = 0.47 cfs @ 11.90 hrs, Volume= 845 cf

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Peak Elev= 343.19' @ 25.70 hrs Surf.Area= 1,322 sf Storage= 845 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

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Type II 24-hr 1 YR Rainfall=2.23"

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Volume	Invert	Avail.Storage	Storage Description
#1	342.05'	8,575 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.05	135	0	0
343.00	1,157	614	614
344.00	2,041	1,599	2,213
345.00	5,082	3,562	5,774
345.50	6,123	2,801	8,575

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	45.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=342.05' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 3P:**

Inflow Area = 13,072 sf, 70.72% Impervious, Inflow Depth = 0.76" for 1 YR event
 Inflow = 0.47 cfs @ 11.90 hrs, Volume= 823 cf
 Outflow = 0.47 cfs @ 11.90 hrs, Volume= 823 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.47 cfs @ 11.90 hrs, Volume= 823 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 343.67' @ 11.90 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	343.31'	10.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.31' / 342.05' S= 0.0115 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=0.46 cfs @ 11.90 hrs HW=343.67' (Free Discharge)↑**1=Culvert** (Inlet Controls 0.46 cfs @ 2.04 fps)**Summary for Link OFF1:**

Inflow Area = 87,491 sf, 23.23% Impervious, Inflow Depth = 0.00" for 1 YR event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Link OFF2:

Inflow Area = 25,911 sf, 37.25% Impervious, Inflow Depth = 0.12" for 1 YR event

Inflow = 0.02 cfs @ 12.27 hrs, Volume= 266 cf

Primary = 0.02 cfs @ 12.27 hrs, Volume= 266 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

PREDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Runoff Area=22,224 sf 0.12% Impervious Runoff Depth=0.00"
Flow Length=323' Tc=52.4 min CN=31 Runoff=0.00 cfs 0 cf

Subcatchment S2: Runoff Area=52,195 sf 21.18% Impervious Runoff Depth=0.25"
Flow Length=233' Tc=29.3 min CN=50 Runoff=0.08 cfs 1,086 cf

Subcatchment S3: Runoff Area=13,072 sf 70.72% Impervious Runoff Depth=1.88"
Tc=0.0 min CN=81 Runoff=1.15 cfs 2,048 cf

Subcatchment S4: Runoff Area=25,911 sf 37.25% Impervious Runoff Depth=0.67"
Flow Length=212' Tc=18.8 min CN=61 Runoff=0.36 cfs 1,446 cf

Pond 1P: Peak Elev=344.36' Storage=3,134 cf Inflow=1.15 cfs 3,134 cf
Outflow=0.00 cfs 0 cf

Pond 3P: Peak Elev=343.93' Inflow=1.15 cfs 2,048 cf
10.0" Round Culvert n=0.012 L=110.0' S=0.0115 '/' Outflow=1.15 cfs 2,048 cf

Link OFF1: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link OFF2: Inflow=0.36 cfs 1,446 cf
Primary=0.36 cfs 1,446 cf

Total Runoff Area = 113,402 sf Runoff Volume = 4,581 cf Average Runoff Depth = 0.48"
73.57% Pervious = 83,425 sf 26.43% Impervious = 29,977 sf

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Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Subcatchment S1:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
20,701	30	Woods, Good, HSG A
1,496	39	>75% Grass cover, Good, HSG A
27	98	Paved parking, HSG A
22,224	31	Weighted Average
22,197		99.88% Pervious Area
27		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	100	0.0040	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
7.0	223	0.0112	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
52.4	323	Total			

Summary for Subcatchment S2:

Runoff = 0.08 cfs @ 12.43 hrs, Volume= 1,086 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
10,237	30	Woods, Good, HSG A
30,905	39	>75% Grass cover, Good, HSG A
11,053	98	Paved parking, HSG A
52,195	50	Weighted Average
41,142		78.82% Pervious Area
11,053		21.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	33	0.0040	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
9.4	67	0.0130	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.2	133	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
29.3	233	Total			

PREDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Subcatchment S3:

Runoff = 1.15 cfs @ 11.89 hrs, Volume= 2,048 cf, Depth= 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
9,244	98	Paved parking, HSG A
3,828	39	>75% Grass cover, Good, HSG A
13,072	81	Weighted Average
3,828		29.28% Pervious Area
9,244		70.72% Impervious Area

Summary for Subcatchment S4:

Runoff = 0.36 cfs @ 12.15 hrs, Volume= 1,446 cf, Depth= 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
9,653	98	Paved parking, HSG A
16,258	39	>75% Grass cover, Good, HSG A
25,911	61	Weighted Average
16,258		62.75% Pervious Area
9,653		37.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0060	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	48	0.0068	1.24		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.6	64	0.0068	1.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
18.8	212	Total			

Summary for Pond 1P:

Inflow Area = 65,267 sf, 31.10% Impervious, Inflow Depth = 0.58" for 10 YR event

Inflow = 1.15 cfs @ 11.89 hrs, Volume= 3,134 cf

Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min

Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 344.36' @ 25.70 hrs Surf.Area= 3,126 sf Storage= 3,134 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

PREDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Volume	Invert	Avail.Storage	Storage Description
#1	342.05'	8,575 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.05	135	0	0
343.00	1,157	614	614
344.00	2,041	1,599	2,213
345.00	5,082	3,562	5,774
345.50	6,123	2,801	8,575

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	45.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=342.05' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 3P:**

Inflow Area = 13,072 sf, 70.72% Impervious, Inflow Depth = 1.88" for 10 YR event
 Inflow = 1.15 cfs @ 11.89 hrs, Volume= 2,048 cf
 Outflow = 1.15 cfs @ 11.89 hrs, Volume= 2,048 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.15 cfs @ 11.89 hrs, Volume= 2,048 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 343.93' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	343.31'	10.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.31' / 342.05' S= 0.0115 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=1.11 cfs @ 11.89 hrs HW=343.91' (Free Discharge)↑**1=Culvert** (Inlet Controls 1.11 cfs @ 2.64 fps)**Summary for Link OFF1:**

Inflow Area = 87,491 sf, 23.23% Impervious, Inflow Depth = 0.00" for 10 YR event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

PREDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Link OFF2:

Inflow Area = 25,911 sf, 37.25% Impervious, Inflow Depth = 0.67" for 10 YR event
Inflow = 0.36 cfs @ 12.15 hrs, Volume= 1,446 cf
Primary = 0.36 cfs @ 12.15 hrs, Volume= 1,446 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

PREDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: Runoff Area=22,224 sf 0.12% Impervious Runoff Depth=0.13"
Flow Length=323' Tc=52.4 min CN=31 Runoff=0.01 cfs 241 cf

Subcatchment S2: Runoff Area=52,195 sf 21.18% Impervious Runoff Depth=1.25"
Flow Length=233' Tc=29.3 min CN=50 Runoff=1.04 cfs 5,447 cf

Subcatchment S3: Runoff Area=13,072 sf 70.72% Impervious Runoff Depth=4.08"
Tc=0.0 min CN=81 Runoff=2.42 cfs 4,450 cf

Subcatchment S4: Runoff Area=25,911 sf 37.25% Impervious Runoff Depth=2.15"
Flow Length=212' Tc=18.8 min CN=61 Runoff=1.41 cfs 4,651 cf

Pond 1P: Peak Elev=345.02' Storage=5,852 cf Inflow=2.45 cfs 9,897 cf
Outflow=0.24 cfs 4,123 cf

Pond 3P: Peak Elev=344.57' Inflow=2.42 cfs 4,450 cf
10.0" Round Culvert n=0.012 L=110.0' S=0.0115 '/' Outflow=2.42 cfs 4,450 cf

Link OFF1: Inflow=0.25 cfs 4,364 cf
Primary=0.25 cfs 4,364 cf

Link OFF2: Inflow=1.41 cfs 4,651 cf
Primary=1.41 cfs 4,651 cf

Total Runoff Area = 113,402 sf Runoff Volume = 14,789 cf Average Runoff Depth = 1.56"
73.57% Pervious = 83,425 sf 26.43% Impervious = 29,977 sf

PREDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Summary for Subcatchment S1:

Runoff = 0.01 cfs @ 15.55 hrs, Volume= 241 cf, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
20,701	30	Woods, Good, HSG A
1,496	39	>75% Grass cover, Good, HSG A
27	98	Paved parking, HSG A
22,224	31	Weighted Average
22,197		99.88% Pervious Area
27		0.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
45.4	100	0.0040	0.04		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
7.0	223	0.0112	0.53		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
52.4	323	Total			

Summary for Subcatchment S2:

Runoff = 1.04 cfs @ 12.28 hrs, Volume= 5,447 cf, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
10,237	30	Woods, Good, HSG A
30,905	39	>75% Grass cover, Good, HSG A
11,053	98	Paved parking, HSG A
52,195	50	Weighted Average
41,142		78.82% Pervious Area
11,053		21.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	33	0.0040	0.03		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.59"
9.4	67	0.0130	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.2	133	0.0150	1.84		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
29.3	233	Total			

PREDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Summary for Subcatchment S3:

Runoff = 2.42 cfs @ 11.89 hrs, Volume= 4,450 cf, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
9,244	98	Paved parking, HSG A
3,828	39	>75% Grass cover, Good, HSG A
13,072	81	Weighted Average
3,828		29.28% Pervious Area
9,244		70.72% Impervious Area

Summary for Subcatchment S4:

Runoff = 1.41 cfs @ 12.12 hrs, Volume= 4,651 cf, Depth= 2.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
9,653	98	Paved parking, HSG A
16,258	39	>75% Grass cover, Good, HSG A
25,911	61	Weighted Average
16,258		62.75% Pervious Area
9,653		37.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0060	0.09		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	48	0.0068	1.24		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
0.6	64	0.0068	1.67		Shallow Concentrated Flow, Paved Kv= 20.3 fps
18.8	212	Total			

Summary for Pond 1P:

Inflow Area = 65,267 sf, 31.10% Impervious, Inflow Depth = 1.82" for 100 YR event

Inflow = 2.45 cfs @ 11.89 hrs, Volume= 9,897 cf

Outflow = 0.24 cfs @ 13.65 hrs, Volume= 4,123 cf, Atten= 90%, Lag= 105.5 min

Primary = 0.24 cfs @ 13.65 hrs, Volume= 4,123 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Peak Elev= 345.02' @ 13.65 hrs Surf.Area= 5,114 sf Storage= 5,852 cf

Plug-Flow detention time= 349.8 min calculated for 4,123 cf (42% of inflow)

Center-of-Mass det. time= 195.7 min (1,057.0 - 861.2)

PREDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Volume	Invert	Avail.Storage	Storage Description
#1	342.05'	8,575 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.05	135	0	0
343.00	1,157	614	614
344.00	2,041	1,599	2,213
345.00	5,082	3,562	5,774
345.50	6,123	2,801	8,575

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	45.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.23 cfs @ 13.65 hrs HW=345.02' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.23 cfs @ 0.33 fps)**Summary for Pond 3P:**

Inflow Area = 13,072 sf, 70.72% Impervious, Inflow Depth = 4.08" for 100 YR event
 Inflow = 2.42 cfs @ 11.89 hrs, Volume= 4,450 cf
 Outflow = 2.42 cfs @ 11.89 hrs, Volume= 4,450 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.42 cfs @ 11.89 hrs, Volume= 4,450 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.57' @ 11.89 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	343.31'	10.0" Round Culvert L= 110.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 343.31' / 342.05' S= 0.0115 ' S= 0.0115 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.55 sf

Primary OutFlow Max=2.32 cfs @ 11.89 hrs HW=344.51' (Free Discharge)↑**1=Culvert** (Inlet Controls 2.32 cfs @ 4.25 fps)**Summary for Link OFF1:**

Inflow Area = 87,491 sf, 23.23% Impervious, Inflow Depth = 0.60" for 100 YR event
 Inflow = 0.25 cfs @ 13.65 hrs, Volume= 4,364 cf
 Primary = 0.25 cfs @ 13.65 hrs, Volume= 4,364 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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Type II 24-hr 100 YR Rainfall=6.22"

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Summary for Link OFF2:

Inflow Area = 25,911 sf, 37.25% Impervious, Inflow Depth = 2.15" for 100 YR event

Inflow = 1.41 cfs @ 12.12 hrs, Volume= 4,651 cf

Primary = 1.41 cfs @ 12.12 hrs, Volume= 4,651 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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1 YR Event

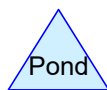
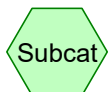
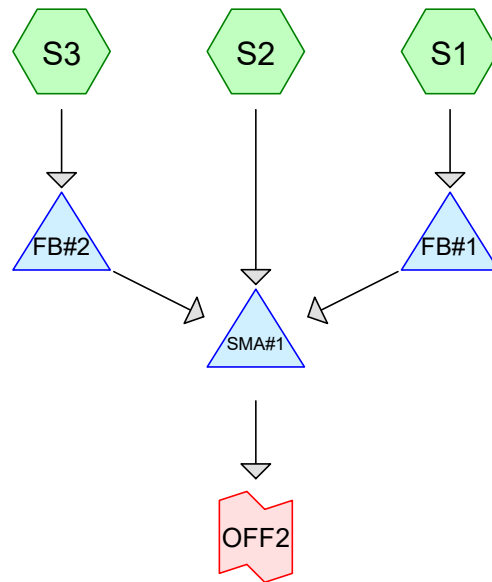
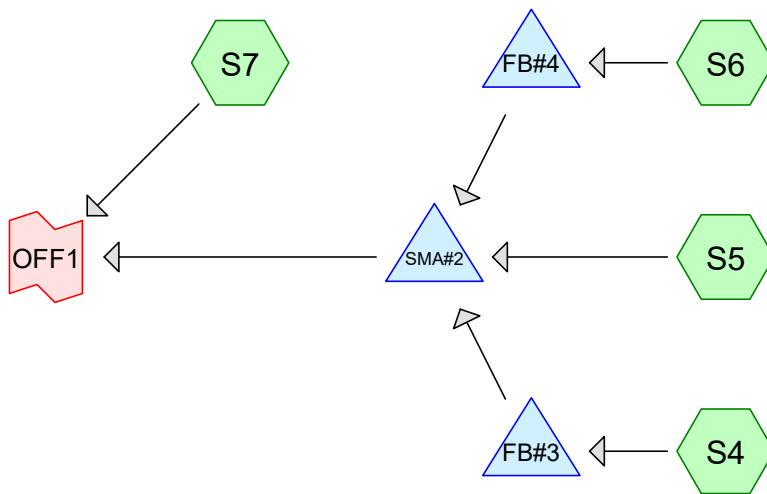
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Routing Diagram for POSTDEVELOPMENT

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Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1 YR	Type II 24-hr		Default	24.00	1	2.23	2
2	10 YR	Type II 24-hr		Default	24.00	1	3.71	2
3	100 YR	Type II 24-hr		Default	24.00	1	6.22	2

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
54,874	39	>75% Grass cover, Good, HSG A (S1, S2, S3, S4, S5, S6, S7)
48,800	98	Paved parking, HSG A (S1, S2, S3, S4, S5, S6)
9,725	30	Woods, Good, HSG A (S1, S6, S7)
113,399	64	TOTAL AREA

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Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
113,399	HSG A	S1, S2, S3, S4, S5, S6, S7
0	HSG B	
0	HSG C	
0	HSG D	
0	Other	
113,399		TOTAL AREA

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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
54,874	0	0	0	0	54,874	>75% Grass cover, Good
48,800	0	0	0	0	48,800	Paved parking
9,725	0	0	0	0	9,725	Woods, Good
113,399	0	0	0	0	113,399	TOTAL AREA

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Type II 24-hr 1 YR Rainfall=2.23"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1:	Runoff Area=34,373 sf 36.06% Impervious Runoff Depth=0.11" Flow Length=262' Tc=8.9 min CN=60 Runoff=0.02 cfs 304 cf
Subcatchment S2:	Runoff Area=6,829 sf 30.94% Impervious Runoff Depth=0.06" Tc=0.0 min CN=57 Runoff=0.00 cfs 36 cf
Subcatchment S3:	Runoff Area=19,158 sf 62.25% Impervious Runoff Depth=0.54" Tc=0.0 min CN=76 Runoff=0.47 cfs 858 cf
Subcatchment S4:	Runoff Area=18,005 sf 65.67% Impervious Runoff Depth=0.62" Tc=0.0 min CN=78 Runoff=0.52 cfs 928 cf
Subcatchment S5:	Runoff Area=9,885 sf 47.62% Impervious Runoff Depth=0.25" Tc=0.0 min CN=67 Runoff=0.09 cfs 207 cf
Subcatchment S6:	Runoff Area=14,474 sf 40.32% Impervious Runoff Depth=0.14" Tc=0.0 min CN=62 Runoff=0.04 cfs 171 cf
Subcatchment S7:	Runoff Area=10,675 sf 0.00% Impervious Runoff Depth=0.00" Tc=0.0 min CN=33 Runoff=0.00 cfs 0 cf
Pond FB#1:	Peak Elev=343.97' Storage=304 cf Inflow=0.02 cfs 304 cf Outflow=0.00 cfs 0 cf
Pond FB#2:	Peak Elev=344.77' Storage=858 cf Inflow=0.47 cfs 858 cf Outflow=0.00 cfs 0 cf
Pond FB#3:	Peak Elev=345.02' Storage=928 cf Inflow=0.52 cfs 928 cf Outflow=0.00 cfs 0 cf
Pond FB#4:	Peak Elev=344.39' Storage=170 cf Inflow=0.04 cfs 171 cf Outflow=0.00 cfs 0 cf
Pond SMA#1:	Peak Elev=343.50' Storage=0 cf Inflow=0.00 cfs 36 cf Discarded=0.00 cfs 36 cf Primary=0.00 cfs 0 cf Outflow=0.00 cfs 36 cf
Pond SMA#2:	Peak Elev=344.00' Storage=10 cf Inflow=0.09 cfs 207 cf Discarded=0.07 cfs 207 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 207 cf
Link OFF1:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
Link OFF2:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf

Total Runoff Area = 113,399 sf Runoff Volume = 2,503 cf Average Runoff Depth = 0.26"
56.97% Pervious = 64,599 sf 43.03% Impervious = 48,800 sf

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Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Subcatchment S1:

Runoff = 0.02 cfs @ 12.11 hrs, Volume= 304 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
20,763	39	>75% Grass cover, Good, HSG A
12,395	98	Paved parking, HSG A
1,215	30	Woods, Good, HSG A
34,373	60	Weighted Average
21,978		63.94% Pervious Area
12,395		36.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	17	0.0300	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	30	0.0150	0.87		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.59"
4.3	52	0.0560	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.8	163	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.9	262	Total			

Summary for Subcatchment S2:

Runoff = 0.00 cfs @ 12.86 hrs, Volume= 36 cf, Depth= 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
4,716	39	>75% Grass cover, Good, HSG A
2,113	98	Paved parking, HSG A
6,829	57	Weighted Average
4,716		69.06% Pervious Area
2,113		30.94% Impervious Area

Summary for Subcatchment S3:

Runoff = 0.47 cfs @ 11.90 hrs, Volume= 858 cf, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

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Type II 24-hr 1 YR Rainfall=2.23"

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Area (sf)	CN	Description
11,925	98	Paved parking, HSG A
7,233	39	>75% Grass cover, Good, HSG A
19,158	76	Weighted Average
7,233		37.75% Pervious Area
11,925		62.25% Impervious Area

Summary for Subcatchment S4:

Runoff = 0.52 cfs @ 11.90 hrs, Volume= 928 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
6,181	39	>75% Grass cover, Good, HSG A
11,824	98	Paved parking, HSG A
18,005	78	Weighted Average
6,181		34.33% Pervious Area
11,824		65.67% Impervious Area

Summary for Subcatchment S5:

Runoff = 0.09 cfs @ 11.92 hrs, Volume= 207 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
5,178	39	>75% Grass cover, Good, HSG A
4,707	98	Paved parking, HSG A
9,885	67	Weighted Average
5,178		52.38% Pervious Area
4,707		47.62% Impervious Area

Summary for Subcatchment S6:

Runoff = 0.04 cfs @ 11.95 hrs, Volume= 171 cf, Depth= 0.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
6,822	39	>75% Grass cover, Good, HSG A
5,836	98	Paved parking, HSG A
1,816	30	Woods, Good, HSG A
14,474	62	Weighted Average
8,638		59.68% Pervious Area
5,836		40.32% Impervious Area

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Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Subcatchment S7:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 1 YR Rainfall=2.23"

Area (sf)	CN	Description
3,981	39	>75% Grass cover, Good, HSG A
6,694	30	Woods, Good, HSG A
10,675	33	Weighted Average
10,675		100.00% Pervious Area

Summary for Pond FB#1:

Inflow Area = 34,373 sf, 36.06% Impervious, Inflow Depth = 0.11" for 1 YR event
 Inflow = 0.02 cfs @ 12.11 hrs, Volume= 304 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 343.97' @ 24.55 hrs Surf.Area= 764 sf Storage= 304 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	2,148 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	530	0	0
344.00	779	327	327
345.00	1,355	1,067	1,394
345.50	1,661	754	2,148

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=343.50' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Pond FB#2:

Inflow Area = 19,158 sf, 62.25% Impervious, Inflow Depth = 0.54" for 1 YR event
 Inflow = 0.47 cfs @ 11.90 hrs, Volume= 858 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.77' @ 24.05 hrs Surf.Area= 1,033 sf Storage= 858 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	343.75'	1,716 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.75	652	0	0
344.00	739	174	174
345.00	1,120	930	1,103
345.50	1,332	613	1,716

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=343.75' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond FB#3:

Inflow Area = 18,005 sf, 65.67% Impervious, Inflow Depth = 0.62" for 1 YR event
 Inflow = 0.52 cfs @ 11.90 hrs, Volume= 928 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.02' @ 24.05 hrs Surf.Area= 1,180 sf Storage= 928 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	3,317 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	634	0	0
345.00	1,166	900	900
346.00	1,755	1,461	2,361
346.50	2,071	957	3,317

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond FB#4:

Inflow Area = 14,474 sf, 40.32% Impervious, Inflow Depth = 0.14" for 1 YR event
 Inflow = 0.04 cfs @ 11.95 hrs, Volume= 171 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.39' @ 24.05 hrs Surf.Area= 492 sf Storage= 170 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	2,653 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	380	0	0
345.00	667	524	524
346.00	1,605	1,136	1,660
346.50	2,368	993	2,653

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	20.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

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Type II 24-hr 1 YR Rainfall=2.23"

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Summary for Pond SMA#1:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 0.01" for 1 YR event
 Inflow = 0.00 cfs @ 12.86 hrs, Volume= 36 cf
 Outflow = 0.00 cfs @ 12.89 hrs, Volume= 36 cf, Atten= 0%, Lag= 1.8 min
 Discarded = 0.00 cfs @ 12.89 hrs, Volume= 36 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 343.50' @ 12.89 hrs Surf.Area= 1,278 sf Storage= 0 cf

Plug-Flow detention time= 1.7 min calculated for 36 cf (100% of inflow)
 Center-of-Mass det. time= 1.7 min (1,045.8 - 1,044.0)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	3,882 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	1,278	0	0
344.00	1,630	727	727
345.00	2,376	2,003	2,730
345.25	2,571	618	3,348
345.45	2,770	534	3,882

Device	Routing	Invert	Outlet Devices
#1	Discarded	343.50'	8.000 in/hr Exfiltration over Surface area
#2	Primary	345.25'	10.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.24 cfs @ 12.89 hrs HW=343.50' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=343.50' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond SMA#2:

Inflow Area = 42,364 sf, 52.80% Impervious, Inflow Depth = 0.06" for 1 YR event
 Inflow = 0.09 cfs @ 11.92 hrs, Volume= 207 cf
 Outflow = 0.07 cfs @ 11.95 hrs, Volume= 207 cf, Atten= 17%, Lag= 2.2 min
 Discarded = 0.07 cfs @ 11.95 hrs, Volume= 207 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.00' @ 11.95 hrs Surf.Area= 1,998 sf Storage= 10 cf

Plug-Flow detention time= 2.2 min calculated for 207 cf (100% of inflow)

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Type II 24-hr 1 YR Rainfall=2.23"

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Center-of-Mass det. time= 2.2 min (925.0 - 922.8)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	7,584 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,994	0	0
345.00	2,803	2,399	2,399
346.00	3,670	3,237	5,635
346.50	4,125	1,949	7,584

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	8.000 in/hr Exfiltration over Surface area
#2	Primary	346.00'	15.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.37 cfs @ 11.95 hrs HW=344.00' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link OFF1:

Inflow Area = 53,039 sf, 42.17% Impervious, Inflow Depth = 0.00" for 1 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Summary for Link OFF2:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 0.00" for 1 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1:	Runoff Area=34,373 sf 36.06% Impervious Runoff Depth=0.62" Flow Length=262' Tc=8.9 min CN=60 Runoff=0.64 cfs 1,789 cf
Subcatchment S2:	Runoff Area=6,829 sf 30.94% Impervious Runoff Depth=0.50" Tc=0.0 min CN=57 Runoff=0.13 cfs 283 cf
Subcatchment S3:	Runoff Area=19,158 sf 62.25% Impervious Runoff Depth=1.52" Tc=0.0 min CN=76 Runoff=1.38 cfs 2,426 cf
Subcatchment S4:	Runoff Area=18,005 sf 65.67% Impervious Runoff Depth=1.66" Tc=0.0 min CN=78 Runoff=1.41 cfs 2,489 cf
Subcatchment S5:	Runoff Area=9,885 sf 47.62% Impervious Runoff Depth=0.97" Tc=0.0 min CN=67 Runoff=0.45 cfs 800 cf
Subcatchment S6:	Runoff Area=14,474 sf 40.32% Impervious Runoff Depth=0.72" Tc=0.0 min CN=62 Runoff=0.46 cfs 864 cf
Subcatchment S7:	Runoff Area=10,675 sf 0.00% Impervious Runoff Depth=0.00" Tc=0.0 min CN=33 Runoff=0.00 cfs 0 cf
Pond FB#1:	Peak Elev=345.01' Storage=1,402 cf Inflow=0.64 cfs 1,789 cf Outflow=0.02 cfs 395 cf
Pond FB#2:	Peak Elev=345.03' Storage=1,140 cf Inflow=1.38 cfs 2,426 cf Outflow=0.16 cfs 1,323 cf
Pond FB#3:	Peak Elev=346.00' Storage=2,366 cf Inflow=1.41 cfs 2,489 cf Outflow=0.01 cfs 128 cf
Pond FB#4:	Peak Elev=345.40' Storage=864 cf Inflow=0.46 cfs 864 cf Outflow=0.00 cfs 0 cf
Pond SMA#1:	Peak Elev=343.51' Storage=19 cf Inflow=0.18 cfs 2,001 cf Discarded=0.18 cfs 2,001 cf Primary=0.00 cfs 0 cf Outflow=0.18 cfs 2,001 cf
Pond SMA#2:	Peak Elev=344.03' Storage=51 cf Inflow=0.45 cfs 928 cf Discarded=0.38 cfs 928 cf Primary=0.00 cfs 0 cf Outflow=0.38 cfs 928 cf
Link OFF1:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf
Link OFF2:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf

Total Runoff Area = 113,399 sf Runoff Volume = 8,651 cf Average Runoff Depth = 0.92"
56.97% Pervious = 64,599 sf 43.03% Impervious = 48,800 sf

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Subcatchment S1:

Runoff = 0.64 cfs @ 12.03 hrs, Volume= 1,789 cf, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
20,763	39	>75% Grass cover, Good, HSG A
12,395	98	Paved parking, HSG A
1,215	30	Woods, Good, HSG A
34,373	60	Weighted Average
21,978		63.94% Pervious Area
12,395		36.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	17	0.0300	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	30	0.0150	0.87		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.59"
4.3	52	0.0560	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.8	163	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.9	262	Total			

Summary for Subcatchment S2:

Runoff = 0.13 cfs @ 11.91 hrs, Volume= 283 cf, Depth= 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
4,716	39	>75% Grass cover, Good, HSG A
2,113	98	Paved parking, HSG A
6,829	57	Weighted Average
4,716		69.06% Pervious Area
2,113		30.94% Impervious Area

Summary for Subcatchment S3:

Runoff = 1.38 cfs @ 11.89 hrs, Volume= 2,426 cf, Depth= 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Area (sf)	CN	Description
11,925	98	Paved parking, HSG A
7,233	39	>75% Grass cover, Good, HSG A
19,158	76	Weighted Average
7,233		37.75% Pervious Area
11,925		62.25% Impervious Area

Summary for Subcatchment S4:

Runoff = 1.41 cfs @ 11.89 hrs, Volume= 2,489 cf, Depth= 1.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
6,181	39	>75% Grass cover, Good, HSG A
11,824	98	Paved parking, HSG A
18,005	78	Weighted Average
6,181		34.33% Pervious Area
11,824		65.67% Impervious Area

Summary for Subcatchment S5:

Runoff = 0.45 cfs @ 11.90 hrs, Volume= 800 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
5,178	39	>75% Grass cover, Good, HSG A
4,707	98	Paved parking, HSG A
9,885	67	Weighted Average
5,178		52.38% Pervious Area
4,707		47.62% Impervious Area

Summary for Subcatchment S6:

Runoff = 0.46 cfs @ 11.90 hrs, Volume= 864 cf, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
6,822	39	>75% Grass cover, Good, HSG A
5,836	98	Paved parking, HSG A
1,816	30	Woods, Good, HSG A
14,474	62	Weighted Average
8,638		59.68% Pervious Area
5,836		40.32% Impervious Area

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Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Subcatchment S7:

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 YR Rainfall=3.71"

Area (sf)	CN	Description
3,981	39	>75% Grass cover, Good, HSG A
6,694	30	Woods, Good, HSG A
10,675	33	Weighted Average
10,675		100.00% Pervious Area

Summary for Pond FB#1:

Inflow Area = 34,373 sf, 36.06% Impervious, Inflow Depth = 0.62" for 10 YR event
 Inflow = 0.64 cfs @ 12.03 hrs, Volume= 1,789 cf
 Outflow = 0.02 cfs @ 18.25 hrs, Volume= 395 cf, Atten= 97%, Lag= 373.6 min
 Primary = 0.02 cfs @ 18.25 hrs, Volume= 395 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.01' @ 18.25 hrs Surf.Area= 1,359 sf Storage= 1,402 cf

Plug-Flow detention time= 531.4 min calculated for 395 cf (22% of inflow)
 Center-of-Mass det. time= 347.9 min (1,250.7 - 902.8)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	2,148 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	530	0	0
344.00	779	327	327
345.00	1,355	1,067	1,394
345.50	1,661	754	2,148

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.01 cfs @ 18.25 hrs HW=345.01' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.20 fps)

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Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Pond FB#2:

Inflow Area = 19,158 sf, 62.25% Impervious, Inflow Depth = 1.52" for 10 YR event
 Inflow = 1.38 cfs @ 11.89 hrs, Volume= 2,426 cf
 Outflow = 0.16 cfs @ 12.21 hrs, Volume= 1,323 cf, Atten= 88%, Lag= 18.9 min
 Primary = 0.16 cfs @ 12.21 hrs, Volume= 1,323 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.03' @ 12.21 hrs Surf.Area= 1,134 sf Storage= 1,140 cf

Plug-Flow detention time= 241.6 min calculated for 1,322 cf (55% of inflow)
 Center-of-Mass det. time= 115.1 min (953.5 - 838.4)

Volume	Invert	Avail.Storage	Storage Description
#1	343.75'	1,716 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.75	652	0	0
344.00	739	174	174
345.00	1,120	930	1,103
345.50	1,332	613	1,716

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.16 cfs @ 12.21 hrs HW=345.03' (Free Discharge)
 ↑1=**Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.48 fps)

Summary for Pond FB#3:

Inflow Area = 18,005 sf, 65.67% Impervious, Inflow Depth = 1.66" for 10 YR event
 Inflow = 1.41 cfs @ 11.89 hrs, Volume= 2,489 cf
 Outflow = 0.01 cfs @ 22.06 hrs, Volume= 128 cf, Atten= 99%, Lag= 610.2 min
 Primary = 0.01 cfs @ 22.06 hrs, Volume= 128 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 346.00' @ 22.06 hrs Surf.Area= 1,757 sf Storage= 2,366 cf

Plug-Flow detention time= 706.9 min calculated for 128 cf (5% of inflow)
 Center-of-Mass det. time= 536.2 min (1,368.7 - 832.5)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	3,317 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	634	0	0
345.00	1,166	900	900
346.00	1,755	1,461	2,361
346.50	2,071	957	3,317

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.01 cfs @ 22.06 hrs HW=346.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.01 cfs @ 0.16 fps)

Summary for Pond FB#4:

Inflow Area = 14,474 sf, 40.32% Impervious, Inflow Depth = 0.72" for 10 YR event
 Inflow = 0.46 cfs @ 11.90 hrs, Volume= 864 cf
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.40' @ 24.05 hrs Surf.Area= 1,041 sf Storage= 864 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	2,653 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	380	0	0
345.00	667	524	524
346.00	1,605	1,136	1,660
346.50	2,368	993	2,653

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	20.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Summary for Pond SMA#1:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 0.40" for 10 YR event
 Inflow = 0.18 cfs @ 12.21 hrs, Volume= 2,001 cf
 Outflow = 0.18 cfs @ 12.24 hrs, Volume= 2,001 cf, Atten= 2%, Lag= 2.3 min
 Discarded = 0.18 cfs @ 12.24 hrs, Volume= 2,001 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 343.51' @ 12.24 hrs Surf.Area= 1,288 sf Storage= 19 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 1.7 min (1,007.8 - 1,006.1)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	3,882 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	1,278	0	0
344.00	1,630	727	727
345.00	2,376	2,003	2,730
345.25	2,571	618	3,348
345.45	2,770	534	3,882

Device	Routing	Invert	Outlet Devices
#1	Discarded	343.50'	8.000 in/hr Exfiltration over Surface area
#2	Primary	345.25'	10.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.24 cfs @ 12.24 hrs HW=343.51' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=343.50' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond SMA#2:

Inflow Area = 42,364 sf, 52.80% Impervious, Inflow Depth = 0.26" for 10 YR event
 Inflow = 0.45 cfs @ 11.90 hrs, Volume= 928 cf
 Outflow = 0.38 cfs @ 11.93 hrs, Volume= 928 cf, Atten= 14%, Lag= 2.0 min
 Discarded = 0.38 cfs @ 11.93 hrs, Volume= 928 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.03' @ 11.93 hrs Surf.Area= 2,015 sf Storage= 51 cf

Plug-Flow detention time= 2.2 min calculated for 928 cf (100% of inflow)

POSTDEVELOPMENT

Type II 24-hr 10 YR Rainfall=3.71"

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Center-of-Mass det. time= 2.2 min (938.1 - 935.8)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	7,584 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,994	0	0
345.00	2,803	2,399	2,399
346.00	3,670	3,237	5,635
346.50	4,125	1,949	7,584

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	8.000 in/hr Exfiltration over Surface area
#2	Primary	346.00'	15.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.37 cfs @ 11.93 hrs HW=344.02' (Free Discharge)

↑**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link OFF1:

Inflow Area = 53,039 sf, 42.17% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Summary for Link OFF2:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 0.00" for 10 YR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

POSTDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Time span=0.00-200.00 hrs, dt=0.05 hrs, 4001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1:	Runoff Area=34,373 sf 36.06% Impervious Runoff Depth=2.07" Flow Length=262' Tc=8.9 min CN=60 Runoff=2.53 cfs 5,920 cf
Subcatchment S2:	Runoff Area=6,829 sf 30.94% Impervious Runoff Depth=1.81" Tc=0.0 min CN=57 Runoff=0.58 cfs 1,031 cf
Subcatchment S3:	Runoff Area=19,158 sf 62.25% Impervious Runoff Depth=3.57" Tc=0.0 min CN=76 Runoff=3.17 cfs 5,701 cf
Subcatchment S4:	Runoff Area=18,005 sf 65.67% Impervious Runoff Depth=3.77" Tc=0.0 min CN=78 Runoff=3.12 cfs 5,662 cf
Subcatchment S5:	Runoff Area=9,885 sf 47.62% Impervious Runoff Depth=2.70" Tc=0.0 min CN=67 Runoff=1.26 cfs 2,222 cf
Subcatchment S6:	Runoff Area=14,474 sf 40.32% Impervious Runoff Depth=2.24" Tc=0.0 min CN=62 Runoff=1.54 cfs 2,705 cf
Subcatchment S7:	Runoff Area=10,675 sf 0.00% Impervious Runoff Depth=0.21" Tc=0.0 min CN=33 Runoff=0.01 cfs 185 cf
Pond FB#1:	Peak Elev=345.17' Storage=1,637 cf Inflow=2.53 cfs 5,920 cf Outflow=1.93 cfs 4,526 cf
Pond FB#2:	Peak Elev=345.23' Storage=1,371 cf Inflow=3.17 cfs 5,701 cf Outflow=2.95 cfs 4,597 cf
Pond FB#3:	Peak Elev=346.16' Storage=2,647 cf Inflow=3.12 cfs 5,662 cf Outflow=1.52 cfs 3,302 cf
Pond FB#4:	Peak Elev=346.01' Storage=1,671 cf Inflow=1.54 cfs 2,705 cf Outflow=0.06 cfs 1,045 cf
Pond SMA#1:	Peak Elev=345.20' Storage=3,212 cf Inflow=3.53 cfs 10,154 cf Discarded=0.47 cfs 10,154 cf Primary=0.00 cfs 0 cf Outflow=0.47 cfs 10,154 cf
Pond SMA#2:	Peak Elev=344.48' Storage=1,039 cf Inflow=2.20 cfs 6,569 cf Discarded=0.44 cfs 6,569 cf Primary=0.00 cfs 0 cf Outflow=0.44 cfs 6,569 cf
Link OFF1:	Inflow=0.01 cfs 185 cf Primary=0.01 cfs 185 cf
Link OFF2:	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf

Total Runoff Area = 113,399 sf Runoff Volume = 23,425 cf Average Runoff Depth = 2.48"
56.97% Pervious = 64,599 sf 43.03% Impervious = 48,800 sf

POSTDEVELOPMENT

Type II 24-hr 100 YR Rainfall=6.22"

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Summary for Subcatchment S1:

Runoff = 2.53 cfs @ 12.01 hrs, Volume= 5,920 cf, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
20,763	39	>75% Grass cover, Good, HSG A
12,395	98	Paved parking, HSG A
1,215	30	Woods, Good, HSG A
34,373	60	Weighted Average
21,978		63.94% Pervious Area
12,395		36.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.2	17	0.0300	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
0.6	30	0.0150	0.87		Sheet Flow, Smooth surfaces n= 0.011 P2= 2.59"
4.3	52	0.0560	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 2.59"
1.8	163	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.9	262	Total			

Summary for Subcatchment S2:

Runoff = 0.58 cfs @ 11.90 hrs, Volume= 1,031 cf, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
4,716	39	>75% Grass cover, Good, HSG A
2,113	98	Paved parking, HSG A
6,829	57	Weighted Average
4,716		69.06% Pervious Area
2,113		30.94% Impervious Area

Summary for Subcatchment S3:

Runoff = 3.17 cfs @ 11.89 hrs, Volume= 5,701 cf, Depth= 3.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

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Area (sf)	CN	Description
11,925	98	Paved parking, HSG A
7,233	39	>75% Grass cover, Good, HSG A
19,158	76	Weighted Average
7,233		37.75% Pervious Area
11,925		62.25% Impervious Area

Summary for Subcatchment S4:

Runoff = 3.12 cfs @ 11.89 hrs, Volume= 5,662 cf, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
6,181	39	>75% Grass cover, Good, HSG A
11,824	98	Paved parking, HSG A
18,005	78	Weighted Average
6,181		34.33% Pervious Area
11,824		65.67% Impervious Area

Summary for Subcatchment S5:

Runoff = 1.26 cfs @ 11.89 hrs, Volume= 2,222 cf, Depth= 2.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
5,178	39	>75% Grass cover, Good, HSG A
4,707	98	Paved parking, HSG A
9,885	67	Weighted Average
5,178		52.38% Pervious Area
4,707		47.62% Impervious Area

Summary for Subcatchment S6:

Runoff = 1.54 cfs @ 11.90 hrs, Volume= 2,705 cf, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
6,822	39	>75% Grass cover, Good, HSG A
5,836	98	Paved parking, HSG A
1,816	30	Woods, Good, HSG A
14,474	62	Weighted Average
8,638		59.68% Pervious Area
5,836		40.32% Impervious Area

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Summary for Subcatchment S7:

Runoff = 0.01 cfs @ 12.34 hrs, Volume= 185 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 YR Rainfall=6.22"

Area (sf)	CN	Description
3,981	39	>75% Grass cover, Good, HSG A
6,694	30	Woods, Good, HSG A
10,675	33	Weighted Average
10,675		100.00% Pervious Area

Summary for Pond FB#1:

Inflow Area = 34,373 sf, 36.06% Impervious, Inflow Depth = 2.07" for 100 YR event
 Inflow = 2.53 cfs @ 12.01 hrs, Volume= 5,920 cf
 Outflow = 1.93 cfs @ 12.10 hrs, Volume= 4,526 cf, Atten= 24%, Lag= 5.4 min
 Primary = 1.93 cfs @ 12.10 hrs, Volume= 4,526 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.17' @ 12.10 hrs Surf.Area= 1,461 sf Storage= 1,637 cf

Plug-Flow detention time= 148.5 min calculated for 4,526 cf (76% of inflow)
 Center-of-Mass det. time= 49.8 min (909.7 - 859.9)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	2,148 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	530	0	0
344.00	779	327	327
345.00	1,355	1,067	1,394
345.50	1,661	754	2,148

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=1.92 cfs @ 12.10 hrs HW=345.17' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 1.92 cfs @ 1.12 fps)

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Summary for Pond FB#2:

Inflow Area = 19,158 sf, 62.25% Impervious, Inflow Depth = 3.57" for 100 YR event
 Inflow = 3.17 cfs @ 11.89 hrs, Volume= 5,701 cf
 Outflow = 2.95 cfs @ 11.90 hrs, Volume= 4,597 cf, Atten= 7%, Lag= 0.8 min
 Primary = 2.95 cfs @ 11.90 hrs, Volume= 4,597 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.23' @ 11.90 hrs Surf.Area= 1,217 sf Storage= 1,371 cf

Plug-Flow detention time= 118.9 min calculated for 4,596 cf (81% of inflow)
 Center-of-Mass det. time= 37.7 min (851.5 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	343.75'	1,716 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.75	652	0	0
344.00	739	174	174
345.00	1,120	930	1,103
345.50	1,332	613	1,716

Device	Routing	Invert	Outlet Devices
#1	Primary	345.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=2.91 cfs @ 11.90 hrs HW=345.23' (Free Discharge)
 ↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 2.91 cfs @ 1.28 fps)

Summary for Pond FB#3:

Inflow Area = 18,005 sf, 65.67% Impervious, Inflow Depth = 3.77" for 100 YR event
 Inflow = 3.12 cfs @ 11.89 hrs, Volume= 5,662 cf
 Outflow = 1.52 cfs @ 11.97 hrs, Volume= 3,302 cf, Atten= 51%, Lag= 4.9 min
 Primary = 1.52 cfs @ 11.97 hrs, Volume= 3,302 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 346.16' @ 11.97 hrs Surf.Area= 1,855 sf Storage= 2,647 cf

Plug-Flow detention time= 202.7 min calculated for 3,301 cf (58% of inflow)
 Center-of-Mass det. time= 91.7 min (900.7 - 809.0)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	3,317 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	634	0	0
345.00	1,166	900	900
346.00	1,755	1,461	2,361
346.50	2,071	957	3,317

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	10.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=1.34 cfs @ 11.97 hrs HW=346.14' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 1.34 cfs @ 0.99 fps)

Summary for Pond FB#4:

Inflow Area = 14,474 sf, 40.32% Impervious, Inflow Depth = 2.24" for 100 YR event
 Inflow = 1.54 cfs @ 11.90 hrs, Volume= 2,705 cf
 Outflow = 0.06 cfs @ 13.47 hrs, Volume= 1,045 cf, Atten= 96%, Lag= 94.3 min
 Primary = 0.06 cfs @ 13.47 hrs, Volume= 1,045 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 346.01' @ 13.47 hrs Surf.Area= 1,616 sf Storage= 1,671 cf

Plug-Flow detention time= 339.2 min calculated for 1,045 cf (39% of inflow)
 Center-of-Mass det. time= 200.8 min (1,047.3 - 846.6)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	2,653 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	380	0	0
345.00	667	524	524
346.00	1,605	1,136	1,660
346.50	2,368	993	2,653

Device	Routing	Invert	Outlet Devices
#1	Primary	346.00'	20.0' long x 1.0' 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 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=0.03 cfs @ 13.47 hrs HW=346.01' (Free Discharge)

↑1=Broad-Crested Rectangular Weir (Weir Controls 0.03 cfs @ 0.23 fps)

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Summary for Pond SMA#1:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 2.02" for 100 YR event
 Inflow = 3.53 cfs @ 11.90 hrs, Volume= 10,154 cf
 Outflow = 0.47 cfs @ 12.68 hrs, Volume= 10,154 cf, Atten= 87%, Lag= 46.4 min
 Discarded = 0.47 cfs @ 12.68 hrs, Volume= 10,154 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 345.20' @ 12.68 hrs Surf.Area= 2,529 sf Storage= 3,212 cf

Plug-Flow detention time= 63.6 min calculated for 10,154 cf (100% of inflow)
 Center-of-Mass det. time= 63.6 min (941.8 - 878.3)

Volume	Invert	Avail.Storage	Storage Description
#1	343.50'	3,882 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
343.50	1,278	0	0
344.00	1,630	727	727
345.00	2,376	2,003	2,730
345.25	2,571	618	3,348
345.45	2,770	534	3,882

Device	Routing	Invert	Outlet Devices
#1	Discarded	343.50'	8.000 in/hr Exfiltration over Surface area
#2	Primary	345.25'	10.0' long x 1.0' 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			
Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31			
3.30 3.31 3.32			

Discarded OutFlow Max=0.47 cfs @ 12.68 hrs HW=345.20' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.47 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=343.50' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond SMA#2:

Inflow Area = 42,364 sf, 52.80% Impervious, Inflow Depth = 1.86" for 100 YR event
 Inflow = 2.20 cfs @ 11.95 hrs, Volume= 6,569 cf
 Outflow = 0.44 cfs @ 12.29 hrs, Volume= 6,569 cf, Atten= 80%, Lag= 19.9 min
 Discarded = 0.44 cfs @ 12.29 hrs, Volume= 6,569 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs
 Peak Elev= 344.48' @ 12.29 hrs Surf.Area= 2,378 sf Storage= 1,039 cf

Plug-Flow detention time= 12.9 min calculated for 6,569 cf (100% of inflow)

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Center-of-Mass det. time= 12.8 min (914.5 - 901.7)

Volume	Invert	Avail.Storage	Storage Description
#1	344.00'	7,584 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
344.00	1,994	0	0
345.00	2,803	2,399	2,399
346.00	3,670	3,237	5,635
346.50	4,125	1,949	7,584

Device	Routing	Invert	Outlet Devices
#1	Discarded	344.00'	8.000 in/hr Exfiltration over Surface area
#2	Primary	346.00'	15.0' long x 1.0' 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
			Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31
			3.30 3.31 3.32

Discarded OutFlow Max=0.44 cfs @ 12.29 hrs HW=344.47' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.44 cfs)**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=344.00' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Link OFF1:**

Inflow Area = 53,039 sf, 42.17% Impervious, Inflow Depth = 0.04" for 100 YR event
 Inflow = 0.01 cfs @ 12.34 hrs, Volume= 185 cf
 Primary = 0.01 cfs @ 12.34 hrs, Volume= 185 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

Summary for Link OFF2:

Inflow Area = 60,360 sf, 43.79% Impervious, Inflow Depth = 0.00" for 100 YR event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-200.00 hrs, dt= 0.05 hrs

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