

PROJECT NARRATIVE

Prepared For

**THE WOODS AT EAST VILLAGE
SHAKER ROAD
MAP 411Z LOT 49
CONCORD, NEW HAMPSHIRE**

January 19, 2022

Prepared for:

**MERC Properties, LLC
189 North Main Street, Suite 101
Concord, NH 03301**

Prepared By:



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Project No. 21045

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I. PROJECT NARRATIVE

Property Description

The subject parcel of land is located on the east side of Shaker Road approximately 1,000-feet north of Pekoe Drive in Concord, New Hampshire. The subject parcel is approximately 15.88 acres in size with approximately 378-feet of frontage on Shaker Road. The parcel is currently undeveloped and is predominantly wooded. It is situated entirely within the RM (Medium Density Residential) Zoning District. It is bounded by existing residential properties in the RM District to the north and east. And to the south and west (across Shaker Road) it is bounded by existing residential properties in the adjacent RS (Single Family Residential) Zoning District.

The parcel contains a large wetland complex, with a seasonal stream, located directly adjacent to Shaker Road. The small stream crosses under Shaker Road in an undersized 12-inch culvert near the northwest corner of the property. The middle area of the subject parcel is comprised of a large upland area, which is the subject area of the proposed development. However, in order to access this buildable area of the parcel, the front wetland needs to be crossed.

Project Description

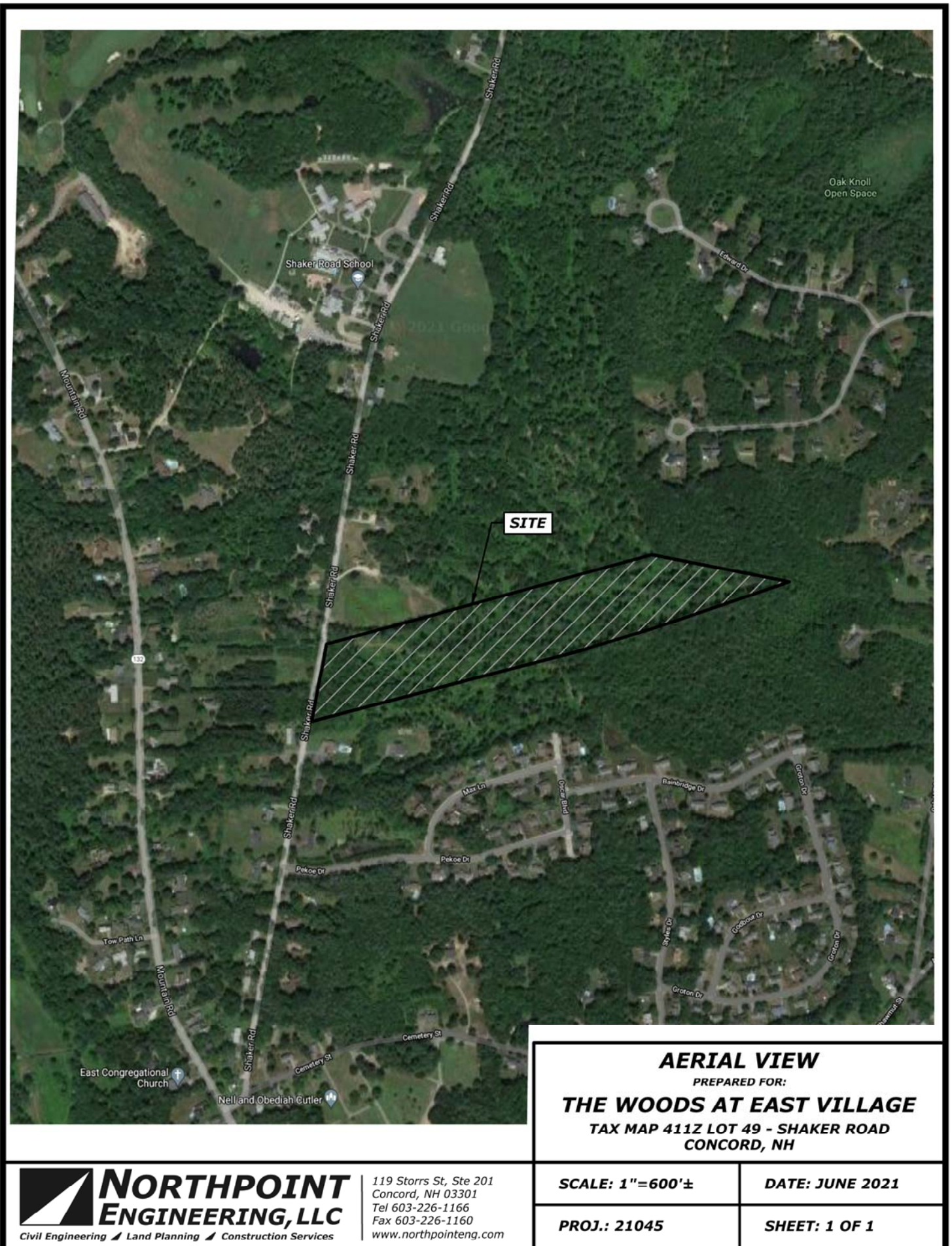
The proposed project involves the construction of a private roadway extending from Shaker Road approximately 1,150-feet into the parcel and terminating in a cul-de-sac. This private road will provide access to a new 20-unit cluster development comprised of both single-family and duplex units which will be developed as a residential condominium. The project will be serviced by municipal water and sewer which exist in Shaker Road just to the south of the parcel and will be extended within Shaker Road along the parcel's frontage. The development will also be serviced with natural gas which exists in Shaker Road. All other private utilities will be installed underground within the private roadway corridor and will connect to existing infrastructure in Shaker Road.

The proposed private roadway will be constructed with a 26-foot wide paved surface. The first 250-feet of the road will extend across the existing wetland complex in order to access the buildable area of the parcel. This first section of road will not have any curb in order to limit the impact to the adjacent wetland. The remaining 900-feet of the road will have sloped granite curb on both sides and a closed drainage system with roadway catch basins. All stormwater runoff from the closed drainage system will be treated onsite in a series of stormwater management basins.

The proposed residential condominium units will all have two car garages with 18-foot wide private driveways off the private roadway. Each unit will also have a limited common area in the back yard for a small patio or deck. All other land will be common to the condominium development. A small guest parking area and mail station will be installed central to the development.

This proposed wetland impacts total 9,990-sf and will require a Dredge & Fill Wetlands Permit from NHDES. An additional 24,300-sf of upland wetland buffer will also be impacted which necessitate approval of a Conditional Use Permit from the Planning Board. The project will also require an Alteration of Terrain (AoT) Permit from NHDES as it will disturb approximately 280,000-sf of terrain.

II. Aerial Photograph Exhibit



III. Site Photograph Exhibits



Picture 1: Existing catch basin at south corner of property



Picture 2: Headwall adjacent to catch basin in picture 1



Picture 3: Roadside swale along middle of property line, border of large wetland area



Picture 4: View of culvert outlet on opposite side of Shaker Rd., looking towards site



Picture 5: Existing culvert inlet near north corner of property



Picture 6: View of wetland area draining towards catch basin, looking towards Shaker Rd.



Picture 7: View of wetland area draining west to culvert, looking north



Picture 8: Large upland area adjacent to Shaker Rd., looking towards road



Picture 9: Upland area in Picture 8, looking towards back of site to the east



Picture 10: Neighboring property south of site and catch basin, in relation to property corner stake shown on the left

V. Architectural Elevations



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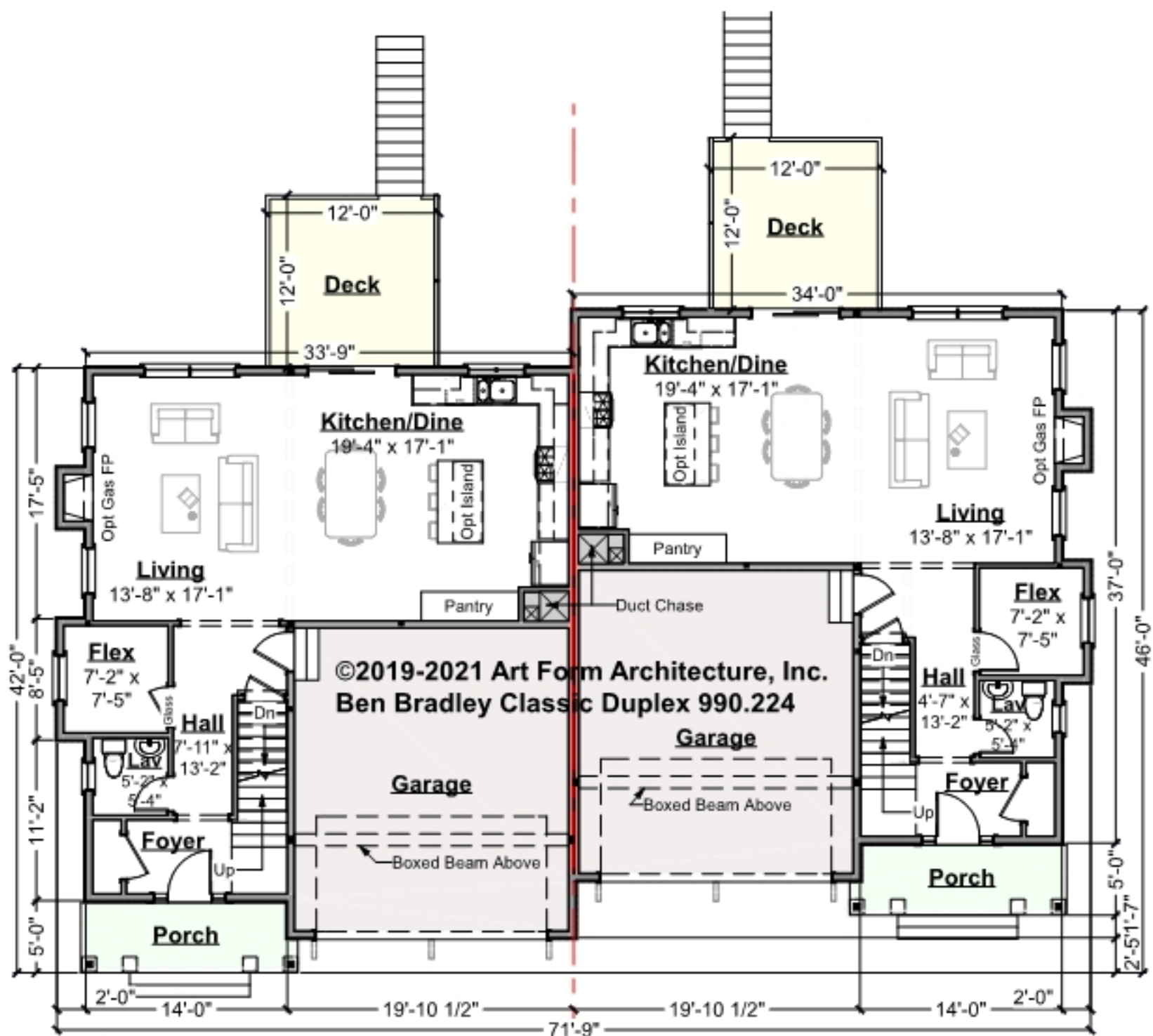
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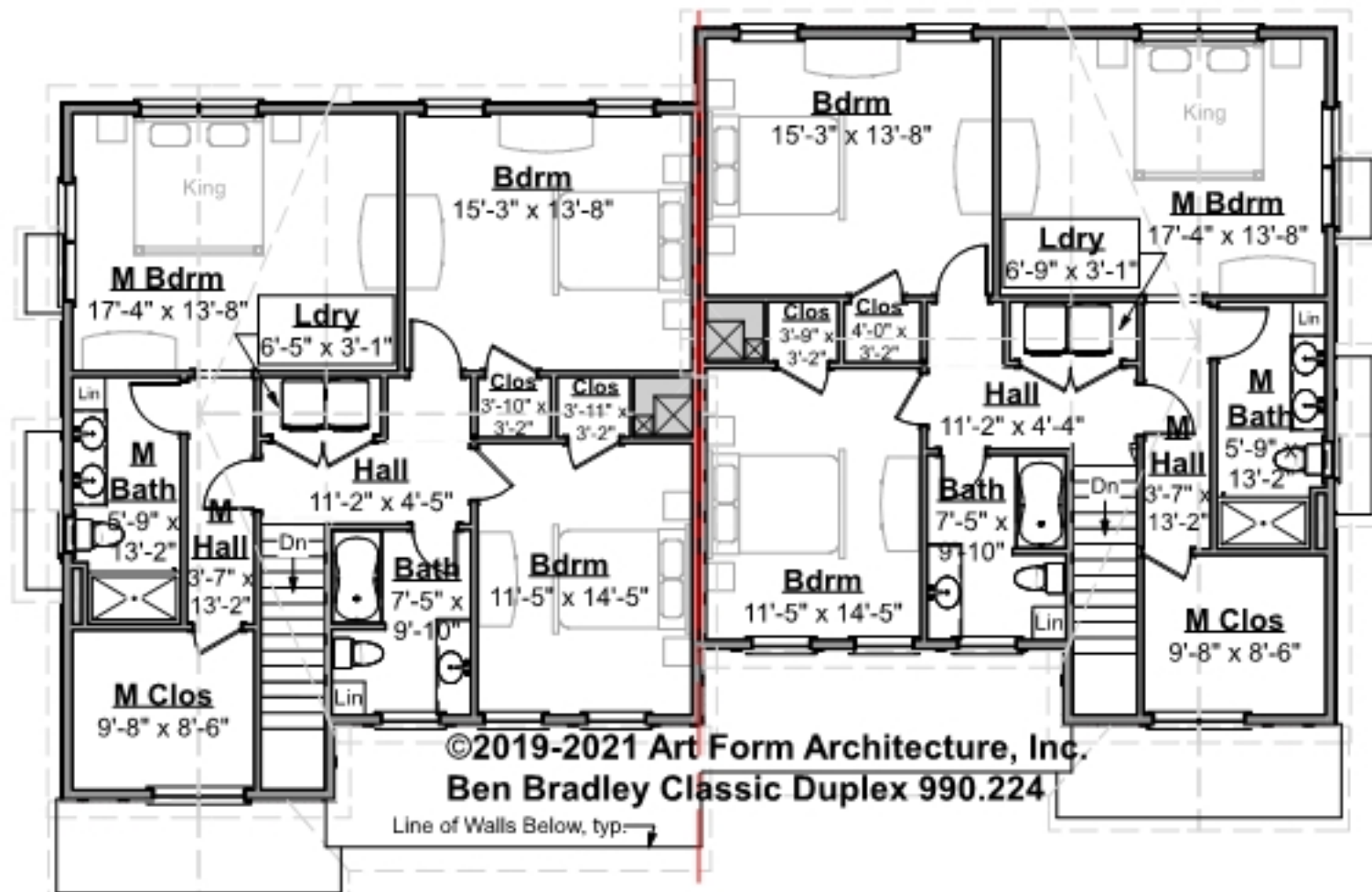


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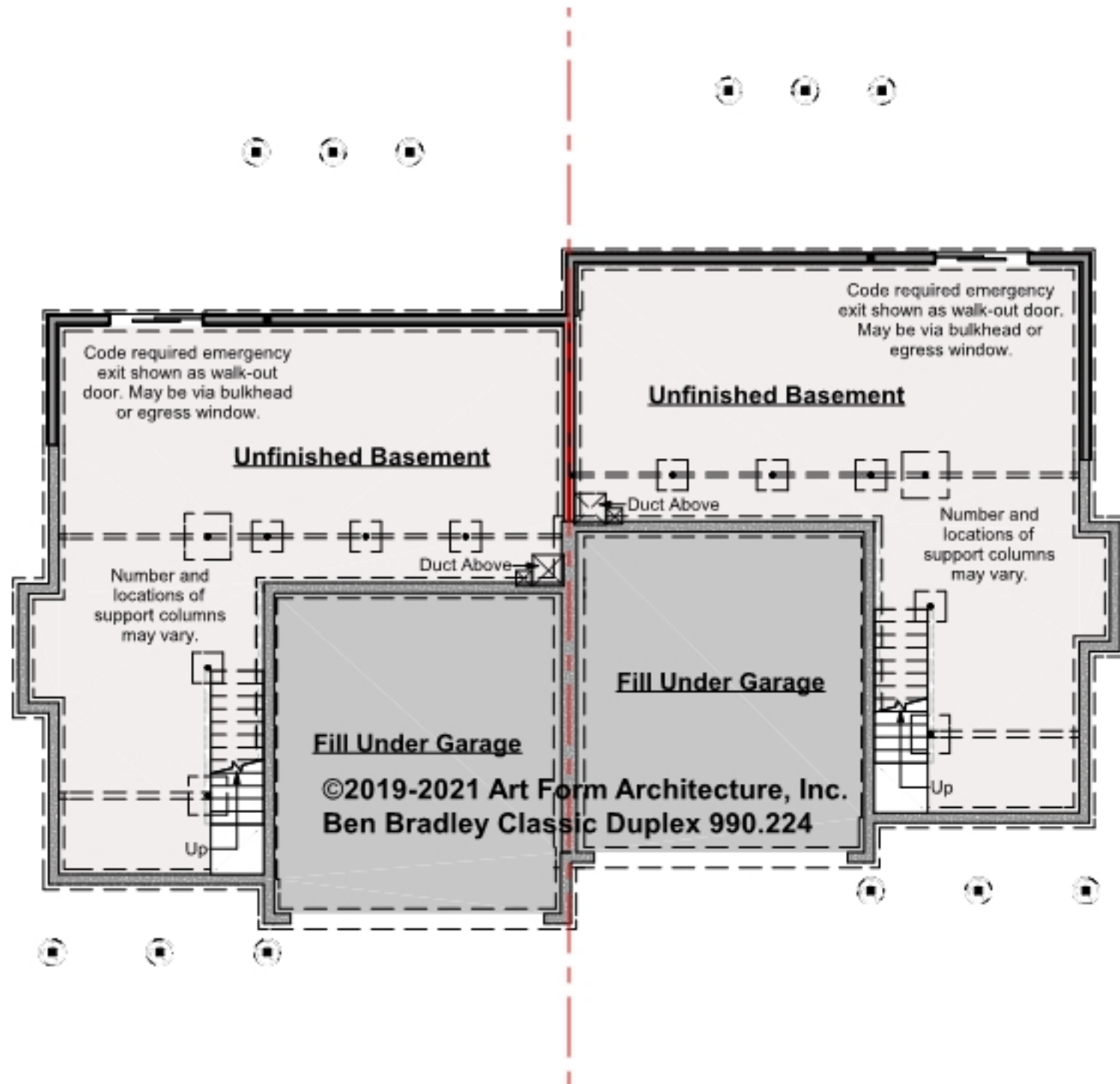


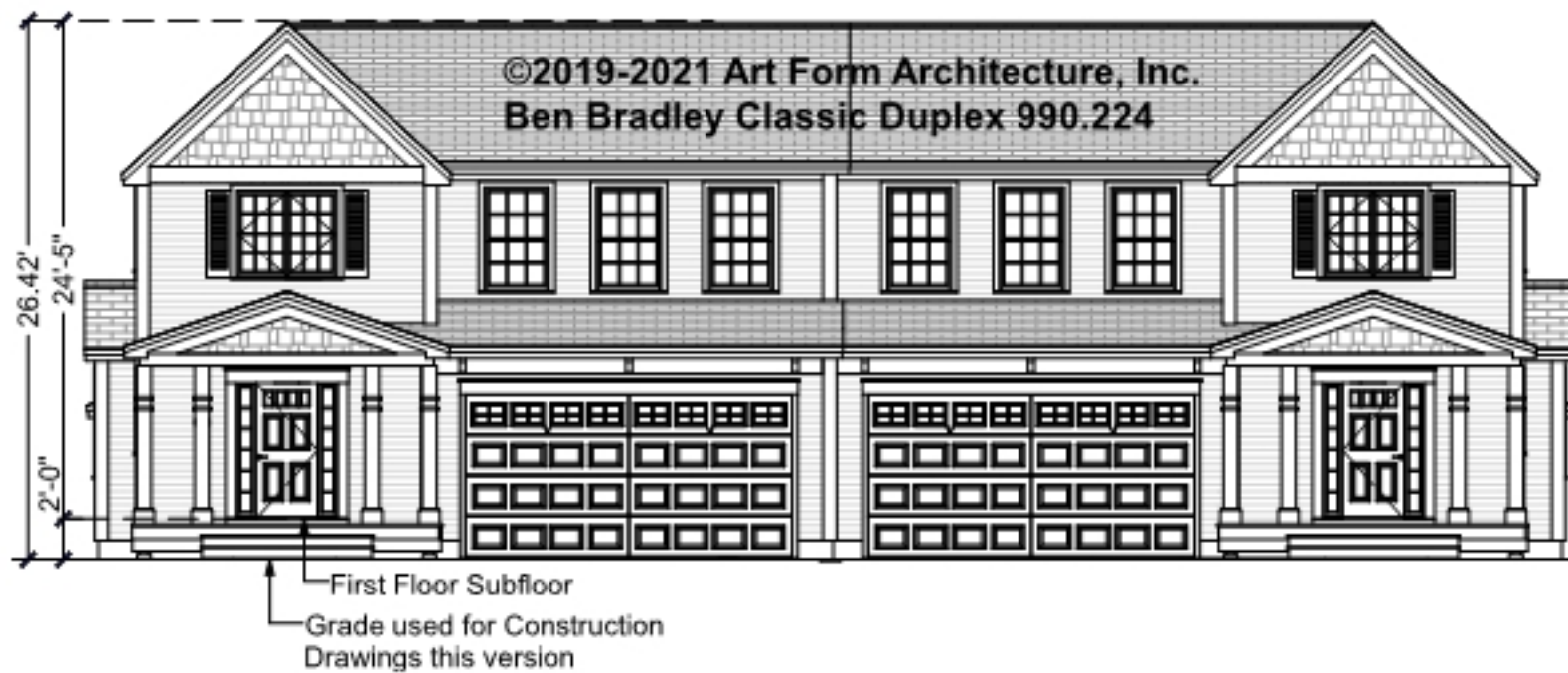
Living Area this Floor (Per Unit): 902 sq ft

8 ft Ceilings



Living Area this Floor (Per Unit): 1176 sq ft
 8 ft Ceilings



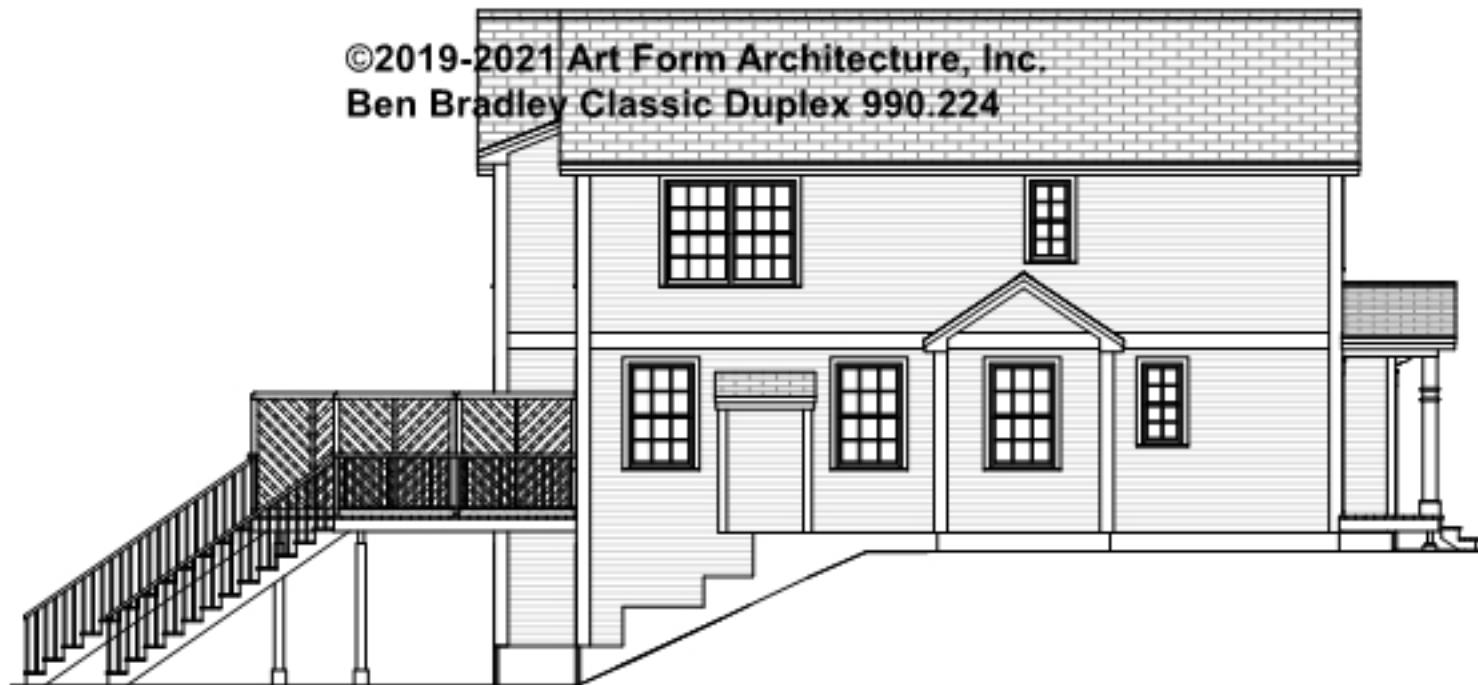


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January 19, 2022

City of Concord Planning Board
c/o City of Concord Planning Dept
41 Green Street
Concord, NH 03301

Subject: Waiver Requests Letter
The Woods at East Village – Subdivision Application
Map 411Z Lot 49 (Shaker Road)
Concord, New Hampshire
NPE Proj. No. 21045

Dear Board Members,

On behalf of the Applicant and property owners the referenced Subdivision application, I am formally requesting that the Planning Board grant the following waiver from the City of Concord Subdivision Regulations:

- Section 20.24 Length of Dead End Streets;
- Section 21.11 Cul-de-sacs;

The waivers requested are specific to the length of the proposed private roadway which is designed as a permanent dead end terminating in a cul-de-sac. The noted sections both state that permanent dead end streets shall not exceed 1,000-feet in length. The proposed private roadway measures 1,150-feet in length.

The proposed private roadway will be constructed to all other applicable City standards, including a pavement width of 26-feet with a cul-de-sac diameter of 100-feet. The development will be serviced by municipal water and will include fire hydrants along the length of the roadway, including at its cul-de-sac terminus. The project will be fully compliant with all NFPA requirements for fire safety.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. W. Lewis'.

Jeffrey W. Lewis, PE
Principal Engineer
Northpoint Engineering, LLC



Civil Engineering / Land Planning / Construction Services

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January 19, 2022

Heather R. Shank, PLA, AICP, City Planner
City of Concord Planning Dept
41 Green Street
Concord, NH 03301

Subject: Traffic Letter
The Woods at East Village
Map 411Z Lot 49 (Shaker Road)
Concord, New Hampshire
NPE Proj. No. 21045

Dear Ms. Shank,

Please accept this brief letter as our formal documentation of the expected traffic volumes that will be generated by the proposed residential cluster subdivision. The proposed subdivision involves the creation of 20 residential condominium units, 12 of which are single-family detached units and 8 of which are attached duplex units. All proposed units will be accessed via a new private roadway connection to Shaker Road. Shaker Road is a rural collector street that carries local and regional traffic through the northeast quadrant of the City.

According to the ITE Trip Generation Handbook, 9th Edition, for Land Use Code 210 (Single-family Detached Housing) the average rate of vehicle trip ends per dwelling unit on a weekday is 9.52; the average rate during the AM peak hour is 0.77; and, the average rate during the PM peak hour is 1.02. Based on a proposed 20 unit development this correlates to the following average trip ends expected from this development:

Weekday Total

Entering (50%):	95
Exiting (50%):	95
Total:	190

Weekday AM Peak Hour (of Generator)

Entering (26%):	4
Exiting (74%):	11
Total:	15

Heather R. Shank

1/19/2022

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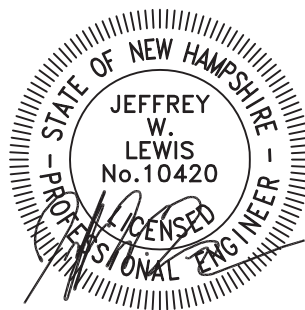
Weekday PM Peak Hour
(of Generator)

Entering (64%):	13
Exiting (36%):	7
Total:	20

Sincerely,



Jeffrey W. Lewis, PE
Principal Engineer
Northpoint Engineering, LLC





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February 28, 2022

City of Concord Planning Board
c/o City of Concord Planning Dept
41 Green Street
Concord, NH 03301

Subject: Waiver Requests Letter
The Woods at East Village – Subdivision Application
Map 411Z Lot 49 (Shaker Road)
NPE Proj. No. 21045

Dear Board Members,

On behalf of the Applicant and property owner the referenced Subdivision application, I am formally requesting that the Planning Board grant the following waivers from the City of Concord Subdivision Regulations:

- Section 20.24 Length of Dead End Streets;
- Section 21.11 Cul-de-sacs;
- Section 21.06 Sidewalks;
- Section 22.02 Sidewalks Required;

The first two waivers requested are specific to the proposed private roadway which is designed as a permanent dead end terminating in a cul-de-sac. The noted sections both state that permanent dead end streets shall not exceed 1,000-feet in length, whereas 1,150-feet is proposed. In addition, the required right-of-way diameter on the cul-de-sac is 120-feet whereas 110-feet is proposed. The proposed private roadway will be constructed to all other applicable City standards, including a pavement width of 26-feet with a cul-de-sac pavement diameter of 100-feet. The development will be serviced by municipal water and will include fire hydrants along the length of the roadway, including at its cul-de-sac terminus. The project will be fully compliant with all NFPA requirements for fire safety.

The second two waiver requests are specific to the requirement for sidewalks, both along existing Shaker Road and along the proposed private roadway. Shaker Road does not have any sidewalk on either side of the road. Installation of sidewalk along the project's frontage would not be practical and would serve no point. In addition, the proposed 26-foot pavement width of the private roadway serving only 20 homes with no thru traffic does not warrant a sidewalk.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. W. Lewis', is written over a light blue horizontal line.

Jeffrey W. Lewis, PE
Principal Engineer
Northpoint Engineering, LLC



Civil Engineering / Land Planning / Construction Services

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February 28, 2022

Beth Fenstermacher, Assistant City Planner
City of Concord Planning Dept
41 Green Street
Concord, NH 03301

Subject: **Drainage Report Addendum**
The Woods at East Village
Map 411Z Lot 49 (Shaker Road)
Concord, New Hampshire
NPE Proj. No. 21045

Dear Ms. Fenstermacher,

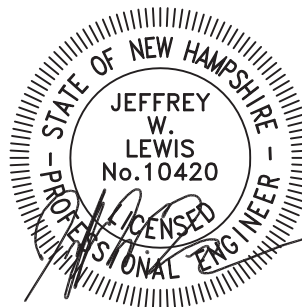
In order to address the City Engineering Review comments received in the Memorandum from Gary Lemay dated 2/8/22, we have revised certain aspects of the stormwater management design plans and calculations. The original drainage analysis was contained within the NHDES Alteration of Terrain Permit application that was submitted as part of the Subdivision Application. Included with this cover letter are the revised sections of the original report, which include the Project Narrative and the Drainage Analysis.

The design has been modified to accommodate the requirements of Subdivision Regulation Section 23.08(3) relative to the 100-year storm peak flow and the 10-year storm volume. In order to meet the 100-year peak flow requirements some minor adjustments were made to the outlet control structures at SWMB#1 and SWMB#3. In order to meet the 10-year volume requirement, a stone berm level spreader was added downstream on SWMB#1 which has a small infiltration volume capacity.

Sincerely,

A handwritten signature in blue ink, appearing to read 'J. W. Lewis'.

Jeffrey W. Lewis, PE
Principal Engineer
Northpoint Engineering, LLC



II. PROJECT NARRATIVE **(Rev 2/28/22)**

- Project Description
- Methodology
- Pre-Developed Conditions
- Post-Developed Conditions
- Summary of Results

Project Description

This project is a proposed 20-unit residential cluster subdivision in the east side of Concord. The subject parcel is Tax Map 411 Z Lot 49 located on Shaker Road. The subject parcel is 16 acres in size and is located on the east side of Shaker Road.

The proposed development includes a new private cul-de-sac accessed off Shaker Road. All residential units and parking will be along this new drive. This project will also include onsite stormwater management and disturb approximately 280,000-sf of terrain.

The majority of onsite stormwater runoff, including all roadway runoff, generated from the proposed site improvements will be collected in an onsite stormdrain system and conveyed to three onsite stormwater management basins that will provide treatment prior to discharge, as further discussed in the sections to follow.

Methodology

In accordance with the provisions and requirements of the NHDES Alteration of Terrain Program, the 2-, 10-, and 50-year, (24-hour) return frequency storms were used in all aspects of analysis and design for stormwater management improvements at the subject site.

The methodology of the U.S.D.A–S.C.S publication Urban Hydrology for Small Watersheds – Technical Release No. 55 (TR-55) and Computer Program – Project Formulation Hydrology (TR-20) was selected for use in the design of segments of the drainage system in order to estimate peak stormwater discharge volumes. In implementing the methodology of TR-55 and TR-20 a HYDROCAD (Version 10.00) stormwater modeling, hydrograph generating, and routing computer program was utilized.

Estimates for Time of Concentration, used in the analysis were made using the methodology contained within U.S.D.A–S.C.S publication Urban Hydrology for Small Watersheds – Technical Release No. 55 (TR-55). In implementing the TR-55 Method, a minimum Time of Concentration of 2 minutes was utilized for urbanized areas.

All design and analysis calculations performed using the referenced methodologies are attached to this report. These calculations document the subcatchment area, breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the attached “Drainage Areas Plans” graphically define and illustrate the real extent of each watershed or subcatchment area investigated.

Site Specific Soil Mapping has been performed on the portion of the site that is to be developed and is included in the further sections of this report. The USDA-NRCS Web Soils Survey was used to identify soil types outside the limits of the site specific soils mapping.

Pre-Developed Drainage Conditions

In general, the topography of the subject parcel slopes downward from the east to the west. The property is entirely undeveloped and forested. Based on the Site Specific Soil Survey performed by Northpoint Engineering, LLC, the underlying native soils within the upland areas of the property are predominantly hydrologic soils group (HSG) "A" and "B" soils.

The entire subject property lies within the watershed area of Bowen Brook which is a tributary of the Merrimack River, and is located approximately a mile to the west of the site. The entirety of the subject parcel drains directly to one of two unnamed tributary streams of Bowen Brook. The first stream cuts through the subject parcel and is conveyed under Shaker Road near the northwest corner of the parcel through an existing 12-inch culvert. This stream conveys runoff from a large wetland complex that lies adjacent to the east side of Shaker Road along the frontage of the subject parcel. The watershed area of this stream is approximately 64-acres in size and extends easterly all the way to Oak Hill Road.

The subject parcel contains a large, contiguous upland area that is the subject area of the proposed development. This upland area, unlike the lower lying areas of the parcel, does not drain to the stream that flows through the parcel. Instead, it drains to the north and onto the abutting residential property. From there, runoff sheet drains to the north where it ultimately is discharged to the second unnamed tributary stream of Bowen Brook. This tributary stream crossed under Shaker Road about one-quarter mile north of the subject property.

In the pre-developed condition, the subject property has been divided into five separate subcatchment drainage areas. Subcatchment 10S includes a large, mostly offsite watershed that drains to the onsite stream, which in turn discharges to the 12-inch culvert under Shaker Road near the northwest corner of the property. This offsite watershed area includes portions of lots on Irving Drive, Oak Hill Road, Max Lane, and Bainbridge Drive, but is mostly wooded and undeveloped. Subcatchment 20S is the area that drains to an existing headwall near the southwest corner of the property where it enters the municipal storm drain system. Subcatchments 30S, 40S, and 50S are areas within the property boundary that drain offsite to the north and onto the adjacent residential property.

The drainage analysis has identified five separate Points of Comparison (POC's) where stormwater is discharged from the site. POC #1 (Pond 10P) is the inlet end of existing 12-inch culvert which conveys the stream runoff from subcatchment 10S. POC #2 (Reach 20R) represents the existing headwall on Shaker Road which conveys runoff from subcatchment 20S. POC #3 (Reach 30R), POC #4 (Reach 40R), and POC #5 (Reach 50R) represent three separate points where subcatchments 30S, 40S, and 50S respectively drain onto the adjacent property to the north. All three points are located just over the northern property boundary where runoff is conveyed to the neighboring property.

Post-Development Drainage Conditions

The proposed project will disturb approximately 280,000-acres of terrain and result in approximately 99,880-sf of new impervious surface areas. Stormwater runoff from the majority of paved surfaces, including private driveways, will be collected in a closed drainage system within the proposed roadways and will be conveyed to one of three separate Stormwater Management Basins (SWMB's) onsite. SWMB #1, SWMB #2, and SWMB #3 will provide treatment of the collected stormwater in accordance with NHDES AoT requirements and will be equipped with outlet control devices to ensure that the post-developed peaks flows from the site meet or exceed the NHDES AoT requirements.

SWMB#1 and SWMB #3 are designed as gravel wetlands, with additional storage capacity for larger storm events. The closed drainage system in the roadway will discharge to one of these two basins.

SWMB #2 is designed as a shallow, surface infiltration basin which will collect roof runoff and back yard areas from the first row of houses on the north side of the private roadway.

All five Points of Comparison identified in the above section were analyzed in the post-developed condition to ensure that there would not be any adverse effects experienced by the adjacent downstream properties or receiving drainage channels. The following sections describe in greater detail the treatment methods, groundwater recharge requirements, channel protection criteria and peak runoff control criteria.

Stormwater Treatment:

The site has been designed to provide permanent stormwater treatment in compliance with Env-Wq 1507.03 for the majority of runoff generated from the proposed site improvements. Stormwater runoff from the majority of the proposed roadways and residential units will be collected in a series of catch basins and directed into one of two proposed gravel wetlands (SWMB #1 and SWMB #3). A small portion of the site will drain directly to the shallow surface infiltration basin (SWMB #2).

SWMB #1, located west of Unit 1 and adjacent to Shaker Road, is designed as a Gravel Wetland basin. SWMB #3, located between Unit 9 and Unit 10, is also designed as a Gravel Wetland basin. Both basins contain a sediment forebay that will provide pre-treatment of the collected runoff and then a two-cell gravel wetland designed in compliance with Env-Wq 1508.05 for the water quality volume (WQV). Additional storage above the WQV will allow SWMB #1 and SWMB #3 to provide stormwater management for the 10-year and 50-year storms.

SWMB #2, located behind Units 1 thru 5, is designed as an Infiltration basin. It does not have any pretreatment component as it is not receiving any roadway runoff. Permanent treatment is accomplished through infiltration through the basin floor in compliance with Env-Wq 1508.06 for the WQV. Additional storage above the WQV will allow SWMB #2 to provide stormwater management for the 10-year and 50-year storms.

Groundwater Recharge:

As a result of the proposed development, the impervious surface area on the subject parcel will increase from 0-sf to 99,880-sf, an increase of 99,880-sf. The the new impervious surface area will displace 71,918-sf of undisturbed HSG “A” soils, 22,433-sf of undisturbed HSG “B” soils and 5,532-sf of undisturbed HSG “D” soils. This correlates to a required Groundwater Recharge Volume (GRV) of 2,865-cf. Proposed SWMB#2 (infiltration basin) will provide well in excess of this required amount. The volume of the infiltration basin, below the emergency spillway (lowest outfall) is 5,450-cf. All of this volume will be infiltrated. Therefore, the site exceeds the groundwater recharge requirements of Env-Wq 1507.04.

Channel Protection:

The site has been designed to provide downstream Channel Protection in compliance with Env-Wq 1507.05 through the implementation of Stormwater Management Basins. Points of Comparison POC #1, POC #2, POC #3, POC #4, and POC #5 were analyzed to demonstrate compliance at the locations where concentrated runoff is discharged from the site. The 2-year, 24-hour post-developed peak flow rate at each of these two Points of Comparison (POC) is less than or equal to the 2-year, 24-hour pre-developed peak flow rate, subject to mathematical rounding. Additionally, the 2-year, 24-hour post-developed storm volume at each POC has not increased over the pre-developed volume by more than 0.10-af. See Table 1 in the Summary of Results below for actual values. This meets the criteria of Env-Wq 1507.05 and will ensure that downstream stream channels and receiving waters are protected from erosion-causing volumes and flows.

Peak Runoff Control:

The site has been designed to provide Peak Runoff Control requirements in compliance with Env-Wq 1507.06 through the implementation of the Stormwater Management Basins. All five Points of Comparison were analyzed to demonstrate compliance with the peak runoff control requirements. The site has been designed such that both the 10-year and 50-year 24-hour post-developed peak flow rates do not exceed those of the pre-developed condition at any of the Points of Comparison, thus ensuring that downstream properties will not be adversely affected by the development. See Table 2 in the Summary of Results below for actual values.

Note that at POC#5, the HydroCAD model indicates an increase in runoff. This is a limitation of the software in analyzing small watershed areas. The affected subcatchment (50S) is actually reduced in size in the post-developed conditions, but due to the nature of the HSG “A” soils being removed from the subcatchment, its curve number is increased. In actuality, there is no reason to expect any increase in peak runoff at this POC.

City of Concord – Additional Stormwater Requirements

In addition to the requirements of Env-Wq 1507.06 above, the City of Concord requires runoff control for the 10-year storm volume and the 100-year storm peak flow. The proposed SWMB’s described above have been designed to ensure that these additional design storm requirements have been met. Refer to Tables 4 and 5 in the Summary of Results below for actual values.

Summary of Results

Table 1. Channel Protection Summary

Location	Node	Volumes & Peak Rates of Runoff at Points of Comparison					
		Volume (2-Year, 24-Hour)			Peak Runoff (2-Year, 24-Hour)		
		Pre-Develop	Post-Develop	+ Increase/ (Decrease)	Pre-Develop	Post-Develop	+ Increase/ (Decrease)
P.O.C. #1	Pond 10P	0.5 af	0.5 af	(0.0 af)	0.8 cfs	0.8 cfs	(0.0 cfs)
P.O.C. #2	Reach 20R	0.0 af	0.0 af	(0.0 af)	0.0 cfs	0.0 cfs	(0.0 cfs)
P.O.C. #3	Reach 30R	0.0 af	0.0 af	(0.0 af)	0.0 cfs	0.0 cfs	(0.0 cfs)
P.O.C. #4	Reach 40R	0.0 af	0.0 af	(0.0 af)	0.0 cfs	0.0 cfs	(0.0 cfs)
P.O.C. #5	Reach 50R	0.0 af	0.0 af	(0.0 af)	0.0 cfs	0.0 cfs	(0.0 cfs)

Table 2. Peak Runoff Control Summary

Location	Node	Peak Rates of Runoff at Points of Comparison					
		(10-Year, 24-Hour)			(50-Year, 24-Hour)		
		Pre-Develop	Post-Develop	+ Increase/ (Decrease)	Pre-Develop	Post-Develop	+ Increase/ (Decrease)
P.O.C. #1	Pond 10P	7.0 cfs	6.8 cfs	(0.2 cfs)	28.3 cfs	27.9 cfs	(0.4 cfs)
P.O.C. #2	Reach 20R	0.0 cfs	0.0 cfs	(0.0 cfs)	0.1 cfs	0.1 cfs	(0.0 cfs)
P.O.C. #3	Reach 30R	0.0 cfs	0.0 cfs	(0.0 cfs)	0.0 cfs	0.0 cfs	(0.0 cfs)
P.O.C. #4	Reach 40R	0.0 cfs	0.0 cfs	(0.0 cfs)	0.7 cfs	0.1 cfs	(0.6 cfs)
P.O.C. #5	Reach 50R	0.0 cfs	0.1 cfs	+0.1 cfs*	0.2 cfs	0.5 cfs	+ 0.3 cfs*

* Note that this increase is due to a limitation in the HydroCAD software, as noted in the Peak Runoff Control Section above.

**Table 3. SWMB Summary
(50-Year, 24-Storm)**

SWMB# / Node	Peak In-Flow (cfs)	Peak Out-Flow (cfs)	High Water Elevation	Berm Elevation	Free Board
SWMB #1 / 31P	4.8 cfs	0.3 cfs	324.07	326.00	1.93 ft
SWMB #2 / 32P	1.8 cfs	0.5 cfs	325.53	326.00	0.47 ft
SWMB #3 / 41P	10.1 cfs	0.4 cfs	331.79	333.00	1.21 ft

Table 4. 100-Year Peak Flow Summary

Location	Node	Peak Rates of Runoff at Points of Comparison		
		(100-Year, 24-Hour)		
		Pre-Develop	Post-Develop	+ Increase/ (Decrease)
P.O.C. #1	Pond 10P	44.8 cfs	44.6 cfs	(0.2 cfs)
P.O.C. #2	Reach 20R	0.3 cfs	0.3 cfs	(0.0 cfs)
P.O.C. #3	Reach 30R	0.1 cfs	0.1 cfs	(0.0 cfs)
P.O.C. #4	Reach 40R	1.5 cfs	0.2 cfs	(1.3 cfs)
P.O.C. #5	Reach 50R	0.5 cfs	0.7 cfs	+ 0.2 cfs*

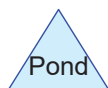
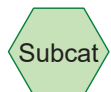
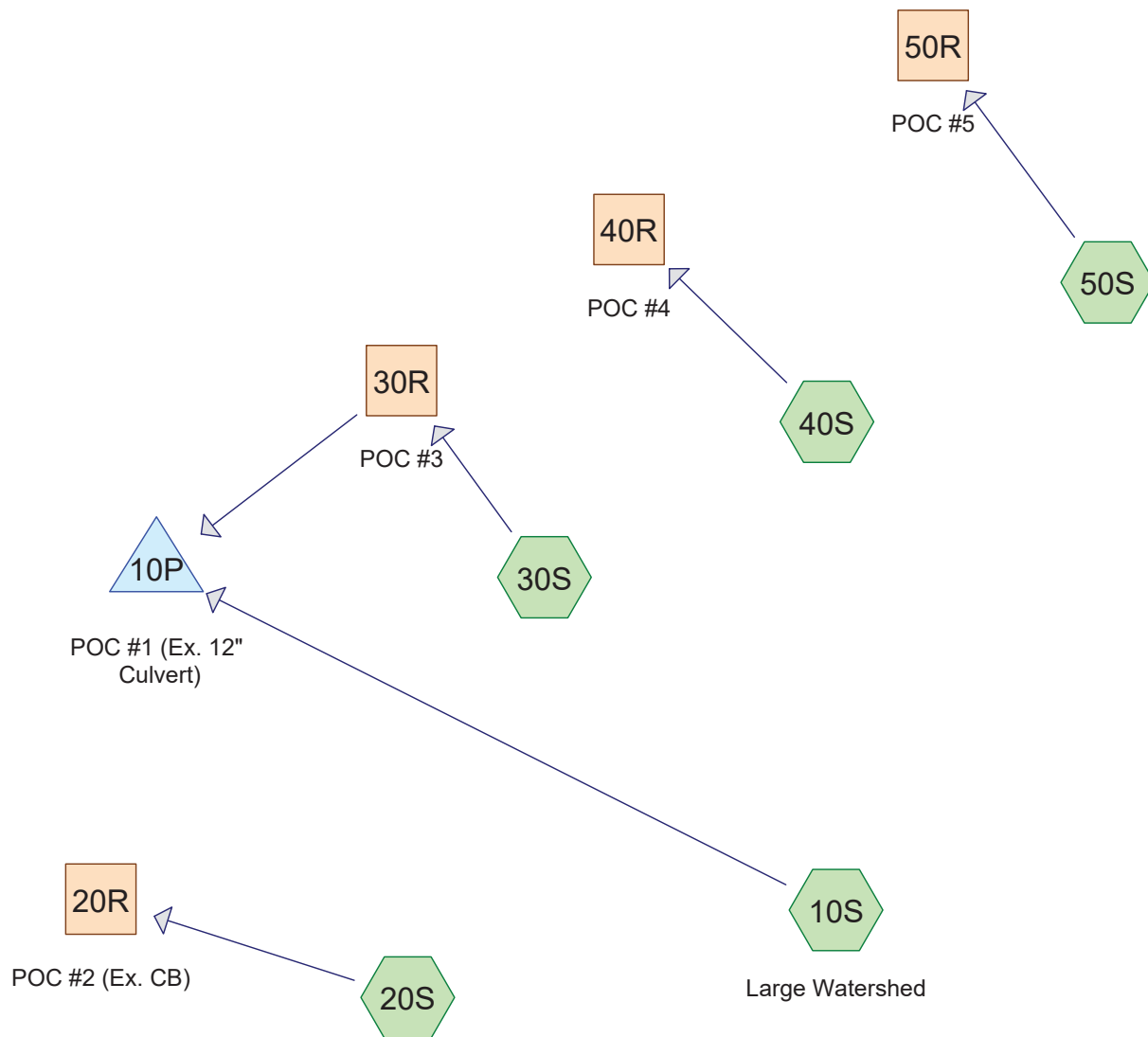
* Note that this increase is due to a limitation in the HydroCAD software, as noted in the Peak Runoff Control Section above.

Table 5. 10-Year Volume Summary

Location	Node	Volumes of Runoff at Points of Comparison		
		(10-Year, 24-Hour)		
		Pre-Develop	Post-Develop	+ Increase/ (Decrease)
P.O.C. #1	Pond 10P	2.3 af	2.3 af	(0.0 af)
P.O.C. #2	Reach 20R	0.0 af	0.0 af	(0.0 af)
P.O.C. #3	Reach 30R	0.0 af	0.0 af	(0.0 af)
P.O.C. #4	Reach 40R	0.0 af	0.0 af	(0.0 af)
P.O.C. #5	Reach 50R	0.0 af	0.0 af	(0.0 af)

X. Drainage Analysis (Rev 2/28/22)

- Extreme Precipitation Table from National Regional Climate Center
- HydroCAD Output Data – Pre-Developed
 - Drainage Diagram
 - Area Listing and Soil Listing
 - Node Listing: 2-year, 10-year, 50-year, and 100-year
 - Full Summary: 10-year
- HydroCAD Output Data – Post-Developed
 - Drainage Diagram
 - Area Listing and Soil Listing
 - Node Listing: 2-year, 10-year, 50-year, and 100-year
 - Full Summary: 10-year



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.400	51	1 acre lots, HSG A (10S)
4.393	68	1 acre lots, HSG B (10S)
3.390	79	1 acre lots, HSG C (10S)
2.593	84	1 acre lots, HSG D (10S)
2.789	61	1/4 acre lots, HSG A (10S)
0.478	98	Existing Pavement, HSG B (10S)
0.116	98	Existing Pavement, HSG D (10S)
37.704	30	Woods, HSG A (10S, 20S, 30S, 40S, 50S)
2.757	55	Woods, HSG B (10S, 20S, 40S)
2.952	70	Woods, HSG C (10S)
12.575	77	Woods, HSG D (10S, 20S, 40S, 50S)
73.148	50	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
43.893	HSG A	10S, 20S, 30S, 40S, 50S
7.628	HSG B	10S, 20S, 40S
6.342	HSG C	10S
15.284	HSG D	10S, 20S, 40S, 50S
0.000	Other	
73.148		TOTAL AREA

21045-PRE*Type III 24-hr 2-year Rainfall=2.81"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Large Watershed	Runoff Area=2,803,800 sf 0.92% Impervious Runoff Depth>0.09" Flow Length=3,168' Tc=78.2 min CN=52 Runoff=0.8 cfs 0.5 af
Subcatchment 20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.0 cfs 0.0 af
Subcatchment 30S:	Runoff Area=79,464 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=289' Tc=17.5 min CN=30 Runoff=0.0 cfs 0.0 af
Subcatchment 40S:	Runoff Area=138,347 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=659' Tc=28.8 min CN=41 Runoff=0.0 cfs 0.0 af
Subcatchment 50S:	Runoff Area=27,286 sf 0.00% Impervious Runoff Depth>0.00" Flow Length=100' Slope=0.1400 '/' Tc=10.5 min CN=43 Runoff=0.0 cfs 0.0 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 50R: POC #5	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Pond 10P: POC #1 (Ex. 12" Culvert)	Peak Elev=318.40' Storage=905 cf Inflow=0.8 cfs 0.5 af Primary=0.8 cfs 0.5 af Secondary=0.0 cfs 0.0 af Outflow=0.8 cfs 0.5 af

Total Runoff Area = 73.148 ac Runoff Volume = 0.5 af Average Runoff Depth = 0.08"
99.19% Pervious = 72.554 ac 0.81% Impervious = 0.594 ac

21045-PRE*Type III 24-hr 10-year Rainfall=4.13"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Large Watershed	Runoff Area=2,803,800 sf 0.92% Impervious Runoff Depth>0.44" Flow Length=3,168' Tc=78.2 min CN=52 Runoff=7.0 cfs 2.3 af
Subcatchment 20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.00" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.0 cfs 0.0 af
Subcatchment 30S:	Runoff Area=79,464 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=289' Tc=17.5 min CN=30 Runoff=0.0 cfs 0.0 af
Subcatchment 40S:	Runoff Area=138,347 sf 0.00% Impervious Runoff Depth>0.10" Flow Length=659' Tc=28.8 min CN=41 Runoff=0.0 cfs 0.0 af
Subcatchment 50S:	Runoff Area=27,286 sf 0.00% Impervious Runoff Depth>0.15" Flow Length=100' Slope=0.1400 '/' Tc=10.5 min CN=43 Runoff=0.0 cfs 0.0 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 50R: POC #5	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Pond 10P: POC #1 (Ex. 12" Culvert)	Peak Elev=319.72' Storage=16,839 cf Inflow=7.0 cfs 2.3 af Primary=4.2 cfs 2.3 af Secondary=0.0 cfs 0.0 af Outflow=4.2 cfs 2.3 af

Total Runoff Area = 73.148 ac Runoff Volume = 2.4 af Average Runoff Depth = 0.39"
99.19% Pervious = 72.554 ac 0.81% Impervious = 0.594 ac

21045-PRE*Type III 24-hr 50-year Rainfall=6.10"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Large Watershed	Runoff Area=2,803,800 sf 0.92% Impervious Runoff Depth>1.31" Flow Length=3,168' Tc=78.2 min CN=52 Runoff=28.3 cfs 7.0 af
Subcatchment 20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.18" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.1 cfs 0.0 af
Subcatchment 30S:	Runoff Area=79,464 sf 0.00% Impervious Runoff Depth>0.08" Flow Length=289' Tc=17.5 min CN=30 Runoff=0.0 cfs 0.0 af
Subcatchment 40S:	Runoff Area=138,347 sf 0.00% Impervious Runoff Depth>0.58" Flow Length=659' Tc=28.8 min CN=41 Runoff=0.7 cfs 0.2 af
Subcatchment 50S:	Runoff Area=27,286 sf 0.00% Impervious Runoff Depth>0.71" Flow Length=100' Slope=0.1400 '/' Tc=10.5 min CN=43 Runoff=0.2 cfs 0.0 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.1 cfs 0.0 af Outflow=0.1 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.09' Max Vel=0.76 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.7 cfs 0.2 af Outflow=0.7 cfs 0.2 af
Reach 50R: POC #5	Inflow=0.2 cfs 0.0 af Outflow=0.2 cfs 0.0 af
Pond 10P: POC #1 (Ex. 12" Culvert)	Peak Elev=321.73' Storage=95,595 cf Inflow=28.3 cfs 7.0 af Primary=6.9 cfs 5.8 af Secondary=6.8 cfs 0.9 af Outflow=13.7 cfs 6.6 af

Total Runoff Area = 73.148 ac Runoff Volume = 7.3 af Average Runoff Depth = 1.19"
99.19% Pervious = 72.554 ac 0.81% Impervious = 0.594 ac

21045-PRE*Type III 24-hr 100-year Rainfall=7.22"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 10S: Large Watershed Runoff Area=2,803,800 sf 0.92% Impervious Runoff Depth>1.93"
Flow Length=3,168' Tc=78.2 min CN=52 Runoff=44.7 cfs 10.3 af

Subcatchment 20S: Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.42"
Flow Length=682' Tc=27.8 min CN=33 Runoff=0.3 cfs 0.1 af

Subcatchment 30S: Runoff Area=79,464 sf 0.00% Impervious Runoff Depth>0.25"
Flow Length=289' Tc=17.5 min CN=30 Runoff=0.1 cfs 0.0 af

Subcatchment 40S: Runoff Area=138,347 sf 0.00% Impervious Runoff Depth>0.99"
Flow Length=659' Tc=28.8 min CN=41 Runoff=1.5 cfs 0.3 af

Subcatchment 50S: Runoff Area=27,286 sf 0.00% Impervious Runoff Depth>1.17"
Flow Length=100' Slope=0.1400 '/' Tc=10.5 min CN=43 Runoff=0.5 cfs 0.1 af

Reach 20R: POC #2 (Ex. CB) Inflow=0.3 cfs 0.1 af
Outflow=0.3 cfs 0.1 af

Reach 30R: POC #3 Avg. Flow Depth=0.14' Max Vel=1.02 fps Inflow=0.1 cfs 0.0 af
n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.1 cfs 0.0 af

Reach 40R: POC #4 Inflow=1.5 cfs 0.3 af
Outflow=1.5 cfs 0.3 af

Reach 50R: POC #5 Inflow=0.5 cfs 0.1 af
Outflow=0.5 cfs 0.1 af

Pond 10P: POC #1 (Ex. 12" Culvert) Peak Elev=321.99' Storage=112,553 cf Inflow=44.8 cfs 10.4 af
Primary=7.2 cfs 6.2 af Secondary=25.3 cfs 3.4 af Outflow=32.4 cfs 9.6 af

Total Runoff Area = 73.148 ac Runoff Volume = 10.8 af Average Runoff Depth = 1.77"
99.19% Pervious = 72.554 ac 0.81% Impervious = 0.594 ac

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Type III 24-hr 10-year Rainfall=4.13"

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Summary for Subcatchment 10S: Large Watershed

Runoff = 7.0 cfs @ 13.38 hrs, Volume= 2.3 af, Depth> 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	20,818	98	Existing Pavement, HSG B
*	5,059	98	Existing Pavement, HSG D
*	148,095	51	1 acre lots, HSG A
*	121,481	61	1/4 acre lots, HSG A
*	1,346,491	30	Woods, HSG A
*	191,378	68	1 acre lots, HSG B
*	128,600	70	Woods, HSG C
*	147,658	79	1 acre lots, HSG C
*	537,000	77	Woods, HSG D
*	112,960	84	1 acre lots, HSG D
*	44,260	55	Woods, HSG B
	2,803,800	52	Weighted Average
	2,777,923		99.08% Pervious Area
	25,877		0.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
2.9	283	0.1060	1.63		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.4	771	0.0026	0.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.7	2,014	0.0079	2.88	23.04	Channel Flow, Area= 8.0 sf Perim= 12.0' r= 0.67' n= 0.035
78.2	3,168	Total			

Summary for Subcatchment 20S:

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	120,662	30	Woods, HSG A
*	14,392	55	Woods, HSG B
*	2,371	77	Woods, HSG D
	137,425	33	Weighted Average
	137,425		100.00% Pervious Area

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Type III 24-hr 10-year Rainfall=4.13"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.1200	0.15		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
16.6	582	0.0137	0.59		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
27.8	682	Total			

Summary for Subcatchment 30S:

Runoff = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 79,464	30	Woods, HSG A
79,464		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
4.3	189	0.0212	0.73		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
17.5	289	Total			

Summary for Subcatchment 40S:

Runoff = 0.0 cfs @ 15.07 hrs, Volume= 0.0 af, Depth> 0.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 76,068	30	Woods, HSG A
* 61,446	55	Woods, HSG B
833	77	Woods, HSG D
138,347	41	Weighted Average
138,347		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
15.6	559	0.0143	0.60		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
28.8	659	Total			

21045-PRE

Type III 24-hr 10-year Rainfall=4.13"

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Summary for Subcatchment 50S:

Runoff = 0.0 cfs @ 13.66 hrs, Volume= 0.0 af, Depth> 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	19,720	30	Woods, HSG A
*	7,566	77	Woods, HSG D
	27,286	43	Weighted Average
	27,286		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	100	0.1400	0.16		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"

Summary for Reach 20R: POC #2 (Ex. CB)

Inflow Area = 3.155 ac, 0.00% Impervious, Inflow Depth > 0.00" for 10-year event
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 30R: POC #3

Inflow Area = 1.824 ac, 0.00% Impervious, Inflow Depth = 0.00" for 10-year event
 Inflow = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

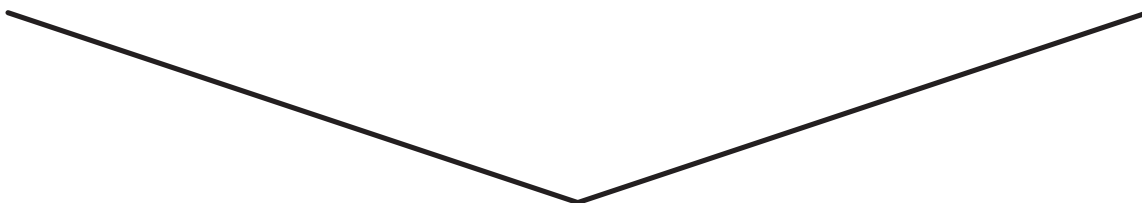
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 11.1 cfs

0.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 3.0 '/' Top Width= 6.00'

Length= 340.0' Slope= 0.0206 '/'

Inlet Invert= 326.00', Outlet Invert= 319.00'



Summary for Reach 40R: POC #4

Inflow Area = 3.176 ac, 0.00% Impervious, Inflow Depth > 0.10" for 10-year event
 Inflow = 0.0 cfs @ 15.07 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 15.07 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 50R: POC #5

Inflow Area = 0.626 ac, 0.00% Impervious, Inflow Depth > 0.15" for 10-year event
 Inflow = 0.0 cfs @ 13.66 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 13.66 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 10P: POC #1 (Ex. 12" Culvert)

Inflow Area = 66.191 ac, 0.90% Impervious, Inflow Depth > 0.42" for 10-year event
 Inflow = 7.0 cfs @ 13.38 hrs, Volume= 2.3 af
 Outflow = 4.2 cfs @ 14.73 hrs, Volume= 2.3 af, Atten= 40%, Lag= 81.1 min
 Primary = 4.2 cfs @ 14.73 hrs, Volume= 2.3 af
 Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 319.72' @ 14.73 hrs Surf.Area= 19,592 sf Storage= 16,839 cf

Plug-Flow detention time= 47.7 min calculated for 2.3 af (99% of inflow)
 Center-of-Mass det. time= 41.9 min (1,021.5 - 979.5)

Volume	Invert	Avail.Storage	Storage Description
#1	317.90'	112,905 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.90	0	0	0
318.00	5	0	0
320.00	22,800	22,805	22,805
322.00	67,300	90,100	112,905

Device	Routing	Invert	Outlet Devices
#1	Primary	317.90'	12.0" Round Culvert L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 317.90' / 317.70' S= 0.0054 ' /' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Secondary	321.52'	30.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

21045-PRE*Type III 24-hr 10-year Rainfall=4.13"*

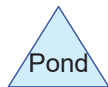
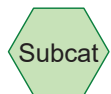
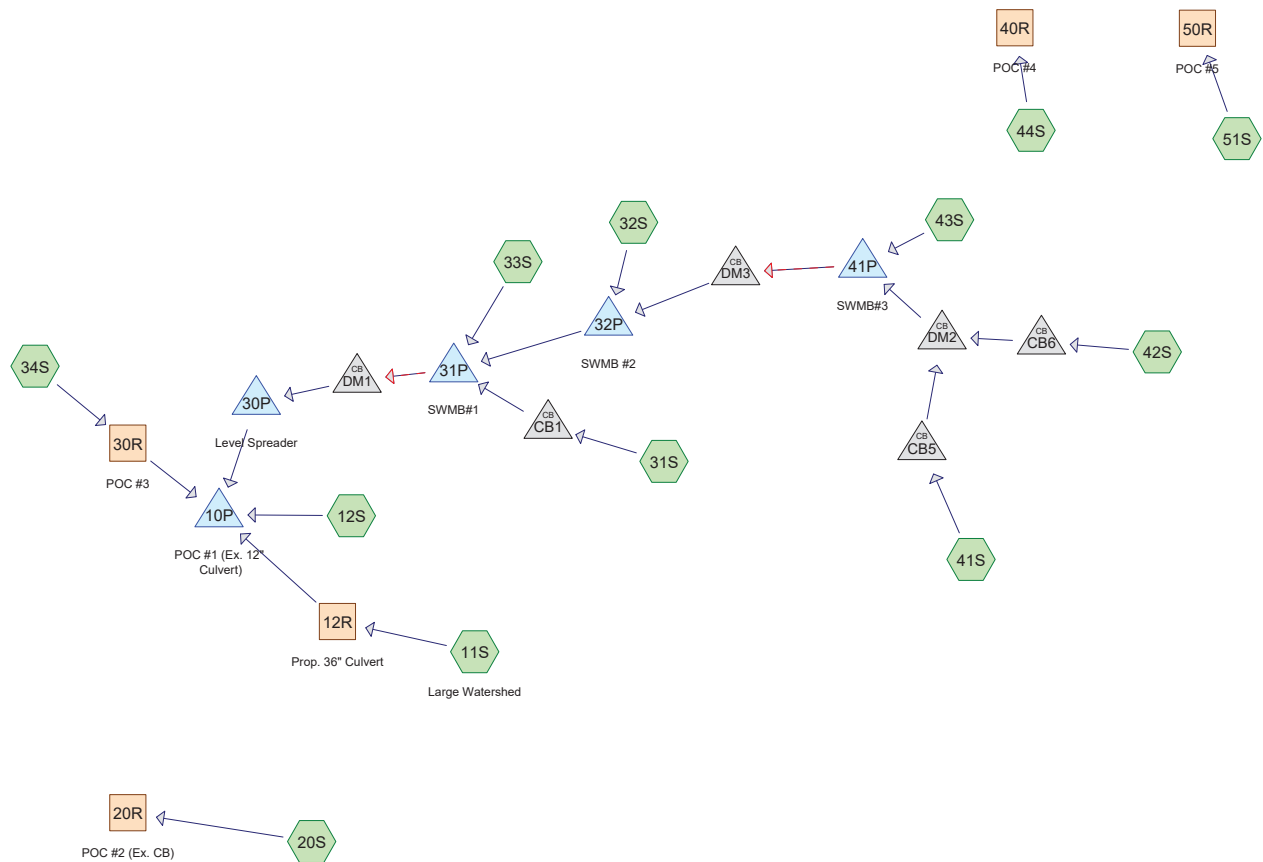
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Primary OutFlow Max=4.2 cfs @ 14.73 hrs HW=319.72' (Free Discharge)↑**1=Culvert** (Barrel Controls 4.2 cfs @ 5.30 fps)**Secondary OutFlow** Max=0.0 cfs @ 0.00 hrs HW=317.90' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)



Routing Diagram for 21045-POST

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.400	51	1 acre lots, HSG A (11S)
4.393	68	1 acre lots, HSG B (11S)
3.390	79	1 acre lots, HSG C (11S)
2.593	84	1 acre lots, HSG D (11S)
2.789	61	1/4 acre lots, HSG A (11S)
0.478	98	Existing Pavement, HSG B (11S)
0.116	98	Existing Pavement, HSG D (11S)
3.099	39	Lawn/Landscape, HSG A (12S, 31S, 32S, 33S, 34S, 41S, 42S, 43S, 44S, 51S)
0.921	61	Lawn/Landscape, HSG B (41S, 42S, 43S, 44S)
0.128	80	Lawn/Landscape, HSG D (12S, 31S, 43S)
0.835	98	Proposed Buildings & Patios, HSG A (31S, 32S, 41S, 42S, 43S)
0.331	98	Proposed Buildings & Patios, HSG B (41S, 42S, 43S)
0.009	98	Proposed Buildings & Patios, HSG D (43S)
0.816	98	Proposed Pavement, HSG A (12S, 31S, 42S)
0.184	98	Proposed Pavement, HSG B (42S)
0.118	98	Proposed Pavement, HSG D (11S, 12S, 31S)
0.125	98	SWMB's, HSG A (33S, 43S)
0.152	98	SWMB's, HSG B (43S)
32.830	30	Woods, HSG A (11S, 20S, 51S)
1.169	55	Woods, HSG B (11S, 20S)
2.952	70	Woods, HSG C (11S)
12.320	77	Woods, HSG D (11S, 20S, 51S)
73.148	52	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
43.893	HSG A	11S, 12S, 20S, 31S, 32S, 33S, 34S, 41S, 42S, 43S, 44S, 51S
7.628	HSG B	11S, 20S, 41S, 42S, 43S, 44S
6.342	HSG C	11S
15.284	HSG D	11S, 12S, 20S, 31S, 43S, 51S
0.000	Other	
73.148		TOTAL AREA

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Type III 24-hr 2-year Rainfall=2.81"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment11S: Large Watershed	Runoff Area=2,744,009 sf 1.04% Impervious Runoff Depth>0.09" Flow Length=3,121' Tc=77.7 min CN=52 Runoff=0.8 cfs 0.4 af
Subcatchment12S:	Runoff Area=15,821 sf 18.68% Impervious Runoff Depth>0.36" Tc=5.0 min CN=63 Runoff=0.1 cfs 0.0 af
Subcatchment20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.0 cfs 0.0 af
Subcatchment31S:	Runoff Area=41,868 sf 64.99% Impervious Runoff Depth>0.94" Tc=5.0 min CN=77 Runoff=1.0 cfs 0.1 af
Subcatchment32S:	Runoff Area=37,948 sf 28.04% Impervious Runoff Depth>0.17" Tc=5.0 min CN=56 Runoff=0.0 cfs 0.0 af
Subcatchment33S:	Runoff Area=9,366 sf 45.47% Impervious Runoff Depth>0.46" Tc=5.0 min CN=66 Runoff=0.1 cfs 0.0 af
Subcatchment34S:	Runoff Area=7,851 sf 0.00% Impervious Runoff Depth=0.00" Tc=5.0 min CN=39 Runoff=0.0 cfs 0.0 af
Subcatchment41S:	Runoff Area=63,469 sf 19.19% Impervious Runoff Depth>0.19" Flow Length=496' Tc=15.6 min CN=57 Runoff=0.1 cfs 0.0 af
Subcatchment42S:	Runoff Area=60,456 sf 60.48% Impervious Runoff Depth>0.99" Tc=5.0 min CN=78 Runoff=1.6 cfs 0.1 af
Subcatchment43S:	Runoff Area=46,051 sf 33.46% Impervious Runoff Depth>0.39" Tc=5.0 min CN=64 Runoff=0.3 cfs 0.0 af
Subcatchment44S:	Runoff Area=4,061 sf 0.00% Impervious Runoff Depth>0.05" Tc=5.0 min CN=49 Runoff=0.0 cfs 0.0 af
Subcatchment51S:	Runoff Area=17,997 sf 0.00% Impervious Runoff Depth>0.07" Flow Length=193' Tc=8.9 min CN=51 Runoff=0.0 cfs 0.0 af
Reach 12R: Prop. 36" Culvert	Avg. Flow Depth=0.28' Max Vel=2.33 fps Inflow=0.8 cfs 0.4 af 36.0" Round Pipe n=0.012 L=56.0' S=0.0036 '/' Capacity=43.2 cfs Outflow=0.8 cfs 0.4 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af

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Type III 24-hr 2-year Rainfall=2.81"

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Reach 50R: POC #5

Inflow=0.0 cfs 0.0 af

Outflow=0.0 cfs 0.0 af

Pond 10P: POC #1 (Ex. 12" Culvert)Peak Elev=318.40' Storage=739 cf Inflow=0.8 cfs 0.5 af
Primary=0.8 cfs 0.5 af Secondary=0.0 cfs 0.0 af Outflow=0.8 cfs 0.5 af**Pond 30P: Level Spreader**Peak Elev=320.00' Storage=0 cf Inflow=0.0 cfs 0.0 af
Discarded=0.0 cfs 0.0 af Primary=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af**Pond 31P: SWMB#1**Peak Elev=322.61' Storage=2,248 cf Inflow=1.1 cfs 0.1 af
Primary=0.0 cfs 0.0 af Secondary=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af**Pond 32P: SWMB #2**Peak Elev=324.00' Storage=0 cf Inflow=0.1 cfs 0.1 af
Discarded=0.1 cfs 0.1 af Primary=0.0 cfs 0.0 af Outflow=0.1 cfs 0.1 af**Pond 41P: SWMB#3**Peak Elev=329.53' Storage=4,361 cf Inflow=1.9 cfs 0.2 af
Primary=0.1 cfs 0.1 af Secondary=0.0 cfs 0.0 af Outflow=0.1 cfs 0.1 af**Pond CB1:**Peak Elev=322.61' Inflow=1.0 cfs 0.1 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0062 '/' Outflow=1.0 cfs 0.1 af**Pond CB5:**Peak Elev=329.67' Inflow=0.1 cfs 0.0 af
15.0" Round Culvert n=0.012 L=149.0' S=0.0050 '/' Outflow=0.1 cfs 0.0 af**Pond CB6:**Peak Elev=331.06' Inflow=1.6 cfs 0.1 af
15.0" Round Culvert n=0.012 L=66.0' S=0.0120 '/' Outflow=1.6 cfs 0.1 af**Pond DM1:**Peak Elev=320.41' Inflow=0.0 cfs 0.0 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.0 cfs 0.0 af**Pond DM2:**Peak Elev=329.53' Inflow=1.6 cfs 0.1 af
15.0" Round Culvert n=0.012 L=22.0' S=0.0068 '/' Outflow=1.6 cfs 0.1 af**Pond DM3:**Peak Elev=327.45' Inflow=0.1 cfs 0.1 af
15.0" Round Culvert n=0.012 L=167.0' S=0.0054 '/' Outflow=0.1 cfs 0.1 af**Total Runoff Area = 73.148 ac Runoff Volume = 0.7 af Average Runoff Depth = 0.12"**
95.68% Pervious = 69.985 ac 4.32% Impervious = 3.163 ac

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Type III 24-hr 10-year Rainfall=4.13"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment11S: Large Watershed	Runoff Area=2,744,009 sf 1.04% Impervious Runoff Depth>0.44" Flow Length=3,121' Tc=77.7 min CN=52 Runoff=6.8 cfs 2.3 af
Subcatchment12S:	Runoff Area=15,821 sf 18.68% Impervious Runoff Depth>0.99" Tc=5.0 min CN=63 Runoff=0.4 cfs 0.0 af
Subcatchment20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.00" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.0 cfs 0.0 af
Subcatchment31S:	Runoff Area=41,868 sf 64.99% Impervious Runoff Depth>1.91" Tc=5.0 min CN=77 Runoff=2.2 cfs 0.2 af
Subcatchment32S:	Runoff Area=37,948 sf 28.04% Impervious Runoff Depth>0.63" Tc=5.0 min CN=56 Runoff=0.5 cfs 0.0 af
Subcatchment33S:	Runoff Area=9,366 sf 45.47% Impervious Runoff Depth>1.16" Tc=5.0 min CN=66 Runoff=0.3 cfs 0.0 af
Subcatchment34S:	Runoff Area=7,851 sf 0.00% Impervious Runoff Depth>0.06" Tc=5.0 min CN=39 Runoff=0.0 cfs 0.0 af
Subcatchment41S:	Runoff Area=63,469 sf 19.19% Impervious Runoff Depth>0.67" Flow Length=496' Tc=15.6 min CN=57 Runoff=0.6 cfs 0.1 af
Subcatchment42S:	Runoff Area=60,456 sf 60.48% Impervious Runoff Depth>1.99" Tc=5.0 min CN=78 Runoff=3.3 cfs 0.2 af
Subcatchment43S:	Runoff Area=46,051 sf 33.46% Impervious Runoff Depth>1.04" Tc=5.0 min CN=64 Runoff=1.2 cfs 0.1 af
Subcatchment44S:	Runoff Area=4,061 sf 0.00% Impervious Runoff Depth>0.34" Tc=5.0 min CN=49 Runoff=0.0 cfs 0.0 af
Subcatchment51S:	Runoff Area=17,997 sf 0.00% Impervious Runoff Depth>0.41" Flow Length=193' Tc=8.9 min CN=51 Runoff=0.1 cfs 0.0 af
Reach 12R: Prop. 36" Culvert	Avg. Flow Depth=0.80' Max Vel=4.46 fps Inflow=6.8 cfs 2.3 af 36.0" Round Pipe n=0.012 L=56.0' S=0.0036 '/' Capacity=43.2 cfs Outflow=6.8 cfs 2.3 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.03' Max Vel=0.40 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.0 cfs 0.0 af Outflow=0.0 cfs 0.0 af

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Type III 24-hr 10-year Rainfall=4.13"

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Reach 50R: POC #5

Inflow=0.1 cfs 0.0 af

Outflow=0.1 cfs 0.0 af

Pond 10P: POC #1 (Ex. 12" Culvert)Peak Elev=319.80' Storage=14,999 cf Inflow=6.8 cfs 2.3 af
Primary=4.3 cfs 2.3 af Secondary=0.0 cfs 0.0 af Outflow=4.3 cfs 2.3 af**Pond 30P: Level Spreader**Peak Elev=320.51' Storage=408 cf Inflow=0.1 cfs 0.1 af
Discarded=0.1 cfs 0.1 af Primary=0.1 cfs 0.0 af Outflow=0.1 cfs 0.1 af**Pond 31P: SWMB#1**Peak Elev=323.28' Storage=4,324 cf Inflow=2.5 cfs 0.2 af
Primary=0.0 cfs 0.0 af Secondary=0.1 cfs 0.1 af Outflow=0.1 cfs 0.1 af**Pond 32P: SWMB#2**Peak Elev=324.60' Storage=1,756 cf Inflow=0.5 cfs 0.3 af
Discarded=0.2 cfs 0.2 af Primary=0.0 cfs 0.0 af Outflow=0.2 cfs 0.2 af**Pond 41P: SWMB#3**Peak Elev=330.49' Storage=10,325 cf Inflow=4.7 cfs 0.4 af
Primary=0.1 cfs 0.1 af Secondary=0.1 cfs 0.1 af Outflow=0.2 cfs 0.2 af**Pond CB1:**Peak Elev=323.28' Inflow=2.2 cfs 0.2 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0062 '/' Outflow=2.2 cfs 0.2 af**Pond CB5:**Peak Elev=330.49' Inflow=0.6 cfs 0.1 af
15.0" Round Culvert n=0.012 L=149.0' S=0.0050 '/' Outflow=0.6 cfs 0.1 af**Pond CB6:**Peak Elev=331.40' Inflow=3.3 cfs 0.2 af
15.0" Round Culvert n=0.012 L=66.0' S=0.0120 '/' Outflow=3.3 cfs 0.2 af**Pond DM1:**Peak Elev=320.57' Inflow=0.1 cfs 0.1 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.1 cfs 0.1 af**Pond DM2:**Peak Elev=330.49' Inflow=3.5 cfs 0.3 af
15.0" Round Culvert n=0.012 L=22.0' S=0.0068 '/' Outflow=3.5 cfs 0.3 af**Pond DM3:**Peak Elev=327.55' Inflow=0.2 cfs 0.2 af
15.0" Round Culvert n=0.012 L=167.0' S=0.0054 '/' Outflow=0.2 cfs 0.2 af**Total Runoff Area = 73.148 ac Runoff Volume = 3.0 af Average Runoff Depth = 0.49"**
95.68% Pervious = 69.985 ac 4.32% Impervious = 3.163 ac

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Type III 24-hr 50-year Rainfall=6.10"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment11S: Large Watershed	Runoff Area=2,744,009 sf 1.04% Impervious Runoff Depth>1.31" Flow Length=3,121' Tc=77.7 min CN=52 Runoff=27.8 cfs 6.9 af
Subcatchment12S:	Runoff Area=15,821 sf 18.68% Impervious Runoff Depth>2.24" Tc=5.0 min CN=63 Runoff=1.0 cfs 0.1 af
Subcatchment20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.18" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.1 cfs 0.0 af
Subcatchment31S:	Runoff Area=41,868 sf 64.99% Impervious Runoff Depth>3.56" Tc=5.0 min CN=77 Runoff=4.2 cfs 0.3 af
Subcatchment32S:	Runoff Area=37,948 sf 28.04% Impervious Runoff Depth>1.65" Tc=5.0 min CN=56 Runoff=1.6 cfs 0.1 af
Subcatchment33S:	Runoff Area=9,366 sf 45.47% Impervious Runoff Depth>2.51" Tc=5.0 min CN=66 Runoff=0.6 cfs 0.0 af
Subcatchment34S:	Runoff Area=7,851 sf 0.00% Impervious Runoff Depth>0.47" Tc=5.0 min CN=39 Runoff=0.0 cfs 0.0 af
Subcatchment41S:	Runoff Area=63,469 sf 19.19% Impervious Runoff Depth>1.73" Flow Length=496' Tc=15.6 min CN=57 Runoff=2.0 cfs 0.2 af
Subcatchment42S:	Runoff Area=60,456 sf 60.48% Impervious Runoff Depth>3.66" Tc=5.0 min CN=78 Runoff=6.2 cfs 0.4 af
Subcatchment43S:	Runoff Area=46,051 sf 33.46% Impervious Runoff Depth>2.33" Tc=5.0 min CN=64 Runoff=2.9 cfs 0.2 af
Subcatchment44S:	Runoff Area=4,061 sf 0.00% Impervious Runoff Depth>1.12" Tc=5.0 min CN=49 Runoff=0.1 cfs 0.0 af
Subcatchment51S:	Runoff Area=17,997 sf 0.00% Impervious Runoff Depth>1.26" Flow Length=193' Tc=8.9 min CN=51 Runoff=0.5 cfs 0.0 af
Reach 12R: Prop. 36" Culvert	Avg. Flow Depth=1.75' Max Vel=6.49 fps Inflow=27.8 cfs 6.9 af 36.0" Round Pipe n=0.012 L=56.0' S=0.0036 '/' Capacity=43.2 cfs Outflow=27.8 cfs 6.9 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.1 cfs 0.0 af Outflow=0.1 cfs 0.0 af
Reach 30R: POC #3	Avg. Flow Depth=0.11' Max Vel=0.86 fps Inflow=0.0 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.0 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.1 cfs 0.0 af Outflow=0.1 cfs 0.0 af

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Type III 24-hr 50-year Rainfall=6.10"

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Reach 50R: POC #5

Inflow=0.5 cfs 0.0 af

Outflow=0.5 cfs 0.0 af

Pond 10P: POC #1 (Ex. 12" Culvert)Peak Elev=321.77' Storage=84,249 cf Inflow=27.9 cfs 7.1 af
Primary=6.9 cfs 5.7 af Secondary=9.0 cfs 1.1 af Outflow=15.9 cfs 6.9 af**Pond 30P: Level Spreader**Peak Elev=321.77' Storage=870 cf Inflow=0.3 cfs 0.3 af
Discarded=0.1 cfs 0.1 af Primary=0.4 cfs 0.2 af Outflow=0.5 cfs 0.2 af**Pond 31P: SWMB#1**Peak Elev=324.07' Storage=8,128 cf Inflow=4.8 cfs 0.4 af
Primary=0.0 cfs 0.1 af Secondary=0.2 cfs 0.2 af Outflow=0.3 cfs 0.3 af**Pond 32P: SWMB #2**Peak Elev=325.53' Storage=5,616 cf Inflow=1.8 cfs 0.5 af
Discarded=0.3 cfs 0.3 af Primary=0.1 cfs 0.1 af Outflow=0.5 cfs 0.4 af**Pond 41P: SWMB#3**Peak Elev=331.79' Storage=23,040 cf Inflow=10.1 cfs 0.8 af
Primary=0.1 cfs 0.1 af Secondary=0.3 cfs 0.3 af Outflow=0.4 cfs 0.4 af**Pond CB1:**Peak Elev=324.07' Inflow=4.2 cfs 0.3 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0062 '/' Outflow=4.2 cfs 0.3 af**Pond CB5:**Peak Elev=331.80' Inflow=2.0 cfs 0.2 af
15.0" Round Culvert n=0.012 L=149.0' S=0.0050 '/' Outflow=2.0 cfs 0.2 af**Pond CB6:**Peak Elev=332.69' Inflow=6.2 cfs 0.4 af
15.0" Round Culvert n=0.012 L=66.0' S=0.0120 '/' Outflow=6.2 cfs 0.4 af**Pond DM1:**Peak Elev=321.77' Inflow=0.3 cfs 0.3 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=0.3 cfs 0.3 af**Pond DM2:**Peak Elev=331.80' Inflow=7.2 cfs 0.6 af
15.0" Round Culvert n=0.012 L=22.0' S=0.0068 '/' Outflow=7.2 cfs 0.6 af**Pond DM3:**Peak Elev=327.63' Inflow=0.4 cfs 0.4 af
15.0" Round Culvert n=0.012 L=167.0' S=0.0054 '/' Outflow=0.4 cfs 0.4 af**Total Runoff Area = 73.148 ac Runoff Volume = 8.3 af Average Runoff Depth = 1.36"**
95.68% Pervious = 69.985 ac 4.32% Impervious = 3.163 ac

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Type III 24-hr 100-year Rainfall=7.22"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment11S: Large Watershed	Runoff Area=2,744,009 sf 1.04% Impervious Runoff Depth>1.93" Flow Length=3,121' Tc=77.7 min CN=52 Runoff=43.8 cfs 10.1 af
Subcatchment12S:	Runoff Area=15,821 sf 18.68% Impervious Runoff Depth>3.06" Tc=5.0 min CN=63 Runoff=1.3 cfs 0.1 af
Subcatchment20S:	Runoff Area=137,425 sf 0.00% Impervious Runoff Depth>0.42" Flow Length=682' Tc=27.8 min CN=33 Runoff=0.3 cfs 0.1 af
Subcatchment31S:	Runoff Area=41,868 sf 64.99% Impervious Runoff Depth>4.56" Tc=5.0 min CN=77 Runoff=5.3 cfs 0.4 af
Subcatchment32S:	Runoff Area=37,948 sf 28.04% Impervious Runoff Depth>2.36" Tc=5.0 min CN=56 Runoff=2.4 cfs 0.2 af
Subcatchment33S:	Runoff Area=9,366 sf 45.47% Impervious Runoff Depth>3.37" Tc=5.0 min CN=66 Runoff=0.9 cfs 0.1 af
Subcatchment34S:	Runoff Area=7,851 sf 0.00% Impervious Runoff Depth>0.85" Tc=5.0 min CN=39 Runoff=0.1 cfs 0.0 af
Subcatchment41S:	Runoff Area=63,469 sf 19.19% Impervious Runoff Depth>2.45" Flow Length=496' Tc=15.6 min CN=57 Runoff=3.0 cfs 0.3 af
Subcatchment42S:	Runoff Area=60,456 sf 60.48% Impervious Runoff Depth>4.67" Tc=5.0 min CN=78 Runoff=7.8 cfs 0.5 af
Subcatchment43S:	Runoff Area=46,051 sf 33.46% Impervious Runoff Depth>3.17" Tc=5.0 min CN=64 Runoff=4.0 cfs 0.3 af
Subcatchment44S:	Runoff Area=4,061 sf 0.00% Impervious Runoff Depth>1.70" Tc=5.0 min CN=49 Runoff=0.2 cfs 0.0 af
Subcatchment51S:	Runoff Area=17,997 sf 0.00% Impervious Runoff Depth>1.88" Flow Length=193' Tc=8.9 min CN=51 Runoff=0.7 cfs 0.1 af
Reach 12R: Prop. 36" Culvert	Avg. Flow Depth=2.50' Max Vel=6.96 fps Inflow=43.8 cfs 10.1 af 36.0" Round Pipe n=0.012 L=56.0' S=0.0036 '/' Capacity=43.2 cfs Outflow=43.8 cfs 10.1 af
Reach 20R: POC #2 (Ex. CB)	Inflow=0.3 cfs 0.1 af Outflow=0.3 cfs 0.1 af
Reach 30R: POC #3	Avg. Flow Depth=0.16' Max Vel=1.08 fps Inflow=0.1 cfs 0.0 af n=0.035 L=340.0' S=0.0206 '/' Capacity=11.1 cfs Outflow=0.1 cfs 0.0 af
Reach 40R: POC #4	Inflow=0.2 cfs 0.0 af Outflow=0.2 cfs 0.0 af

21045-POST*Type III 24-hr 100-year Rainfall=7.22"*

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Reach 50R: POC #5

Inflow=0.7 cfs 0.1 af

Outflow=0.7 cfs 0.1 af

Pond 10P: POC #1 (Ex. 12" Culvert)Peak Elev=322.13' Storage=97,505 cf Inflow=44.6 cfs 10.7 af
Primary=7.3 cfs 6.2 af Secondary=39.0 cfs 3.9 af Outflow=46.3 cfs 10.1 af**Pond 30P: Level Spreader**Peak Elev=322.13' Storage=870 cf Inflow=1.7 cfs 0.6 af
Discarded=0.1 cfs 0.1 af Primary=2.1 cfs 0.5 af Outflow=2.2 cfs 0.6 af**Pond 31P: SWMB#1**Peak Elev=324.72' Storage=11,637 cf Inflow=6.2 cfs 0.8 af
Primary=1.4 cfs 0.3 af Secondary=0.3 cfs 0.3 af Outflow=1.7 cfs 0.6 af**Pond 32P: SWMB#2**Peak Elev=325.65' Storage=6,185 cf Inflow=2.6 cfs 0.8 af
Discarded=0.3 cfs 0.4 af Primary=1.4 cfs 0.3 af Outflow=1.7 cfs 0.7 af**Pond 41P: SWMB#3**Peak Elev=332.00' Storage=25,318 cf Inflow=13.5 cfs 1.1 af
Primary=1.3 cfs 0.4 af Secondary=0.3 cfs 0.3 af Outflow=1.6 cfs 0.7 af**Pond CB1:**Peak Elev=324.72' Inflow=5.3 cfs 0.4 af
15.0" Round Culvert n=0.012 L=24.0' S=0.0062 '/' Outflow=5.3 cfs 0.4 af**Pond CB5:**Peak Elev=333.33' Inflow=3.0 cfs 0.3 af
15.0" Round Culvert n=0.012 L=149.0' S=0.0050 '/' Outflow=3.0 cfs 0.3 af**Pond CB6:**Peak Elev=334.81' Inflow=7.8 cfs 0.5 af
15.0" Round Culvert n=0.012 L=66.0' S=0.0120 '/' Outflow=7.8 cfs 0.5 af**Pond DM1:**Peak Elev=322.19' Inflow=1.7 cfs 0.6 af
15.0" Round Culvert n=0.012 L=20.0' S=0.0050 '/' Outflow=1.7 cfs 0.6 af**Pond DM2:**Peak Elev=333.15' Inflow=9.5 cfs 0.8 af
15.0" Round Culvert n=0.012 L=22.0' S=0.0068 '/' Outflow=9.5 cfs 0.8 af**Pond DM3:**Peak Elev=327.96' Inflow=1.6 cfs 0.7 af
15.0" Round Culvert n=0.012 L=167.0' S=0.0054 '/' Outflow=1.6 cfs 0.7 af**Total Runoff Area = 73.148 ac Runoff Volume = 12.1 af Average Runoff Depth = 1.99"**
95.68% Pervious = 69.985 ac 4.32% Impervious = 3.163 ac

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Type III 24-hr 10-year Rainfall=4.13"

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Summary for Subcatchment 11S: Large Watershed

Runoff = 6.8 cfs @ 13.38 hrs, Volume= 2.3 af, Depth> 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 20,818	98	Existing Pavement, HSG B
* 5,059	98	Existing Pavement, HSG D
* 2,695	98	Proposed Pavement, HSG D
* 148,095	51	1 acre lots, HSG A
* 121,481	61	1/4 acre lots, HSG A
* 1,302,027	30	Woods, HSG A
* 191,378	68	1 acre lots, HSG B
* 128,600	70	Woods, HSG C
* 147,658	79	1 acre lots, HSG C
* 526,711	77	Woods, HSG D
* 112,960	84	1 acre lots, HSG D
* 36,527	55	Woods, HSG B
2,744,009	52	Weighted Average
2,715,437		98.96% Pervious Area
28,572		1.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	100	0.0800	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
2.9	283	0.1060	1.63		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
50.4	771	0.0026	0.25		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
11.2	1,967	0.0081	2.92	23.33	Channel Flow, Area= 8.0 sf Perim= 12.0' r= 0.67' n= 0.035
77.7	3,121	Total			

Summary for Subcatchment 12S:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 0.0 af, Depth> 0.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 580	98	Proposed Pavement, HSG A
* 2,376	98	Proposed Pavement, HSG D
* 7,756	39	Lawn/Landscape, HSG A
* 5,109	80	Lawn/Landscape, HSG D
15,821	63	Weighted Average
12,865		81.32% Pervious Area
2,956		18.68% Impervious Area

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Type III 24-hr 10-year Rainfall=4.13"

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

Summary for Subcatchment 20S:

Runoff = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	120,662	30	Woods, HSG A
*	14,392	55	Woods, HSG B
*	2,371	77	Woods, HSG D
	137,425	33	Weighted Average
	137,425		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.1200	0.15		Sheet Flow,
					Woods: Light underbrush n= 0.400 P2= 2.81"
16.6	582	0.0137	0.59		Shallow Concentrated Flow,
					Woodland Kv= 5.0 fps
27.8	682	Total			

Summary for Subcatchment 31S:

Runoff = 2.2 cfs @ 12.08 hrs, Volume= 0.2 af, Depth> 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	19,868	98	Proposed Pavement, HSG A
*	63	98	Proposed Pavement, HSG D
*	7,280	98	Proposed Buildings & Patios, HSG A
*	14,611	39	Lawn/Landscape, HSG A
*	46	80	Lawn/Landscape, HSG D
	41,868	77	Weighted Average
	14,657		35.01% Pervious Area
	27,211		64.99% Impervious Area

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

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Summary for Subcatchment 32S:

Runoff = 0.5 cfs @ 12.10 hrs, Volume= 0.0 af, Depth> 0.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	10,640	98	Proposed Buildings & Patios, HSG A
*	27,308	39	Lawn/Landscape, HSG A
	37,948	56	Weighted Average
	27,308		71.96% Pervious Area
	10,640		28.04% Impervious Area

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

Summary for Subcatchment 33S:

Runoff = 0.3 cfs @ 12.08 hrs, Volume= 0.0 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	4,259	98	SWMB's, HSG A
*	5,107	39	Lawn/Landscape, HSG A
	9,366	66	Weighted Average
	5,107		54.53% Pervious Area
	4,259		45.47% Impervious Area

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

Summary for Subcatchment 34S:

Runoff = 0.0 cfs @ 15.26 hrs, Volume= 0.0 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	7,851	39	Lawn/Landscape, HSG A
	7,851		100.00% Pervious Area

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Type III 24-hr 10-year Rainfall=4.13"

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

Summary for Subcatchment 41S:

Runoff = 0.6 cfs @ 12.28 hrs, Volume= 0.1 af, Depth> 0.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 5,398	98	Proposed Buildings & Patios, HSG A
* 6,780	98	Proposed Buildings & Patios, HSG B
* 30,621	39	Lawn/Landscape, HSG A
* 20,670	61	Lawn/Landscape, HSG B
63,469	57	Weighted Average
51,291		80.81% Pervious Area
12,178		19.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	100	0.0700	0.12		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.81"
1.7	396	0.0177	3.77	30.17	Channel Flow, Area= 8.0 sf Perim= 12.0' r= 0.67' n= 0.040
15.6	496	Total			

Summary for Subcatchment 42S:

Runoff = 3.3 cfs @ 12.08 hrs, Volume= 0.2 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

Area (sf)	CN	Description
* 7,723	98	Proposed Buildings & Patios, HSG A
* 5,769	98	Proposed Buildings & Patios, HSG B
* 15,076	98	Proposed Pavement, HSG A
* 7,998	98	Proposed Pavement, HSG B
* 15,638	39	Lawn/Landscape, HSG A
* 8,252	61	Lawn/Landscape, HSG B
60,456	78	Weighted Average
23,890		39.52% Pervious Area
36,566		60.48% Impervious Area

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Type III 24-hr 10-year Rainfall=4.13"

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

Summary for Subcatchment 43S:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 0.1 af, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	5,340	98	Proposed Buildings & Patios, HSG A
*	1,881	98	Proposed Buildings & Patios, HSG B
*	403	98	Proposed Buildings & Patios, HSG D
*	1,167	98	SWMB's, HSG A
*	6,618	98	SWMB's, HSG B
*	20,816	39	Lawn/Landscape, HSG A
*	9,396	61	Lawn/Landscape, HSG B
*	430	80	Lawn/Landscape, HSG D
	46,051	64	Weighted Average
	30,642		66.54% Pervious Area
	15,409		33.46% Impervious Area

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

Summary for Subcatchment 44S:

Runoff = 0.0 cfs @ 12.31 hrs, Volume= 0.0 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	2,246	39	Lawn/Landscape, HSG A
*	1,815	61	Lawn/Landscape, HSG B
	4,061	49	Weighted Average
	4,061		100.00% Pervious Area

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

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Type III 24-hr 10-year Rainfall=4.13"

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Summary for Subcatchment 51S:

Runoff = 0.1 cfs @ 12.31 hrs, Volume= 0.0 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.13"

	Area (sf)	CN	Description
*	3,037	39	Lawn/Landscape, HSG A
*	7,394	30	Woods, HSG A
*	7,566	77	Woods, HSG D
	17,997	51	Weighted Average
	17,997		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	100	0.0500	0.23		Sheet Flow, Grass: Short n= 0.150 P2= 2.81"
1.7	93	0.0323	0.90		Shallow Concentrated Flow, Woodland Kv= 5.0 fps
8.9	193	Total			

Summary for Reach 12R: Prop. 36" Culvert

Inflow Area = 62.994 ac, 1.04% Impervious, Inflow Depth > 0.44" for 10-year event
 Inflow = 6.8 cfs @ 13.38 hrs, Volume= 2.3 af
 Outflow = 6.8 cfs @ 13.38 hrs, Volume= 2.3 af, Atten= 0%, Lag= 0.1 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.46 fps, Min. Travel Time= 0.2 min
 Avg. Velocity= 3.09 fps, Avg. Travel Time= 0.3 min

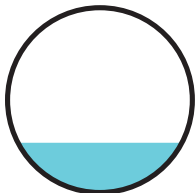
Peak Storage= 85 cf @ 13.38 hrs
 Average Depth at Peak Storage= 0.80'
 Bank-Full Depth= 3.00' Flow Area= 7.1 sf, Capacity= 43.2 cfs

36.0" Round Pipe

n= 0.012

Length= 56.0' Slope= 0.0036 '/'

Inlet Invert= 319.10', Outlet Invert= 318.90'



Summary for Reach 20R: POC #2 (Ex. CB)

Inflow Area = 3.155 ac, 0.00% Impervious, Inflow Depth > 0.00" for 10-year event
 Inflow = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 24.00 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 30R: POC #3

Inflow Area = 0.180 ac, 0.00% Impervious, Inflow Depth > 0.06" for 10-year event
 Inflow = 0.0 cfs @ 15.26 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 15.46 hrs, Volume= 0.0 af, Atten= 1%, Lag= 11.7 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.40 fps, Min. Travel Time= 14.3 min

Avg. Velocity = 0.36 fps, Avg. Travel Time= 15.7 min

Peak Storage= 1 cf @ 15.46 hrs

Average Depth at Peak Storage= 0.03'

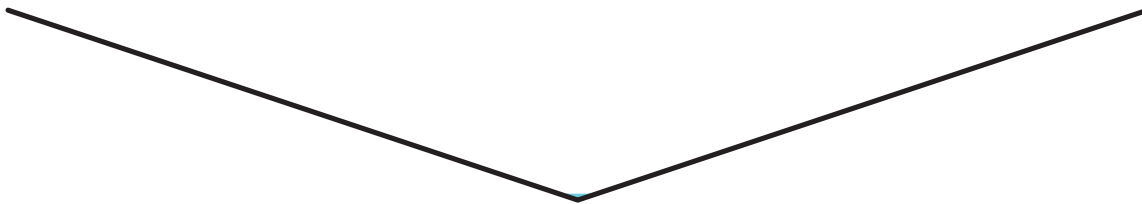
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 11.1 cfs

0.00' x 1.00' deep channel, n= 0.035

Side Slope Z-value= 3.0 ' Top Width= 6.00'

Length= 340.0' Slope= 0.0206 ' /'

Inlet Invert= 326.00', Outlet Invert= 319.00'

**Summary for Reach 40R: POC #4**

Inflow Area = 0.093 ac, 0.00% Impervious, Inflow Depth > 0.34" for 10-year event
 Inflow = 0.0 cfs @ 12.31 hrs, Volume= 0.0 af
 Outflow = 0.0 cfs @ 12.31 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Reach 50R: POC #5

Inflow Area = 0.413 ac, 0.00% Impervious, Inflow Depth > 0.41" for 10-year event
 Inflow = 0.1 cfs @ 12.31 hrs, Volume= 0.0 af
 Outflow = 0.1 cfs @ 12.31 hrs, Volume= 0.0 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Pond 10P: POC #1 (Ex. 12" Culvert)

Inflow Area = 69.487 ac, 4.55% Impervious, Inflow Depth > 0.41" for 10-year event
 Inflow = 6.8 cfs @ 13.38 hrs, Volume= 2.3 af
 Outflow = 4.3 cfs @ 14.62 hrs, Volume= 2.3 af, Atten= 37%, Lag= 74.5 min
 Primary = 4.3 cfs @ 14.62 hrs, Volume= 2.3 af
 Secondary = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 319.80' @ 14.62 hrs Surf.Area= 16,700 sf Storage= 14,999 cf

Plug-Flow detention time= 40.0 min calculated for 2.3 af (99% of inflow)
 Center-of-Mass det. time= 35.4 min (1,013.7 - 978.3)

Volume	Invert	Avail.Storage	Storage Description
#1	317.90'	97,505 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
317.90	0	0	0
318.00	5	0	0
320.00	18,600	18,605	18,605
322.00	60,300	78,900	97,505

Device	Routing	Invert	Outlet Devices
#1	Primary	317.90'	12.0" Round Culvert L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 317.90' / 317.70' S= 0.0054 ' S= 0.0054 ' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.79 sf
#2	Secondary	321.52'	30.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=4.3 cfs @ 14.62 hrs HW=319.80' (Free Discharge)
 ↑1=Culvert (Barrel Controls 4.3 cfs @ 5.50 fps)

Secondary OutFlow Max=0.0 cfs @ 0.00 hrs HW=317.90' (Free Discharge)
 ↑2=Broad-Crested Rectangular Weir (Controls 0.0 cfs)

Summary for Pond 30P: Level Spreader

Inflow Area = 5.949 ac, 41.00% Impervious, Inflow Depth > 0.19" for 10-year event
 Inflow = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af
 Outflow = 0.1 cfs @ 14.93 hrs, Volume= 0.1 af, Atten= 0%, Lag= 1.9 min
 Discarded = 0.1 cfs @ 14.93 hrs, Volume= 0.1 af
 Primary = 0.1 cfs @ 14.93 hrs, Volume= 0.0 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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Peak Elev= 320.51' @ 14.93 hrs Surf.Area= 875 sf Storage= 408 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 25.8 min (1,044.5 - 1,018.7)

Volume	Invert	Avail.Storage	Storage Description
#1	320.00'	870 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
320.00	710	0	0
321.00	1,030	870	870

Device	Routing	Invert	Outlet Devices
#1	Primary	320.50'	17.0' long x 2.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 Coef. (English) 2.54 2.61 2.61 2.60 2.66 2.70 2.77 2.89 2.88 2.85 3.07 3.20 3.32
#2	Discarded	320.00'	3.000 in/hr Exfiltration over Surface area

Discarded OutFlow Max=0.1 cfs @ 14.93 hrs HW=320.51' (Free Discharge)↳ **2=Exfiltration** (Exfiltration Controls 0.1 cfs)**Primary OutFlow** Max=0.1 cfs @ 14.93 hrs HW=320.51' TW=319.78' (Dynamic Tailwater)↳ **1=Broad-Crested Rectangular Weir** (Weir Controls 0.1 cfs @ 0.31 fps)**Summary for Pond 31P: SWMB#1**

Inflow Area = 5.949 ac, 41.00% Impervious, Inflow Depth > 0.35" for 10-year event
 Inflow = 2.5 cfs @ 12.08 hrs, Volume= 0.2 af
 Outflow = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af, Atten= 95%, Lag= 169.4 min
 Primary = 0.0 cfs @ 14.23 hrs, Volume= 0.0 af
 Secondary = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 323.28' @ 14.90 hrs Surf.Area= 4,487 sf Storage= 4,324 cf

Plug-Flow detention time= 295.1 min calculated for 0.1 af (56% of inflow)

Center-of-Mass det. time= 177.7 min (1,018.7 - 841.0)

Volume	Invert	Avail.Storage	Storage Description
#1	321.00'	736 cf	Sediment Forebay (Prismatic) Listed below (Recalc)
#2	321.00'	1,179 cf	Gravel Wetland - Bay #1 (Prismatic) Listed below (Recalc)
#3	321.00'	1,179 cf	Gravel Wetland - Bay #2 (Prismatic) Listed below (Recalc)
#4	323.00'	16,605 cf	Upper Detention Basin (Prismatic) Listed below (Recalc)
		19,699 cf	Total Available Storage

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	159	0	0
323.00	574	733	733
323.01	0	3	736

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	315	0	0
323.00	860	1,175	1,175
323.01	0	4	1,179

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
321.00	315	0	0
323.00	860	1,175	1,175
323.01	0	4	1,179

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
323.00	4,258	0	0
324.00	5,072	4,665	4,665
326.00	6,868	11,940	16,605

Device	Routing	Invert	Outlet Devices
#1	Primary	320.50'	6.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 320.50' / 320.40' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	320.50'	1.0" Vert. Orifice/Grate C= 0.600
#3	Device 1	324.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Secondary	321.00'	15.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 321.00' / 320.40' S= 0.0200 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#5	Device 4	323.00'	3.0" Vert. Orifice/Grate C= 0.600
#6	Device 4	325.00'	48.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.0 cfs @ 14.23 hrs HW=323.27' TW=320.54' (Dynamic Tailwater)

- 1=Culvert (Passes 0.0 cfs of 1.5 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.0 cfs @ 7.96 fps)
- 3=Sharp-Crested Rectangular Weir (Controls 0.0 cfs)

Secondary OutFlow Max=0.1 cfs @ 14.90 hrs HW=323.28' TW=320.57' (Dynamic Tailwater)

- 4=Culvert (Passes 0.1 cfs of 7.6 cfs potential flow)
- 5=Orifice/Grate (Orifice Controls 0.1 cfs @ 1.90 fps)
- 6=Orifice/Grate (Controls 0.0 cfs)

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Summary for Pond 32P: SWMB #2

Inflow Area = 4.773 ac, 35.97% Impervious, Inflow Depth > 0.66" for 10-year event
 Inflow = 0.5 cfs @ 12.10 hrs, Volume= 0.3 af
 Outflow = 0.2 cfs @ 20.25 hrs, Volume= 0.2 af, Atten= 55%, Lag= 488.8 min
 Discarded = 0.2 cfs @ 20.25 hrs, Volume= 0.2 af
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0.0 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 324.60' @ 20.25 hrs Surf.Area= 3,398 sf Storage= 1,756 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 38.0 min (1,075.0 - 1,037.0)

Volume	Invert	Avail.Storage	Storage Description
#1	324.00'	8,041 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
324.00	2,471	0	0
326.00	5,570	8,041	8,041

Device	Routing	Invert	Outlet Devices
#1	Discarded	324.00'	3.000 in/hr Exfiltration over Surface area
#2	Primary	325.50'	10.0' long x 5.0' 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) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65
			2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Discarded OutFlow Max=0.2 cfs @ 20.25 hrs HW=324.60' (Free Discharge)
 ↑**1=Exfiltration** (Exfiltration Controls 0.2 cfs)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=324.00' TW=321.00' (Dynamic Tailwater)
 ↑**2=Broad-Crested Rectangular Weir** (Controls 0.0 cfs)

Summary for Pond 41P: SWMB#3

Inflow Area = 3.902 ac, 37.74% Impervious, Inflow Depth > 1.24" for 10-year event
 Inflow = 4.7 cfs @ 12.08 hrs, Volume= 0.4 af
 Outflow = 0.2 cfs @ 16.06 hrs, Volume= 0.2 af, Atten= 95%, Lag= 238.8 min
 Primary = 0.1 cfs @ 16.06 hrs, Volume= 0.1 af
 Secondary = 0.1 cfs @ 16.06 hrs, Volume= 0.1 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 330.49' @ 16.06 hrs Surf.Area= 8,655 sf Storage= 10,325 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 205.1 min (1,064.2 - 859.0)

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Volume	Invert	Avail.Storage	Storage Description
#1	328.00'	734 cf	Sediment Forebay (Prismatic) Listed below (Recalc)
#2	328.00'	2,757 cf	Gravel Wetland - Bay #1 (Prismatic) Listed below (Recalc)
#3	328.00'	2,785 cf	Gravel Wetland - Bay #2 (Prismatic) Listed below (Recalc)
#4	330.00'	31,202 cf	Upper Detention Basin (Prismatic) Listed below (Recalc)
		37,479 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	160	0	0
330.00	571	731	731
330.01	0	3	734

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	870	0	0
330.00	1,878	2,748	2,748
330.01	0	9	2,757

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
328.00	880	0	0
330.00	1,896	2,776	2,776
330.01	0	9	2,785

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
330.00	7,810	0	0
332.00	11,246	19,056	19,056
333.00	13,046	12,146	31,202

Device	Routing	Invert	Outlet Devices
#1	Primary	327.50'	6.0" Round Culvert L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 327.50' / 327.40' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Device 1	327.50'	1.5" Vert. Orifice/Grate C= 0.600
#3	Device 1	331.80'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)
#4	Secondary	328.00'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 328.00' / 327.40' S= 0.0250 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#5	Device 4	330.00'	3.0" Vert. Orifice/Grate C= 0.600
#6	Device 4	332.00'	48.0" x 48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1 cfs @ 16.06 hrs HW=330.49' TW=327.55' (Dynamic Tailwater)

- ↑ **1=Culvert** (Passes 0.1 cfs of 1.5 cfs potential flow)
 - ↑ **2=Orifice/Grate** (Orifice Controls 0.1 cfs @ 8.24 fps)
 - ↑ **3=Sharp-Crested Rectangular Weir** (Controls 0.0 cfs)

Secondary OutFlow Max=0.1 cfs @ 16.06 hrs HW=330.49' TW=327.55' (Dynamic Tailwater)

- ↑ **4=Culvert** (Passes 0.1 cfs of 8.1 cfs potential flow)
 - ↑ **5=Orifice/Grate** (Orifice Controls 0.1 cfs @ 2.92 fps)
 - ↑ **6=Orifice/Grate** (Controls 0.0 cfs)

Summary for Pond CB1:

Inflow Area = 0.961 ac, 64.99% Impervious, Inflow Depth > 1.91" for 10-year event
 Inflow = 2.2 cfs @ 12.08 hrs, Volume= 0.2 af
 Outflow = 2.2 cfs @ 12.08 hrs, Volume= 0.2 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.2 cfs @ 12.08 hrs, Volume= 0.2 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 323.28' @ 14.90 hrs
 Flood Elev= 326.26'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.65'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 321.65' / 321.50' S= 0.0062 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=2.0 cfs @ 12.08 hrs HW=322.56' TW=322.30' (Dynamic Tailwater)

- ↑ **1=Culvert** (Outlet Controls 2.0 cfs @ 2.97 fps)

Summary for Pond CB5:

Inflow Area = 1.457 ac, 19.19% Impervious, Inflow Depth > 0.67" for 10-year event
 Inflow = 0.6 cfs @ 12.28 hrs, Volume= 0.1 af
 Outflow = 0.6 cfs @ 12.28 hrs, Volume= 0.1 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.6 cfs @ 12.28 hrs, Volume= 0.1 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
 Peak Elev= 330.49' @ 16.05 hrs
 Flood Elev= 331.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	329.50'	15.0" Round Culvert L= 149.0' Ke= 0.500 Inlet / Outlet Invert= 329.50' / 328.75' S= 0.0050 ' / ' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.6 cfs @ 12.28 hrs HW=330.09' TW=329.89' (Dynamic Tailwater)

- ↑ **1=Culvert** (Outlet Controls 0.6 cfs @ 1.51 fps)

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Summary for Pond CB6:

Inflow Area = 1.388 ac, 60.48% Impervious, Inflow Depth > 1.99" for 10-year event
 Inflow = 3.3 cfs @ 12.08 hrs, Volume= 0.2 af
 Outflow = 3.3 cfs @ 12.08 hrs, Volume= 0.2 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.3 cfs @ 12.08 hrs, Volume= 0.2 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 331.40' @ 12.08 hrs

Flood Elev= 335.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	330.44'	15.0" Round Culvert L= 66.0' Ke= 0.500 Inlet / Outlet Invert= 330.44' / 329.65' S= 0.0120 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.3 cfs @ 12.08 hrs HW=331.39' TW=329.80' (Dynamic Tailwater)**1=Culvert** (Inlet Controls 3.3 cfs @ 3.33 fps)**Summary for Pond DM1:**

Inflow Area = 5.949 ac, 41.00% Impervious, Inflow Depth > 0.19" for 10-year event
 Inflow = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af
 Outflow = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.1 cfs @ 14.90 hrs, Volume= 0.1 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 320.57' @ 14.91 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	320.30'	15.0" Round Culvert L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 320.30' / 320.20' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.1 cfs @ 14.90 hrs HW=320.57' TW=320.51' (Dynamic Tailwater)**1=Culvert** (Outlet Controls 0.1 cfs @ 1.08 fps)**Summary for Pond DM2:**

Inflow Area = 2.845 ac, 39.33% Impervious, Inflow Depth > 1.31" for 10-year event
 Inflow = 3.5 cfs @ 12.08 hrs, Volume= 0.3 af
 Outflow = 3.5 cfs @ 12.08 hrs, Volume= 0.3 af, Atten= 0%, Lag= 0.0 min
 Primary = 3.5 cfs @ 12.08 hrs, Volume= 0.3 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 330.49' @ 16.05 hrs

Flood Elev= 335.24'

Device	Routing	Invert	Outlet Devices
#1	Primary	328.65'	15.0" Round Culvert L= 22.0' Ke= 0.500 Inlet / Outlet Invert= 328.65' / 328.50' S= 0.0068 '/' Cc= 0.900

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n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=3.5 cfs @ 12.08 hrs HW=329.80' TW=329.12' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 3.5 cfs @ 3.90 fps)**Summary for Pond DM3:**

Inflow Area = 3.902 ac, 37.74% Impervious, Inflow Depth > 0.67" for 10-year event
 Inflow = 0.2 cfs @ 16.06 hrs, Volume= 0.2 af
 Outflow = 0.2 cfs @ 16.06 hrs, Volume= 0.2 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.2 cfs @ 16.06 hrs, Volume= 0.2 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Peak Elev= 327.55' @ 16.06 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	327.30'	15.0" Round Culvert L= 167.0' Ke= 0.500 Inlet / Outlet Invert= 327.30' / 326.40' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Primary OutFlow Max=0.2 cfs @ 16.06 hrs HW=327.55' TW=324.47' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 0.2 cfs @ 2.11 fps)