KEACH-NORDSTROM ASSOCIATES, INC.

December 17, 2025

Kevin D. Thatcher, PE, CPESC
Alteration of Terrain Bureau
29 Hazen Drive
Concord, NH 03302

RE: Alteration of Terrain Permit Application #250327-055
Jennesstown Manor
Tax Map 7, Lots 39 & 39-1 – Warner

Dear Mr. Thatcher:

Our office is in receipt of the Alteration of Terrain third request for information comments dated December 16, 2025. Based on the comments, we have made the required modifications and attached revised plans for review. A response to each comment has been provided below.

1. **Plans:**

Construction Details (13 of 16)

- Pocket Pond Cross Section
  - Show berm for Pond 23P and 415P.
    - Show berm as it relates to side slopes shown in Emergency Spillway Detail on Construction Details (Sheet 14 of 16).

      Clarification for how the emergency spillway berm interacts with the top of pond and side slopes has been added to the Pocket Pond Section Detail on Sheet 13.

  - Show cutoff wall for 23P and 415P spillways.
    - Show cutoff wall as it relates to concrete curb shown in Emergency Spillway Detail on Construction Details (Sheet 14 of 16).

      The cutoff wall has been added to the Pocket Pond Section Detail on Sheet 13.

- Typical Infiltration Pond Section
  - Show berm for Pond 22P.
    - Show berm as it relates to side slopes shown in Emergency Spillway Detail on Construction Details (Sheet 14 of 16).

      Clarification for how the emergency spillway berm interacts with the top of pond and side slopes has been added to the Typical Infiltration Pond Section Detail on Sheet 13.

  - Show cutoff wall for Pond 22P spillway.
    - Show cutoff wall as it relates to concrete curb shown in Emergency Spillway Detail on Construction Details (Sheet 14 of 16).

      The cutoff wall has been added to the Typical Infiltration Pond Section

Detail on Sheet 13.

Construction Details (Sheet 14 of 16)

- Emergency Spillway
  - Include construction data for sediment forebay spillways.
    - Information should include spillway elevation and top of berm elevation.

The emergency spillway detail has been updated to include construction data on the sediment forebay spillways including their spillway elevation and top of berm elevation, see Sheet 14.

2. <u>Stormwater Management Report:</u>

General

- Provide color-coded soil plans separate from bound report per Section 11 of application form.

Color-coded soil plans are separate from the bound report as their own file. The pdf contains two copies of the plans: the first is stamped then scanned and the second is computer generated pdfs without stamps.

- Provide drainage area plans separate from bound report per Section 11 of application form.

Drainage area plans are separate from the bound report as their own file. The pdf contains two copies of the plans: the first is stamped then scanned and the second is computer generated pdfs without stamps.

- Provide full version of Section 18. HydroCAD Drainage Analysis as only odd numbered pages were provided.
  - Post-development HydroCAD diagram is only marginally legible.

The full analysis has been provided and the HydroCAD is now a computer generated pdf for legibility.

- Revise order of drainage analyses in accordance with Attachment A of Alteration of Terrain Permit Application.
  - Node listing for 10-year storm should follow node listing for 2-year storm and not be included with full summary for 10-year storm.

The node listing for the 10-year storm is now following the 2-year storm node listing and not included with the full 10-year storm summary.

BMP Worksheets

- Stormwater Pond Design Criteria
  - Provide Stage-Area-Storage tables for sediment forebays.
    - Tables show no volume. See following comments on Post-Development HydroCAD model for Pond 23P and 415P.

Post-Development HydroCAD Model

- Define a starting elevation of 471.00 feet for Pond 23P.
- Define a starting elevation of 441.50 feet for Pond 415P.
  - Defining the volume instead with zero percent voids does not account for detention volume above permanent pool in routing. It also results in a Stage-Area-Storage table

with no pertinent design information.

The volume for each forebay now has 100% voids and starting elevations at the outlet elevations (471.00 for Pond 23P and 441.50 for Pond 415P). See updated post-development HydroCAD analysis, narrative, riprap calculations, and bmp worksheet attachments.

Drainage Area Plans

- Plans need to be stamped, signed, and dated by a Professional Engineer (PE) registered in the State of New Hampshire in accordance with Env-Wq 1504.01(e).

Hydrologic Soil Group Plans

- Plans need to be stamped, signed, and dated by a Professional Engineer (PE) registered in the State of New Hampshire in accordance with Env-Wq 1504.01(e).

Drainage and hydrologic soil group plans are now stamped.

3. **Revisions:**
Pursuant to Env-Wq 1503.15(b), changes to the revised plans are to be called out and a revision date must be added to each page that has been changed. Graphical revision callouts should be included on the plans. Provide a response letter stating how each individual comment in this RFMI has been addressed. Do not simply state "revised" or "addressed" if the comment required a design decision or additional analysis. If any changes to the project documents were made other than those requested in this RFMI that may be pertinent to this permit review, please provide a narrative describing these additional changes that were made in your response letter.

Plan changes are called out with a revision date and response letter.

4. **Electronic Files:**
Pursuant to Env-Wq 1503.15(e), provide, in electronic format, as computer-generated PDF files with text that is searchable through optical character recognition (OCR), a copy of all project documents that were modified in response to this request for more information (RFMI). As separate documents, provide a copy of the complete application with all documents current to reflect any modifications from the original application.

All documents modified by this request for more information have been provided. Additionally, separate documents with the complete application and combined up to date report and plans have been provided. Per Env-Wq 1503.15(e), documents do not need to be keyword searchable.

I trust the content of this response letter and its attachments will address each of the comments, as noted. Should you have further questions or require additional information, please do not hesitate to contact our office.

Respectfully,

Jason Lopez
Senior Project Manager
Keach-Nordstrom Associates, Inc.

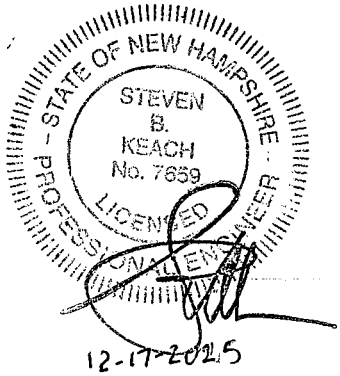
Alteration of Terrain Application & Stormwater Drainage Analysis

Jennesstown Manor

Map 7, Lots 39
Route 103
Warner, New Hampshire

February 20, 2025
REVISED: DECEMBER 17, 2025

KNA Project No. 24-0307-1



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KNA KEACH-NORDSTROM ASSOCIATES, INC.

1. INTRODUCTION

A. Project Description

The project proposes the development of Warner Tax Map 7, Lots 39 and 39-1, on the west side of Route 103. The proposal seeks to develop two buildings for multi-family residence. Each building will have four units. The project will include associated parking and utilities.

The buildings will be served by on-site septic systems and wells. Access will be provided by connection to a proposed driveway off of Route 103. The buildings will share access to the driveway. The drainage system will have two pocket ponds and an infiltration basin. After treatment and mitigation of peak runoff, the water flows to the existing catch basins on Route 103 in front of the subject parcel.

B. Existing Site Conditions

The subject lot is 34.60 acres and is currently undeveloped in Warner's Residential 2 (R-2) and Residential 3 (R-3) Zoning Districts; however, the area of proposed work is entirely within the R-2 District. The abutting properties are residential or undeveloped uses. Previously, the subject lot was partially cleared. There are wetland pockets and many ledge outcroppings on site.

According to the Site-Specific Soil Survey soil mapping, the parcel consists of soils as shown below:

SSSM SYM.	SSS MAP NAME	HISS SYM.	HYDROLOGIC SOIL GRP.
55	Hermon Very Stony	121	B
442	Chichester	221	B
58	Waumbek	321	A
829	Waumbek-Hermon Association	321	B
414	Moosilauke Poorly Drained	521	C
399	Ledge Outcrop	228	D

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the provisions of the Town of Warner, NHDES, and generally accepted engineering practice, the 2-year, 10-year, 25-year and 50-year frequency storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject residential development project. All proposed stormwater measures have been designed for the 10-year return frequency storms, in accordance with the State regulations and for the 25-year return frequency storms, in accordance with the Town regulations.

KNA utilizes HydroCAD version 10.2 to analyze both pre and post-development watershed characteristics. This computer software system is based largely on hydrology techniques (TR-20) developed by the Soil Conservation Service (now the Natural Resources Conservation Service). In addition, the software derives Time of Concentration values using the methodology contained within USDA-S.C.S. publication Urban Hydrology for Small Watersheds Technical Release No. 55 (TR 55).

Rainfall data utilized in the analysis is obtained from the “Extreme Precipitation in a Changing Climate for New York and the New England States", version 1.12, published by the USDA, NRCS and Cornell University’s Northeast Regional Climate Center and can be found in Section 9.

All design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning’s “n” value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Pre/Post Development Drainage Area Plans” graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In the pre-development scenario, 6 points of analysis (POA) were identified as the appropriate points to compare pre vs. post development rates of stormwater discharge. These points of analysis reflect the main discharge points of the site and were analyzed to show the impact of the proposed improvements.

The pre-development drainage model’s POA is further described as follows:

10P Flow to Existing CB

20P Flow to Existing CB

30P Flow to Existing CB

40P Flow to Existing CB

50L Flow to Abutters Map 7 Lots 36 & 36-1

An additional point of analysis has been added to monitor the flow and volume to the Map 7 Lot 36-1 due to increased area (~1 acre) directed towards this parcel in post-development design versus pre-development:

60L Flow to Abutter Map 7 Lot 36-1

In general, the site slopes in an easterly direction to the catch basins along Route 103.

For a more visual description of the information presented in this section, please refer to the attached “Pre-Development Drainage Areas Plan” attached in the appendix of this report. The pre-development drainage model recognizes five points of analysis to compare pre vs. post-development peak rates of stormwater discharge.

C. Post-Development Drainage Conditions:

The same POA’s that were identified in the pre-development scenario have been analyzed in the post-development scenario.

The proposed stormwater management system utilizes closed and open drainage that incorporates various best management practices for the collection, storage, and treatment of runoff. Stormwater runoff generated from the proposed development will be collected in a series of closed structures (catch basins and drain manholes) and conveyed towards the pocket ponds and the infiltration basin. The proposed ponds discharge through outlet control structures to overland flow prior to entering the closed drainage system in the Route 103 Right-Of-Way. The areas flowing towards each point of analysis are equal to or less than in comparison to the pre-development conditions. The proposal has also been designed to convey runoff in a manner consistent with the pre-development conditions. The drainage system was properly sized to control runoff for the full build-out of the project.

The proposed pocket ponds are designed to intercept groundwater and maintain a permanent pool. The ponds have been designed to mitigate the increased runoff from the proposed parking areas and common driveway.

The proposed infiltration basin is designed to infiltrate the runoff from the proposed development.

The peak stormwater runoff rate for the specific storm frequencies is presented and analyzed in the subsequent summary section of this report (Table 1). For a more visual description of the information presented in this section, please refer to the attached “Post-Development Drainage Areas Plan" attached in the appendix of this report.

D. Summary:

Through the use of the stormwater management techniques described above, we were able to implement the proposed development goals while maintaining appropriate peak rates of runoff, providing volume control, and providing treatment of stormwater generated from the proposed development. As shown in the Tables below, through the use of the aforementioned stormwater management techniques, the peak rates of stormwater discharge and volume to the point of analysis was controlled within an acceptable limit.

Table 1: Peak Flow Discharge Rate

Site Pre-Development vs. Post-Development (cfs)								
Description	2-Year		10-Year		25-Year		50-Year	
24-hr Rainfall	2.78 in/hr		4.04 in/hr		5.01 in/hr		5.89 in/hr	
	Pre	Post	**Pre**	Post	**Pre**	Post	**Pre**	Post
10P (Lot 3-1)	**0.85**	0.84	**1.93**	1.93	**3.00**	2.99	**4.07**	4.05
20P (Lot 7-38)	**2.01**	1.84	**4.94**	4.13	**8.10**	7.97	**11.29**	10.99
30P (Lot 7-38)	**0.63**	0.49	**1.36**	0.87	**2.08**	1.19	**2.80**	1.48
40P (Lot7-38)	**1.06**	0.66	**2.46**	1.30	**4.11**	2.09	**5.82**	3.67
50L (Lots 7-36 & 7-36-1)	**0.04**	0.04	**0.13**	0.13	**0.25**	0.25	**0.39**	0.39
Site Pre-Development vs. Post-Development Monitoring of Flow to Abutter Map 7 Lot 36-1 (cfs)								
60L (Lot 7-36-1)	**0.19**	0.18	**0.79**	0.63	**1.55**	1.29	**2.37**	2.26

Table 2: Channel Protection Requirements

Site Pre-Development vs. Post-Development Flow Volume (af)			
Description	2-Year		Comments
24- hr Rainfall	2.78 in/hr		
	Pre	Post	
10P	0.104	0.103	NHDES 1507.05,(b),(1), a
20P	0.255	0.247	NHDES 1507.05,(b),(1), a
30P	0.083	0.053	NHDES 1507.05,(b),(1), a
40P	0.148	0.133	NHDES 1507.05,(b),(1), a
50L	0.006	0.006	NHDES 1507.05,(b),(1), a
Site Pre-Development vs. Post-Development Monitoring of Flow to Abutter Map 7 Lot 36-1 (af)			
60L	0.041	0.032	

III. EROSION & SEDIMENTATION CONTROL PROVISIONS

A. Temporary Erosion Control Measures

As an integral part of the engineering design of this site, an erosion and sedimentation control plan has been developed with the intent of limiting the potential for soil loss and associated receiving water quality degradation, both during and after the construction period. As the project plans indicate, traditional temporary erosion and sedimentation control devices and practices, such as siltation fencing, block and gravel sediment filters, and seeding have been specified for use during the construction period. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Furthermore, the contractor is encouraged to supplement specified erosion control measures during the construction period where and when in his/ her best judgment, additional protection is warranted.

C. Permanent Erosion Control Measures

In the design of this site, consideration was given to limiting the potential for long-term erosion of completed improvements. As a result, several permanent erosion control measures were incorporated into the site design. These provisions include:

1) Specification of a turf establishment schedule and seed mixture, utilizing materials and workmanship recognized as appropriate for the site conditions at hand;

2) The design has provided catch basins to capture runoff and reduce the overland flow, thereby reducing erosion.

GROUNDWATER RECHARGE VOLULME (GRV) CALCULATION (Env-Wq 1507.04)

0.44	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
0.42	ac	Area of HSG B soil that was replaced by impervious cover	0.25"
	ac	Area of HSG C soil that was replaced by impervious cover	0.10"
-	ac	Area of HSG D soil or impervious cover that was replaced by impervious cover	0.0"
0.33	inches	Rd = Weighted groundwater recharge depth	
0.281	ac-in	GRV = AI * Rd	
1,020	cf	GRV conversion (ac-in x 43,560 sf/ac x 1ft/12”)	

Provide calculations below showing that the project meets the groundwater recharge requirements (Env-Wq 1507.04):

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Practice 21P**

Enter the type of infiltration practice (e.g., basin, trench) and the node name in the drainage analysis, if applicable.

Yes		Have you reviewed Env-Wq 1508.06(a) to ensure that infiltration is allowed?	← **yes**
2.46	ac	A = Area draining to the practice	
0.64	ac	A_I = Impervious area draining to the practice	
0.26	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.28	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.70	ac-in	WQV= 1" x Rv x A	
2,537	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
634	cf	25% x WQV (check calc for sediment forebay volume)	
NA		Method of pretreatment? (not required for clean or roof runoff)	
-	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
3,199	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
238	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
42.6	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
466.00	feet	E_{BTM} = Elevation of the bottom of the basin	
464.22	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
456.89	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.78	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
9.1	feet	D_{ROCK} = Separation from bedrock	≥ *[3]
	ft	D_{amend} = Depth of amended soil, if applicable due high infiltation rate	≥ **24"**
	ft	D_T = Depth of trench, if trench proposed	**4 - 10 ft**
	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
		If a trench is proposed, does materialmeet Env-Wq 1508.06(k)(2) requirements.[4]	← **yes**
Yes	Yes/No	If a basin is proposed, Is the perimeter curvilinear, and basin floor flat?	← **yes**
3.0	:1	If a basin is proposed, pond side slopes.	≥**3:1**
469.75	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
469.82	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
470.00	ft	Elevation of the top of the practice (if a basin, this is the elevation of the berm)	
YES		10 peak elevation ≤ Elevation of the top of the trench?[5]	← **yes**
YES		If a basin is proposed, 50-year peak elevation ≤ Elevation of berm?	← **yes**

1. Volume below the lowest invert of the outlet structure and excludes forebay volume
2. $Ksat_{DESIGN}$ includes a factor of safety. See Env-Wq 1504.14 for requirements for determining the infiltr. rate
3. 1' separation if treatment not required; 4' for treatment in GPAs & WSIPAs; & 3' in all other areas.
4. Clean, washed well graded diameter of 1.5 to 3 inches above the in-situ soil.
5. If 50-year peak elevation exceeds top of trench, the overflow must be routed in HydroCAD as secondary discharge.

Designer's Notes:

Summary for Pond 21P: Infiltration Basin

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 1.68" for 10 yr event
Inflow = 1.43 cfs @ 12.32 hrs, Volume= 0.343 af
Outflow = 1.35 cfs @ 12.53 hrs, Volume= 0.281 af, Atten= 5%, Lag= 12.6 min
Discarded = 0.13 cfs @ 12.53 hrs, Volume= 0.140 af
Primary = 1.23 cfs @ 12.53 hrs, Volume= 0.141 af
Routed to Reach 20R : Overland Flow to 20P
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 20R : Overland Flow to 20P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 469.75' @ 12.53 hrs Surf.Area= 1,822 sf Storage= 3,377 cf
Flood Elev= 470.00' Surf.Area= 1,983 sf Storage= 3,854 cf

Plug-Flow detention time= 140.8 min calculated for 0.281 af (82% of inflow)
Center-of-Mass det. time= 61.9 min (900.1 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	466.00'	3,854 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
466.00	238	61.0	0	0	238
468.00	887	160.0	1,056	1,056	1,993
470.00	1,983	201.0	2,797	3,854	3,225

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	465.00'	**18.0" Round HDPE Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 465.00' / 464.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	469.65'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#4	Secondary	469.75'	**4.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.13 cfs @ 12.53 hrs HW=469.75' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=1.23 cfs @ 12.53 hrs HW=469.75' TW=453.59' (Dynamic Tailwater)
└**2=HDPE Culvert** (Passes 1.23 cfs of 17.02 cfs potential flow)
└**3=Grate** (Weir Controls 1.23 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=466.00' TW=453.50' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 21P: Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
466.00	238	0
466.05	249	12
466.10	261	25
466.15	272	38
466.20	284	52
466.25	297	67
466.30	309	82
466.35	322	98
466.40	335	114
466.45	348	131
466.50	362	149
466.55	375	167
466.60	389	186
466.65	404	206
466.70	418	227
466.75	433	248
466.80	448	270
466.85	463	293
466.90	479	316
466.95	495	341
467.00	511	366
467.05	527	392
467.10	544	419
467.15	561	446
467.20	578	475
467.25	595	504
467.30	613	534
467.35	631	565
467.40	649	597
467.45	667	630
467.50	686	664
467.55	705	699
467.60	724	735
467.65	744	771
467.70	763	809
467.75	783	848
467.80	804	887
467.85	824	928
467.90	845	970
467.95	866	1,012
468.00	887	1,056
468.05	909	1,101
468.10	931	1,147
468.15	954	1,194
468.20	977	1,243
468.25	1,000	1,292
468.30	1,024	1,343
468.35	1,047	1,394
468.40	1,071	1,447
468.45	1,096	1,502
468.50	1,120	1,557
468.55	1,145	1,614
468.60	1,170	1,671
468.65	1,195	1,731
468.70	1,221	1,791
468.75	1,247	1,853
468.80	1,273	1,916
468.85	1,300	1,980
468.90	1,326	2,046
468.95	1,353	2,113
469.00	1,381	2,181
469.05	1,408	2,251
469.10	1,436	2,322
469.15	1,464	2,394
469.20	1,492	2,468
469.25	1,521	2,544
469.30	1,550	2,620
469.35	1,579	2,699
469.40	1,609	2,778
469.45	1,638	2,859
469.50	1,668	2,942
469.55	1,698	3,026
469.60	1,729	3,112
469.65	1,760	3,199
469.70	1,791	3,288
469.75	1,822	3,378
469.80	1,854	3,470
469.85	1,886	3,564
469.90	1,918	3,659
469.95	1,950	3,755
470.00	**1,983**	**3,854**

Summary for Pond 21P: Infiltration Basin

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 2.90" for 50 yr event
Inflow = 3.01 cfs @ 12.39 hrs, Volume= 0.593 af
Outflow = 3.00 cfs @ 12.41 hrs, Volume= 0.521 af, Atten= 0%, Lag= 1.2 min
Discarded = 0.13 cfs @ 12.41 hrs, Volume= 0.154 af
Primary = 2.70 cfs @ 12.41 hrs, Volume= 0.359 af
Routed to Reach 20R : Overland Flow to 20P
Secondary = 0.17 cfs @ 12.41 hrs, Volume= 0.008 af
Routed to Reach 20R : Overland Flow to 20P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 469.82' @ 12.41 hrs Surf.Area= 1,865 sf Storage= 3,504 cf
Flood Elev= 470.00' Surf.Area= 1,983 sf Storage= 3,854 cf

Plug-Flow detention time= 88.3 min calculated for 0.520 af (88% of inflow)
Center-of-Mass det. time= 32.5 min (858.6 - 826.1)

Volume	Invert	Avail.Storage	Storage Description
#1	466.00'	3,854 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
466.00	238	61.0	0	0	238
468.00	887	160.0	1,056	1,056	1,993
470.00	1,983	201.0	2,797	3,854	3,225

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	465.00'	**18.0" Round HDPE Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 465.00' / 464.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	469.65'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#4	Secondary	469.75'	**4.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.13 cfs @ 12.41 hrs HW=469.82' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=2.70 cfs @ 12.41 hrs HW=469.82' TW=453.63' (Dynamic Tailwater)
└**2=HDPE Culvert** (Passes 2.70 cfs of 17.16 cfs potential flow)
└**3=Grate** (Weir Controls 2.70 cfs @ 1.34 fps)

Secondary OutFlow Max=0.17 cfs @ 12.41 hrs HW=469.82' TW=453.63' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.62 fps)

Stage-Area-Storage for Pond 21P: Infiltration Basin

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
466.00	238	0
466.05	249	12
466.10	261	25
466.15	272	38
466.20	284	52
466.25	297	67
466.30	309	82
466.35	322	98
466.40	335	114
466.45	348	131
466.50	362	149
466.55	375	167
466.60	389	186
466.65	404	206
466.70	418	227
466.75	433	248
466.80	448	270
466.85	463	293
466.90	479	316
466.95	495	341
467.00	511	366
467.05	527	392
467.10	544	419
467.15	561	446
467.20	578	475
467.25	595	504
467.30	613	534
467.35	631	565
467.40	649	597
467.45	667	630
467.50	686	664
467.55	705	699
467.60	724	735
467.65	744	771
467.70	763	809
467.75	783	848
467.80	804	887
467.85	824	928
467.90	845	970
467.95	866	1,012
468.00	887	1,056
468.05	909	1,101
468.10	931	1,147
468.15	954	1,194
468.20	977	1,243
468.25	1,000	1,292
468.30	1,024	1,343
468.35	1,047	1,394
468.40	1,071	1,447
468.45	1,096	1,502
468.50	1,120	1,557
468.55	1,145	1,614
468.60	1,170	1,671
468.65	1,195	1,731
468.70	1,221	1,791
468.75	1,247	1,853
468.80	1,273	1,916
468.85	1,300	1,980
468.90	1,326	2,046
468.95	1,353	2,113
469.00	1,381	2,181
469.05	1,408	2,251
469.10	1,436	2,322
469.15	1,464	2,394
469.20	1,492	2,468
469.25	1,521	2,544
469.30	1,550	2,620
469.35	1,579	2,699
469.40	1,609	2,778
469.45	1,638	2,859
469.50	1,668	2,942
469.55	1,698	3,026
469.60	1,729	3,112
469.65	1,760	3,199
469.70	1,791	3,288
469.75	1,822	3,378
469.80	1,854	3,470
469.85	1,886	3,564
469.90	1,918	3,659
469.95	1,950	3,755
470.00	**1,983**	**3,854**

STORMWATER POND DESIGN CRITERIA

Env-Wq 1508.03

Type/Node Name: **Pocket Pond 22P**

Enter the type of stormwater pond (e.g., Wet Pond) and the node name in the drainage analysis, if applicable.

2.46	ac	A = Area draining to the practice	
0.64	ac	A_I = Impervious area draining to the practice	
0.26	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.28	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.70	ac-in	WQV= 1" x Rv x A	
2,537	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
254	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
1,269	cf	50% x WQV (check calc for extended detention volume)	
292	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
3,827	cf	V_{PP} = Permanent pool volume (volume below the lowest invert of the outlet structure) Attach stage-storage table.	
no	cf	Extended Detention?[1]	**≤ 50% WQV**
-		V_{ED} = Volume of extended detention (if "yes" is given in box above)	
		E_{ED} = Elevation of WQV if "yes" is given in box above[2]	
-	cfs	$2Q_{avg}$ = 2* V_{ED} / 24 hrs * (1hr / 3600 sec) (used to check against Q_{EDmax} below)	
	cfs	Q_{EDmax} = Discharge at the E_{ED} (attach stage-discharge table)	**< $2Q_{avg}$**
-	hours	T_{ED} = Drawdown time of extended detention = $2V_{ED}/Q_{EDmax}$	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥3:1**
468.63	ft	Elevation of seasonal high water table	
469.35	ft	Elevation of lowest pond outlet	
463.63	ft	Max floor = Maximum elevation of pond bottom (ft)	
460.63	ft	Minimum floor (to maintain depth at less than 8')	**≤ 8 ft**
466.00	ft	Elevation of pond floor[3]	**≤ Max floor and > Min floor**
80.00	ft	Length of the flow path between the inlet and outlet at mid-depth	
30.00	ft	Average width ([average of the top width + average bottom width]/2)	
2.67	:1	Length to average width ratio	**≥ 3:1**
No	Yes/No	Is the perimeter curvilinear.	**← Yes**
Yes	Yes/No	Are the inlet and outlet located as far apart as possible.	**← Yes**
No	Yes/No	Is there a manually-controlled drain to dewater the pond over a 24hr period?	
If no state why:		grades	
		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of <6")?	
471.52	ft	Peak elevation of the 50-year storm event	
472.00	ft	Berm elevation of the pond	
YES		50 peak elevation ≤ the berm elevation?	**←yes**

1. If the entire WQV is stored in the perm. pool, there is no extended det., and the following five lines do not apply.

2. This is the elevation of WQV **if** the hydrologic analysis is set up to include the permanent pool storage in the node description.

3. If the pond floor elevation is above the max floor elev., a hydrologic budget must be submitted to demonstrate that a minimum depth of 3 feet can be maintained. (First check whether a revised "lowest pond outlet" elev. will resolve the issue.)

Designer's Notes:

Summary for Pond 22P: Pocket Pond 22P

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 2.96" for 50 yr event
Inflow = 6.81 cfs @ 12.12 hrs, Volume= 0.605 af
Outflow = 3.01 cfs @ 12.39 hrs, Volume= 0.593 af, Atten= 56%, Lag= 16.3 min
Primary = 3.01 cfs @ 12.39 hrs, Volume= 0.593 af
Routed to Pond 21P : Infiltration Basin
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 21P : Infiltration Basin

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 469.35' Surf.Area= 1,930 sf Storage= 3,827 cf
Peak Elev= 471.52' @ 12.39 hrs Surf.Area= 4,514 sf Storage= 9,741 cf (5,915 cf above start)
Flood Elev= 472.00' Surf.Area= 5,229 sf Storage= 12,066 cf (8,239 cf above start)

Plug-Flow detention time= 144.6 min calculated for 0.505 af (83% of inflow)
Center-of-Mass det. time= 28.1 min (826.1 - 798.0)

Volume	Invert	Avail.Storage	Storage Description
#1	466.00'	12,066 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
466.00	492	103.6	0	0	492
468.00	1,258	151.6	1,691	1,691	1,500
470.00	2,304	194.4	3,510	5,201	2,728
471.00	2,916	213.3	2,604	7,805	3,374
471.50	4,482	493.2	1,836	9,640	19,111
472.00	5,229	502.6	2,425	12,066	19,897

Device	Routing	Invert	Outlet Devices
#1	Primary	469.00'	**12.0" Round HDPE Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 469.00' / 468.00' S= 0.0476 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	469.35'	**5.0" Vert. 5" Orifices X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	470.80'	**5.0" Vert. 5" Orifices X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	471.25'	**Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 Width (feet) 0.75 0.75
#5	Device 1	471.65'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#6	Secondary	471.75'	**4.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.00 cfs @ 12.39 hrs HW=471.52' TW=469.82' (Dynamic Tailwater)
└─**1=HDPE Culvert** (Passes 3.00 cfs of 4.94 cfs potential flow)
  ├─**2=5" Orifices** (Orifice Controls 1.71 cfs @ 6.29 fps)
  ├─**3=5" Orifices** (Orifice Controls 0.94 cfs @ 3.45 fps)
  ├─**4=Weir** (Weir Controls 0.35 cfs @ 1.71 fps)
  └─**5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=469.35' TW=466.00' (Dynamic Tailwater)
└─**6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Area-Storage for Pond 22P: Pocket Pond 22P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
466.00	492	0
466.10	522	51
466.20	553	104
466.30	584	161
466.40	617	221
466.50	650	285
466.60	685	351
466.70	720	422
466.80	756	495
466.90	793	573
467.00	831	654
467.10	870	739
467.20	909	828
467.30	950	921
467.40	991	1,018
467.50	1,033	1,119
467.60	1,077	1,225
467.70	1,121	1,335
467.80	1,166	1,449
467.90	1,211	1,568
468.00	1,258	1,691
468.10	1,303	1,819
468.20	1,348	1,952
468.30	1,395	2,089
468.40	1,442	2,231
468.50	1,490	2,377
468.60	1,539	2,529
468.70	1,588	2,685
468.80	1,639	2,846
468.90	1,690	3,013
469.00	1,742	3,184
469.10	1,794	3,361
469.20	1,848	3,543
469.30	1,902	3,731
469.40	1,957	3,924
469.50	2,013	4,122
469.60	2,070	4,326
469.70	2,127	4,536
469.80	2,185	4,752
469.90	2,244	4,973
470.00	2,304	5,201
470.10	2,362	5,434
470.20	2,421	5,673
470.30	2,480	5,918
470.40	2,540	6,169
470.50	2,601	6,426
470.60	2,663	6,689
470.70	2,725	6,959
470.80	2,788	7,234
470.90	2,852	7,516
471.00	2,916	7,805
471.10	3,202	8,111
471.20	3,502	8,446
471.30	3,815	8,811
471.40	4,142	9,209
471.50	4,482	9,640
471.60	4,627	10,096
471.70	4,774	10,566
471.80	4,923	11,051
471.90	5,075	11,551
472.00	**5,229**	**12,066**

Summary for Pond 23P: Sediment Forebay 23P

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 2.96" for 50 yr event
Inflow = 6.85 cfs @ 12.11 hrs, Volume= 0.606 af
Outflow = 6.81 cfs @ 12.12 hrs, Volume= 0.605 af, Atten= 1%, Lag= 0.5 min
Primary = 6.81 cfs @ 12.12 hrs, Volume= 0.605 af
Routed to Pond 22P : Pocket Pond 22P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 471.00' Surf.Area= 363 sf Storage= 292 cf
Peak Elev= 471.74' @ 12.13 hrs Surf.Area= 568 sf Storage= 634 cf (342 cf above start)
Flood Elev= 472.00' Surf.Area= 650 sf Storage= 792 cf (500 cf above start)

Plug-Flow detention time= 15.5 min calculated for 0.598 af (99% of inflow)
Center-of-Mass det. time= 1.4 min (798.0 - 796.6)

Volume	Invert	Avail.Storage	Storage Description
#1	469.00'	792 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
469.00	3	16.6	0	0	3
470.00	135	65.6	53	53	326
471.00	363	86.1	240	292	585
472.00	650	105.0	500	792	888

Device	Routing	Invert	Outlet Devices
#1	Primary	471.00'	**4.0' 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

Primary OutFlow Max=6.81 cfs @ 12.12 hrs HW=471.74' TW=471.01' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 6.81 cfs @ 2.31 fps)

Stage-Area-Storage for Pond 23P: Sediment Forebay 23P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
469.00	3	0
469.05	5	0
469.10	7	1
469.15	10	1
469.20	14	2
469.25	18	2
469.30	22	3
469.35	27	5
469.40	32	6
469.45	38	8
469.50	45	10
469.55	51	12
469.60	59	15
469.65	67	18
469.70	75	22
469.75	84	26
469.80	93	30
469.85	103	35
469.90	113	40
469.95	124	46
470.00	135	53
470.05	144	60
470.10	153	67
470.15	162	75
470.20	172	83
470.25	182	92
470.30	192	101
470.35	202	111
470.40	213	122
470.45	224	133
470.50	235	144
470.55	247	156
470.60	259	169
470.65	271	182
470.70	283	196
470.75	296	210
470.80	309	225
470.85	322	241
470.90	335	258
470.95	349	275
471.00	363	292
471.05	375	311
471.10	388	330
471.15	401	350
471.20	414	370
471.25	427	391
471.30	440	413
471.35	454	435
471.40	468	458
471.45	482	482
471.50	496	506
471.55	511	532
471.60	525	557
471.65	540	584
471.70	555	611
471.75	570	640
471.80	586	669
471.85	602	698
471.90	618	729
471.95	634	760
472.00	**650**	**792**

STORMWATER POND DESIGN CRITERIA

Env-Wq 1508.03

Type/Node Name: **Pocket Pond 41P**

Enter the type of stormwater pond (e.g., Wet Pond) and the node name in the drainage analysis, if applicable.

1.68	ac	A = Area draining to the practice	
0.14	ac	A_I = Impervious area draining to the practice	
0.09	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.13	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.21	ac-in	WQV= 1" x Rv x A	
775	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
77	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
387	cf	50% x WQV (check calc for extended detention volume)	
245	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
5,532	cf	V_{PP} = Permanent pool volume (volume below the lowest invert of the outlet structure) Attach stage-storage table.	
no	cf	Extended Detention?[1]	**≤ 50% WQV**
-		V_{ED} = Volume of extended detention (if "yes" is given in box above)	
		E_{ED} = Elevation of WQV if "yes" is given in box above[2]	
-	cfs	$2Q_{avg}$ = 2* V_{ED} / 24 hrs * (1hr / 3600 sec) (used to check against Q_{EDmax} below)	
	cfs	Q_{EDmax} = Discharge at the E_{ED} (attach stage-discharge table)	**< $2Q_{avg}$**
-	hours	T_{ED} = Drawdown time of extended detention = $2V_{ED}/Q_{EDmax}$	**≥ 24-hrs**
3.00	:1	Pond side slopes	**≥3:1**
437.00	ft	Elevation of seasonal high water table	
440.10	ft	Elevation of lowest pond outlet	
432.00	ft	Max floor = Maximum elevation of pond bottom (ft)	
429.00	ft	Minimum floor (to maintain depth at less than 8')	**≤ 8 ft**
434.00	ft	Elevation of pond floor[3]	**≤ Max floor and > Min floor**
51.00	ft	Length of the flow path between the inlet and outlet at mid-depth	
67.00	ft	Average width ([average of the top width + average bottom width]/2)	
0.76	:1	Length to average width ratio	**≥ 3:1**
Yes	Yes/No	Is the perimeter curvilinear.	**← Yes**
Yes	Yes/No	Are the inlet and outlet located as far apart as possible.	**← Yes**
No	Yes/No	Is there a manually-controlled drain to dewater the pond over a 24hr period?	
If no state why:		grades	
		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of <6")?	
441.67	ft	Peak elevation of the 50-year storm event	
442.00	ft	Berm elevation of the pond	
YES		50 peak elevation ≤ the berm elevation?	**←yes**

1. If the entire WQV is stored in the perm. pool, there is no extended det., and the following five lines do not apply.

2. This is the elevation of WQV **if** the hydrologic analysis is set up to include the permanent pool storage in the node description.

3. If the pond floor elevation is above the max floor elev., a hydrologic budget must be submitted to demonstrate that a minimum depth of 3 feet can be maintained. (First check whether a revised "lowest pond outlet" elev. will resolve the issue.)

Designer's Notes:

Summary for Pond 41P: Pocket Pond 41P

Inflow Area = 1.631 ac, 10.12% Impervious, Inflow Depth > 1.95" for 50 yr event
Inflow = 2.88 cfs @ 12.12 hrs, Volume= 0.266 af
Outflow = 1.04 cfs @ 12.49 hrs, Volume= 0.251 af, Atten= 64%, Lag= 22.6 min
Primary = 1.04 cfs @ 12.49 hrs, Volume= 0.251 af
Routed to Pond 40P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 440.10' Surf.Area= 2,197 sf Storage= 5,532 cf
Peak Elev= 441.67' @ 12.49 hrs Surf.Area= 3,100 sf Storage= 9,713 cf (4,181 cf above start)
Flood Elev= 442.00' Surf.Area= 3,207 sf Storage= 10,747 cf (5,215 cf above start)

Plug-Flow detention time= 462.4 min calculated for 0.124 af (47% of inflow)
Center-of-Mass det. time= 139.4 min (967.9 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	434.00'	10,747 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
434.00	64	44.5	0	0	64
436.00	472	91.7	473	473	593
438.00	1,164	139.2	1,585	2,058	1,496
440.00	2,142	186.2	3,257	5,315	2,756
441.50	3,044	214.5	3,870	9,184	3,707
442.00	3,207	219.2	1,563	10,747	3,902

Device	Routing	Invert	Outlet Devices
#1	Primary	437.00'	**18.0" Round HDPE Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 437.00' / 435.00' S= 0.0833 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	440.10'	**3.0" Vert. 3" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	441.60'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads

Primary OutFlow Max=1.03 cfs @ 12.49 hrs HW=441.67' TW=0.00' (Dynamic Tailwater)
└**1=HDPE Culvert** (Passes 1.03 cfs of 16.85 cfs potential flow)
  ├**2=3" Orifice** (Orifice Controls 0.28 cfs @ 5.79 fps)
  └**3=Grate** (Weir Controls 0.75 cfs @ 0.87 fps)

Stage-Area-Storage for Pond 41P: Pocket Pond 41P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
434.00	64	0
434.10	75	7
434.20	88	15
434.30	101	25
434.40	115	35
434.50	131	48
434.60	147	62
434.70	164	77
434.80	182	94
434.90	201	114
435.00	221	135
435.10	242	158
435.20	264	183
435.30	286	210
435.40	310	240
435.50	335	273
435.60	360	307
435.70	387	345
435.80	414	385
435.90	443	427
436.00	472	473
436.10	499	522
436.20	527	573
436.30	556	627
436.40	586	684
436.50	616	744
436.60	647	808
436.70	679	874
436.80	712	944
436.90	745	1,016
437.00	780	1,093
437.10	815	1,172
437.20	850	1,256
437.30	887	1,342
437.40	924	1,433
437.50	962	1,527
437.60	1,001	1,625
437.70	1,041	1,727
437.80	1,081	1,834
437.90	1,122	1,944
438.00	1,164	2,058
438.10	1,206	2,177
438.20	1,248	2,299
438.30	1,292	2,426
438.40	1,336	2,558
438.50	1,381	2,693
438.60	1,426	2,834
438.70	1,473	2,979
438.80	1,520	3,128
438.90	1,567	3,283
439.00	1,616	3,442
439.10	1,665	3,606
439.20	1,715	3,775
439.30	1,766	3,949
439.40	1,818	4,128
439.50	1,870	4,313
439.60	1,923	4,502
439.70	1,976	4,697
439.80	2,031	4,897
439.90	2,086	5,103
440.00	2,142	5,315
440.10	2,197	5,532
440.20	2,253	5,754
440.30	2,310	5,982
440.40	2,367	6,216
440.50	2,425	6,456
440.60	2,484	6,701
440.70	2,543	6,953
440.80	2,603	7,210
440.90	2,664	7,473
441.00	2,726	7,743
441.10	2,788	8,018
441.20	2,851	8,300
441.30	2,915	8,589
441.40	2,979	8,883
441.50	3,044	9,184
441.60	3,076	9,490
441.70	3,109	9,800
441.80	3,141	10,112
441.90	3,174	10,428
442.00	**3,207**	**10,747**

Summary for Pond 415P: Sediment Forebay 415P

Inflow Area = 0.974 ac, 15.98% Impervious, Inflow Depth > 2.29" for 50 yr event
Inflow = 2.01 cfs @ 12.11 hrs, Volume= 0.186 af
Outflow = 2.00 cfs @ 12.13 hrs, Volume= 0.186 af, Atten= 0%, Lag= 0.8 min
Primary = 2.00 cfs @ 12.13 hrs, Volume= 0.186 af
Routed to Pond 41P : Pocket Pond 41P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 441.50' Surf.Area= 313 sf Storage= 245 cf
Peak Elev= 441.84' @ 12.13 hrs Surf.Area= 407 sf Storage= 368 cf (123 cf above start)
Flood Elev= 442.00' Surf.Area= 454 sf Storage= 435 cf (191 cf above start)

Plug-Flow detention time= 35.2 min calculated for 0.180 af (97% of inflow)
Center-of-Mass det. time= 1.8 min (819.7 - 817.9)

Volume	Invert	Avail.Storage	Storage Description
#1	439.50'	435 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

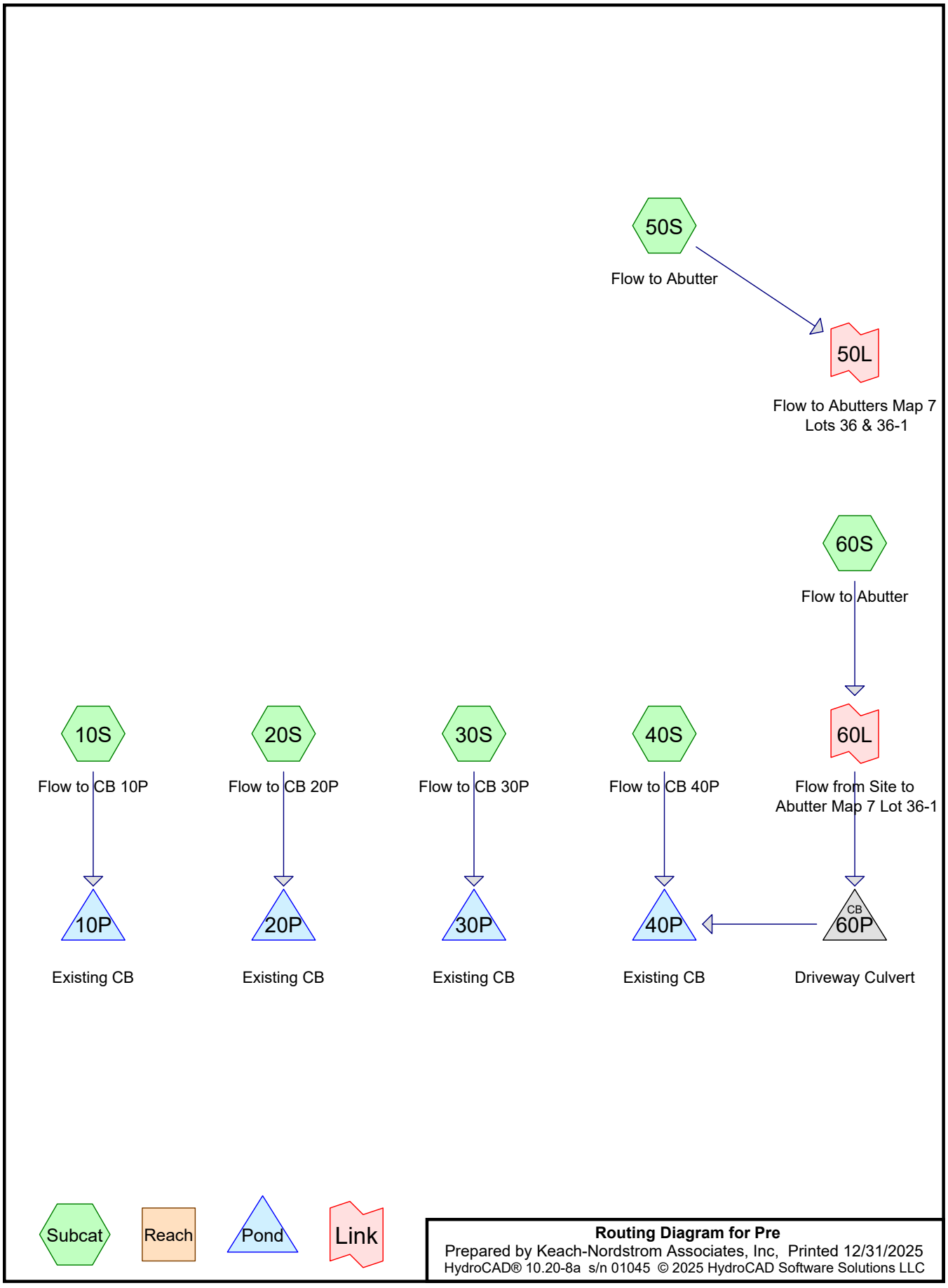
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
439.50	7	13.1	0	0	7
441.50	313	89.1	245	245	633
442.00	454	98.5	191	435	781

Device	Routing	Invert	Outlet Devices
#1	Primary	441.50'	**4.0' 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

Primary OutFlow Max=1.99 cfs @ 12.13 hrs HW=441.84' TW=441.08' (Dynamic Tailwater)
1=Broad-Crested Rectangular Weir (Weir Controls 1.99 cfs @ 1.46 fps)

Stage-Area-Storage for Pond 415P: Sediment Forebay 415P

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
439.50	7	0
439.55	9	0
439.60	12	1
439.65	14	2
439.70	17	2
439.75	20	3
439.80	24	4
439.85	28	6
439.90	32	7
439.95	36	9
440.00	41	11
440.05	46	13
440.10	51	15
440.15	57	18
440.20	63	21
440.25	69	24
440.30	75	28
440.35	82	32
440.40	89	36
440.45	96	41
440.50	103	46
440.55	111	51
440.60	119	57
440.65	128	63
440.70	136	70
440.75	145	77
440.80	154	84
440.85	164	92
440.90	174	101
440.95	184	110
441.00	194	119
441.05	205	129
441.10	216	139
441.15	227	150
441.20	238	162
441.25	250	174
441.30	262	187
441.35	274	201
441.40	287	215
441.45	300	229
441.50	313	245
441.55	326	261
441.60	339	277
441.65	353	294
441.70	366	312
441.75	380	331
441.80	394	350
441.85	409	371
441.90	424	391
441.95	439	413
442.00	**454**	**435**



Routing Diagram for Pre

Prepared by Keach-Nordstrom Associates, Inc, Printed 12/31/2025

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.464	39	>75% Grass cover, Good, HSG A (30S, 40S, 60S)
0.355	61	>75% Grass cover, Good, HSG B (10S, 30S, 40S)
0.263	80	>75% Grass cover, Good, HSG D (20S, 30S, 40S, 60S)
0.028	85	Gravel roads, HSG B (60S)
0.209	96	Gravel surface, HSG A (40S)
0.083	96	Gravel surface, HSG B (30S, 40S, 50S)
0.227	98	Paved parking, HSG A (30S, 40S, 60S)
0.242	98	Paved parking, HSG B (10S, 20S, 30S, 40S)
0.011	98	Paved parking, HSG D (40S)
0.183	98	Water Surface, HSG C (10S, 20S)
2.812	30	Woods, Good, HSG A (10S, 20S, 30S, 60S)
8.875	55	Woods, Good, HSG B (10S, 20S, 30S, 40S, 50S, 60S)
3.392	77	Woods, Good, HSG D (10S, 20S, 30S, 40S, 50S, 60S)
17.143	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.712	HSG A	10S, 20S, 30S, 40S, 60S
9.582	HSG B	10S, 20S, 30S, 40S, 50S, 60S
0.183	HSG C	10S, 20S
3.666	HSG D	10S, 20S, 30S, 40S, 50S, 60S
0.000	Other	
17.143		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,949 sf 3.22% Impervious Runoff Depth>0.39"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=0.85 cfs 0.104 af

Subcatchment 20S: Flow to CB 20P Runoff Area=314,828 sf 3.69% Impervious Runoff Depth>0.42"
Flow Length=1,000' Tc=16.1 min CN=WQ Runoff=2.01 cfs 0.255 af

Subcatchment 30S: Flow to CB 30P Runoff Area=85,116 sf 6.62% Impervious Runoff Depth>0.51"
Flow Length=905' Tc=21.0 min CN=WQ Runoff=0.63 cfs 0.083 af

Subcatchment 40S: Flow to CB 40P Runoff Area=87,968 sf 5.34% Impervious Runoff Depth>0.63"
Flow Length=1,073' Tc=17.4 min CN=WQ Runoff=0.86 cfs 0.106 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>0.27"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.04 cfs 0.006 af

Subcatchment 60S: Flow to Abutter Runoff Area=108,896 sf 2.23% Impervious Runoff Depth>0.20"
Flow Length=1,171' Tc=18.2 min CN=WQ Runoff=0.19 cfs 0.041 af

Pond 10P: Existing CB Inflow=0.85 cfs 0.104 af
Primary=0.85 cfs 0.104 af

Pond 20P: Existing CB Inflow=2.01 cfs 0.255 af
Primary=2.01 cfs 0.255 af

Pond 30P: Existing CB Inflow=0.63 cfs 0.083 af
Primary=0.63 cfs 0.083 af

Pond 40P: Existing CB Inflow=1.06 cfs 0.148 af
Primary=1.06 cfs 0.148 af

Pond 60P: Driveway Culvert Peak Elev=431.57' Inflow=0.19 cfs 0.041 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0169 '/' Outflow=0.19 cfs 0.041 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.04 cfs 0.006 af
Primary=0.04 cfs 0.006 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=0.19 cfs 0.041 af
Primary=0.19 cfs 0.041 af

Total Runoff Area = 17.143 ac Runoff Volume = 0.595 af Average Runoff Depth = 0.42"
96.13% Pervious = 16.481 ac 3.87% Impervious = 0.663 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,949 sf 3.22% Impervious Runoff Depth>0.83"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=1.93 cfs 0.220 af

Subcatchment 20S: Flow to CB 20P Runoff Area=314,828 sf 3.69% Impervious Runoff Depth>0.95"
Flow Length=1,000' Tc=16.1 min CN=WQ Runoff=4.94 cfs 0.571 af

Subcatchment 30S: Flow to CB 30P Runoff Area=85,116 sf 6.62% Impervious Runoff Depth>1.03"
Flow Length=905' Tc=21.0 min CN=WQ Runoff=1.36 cfs 0.168 af

Subcatchment 40S: Flow to CB 40P Runoff Area=87,968 sf 5.34% Impervious Runoff Depth>1.22"
Flow Length=1,073' Tc=17.4 min CN=WQ Runoff=1.71 cfs 0.205 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>0.74"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.13 cfs 0.016 af

Subcatchment 60S: Flow to Abutter Runoff Area=108,896 sf 2.23% Impervious Runoff Depth>0.55"
Flow Length=1,171' Tc=18.2 min CN=WQ Runoff=0.79 cfs 0.115 af

Pond 10P: Existing CB Inflow=1.93 cfs 0.220 af
Primary=1.93 cfs 0.220 af

Pond 20P: Existing CB Inflow=4.94 cfs 0.571 af
Primary=4.94 cfs 0.571 af

Pond 30P: Existing CB Inflow=1.36 cfs 0.168 af
Primary=1.36 cfs 0.168 af

Pond 40P: Existing CB Inflow=2.46 cfs 0.320 af
Primary=2.46 cfs 0.320 af

Pond 60P: Driveway Culvert Peak Elev=431.81' Inflow=0.79 cfs 0.115 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0169 '/' Outflow=0.79 cfs 0.115 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.13 cfs 0.016 af
Primary=0.13 cfs 0.016 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=0.79 cfs 0.115 af
Primary=0.79 cfs 0.115 af

Total Runoff Area = 17.143 ac Runoff Volume = 1.294 af Average Runoff Depth = 0.91"
96.13% Pervious = 16.481 ac 3.87% Impervious = 0.663 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,949 sf 3.22% Impervious Runoff Depth>1.23"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=3.00 cfs 0.326 af

Subcatchment 20S: Flow to CB 20P Runoff Area=314,828 sf 3.69% Impervious Runoff Depth>1.45"
Flow Length=1,000' Tc=16.1 min CN=WQ Runoff=8.10 cfs 0.871 af

Subcatchment 30S: Flow to CB 30P Runoff Area=85,116 sf 6.62% Impervious Runoff Depth>1.52"
Flow Length=905' Tc=21.0 min CN=WQ Runoff=2.08 cfs 0.247 af

Subcatchment 40S: Flow to CB 40P Runoff Area=87,968 sf 5.34% Impervious Runoff Depth>1.76"
Flow Length=1,073' Tc=17.4 min CN=WQ Runoff=2.59 cfs 0.297 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>1.22"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.25 cfs 0.026 af

Subcatchment 60S: Flow to Abutter Runoff Area=108,896 sf 2.23% Impervious Runoff Depth>0.92"
Flow Length=1,171' Tc=18.2 min CN=WQ Runoff=1.55 cfs 0.192 af

Pond 10P: Existing CB Inflow=3.00 cfs 0.326 af
Primary=3.00 cfs 0.326 af

Pond 20P: Existing CB Inflow=8.10 cfs 0.871 af
Primary=8.10 cfs 0.871 af

Pond 30P: Existing CB Inflow=2.08 cfs 0.247 af
Primary=2.08 cfs 0.247 af

Pond 40P: Existing CB Inflow=4.11 cfs 0.489 af
Primary=4.11 cfs 0.489 af

Pond 60P: Driveway Culvert Peak Elev=432.03' Inflow=1.55 cfs 0.192 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0169 '/' Outflow=1.55 cfs 0.192 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.25 cfs 0.026 af
Primary=0.25 cfs 0.026 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=1.55 cfs 0.192 af
Primary=1.55 cfs 0.192 af

Total Runoff Area = 17.143 ac Runoff Volume = 1.959 af Average Runoff Depth = 1.37"
96.13% Pervious = 16.481 ac 3.87% Impervious = 0.663 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,949 sf 3.22% Impervious Runoff Depth>1.64"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=4.07 cfs 0.437 af

Subcatchment 20S: Flow to CB 20P Runoff Area=314,828 sf 3.69% Impervious Runoff Depth>1.95"
Flow Length=1,000' Tc=16.1 min CN=WQ Runoff=11.29 cfs 1.177 af

Subcatchment 30S: Flow to CB 30P Runoff Area=85,116 sf 6.62% Impervious Runoff Depth>2.01"
Flow Length=905' Tc=21.0 min CN=WQ Runoff=2.80 cfs 0.328 af

Subcatchment 40S: Flow to CB 40P Runoff Area=87,968 sf 5.34% Impervious Runoff Depth>2.32"
Flow Length=1,073' Tc=17.4 min CN=WQ Runoff=3.48 cfs 0.390 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>1.72"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.39 cfs 0.036 af

Subcatchment 60S: Flow to Abutter Runoff Area=108,896 sf 2.23% Impervious Runoff Depth>1.32"
Flow Length=1,171' Tc=18.2 min CN=WQ Runoff=2.37 cfs 0.276 af

Pond 10P: Existing CB Inflow=4.07 cfs 0.437 af
Primary=4.07 cfs 0.437 af

Pond 20P: Existing CB Inflow=11.29 cfs 1.177 af
Primary=11.29 cfs 1.177 af

Pond 30P: Existing CB Inflow=2.80 cfs 0.328 af
Primary=2.80 cfs 0.328 af

Pond 40P: Existing CB Inflow=5.82 cfs 0.666 af
Primary=5.82 cfs 0.666 af

Pond 60P: Driveway Culvert Peak Elev=432.25' Inflow=2.37 cfs 0.276 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0169 '/' Outflow=2.37 cfs 0.276 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.39 cfs 0.036 af
Primary=0.39 cfs 0.036 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=2.37 cfs 0.276 af
Primary=2.37 cfs 0.276 af

Total Runoff Area = 17.143 ac Runoff Volume = 2.644 af Average Runoff Depth = 1.85"
96.13% Pervious = 16.481 ac 3.87% Impervious = 0.663 ac

Summary for Subcatchment 10S: Flow to CB 10P

Runoff = 1.93 cfs @ 12.26 hrs, Volume= 0.220 af, Depth> 0.83"
Routed to Pond 10P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
3,674	98	Paved parking, HSG B
6,224	61	>75% Grass cover, Good, HSG B
801	98	Water Surface, HSG C
49,768	30	Woods, Good, HSG A
39,726	55	Woods, Good, HSG B
38,756	77	Woods, Good, HSG D
138,949		Weighted Average
134,474		96.78% Pervious Area
4,475		3.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
8.9	1,035	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	1,135	Total			

Summary for Subcatchment 20S: Flow to CB 20P

Runoff = 4.94 cfs @ 12.24 hrs, Volume= 0.571 af, Depth> 0.95"
Routed to Pond 20P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
4,461	98	Paved parking, HSG B
5,323	80	>75% Grass cover, Good, HSG D
7,166	98	Water Surface, HSG C
39,209	30	Woods, Good, HSG A
179,013	55	Woods, Good, HSG B
79,656	77	Woods, Good, HSG D
314,828		Weighted Average
303,201		96.31% Pervious Area
11,627		3.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
7.1	900	0.1800	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.1	1,000	Total			

Summary for Subcatchment 30S: Flow to CB 30P

Runoff = 1.36 cfs @ 12.31 hrs, Volume= 0.168 af, Depth> 1.03"
Routed to Pond 30P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
5,038	98	Paved parking, HSG A
3,542	80	>75% Grass cover, Good, HSG D
6,809	39	>75% Grass cover, Good, HSG A
3,061	61	>75% Grass cover, Good, HSG B
595	98	Paved parking, HSG B
790	96	Gravel surface, HSG B
12,810	30	Woods, Good, HSG A
19,284	77	Woods, Good, HSG D
33,187	55	Woods, Good, HSG B
85,116		Weighted Average
79,483		93.38% Pervious Area
5,633		6.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.6	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
4.3	500	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	55	0.3600	9.66		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.0	250	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
21.0	905	Total			

Summary for Subcatchment 40S: Flow to CB 40P

Runoff = 1.71 cfs @ 12.25 hrs, Volume= 0.205 af, Depth> 1.22"
Routed to Pond 40P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
2,433	98	Paved parking, HSG A
474	98	Paved parking, HSG D
1,792	98	Paved parking, HSG B
9,352	39	>75% Grass cover, Good, HSG A
6,161	61	>75% Grass cover, Good, HSG B
2,588	80	>75% Grass cover, Good, HSG D
47,279	55	Woods, Good, HSG B
2,326	96	Gravel surface, HSG B
9,098	96	Gravel surface, HSG A
6,465	77	Woods, Good, HSG D
87,968		Weighted Average
83,269		94.66% Pervious Area
4,699		5.34% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
8.4	973	0.1500	1.94		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
17.4	1,073	Total			

Summary for Subcatchment 50S: Flow to Abutter

Runoff = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af, Depth> 0.74"
Routed to Link 50L : Flow to Abutters Map 7 Lots 36 & 36-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
506	96	Gravel surface, HSG B
485	77	Woods, Good, HSG D
10,016	55	Woods, Good, HSG B
11,007		Weighted Average
11,007		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.1800	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
1.0	113	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	213	Total			

Summary for Subcatchment 60S: Flow to Abutter

Runoff = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af, Depth> 0.55"
Routed to Link 60L : Flow from Site to Abutter Map 7 Lot 36-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
3,110	77	Woods, Good, HSG D
16	80	>75% Grass cover, Good, HSG D
20,716	30	Woods, Good, HSG A
4,044	39	>75% Grass cover, Good, HSG A
1,214	85	Gravel roads, HSG B
77,363	55	Woods, Good, HSG B
2,433	98	Paved parking, HSG A
108,896		Weighted Average
106,463		97.77% Pervious Area
2,433		2.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
9.2	1,071	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
18.2	1,171	Total			

Summary for Pond 10P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.190 ac, 3.22% Impervious, Inflow Depth > 0.83" for 10 yr event
Inflow = 1.93 cfs @ 12.26 hrs, Volume= 0.220 af
Primary = 1.93 cfs @ 12.26 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 20P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.227 ac, 3.69% Impervious, Inflow Depth > 0.95" for 10 yr event
Inflow = 4.94 cfs @ 12.24 hrs, Volume= 0.571 af
Primary = 4.94 cfs @ 12.24 hrs, Volume= 0.571 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 30P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 1.954 ac, 6.62% Impervious, Inflow Depth > 1.03" for 10 yr event
Inflow = 1.36 cfs @ 12.31 hrs, Volume= 0.168 af
Primary = 1.36 cfs @ 12.31 hrs, Volume= 0.168 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 40P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 4.519 ac, 3.62% Impervious, Inflow Depth > 0.85" for 10 yr event
Inflow = 2.46 cfs @ 12.27 hrs, Volume= 0.320 af
Primary = 2.46 cfs @ 12.27 hrs, Volume= 0.320 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 60P: Driveway Culvert

[57] Hint: Peaked at 431.81' (Flood elevation advised)

Inflow Area = 2.500 ac, 2.23% Impervious, Inflow Depth > 0.55" for 10 yr event
Inflow = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af
Outflow = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min
Primary = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af
Routed to Pond 40P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 431.81' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	431.36'	**12.0" Round Culvert** L= 39.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 431.36' / 430.70' S= 0.0169 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.79 cfs @ 12.32 hrs HW=431.81' TW=0.00' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.79 cfs @ 2.29 fps)

Summary for Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1

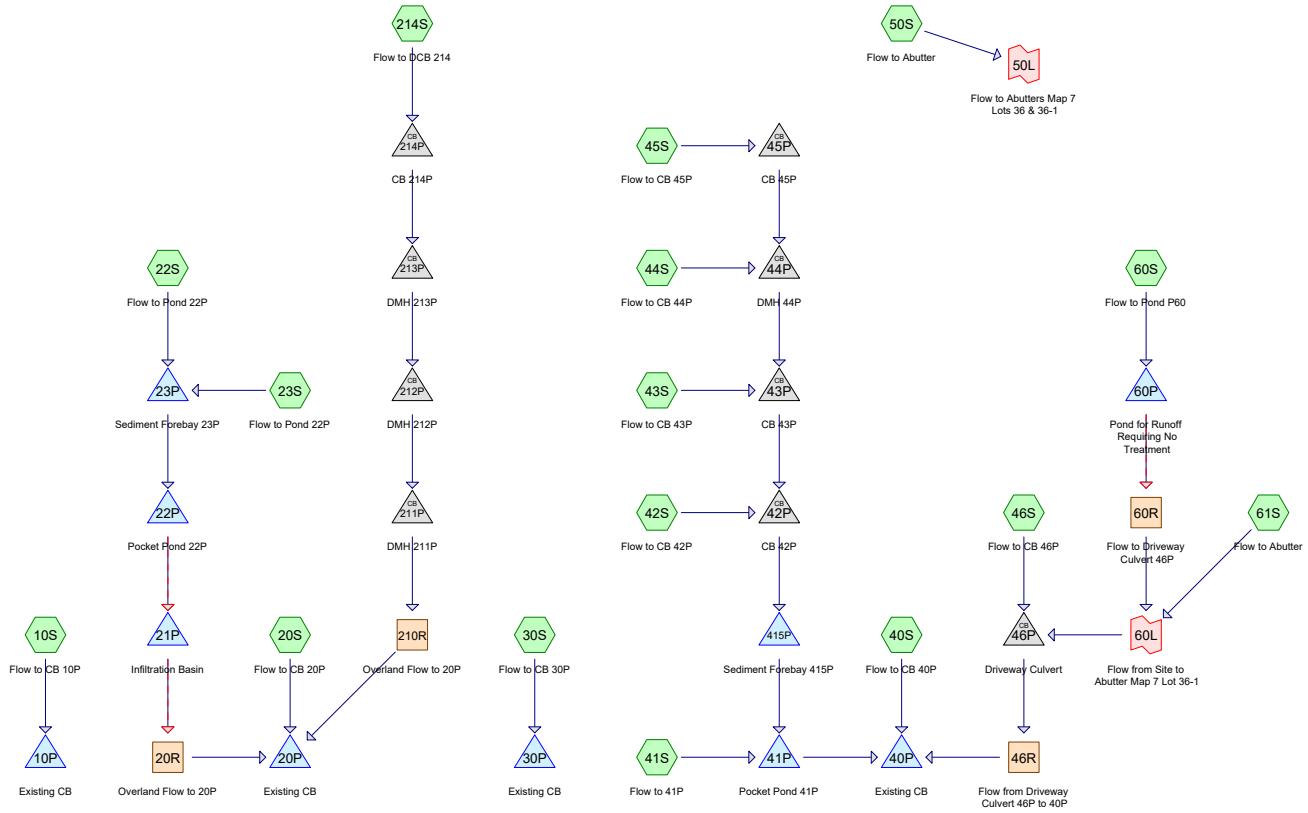
Inflow Area = 0.253 ac, 0.00% Impervious, Inflow Depth > 0.74" for 10 yr event
Inflow = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af
Primary = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Summary for Link 60L: Flow from Site to Abutter Map 7 Lot 36-1

Inflow Area = 2.500 ac, 2.23% Impervious, Inflow Depth > 0.55" for 10 yr event
Inflow = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af
Primary = 0.79 cfs @ 12.32 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 60P : Driveway Culvert

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs



Subcat Reach Pond Link

Routing Diagram for Post

Prepared by Keach-Nordstrom Associates, Inc, Printed 12/31/2025

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.294	39	>75% Grass cover, Good, HSG A (20S, 22S, 23S, 40S, 41S, 42S, 43S, 44S, 46S, 61S)
2.729	61	>75% Grass cover, Good, HSG B (10S, 20S, 22S, 23S, 30S, 41S, 42S, 43S, 44S, 45S, 60S, 61S, 214S)
1.023	80	>75% Grass cover, Good, HSG D (20S, 22S, 30S, 40S, 41S, 42S, 43S, 45S, 46S, 61S, 214S)
0.047	85	Gravel roads, HSG B (60S, 61S)
0.012	96	Gravel surface, HSG B (50S)
0.615	98	Paved parking, HSG A (22S, 23S, 30S, 40S, 41S, 42S, 43S, 44S, 46S, 61S)
0.514	98	Paved parking, HSG B (10S, 20S, 22S, 23S, 42S, 43S, 44S, 45S)
0.008	98	Paved parking, HSG D (40S, 46S)
0.066	98	Roofs, HSG A (22S, 23S)
0.161	98	Roofs, HSG B (22S, 23S)
0.001	98	Roofs, HSG D (22S)
0.183	98	Water Surface, HSG C (10S, 20S)
1.737	30	Woods, Good, HSG A (10S, 20S, 22S, 30S, 46S, 61S)
6.121	55	Woods, Good, HSG B (10S, 20S, 22S, 43S, 46S, 50S, 60S, 61S, 214S)
2.634	77	Woods, Good, HSG D (10S, 20S, 22S, 30S, 43S, 46S, 50S, 60S, 61S, 214S)
17.143	**61**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
3.712	HSG A	10S, 20S, 22S, 23S, 30S, 40S, 41S, 42S, 43S, 44S, 46S, 61S
9.582	HSG B	10S, 20S, 22S, 23S, 30S, 41S, 42S, 43S, 44S, 45S, 46S, 50S, 60S, 61S, 214S
0.183	HSG C	10S, 20S
3.666	HSG D	10S, 20S, 22S, 30S, 40S, 41S, 42S, 43S, 45S, 46S, 50S, 60S, 61S, 214S
0.000	Other	
17.143		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,730 sf 3.23% Impervious Runoff Depth>0.39"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=0.84 cfs 0.103 af

Subcatchment 20S: Flow to CB 20P Runoff Area=102,298 sf 14.98% Impervious Runoff Depth>0.78"
Flow Length=578' Tc=16.9 min CN=WQ Runoff=1.30 cfs 0.153 af

Subcatchment 22S: Flow to Pond 22P Runoff Area=75,133 sf 6.41% Impervious Runoff Depth>0.60"
Flow Length=363' Tc=9.5 min CN=WQ Runoff=0.86 cfs 0.086 af

Subcatchment 23S: Flow to Pond 22P Runoff Area=31,796 sf 71.93% Impervious Runoff Depth>1.85"
Flow Length=412' Tc=6.0 min CN=WQ Runoff=1.41 cfs 0.113 af

Subcatchment 30S: Flow to CB 30P Runoff Area=21,407 sf 23.53% Impervious Runoff Depth>1.29"
Flow Length=310' Slope=0.0100 '/' Tc=17.8 min CN=WQ Runoff=0.49 cfs 0.053 af

Subcatchment 40S: Flow to CB 40P Runoff Area=6,946 sf 32.42% Impervious Runoff Depth>1.44"
Flow Length=126' Tc=6.3 min CN=WQ Runoff=0.25 cfs 0.019 af

Subcatchment 41S: Flow to 41P Runoff Area=28,634 sf 1.45% Impervious Runoff Depth>0.30"
Flow Length=142' Tc=6.0 min CN=WQ Runoff=0.19 cfs 0.017 af

Subcatchment 42S: Flow to CB 42P Runoff Area=6,835 sf 27.53% Impervious Runoff Depth>0.80"
Flow Length=128' Tc=8.1 min CN=WQ Runoff=0.12 cfs 0.010 af

Subcatchment 43S: Flow to CB 43P Runoff Area=18,609 sf 12.79% Impervious Runoff Depth>0.52"
Flow Length=358' Tc=11.6 min CN=WQ Runoff=0.16 cfs 0.018 af

Subcatchment 44S: Flow to CB 44P Runoff Area=2,206 sf 60.20% Impervious Runoff Depth>1.62"
Flow Length=54' Slope=0.1400 '/' Tc=6.0 min CN=WQ Runoff=0.08 cfs 0.007 af

Subcatchment 45S: Flow to CB 45P Runoff Area=14,764 sf 8.05% Impervious Runoff Depth>0.51"
Flow Length=134' Tc=6.0 min CN=WQ Runoff=0.13 cfs 0.014 af

Subcatchment 46S: Flow to CB 46P Runoff Area=12,239 sf 23.60% Impervious Runoff Depth>0.83"
Flow Length=258' Tc=10.0 min CN=WQ Runoff=0.22 cfs 0.019 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>0.27"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.04 cfs 0.006 af

Subcatchment 60S: Flow to Pond P60 Runoff Area=110,256 sf 0.00% Impervious Runoff Depth>0.21"
Flow Length=684' Tc=14.6 min CN=WQ Runoff=0.18 cfs 0.045 af

Subcatchment 61S: Flow to Abutter Runoff Area=81,036 sf 3.10% Impervious Runoff Depth>0.21"
Flow Length=734' Tc=14.5 min CN=WQ Runoff=0.18 cfs 0.032 af

Subcatchment 214S: Flow to DCB 214 Runoff Area=84,870 sf 0.00% Impervious Runoff Depth>0.43"
Flow Length=816' Tc=15.2 min CN=WQ Runoff=0.55 cfs 0.069 af

Reach 20R: Overland Flow to 20P Avg. Flow Depth=0.05' Max Vel=3.75 fps Inflow=0.41 cfs 0.025 af
n=0.013 L=244.0' S=0.0922 '/' Capacity=1,102.26 cfs Outflow=0.41 cfs 0.025 af

Reach 46R: Flow from Driveway Culvert Avg. Flow Depth=0.45' Max Vel=0.36 fps Inflow=0.39 cfs 0.052 af
n=0.150 L=50.0' S=0.0074 '/' Capacity=12.13 cfs Outflow=0.38 cfs 0.052 af

Reach 60R: Flow to Driveway Culvert Avg. Flow Depth=0.01' Max Vel=0.64 fps Inflow=0.01 cfs 0.001 af
n=0.035 L=467.0' S=0.1499 '/' Capacity=166.52 cfs Outflow=0.01 cfs 0.000 af

Reach 210R: Overland Flow to 20P Avg. Flow Depth=0.06' Max Vel=3.93 fps Inflow=0.55 cfs 0.069 af
n=0.013 L=486.0' S=0.0874 '/' Capacity=1,073.41 cfs Outflow=0.54 cfs 0.069 af

Pond 10P: Existing CB Inflow=0.84 cfs 0.103 af
Primary=0.84 cfs 0.103 af

Pond 20P: Existing CB Inflow=1.84 cfs 0.247 af
Primary=1.84 cfs 0.247 af

Pond 21P: Infiltration Basin Peak Elev=469.70' Storage=3,284 cf Inflow=1.00 cfs 0.195 af
Discarded=0.12 cfs 0.125 af Primary=0.41 cfs 0.025 af Secondary=0.00 cfs 0.000 af Outflow=0.54 cfs 0.150 af

Pond 22P: Pocket Pond 22P Peak Elev=470.14' Storage=5,534 cf Inflow=2.14 cfs 0.199 af
Primary=1.00 cfs 0.195 af Secondary=0.00 cfs 0.000 af Outflow=1.00 cfs 0.195 af

Pond 23P: Sediment Forebay 23P Peak Elev=471.36' Storage=439 cf Inflow=2.16 cfs 0.199 af
Outflow=2.14 cfs 0.199 af

Pond 30P: Existing CB Inflow=0.49 cfs 0.053 af
Primary=0.49 cfs 0.053 af

Pond 40P: Existing CB Inflow=0.66 cfs 0.133 af
Primary=0.66 cfs 0.133 af

Pond 41P: Pocket Pond 41P Peak Elev=440.55' Storage=6,589 cf Inflow=0.64 cfs 0.067 af
Outflow=0.14 cfs 0.062 af

Pond 42P: CB 42P Peak Elev=443.63' Inflow=0.47 cfs 0.050 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0782 '/' Outflow=0.47 cfs 0.050 af

Pond 43P: CB 43P Peak Elev=445.92' Inflow=0.36 cfs 0.040 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0526 '/' Outflow=0.36 cfs 0.040 af

Pond 44P: DMH 44P Peak Elev=453.21' Inflow=0.21 cfs 0.021 af
15.0" Round Culvert n=0.013 L=79.0' S=0.0886 '/' Outflow=0.21 cfs 0.021 af

Pond 45P: CB 45P Peak Elev=465.96' Inflow=0.13 cfs 0.014 af
15.0" Round Culvert n=0.013 L=64.0' S=0.1219 '/' Outflow=0.13 cfs 0.014 af

Pond 46P: Driveway Culvert Peak Elev=431.32' Inflow=0.39 cfs 0.052 af
12.0" Round Culvert n=0.013 L=31.0' S=0.0161 '/' Outflow=0.39 cfs 0.052 af

Pond 60P: Pond for Runoff Requiring No Peak Elev=502.05' Storage=1,922 cf Inflow=0.18 cfs 0.045 af
Primary=0.01 cfs 0.001 af Secondary=0.00 cfs 0.000 af Outflow=0.01 cfs 0.001 af

Pond 211P: DMH 211P Peak Elev=473.56' Inflow=0.55 cfs 0.069 af
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=0.55 cfs 0.069 af

Pond 212P: DMH 212P Peak Elev=479.57' Inflow=0.55 cfs 0.069 af
18.0" Round Culvert n=0.013 L=43.0' S=0.0988 '/' Outflow=0.55 cfs 0.069 af

Pond 213P: DMH 213P Peak Elev=488.37' Inflow=0.55 cfs 0.069 af
18.0" Round Culvert n=0.013 L=38.0' S=0.1066 '/' Outflow=0.55 cfs 0.069 af

Pond 214P: CB 214P Peak Elev=497.82' Inflow=0.55 cfs 0.069 af
18.0" Round Culvert n=0.013 L=45.0' S=0.0989 '/' Outflow=0.55 cfs 0.069 af

Pond 415P: Sediment Forebay 415P Peak Elev=441.63' Storage=289 cf Inflow=0.47 cfs 0.050 af
Outflow=0.46 cfs 0.050 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.04 cfs 0.006 af
Primary=0.04 cfs 0.006 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=0.18 cfs 0.032 af
Primary=0.18 cfs 0.032 af

Total Runoff Area = 17.143 ac Runoff Volume = 0.765 af Average Runoff Depth = 0.54"
90.98% Pervious = 15.597 ac 9.02% Impervious = 1.546 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,730 sf 3.23% Impervious Runoff Depth>0.82"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=1.93 cfs 0.219 af

Subcatchment 20S: Flow to CB 20P Runoff Area=102,298 sf 14.98% Impervious Runoff Depth>1.49"
Flow Length=578' Tc=16.9 min CN=WQ Runoff=2.65 cfs 0.291 af

Subcatchment 22S: Flow to Pond 22P Runoff Area=75,133 sf 6.41% Impervious Runoff Depth>1.24"
Flow Length=363' Tc=9.5 min CN=WQ Runoff=1.99 cfs 0.178 af

Subcatchment 23S: Flow to Pond 22P Runoff Area=31,796 sf 71.93% Impervious Runoff Depth>2.80"
Flow Length=412' Tc=6.0 min CN=WQ Runoff=2.10 cfs 0.171 af

Subcatchment 30S: Flow to CB 30P Runoff Area=21,407 sf 23.53% Impervious Runoff Depth>2.25"
Flow Length=310' Slope=0.0100 '/' Tc=17.8 min CN=WQ Runoff=0.87 cfs 0.092 af

Subcatchment 40S: Flow to CB 40P Runoff Area=6,946 sf 32.42% Impervious Runoff Depth>2.42"
Flow Length=126' Tc=6.3 min CN=WQ Runoff=0.42 cfs 0.032 af

Subcatchment 41S: Flow to 41P Runoff Area=28,634 sf 1.45% Impervious Runoff Depth>0.67"
Flow Length=142' Tc=6.0 min CN=WQ Runoff=0.45 cfs 0.036 af

Subcatchment 42S: Flow to CB 42P Runoff Area=6,835 sf 27.53% Impervious Runoff Depth>1.31"
Flow Length=128' Tc=8.1 min CN=WQ Runoff=0.19 cfs 0.017 af

Subcatchment 43S: Flow to CB 43P Runoff Area=18,609 sf 12.79% Impervious Runoff Depth>1.04"
Flow Length=358' Tc=11.6 min CN=WQ Runoff=0.34 cfs 0.037 af

Subcatchment 44S: Flow to CB 44P Runoff Area=2,206 sf 60.20% Impervious Runoff Depth>2.55"
Flow Length=54' Slope=0.1400 '/' Tc=6.0 min CN=WQ Runoff=0.13 cfs 0.011 af

Subcatchment 45S: Flow to CB 45P Runoff Area=14,764 sf 8.05% Impervious Runoff Depth>1.14"
Flow Length=134' Tc=6.0 min CN=WQ Runoff=0.38 cfs 0.032 af

Subcatchment 46S: Flow to CB 46P Runoff Area=12,239 sf 23.60% Impervious Runoff Depth>1.36"
Flow Length=258' Tc=10.0 min CN=WQ Runoff=0.35 cfs 0.032 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>0.74"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.13 cfs 0.016 af

Subcatchment 60S: Flow to Pond P60 Runoff Area=110,256 sf 0.00% Impervious Runoff Depth>0.67"
Flow Length=684' Tc=14.6 min CN=WQ Runoff=1.05 cfs 0.140 af

Subcatchment 61S: Flow to Abutter Runoff Area=81,036 sf 3.10% Impervious Runoff Depth>0.54"
Flow Length=734' Tc=14.5 min CN=WQ Runoff=0.63 cfs 0.084 af

Subcatchment 214S: Flow to DCB 214 Runoff Area=84,870 sf 0.00% Impervious Runoff Depth>1.02"
Flow Length=816' Tc=15.2 min CN=WQ Runoff=1.49 cfs 0.166 af

Reach 20R: Overland Flow to 20P Avg. Flow Depth=0.09' Max Vel=5.19 fps Inflow=1.23 cfs 0.141 af
n=0.013 L=244.0' S=0.0922 '/' Capacity=1,102.26 cfs Outflow=1.23 cfs 0.141 af

Reach 46R: Flow from Driveway Culvert Avg. Flow Depth=0.67' Max Vel=0.45 fps Inflow=0.91 cfs 0.210 af
n=0.150 L=50.0' S=0.0074 '/' Capacity=12.13 cfs Outflow=0.90 cfs 0.209 af

Reach 60R: Flow to Driveway Culvert Avg. Flow Depth=0.05' Max Vel=1.69 fps Inflow=0.25 cfs 0.095 af
n=0.035 L=467.0' S=0.1499 '/' Capacity=166.52 cfs Outflow=0.25 cfs 0.094 af

Reach 210R: Overland Flow to 20P Avg. Flow Depth=0.09' Max Vel=5.38 fps Inflow=1.50 cfs 0.166 af
n=0.013 L=486.0' S=0.0874 '/' Capacity=1,073.41 cfs Outflow=1.48 cfs 0.166 af

Pond 10P: Existing CB Inflow=1.93 cfs 0.219 af
Primary=1.93 cfs 0.219 af

Pond 20P: Existing CB Inflow=4.13 cfs 0.598 af
Primary=4.13 cfs 0.598 af

Pond 21P: Infiltration Basin Peak Elev=469.75' Storage=3,377 cf Inflow=1.43 cfs 0.343 af
Discarded=0.13 cfs 0.140 af Primary=1.23 cfs 0.141 af Secondary=0.00 cfs 0.000 af Outflow=1.35 cfs 0.281 af

Pond 22P: Pocket Pond 22P Peak Elev=470.82' Storage=7,279 cf Inflow=3.87 cfs 0.348 af
Primary=1.43 cfs 0.343 af Secondary=0.00 cfs 0.000 af Outflow=1.43 cfs 0.343 af

Pond 23P: Sediment Forebay 23P Peak Elev=471.51' Storage=514 cf Inflow=3.89 cfs 0.348 af
Outflow=3.87 cfs 0.348 af

Pond 30P: Existing CB Inflow=0.87 cfs 0.092 af
Primary=0.87 cfs 0.092 af

Pond 40P: Existing CB Inflow=1.30 cfs 0.368 af
Primary=1.30 cfs 0.368 af

Pond 41P: Pocket Pond 41P Peak Elev=441.01' Storage=7,780 cf Inflow=1.41 cfs 0.133 af
Outflow=0.21 cfs 0.127 af

Pond 42P: CB 42P Peak Elev=443.77' Inflow=0.99 cfs 0.097 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0782 '/' Outflow=0.99 cfs 0.097 af

Pond 43P: CB 43P Peak Elev=446.06' Inflow=0.80 cfs 0.080 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0526 '/' Outflow=0.80 cfs 0.080 af

Pond 44P: DMH 44P Peak Elev=453.33' Inflow=0.51 cfs 0.043 af
15.0" Round Culvert n=0.013 L=79.0' S=0.0886 '/' Outflow=0.51 cfs 0.043 af

Pond 45P: CB 45P Peak Elev=466.08' Inflow=0.38 cfs 0.032 af
15.0" Round Culvert n=0.013 L=64.0' S=0.1219 '/' Outflow=0.38 cfs 0.032 af

Pond 46P: Driveway Culvert Peak Elev=431.54' Inflow=0.91 cfs 0.210 af
12.0" Round Culvert n=0.013 L=31.0' S=0.0161 '/' Outflow=0.91 cfs 0.210 af

Pond 60P: Pond for Runoff Requiring No Peak Elev=502.26' Storage=2,242 cf Inflow=1.05 cfs 0.140 af
Primary=0.25 cfs 0.095 af Secondary=0.00 cfs 0.000 af Outflow=0.25 cfs 0.095 af

Pond 211P: DMH 211P Peak Elev=473.64' Inflow=1.49 cfs 0.166 af
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=1.50 cfs 0.166 af

Pond 212P: DMH 212P Peak Elev=479.80' Inflow=1.49 cfs 0.166 af
18.0" Round Culvert n=0.013 L=43.0' S=0.0988 '/' Outflow=1.49 cfs 0.166 af

Pond 213P: DMH 213P Peak Elev=488.60' Inflow=1.49 cfs 0.166 af
18.0" Round Culvert n=0.013 L=38.0' S=0.1066 '/' Outflow=1.49 cfs 0.166 af

Pond 214P: CB 214P Peak Elev=498.05' Inflow=1.49 cfs 0.166 af
18.0" Round Culvert n=0.013 L=45.0' S=0.0989 '/' Outflow=1.49 cfs 0.166 af

Pond 415P: Sediment Forebay 415P Peak Elev=441.72' Storage=319 cf Inflow=0.99 cfs 0.097 af
Outflow=0.98 cfs 0.097 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.13 cfs 0.016 af
Primary=0.13 cfs 0.016 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=0.63 cfs 0.178 af
Primary=0.63 cfs 0.178 af

Total Runoff Area = 17.143 ac Runoff Volume = 1.553 af Average Runoff Depth = 1.09"
90.98% Pervious = 15.597 ac 9.02% Impervious = 1.546 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,730 sf 3.23% Impervious Runoff Depth>1.23"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=2.99 cfs 0.325 af

Subcatchment 20S: Flow to CB 20P Runoff Area=102,298 sf 14.98% Impervious Runoff Depth>2.12"
Flow Length=578' Tc=16.9 min CN=WQ Runoff=3.87 cfs 0.414 af

Subcatchment 22S: Flow to Pond 22P Runoff Area=75,133 sf 6.41% Impervious Runoff Depth>1.82"
Flow Length=363' Tc=9.5 min CN=WQ Runoff=3.01 cfs 0.262 af

Subcatchment 23S: Flow to Pond 22P Runoff Area=31,796 sf 71.93% Impervious Runoff Depth>3.57"
Flow Length=412' Tc=6.0 min CN=WQ Runoff=2.63 cfs 0.217 af

Subcatchment 30S: Flow to CB 30P Runoff Area=21,407 sf 23.53% Impervious Runoff Depth>3.05"
Flow Length=310' Slope=0.0100 '/' Tc=17.8 min CN=WQ Runoff=1.19 cfs 0.125 af

Subcatchment 40S: Flow to CB 40P Runoff Area=6,946 sf 32.42% Impervious Runoff Depth>3.22"
Flow Length=126' Tc=6.3 min CN=WQ Runoff=0.55 cfs 0.043 af

Subcatchment 41S: Flow to 41P Runoff Area=28,634 sf 1.45% Impervious Runoff Depth>1.05"
Flow Length=142' Tc=6.0 min CN=WQ Runoff=0.69 cfs 0.057 af

Subcatchment 42S: Flow to CB 42P Runoff Area=6,835 sf 27.53% Impervious Runoff Depth>1.78"
Flow Length=128' Tc=8.1 min CN=WQ Runoff=0.25 cfs 0.023 af

Subcatchment 43S: Flow to CB 43P Runoff Area=18,609 sf 12.79% Impervious Runoff Depth>1.55"
Flow Length=358' Tc=11.6 min CN=WQ Runoff=0.54 cfs 0.055 af

Subcatchment 44S: Flow to CB 44P Runoff Area=2,206 sf 60.20% Impervious Runoff Depth>3.31"
Flow Length=54' Slope=0.1400 '/' Tc=6.0 min CN=WQ Runoff=0.17 cfs 0.014 af

Subcatchment 45S: Flow to CB 45P Runoff Area=14,764 sf 8.05% Impervious Runoff Depth>1.73"
Flow Length=134' Tc=6.0 min CN=WQ Runoff=0.62 cfs 0.049 af

Subcatchment 46S: Flow to CB 46P Runoff Area=12,239 sf 23.60% Impervious Runoff Depth>1.84"
Flow Length=258' Tc=10.0 min CN=WQ Runoff=0.46 cfs 0.043 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>1.22"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.25 cfs 0.026 af

Subcatchment 60S: Flow to Pond P60 Runoff Area=110,256 sf 0.00% Impervious Runoff Depth>1.14"
Flow Length=684' Tc=14.6 min CN=WQ Runoff=2.15 cfs 0.240 af

Subcatchment 61S: Flow to Abutter Runoff Area=81,036 sf 3.10% Impervious Runoff Depth>0.89"
Flow Length=734' Tc=14.5 min CN=WQ Runoff=1.21 cfs 0.137 af

Subcatchment 214S: Flow to DCB 214 Runoff Area=84,870 sf 0.00% Impervious Runoff Depth>1.59"
Flow Length=816' Tc=15.2 min CN=WQ Runoff=2.50 cfs 0.258 af

Reach 20R: Overland Flow to 20P Avg. Flow Depth=0.11' Max Vel=6.09 fps Inflow=2.08 cfs 0.252 af
n=0.013 L=244.0' S=0.0922 '/' Capacity=1,102.26 cfs Outflow=2.08 cfs 0.252 af

Reach 46R: Flow from Driveway Culvert Avg. Flow Depth=0.85' Max Vel=0.52 fps Inflow=1.58 cfs 0.373 af
n=0.150 L=50.0' S=0.0074 '/' Capacity=12.13 cfs Outflow=1.57 cfs 0.373 af

Reach 60R: Flow to Driveway Culvert Avg. Flow Depth=0.08' Max Vel=2.32 fps Inflow=0.69 cfs 0.194 af
n=0.035 L=467.0' S=0.1499 '/' Capacity=166.52 cfs Outflow=0.69 cfs 0.193 af

Reach 210R: Overland Flow to 20P Avg. Flow Depth=0.12' Max Vel=6.29 fps Inflow=2.52 cfs 0.258 af
n=0.013 L=486.0' S=0.0874 '/' Capacity=1,073.41 cfs Outflow=2.48 cfs 0.258 af

Pond 10P: Existing CB Inflow=2.99 cfs 0.325 af
Primary=2.99 cfs 0.325 af

Pond 20P: Existing CB Inflow=7.97 cfs 0.924 af
Primary=7.97 cfs 0.924 af

Pond 21P: Infiltration Basin Peak Elev=469.79' Storage=3,448 cf Inflow=2.21 cfs 0.469 af
Discarded=0.13 cfs 0.148 af Primary=2.01 cfs 0.250 af Secondary=0.07 cfs 0.002 af Outflow=2.21 cfs 0.400 af

Pond 22P: Pocket Pond 22P Peak Elev=471.24' Storage=8,575 cf Inflow=5.37 cfs 0.478 af
Primary=2.21 cfs 0.469 af Secondary=0.00 cfs 0.000 af Outflow=2.21 cfs 0.469 af

Pond 23P: Sediment Forebay 23P Peak Elev=471.63' Storage=573 cf Inflow=5.40 cfs 0.479 af
Outflow=5.37 cfs 0.478 af

Pond 30P: Existing CB Inflow=1.19 cfs 0.125 af
Primary=1.19 cfs 0.125 af

Pond 40P: Existing CB Inflow=2.09 cfs 0.605 af
Primary=2.09 cfs 0.605 af

Pond 41P: Pocket Pond 41P Peak Elev=441.46' Storage=9,058 cf Inflow=2.14 cfs 0.199 af
Outflow=0.26 cfs 0.189 af

Pond 42P: CB 42P Peak Elev=443.88' Inflow=1.50 cfs 0.141 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0782 '/' Outflow=1.50 cfs 0.141 af

Pond 43P: CB 43P Peak Elev=446.16' Inflow=1.25 cfs 0.118 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0526 '/' Outflow=1.25 cfs 0.118 af

Pond 44P: DMH 44P Peak Elev=453.42' Inflow=0.79 cfs 0.063 af
15.0" Round Culvert n=0.013 L=79.0' S=0.0886 '/' Outflow=0.79 cfs 0.063 af

Pond 45P: CB 45P Peak Elev=466.17' Inflow=0.62 cfs 0.049 af
15.0" Round Culvert n=0.013 L=64.0' S=0.1219 '/' Outflow=0.62 cfs 0.049 af

Pond 46P: Driveway Culvert Peak Elev=431.77' Inflow=1.58 cfs 0.373 af
12.0" Round Culvert n=0.013 L=31.0' S=0.0161 '/' Outflow=1.58 cfs 0.373 af

Pond 60P: Pond for Runoff Requiring No Peak Elev=502.84' Storage=3,267 cf Inflow=2.15 cfs 0.240 af
Primary=0.69 cfs 0.194 af Secondary=0.00 cfs 0.000 af Outflow=0.69 cfs 0.194 af

Pond 211P: DMH 211P Peak Elev=473.74' Inflow=2.50 cfs 0.258 af
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=2.52 cfs 0.258 af

Pond 212P: DMH 212P Peak Elev=479.98' Inflow=2.50 cfs 0.258 af
18.0" Round Culvert n=0.013 L=43.0' S=0.0988 '/' Outflow=2.50 cfs 0.258 af

Pond 213P: DMH 213P Peak Elev=488.78' Inflow=2.50 cfs 0.258 af
18.0" Round Culvert n=0.013 L=38.0' S=0.1066 '/' Outflow=2.50 cfs 0.258 af

Pond 214P: CB 214P Peak Elev=498.23' Inflow=2.50 cfs 0.258 af
18.0" Round Culvert n=0.013 L=45.0' S=0.0989 '/' Outflow=2.50 cfs 0.258 af

Pond 415P: Sediment Forebay 415P Peak Elev=441.79' Storage=345 cf Inflow=1.50 cfs 0.141 af
Outflow=1.49 cfs 0.141 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.25 cfs 0.026 af
Primary=0.25 cfs 0.026 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=1.29 cfs 0.330 af
Primary=1.29 cfs 0.330 af

Total Runoff Area = 17.143 ac Runoff Volume = 2.288 af Average Runoff Depth = 1.60"
90.98% Pervious = 15.597 ac 9.02% Impervious = 1.546 ac

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 points x 3
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Flow to CB 10P Runoff Area=138,730 sf 3.23% Impervious Runoff Depth>1.64"
Flow Length=1,135' Tc=17.9 min CN=WQ Runoff=4.05 cfs 0.435 af

Subcatchment 20S: Flow to CB 20P Runoff Area=102,298 sf 14.98% Impervious Runoff Depth>2.73"
Flow Length=578' Tc=16.9 min CN=WQ Runoff=5.06 cfs 0.535 af

Subcatchment 22S: Flow to Pond 22P Runoff Area=75,133 sf 6.41% Impervious Runoff Depth>2.40"
Flow Length=363' Tc=9.5 min CN=WQ Runoff=4.02 cfs 0.345 af

Subcatchment 23S: Flow to Pond 22P Runoff Area=31,796 sf 71.93% Impervious Runoff Depth>4.28"
Flow Length=412' Tc=6.0 min CN=WQ Runoff=3.12 cfs 0.261 af

Subcatchment 30S: Flow to CB 30P Runoff Area=21,407 sf 23.53% Impervious Runoff Depth>3.80"
Flow Length=310' Slope=0.0100 '/' Tc=17.8 min CN=WQ Runoff=1.48 cfs 0.156 af

Subcatchment 40S: Flow to CB 40P Runoff Area=6,946 sf 32.42% Impervious Runoff Depth>3.97"
Flow Length=126' Tc=6.3 min CN=WQ Runoff=0.68 cfs 0.053 af

Subcatchment 41S: Flow to 41P Runoff Area=28,634 sf 1.45% Impervious Runoff Depth>1.46"
Flow Length=142' Tc=6.0 min CN=WQ Runoff=0.92 cfs 0.080 af

Subcatchment 42S: Flow to CB 42P Runoff Area=6,835 sf 27.53% Impervious Runoff Depth>2.26"
Flow Length=128' Tc=8.1 min CN=WQ Runoff=0.31 cfs 0.030 af

Subcatchment 43S: Flow to CB 43P Runoff Area=18,609 sf 12.79% Impervious Runoff Depth>2.07"
Flow Length=358' Tc=11.6 min CN=WQ Runoff=0.75 cfs 0.074 af

Subcatchment 44S: Flow to CB 44P Runoff Area=2,206 sf 60.20% Impervious Runoff Depth>4.03"
Flow Length=54' Slope=0.1400 '/' Tc=6.0 min CN=WQ Runoff=0.21 cfs 0.017 af

Subcatchment 45S: Flow to CB 45P Runoff Area=14,764 sf 8.05% Impervious Runoff Depth>2.32"
Flow Length=134' Tc=6.0 min CN=WQ Runoff=0.86 cfs 0.066 af

Subcatchment 46S: Flow to CB 46P Runoff Area=12,239 sf 23.60% Impervious Runoff Depth>2.32"
Flow Length=258' Tc=10.0 min CN=WQ Runoff=0.56 cfs 0.054 af

Subcatchment 50S: Flow to Abutter Runoff Area=11,007 sf 0.00% Impervious Runoff Depth>1.72"
Flow Length=213' Tc=10.6 min CN=WQ Runoff=0.39 cfs 0.036 af

Subcatchment 60S: Flow to Pond P60 Runoff Area=110,256 sf 0.00% Impervious Runoff Depth>1.63"
Flow Length=684' Tc=14.6 min CN=WQ Runoff=3.33 cfs 0.345 af

Subcatchment 61S: Flow to Abutter Runoff Area=81,036 sf 3.10% Impervious Runoff Depth>1.26"
Flow Length=734' Tc=14.5 min CN=WQ Runoff=1.82 cfs 0.196 af

Subcatchment 214S: Flow to DCB 214 Runoff Area=84,870 sf 0.00% Impervious Runoff Depth>2.16"
Flow Length=816' Tc=15.2 min CN=WQ Runoff=3.51 cfs 0.351 af

Reach 20R: Overland Flow to 20P Avg. Flow Depth=0.13' Max Vel=6.72 fps Inflow=2.87 cfs 0.366 af
n=0.013 L=244.0' S=0.0922 '/' Capacity=1,102.26 cfs Outflow=2.87 cfs 0.366 af

Reach 46R: Flow from Driveway Culvert Avg. Flow Depth=1.04' Max Vel=0.58 fps Inflow=2.49 cfs 0.547 af
n=0.150 L=50.0' S=0.0074 '/' Capacity=12.13 cfs Outflow=2.48 cfs 0.547 af

Reach 60R: Flow to Driveway Culvert Avg. Flow Depth=0.11' Max Vel=2.88 fps Inflow=1.40 cfs 0.298 af
n=0.035 L=467.0' S=0.1499 '/' Capacity=166.52 cfs Outflow=1.40 cfs 0.297 af

Reach 210R: Overland Flow to 20P Avg. Flow Depth=0.14' Max Vel=6.99 fps Inflow=3.53 cfs 0.351 af
n=0.013 L=486.0' S=0.0874 '/' Capacity=1,073.41 cfs Outflow=3.50 cfs 0.351 af

Pond 10P: Existing CB Inflow=4.05 cfs 0.435 af
Primary=4.05 cfs 0.435 af

Pond 20P: Existing CB Inflow=10.99 cfs 1.252 af
Primary=10.99 cfs 1.252 af

Pond 21P: Infiltration Basin Peak Elev=469.82' Storage=3,504 cf Inflow=3.01 cfs 0.593 af
Discarded=0.13 cfs 0.154 af Primary=2.70 cfs 0.359 af Secondary=0.17 cfs 0.008 af Outflow=3.00 cfs 0.521 af

Pond 22P: Pocket Pond 22P Peak Elev=471.52' Storage=9,741 cf Inflow=6.81 cfs 0.605 af
Primary=3.01 cfs 0.593 af Secondary=0.00 cfs 0.000 af Outflow=3.01 cfs 0.593 af

Pond 23P: Sediment Forebay 23P Peak Elev=471.74' Storage=634 cf Inflow=6.85 cfs 0.606 af
Outflow=6.81 cfs 0.605 af

Pond 30P: Existing CB Inflow=1.48 cfs 0.156 af
Primary=1.48 cfs 0.156 af

Pond 40P: Existing CB Inflow=3.67 cfs 0.851 af
Primary=3.67 cfs 0.851 af

Pond 41P: Pocket Pond 41P Peak Elev=441.67' Storage=9,713 cf Inflow=2.88 cfs 0.266 af
Outflow=1.04 cfs 0.251 af

Pond 42P: CB 42P Peak Elev=443.98' Inflow=2.01 cfs 0.186 af
18.0" Round Culvert n=0.013 L=17.0' S=0.0782 '/' Outflow=2.01 cfs 0.186 af

Pond 43P: CB 43P Peak Elev=446.25' Inflow=1.70 cfs 0.156 af
18.0" Round Culvert n=0.013 L=38.0' S=0.0526 '/' Outflow=1.70 cfs 0.156 af

Pond 44P: DMH 44P Peak Elev=453.49' Inflow=1.07 cfs 0.083 af
15.0" Round Culvert n=0.013 L=79.0' S=0.0886 '/' Outflow=1.07 cfs 0.083 af

Pond 45P: CB 45P Peak Elev=466.24' Inflow=0.86 cfs 0.066 af
15.0" Round Culvert n=0.013 L=64.0' S=0.1219 '/' Outflow=0.86 cfs 0.066 af

Pond 46P: Driveway Culvert Peak Elev=432.04' Inflow=2.49 cfs 0.547 af
12.0" Round Culvert n=0.013 L=31.0' S=0.0161 '/' Outflow=2.49 cfs 0.547 af

Pond 60P: Pond for Runoff Requiring No Peak Elev=503.43' Storage=4,498 cf Inflow=3.33 cfs 0.345 af
Primary=1.40 cfs 0.298 af Secondary=0.00 cfs 0.000 af Outflow=1.40 cfs 0.298 af

Pond 211P: DMH 211P Peak Elev=473.88' Inflow=3.51 cfs 0.351 af
18.0" Round Culvert n=0.013 L=128.0' S=0.0078 '/' Outflow=3.53 cfs 0.351 af

Pond 212P: DMH 212P Peak Elev=480.14' Inflow=3.51 cfs 0.351 af
18.0" Round Culvert n=0.013 L=43.0' S=0.0988 '/' Outflow=3.51 cfs 0.351 af

Pond 213P: DMH 213P Peak Elev=488.94' Inflow=3.51 cfs 0.351 af
18.0" Round Culvert n=0.013 L=38.0' S=0.1066 '/' Outflow=3.51 cfs 0.351 af

Pond 214P: CB 214P Peak Elev=498.39' Inflow=3.51 cfs 0.351 af
18.0" Round Culvert n=0.013 L=45.0' S=0.0989 '/' Outflow=3.51 cfs 0.351 af

Pond 415P: Sediment Forebay 415P Peak Elev=441.84' Storage=368 cf Inflow=2.01 cfs 0.186 af
Outflow=2.00 cfs 0.186 af

Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1 Inflow=0.39 cfs 0.036 af
Primary=0.39 cfs 0.036 af

Link 60L: Flow from Site to Abutter Map 7 Lot 36-1 Inflow=2.26 cfs 0.493 af
Primary=2.26 cfs 0.493 af

Total Runoff Area = 17.143 ac Runoff Volume = 3.033 af Average Runoff Depth = 2.12"
90.98% Pervious = 15.597 ac 9.02% Impervious = 1.546 ac

Summary for Subcatchment 10S: Flow to CB 10P

Runoff = 1.93 cfs @ 12.26 hrs, Volume= 0.219 af, Depth> 0.82"
Routed to Pond 10P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
3,674	98	Paved parking, HSG B
6,224	61	>75% Grass cover, Good, HSG B
801	98	Water Surface, HSG C
49,768	30	Woods, Good, HSG A
39,726	55	Woods, Good, HSG B
38,537	77	Woods, Good, HSG D
138,730		Weighted Average
134,255		96.77% Pervious Area
4,475		3.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
8.9	1,035	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
17.9	1,135	Total			

Summary for Subcatchment 20S: Flow to CB 20P

Runoff = 2.65 cfs @ 12.24 hrs, Volume= 0.291 af, Depth> 1.49"
Routed to Pond 20P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
8,155	98	Paved parking, HSG B
7,166	98	Water Surface, HSG C
7,214	39	>75% Grass cover, Good, HSG A
39,175	61	>75% Grass cover, Good, HSG B
12,295	80	>75% Grass cover, Good, HSG D
2,837	30	Woods, Good, HSG A
8,405	55	Woods, Good, HSG B
17,051	77	Woods, Good, HSG D
102,298		Weighted Average
86,977		85.02% Pervious Area
15,321		14.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	60	0.0600	0.22		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
6.0	32	0.0600	0.09		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
0.9	8	0.0600	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
5.5	478	0.0840	1.45		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
16.9	578	Total			

Summary for Subcatchment 22S: Flow to Pond 22P

Runoff = 1.99 cfs @ 12.14 hrs, Volume= 0.178 af, Depth> 1.24"
Routed to Pond 23P : Sediment Forebay 23P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
29	98	Paved parking, HSG A
169	98	Paved parking, HSG B
9,272	39	>75% Grass cover, Good, HSG A
32,594	61	>75% Grass cover, Good, HSG B
13,821	80	>75% Grass cover, Good, HSG D
1,564	30	Woods, Good, HSG A
4,368	55	Woods, Good, HSG B
8,700	77	Woods, Good, HSG D
1,328	98	Roofs, HSG A
3,258	98	Roofs, HSG B
30	98	Roofs, HSG D
75,133		Weighted Average
70,319		93.59% Pervious Area
4,814		6.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	100	0.3400	0.22		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
2.1	263	0.1790	2.12		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
9.5	363	Total			

Summary for Subcatchment 23S: Flow to Pond 22P

Runoff = 2.10 cfs @ 12.08 hrs, Volume= 0.171 af, Depth> 2.80"
Routed to Pond 23P : Sediment Forebay 23P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
6,715	39	>75% Grass cover, Good, HSG A
2,210	61	>75% Grass cover, Good, HSG B
1,562	98	Roofs, HSG A
3,736	98	Roofs, HSG B
10,663	98	Paved parking, HSG A
6,910	98	Paved parking, HSG B
31,796		Weighted Average
8,925		28.07% Pervious Area
22,871		71.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.7	100	0.0100	0.97		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.78"
2.1	312	0.0150	2.49		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
3.8	412	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 30S: Flow to CB 30P

Runoff = 0.87 cfs @ 12.24 hrs, Volume= 0.092 af, Depth> 2.25"
Routed to Pond 30P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
5,038	98	Paved parking, HSG A
214	61	>75% Grass cover, Good, HSG B
4,495	80	>75% Grass cover, Good, HSG D
995	30	Woods, Good, HSG A
10,665	77	Woods, Good, HSG D
21,407		Weighted Average
16,369		76.47% Pervious Area
5,038		23.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	50	0.0100	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.78"
6.2	260	0.0100	0.70		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.8	310	Total			

Summary for Subcatchment 40S: Flow to CB 40P

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 2.42"
Routed to Pond 40P : Existing CB

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
739	39	>75% Grass cover, Good, HSG A
3,955	80	>75% Grass cover, Good, HSG D
320	98	Paved parking, HSG D
1,932	98	Paved parking, HSG A
6,946		Weighted Average
4,694		67.58% Pervious Area
2,252		32.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0800	0.28		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
0.3	26	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	126	Total			

Summary for Subcatchment 41S: Flow to 41P

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 0.67"
Routed to Pond 41P : Pocket Pond 41P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
414	98	Paved parking, HSG A
15,817	39	>75% Grass cover, Good, HSG A
7,268	61	>75% Grass cover, Good, HSG B
5,135	80	>75% Grass cover, Good, HSG D
28,634		Weighted Average
28,220		98.55% Pervious Area
414		1.45% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	91	0.2200	0.41		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
0.2	51	0.5000	4.95		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
3.9	142	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 42S: Flow to CB 42P

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.017 af, Depth> 1.31"
Routed to Pond 42P : CB 42P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
1,038	98	Paved parking, HSG A
844	98	Paved parking, HSG B
3,444	39	>75% Grass cover, Good, HSG A
1,216	61	>75% Grass cover, Good, HSG B
293	80	>75% Grass cover, Good, HSG D
6,835		Weighted Average
4,953		72.47% Pervious Area
1,882		27.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.2800	0.21		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
0.1	28	0.1070	4.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
8.1	128	Total			

Summary for Subcatchment 43S: Flow to CB 43P

Runoff = 0.34 cfs @ 12.17 hrs, Volume= 0.037 af, Depth> 1.04"
Routed to Pond 43P : CB 43P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
2,222	98	Paved parking, HSG A
158	98	Paved parking, HSG B
2,678	39	>75% Grass cover, Good, HSG A
1,972	61	>75% Grass cover, Good, HSG B
1,094	80	>75% Grass cover, Good, HSG D
10,023	55	Woods, Good, HSG B
462	77	Woods, Good, HSG D
18,609		Weighted Average
16,229		87.21% Pervious Area
2,380		12.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.3	100	0.1500	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
0.9	126	0.2220	2.36		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	132	0.1212	5.22		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
11.6	358	Total			

Summary for Subcatchment 44S: Flow to CB 44P

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 2.55"
Routed to Pond 44P : DMH 44P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
200	39	>75% Grass cover, Good, HSG A
55	98	Paved parking, HSG A
1,273	98	Paved parking, HSG B
678	61	>75% Grass cover, Good, HSG B
2,206		Weighted Average
878		39.80% Pervious Area
1,328		60.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	54	0.1400	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
2.9	54	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 45S: Flow to CB 45P

Runoff = 0.38 cfs @ 12.10 hrs, Volume= 0.032 af, Depth> 1.14"
Routed to Pond 45P : CB 45P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
1,189	98	Paved parking, HSG B
7,924	61	>75% Grass cover, Good, HSG B
621	80	>75% Grass cover, Good, HSG D
4,853	61	>75% Grass cover, Good, HSG B
177	80	>75% Grass cover, Good, HSG D
14,764		Weighted Average
13,575		91.95% Pervious Area
1,189		8.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.4	100	0.1800	0.38		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.78"
0.2	34	0.2540	3.53		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
4.6	134	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 46S: Flow to CB 46P

Runoff = 0.35 cfs @ 12.14 hrs, Volume= 0.032 af, Depth> 1.36"
Routed to Pond 46P : Driveway Culvert

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
2,876	98	Paved parking, HSG A
13	98	Paved parking, HSG D
6,407	39	>75% Grass cover, Good, HSG A
2,290	80	>75% Grass cover, Good, HSG D
276	30	Woods, Good, HSG A
114	55	Woods, Good, HSG B
263	77	Woods, Good, HSG D
12,239		Weighted Average
9,350		76.40% Pervious Area
2,889		23.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
1.0	158	0.1500	2.71		**Shallow Concentrated Flow, Shallow** Short Grass Pasture Kv= 7.0 fps
10.0	258	Total			

Summary for Subcatchment 50S: Flow to Abutter

Runoff = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af, Depth> 0.74"
Routed to Link 50L : Flow to Abutters Map 7 Lots 36 & 36-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
506	96	Gravel surface, HSG B
485	77	Woods, Good, HSG D
10,016	55	Woods, Good, HSG B
11,007		Weighted Average
11,007		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.6	100	0.1800	0.17		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
1.0	113	0.1400	1.87		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.6	213	Total			

Summary for Subcatchment 60S: Flow to Pond P60

Runoff = 1.05 cfs @ 12.26 hrs, Volume= 0.140 af, Depth> 0.67"
Routed to Pond 60P : Pond for Runoff Requiring No Treatment

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
6,618	77	Woods, Good, HSG D
1,214	85	Gravel roads, HSG B
93,143	55	Woods, Good, HSG B
9,281	61	>75% Grass cover, Good, HSG B
110,256		Weighted Average
110,256		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
3.3	379	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
2.3	205	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
14.6	684	Total			

Summary for Subcatchment 61S: Flow to Abutter

Runoff = 0.63 cfs @ 12.24 hrs, Volume= 0.084 af, Depth> 0.54"
Routed to Link 60L : Flow from Site to Abutter Map 7 Lot 36-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
20,216	30	Woods, Good, HSG A
2,509	98	Paved parking, HSG A
3,902	39	>75% Grass cover, Good, HSG A
163	80	>75% Grass cover, Good, HSG D
1,773	77	Woods, Good, HSG D
826	85	Gravel roads, HSG B
50,477	55	Woods, Good, HSG B
1,170	61	>75% Grass cover, Good, HSG B
81,036		Weighted Average
78,527		96.90% Pervious Area
2,509		3.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
5.5	634	0.1500	1.94		**Shallow Concentrated Flow, Shallow** Woodland Kv= 5.0 fps
14.5	734	Total			

Summary for Subcatchment 214S: Flow to DCB 214

Runoff = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af, Depth> 1.02"
Routed to Pond 214P : CB 214P

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10 yr Rainfall=4.04"

Area (sf)	CN	Description
4,107	61	>75% Grass cover, Good, HSG B
235	80	>75% Grass cover, Good, HSG D
50,341	55	Woods, Good, HSG B
30,187	77	Woods, Good, HSG D
84,870		Weighted Average
84,870		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	100	0.2100	0.19		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.78"
6.2	716	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
15.2	816	Total			

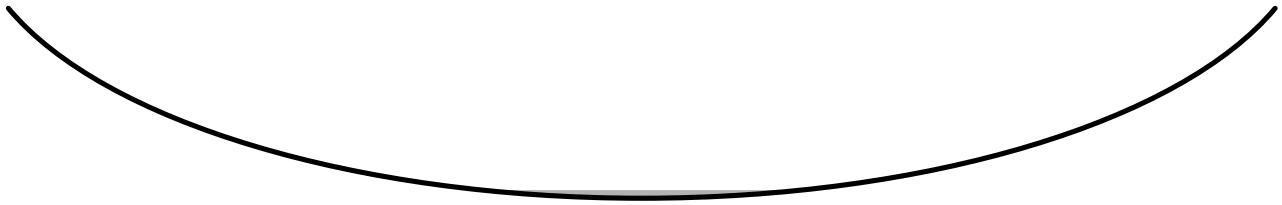
Summary for Reach 20R: Overland Flow to 20P

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth = 0.69" for 10 yr event
Inflow = 1.23 cfs @ 12.53 hrs, Volume= 0.141 af
Outflow = 1.23 cfs @ 12.54 hrs, Volume= 0.141 af, Atten= 0%, Lag= 0.7 min
Routed to Pond 20P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Max. Velocity= 5.19 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.03 fps, Avg. Travel Time= 1.3 min

Peak Storage= 58 cf @ 12.54 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 4.13'
Defined Flood Depth= 2.25' Flow Area= 31.7 sf, Capacity= 1,396.82 cfs
Bank-Full Depth= 2.00' Flow Area= 26.7 sf, Capacity= 1,102.26 cfs

20.00' x 2.00' deep Parabolic Channel, n= 0.013 Corrugated PE, smooth interior
Length= 244.0' Slope= 0.0922 '/'
Inlet Invert= 453.50', Outlet Invert= 431.00'



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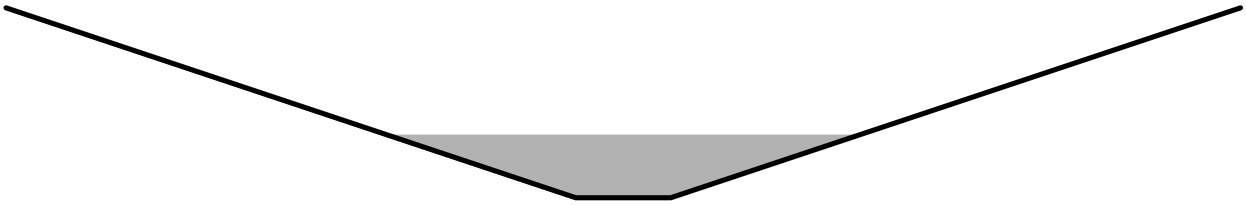
Summary for Reach 46R: Flow from Driveway Culvert 46P to 40P

Inflow Area = 4.672 ac, 2.65% Impervious, Inflow Depth > 0.54" for 10 yr event
Inflow = 0.91 cfs @ 12.20 hrs, Volume= 0.210 af
Outflow = 0.90 cfs @ 12.23 hrs, Volume= 0.209 af, Atten= 1%, Lag= 1.6 min
Routed to Pond 40P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Max. Velocity= 0.45 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 4.0 min

Peak Storage= 100 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.67' , Surface Width= 5.00'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 12.13 cfs

1.00' x 2.00' deep channel, n= 0.150 Sheet flow over Short Grass
Side Slope Z-value= 3.0 '/' Top Width= 13.00'
Length= 50.0' Slope= 0.0074 '/'
Inlet Invert= 430.50', Outlet Invert= 430.13'



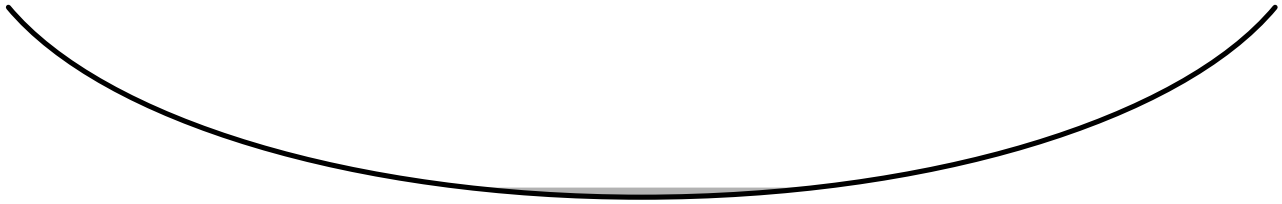
Summary for Reach 60R: Flow to Driveway Culvert 46P

Inflow Area = 2.531 ac, 0.00% Impervious, Inflow Depth > 0.45" for 10 yr event
Inflow = 0.25 cfs @ 13.19 hrs, Volume= 0.095 af
Outflow = 0.25 cfs @ 13.27 hrs, Volume= 0.094 af, Atten= 0%, Lag= 4.4 min
Routed to Link 60L : Flow from Site to Abutter Map 7 Lot 36-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Max. Velocity= 1.69 fps, Min. Travel Time= 4.6 min
Avg. Velocity = 1.25 fps, Avg. Travel Time= 6.2 min

Peak Storage= 68 cf @ 13.27 hrs
Average Depth at Peak Storage= 0.05' , Surface Width= 4.44'
Bank-Full Depth= 1.00' Flow Area= 13.3 sf, Capacity= 166.52 cfs

20.00' x 1.00' deep Parabolic Channel, n= 0.035 Earth, dense weeds
Length= 467.0' Slope= 0.1499 '/'
Inlet Invert= 502.00', Outlet Invert= 432.00'



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Summary for Reach 210R: Overland Flow to 20P

[80] Warning: Exceeded Pond 211P by 2.09' @ 0.00 hrs (9.57 cfs 1.719 af)

Inflow Area = 1.948 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 yr event
Inflow = 1.50 cfs @ 12.22 hrs, Volume= 0.166 af
Outflow = 1.48 cfs @ 12.25 hrs, Volume= 0.166 af, Atten= 1%, Lag= 1.9 min
Routed to Pond 20P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Max. Velocity= 5.38 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 2.40 fps, Avg. Travel Time= 3.4 min

Peak Storage= 134 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.09' , Surface Width= 4.35'
Defined Flood Depth= 2.25' Flow Area= 31.7 sf, Capacity= 1,360.25 cfs
Bank-Full Depth= 2.00' Flow Area= 26.7 sf, Capacity= 1,073.41 cfs

20.00' x 2.00' deep Parabolic Channel, n= 0.013 Corrugated PE, smooth interior
Length= 486.0' Slope= 0.0874 '/'
Inlet Invert= 473.50', Outlet Invert= 431.00'

‡

Summary for Pond 10P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 3.185 ac, 3.23% Impervious, Inflow Depth > 0.82" for 10 yr event
Inflow = 1.93 cfs @ 12.26 hrs, Volume= 0.219 af
Primary = 1.93 cfs @ 12.26 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 20P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.752 ac, 14.62% Impervious, Inflow Depth > 1.06" for 10 yr event
Inflow = 4.13 cfs @ 12.25 hrs, Volume= 0.598 af
Primary = 4.13 cfs @ 12.25 hrs, Volume= 0.598 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 21P: Infiltration Basin

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 1.68" for 10 yr event
Inflow = 1.43 cfs @ 12.32 hrs, Volume= 0.343 af
Outflow = 1.35 cfs @ 12.53 hrs, Volume= 0.281 af, Atten= 5%, Lag= 12.6 min
Discarded = 0.13 cfs @ 12.53 hrs, Volume= 0.140 af
Primary = 1.23 cfs @ 12.53 hrs, Volume= 0.141 af
Routed to Reach 20R : Overland Flow to 20P
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 20R : Overland Flow to 20P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 469.75' @ 12.53 hrs Surf.Area= 1,822 sf Storage= 3,377 cf
Flood Elev= 470.00' Surf.Area= 1,983 sf Storage= 3,854 cf

Plug-Flow detention time= 140.8 min calculated for 0.281 af (82% of inflow)
Center-of-Mass det. time= 61.9 min (900.1 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	466.00'	3,854 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
466.00	238	61.0	0	0	238
468.00	887	160.0	1,056	1,056	1,993
470.00	1,983	201.0	2,797	3,854	3,225

Device	Routing	Invert	Outlet Devices
#1	Discarded	466.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	465.00'	**18.0" Round HDPE Culvert** L= 25.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 465.00' / 464.75' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#3	Device 2	469.65'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#4	Secondary	469.75'	**4.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Discarded OutFlow Max=0.13 cfs @ 12.53 hrs HW=469.75' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=1.23 cfs @ 12.53 hrs HW=469.75' TW=453.59' (Dynamic Tailwater)
└**2=HDPE Culvert** (Passes 1.23 cfs of 17.02 cfs potential flow)
└**3=Grate** (Weir Controls 1.23 cfs @ 1.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=466.00' TW=453.50' (Dynamic Tailwater)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 22P: Pocket Pond 22P

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 1.70" for 10 yr event
Inflow = 3.87 cfs @ 12.12 hrs, Volume= 0.348 af
Outflow = 1.43 cfs @ 12.32 hrs, Volume= 0.343 af, Atten= 63%, Lag= 11.7 min
Primary = 1.43 cfs @ 12.32 hrs, Volume= 0.343 af
Routed to Pond 21P : Infiltration Basin
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 21P : Infiltration Basin

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 469.35' Surf.Area= 1,930 sf Storage= 3,827 cf
Peak Elev= 470.82' @ 12.48 hrs Surf.Area= 2,798 sf Storage= 7,279 cf (3,452 cf above start)
Flood Elev= 472.00' Surf.Area= 5,229 sf Storage= 12,066 cf (8,239 cf above start)

Plug-Flow detention time= 202.3 min calculated for 0.255 af (73% of inflow)
Center-of-Mass det. time= 38.2 min (838.2 - 800.0)

Volume	Invert	Avail.Storage	Storage Description
#1	466.00'	12,066 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
466.00	492	103.6	0	0	492
468.00	1,258	151.6	1,691	1,691	1,500
470.00	2,304	194.4	3,510	5,201	2,728
471.00	2,916	213.3	2,604	7,805	3,374
471.50	4,482	493.2	1,836	9,640	19,111
472.00	5,229	502.6	2,425	12,066	19,897

Device	Routing	Invert	Outlet Devices
#1	Primary	469.00'	**12.0" Round HDPE Culvert** L= 21.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 469.00' / 468.00' S= 0.0476 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Device 1	469.35'	**5.0" Vert. 5" Orifices X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	470.80'	**5.0" Vert. 5" Orifices X 2.00** C= 0.600 Limited to weir flow at low heads
#4	Device 1	471.25'	**Weir, Cv= 2.62 (C= 3.28)** Head (feet) 0.00 0.40 Width (feet) 0.75 0.75
#5	Device 1	471.65'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#6	Secondary	471.75'	**4.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.43 cfs @ 12.32 hrs HW=470.74' TW=469.54' (Dynamic Tailwater)
- **1=HDPE Culvert** (Passes 1.43 cfs of 4.14 cfs potential flow)
  - **2=5" Orifices** (Orifice Controls 1.43 cfs @ 5.25 fps)
  - **3=5" Orifices** (Controls 0.00 cfs)
  - **4=Weir** (Controls 0.00 cfs)
  - **5=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=469.35' TW=466.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 23P: Sediment Forebay 23P

Inflow Area = 2.455 ac, 25.89% Impervious, Inflow Depth > 1.70" for 10 yr event
Inflow = 3.89 cfs @ 12.11 hrs, Volume= 0.348 af
Outflow = 3.87 cfs @ 12.12 hrs, Volume= 0.348 af, Atten= 0%, Lag= 0.8 min
Primary = 3.87 cfs @ 12.12 hrs, Volume= 0.348 af
Routed to Pond 22P : Pocket Pond 22P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Starting Elev= 471.00' Surf.Area= 363 sf Storage= 292 cf
Peak Elev= 471.51' @ 12.12 hrs Surf.Area= 500 sf Storage= 514 cf (221 cf above start)
Flood Elev= 472.00' Surf.Area= 650 sf Storage= 792 cf (500 cf above start)

Plug-Flow detention time= 24.4 min calculated for 0.341 af (98% of inflow)
Center-of-Mass det. time= 1.5 min (800.0 - 798.5)

Volume	Invert	Avail.Storage	Storage Description
#1	469.00'	792 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
469.00	3	16.6	0	0	3
470.00	135	65.6	53	53	326
471.00	363	86.1	240	292	585
472.00	650	105.0	500	792	888

Device	Routing	Invert	Outlet Devices
#1	Primary	471.00'	**4.0' 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

Primary OutFlow Max=3.87 cfs @ 12.12 hrs HW=471.51' TW=470.31' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 3.87 cfs @ 1.88 fps)

Summary for Pond 30P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.491 ac, 23.53% Impervious, Inflow Depth > 2.25" for 10 yr event
Inflow = 0.87 cfs @ 12.24 hrs, Volume= 0.092 af
Primary = 0.87 cfs @ 12.24 hrs, Volume= 0.092 af, Atten= 0%, Lag= 0.0 min
Routed to nonexistent node 1L

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 40P: Existing CB

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 6.463 ac, 5.27% Impervious, Inflow Depth > 0.68" for 10 yr event
Inflow = 1.30 cfs @ 12.20 hrs, Volume= 0.368 af
Primary = 1.30 cfs @ 12.20 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Summary for Pond 41P: Pocket Pond 41P

Inflow Area = 1.631 ac, 10.12% Impervious, Inflow Depth > 0.98" for 10 yr event
Inflow = 1.41 cfs @ 12.12 hrs, Volume= 0.133 af
Outflow = 0.21 cfs @ 12.94 hrs, Volume= 0.127 af, Atten= 85%, Lag= 49.0 min
Primary = 0.21 cfs @ 12.94 hrs, Volume= 0.127 af
Routed to Pond 40P : Existing CB

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 440.10' Surf.Area= 2,197 sf Storage= 5,532 cf
Peak Elev= 441.01' @ 12.94 hrs Surf.Area= 2,734 sf Storage= 7,780 cf (2,249 cf above start)
Flood Elev= 442.00' Surf.Area= 3,207 sf Storage= 10,747 cf (5,215 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 119.4 min (949.5 - 830.1)

Volume	Invert	Avail.Storage	Storage Description
#1	434.00'	10,747 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
434.00	64	44.5	0	0	64
436.00	472	91.7	473	473	593
438.00	1,164	139.2	1,585	2,058	1,496
440.00	2,142	186.2	3,257	5,315	2,756
441.50	3,044	214.5	3,870	9,184	3,707
442.00	3,207	219.2	1,563	10,747	3,902

Device	Routing	Invert	Outlet Devices
#1	Primary	437.00'	**18.0" Round HDPE Culvert** L= 24.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 437.00' / 435.00' S= 0.0833 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	440.10'	**3.0" Vert. 3" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	441.60'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.94 hrs HW=441.01' TW=0.00' (Dynamic Tailwater)
└**1=HDPE Culvert** (Passes 0.21 cfs of 15.37 cfs potential flow)
└**2=3" Orifice** (Orifice Controls 0.21 cfs @ 4.28 fps)
└**3=Grate** (Controls 0.00 cfs)

Summary for Pond 42P: CB 42P

Inflow Area = 0.974 ac, 15.98% Impervious, Inflow Depth > 1.20" for 10 yr event
Inflow = 0.99 cfs @ 12.12 hrs, Volume= 0.097 af
Outflow = 0.99 cfs @ 12.12 hrs, Volume= 0.097 af, Atten= 0%, Lag= 0.0 min
Primary = 0.99 cfs @ 12.12 hrs, Volume= 0.097 af
Routed to Pond 415P : Sediment Forebay 415P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3

Peak Elev= 443.77' @ 12.12 hrs
Flood Elev= 447.18'

Device	Routing	Invert	Outlet Devices
#1	Primary	443.33'	**18.0" Round Culvert** L= 17.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 443.33' / 442.00' S= 0.0782 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.99 cfs @ 12.12 hrs HW=443.77' TW=441.72' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.99 cfs @ 2.27 fps)

Summary for Pond 43P: CB 43P

Inflow Area = 0.817 ac, 13.76% Impervious, Inflow Depth > 1.17" for 10 yr event
Inflow = 0.80 cfs @ 12.12 hrs, Volume= 0.080 af
Outflow = 0.80 cfs @ 12.12 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 12.12 hrs, Volume= 0.080 af
Routed to Pond 42P : CB 42P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 446.06' @ 12.12 hrs
Flood Elev= 449.41'

Device	Routing	Invert	Outlet Devices
#1	Primary	445.66'	**18.0" Round Culvert** L= 38.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 445.66' / 443.66' S= 0.0526 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=0.80 cfs @ 12.12 hrs HW=446.06' TW=443.77' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.80 cfs @ 2.14 fps)

Summary for Pond 44P: DMH 44P

Inflow Area = 0.390 ac, 14.83% Impervious, Inflow Depth > 1.32" for 10 yr event
Inflow = 0.51 cfs @ 12.10 hrs, Volume= 0.043 af
Outflow = 0.51 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.51 cfs @ 12.10 hrs, Volume= 0.043 af
Routed to Pond 43P : CB 43P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 453.33' @ 12.10 hrs
Flood Elev= 462.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	453.00'	**15.0" Round Culvert** L= 79.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 453.00' / 446.00' S= 0.0886 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.51 cfs @ 12.10 hrs HW=453.33' TW=446.05' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.51 cfs @ 1.96 fps)

Summary for Pond 45P: CB 45P

Inflow Area = 0.339 ac, 8.05% Impervious, Inflow Depth > 1.14" for 10 yr event
Inflow = 0.38 cfs @ 12.10 hrs, Volume= 0.032 af
Outflow = 0.38 cfs @ 12.10 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.10 hrs, Volume= 0.032 af
Routed to Pond 44P : DMH 44P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 466.08' @ 12.10 hrs
Flood Elev= 471.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	465.80'	**15.0" Round Culvert** L= 64.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 465.80' / 458.00' S= 0.1219 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.38 cfs @ 12.10 hrs HW=466.08' TW=453.33' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 0.38 cfs @ 1.81 fps)

Summary for Pond 46P: Driveway Culvert

Inflow Area = 4.672 ac, 2.65% Impervious, Inflow Depth > 0.54" for 10 yr event
Inflow = 0.91 cfs @ 12.20 hrs, Volume= 0.210 af
Outflow = 0.91 cfs @ 12.20 hrs, Volume= 0.210 af, Atten= 0%, Lag= 0.0 min
Primary = 0.91 cfs @ 12.20 hrs, Volume= 0.210 af
Routed to Reach 46R : Flow from Driveway Culvert 46P to 40P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 431.54' @ 12.21 hrs
Flood Elev= 432.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	431.00'	**12.0" Round Culvert** L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 431.00' / 430.50' S= 0.0161 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.20 hrs HW=431.54' TW=431.16' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 0.91 cfs @ 3.03 fps)

Summary for Pond 60P: Pond for Runoff Requiring No Treatment

Inflow Area = 2.531 ac, 0.00% Impervious, Inflow Depth > 0.67" for 10 yr event
Inflow = 1.05 cfs @ 12.26 hrs, Volume= 0.140 af
Outflow = 0.25 cfs @ 13.19 hrs, Volume= 0.095 af, Atten= 76%, Lag= 56.1 min
Primary = 0.25 cfs @ 13.19 hrs, Volume= 0.095 af
Routed to Reach 60R : Flow to Driveway Culvert 46P
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Reach 60R : Flow to Driveway Culvert 46P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 502.26' @ 13.19 hrs Surf.Area= 1,584 sf Storage= 2,242 cf
Flood Elev= 504.00' Surf.Area= 2,640 sf Storage= 5,886 cf

Plug-Flow detention time= 208.7 min calculated for 0.095 af (67% of inflow)
Center-of-Mass det. time= 93.2 min (995.5 - 902.3)

Volume	Invert	Avail.Storage	Storage Description
#1	500.00'	5,886 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
500.00	488	141.6	0	0	488
502.00	1,451	179.3	1,854	1,854	1,503
504.00	2,640	217.0	4,032	5,886	2,756

Device	Routing	Invert	Outlet Devices
#1	Primary	501.00'	**12.0" Round Culvert** L= 44.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 501.00' / 500.00' S= 0.0227 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	502.00'	**4.0" Vert. Two 4" Orifices X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	503.00'	**6.0" W x 6.0" H Vert. 6" Weir** C= 0.600 Limited to weir flow at low heads
#4	Device 1	503.50'	**2.0" x 2.0" Horiz. Grate X 10.00 columns** X 10 rows C= 0.600 in 36.0" x 36.0" Grate (31% open area) Limited to weir flow at low heads
#5	Secondary	503.75'	**4.0' 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

Primary OutFlow Max=0.25 cfs @ 13.19 hrs HW=502.26' TW=502.05' (Dynamic Tailwater)
- **1=Culvert** (Passes 0.25 cfs of 1.72 cfs potential flow)
  - **2=Two 4" Orifices** (Orifice Controls 0.25 cfs @ 1.72 fps)
  - **3=6" Weir** (Controls 0.00 cfs)
  - **4=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=500.00' TW=502.00' (Dynamic Tailwater)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 211P: DMH 211P

[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=195)

Inflow Area = 1.948 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 yr event
Inflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Outflow = 1.50 cfs @ 12.22 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.50 cfs @ 12.22 hrs, Volume= 0.166 af
Routed to Reach 210R : Overland Flow to 20P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 473.64' @ 12.25 hrs
Flood Elev= 479.08'

Device	Routing	Invert	Outlet Devices
#1	Primary	471.25'	**18.0" Round Culvert** L= 128.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 471.25' / 470.25' S= 0.0078 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.48 cfs @ 12.22 hrs HW=473.64' TW=473.59' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.48 cfs @ 0.84 fps)

Summary for Pond 212P: DMH 212P

Inflow Area = 1.948 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 yr event
Inflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Outflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Routed to Pond 211P : DMH 211P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 479.80' @ 12.23 hrs
Flood Elev= 487.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	479.25'	**18.0" Round Culvert** L= 43.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 479.25' / 475.00' S= 0.0988 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.49 cfs @ 12.23 hrs HW=479.80' TW=473.64' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.53 fps)

Summary for Pond 213P: DMH 213P

Inflow Area = 1.948 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 yr event
Inflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Outflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Routed to Pond 212P : DMH 212P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 488.60' @ 12.23 hrs
Flood Elev= 497.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	488.05'	**18.0" Round Culvert** L= 38.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 488.05' / 484.00' S= 0.1066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.49 cfs @ 12.23 hrs HW=488.60' TW=479.80' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.53 fps)

Summary for Pond 214P: CB 214P

Inflow Area = 1.948 ac, 0.00% Impervious, Inflow Depth > 1.02" for 10 yr event
Inflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Outflow = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af, Atten= 0%, Lag= 0.0 min
Primary = 1.49 cfs @ 12.23 hrs, Volume= 0.166 af
Routed to Pond 213P : DMH 213P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Peak Elev= 498.05' @ 12.23 hrs
Flood Elev= 504.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	497.50'	**18.0" Round Culvert** L= 45.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 497.50' / 493.05' S= 0.0989 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=1.49 cfs @ 12.23 hrs HW=498.05' TW=488.60' (Dynamic Tailwater)
1=Culvert (Inlet Controls 1.49 cfs @ 2.53 fps)

Summary for Pond 415P: Sediment Forebay 415P

Inflow Area = 0.974 ac, 15.98% Impervious, Inflow Depth > 1.20" for 10 yr event
Inflow = 0.99 cfs @ 12.12 hrs, Volume= 0.097 af
Outflow = 0.98 cfs @ 12.13 hrs, Volume= 0.097 af, Atten= 1%, Lag= 0.9 min
Primary = 0.98 cfs @ 12.13 hrs, Volume= 0.097 af
Routed to Pond 41P : Pocket Pond 41P

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs / 3
Starting Elev= 441.50' Surf.Area= 313 sf Storage= 245 cf
Peak Elev= 441.72' @ 12.13 hrs Surf.Area= 372 sf Storage= 319 cf (75 cf above start)
Flood Elev= 442.00' Surf.Area= 454 sf Storage= 435 cf (191 cf above start)

Plug-Flow detention time= 59.3 min calculated for 0.091 af (94% of inflow)
Center-of-Mass det. time= 1.9 min (821.1 - 819.1)

Volume	Invert	Avail.Storage	Storage Description
#1	439.50'	435 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
439.50	7	13.1	0	0	7
441.50	313	89.1	245	245	633
442.00	454	98.5	191	435	781

Device	Routing	Invert	Outlet Devices
#1	Primary	441.50'	**4.0' 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

Primary OutFlow Max=0.97 cfs @ 12.13 hrs HW=441.72' TW=440.61' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 0.97 cfs @ 1.12 fps)

Summary for Link 50L: Flow to Abutters Map 7 Lots 36 & 36-1

Inflow Area = 0.253 ac, 0.00% Impervious, Inflow Depth > 0.74" for 10 yr event
Inflow = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af
Primary = 0.13 cfs @ 12.18 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

Summary for Link 60L: Flow from Site to Abutter Map 7 Lot 36-1

Inflow Area = 4.391 ac, 1.31% Impervious, Inflow Depth > 0.49" for 10 yr event
Inflow = 0.63 cfs @ 12.24 hrs, Volume= 0.178 af
Primary = 0.63 cfs @ 12.24 hrs, Volume= 0.178 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 46P : Driveway Culvert

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs

KEACH-NORDSTROM ASSOCIATES, INC.

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project: **Jennesstown Manor** Date: **12/17/2025**
KNA #: 24-0307-1

The purpose of this spreadsheet is to calculate the dimensions of Inlet/Outlet Protection apron (riprap) required during the SCS/NRCS 50-year type III 24-hr storm event. The spillway weir(s) inlet/outlet apron protection will be sized for the SCS/NRCS 50-**year type III 24-hr storm event.**

Required Input:

Q	peak flow in CFS
Do	diameter in feet of outlet or width of channel
Tw	tail water at end of apron

Depending on the tail water conditions, either **column 1** or **column 2** is used for calculations

	Column One where Tw<1/2Do	Column Two where Tw>1/2Do
Length of Apron	**La = (1.8Q/Do^3/2)+7Do**	**La = 3*Q/Do^3/2+7Do**
Width of Apron at outfall	W1 = 3*Do W2 = 3*Do + La	W1 = 3*Do W2 = 3*Do+0.4*La

If defined channel, then use channel width for W1 and W2

Rock Rip Rap Size:
d50 = (0.02*Q^4/3)/(Tw*Do)

RIRAP GRADATION ENVELOPE

Calculation Summary Table:

Input to Chart		Q-25**			Calculated Output		W2			USE	d100		d85		d50		d15			USE			
Description (Optional)		(cfs)	Do (ft)	Tw (ft)	La	W1	no channel	d50, ft	d50 in	d50 in.	FROM in	TO in	FROM in	TO in	FROM in	TO in	FROM in	TO in	depth in	Depth in.	Length ft.	W1 ft.	W2 ft.
41P	Pond Outlet	0.26	1.50	0.75	11	5	15	0.0	0.04	**4**	6	8	5	7	4	6	1	2	10	**10**	**11**	**5**	**15**
21P	Infiltration Pond Outlet	2.22	1.50	0.75	13	5	17	0.1	0.62	**5**	8	10	7	9	5	8	2	3	12.5	**13**	**13**	**5**	**17**
22P	Pocket Pond Outlet	2.22	1.00	0.50	11	3	14	0.1	1.39	**6**	9	12	8	11	6	9	2	3	15	**15**	**11**	**3**	**14**
211P	Outlet Head Wall #210	2.52	1.50	0.75	13	5	17	0.1	0.73	**3**	5	6	4	5	3	5	1	2	7.5	**8**	**13**	**5**	**17**
60P	Outlet FES #60	0.69	1.00	0.75	9	3	7	0.0	0.20	**3**	5	6	4	5	3	5	1	2	7.5	**8**	**9**	**3**	**7**

* Center Apron with Headwall and Outlet Pipe (All Cases)
* Line Apron with 6.0 oz. Geotextile Fabric (All Cases)
**Q-100 Used When no Flow is Present in the Q-10

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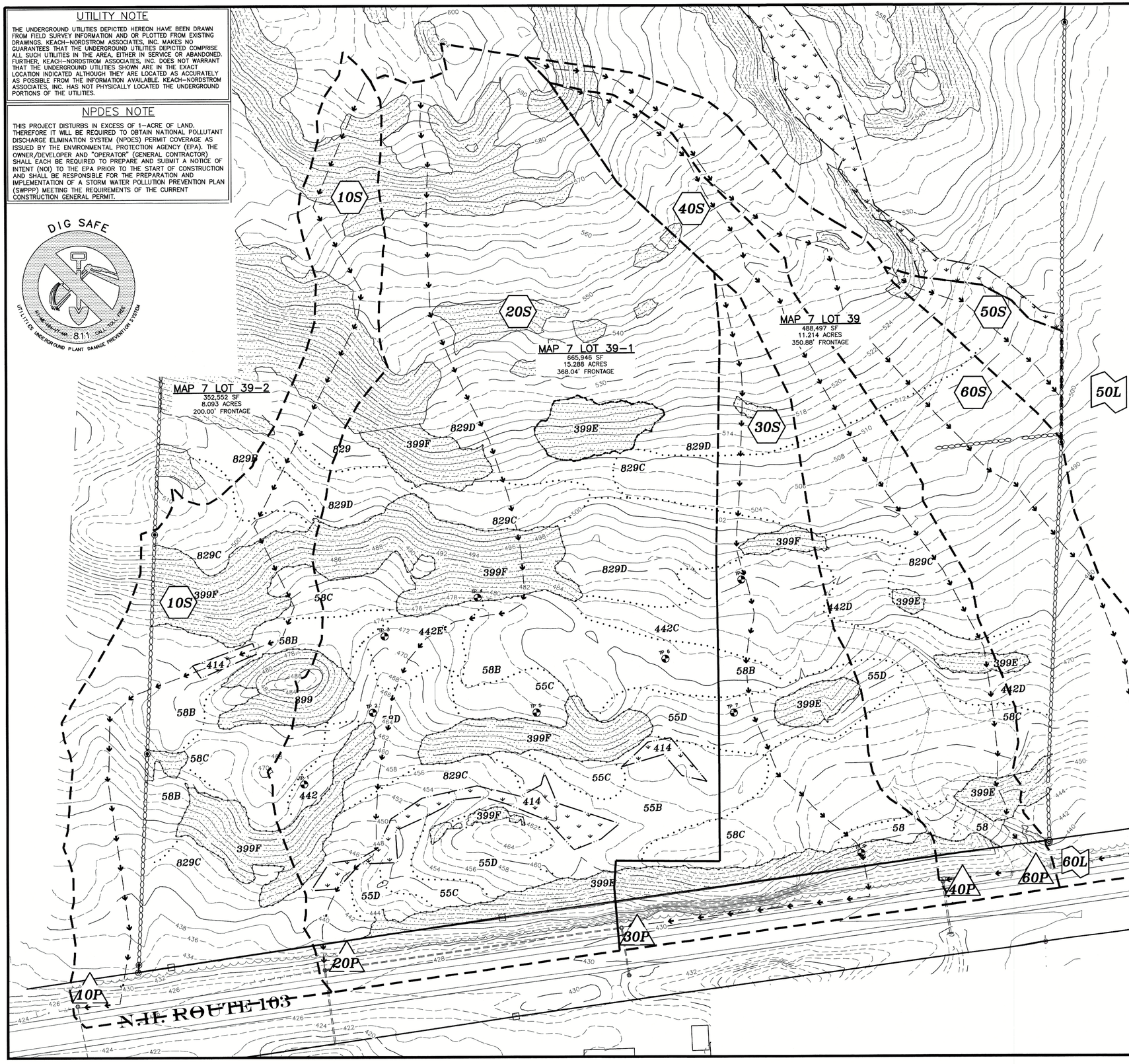
DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM



GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

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MAGNETIC

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PRE-DEVELOPMENT DRAINAREAS PLAN

JENNESSTOWN MANOR
MAP 7, LOTS 39 & 39-1

ROUTE 103
WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

OWNER/APPLICANT:
PEACOCK HILL ROAD, LLC
145 OLD TOWN ROAD
WEARE, NH 03281
BK. 3829 PG. 2512

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STATE OF NEW HAMPSHIRE — STEVEN D. KEACH — 7659 — PROFESSIONAL ENGINEER

REVISIONS

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6	12/16/25	PER AOT COMMENTS	AEW

DATE: MARCH 25, 2025 — **SCALE:** 1" = 50'
PROJECT NO: 24–0307–1 — **SHEET** 1 **OF** 2

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DIG SAFE

811 CALL TOLL FREE

UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

MAP 7 LOT 39–2
352,552 SF
8.093 ACRES
200.00' FRONTAGE

MAP 7 LOT 39–1
665,946 SF
15.288 ACRES
368.04' FRONTAGE

MAP 7 LOT 39
488,497 SF
11.214 ACRES
350.88' FRONTAGE

N.H. ROUTE 103

GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

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MAGNETIC

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POST-DEVELOPMENT DRAINAREAS PLAN

JENNESSTOWN MANOR
MAP 7, LOTS 39 & 39-1

ROUTE 103
WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

OWNER/APPLICANT:
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145 OLD TOWN ROAD
WEARE, NH 03281
BK. 3829 PG. 2512

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627–2881

STEVEN B. KEACH 7659 CERTIFIED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

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DATE: MARCH 25, 2025 SCALE: 1" = 50'
PROJECT NO: 24–0307–1 SHEET 2 OF 2

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DIG SAFE
811 CALL DIG-SAFE
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352,552 SF
8.093 ACRES
200.00' FRONTAGE

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665,946 SF
15.288 ACRES
368.04' FRONTAGE

MAP 7 LOT 39
488,907 SF
11.214 ACRES
350.88' FRONTAGE

10S 20S 30S 40S 50S 60S 50L 10P 20P 30P 40P 60P 60L

N.H. ROUTE 103

GRAPHIC SCALE

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(IN FEET)
1 inch = 50 ft.

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PRE-DEVELOPMENT DRAINAREAS PLAN

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MAP 7, LOTS 39 & 39-1

ROUTE 103
WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

OWNER/APPLICANT:
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145 OLD TOWN ROAD
WEARE, NH 03281
BK. 3829 PG. 2512

KEACH–NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
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DATE: MARCH 25, 2025 | **SCALE:** 1" = 50'
PROJECT NO: 24–0307–1 | **SHEET** 1 **OF** 2

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DIG SAFE
811
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

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352,552 SF
8.093 ACRES
200.00' FRONTAGE

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665,946 SF
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N.H. ROUTE 103

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(IN FEET)
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POST-DEVELOPMENT DRAINAREAS PLAN

JENNESSTOWN MANOR
MAP 7, LOTS 39 & 39-1

ROUTE 103
WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

OWNER/APPLICANT:
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KEACH–NORDSTROM ASSOCIATES, INC.
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DATE: MARCH 25, 2025 | **SCALE:** 1" = 50'
PROJECT NO: 24–0307–1 | **SHEET** 2 **OF** 2

HYDROLOGIC SOIL GROUP A
HYDROLOGIC SOIL GROUP B
HYDROLOGIC SOIL GROUP D
OPEN WATER FEATURE
IMPERVIOUS COVER

MAP 7 LOT 39-2
352,552 SF
8.093 ACRES
200.00' FRONTAGE

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665,946 SF
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MAGNETIC NORTH

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BEFORE YOU DIG - IT'S THE LAW
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

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STATE OF NEW HAMPSHIRE
STEVEN B. KEACH
NO. 7659
LICENSED
LAND SURVEYOR
12-17-25

REVISIONS

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HYDROLOGIC SOIL GROUP B
HYDROLOGIC SOIL GROUP D
OPEN WATER FEATURE
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UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

UTILITY NOTE

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NPDES NOTE

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POST-DEVELOPMENT DRAINAREAS PLAN

JENNESSTOWN MANOR
MAP 7, LOTS 39 & 39-1

ROUTE 103
WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

OWNER/APPLICANT:
PEACOCK HILL ROAD, LLC
145 OLD TOWN ROAD
WEARE, NH 03281
BK. 3829 PG. 2512

KNA KEACH-NORDSTROM ASSOCIATES, INC.
Civil Engineering Land Surveying Landscape Architecture
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

STEVEN G. KEACH 17698 LICENSED PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE 12/17/25

REVISIONS

No.	DATE	DESCRIPTION	BY
1	5/22/25	PER PB AND AOT COMMENTS	AEW
2	9/4/25	PER AOT COMMENTS	AEW
3	10/2/25	PER AOT COMMENTS	AEW
4	10/31/25	PER ARIES & FIRE COMMENTS	JDL
5	11/18/25	PER AOT & COND. OF APPROVAL	AEW
6	12/16/25	PER AOT COMMENTS	AEW

DATE: MARCH 25, 2025	**SCALE:** 1" = 50'
PROJECT NO: 24-0307-1	**SHEET** 2 **OF** 2

HYDROLOGIC SOIL GROUP A
HYDROLOGIC SOIL GROUP B
HYDROLOGIC SOIL GROUP D
OPEN WATER FEATURE
IMPERVIOUS COVER

MAP 7 LOT 39-2
352,552 SF
8.093 ACRES
200.00' FRONTAGE

MAP 7 LOT 39-1
665,946 SF
15.288 ACRES
368.04' FRONTAGE

MAP 7 LOT 39
488,207 SF
11.214 ACRES
350.88' FRONTAGE

10S 20S 30S 40S 50S 60S 50L 10P 20P 30P 40P 60P 60L

N.H. ROUTE 103

GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

DRAINAGE LEGEND:

THE LEGEND BELOW REFLECTS THE HYDROCAD MODEL USED FOR DRAINAGE CALCULATIONS.

- SSSM SOIL LINES
- 30B — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- R — DENOTES REACH
- L — DENOTES POINT OF INTEREST
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION

MAGNETIC NW

DIG SAFE
811 CALL TOLL FREE
PLAN-MARK-DIG
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PRE-DEVELOPMENT DRAINAREAS PLAN

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WARNER, NEW HAMPSHIRE
MERRIMACK COUNTY

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HYDROLOGIC SOIL GROUP B
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PROJECT NO: 24-0307-1 | **SHEET** 2 **OF** 2