Alteration of Terrain Application

BLUEBIRD SELF STORAGE

Map 176; Lots 21,22, & 23
196-202 Central Street
Hudson, New Hampshire

December 20, 2021

KNA Project No. 21-0709-3

Prepared For: Bluebird Self Storage, LLC
125 Ocean Road
Greenland, New Hampshire 03840

Prepared By: Keach-Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, New Hampshire 03110
(603) 627-2881
(603) 627-2915 (fax)

KNA KEACH-NORDSTROM ASSOCIATES, INC.

Table of Contents

1. SIGNED OWNER AND APPLICANT AFFIDAVIT

Owner Affidavit

I, **BRIAN H. CRAVEN, TRUSTEE**, authorized representative of Bluebird Self Storage, LLC, owner for the property, Tax Map 176 Lots 21, 22 and 23, referenced at 196 Central Street in Hudson, New Hampshire, hereby verify that I have authorized Keach-Nordstrom Associates, Inc. to submit on my behalf, any and all applicable State and local permit applications as they pertain to improvements on said property.

Additionally, I authorize Keach-Nordstrom Associates, Inc. to aid in the representation of these applications throughout the approval process.

Signature of Owner: _____

Brian H. Craven

Printed Name of Owner: BRIAN H. CRAVEN, TRUSTEE

Address of Owner: 88 SPEARE ROAD

HUDSON NH 03051

Date: 12/17/2021

Applicant Affidavit

I, Bill Goodison, authorized representative of Bluebird Self Storage, LLC, applicant for the property, Tax Map 176 Lots 21, 22 and 23, referenced at 196 Central Street in Hudson, New Hampshire, hereby verify that I have authorized Keach-Nordstrom Associates, Inc. to submit on my behalf, any and all applicable State and local permit applications as they pertain to improvements on said property.

Additionally, I authorize Keach-Nordstrom Associates, Inc. to aid in the representation of these applications throughout the approval process.

Signature of Applicant: Bill Goodi

Printed Name of Applicant: Bill Goodison

Address of Applicant: 125 Ocean Rd
Greenland NH 03840

Date: 12-16-21

2. AOT APPLICATION

ALTERATION OF TERRAIN PERMIT APPLICATION

Water Division/ Alteration of Terrain Bureau/ Land Resources Management
Check the Status of your Application: www.des.nh.gov/onestop

RSA/ Rule: RSA 485-A:17, Env-Wq 1500

Administrative Use Only	Administrative Use Only	Administrative Use Only	File Number:
			Check No.
			Amount:
			Initials:

1. APPLICANT INFORMATION (INTENDED PERMIT HOLDER)		
Applicant Name: Bluebird Self Storage, LLC	Contact Name: Bill Goodison	
Email: bill.goodison@bluebirdstorage.com	Daytime Telephone: 603-380-9455	
Mailing Address: 125 Ocean Road		
Town/City: Greenland	State: NH	Zip Code: 03840
2. APPLICANT'S AGENT INFORMATION If none, check here: ☒		
Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	Zip Code:
3. PROPERTY OWNER INFORMATION (IF DIFFERENT FROM APPLICANT)		
Applicant Name: Craven Rev. Trust	Contact Name: Brian Craven	
Email: bcnashuatile@yahoo.com	Daytime Telephone: 603-888-1231	
Mailing Address: 88 Speare Road		
Town/City: Hudson	State: NH	Zip Code: 03051
4. PROPERTY OWNER'S AGENT INFORMATION If none, check here: ☒		
Business Name:	Contact Name:	
Email:	Daytime Telephone:	
Address:		
Town/City:	State:	Zip Code:
5. CONSULTANT INFORMATION If none, check here: ☐		
Engineering Firm: Keach-Nordstrom Associates, Inc.	Contact Name: Bridget Souza	
Email: bsouza@keachnordstrom.com	Daytime Telephone: 603-627-2881	
Address: 10 Commerce Park N., Suite 3		
Town/City: Bedford	State: NH	Zip Code: 03110

6. PROJECT TYPE

☐ Excavation Only ☐ Residential ☒ Commercial ☐ Golf Course ☐ School ☐ Municipal
☐ Agricultural ☐ Land Conversion ☐ Other:

7. PROJECT LOCATION INFORMATION

Project Name: Bluebird Self Storage

Street/Road Address: 196-202 Central Street

Town/City: Hudson	County: Hillsborough

Tax Map: 176	Block:	Lot Number: 21,22,& 23	Unit:

Location Coordinates: 42.768750,-71.413730 ☒ Latitude/Longitude ☐ UTM ☐ State Plane

Post-development, will the proposed project withdraw from or directly discharge to any of the following? If yes, identify the purpose.

1. Stream or Wetland Purpose:	☐ Yes ☐ No	☐ Withdrawal	☒ Discharge
2. Man-made pond created by impounding a stream or wetland Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge
3. Unlined pond dug into the water table Purpose:	☐ Yes ☒ No	☐ Withdrawal	☐ Discharge

Post-development, will the proposed project discharge to:

- A surface water impaired for phosphorus and/or nitrogen? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A Class A surface water or Outstanding Resource Water? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen**
- A lake or pond not covered previously? ☒ No ☐ **Yes - include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond**

Is the project a High Load area? ☐ Yes ☒ No
If yes, specify the type of high load land use or activity: _____

Is the project within a Water Supply Intake Protection Area (WSIPA)? ☐ Yes ☒ No
Is the project within a Groundwater Protection Area (GPA)? ☐ Yes ☒ No
Will the well setbacks identified in Env-Wq 1508.02 be met? ☒ Yes ☐ No

Note: Guidance document titled "*Using NHDES's OneStop WebGIS to Locate Protection Areas*" is available online. For more details on the restrictions in these areas, read Chapter 3.1 in Volume 2 of the NH Stormwater Manual.

Is any part of the property within the 100-year floodplain? ☐ Yes ☒ No
If yes: Cut volume: _____ cubic feet within the 100-year floodplain
Fill volume: _____ cubic feet within the 100-year floodplain

☐ Project **IS** within **¼ mile of a designated river** Name of River:
☒ Project is **NOT** within ¼ mile of a designated river

☐ Project **IS** within **a Coastal/Great Bay Region community** - **include info required by Env-Wq 1503.08(l) if applicable**
☒ Project is **NOT** within a Coastal/Great Bay Region community

8. BRIEF PROJECT DESCRIPTION (PLEASE DO NOT REPLY "SEE ATTACHED")

This project proposes a 3-story (39,388 SF footprint), 118,164 SF self storage building with associated parking, utilities, and stormwater systems.

9. IF APPLICABLE, DESCRIBE ANY WORK STARTED PRIOR TO RECEIVING PERMIT

10. ADDITIONAL REQUIRED INFORMATION

A. Date a copy of the application was sent to the municipality as required by Env-Wq 1503.05(e)[1]: 12/20/2021.

(Attach proof of delivery)

B. Date a copy of the application was sent to the local river advisory committee if required by Env-Wq 1503.05(e)[2]: __/__/____.

(Attach proof of delivery)

C. Type of plan required: ☐ Land Conversion ☒ Detailed Development ☐ Excavation, Grading & Reclamation ☐ Steep Slope

D. Additional plans required: ☒ Stormwater Drainage & Hydrologic Soil Groups ☐ Source Control ☐ Chloride Management

E. Total area of disturbance: 140,435 square feet

F. Additional impervious cover as a result of the project: 61,147 square feet (use the "-" symbol to indicate a net reduction in impervious coverage).

Total final impervious cover: 71,952 square feet

G. Total undisturbed cover: 24,130 square feet

H. Number of lots proposed: 1

I. Total length of roadway: 0 linear feet

J. Name(s) of receiving water(s): Ottarnic Pond

K. Identify all other NHDES permits required for the project, and for each indicate whether an application has been filed and is pending, or if the required approval has been issued provide the permit number, registration date, or approval letter number, as applicable.

Type of Approval	Application Filed?	Status	
		Pending	If Issued:
1. Water Supply Approval	☐ Yes ☐ No ☒ N/A	☐	Permit number:
2. Wetlands Permit	☐ Yes ☐ No ☒ N/A	☐	Permit number:
3. Shoreland Permit	☐ Yes ☐ No ☒ N/A	☐	Permit number:
4. UIC Registration	☐ Yes ☐ No ☒ N/A	☐	Registration date:
5. Large/Small Community Well Approval	☐ Yes ☐ No ☒ N/A	☐	Approval letter date:
6. Large Groundwater Withdrawal Permit	☐ Yes ☐ No ☒ N/A	☐	Permit number:
7. Other:	☐ Yes ☒ No	☐	Permit number:

L. List all species identified by the Natural Heritage Bureau as threatened or endangered or of concern: Blanding's Turtle, Eastern Box Turtle, Spotted Turtle

M. Using NHDES's Web GIS OneStop program (www2.des.state.nh.us/gis/onestop/), with the Surface Water Impairment layer turned on, list the impairments identified for each receiving water. If no pollutants are listed, enter "N/A."

N/A

N. Did the applicant/applicant's agent have a pre-application meeting with AOT staff? ☐ Yes ☒ No

If yes, name of staff member:

O. Will blasting of bedrock be required? ☐ Yes ☒ No If yes, estimated quantity of blast rock: _____ cubic yards

If yes, standard blasting BMP notes must be placed on the plans, available at:
http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-10-12.pdf

NOTE: If greater than 5,000 cubic yards of blast rock will be generated, a groundwater monitoring program must be developed and submitted to NHDES. Contact AOT staff for additional detail.

[1] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the governing body of each municipality in which the project is proposed.

[2] Env-Wq 1503.05(c)(6), requires proof that a completed application form, checklist, plans and specifications, and all other supporting materials have been sent or delivered to the Local River Advisory Committee, if the project is within ¼ mile of a designated river.

11. CHECK ALL APPLICATION ATTACHMENTS THAT APPLY (SUBMIT WITH APPLICATION IN ORDER LISTED)

LOOSE:

- ☒ Signed application form: des.nh.gov/organization/divisions/water/aot/index.htm (with attached proof(s) of delivery)
- ☒ Check for the application fee: des.nh.gov/organization/divisions/water/aot/fees.htm
- ☒ Color copy of a USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ If Applicant is not the property owner, proof that the applicant will have a legal right to undertake the project on the property if a permit is issued to the applicant.

BIND IN A REPORT IN THE FOLLOWING ORDER:

- ☒ Copy of the signed application form & application checklist (des.nh.gov/organization/divisions/water/aot/index.htm)
- ☒ Copy of the check
- ☒ Copy of the USGS map with the property boundaries outlined (1" = 2,000' scale)
- ☒ Narrative of the project with a summary table of the peak discharge rate for the off-site discharge points
- ☒ Web GIS printout with the "Surface Water Impairments" layer turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ Web GIS printouts with the AOT screening layers turned on - http://www4.des.state.nh.us/onestopdatamapper/onestopmapper.aspx
- ☒ NHB letter using DataCheck Tool – www.nhdfl.org/about-forests-and-lands/bureaus/natural-heritage-bureau/
- ☒ The Web Soil Survey Map with project's watershed outlined – websoilsurvey.nrcs.usda.gov
- ☒ Aerial photograph (1" = 2,000' scale with the site boundaries outlined)
- ☒ Photographs representative of the site
- ☒ Groundwater Recharge Volume calculations (one worksheet for each permit application): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ BMP worksheets (one worksheet for each treatment system): des.nh.gov/organization/divisions/water/aot/documents/bmp_worksh.xls
- ☒ Drainage analysis, stamped by a professional engineer (see Application Checklist for details)
- ☒ Riprap apron or other energy dissipation or stability calculations
- ☒ Site Specific Soil Survey report, stamped and with a certification note prepared by the soil scientist that the survey was done in accordance with the Site Specific Soil Mapping standards, *Site-Specific Soil Mapping Standards for NH & VT, SSSNNE Special Publication No. 3*.
- ☒ Infiltration Feasibility Report (example online) [Env-Wq 1503.08(f)(3)]
- ☐ Registration and Notification Form for Storm Water Infiltration to Groundwater (UIC Registration-for underground systems only, including drywells and trenches): (http://des.nh.gov/organization/divisions/water/dwgb/dwspp/gw_discharge)
- ☒ Inspection and maintenance manual with, if applicable, long term maintenance agreements [Env-Wq 1503.08(g)]
- ☒ Source control plan

PLANS:

- ☒ One set of design plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)
- ☒ Pre & post-development color coded soil plans on 11" x 17" (see Application Checklist for details)
- ☒ Pre & post-development drainage area plans on 34 - 36" by 22 - 24" white paper (see Application Checklist for details)

100-YEAR FLOODPLAIN REPORT:

- ☐ All information required in Env-Wq 1503.09, submitted as a separate report.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

- ☐ See Checklist for Details

☒ **REVIEW APPLICATION FOR COMPLETENESS & CONFIRM INFORMATION LISTED ON THE APPLICATION IS INCLUDED WITH SUBMITTAL.**

12. REQUIRED SIGNATURES

_____ By initialing here, I acknowledge that I am required by Env-Wq 1503.20(e) to submit a copy of all approved documents to the department in PDF format on a CD within one week after permit approval.

By signing below, I certify that:

- The information contained in or otherwise submitted with this application is true, complete, and not misleading to the best of my knowledge and belief;
- I understand that the submission of false, incomplete, or misleading information constitutes grounds for the department to deny the application, revoke any permit that is granted based on the information, and/or refer the matter to the board of professional engineers established by RSA 310-A:3 if I am a professional engineer; and
- I understand that I am subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641.

☐ **APPLICANT** ☐ **APPLICANT'S AGENT:**

Signature: Bill Goodison Date: 12-16-21

Name (print or type): Bill Goodison Title: Managing Director

☑ **PROPERTY OWNER** ☐ **PROPERTY OWNER'S AGENT:**

Signature: Brian H Craven Date: 12-18-21

Name (print or type): Brian H. Craven. Title: Trustee

3. AOT APPLICATION CHECKLIST

ATTACHMENT A:
ALTERATION OF TERRAIN PERMIT APPLICATION CHECKLIST

Check the box to indicate the item has been provided or provide an explanation why the item does not apply.

DESIGN PLANS

☒ Plans printed on 34 - 36" by 22 - 24" white paper

☒ PE stamp

☒ Wetland delineation

☒ Temporary erosion control measures

☒ Treatment for all stormwater runoff from impervious surfaces such as roadways (including gravel roadways), parking areas, and non-residential roof runoff. Guidance on treatment BMPs can be found in Volume 2, Chapter 4 of the NH Stormwater Management Manual.

☒ Pre-existing 2-foot contours

☒ Proposed 2-foot contours

☒ Drainage easements protecting the drainage/treatment structures

☒ Compliance with the Wetlands Bureau, RSA 482- A http://des.nh.gov/organization/divisions/water/wetlands/index.htm. Note that artificial detention in wetlands is not allowed.

☒ Compliance with the Comprehensive Shoreland Protection Act, RSA 483-B. http://des.nh.gov/organization/divisions/water/wetlands/cspa

☐ Benches. Benching is needed if you have more than 20 feet change in elevation on a 2:1 slope, 30 feet change in elevation on a 3:1 slope, 40 feet change in elevation on a 4:1 slope.

☒ Check to see if any proposed ponds need state Dam permits.
http://des.nh.gov/organization/divisions/water/dam/documents/damdef.pdf

DETAILS

☐ Typical roadway x-section

☒ Detention basin with inverts noted on the outlet structure

☐ Stone berm level spreader

☒ Outlet protection – riprap aprons

☒ A general installation detail for an erosion control blanket

☒ Silt fences or mulch berm

☒ Storm drain inlet protection. Note that since hay bales must be embedded 4 inches into the ground, they are not to be used on hard surfaces such as pavement.

☐ Hay bale barriers

☐ Stone check dams

☒ Gravel construction exit

☒ Temporary sediment trap

☒ The treatment BMP's proposed

☐ Any innovative BMP's proposed

CONSTRUCTION SEQUENCE/EROSION CONTROL

☒ Note that the project is to be managed in a manner that meets the requirements and intent of RSA 430:53 and Chapter Agr 3800 relative to invasive species.

☒ Note that perimeter controls shall be installed prior to earth moving operations.

☒ Note that temporary water diversion (swales, basins, etc) must be used as necessary until areas are stabilized.

☒ Note that ponds and swales shall be installed early on in the construction sequence (before rough grading the site).

☒ Note that all ditches and swales shall be stabilized prior to directing runoff to them.

☒ Note that all roadways and parking lots shall be stabilized within 72 hours of achieving finished grade.

☒ Note that all cut and fill slopes shall be seeded/loamed within 72 hours of achieving finished grade

☒ Note that all erosion controls shall be inspected weekly AND after every half-inch of rainfall.

☒ Note the limits on the open area allowed, see Env-Wq 1505.02 for detailed information.

Example note: The smallest practical area shall be disturbed during construction, but in no case shall exceed 5 acres at any one time before disturbed areas are stabilized.

☒ Note the definition of the word “stable”

Example note: An area shall be considered stable if one of the following has occurred:

- Base course gravels have been installed in areas to be paved.
- A minimum of 85 percent vegetated growth has been established.
- A minimum of 3 inches of non-erosive material such stone or riprap has been installed.
- Or, erosion control blankets have been properly installed.

☒ Note the limit of time an area may be exposed
Example note: All areas shall be stabilized within 45 days of initial disturbance.

☒ Provide temporary and permanent seeding specifications. (Reed canary grass is listed in the Green Book; however, this is a problematic species according to the Wetlands Bureau and therefore should not be specified)

☒ Provide winter construction notes that meet or exceed our standards.

Standard Winter Notes:

- All proposed vegetated areas that do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized by seeding and installing erosion control blankets on slopes greater than 3:1, and seeding and placing 3 to 4 tons of mulch per acre, secured with anchored netting, elsewhere. The installation of erosion control blankets or mulch and netting shall not occur over accumulated snow or on frozen ground and shall be completed in advance of thaw or spring melt events.
- All ditches or swales which do not exhibit a minimum of 85 percent vegetative growth by October 15, or which are disturbed after October 15, shall be stabilized temporarily with stone or erosion control blankets appropriate for the design flow conditions.
- After October 15, incomplete road or parking surfaces, where work has stopped for the winter season, shall be protected with a minimum of 3 inches of crushed gravel per NHDOT item 304.3.

☒ Note at the end of the construction sequence that “Lot disturbance, other than that shown on the approved plans, shall not commence until after the roadway has the base course to design elevation and the associated drainage is complete and stable.” – This note is applicable to single/duplex family subdivisions, when lot development is not part of the permit.

DRAINAGE ANALYSES

Please double-side 8 ½" × 11" sheets where possible but, **do not** reduce the text such that more than one page fits on one side.

☒ PE stamp

☒ Rainfall amount obtained from the Northeast Regional Climate Center- http://precip.eas.cornell.edu/. Include extreme precipitation table as obtained from the above referenced website.

☒ Drainage analyses, in the following order:

- Pre-development analysis: Drainage diagram.
- Pre-development analysis: Area Listing and Soil Listing.
- Pre-development analysis: Node listing 1-year (if applicable), 2-year, 10-year and 50-year.
- Pre-development analysis: Full summary of the 10-year storm.
- Post-development analysis: Drainage diagram.
- Post-development analysis: Area Listing and Soil Listing.
- Post-development analysis: Node listing for the 2-year, 10-year and 50-year.
- Post-development analysis: Full summary of the 10-year storm.

☐ Review the Area Listing and Soil Listing reports

- Hydrologic soil groups (HSG) match the HSGs on the soil maps provided.
- There is the same or less HSG A soil area after development (check for each HSG).
- There is the same or less "woods" cover in the post-development.
- Undeveloped land was assumed to be in "good" condition.
- The amount of impervious cover in the analyses is correct.

Note: A good check is to subtract the total impervious area used in the pre analysis from the total impervious area used in the post-analysis. For residential projects without demolition occurring, a good check is to take this change in impervious area, subtract out the roadway and divide the remaining by the number of houses/units proposed. Do these numbers make sense?

☒ Check the storage input used to model the ponds.

☒ Check to see if the artificial berms pass the 50-year storm, i.e., make sure the constructed berms on ponds are not overtopped.

☒ Check the outlet structure proposed and make sure it matches that modeled.

☒ Check to see if the total areas in the pre and post analyses are same.

☒ Confirm the correct NRCS storm type was modeled (Coos, Carroll & Grafton counties are Type II, all others Type III).

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PRE- AND POST-DEVELOPMENT DRAINAGE AREA PLANS

☒ Plans printed on 34 - 36" by 22 - 24" on white paper.

☒ Submit these plans separate from the soil plans.

☒ A north arrow.

☒ A scale.

☒ Labeled subcatchments, reaches and ponds.

☒ Tc lines.

☒ A clear delineation of the subcatchment boundaries.

☒ Roadway station numbers.

☒ Culverts and other conveyance structures.

PRE AND POST-DEVELOPMENT COLOR-CODED SOIL PLANS

☒ 11" × 17"sheets suitable, as long as it is readable.

☒ Submit these plans separate from the drainage area plans.

☒ A north arrow.

☒ A scale.

☒ Name of the soil scientist who performed the survey and date the soil survey took place.

☒ 2-foot contours (5-foot contours if application is for a gravel pit) as well as other surveyed features.

☒ Delineation of the soil boundaries and wetland boundaries.

☒ Delineation of the subcatchment boundaries.

☒ Soil series symbols (e.g., 26).

☒ A key or legend which identifies each soil series symbol and its associated soil series name (e.g., 26 = Windsor).

☒ The hydrologic soil group color coding (A = Green, B = yellow, C= orange, D=red, Water=blue, & Impervious = gray).

Please note that excavation projects (e.g., gravel pits) have similar requirements to that above, however the following are common exceptions/additions:

☐ Drainage report is not needed if site does not have off-site flow.

☒ 5 foot contours allowed rather than 2 foot.

☒ No PE stamp needed on the plans.

☒ Add a note to the plans that the applicant must submit to the Department of Environmental Services a written update of the project and revised plans documenting the project status every five years from the date of the Alteration of Terrain permit.

☒ Add reclamation notes.

See NRCS publication titled: *Vegetating New Hampshire Sand and Gravel Pits* for a good resource, it is posted online at: http://des.nh.gov/organization/divisions/water/aot/categories/publications.

ADDITIONAL INFORMATION RE: NUTRIENTS, CLIMATE

☐ If project will discharge stormwater to a surface water impaired for phosphorus and/or nitrogen, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a Class A surface water or Outstanding Resource Water, include information to demonstrate that project will not cause net increase in phosphorus and/or nitrogen.

☐ If project will discharge stormwater to a lake or pond not covered previously, include information to demonstrate that project will not cause net increase in phosphorus in the lake or pond.

☐ If project is within a Coastal/Great Bay Region community, include info required by Env-Wq 1503.08(l) if applicable.

4. COPY OF AOT APPLICATION CHECK

CASH ONLY IF ALL *CheckLock™* SECURITY FEATURES LISTED ON BACK INDICATE NO TAMPERING OR COPYING

BLUEBIRD STORAGE LLC
125 Ocean Rd
Greenland, NH 03840

TD BANK, NA
54-007/114

2934

12/16/2021

PAY TO THE ORDER OF Treasurer State of New Hampshire $ 3,125.00

Three Thousand One Hundred Twenty-five and 00/100 DOLLARS

PROTECTED AGAINST FRAUD

MEMO AoT Fee

Bill Good

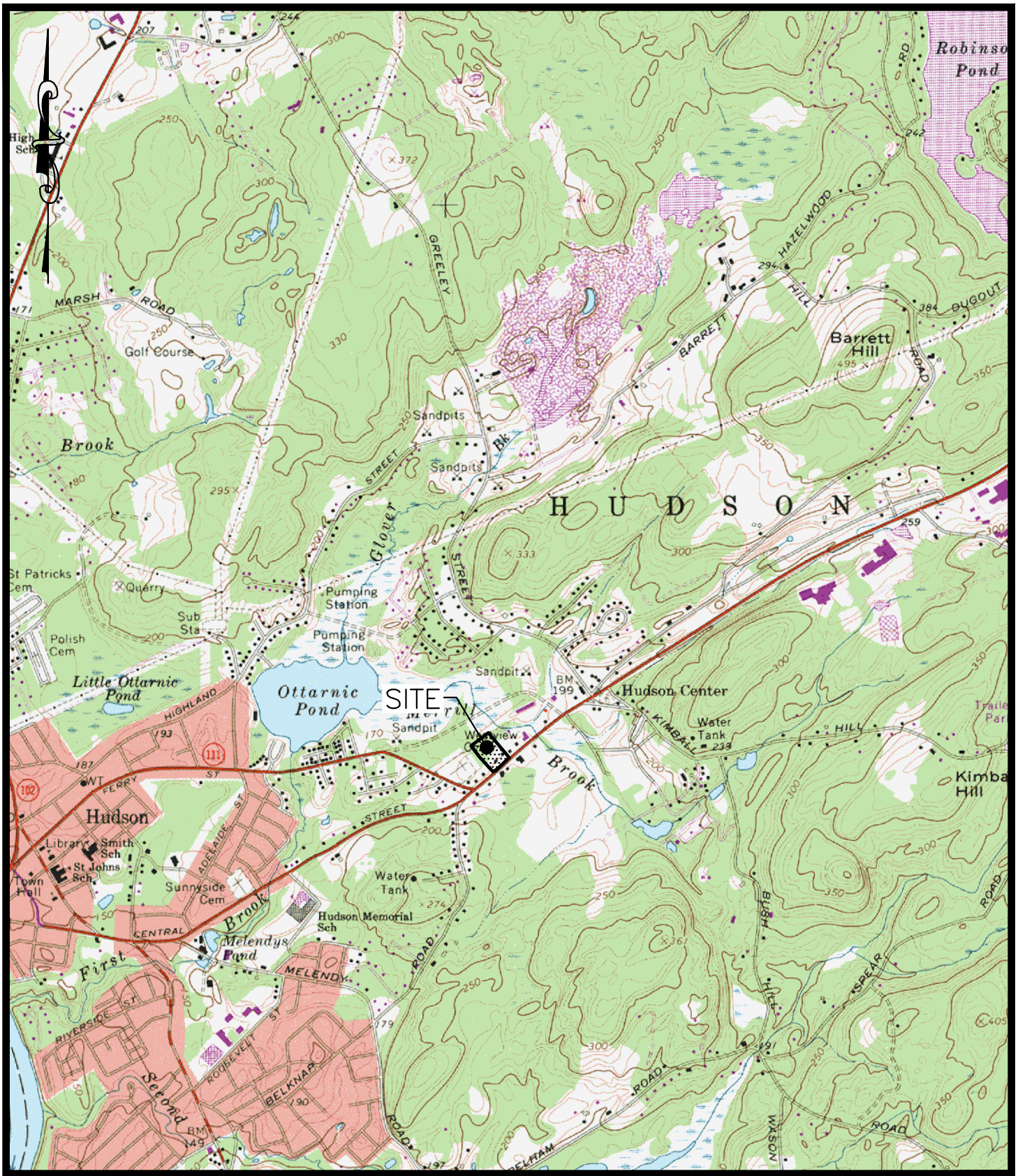
⑈002934⑈ [redacted]

BLUEBIRD STORAGE LLC

2934

5. MUNICIPAL SUBMISSION: TOWN OF HUDSON

6. USGS MAP



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

TITLE: USGS EXHIBIT PREPARED FOR:

BLUEBIRD SELF STORAGE

MAP 176; LOTS 21,22,&23 - 196-202 CENTRAL STREET
HUDSON, NEW HAMPSHIRE

DATE: 11/30/2021	JOB. NO. 21-0709-3
SCALE: 1" = 2,000'	SHEET 1 OF 1

7. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

The subject project proposes a 3-story, 39,388 SF footprint self-storage building. The project encompasses three existing lots for a total of 3.783 acres. There are two existing residential homes, numerous sheds, and the rest of the property is woodland and cleared grass areas. The construction will involve the clearing of woods to the rear of the lot. Once cleared, the building will be constructed along with the parking, drives, stormwater ponds, and associated landscape improvements.

B. Existing Site Conditions

The proposed parcel is located at 196 to 202 Central Street, Hudson, NH. The three parcels total approximately 3.8 acres and contain two residential homes with out-buildings and the remaining acreage is woodland. The site contains one poorly drained wetland located in the north-eastern corner of the property. There is a high point in the rear of lot 21 that causes about half the site to slope to the existing wetland while the other half slopes towards Central Street.

According to the Site-specific Soil Survey Report, performed on November 4, 2021 by certified soil scientist, Luke Hurley, the area of development consists of Agawam, Udorthents, and Scarboro soils of varying slopes ranging from 0-25%+. According to the National Resources Conservation Service (NRCS) soil mapping the site consists of, Windsor loamy sand and Freetown mucky peat soil types of slopes ranging from 0-15%.

II. Storm Drainage Analysis & Design

A. Methodology

In accordance with the Hudson Stormwater Regulations, NHDES AoT requirements 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 site. Stormwater treatment provisions and all drainage facilities have been designed to be fully functional during a 50-year return frequency storm.

KNA utilizes HydroCAD version 10.00-22 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).

All proposed stormwater inlet structures were designed to remain under inlet control throughout a design storm of the return frequency noted. Outlet protection for each discharging culvert was designed in accordance with the methodology for the "best management practice", in accordance with a publication entitled New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design. In addition, this publication served as the primary reference for the numerous temporary and permanent erosion control methods incorporated into the design of this project.

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

The pre-development drainage model recognizes two (2) points of analysis (POA) as the appropriate points to compare pre vs. post-development peak rates of stormwater discharge.

The pre-development drainage model's POA are further described as follows:

- A Wetland/Rear Abutter Lot
- B Central Street

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.

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.

Overall, the design has maintained the drainage patterns to mimic the pre-development conditions. Stormwater will discharge to the same two points of analysis identified in the pre-development scenario. The improvements, however, also provide stormwater treatment for the new impervious areas created for the proposed development.

Subcatchment areas, times of concentration and analysis points have been provided showing how the pre-development and post-development areas best match to have a proper comparison.

A Pocket Pond (Wet Pond) is being proposed at the rear (northern portion) of the property to provide detention and treatment. The system has been designed to maintain the required permanent pool while providing treatment and has been sized to withstand a 50-year storm event.

A series of three additional pond areas is proposed at the front (southern portion) of the property. A Bioretention Pond is proposed to capture a portion of runoff, providing detention and treatment. This stormwater pond will be underdrained. Run-off will be treated first by a sediment forebay, and then the stormwater will infiltrate through the filter media before finally reaching the underdrain and flowing to an outlet structure. The system has been sized to withstand a 50-year storm event.

Two Infiltration Ponds are proposed to capture the remaining stormwater flow. This stormwater pond will treat run-off first by sediment forebays and then recharged back into the ground. The ponds have been sized to provide the required groundwater recharge volume, as well as withstand a 50-year storm event.

The detailed hydrologic and hydraulic relationship of each sub-catchment is described within the HydroCAD stormwater modeling, also contained in the appendix of this report.

The peak stormwater runoff rate and total storm volume for the specific storm frequencies are presented and analyzed in the subsequent summary section of this report, for the point of analysis (Table 1 & 2).

D. Summary:

The subject site complies with the Town of Hudson Stormwater Management and Erosion Control Regulations and NHDES Regulations Env-Wq 1500 in regard to stormwater treatment and groundwater recharge volume. Proposed stormwater best management practices (BMP) are designed in accordance with the New Hampshire Stormwater Manual Volume 2: Post-Construction Best Management Practices Selection and Design and BMP worksheets provided by the New Hampshire Department of Environmental Services. In addition, stormwater discharges, in terms of peak rate of runoff and total volume, are consistent with the Town of Hudson Stormwater Regulations and NHDES Regulations Env-Wq 1500. The results are reported below in Table 1 and 2.

Table 1: Peak Runoff (Env-Wq 1507.06)

Site Pre-Development vs. Post Development (Peak Discharge Rate in cfs)								
Description	**2-Year**		**10-Year**		**25-Year**		**50-Year**	
24-hr Rainfall	2.94 in/hr		4.45 in/hr		5.63 in/hr		6.74 in/hr	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
A	**0.08**	0.07	**0.61**	0.38	**1.34**	0.75	**2.13**	1.14
B	**0.46**	0.44	**1.99**	0.89	**3.59**	1.30	**5.24**	1.79

Table 2: Peak Runoff (2-Year Frozen Conditions)

Site Pre-Development vs. Post Development – Frozen (Peak Discharge Rate in cfs)		
Description	**2-Year - Frozen**	
24-hr Rainfall	2.93 in/hr	
	Pre	Post
A	**2.85**	1.38
B	**5.17**	1.09

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.

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;

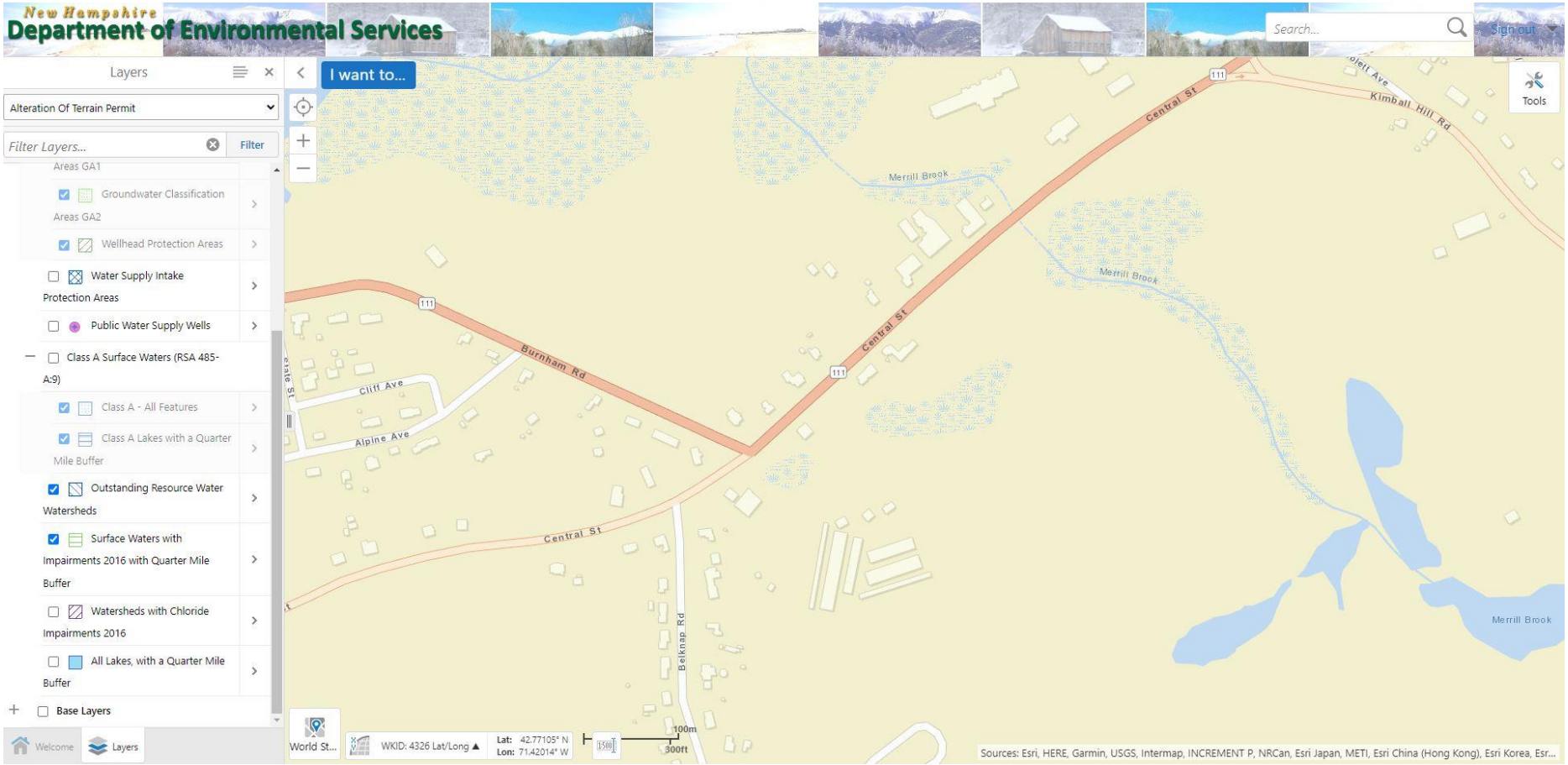
2) The design has provided catch basins with sumps to capture runoff and reduce the overland flow, thereby reducing erosion;

3) Construction of rip-rap at the outlet of the stormwater management areas;

4) Two Infiltration Basins, a Bioretention Pond and a Pocket Pond (Wet Pond) were designed to reduce runoff and volume.

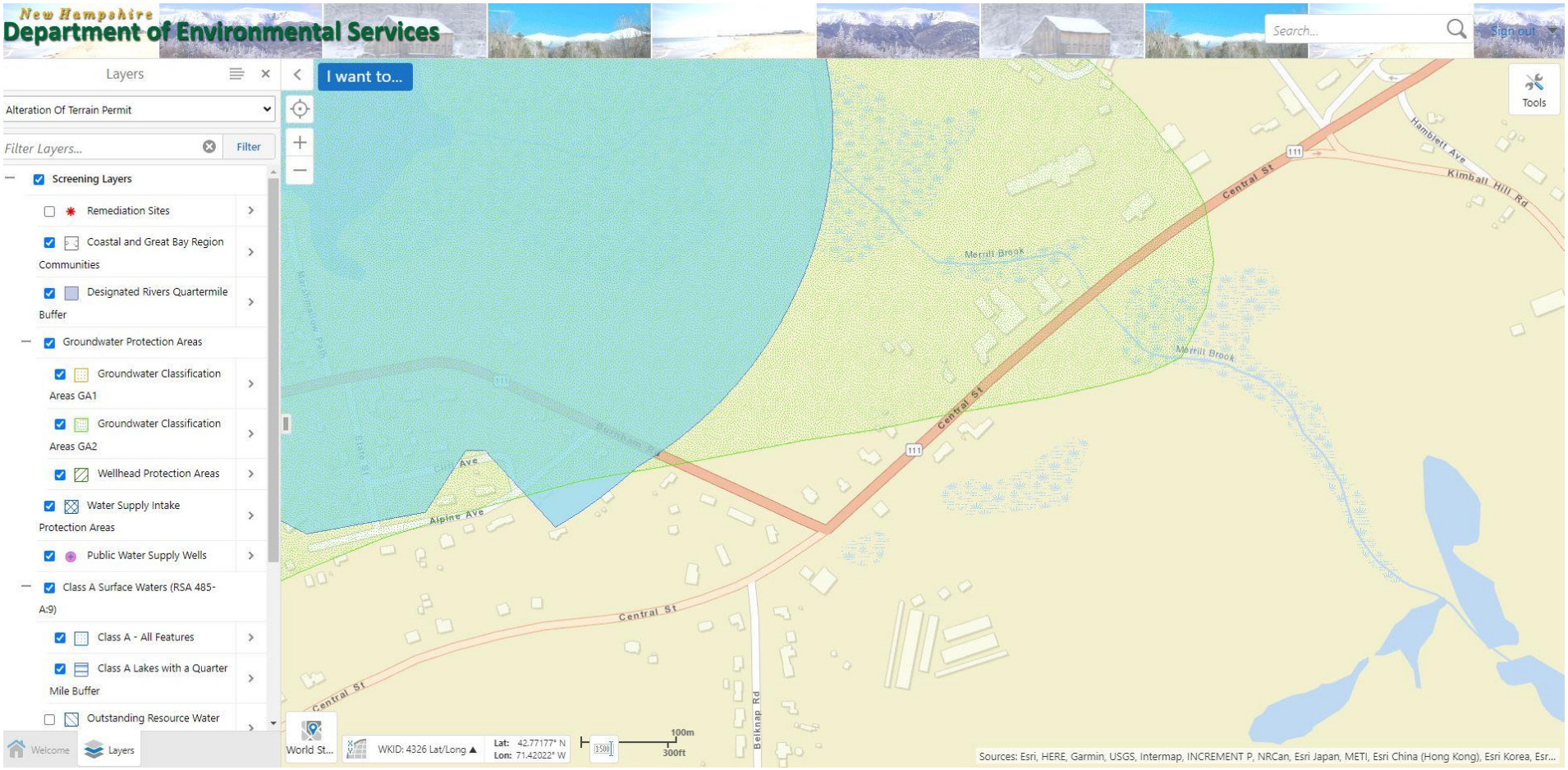
8. SURFACE WATER IMPAIRMENTS

Surface Water Impairments



9. WEB GIS FIGURES

GIS Figure


New Hampshire
Department of Environmental Services
Search...
Sign out
Layers
Alteration Of Terrain Permit
Filter Layers...
Filter
Screening Layers
Remediation Sites
Coastal and Great Bay Region Communities
Designated Rivers Quartermile Buffer
Groundwater Protection Areas
Groundwater Classification Areas GA1
Groundwater Classification Areas GA2
Wellhead Protection Areas
Water Supply Intake Protection Areas
Public Water Supply Wells
Class A Surface Waters (RSA 485-A:9)
Class A - All Features
Class A Lakes with a Quarter Mile Buffer
Outstanding Resource Water
Welcome
Layers
I want to...
Tools
Central St
Merrill Brook
Hambleff Ave
Kimball Hill Rd
Alpine Ave
Belknap Rd
111
World St...
WKID: 4326 Lat/Long
Lat: 42.77177° N
Lon: 71.42022° W
1:500
100m
300ft
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esr...

10. NEW HAMPSHIRE NATURAL HERITAGE INVENTORY LETTER

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Bridget Souza, Keach-Nordstrom Associates, Inc.
10 Commerce Park North
Suite 3
Bedford, NH 03110

From: Jessica Bouchard, NH Natural Heritage Bureau
Date: 9/29/2021 (valid until 09/29/2022)
Re: Review by NH Natural Heritage Bureau
Permits: MUNICIPAL POR - Hudson, NHDES - Alteration of Terrain Permit

NHB ID: **NHB21-2966** Town: Hudson Location: 196-202 Central Street
Description: Remove two abandoned residential homes and construction 39,000 +/- s.f. footprint storage facility with associated drainage, utilities, parking, and landscaping.
cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: No Comments At This Time**
F&G: Please submit AoT-related documents for NHFG review, AoT review inquiries or wildlife biologist questions to NHFGreview@wildlife.nh.gov. If project related: Include the NHB datacheck results letter number (i.e. NHB21-2966) in the email subject line at a minimum. Not including this number will affect our response time and delays of our review. Please include the NHB number in the title of the assessment along with a date (year,month,day).

Vertebrate species	State[1]	Federal	Notes
Blanding's Turtle (*Emydoidea blandingii*)	E	--	Contact the NH Fish & Game Dept (see below).
Eastern Box Turtle (*Terrapene carolina*)	E	--	Contact the NH Fish & Game Dept (see below).
Spotted Turtle (*Clemmys guttata*)	T	--	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

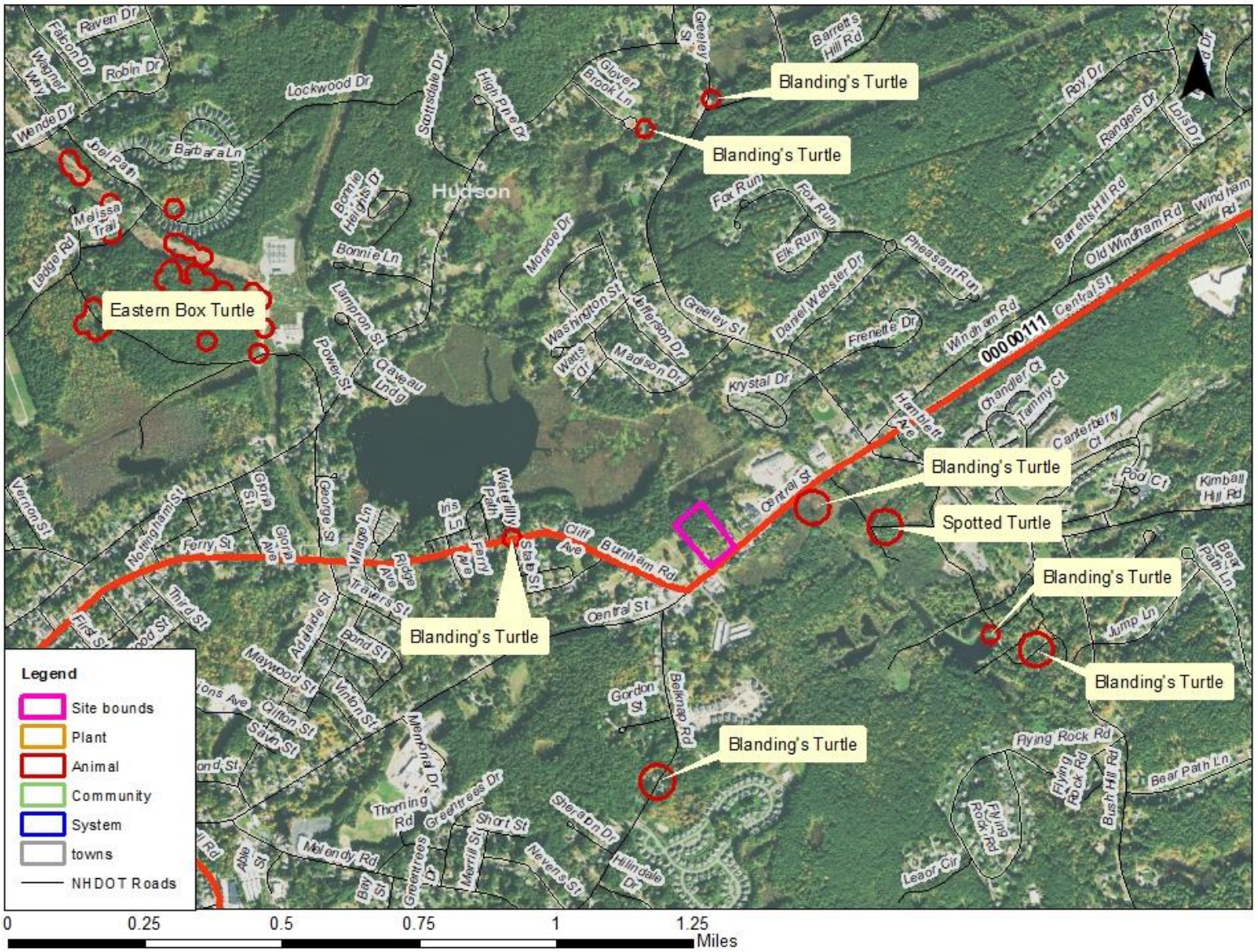
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB21-2966



New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2015: Area 14021: 1 adult observed, sex unknown.
General Area: 2015: Area 14021: Wetland area within urban setting.
General Comments: --
Management Comments: --

Location

Survey Site Name: Second Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2015: Area 14021: Wetland area opposite 222 Central Street, Hudson.

Dates documented

First reported:	2015-06-04	Last reported:	2015-06-04

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status	Conservation Status
Federal: Not listed	Global: Apparently secure but with cause for concern
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2014: Area 13895: 1 adult observed, sex unknown.
General Area: 2014: Area 13895: Pond in municipal park.
General Comments: --
Management Comments: --

Location

Survey Site Name: Second Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2014: Area 13895: Near pond in Benson Park, Hudson (42.76663, -71.40373).

Dates documented

First reported: 2014-07-17 Last reported: 2014-07-17

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2014: Area 13571: 1 adult male observed.
General Area: 2014: Area 13571: Marshy area leading to small stream. Roads surrounding the marshy area.
General Comments: --
Management Comments: --

Location

Survey Site Name: Robinson Pond
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2014: Area 13571: Greeley Street, Hudson, at crossing of Glover Brook.

Dates documented

First reported:	2014-05-02	Last reported:	2014-05-02

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2013: Area 13420: 1 adult observed, sex unknown.
General Area: 2013: Area 13420: Residential yard, coniferous forest.
General Comments: --
Management Comments: --

Location

Survey Site Name: Robinson Pond
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2013: Area 13420: 11 Glover Brook Lane, Hudson.

Dates documented

First reported: 2013-06-17 Last reported: 2013-06-17

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status	Conservation Status
Federal: Not listed	Global: Apparently secure but with cause for concern
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2011: Area 13149: 5 adults observed.
General Area: 2011: Area 13149: Marsh.
General Comments: --
Management Comments: --

Location

Survey Site Name: Second Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Area 13149: 125 Belknap Road, Hudson.

Dates documented

First reported: 2011-05-08 Last reported: 2011-05-08

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2017: Area 14371: 1 adult observed, sex unknown.
General Area: 2017: Area 14371: Forest in city park.
General Comments: --
Management Comments: --

Location

Survey Site Name: Second Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2017: Area 14371: Benson Park, Hudson.

Dates documented

First reported: 2017-04-17 Last reported: 2017-04-17

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

Blanding's Turtle (*Emydoidea blandingii*)

Legal Status		Conservation Status	
Federal:	Not listed	Global:	Apparently secure but with cause for concern
State:	Listed Endangered	State:	Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2016: Area 14397: 1 adult female observed, injured on road. Turtle was brought to rehabber, and released on 6/27.
General Area: Area 14397: Roadside.
General Comments: --
Management Comments: --

Location

Survey Site Name: Robinson Pond
Managed By:

County: Hillsborough
Town(s): Hudson
Size: .4 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2016: Area 14397: Near junction of Route 111, State Street, and Marshmallow Path, Hudson.

Dates documented

First reported: 2016-06-15 Last reported: 2016-06-15

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

CONFIDENTIAL – NH Dept. of Environmental Services review

New Hampshire Natural Heritage Bureau - Animal Record

Eastern Box Turtle (*Terrapene carolina*)

Legal Status	Conservation Status
Federal: Not listed	Global: Demonstrably widespread, abundant, and secure
State: Listed Endangered	State: Critically imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2017-2019: Turtle 7010: Radiotracked female. Turtle 7011: Radiotracked male. Turtle 7012: Radiotracked male. Turtle 7013: Radiotracked female. Turtle 7014: Radiotracked female. 2016: Adult male tracked via telemetry. Initial capture on 6/2. First recapture on 6/7. Second recapture on 6/30. Second adult male captured and tagged on 9/9. 2014: Adult female tracked via telemetry. Believed to have laid eggs during telemetry survey, but no direct evidence.

General Area: 2016: Powerline right-of-way with dense shrub cover. Appalachian oak - pine forest on either side of right-of-way. 2014: Moving between woods and adjacent powerline corridor.

General Comments: --

Management Comments: --

Location

Survey Site Name: Musquash Brook
Managed By: Hamblett

County: Hillsborough
Town(s): Hudson
Size: 45.5 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: --

Dates documented

First reported:	2014-06-18	Last reported:	2019-09-10

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Spotted Turtle (*Clemmys guttata*)

Legal Status

Federal: Not listed
State: Listed Threatened

Conservation Status

Global: Demonstrably widespread, abundant, and secure
State: Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank: --

Detailed Description: 2013: Area 13521: 1 adult observed, sex unknown.
General Area: 2013: Area 13521: Shrubland.
General Comments: --
Management Comments: --

Location

Survey Site Name: Merrill Brook
Managed By:

County: Hillsborough
Town(s): Hudson
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2013: Area 13521: Benson's Park, Hudson. Along Meadow View Trail approximately 100 feet west of intersection with Haselton Farm Trail.

Dates documented

First reported: 2013-06-03
Last reported: 2013-06-03

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

11. WEB SOIL SURVEY

Hydrologic Soil Group—Hillsborough County, New Hampshire, Eastern Part
(BlueBird Self Storage Soil Map)

Map Scale: 1:1,730 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points
- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Hillsborough County, New Hampshire, Eastern Part
Survey Area Data: Version 24, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2015—Jun 14, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Gw	Freetown mucky peat, 0 to 2 percent slopes	B/D	0.2	4.0%
WdB	Windsor loamy sand, 3 to 8 percent slopes	A	2.8	46.8%
WdC	Windsor loamy sand, 8 to 15 percent slopes	A	3.0	49.2%
Totals for Area of Interest			**6.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

12. AERIAL PHOTOGRAPH

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

TITLE:

AERIAL EXHIBIT PREPARED FOR:

BLUEBIRD SELF STORAGE

MAP 176; LOTS 21,22,&23 - 196-202 CENTRAL STREET
HUDSON, NEW HAMPSHIRE

DATE: 11/30/2021	JOB. NO. 21-0709-3
SCALE: 1" = 2,000'	SHEET 1 OF 1

13. SITE PHOTOGRAPHS

Photo No. 1: Looking south-west down Central Street from the existing paved driveway on Lot 21.

Photo No. 2: Existing 2-story house on Lot 21 to be razed.

Photo No. 3: Looking north-east down Central Street from between existing driveways.

Photo No. 4: Existing 2-story house on Lot 23 to be razed.

Photo No. 5: Looking to the rear of the parcels showing the wooded area.

Photo No. 6: Onsite photo of the wetland located in northern, rear corner of Lot 23.

14. GRV CALCULATION

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

-	ac	Area of HSG A soil that was replaced by impervious cover	0.40"
1.48	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"
0.25	inches	Rd = Weighted groundwater recharge depth	
0.3708	ac-in	GRV = AI * Rd	
1,346	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):

Infiltration Pond #4 provides 3,797 cf of infiltration below the lowest orifice

15. BMP WORKSHEETS

STORMWATER POND DESIGN CRITERIA

Env-Wq 1508.03

Type/Node Name: **Wet Pond #1**

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

0.98	ac	A = Area draining to the practice	
0.31	ac	A_I = Impervious area draining to the practice	
0.32	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.33	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.33	ac-in	WQV= 1" x Rv x A	
1,191	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
119	cf	10% x WQV (check calc for sediment forebay and micropool volume)	
595	cf	50% x WQV (check calc for extended detention volume)	
248	cf	V_{SED} = Sediment forebay volume	**≥ 10%WQV**
10,729	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**
179.00	ft	Elevation of seasonal high water table	
182.00	ft	Elevation of lowest pond outlet	
174.00	ft	Max floor = Maximum elevation of pond bottom (ft)	
171.00	ft	Minimum floor (to maintain depth at less than 8')	**≤ 8 ft**
179.00	ft	Elevation of pond floor[3]	**≤ Max floor and > Min floor**
129.00	ft	Length of the flow path between the inlet and outlet at mid-depth	
37.00	ft	Average width ([average of the top width + average bottom width]/2)	
3.49	: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:		If needed, the pond will be pumped out to empty	
Trash grates		What mechanism is proposed to prevent the outlet structure from clogging (applicable for orifices/weirs with a dimension of <6")?	
183.50	ft	Peak elevation of the 50-year storm event	
184.50	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:

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention Pond #2**

Enter the type of filtration practice (e.g., bioretention system) and the node name in the drainage analysis, if applicable.

		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
0.35	ac	A = Area draining to the practice	
0.16	ac	A_I = Impervious area draining to the practice	
0.46	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.46	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.16	ac-in	WQV= 1" x Rv x A	
586	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
147	cf	25% x WQV (check calc for sediment forebay volume)	
440	cf	75% x WQV (check calc for surface sand filter volume)	
Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
175	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
	sf	A_{SA} = Surface area of the practice	
	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
	Yes/No	(Use the calculations below)	
-	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
176.10	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
0.22	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
1.48	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
173.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
172.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
172.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
172.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
1.00	feet	$D_{FC\ to\ UD}$ = Depth to UD from the bottom of the filter course	≥ 1'
1.50	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
1.50	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
177.22	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
178.25	ft	Elevation of the top of the practice	
YES		50 peak elevation ≤ Elevation of the top of the practice	← yes
If a surface sand filter or underground sand filter is proposed:			
YES	ac	Drainage Area check.	< 10 ac
	cf	V = Volume of storage[3] (attach a stage-storage table)	≥ 75%WQV
	inches	D_{FC} = Filter course thickness	18", or 24" if within GPA
Sheet		Note what sheet in the plan set contains the filter course specification.	
	Yes/No	Access grate provided?	← yes

If a bioretention area is proposed:			
YES	ac	Drainage Area no larger than 5 ac?	**← yes**
662	cf	V = Volume of storage[3] (attach a stage-storage table)	**≥ WQV**
18.0	inches	D_{FC} = Filter course thickness	**18", or 24" if within GPA**
Sheet		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	**≥ 3:1**
Sheet		Note what sheet in the plan set contains the planting plans and surface cover	
If porous pavement is proposed:			
		Type of pavement proposed (Concrete? Asphalt? Pavers? Etc.)	
	acres	A_{SA} = Surface area of the pervious pavement	
	:1	Ratio of the contributing area to the pervious surface area	**≤ 5:1**
	inches	D_{FC} = Filter course thickness	**12", or 18" if within GPA mod. 304.1 (see spec)**
Sheet		Note what sheet in the plan set contains the filter course spec.	

1. Rate of the limiting layer (either the filter course or the underlying soil). $Ksat_{design}$ includes factor of safey. See Env-Wq 1504.14 for guidance on determining the infiltration rate.

2. See lines 34, 40 and 48 for required depths of filter media.

3. Volume without depending on infiltration. The volume includes the storage above the filter (but below the invert of the outlet stucture, if any), the filter media voids, and the pretreatment area. The storage above the filter media shall not include the volume above the outlet structure, if any.

Designer's Notes: Pond to be lined.

Volume calculation in filter media voids: 1.5 ft thickness x 193 sq.ft. area x 30% voids = 87 cu.ft. storage

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond #3**

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**
0.17	ac	A = Area draining to the practice	
0.07	ac	A_I = Impervious area draining to the practice	
0.41	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.42	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
0.07	ac-in	WQV= 1" x Rv x A	
260	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
65	cf	25% x WQV (check calc for sediment forebay volume)	
Forebay		Method of pretreatment? (not required for clean or roof runoff)	
76	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
412	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
612	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
1.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
178.00	feet	E_{BTM} = Elevation of the bottom of the basin	
175.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
175.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
3.0	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**
N/A	Yes/No	If a trench or underground system is proposed, has observation well been provided?	←**yes**
N/A		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**
178.52	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
178.80	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
180.00	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:

INFILTRATION PRACTICE CRITERIA
(Env-Wq 1508.06)

Type/Node Name: **Infiltration Pond #4**

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**
1.51	ac	A = Area draining to the practice	
1.03	ac	A_I = Impervious area draining to the practice	
0.68	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.66	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.00	ac-in	WQV= 1" x Rv x A	
3,639	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
910	cf	25% x WQV (check calc for sediment forebay volume)	
Forebay		Method of pretreatment? (not required for clean or roof runoff)	
1,300	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ **25%WQV**
3,797	cf	V = Volume[1] (attach a stage-storage table)	≥ **WQV**
1,859	sf	A_{SA} = Surface area of the bottom of the pond	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[2]	
7.8	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ **72-hrs**
180.00	feet	E_{BTM} = Elevation of the bottom of the basin	
177.00	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
177.00	feet	E_{ROCK} = Elevation of bedrock (if none found, enter the lowest elevation of the test pit)	
3.00	feet	D_{SHWT} = Separation from SHWT	≥ *[3]
3.0	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**
182.17	ft	Peak elevation of the 10-year storm event (infiltration can be used in analysis)	
183.20	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
184.25	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:

16. EXTREME PRECIPITATION TABLES

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New Hampshire
Location	
Longitude	71.414 degrees West
Latitude	42.769 degrees North
Elevation	0 feet
Date/Time	Fri, 22 Oct 2021 09:38:22 -0400

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.27	0.42	0.52	0.68	0.85	1.07	**1yr**	0.73	1.01	1.24	1.55	1.96	2.47	2.71	**1yr**	2.19	2.61	3.04	3.72	4.33	**1yr**
2yr	0.33	0.51	0.63	0.84	1.05	1.32	**2yr**	0.91	1.21	1.53	1.90	2.37	2.95	3.28	**2yr**	2.61	3.15	3.66	4.38	4.98	**2yr**
5yr	0.39	0.61	0.77	1.03	1.31	1.67	**5yr**	1.13	1.52	1.93	2.42	3.01	3.73	4.18	**5yr**	3.30	4.02	4.64	5.50	6.23	**5yr**
10yr	0.44	0.69	0.88	1.19	1.55	1.99	**10yr**	1.34	1.80	2.32	2.90	3.61	4.46	5.01	**10yr**	3.95	4.82	5.56	6.54	7.37	**10yr**
25yr	0.53	0.83	1.06	1.46	1.94	2.51	**25yr**	1.67	2.25	2.93	3.68	4.58	5.65	6.39	**25yr**	5.00	6.14	7.06	8.22	9.23	**25yr**
50yr	0.59	0.94	1.21	1.70	2.30	3.00	**50yr**	1.98	2.66	3.51	4.42	5.50	6.75	7.68	**50yr**	5.98	7.38	8.46	9.78	10.95	**50yr**
100yr	0.68	1.10	1.41	2.00	2.73	3.58	**100yr**	2.35	3.16	4.20	5.30	6.58	8.08	9.23	**100yr**	7.15	8.88	10.14	11.64	12.98	**100yr**
200yr	0.77	1.26	1.63	2.34	3.24	4.28	**200yr**	2.79	3.75	5.03	6.35	7.89	9.67	11.11	**200yr**	8.56	10.68	12.16	13.85	15.40	**200yr**
500yr	0.93	1.53	1.99	2.90	4.06	5.41	**500yr**	3.51	4.70	6.39	8.08	10.02	12.28	14.19	**500yr**	10.86	13.64	15.47	17.45	19.32	**500yr**

Lower Confidence Limits

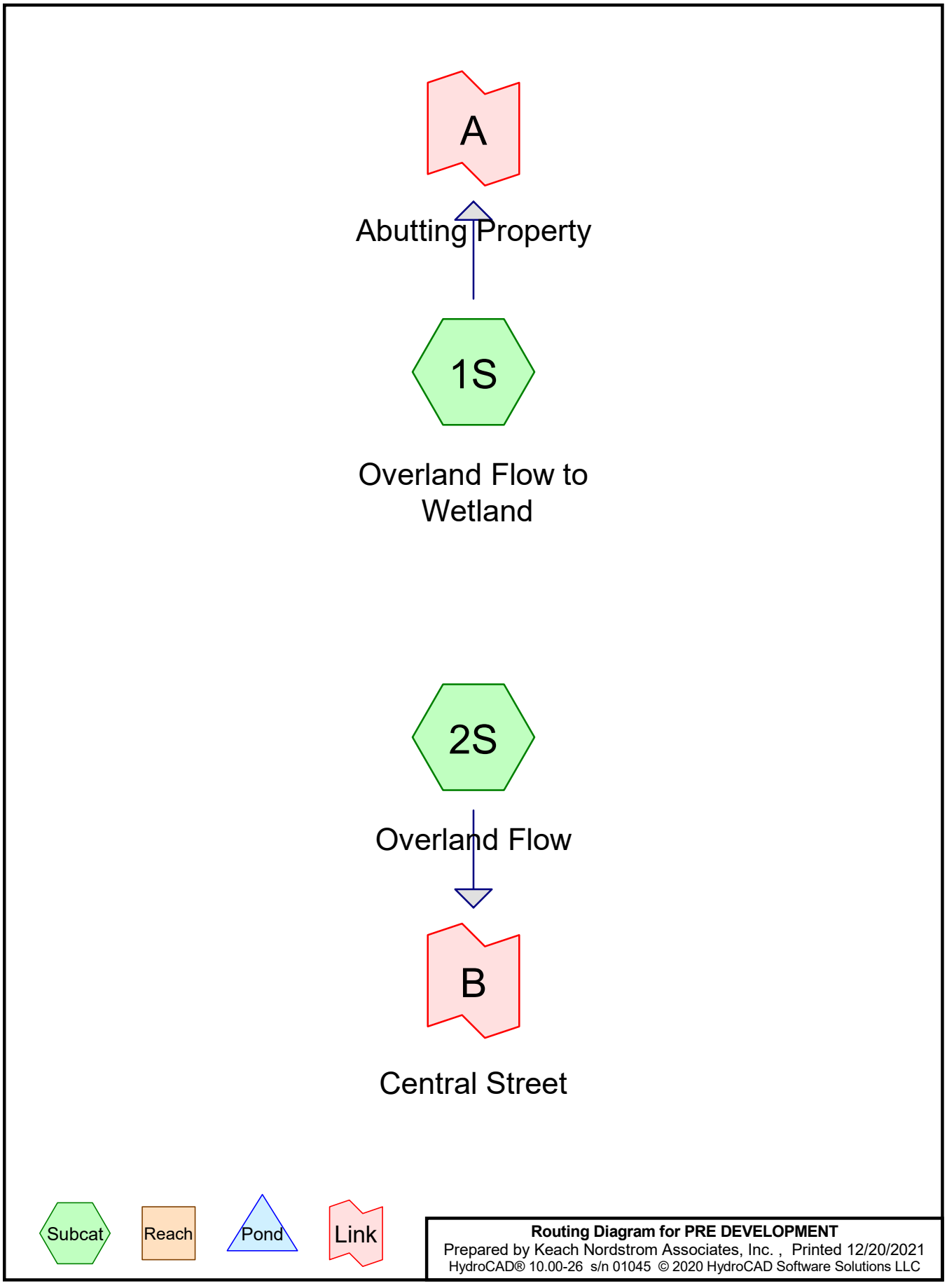
	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.23	0.35	0.43	0.57	0.70	0.81	**1yr**	0.61	0.79	1.07	1.31	1.67	2.25	2.55	**1yr**	1.99	2.45	2.70	3.01	3.77	**1yr**
2yr	0.31	0.49	0.60	0.81	1.00	1.20	**2yr**	0.86	1.17	1.37	1.79	2.30	2.87	3.18	**2yr**	2.54	3.06	3.55	4.26	4.85	**2yr**
5yr	0.36	0.55	0.69	0.94	1.20	1.42	**5yr**	1.04	1.39	1.62	2.11	2.69	3.50	3.84	**5yr**	3.10	3.69	4.25	5.10	5.78	**5yr**
10yr	0.39	0.61	0.75	1.05	1.36	1.61	**10yr**	1.17	1.57	1.83	2.38	3.04	4.05	4.42	**10yr**	3.58	4.25	4.87	5.83	6.58	**10yr**
25yr	0.45	0.68	0.85	1.21	1.59	1.88	**25yr**	1.38	1.84	2.15	2.81	3.53	4.90	5.35	**25yr**	4.33	5.14	5.84	6.98	7.78	**25yr**
50yr	0.49	0.74	0.92	1.33	1.79	2.14	**50yr**	1.54	2.09	2.43	3.19	3.97	5.67	6.19	**50yr**	5.02	5.95	6.72	8.00	8.81	**50yr**
100yr	0.54	0.81	1.01	1.46	2.01	2.42	**100yr**	1.73	2.36	2.76	3.54	4.47	6.21	7.19	**100yr**	5.50	6.91	7.75	9.19	9.97	**100yr**
200yr	0.59	0.89	1.12	1.63	2.27	2.74	**200yr**	1.96	2.68	3.10	4.02	5.07	7.13	8.36	**200yr**	6.31	8.04	8.94	10.56	11.30	**200yr**
500yr	0.67	1.00	1.28	1.86	2.65	3.25	**500yr**	2.29	3.18	3.66	4.76	5.99	8.56	10.28	**500yr**	7.58	9.88	10.81	12.71	13.33	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.31	0.47	0.58	0.78	0.96	1.12	**1yr**	0.83	1.09	1.27	1.65	2.09	2.66	2.87	**1yr**	2.36	2.76	3.42	4.19	4.79	**1yr**
2yr	0.35	0.54	0.67	0.90	1.11	1.31	**2yr**	0.96	1.28	1.49	1.92	2.47	3.07	3.42	**2yr**	2.72	3.29	3.80	4.53	5.18	**2yr**
5yr	0.44	0.67	0.83	1.14	1.45	1.67	**5yr**	1.26	1.63	1.89	2.43	3.05	4.02	4.57	**5yr**	3.56	4.40	5.03	5.95	6.69	**5yr**
10yr	0.53	0.81	1.00	1.40	1.81	2.03	**10yr**	1.56	1.99	2.30	2.91	3.62	4.98	5.71	**10yr**	4.41	5.49	6.25	7.33	8.19	**10yr**
25yr	0.68	1.03	1.29	1.84	2.42	2.63	**25yr**	2.09	2.57	2.97	3.68	4.51	6.61	7.67	**25yr**	5.85	7.37	8.33	9.64	10.74	**25yr**
50yr	0.82	1.25	1.56	2.24	3.02	3.21	**50yr**	2.61	3.14	3.60	4.41	5.34	8.19	9.58	**50yr**	7.25	9.21	10.33	11.86	13.18	**50yr**
100yr	1.01	1.52	1.90	2.75	3.77	3.92	**100yr**	3.26	3.83	4.38	5.38	6.33	10.66	11.96	**100yr**	9.43	11.50	12.82	14.62	16.20	**100yr**
200yr	1.23	1.84	2.34	3.38	4.72	4.78	**200yr**	4.07	4.67	5.32	6.45	7.50	13.31	14.91	**200yr**	11.78	14.34	15.90	18.00	19.93	**200yr**
500yr	1.60	2.38	3.07	4.46	6.34	6.20	**500yr**	5.47	6.06	6.88	8.22	9.38	17.87	19.95	**500yr**	15.81	19.18	21.15	23.72	26.20	**500yr**

Powered by ACIS Northeast Regional Climate Center

17. HYDROCAD DRAINAGE ANALYSIS



Routing Diagram for PRE DEVELOPMENT
Prepared by Keach Nordstrom Associates, Inc. , Printed 12/20/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.878	61.0	>75% Grass cover, Good, HSG B (1S, 2S)
0.201	98.0	Paved parking, HSG D (2S)
0.007	98.0	Roofs, HSG B (2S)
0.067	98.0	Roofs, HSG D (1S, 2S)
2.625	55.0	Woods, Good, HSG B (1S, 2S)
0.011	77.0	Woods, Good, HSG D (1S)
3.789	**59.6**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.509	HSG B	1S, 2S
0.000	HSG C	
0.279	HSG D	1S, 2S
0.000	Other	
3.789		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 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 1S: Overland Flow to Runoff Area=55,615 sf 0.06% Impervious Runoff Depth>0.19"
Flow Length=204' Tc=12.5 min CN=55.3 Runoff=0.08 cfs 0.02 af

Subcatchment 2S: Overland Flow Runoff Area=109,425 sf 10.92% Impervious Runoff Depth>0.37"
Flow Length=336' Tc=17.4 min CN=61.7 Runoff=0.47 cfs 0.08 af

Link A: Abutting Property Inflow=0.08 cfs 0.02 af
Primary=0.08 cfs 0.02 af

Link B: Central Street Inflow=0.47 cfs 0.08 af
Primary=0.47 cfs 0.08 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.10 af Average Runoff Depth = 0.31"
92.74% Pervious = 3.514 ac 7.26% Impervious = 0.275 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 0.08 cfs @ 12.48 hrs, Volume= 0.02 af, Depth> 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
54,171	55.0	Woods, Good, HSG B
481	77.0	Woods, Good, HSG D
927	61.0	>75% Grass cover, Good, HSG B
36	98.0	Roofs, HSG D
55,615	55.3	Weighted Average
55,579	55.3	99.94% Pervious Area
36	98.0	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.3	154	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.5	204	Total			

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.47 cfs @ 12.38 hrs, Volume= 0.08 af, Depth> 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
60,157	55.0	Woods, Good, HSG B
298	98.0	Roofs, HSG B
2,890	98.0	Roofs, HSG D
8,761	98.0	Paved parking, HSG D
37,319	61.0	>75% Grass cover, Good, HSG B
109,425	61.7	Weighted Average
97,476	57.3	89.08% Pervious Area
11,949	98.0	10.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.1	263	0.0460	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	23	0.0869	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	336	Total			

Summary for Link A: Abutting Property

Inflow Area = 1.277 ac, 0.06% Impervious, Inflow Depth > 0.19" for 2-YEAR event
Inflow = 0.08 cfs @ 12.48 hrs, Volume= 0.02 af
Primary = 0.08 cfs @ 12.48 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.0 min

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

Summary for Link B: Central Street

Inflow Area = 2.512 ac, 10.92% Impervious, Inflow Depth > 0.37" for 2-YEAR event
Inflow = 0.47 cfs @ 12.38 hrs, Volume= 0.08 af
Primary = 0.47 cfs @ 12.38 hrs, Volume= 0.08 af, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 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 1S: Overland Flow to Runoff Area=55,615 sf 0.06% Impervious Runoff Depth>2.71"
Flow Length=204' Tc=12.5 min AMC Adjusted CN=98.0 Runoff=2.97 cfs 0.29 af

Subcatchment 2S: Overland Flow Runoff Area=109,425 sf 10.92% Impervious Runoff Depth>2.71"
Flow Length=336' Tc=17.4 min AMC Adjusted CN=98.0 Runoff=5.17 cfs 0.57 af

Link A: Abutting Property Inflow=2.97 cfs 0.29 af
Primary=2.97 cfs 0.29 af

Link B: Central Street Inflow=5.17 cfs 0.57 af
Primary=5.17 cfs 0.57 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.86 af Average Runoff Depth = 2.71"
92.74% Pervious = 3.514 ac 7.26% Impervious = 0.275 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 2.97 cfs @ 12.16 hrs, Volume= 0.29 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
54,171	55.0		Woods, Good, HSG B
481	77.0		Woods, Good, HSG D
927	61.0		>75% Grass cover, Good, HSG B
36	98.0		Roofs, HSG D
55,615	55.3	98.0	Weighted Average, AMC Adjusted
55,579	55.3	98.0	99.94% Pervious Area, AMC Adjusted
36	98.0	98.0	0.06% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.3	154	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.5	204	Total			

Summary for Subcatchment 2S: Overland Flow

Runoff = 5.17 cfs @ 12.23 hrs, Volume= 0.57 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
60,157	55.0		Woods, Good, HSG B
298	98.0		Roofs, HSG B
2,890	98.0		Roofs, HSG D
8,761	98.0		Paved parking, HSG D
37,319	61.0		>75% Grass cover, Good, HSG B
109,425	61.7	98.0	Weighted Average, AMC Adjusted
97,476	57.3	98.0	89.08% Pervious Area, AMC Adjusted
11,949	98.0	98.0	10.92% Impervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.1	263	0.0460	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	23	0.0869	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	336	Total			

Summary for Link A: Abutting Property

Inflow Area = 1.277 ac, 0.06% Impervious, Inflow Depth > 2.71" for 2-YR Frozen event
Inflow = 2.97 cfs @ 12.16 hrs, Volume= 0.29 af
Primary = 2.97 cfs @ 12.16 hrs, Volume= 0.29 af, Atten= 0%, Lag= 0.0 min

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

Summary for Link B: Central Street

Inflow Area = 2.512 ac, 10.92% Impervious, Inflow Depth > 2.71" for 2-YR Frozen event
Inflow = 5.17 cfs @ 12.23 hrs, Volume= 0.57 af
Primary = 5.17 cfs @ 12.23 hrs, Volume= 0.57 af, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 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 1S: Overland Flow to Runoff Area=55,615 sf 0.06% Impervious Runoff Depth>0.74"
Flow Length=204' Tc=12.5 min CN=55.3 Runoff=0.64 cfs 0.08 af

Subcatchment 2S: Overland Flow Runoff Area=109,425 sf 10.92% Impervious Runoff Depth>1.10"
Flow Length=336' Tc=17.4 min CN=61.7 Runoff=2.02 cfs 0.23 af

Link A: Abutting Property Inflow=0.64 cfs 0.08 af
Primary=0.64 cfs 0.08 af

Link B: Central Street Inflow=2.02 cfs 0.23 af
Primary=2.02 cfs 0.23 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.31 af Average Runoff Depth = 0.98"
92.74% Pervious = 3.514 ac 7.26% Impervious = 0.275 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 0.64 cfs @ 12.22 hrs, Volume= 0.08 af, Depth> 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
54,171	55.0	Woods, Good, HSG B
481	77.0	Woods, Good, HSG D
927	61.0	>75% Grass cover, Good, HSG B
36	98.0	Roofs, HSG D
55,615	55.3	Weighted Average
55,579	55.3	99.94% Pervious Area
36	98.0	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.3	154	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.5	204	Total			

Summary for Subcatchment 2S: Overland Flow

Runoff = 2.02 cfs @ 12.27 hrs, Volume= 0.23 af, Depth> 1.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
60,157	55.0	Woods, Good, HSG B
298	98.0	Roofs, HSG B
2,890	98.0	Roofs, HSG D
8,761	98.0	Paved parking, HSG D
37,319	61.0	>75% Grass cover, Good, HSG B
109,425	61.7	Weighted Average
97,476	57.3	89.08% Pervious Area
11,949	98.0	10.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.1	263	0.0460	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	23	0.0869	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	336	Total			

Summary for Link A: Abutting Property

Inflow Area = 1.277 ac, 0.06% Impervious, Inflow Depth > 0.74" for 10-YEAR event
Inflow = 0.64 cfs @ 12.22 hrs, Volume= 0.08 af
Primary = 0.64 cfs @ 12.22 hrs, Volume= 0.08 af, Atten= 0%, Lag= 0.0 min

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

Summary for Link B: Central Street

Inflow Area = 2.512 ac, 10.92% Impervious, Inflow Depth > 1.10" for 10-YEAR event
Inflow = 2.02 cfs @ 12.27 hrs, Volume= 0.23 af
Primary = 2.02 cfs @ 12.27 hrs, Volume= 0.23 af, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 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 1S: Overland Flow to Runoff Area=55,615 sf 0.06% Impervious Runoff Depth>1.34"
Flow Length=204' Tc=12.5 min CN=55.3 Runoff=1.40 cfs 0.14 af

Subcatchment 2S: Overland Flow Runoff Area=109,425 sf 10.92% Impervious Runoff Depth>1.83"
Flow Length=336' Tc=17.4 min CN=61.7 Runoff=3.62 cfs 0.38 af

Link A: Abutting Property Inflow=1.40 cfs 0.14 af
Primary=1.40 cfs 0.14 af

Link B: Central Street Inflow=3.62 cfs 0.38 af
Primary=3.62 cfs 0.38 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.52 af Average Runoff Depth = 1.66"
92.74% Pervious = 3.514 ac 7.26% Impervious = 0.275 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 1.40 cfs @ 12.20 hrs, Volume= 0.14 af, Depth> 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
54,171	55.0	Woods, Good, HSG B
481	77.0	Woods, Good, HSG D
927	61.0	>75% Grass cover, Good, HSG B
36	98.0	Roofs, HSG D
55,615	55.3	Weighted Average
55,579	55.3	99.94% Pervious Area
36	98.0	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.3	154	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.5	204	Total			

Summary for Subcatchment 2S: Overland Flow

Runoff = 3.62 cfs @ 12.26 hrs, Volume= 0.38 af, Depth> 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
60,157	55.0	Woods, Good, HSG B
298	98.0	Roofs, HSG B
2,890	98.0	Roofs, HSG D
8,761	98.0	Paved parking, HSG D
37,319	61.0	>75% Grass cover, Good, HSG B
109,425	61.7	Weighted Average
97,476	57.3	89.08% Pervious Area
11,949	98.0	10.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.1	263	0.0460	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	23	0.0869	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	336	Total			

Summary for Link A: Abutting Property

Inflow Area = 1.277 ac, 0.06% Impervious, Inflow Depth > 1.34" for 25-YEAR event
Inflow = 1.40 cfs @ 12.20 hrs, Volume= 0.14 af
Primary = 1.40 cfs @ 12.20 hrs, Volume= 0.14 af, Atten= 0%, Lag= 0.0 min

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

Summary for Link B: Central Street

Inflow Area = 2.512 ac, 10.92% Impervious, Inflow Depth > 1.83" for 25-YEAR event
Inflow = 3.62 cfs @ 12.26 hrs, Volume= 0.38 af
Primary = 3.62 cfs @ 12.26 hrs, Volume= 0.38 af, Atten= 0%, Lag= 0.0 min

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

Time span=0.00-24.00 hrs, dt=0.03 hrs, 801 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 1S: Overland Flow to Runoff Area=55,615 sf 0.06% Impervious Runoff Depth>1.99"
Flow Length=204' Tc=12.5 min CN=55.3 Runoff=2.23 cfs 0.21 af

Subcatchment 2S: Overland Flow Runoff Area=109,425 sf 10.92% Impervious Runoff Depth>2.58"
Flow Length=336' Tc=17.4 min CN=61.7 Runoff=5.28 cfs 0.54 af

Link A: Abutting Property Inflow=2.23 cfs 0.21 af
Primary=2.23 cfs 0.21 af

Link B: Central Street Inflow=5.28 cfs 0.54 af
Primary=5.28 cfs 0.54 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.75 af Average Runoff Depth = 2.38"
92.74% Pervious = 3.514 ac 7.26% Impervious = 0.275 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 2.23 cfs @ 12.19 hrs, Volume= 0.21 af, Depth> 1.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
54,171	55.0	Woods, Good, HSG B
481	77.0	Woods, Good, HSG D
927	61.0	>75% Grass cover, Good, HSG B
36	98.0	Roofs, HSG D
55,615	55.3	Weighted Average
55,579	55.3	99.94% Pervious Area
36	98.0	0.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.1	50	0.0300	0.07		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.3	154	0.1500	1.94		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
12.5	204	Total			

Summary for Subcatchment 2S: Overland Flow

Runoff = 5.28 cfs @ 12.25 hrs, Volume= 0.54 af, Depth> 2.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.03 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
60,157	55.0	Woods, Good, HSG B
298	98.0	Roofs, HSG B
2,890	98.0	Roofs, HSG D
8,761	98.0	Paved parking, HSG D
37,319	61.0	>75% Grass cover, Good, HSG B
109,425	61.7	Weighted Average
97,476	57.3	89.08% Pervious Area
11,949	98.0	10.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	50	0.0200	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.1	263	0.0460	1.07		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.2	23	0.0869	2.06		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
17.4	336	Total			

Summary for Link A: Abutting Property

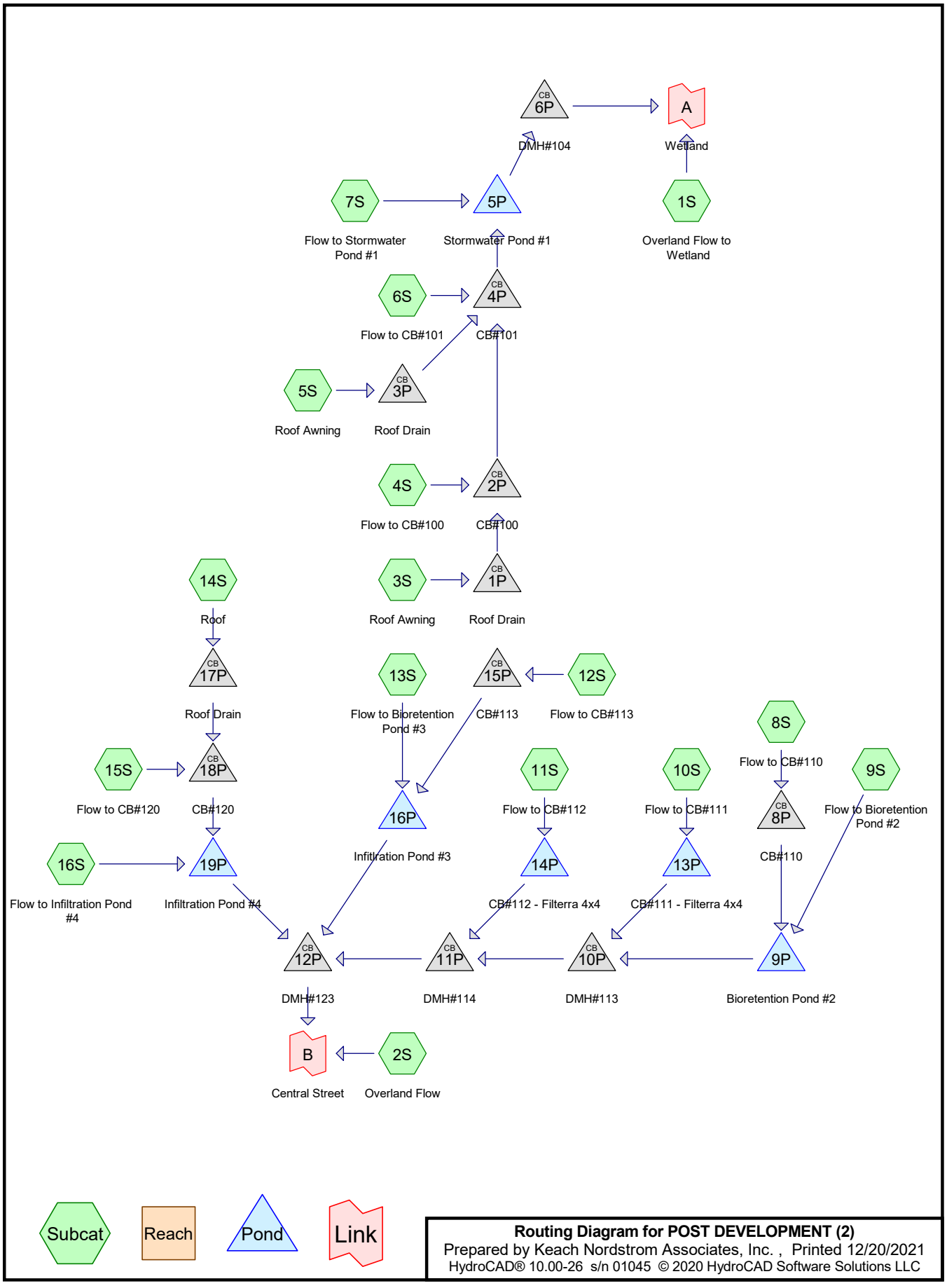
Inflow Area = 1.277 ac, 0.06% Impervious, Inflow Depth > 1.99" for 50-YEAR event
Inflow = 2.23 cfs @ 12.19 hrs, Volume= 0.21 af
Primary = 2.23 cfs @ 12.19 hrs, Volume= 0.21 af, Atten= 0%, Lag= 0.0 min

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

Summary for Link B: Central Street

Inflow Area = 2.512 ac, 10.92% Impervious, Inflow Depth > 2.58" for 50-YEAR event
Inflow = 5.28 cfs @ 12.25 hrs, Volume= 0.54 af
Primary = 5.28 cfs @ 12.25 hrs, Volume= 0.54 af, Atten= 0%, Lag= 0.0 min

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



Routing Diagram for POST DEVELOPMENT (2)

Prepared by Keach Nordstrom Associates, Inc. , Printed 12/20/2021

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.507	61.0	>75% Grass cover, Good, HSG B (1S, 2S, 4S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 15S, 16S)
0.091	80.0	>75% Grass cover, Good, HSG D (2S, 4S, 16S)
0.553	98.0	Paved parking, HSG B (2S, 4S, 6S, 8S, 10S, 11S, 12S, 15S)
0.174	98.0	Paved parking, HSG D (2S, 4S, 8S, 10S, 11S, 15S)
0.937	98.0	Roofs, HSG B (3S, 5S, 14S)
0.003	98.0	Roofs, HSG D (14S)
0.513	55.0	Woods, Good, HSG B (1S, 2S, 4S, 6S, 7S, 9S, 16S)
0.011	77.0	Woods, Good, HSG D (1S)
3.789	**77.0**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
3.510	HSG B	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S, 15S, 16S
0.000	HSG C	
0.279	HSG D	1S, 2S, 4S, 8S, 10S, 11S, 14S, 15S, 16S
0.000	Other	
3.789		**TOTAL AREA**

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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 1S: Overland Flow to Runoff Area=20,345 sf 0.00% Impervious Runoff Depth>0.22"
Tc=6.0 min CN=56.7 Runoff=0.04 cfs 0.01 af

Subcatchment 2S: Overland Flow Runoff Area=8,448 sf 13.75% Impervious Runoff Depth>0.55"
Tc=6.0 min CN=66.7 Runoff=0.10 cfs 0.01 af

Subcatchment 3S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=0.05 cfs 0.00 af

Subcatchment 4S: Flow to CB#100 Runoff Area=10,721 sf 65.43% Impervious Runoff Depth>1.70"
Tc=6.0 min CN=87.1 Runoff=0.49 cfs 0.03 af

Subcatchment 5S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=0.05 cfs 0.00 af

Subcatchment 6S: Flow to CB#101 Runoff Area=7,072 sf 68.89% Impervious Runoff Depth>1.64"
Tc=6.0 min CN=86.3 Runoff=0.31 cfs 0.02 af

Subcatchment 7S: Flow to Stormwater Runoff Area=23,453 sf 0.00% Impervious Runoff Depth>0.33"
Flow Length=142' Slope=0.0140 '/' Tc=8.7 min CN=60.5 Runoff=0.09 cfs 0.01 af

Subcatchment 8S: Flow to CB#110 Runoff Area=8,827 sf 75.87% Impervious Runoff Depth>1.86"
Tc=6.0 min CN=89.1 Runoff=0.44 cfs 0.03 af

Subcatchment 9S: Flow to Bioretention Runoff Area=6,113 sf 0.00% Impervious Runoff Depth>0.32"
Tc=6.0 min CN=60.1 Runoff=0.02 cfs 0.00 af

Subcatchment 10S: Flow to CB#111 Runoff Area=2,406 sf 77.93% Impervious Runoff Depth>1.92"
Tc=6.0 min CN=89.8 Runoff=0.12 cfs 0.01 af

Subcatchment 11S: Flow to CB#112 Runoff Area=2,938 sf 58.68% Impervious Runoff Depth>1.39"
Tc=6.0 min CN=82.7 Runoff=0.11 cfs 0.01 af

Subcatchment 12S: Flow to CB#113 Runoff Area=4,124 sf 76.60% Impervious Runoff Depth>1.88"
Tc=6.0 min CN=89.3 Runoff=0.21 cfs 0.01 af

Subcatchment 13S: Flow to Bioretention Runoff Area=3,336 sf 0.00% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=61.0 Runoff=0.02 cfs 0.00 af

Subcatchment 14S: Roof Runoff Area=39,522 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=2.59 cfs 0.21 af

Subcatchment 15S: Flow to CB#120 Runoff Area=6,013 sf 85.83% Impervious Runoff Depth>2.18"
Tc=6.0 min CN=92.8 Runoff=0.34 cfs 0.03 af

Subcatchment 16S: Flow to Infiltration Runoff Area=20,315 sf 0.00% Impervious Runoff Depth>0.39"
Flow Length=184' Slope=0.0109 '/' Tc=10.7 min CN=62.5 Runoff=0.11 cfs 0.02 af

Pond 1P: Roof Drain Peak Elev=184.23' Inflow=0.05 cfs 0.00 af
6.0" Round Culvert n=0.013 L=45.0' S=0.0200 '/' Outflow=0.05 cfs 0.00 af

Pond 2P: CB#100 Peak Elev=183.07' Inflow=0.54 cfs 0.04 af
15.0" Round Culvert n=0.013 L=90.0' S=0.0100 '/' Outflow=0.54 cfs 0.04 af

Pond 3P: Roof Drain Peak Elev=183.54' Inflow=0.05 cfs 0.00 af
6.0" Round Culvert n=0.013 L=37.0' S=0.0300 '/' Outflow=0.05 cfs 0.00 af

Pond 4P: CB#101 Peak Elev=182.42' Inflow=0.90 cfs 0.06 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=0.90 cfs 0.06 af

Pond 5P: Stormwater Pond #1 Peak Elev=182.42' Storage=12,960 cf Inflow=0.94 cfs 0.08 af
Outflow=0.04 cfs 0.04 af

Pond 6P: DMH#104 Peak Elev=181.56' Inflow=0.04 cfs 0.04 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0055 '/' Outflow=0.04 cfs 0.04 af

Pond 8P: CB#110 Peak Elev=176.09' Inflow=0.44 cfs 0.03 af
12.0" Round Culvert n=0.013 L=13.0' S=0.0200 '/' Outflow=0.44 cfs 0.03 af

Pond 9P: Bioretention Pond #2 Peak Elev=175.87' Storage=339 cf Inflow=0.46 cfs 0.04 af
Outflow=0.15 cfs 0.04 af

Pond 10P: DMH#113 Peak Elev=172.17' Inflow=0.24 cfs 0.04 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0100 '/' Outflow=0.24 cfs 0.04 af

Pond 11P: DMH#114 Peak Elev=171.78' Inflow=0.34 cfs 0.05 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0100 '/' Outflow=0.34 cfs 0.05 af

Pond 12P: DMH#123 Peak Elev=171.36' Inflow=0.34 cfs 0.05 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.34 cfs 0.05 af

Pond 13P: CB#111 - Filterra 4x4 Peak Elev=175.01' Storage=13 cf Inflow=0.12 cfs 0.01 af
Outflow=0.14 cfs 0.01 af

Pond 14P: CB#112 - Filterra 4x4 Peak Elev=174.99' Storage=13 cf Inflow=0.11 cfs 0.01 af
Outflow=0.11 cfs 0.01 af

Pond 15P: CB#113 Peak Elev=178.39' Inflow=0.21 cfs 0.01 af
12.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=0.21 cfs 0.01 af

Pond 16P: Infitlration Pond #3 Peak Elev=178.27' Storage=174 cf Inflow=0.22 cfs 0.02 af
Discarded=0.05 cfs 0.02 af Primary=0.00 cfs 0.00 af Outflow=0.05 cfs 0.02 af

Pond 17P: Roof Drain Peak Elev=184.24' Inflow=2.59 cfs 0.21 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0500 '/' Outflow=2.59 cfs 0.21 af

Pond 18P: CB#120 Peak Elev=181.56' Inflow=2.93 cfs 0.23 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0400 '/' Outflow=2.93 cfs 0.23 af

Pond 19P: Infiltration Pond #4 Peak Elev=181.35' Storage=4,115 cf Inflow=2.98 cfs 0.25 af
Discarded=0.26 cfs 0.25 af Primary=0.00 cfs 0.00 af Outflow=0.26 cfs 0.25 af

Link A: Wetland Inflow=0.07 cfs 0.05 af
Primary=0.07 cfs 0.05 af

Link B: Central Street Inflow=0.44 cfs 0.06 af
Primary=0.44 cfs 0.06 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.41 af Average Runoff Depth = 1.30"
56.01% Pervious = 2.122 ac 43.99% Impervious = 1.667 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 0.04 cfs @ 12.34 hrs, Volume= 0.01 af, Depth> 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
480	77.0	Woods, Good, HSG D
16,003	55.0	Woods, Good, HSG B
3,862	61.0	>75% Grass cover, Good, HSG B
20,345	56.7	Weighted Average
20,345	56.7	100.00% Pervious Area

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

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.10 cfs @ 12.11 hrs, Volume= 0.01 af, Depth> 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
246	55.0	Woods, Good, HSG B
632	98.0	Paved parking, HSG B
530	98.0	Paved parking, HSG D
6,698	61.0	>75% Grass cover, Good, HSG B
342	80.0	>75% Grass cover, Good, HSG D
8,448	66.7	Weighted Average
7,286	61.7	86.25% Pervious Area
1,162	98.0	13.75% Impervious Area

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

Summary for Subcatchment 3S: Roof Awning

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 4S: Flow to CB#100

Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
2,792	98.0	Paved parking, HSG B
4,223	98.0	Paved parking, HSG D
2,020	61.0	>75% Grass cover, Good, HSG B
1,209	80.0	>75% Grass cover, Good, HSG D
477	55.0	Woods, Good, HSG B
10,721	87.1	Weighted Average
3,706	66.4	34.57% Pervious Area
7,015	98.0	65.43% Impervious Area

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

Summary for Subcatchment 5S: Roof Awning

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 6S: Flow to CB#101

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.02 af, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
2,027	61.0	>75% Grass cover, Good, HSG B
173	55.0	Woods, Good, HSG B
4,872	98.0	Paved parking, HSG B
7,072	86.3	Weighted Average
2,200	60.5	31.11% Pervious Area
4,872	98.0	68.89% Impervious Area

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

Summary for Subcatchment 7S: Flow to Stormwater Pond #1

Runoff = 0.09 cfs @ 12.20 hrs, Volume= 0.01 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
2,021	55.0	Woods, Good, HSG B
21,432	61.0	>75% Grass cover, Good, HSG B
23,453	60.5	Weighted Average
23,453	60.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
1.9	92	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.7	142	Total			

Summary for Subcatchment 8S: Flow to CB#110

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
2,130	61.0	>75% Grass cover, Good, HSG B
5,476	98.0	Paved parking, HSG B
1,221	98.0	Paved parking, HSG D
8,827	89.1	Weighted Average
2,130	61.0	24.13% Pervious Area
6,697	98.0	75.87% Impervious Area

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

Summary for Subcatchment 9S: Flow to Bioretention Pond #2

Runoff = 0.02 cfs @ 12.15 hrs, Volume= 0.00 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
932	55.0	Woods, Good, HSG B
5,181	61.0	>75% Grass cover, Good, HSG B
6,113	60.1	Weighted Average
6,113	60.1	100.00% Pervious Area

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

Summary for Subcatchment 10S: Flow to CB#111

Runoff = 0.12 cfs @ 12.09 hrs, Volume= 0.01 af, Depth> 1.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
531	61.0	>75% Grass cover, Good, HSG B
917	98.0	Paved parking, HSG B
958	98.0	Paved parking, HSG D
2,406	89.8	Weighted Average
531	61.0	22.07% Pervious Area
1,875	98.0	77.93% Impervious Area

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

Summary for Subcatchment 11S: Flow to CB#112

Runoff = 0.11 cfs @ 12.09 hrs, Volume= 0.01 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
1,214	61.0	>75% Grass cover, Good, HSG B
1,704	98.0	Paved parking, HSG B
20	98.0	Paved parking, HSG D
2,938	82.7	Weighted Average
1,214	61.0	41.32% Pervious Area
1,724	98.0	58.68% Impervious Area

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

Summary for Subcatchment 12S: Flow to CB#113

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af, Depth> 1.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
965	61.0	>75% Grass cover, Good, HSG B
3,159	98.0	Paved parking, HSG B
4,124	89.3	Weighted Average
965	61.0	23.40% Pervious Area
3,159	98.0	76.60% Impervious Area

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

Summary for Subcatchment 13S: Flow to Bioretention Pond #3

Runoff = 0.02 cfs @ 12.14 hrs, Volume= 0.00 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
3,336	61.0	>75% Grass cover, Good, HSG B
3,336	61.0	100.00% Pervious Area

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

Summary for Subcatchment 14S: Roof

Runoff = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
39,396	98.0	Roofs, HSG B
126	98.0	Roofs, HSG D
39,522	98.0	Weighted Average
39,522	98.0	100.00% Impervious Area

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

Summary for Subcatchment 15S: Flow to CB#120

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
639	98.0	Paved parking, HSG D
4,522	98.0	Paved parking, HSG B
852	61.0	>75% Grass cover, Good, HSG B
6,013	92.8	Weighted Average
852	61.0	14.17% Pervious Area
5,161	98.0	85.83% Impervious Area

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

Summary for Subcatchment 16S: Flow to Infiltration Pond #4

Runoff = 0.11 cfs @ 12.21 hrs, Volume= 0.02 af, Depth> 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YEAR Rainfall=2.95"

Area (sf)	CN	Description
2,499	55.0	Woods, Good, HSG B
15,393	61.0	>75% Grass cover, Good, HSG B
2,423	80.0	>75% Grass cover, Good, HSG D
20,315	62.5	Weighted Average
20,315	62.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0109	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
3.1	134	0.0109	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	184	Total			

Summary for Pond 1P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YEAR event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.23' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.10'	**6.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.10' / 183.20' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=184.22' TW=183.07' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.05 cfs @ 1.20 fps)

Summary for Pond 2P: CB#100

Inflow Area = 0.262 ac, 67.57% Impervious, Inflow Depth > 1.76" for 2-YEAR event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.04 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.09 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.07' @ 12.09 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.70'	**15.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.70' / 181.80' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=183.07' TW=182.36' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.53 cfs @ 2.64 fps)

Summary for Pond 3P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YEAR event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.54' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.41'	**6.0" Round Culvert** L= 37.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.41' / 182.30' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=183.53' TW=182.36' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.05 cfs @ 1.20 fps)

Summary for Pond 4P: CB#101

Inflow Area = 0.441 ac, 69.25% Impervious, Inflow Depth > 1.75" for 2-YEAR event
Inflow = 0.90 cfs @ 12.09 hrs, Volume= 0.06 af
Outflow = 0.90 cfs @ 12.09 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.0 min
Primary = 0.90 cfs @ 12.09 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.42' @ 16.56 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.70'	**15.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.70' / 181.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.86 cfs @ 12.09 hrs HW=182.36' TW=182.17' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.86 cfs @ 1.89 fps)

Summary for Pond 5P: Stormwater Pond #1

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 0.97" for 2-YEAR event
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 0.08 af
Outflow = 0.04 cfs @ 16.54 hrs, Volume= 0.04 af, Atten= 96%, Lag= 266.7 min
Primary = 0.04 cfs @ 16.54 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Starting Elev= 182.00' Surf.Area= 5,137 sf Storage= 10,729 cf
Peak Elev= 182.42' @ 16.54 hrs Surf.Area= 5,527 sf Storage= 12,960 cf (2,231 cf above start)
Flood Elev= 185.00' Surf.Area= 7,127 sf Storage= 22,939 cf (12,210 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 241.5 min (1,078.0 - 836.5)

Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	22,939 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)
179.00	2,168	252.3	0	0	2,168
180.00	3,043	312.6	2,593	2,593	4,893
181.00	4,069	357.9	3,544	6,137	7,334
182.00	5,137	339.8	4,593	10,729	8,397
184.00	7,127	365.6	12,210	22,939	10,008

Device	Routing	Invert	Outlet Devices
#1	Primary	181.95'	**12.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.95' / 181.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	182.00'	**1.0" W x 2.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	182.84'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	183.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.04 cfs @ 16.54 hrs HW=182.42' TW=181.56' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.04 cfs of 0.64 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 2.78 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 6P: DMH#104

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 0.45" for 2-YEAR event
Inflow = 0.04 cfs @ 16.54 hrs, Volume= 0.04 af
Outflow = 0.04 cfs @ 16.54 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min
Primary = 0.04 cfs @ 16.54 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 181.56' @ 16.54 hrs
Flood Elev= 186.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.45'	**12.0" Round Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.45' / 180.85' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.04 cfs @ 16.54 hrs HW=181.56' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.04 cfs @ 1.20 fps)

Summary for Pond 8P: CB#110

Inflow Area = 0.203 ac, 75.87% Impervious, Inflow Depth > 1.86" for 2-YEAR event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.03 af
Outflow = 0.44 cfs @ 12.09 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.0 min
Primary = 0.44 cfs @ 12.09 hrs, Volume= 0.03 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.09' @ 12.09 hrs
Flood Elev= 180.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	175.76'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.76' / 175.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.44 cfs @ 12.09 hrs HW=176.09' TW=175.58' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.44 cfs @ 1.95 fps)

Summary for Pond 9P: Bioretention Pond #2

Inflow Area = 0.343 ac, 44.83% Impervious, Inflow Depth > 1.23" for 2-YEAR event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.04 af
Outflow = 0.15 cfs @ 12.44 hrs, Volume= 0.04 af, Atten= 68%, Lag= 20.8 min
Primary = 0.15 cfs @ 12.44 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.87' @ 12.44 hrs Surf.Area= 628 sf Storage= 339 cf
Flood Elev= 178.10' Surf.Area= 1,676 sf Storage= 2,684 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 16.6 min (842.4 - 825.8)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	2,684 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)
175.00	193	87.3	0	0	193
176.00	714	149.7	426	426	1,376
177.00	1,080	196.1	891	1,317	2,664
178.00	1,676	200.8	1,367	2,684	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**10.000 in/hr Exfiltration over Surface area**
#2	Device 1	172.50'	**12.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 171.96' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	176.20'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	176.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.15 cfs @ 12.44 hrs HW=175.87' TW=172.15' (Dynamic Tailwater)
└─**1=Exfiltration** (Exfiltration Controls 0.15 cfs)
  └─**2=Culvert** (Passes 0.15 cfs of 3.53 cfs potential flow)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: DMH#113

Inflow Area = 0.398 ac, 49.42% Impervious, Inflow Depth > 1.32" for 2-YEAR event
Inflow = 0.24 cfs @ 12.08 hrs, Volume= 0.04 af
Outflow = 0.24 cfs @ 12.08 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min
Primary = 0.24 cfs @ 12.08 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 172.17' @ 12.12 hrs
Flood Elev= 176.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.92'	**12.0" Round Culvert** L= 39.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.92' / 171.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.23 cfs @ 12.08 hrs HW=172.17' TW=171.75' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.23 cfs @ 2.29 fps)

Summary for Pond 11P: DMH#114

Inflow Area = 0.466 ac, 50.76% Impervious, Inflow Depth > 1.33" for 2-YEAR event
Inflow = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af
Outflow = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 171.78' @ 12.12 hrs
Flood Elev= 177.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.48'	**12.0" Round Culvert** L= 38.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.48' / 171.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.12 hrs HW=171.78' TW=171.36' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.34 cfs @ 2.54 fps)

Summary for Pond 12P: DMH#123

Inflow Area = 2.149 ac, 62.12% Impervious, Inflow Depth > 0.29" for 2-YEAR event
Inflow = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af
Outflow = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min
Primary = 0.34 cfs @ 12.12 hrs, Volume= 0.05 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 171.36' @ 12.12 hrs
Flood Elev= 176.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.05'	**12.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.05' / 170.85' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.12 hrs HW=171.36' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.34 cfs @ 2.48 fps)

Summary for Pond 13P: CB#111 - Filterra 4x4

Inflow Area = 0.055 ac, 77.93% Impervious, Inflow Depth > 1.92" for 2-YEAR event
Inflow = 0.12 cfs @ 12.09 hrs, Volume= 0.01 af
Outflow = 0.14 cfs @ 12.09 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.14 cfs @ 12.09 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.01' @ 12.08 hrs Surf.Area= 16 sf Storage= 13 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (811.0 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.97' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.13 cfs @ 12.09 hrs HW=175.00' TW=172.17' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.13 cfs of 5.96 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.08 cfs @ 0.71 fps)

Summary for Pond 14P: CB#112 - Filterra 4x4

Inflow Area = 0.067 ac, 58.68% Impervious, Inflow Depth > 1.39" for 2-YEAR event
Inflow = 0.11 cfs @ 12.09 hrs, Volume= 0.01 af
Outflow = 0.11 cfs @ 12.11 hrs, Volume= 0.01 af, Atten= 1%, Lag= 1.5 min
Primary = 0.11 cfs @ 12.11 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 174.99' @ 12.11 hrs Surf.Area= 16 sf Storage= 13 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.0 min (838.1 - 837.1)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.72' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.11 cfs @ 12.11 hrs HW=174.99' TW=171.78' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.11 cfs of 5.94 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.05 cfs @ 0.63 fps)

Summary for Pond 15P: CB#113

Inflow Area = 0.095 ac, 76.60% Impervious, Inflow Depth > 1.88" for 2-YEAR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.39' @ 12.09 hrs
Flood Elev= 181.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.15'	**12.0" Round Culvert** L= 15.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.15' / 178.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=178.39' TW=178.12' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.21 cfs @ 2.15 fps)

Summary for Pond 16P: Infitlration Pond #3

Inflow Area = 0.171 ac, 42.35% Impervious, Inflow Depth > 1.19" for 2-YEAR event
Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.02 af
Outflow = 0.05 cfs @ 12.53 hrs, Volume= 0.02 af, Atten= 78%, Lag= 26.4 min
Discarded = 0.05 cfs @ 12.53 hrs, Volume= 0.02 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.27' @ 12.53 hrs Surf.Area= 704 sf Storage= 174 cf
Flood Elev= 180.00' Surf.Area= 1,583 sf Storage= 2,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 21.0 min (847.9 - 826.9)

Volume	Invert	Avail.Storage	Storage Description
#1	178.00'	2,141 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)
178.00	585	143.3	0	0	585
179.00	1,078	186.5	819	819	1,731
180.00	1,583	162.2	1,322	2,141	2,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	172.10'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.10' / 171.45' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	178.50'	**6.0" Vert. Orifice/Grate** C= 0.600

#4	Device 2	179.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.05 cfs @ 12.53 hrs HW=178.27' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.05 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=178.00' TW=171.05' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 8.79 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Roof Drain

Inflow Area = 0.907 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YEAR event
Inflow = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af
Outflow = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af, Atten= 0%, Lag= 0.0 min
Primary = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.24' @ 12.08 hrs
Flood Elev= 186.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.43'	**15.0" Round Culvert** L= 53.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.43' / 180.78' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.58 cfs @ 12.08 hrs HW=184.24' TW=181.55' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.58 cfs @ 3.06 fps)

Summary for Pond 18P: CB#120

Inflow Area = 1.045 ac, 98.13% Impervious, Inflow Depth > 2.65" for 2-YEAR event
Inflow = 2.93 cfs @ 12.08 hrs, Volume= 0.23 af
Outflow = 2.93 cfs @ 12.08 hrs, Volume= 0.23 af, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 12.08 hrs, Volume= 0.23 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 181.56' @ 12.08 hrs
Flood Elev= 185.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.68'	**15.0" Round Culvert** L= 17.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.68' / 180.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.92 cfs @ 12.08 hrs HW=181.55' TW=180.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.92 cfs @ 3.18 fps)

Summary for Pond 19P: Infiltration Pond #4

Inflow Area = 1.512 ac, 67.86% Impervious, Inflow Depth > 1.95" for 2-YEAR event
Inflow = 2.98 cfs @ 12.09 hrs, Volume= 0.25 af
Outflow = 0.26 cfs @ 13.07 hrs, Volume= 0.25 af, Atten= 91%, Lag= 59.1 min
Discarded = 0.26 cfs @ 13.07 hrs, Volume= 0.25 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 181.35' @ 13.07 hrs Surf.Area= 3,759 sf Storage= 4,115 cf
Flood Elev= 184.25' Surf.Area= 6,860 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 135.9 min (907.5 - 771.6)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	18,117 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)
180.00	2,396	320.8	0	0	2,396
182.00	4,527	397.5	6,811	6,811	6,839
184.00	6,860	378.5	11,306	18,117	8,245

Device	Routing	Invert	Outlet Devices
#1	Discarded	180.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	175.75'	**12.0" Round Culvert** L= 55.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 173.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	181.60'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	182.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	183.85'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.26 cfs @ 13.07 hrs HW=181.35' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.26 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=180.00' TW=171.05' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.00 cfs of 7.32 cfs potential flow)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link A: Wetland

Inflow Area = 1.446 ac, 21.11% Impervious, Inflow Depth > 0.38" for 2-YEAR event
Inflow = 0.07 cfs @ 12.36 hrs, Volume= 0.05 af
Primary = 0.07 cfs @ 12.36 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link B: Central Street

Inflow Area = 2.343 ac, 58.11% Impervious, Inflow Depth > 0.31" for 2-YEAR event
Inflow = 0.44 cfs @ 12.12 hrs, Volume= 0.06 af
Primary = 0.44 cfs @ 12.12 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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 1S: Overland Flow to Runoff Area=20,345 sf 0.00% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=1.33 cfs 0.11 af

Subcatchment 2S: Overland Flow Runoff Area=8,448 sf 13.75% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.55 cfs 0.04 af

Subcatchment 3S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=0.05 cfs 0.00 af

Subcatchment 4S: Flow to CB#100 Runoff Area=10,721 sf 65.43% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.70 cfs 0.06 af

Subcatchment 5S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=0.05 cfs 0.00 af

Subcatchment 6S: Flow to CB#101 Runoff Area=7,072 sf 68.89% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.46 cfs 0.04 af

Subcatchment 7S: Flow to Stormwater Runoff Area=23,453 sf 0.00% Impervious Runoff Depth>2.72"
Flow Length=142' Slope=0.0140 '/' Tc=8.7 min AMC Adjusted CN=98.0 Runoff=1.40 cfs 0.12 af

Subcatchment 8S: Flow to CB#110 Runoff Area=8,827 sf 75.87% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.58 cfs 0.05 af

Subcatchment 9S: Flow to Bioretention Runoff Area=6,113 sf 0.00% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.40 cfs 0.03 af

Subcatchment 10S: Flow to CB#111 Runoff Area=2,406 sf 77.93% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.16 cfs 0.01 af

Subcatchment 11S: Flow to CB#112 Runoff Area=2,938 sf 58.68% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.19 cfs 0.02 af

Subcatchment 12S: Flow to CB#113 Runoff Area=4,124 sf 76.60% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.27 cfs 0.02 af

Subcatchment 13S: Flow to Bioretention Runoff Area=3,336 sf 0.00% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.22 cfs 0.02 af

Subcatchment 14S: Roof Runoff Area=39,522 sf 100.00% Impervious Runoff Depth>2.72"
Tc=6.0 min CN=98.0 Runoff=2.59 cfs 0.21 af

Subcatchment 15S: Flow to CB#120 Runoff Area=6,013 sf 85.83% Impervious Runoff Depth>2.72"
Tc=6.0 min AMC Adjusted CN=98.0 Runoff=0.39 cfs 0.03 af

Subcatchment 16S: Flow to Infiltration Runoff Area=20,315 sf 0.00% Impervious Runoff Depth>2.71"
Flow Length=184' Slope=0.0109 '/' Tc=10.7 min AMC Adjusted CN=98.0 Runoff=1.14 cfs 0.11 af

Pond 1P: Roof Drain Peak Elev=184.23' Inflow=0.05 cfs 0.00 af
6.0" Round Culvert n=0.013 L=45.0' S=0.0200 '/' Outflow=0.05 cfs 0.00 af

Pond 2P: CB#100 Peak Elev=183.20' Inflow=0.75 cfs 0.06 af
15.0" Round Culvert n=0.013 L=90.0' S=0.0100 '/' Outflow=0.75 cfs 0.06 af

Pond 3P: Roof Drain Peak Elev=183.54' Inflow=0.05 cfs 0.00 af
6.0" Round Culvert n=0.013 L=37.0' S=0.0300 '/' Outflow=0.05 cfs 0.00 af

Pond 4P: CB#101 Peak Elev=183.15' Inflow=1.26 cfs 0.10 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.26 cfs 0.10 af

Pond 5P: Stormwater Pond #1 Peak Elev=183.15' Storage=17,269 cf Inflow=2.61 cfs 0.22 af
Outflow=0.12 cfs 0.11 af

Pond 6P: DMH#104 Peak Elev=181.64' Inflow=0.12 cfs 0.11 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0055 '/' Outflow=0.12 cfs 0.11 af

Pond 8P: CB#110 Peak Elev=176.65' Inflow=0.58 cfs 0.05 af
12.0" Round Culvert n=0.013 L=13.0' S=0.0200 '/' Outflow=0.58 cfs 0.05 af

Pond 9P: Bioretention Pond #2 Peak Elev=176.65' Storage=963 cf Inflow=0.98 cfs 0.08 af
Outflow=0.22 cfs 0.08 af

Pond 10P: DMH#113 Peak Elev=172.24' Inflow=0.35 cfs 0.09 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0100 '/' Outflow=0.35 cfs 0.09 af

Pond 11P: DMH#114 Peak Elev=171.87' Inflow=0.54 cfs 0.11 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0100 '/' Outflow=0.54 cfs 0.11 af

Pond 12P: DMH#123 Peak Elev=171.45' Inflow=0.54 cfs 0.12 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.54 cfs 0.12 af

Pond 13P: CB#111 - Filterra 4x4 Peak Elev=175.02' Storage=13 cf Inflow=0.16 cfs 0.01 af
Outflow=0.16 cfs 0.01 af

Pond 14P: CB#112 - Filterra 4x4 Peak Elev=175.04' Storage=14 cf Inflow=0.19 cfs 0.02 af
Outflow=0.19 cfs 0.02 af

Pond 15P: CB#113 Peak Elev=178.66' Inflow=0.27 cfs 0.02 af
12.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=0.27 cfs 0.02 af

Pond 16P: Infitlration Pond #3 Peak Elev=178.66' Storage=480 cf Inflow=0.49 cfs 0.04 af
Discarded=0.06 cfs 0.04 af Primary=0.07 cfs 0.00 af Outflow=0.13 cfs 0.04 af

Pond 17P: Roof Drain Peak Elev=184.24' Inflow=2.59 cfs 0.21 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0500 '/' Outflow=2.59 cfs 0.21 af

Pond 18P: CB#120 Peak Elev=181.91' Inflow=2.98 cfs 0.24 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0400 '/' Outflow=2.98 cfs 0.24 af

Pond 19P: Infiltration Pond #4 Peak Elev=181.91' Storage=6,399 cf Inflow=3.99 cfs 0.34 af
Discarded=0.31 cfs 0.32 af Primary=0.05 cfs 0.01 af Outflow=0.36 cfs 0.33 af

Link A: Wetland Inflow=1.38 cfs 0.21 af
Primary=1.38 cfs 0.21 af

Link B: Central Street Inflow=1.09 cfs 0.16 af
Primary=1.09 cfs 0.16 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.86 af Average Runoff Depth = 2.72"
56.01% Pervious = 2.122 ac 43.99% Impervious = 1.667 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 1.33 cfs @ 12.08 hrs, Volume= 0.11 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
480	77.0		Woods, Good, HSG D
16,003	55.0		Woods, Good, HSG B
3,862	61.0		>75% Grass cover, Good, HSG B
20,345	56.7	98.0	Weighted Average, AMC Adjusted
20,345	56.7	98.0	100.00% Pervious Area, AMC Adjusted

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

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
246	55.0		Woods, Good, HSG B
632	98.0		Paved parking, HSG B
530	98.0		Paved parking, HSG D
6,698	61.0		>75% Grass cover, Good, HSG B
342	80.0		>75% Grass cover, Good, HSG D
8,448	66.7	98.0	Weighted Average, AMC Adjusted
7,286	61.7	98.0	86.25% Pervious Area, AMC Adjusted
1,162	98.0	98.0	13.75% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 3S: Roof Awning

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 4S: Flow to CB#100

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 0.06 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
2,792	98.0		Paved parking, HSG B
4,223	98.0		Paved parking, HSG D
2,020	61.0		>75% Grass cover, Good, HSG B
1,209	80.0		>75% Grass cover, Good, HSG D
477	55.0		Woods, Good, HSG B
10,721	87.1	98.0	Weighted Average, AMC Adjusted
3,706	66.4	98.0	34.57% Pervious Area, AMC Adjusted
7,015	98.0	98.0	65.43% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 5S: Roof Awning

Runoff = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 6S: Flow to CB#101

Runoff = 0.46 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
2,027	61.0		>75% Grass cover, Good, HSG B
173	55.0		Woods, Good, HSG B
4,872	98.0		Paved parking, HSG B
7,072	86.3	98.0	Weighted Average, AMC Adjusted
2,200	60.5	98.0	31.11% Pervious Area, AMC Adjusted
4,872	98.0	98.0	68.89% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 7S: Flow to Stormwater Pond #1

Runoff = 1.40 cfs @ 12.12 hrs, Volume= 0.12 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
2,021	55.0		Woods, Good, HSG B
21,432	61.0		>75% Grass cover, Good, HSG B
23,453	60.5	98.0	Weighted Average, AMC Adjusted
23,453	60.5	98.0	100.00% Pervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
1.9	92	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.7	142	Total			

Summary for Subcatchment 8S: Flow to CB#110

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.05 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
2,130	61.0		>75% Grass cover, Good, HSG B
5,476	98.0		Paved parking, HSG B
1,221	98.0		Paved parking, HSG D
8,827	89.1	98.0	Weighted Average, AMC Adjusted
2,130	61.0	98.0	24.13% Pervious Area, AMC Adjusted
6,697	98.0	98.0	75.87% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 9S: Flow to Bioretention Pond #2

Runoff = 0.40 cfs @ 12.08 hrs, Volume= 0.03 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
932	55.0		Woods, Good, HSG B
5,181	61.0		>75% Grass cover, Good, HSG B
6,113	60.1	98.0	Weighted Average, AMC Adjusted
6,113	60.1	98.0	100.00% Pervious Area, AMC Adjusted

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

Summary for Subcatchment 10S: Flow to CB#111

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
531	61.0		>75% Grass cover, Good, HSG B
917	98.0		Paved parking, HSG B
958	98.0		Paved parking, HSG D
2,406	89.8	98.0	Weighted Average, AMC Adjusted
531	61.0	98.0	22.07% Pervious Area, AMC Adjusted
1,875	98.0	98.0	77.93% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 11S: Flow to CB#112

Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.02 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
1,214	61.0		>75% Grass cover, Good, HSG B
1,704	98.0		Paved parking, HSG B
20	98.0		Paved parking, HSG D
2,938	82.7	98.0	Weighted Average, AMC Adjusted
1,214	61.0	98.0	41.32% Pervious Area, AMC Adjusted
1,724	98.0	98.0	58.68% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 12S: Flow to CB#113

Runoff = 0.27 cfs @ 12.08 hrs, Volume= 0.02 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
965	61.0		>75% Grass cover, Good, HSG B
3,159	98.0		Paved parking, HSG B
4,124	89.3	98.0	Weighted Average, AMC Adjusted
965	61.0	98.0	23.40% Pervious Area, AMC Adjusted
3,159	98.0	98.0	76.60% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 13S: Flow to Bioretention Pond #3

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.02 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
3,336	61.0		>75% Grass cover, Good, HSG B
3,336	61.0	98.0	Weighted Average, AMC Adjusted
3,336	61.0	98.0	100.00% Pervious Area, AMC Adjusted

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

Summary for Subcatchment 14S: Roof

Runoff = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Description
39,396	98.0	Roofs, HSG B
126	98.0	Roofs, HSG D
39,522	98.0	Weighted Average
39,522	98.0	100.00% Impervious Area

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

Summary for Subcatchment 15S: Flow to CB#120

Runoff = 0.39 cfs @ 12.08 hrs, Volume= 0.03 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
639	98.0		Paved parking, HSG D
4,522	98.0		Paved parking, HSG B
852	61.0		>75% Grass cover, Good, HSG B
6,013	92.8	98.0	Weighted Average, AMC Adjusted
852	61.0	98.0	14.17% Pervious Area, AMC Adjusted
5,161	98.0	98.0	85.83% Impervious Area, AMC Adjusted

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

Summary for Subcatchment 16S: Flow to Infiltration Pond #4

Runoff = 1.14 cfs @ 12.14 hrs, Volume= 0.11 af, Depth> 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Frozen Rainfall=2.95", AMC=4

Area (sf)	CN	Adj	Description
2,499	55.0		Woods, Good, HSG B
15,393	61.0		>75% Grass cover, Good, HSG B
2,423	80.0		>75% Grass cover, Good, HSG D
20,315	62.5	98.0	Weighted Average, AMC Adjusted
20,315	62.5	98.0	100.00% Pervious Area, AMC Adjusted

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0109	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
3.1	134	0.0109	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	184	Total			

Summary for Pond 1P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.23' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.10'	**6.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.10' / 183.20' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=184.22' TW=183.20' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.05 cfs @ 1.20 fps)

Summary for Pond 2P: CB#100

Inflow Area = 0.262 ac, 67.57% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.75 cfs @ 12.08 hrs, Volume= 0.06 af
Outflow = 0.75 cfs @ 12.08 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.0 min
Primary = 0.75 cfs @ 12.08 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.20' @ 12.09 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.70'	**15.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.70' / 181.80' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.72 cfs @ 12.08 hrs HW=183.20' TW=182.77' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.72 cfs @ 2.35 fps)

Summary for Pond 3P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af
Outflow = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 12.08 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.54' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.41'	**6.0" Round Culvert** L= 37.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.41' / 182.30' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.05 cfs @ 12.08 hrs HW=183.53' TW=182.77' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 0.05 cfs @ 1.20 fps)

Summary for Pond 4P: CB#101

Inflow Area = 0.441 ac, 69.25% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 1.26 cfs @ 12.08 hrs, Volume= 0.10 af
Outflow = 1.26 cfs @ 12.08 hrs, Volume= 0.10 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 0.10 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.15' @ 14.80 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.70'	**15.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.70' / 181.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.05 cfs @ 12.08 hrs HW=182.77' TW=182.69' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.05 cfs @ 1.27 fps)

Summary for Pond 5P: Stormwater Pond #1

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 2.61 cfs @ 12.10 hrs, Volume= 0.22 af
Outflow = 0.12 cfs @ 14.80 hrs, Volume= 0.11 af, Atten= 95%, Lag= 161.8 min
Primary = 0.12 cfs @ 14.80 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Starting Elev= 182.00' Surf.Area= 5,137 sf Storage= 10,729 cf
Peak Elev= 183.15' @ 14.80 hrs Surf.Area= 6,243 sf Storage= 17,269 cf (6,539 cf above start)
Flood Elev= 185.00' Surf.Area= 7,127 sf Storage= 22,939 cf (12,210 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 256.8 min (1,015.6 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	22,939 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)
179.00	2,168	252.3	0	0	2,168
180.00	3,043	312.6	2,593	2,593	4,893
181.00	4,069	357.9	3,544	6,137	7,334
182.00	5,137	339.8	4,593	10,729	8,397
184.00	7,127	365.6	12,210	22,939	10,008

Device	Routing	Invert	Outlet Devices
#1	Primary	181.95'	**12.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.95' / 181.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	182.00'	**1.0" W x 2.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	182.84'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	183.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 14.80 hrs HW=183.15' TW=181.64' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 2.68 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 4.97 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.30 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 6P: DMH#104

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 1.32" for 2-YR Frozen event
Inflow = 0.12 cfs @ 14.80 hrs, Volume= 0.11 af
Outflow = 0.12 cfs @ 14.80 hrs, Volume= 0.11 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 14.80 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 181.64' @ 14.80 hrs
Flood Elev= 186.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.45'	**12.0" Round Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.45' / 180.85' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.12 cfs @ 14.80 hrs HW=181.64' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.12 cfs @ 1.68 fps)

Summary for Pond 8P: CB#110

Inflow Area = 0.203 ac, 75.87% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.05 af
Outflow = 0.58 cfs @ 12.08 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.05 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.65' @ 12.50 hrs
Flood Elev= 180.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	175.76'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.76' / 175.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.40 cfs @ 12.08 hrs HW=176.27' TW=176.20' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.40 cfs @ 1.46 fps)

Summary for Pond 9P: Bioretention Pond #2

Inflow Area = 0.343 ac, 44.83% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.98 cfs @ 12.08 hrs, Volume= 0.08 af
Outflow = 0.22 cfs @ 12.48 hrs, Volume= 0.08 af, Atten= 78%, Lag= 23.9 min
Primary = 0.22 cfs @ 12.48 hrs, Volume= 0.08 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.65' @ 12.48 hrs Surf.Area= 943 sf Storage= 963 cf
Flood Elev= 178.10' Surf.Area= 1,676 sf Storage= 2,684 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 32.1 min (789.7 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	2,684 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)
175.00	193	87.3	0	0	193
176.00	714	149.7	426	426	1,376
177.00	1,080	196.1	891	1,317	2,664
178.00	1,676	200.8	1,367	2,684	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**10.000 in/hr Exfiltration over Surface area**
#2	Device 1	172.50'	**12.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 171.96' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	176.20'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	176.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.22 cfs @ 12.48 hrs HW=176.65' TW=172.19' (Dynamic Tailwater)
└─**1=Exfiltration** (Exfiltration Controls 0.22 cfs)
  ├─**2=Culvert** (Passes < 4.86 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 0.06 cfs potential flow)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: DMH#113

Inflow Area = 0.398 ac, 49.42% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.35 cfs @ 12.09 hrs, Volume= 0.09 af
Outflow = 0.35 cfs @ 12.09 hrs, Volume= 0.09 af, Atten= 0%, Lag= 0.0 min
Primary = 0.35 cfs @ 12.09 hrs, Volume= 0.09 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 172.24' @ 12.11 hrs
Flood Elev= 176.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.92'	**12.0" Round Culvert** L= 39.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.92' / 171.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=172.23' TW=171.87' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.34 cfs @ 2.38 fps)

Summary for Pond 11P: DMH#114

Inflow Area = 0.466 ac, 50.76% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.11 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.11 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.09 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 171.87' @ 12.09 hrs
Flood Elev= 177.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.48'	**12.0" Round Culvert** L= 38.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.48' / 171.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=171.87' TW=171.44' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.53 cfs @ 2.77 fps)

Summary for Pond 12P: DMH#123

Inflow Area = 2.149 ac, 62.12% Impervious, Inflow Depth > 0.66" for 2-YR Frozen event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.12 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.12 af, Atten= 0%, Lag= 0.0 min
Primary = 0.54 cfs @ 12.09 hrs, Volume= 0.12 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 171.45' @ 12.09 hrs
Flood Elev= 176.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.05'	**12.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.05' / 170.85' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.53 cfs @ 12.09 hrs HW=171.44' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.53 cfs @ 2.74 fps)

Summary for Pond 13P: CB#111 - Filterra 4x4

Inflow Area = 0.055 ac, 77.93% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.16 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.16 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.16 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.02' @ 12.08 hrs Surf.Area= 16 sf Storage= 13 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (758.4 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.97' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.16 cfs @ 12.08 hrs HW=175.02' TW=172.23' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.16 cfs of 5.98 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.11 cfs @ 0.80 fps)

Summary for Pond 14P: CB#112 - Filterra 4x4

Inflow Area = 0.067 ac, 58.68% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.19 cfs @ 12.08 hrs, Volume= 0.02 af
Outflow = 0.19 cfs @ 12.09 hrs, Volume= 0.02 af, Atten= 1%, Lag= 0.3 min
Primary = 0.19 cfs @ 12.09 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.04' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (758.6 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.72' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.19 cfs @ 12.09 hrs HW=175.03' TW=171.87' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.19 cfs of 6.00 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.14 cfs @ 0.86 fps)

Summary for Pond 15P: CB#113

Inflow Area = 0.095 ac, 76.60% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.27 cfs @ 12.08 hrs, Volume= 0.02 af
Outflow = 0.27 cfs @ 12.08 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.08 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.66' @ 12.44 hrs
Flood Elev= 181.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.15'	**12.0" Round Culvert** L= 15.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.15' / 178.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.22 cfs @ 12.08 hrs HW=178.49' TW=178.42' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.22 cfs @ 1.38 fps)

Summary for Pond 16P: Infitlration Pond #3

Inflow Area = 0.171 ac, 42.35% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.04 af
Outflow = 0.13 cfs @ 12.43 hrs, Volume= 0.04 af, Atten= 73%, Lag= 20.9 min
Discarded = 0.06 cfs @ 12.43 hrs, Volume= 0.04 af
Primary = 0.07 cfs @ 12.43 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.66' @ 12.43 hrs Surf.Area= 891 sf Storage= 480 cf
Flood Elev= 180.00' Surf.Area= 1,583 sf Storage= 2,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 44.0 min (801.7 - 757.6)

Volume	Invert	Avail.Storage	Storage Description
#1	178.00'	2,141 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)
178.00	585	143.3	0	0	585
179.00	1,078	186.5	819	819	1,731
180.00	1,583	162.2	1,322	2,141	2,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	172.10'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.10' / 171.45' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	178.50'	**6.0" Vert. Orifice/Grate** C= 0.600

#4	Device 2	179.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.43 hrs HW=178.66' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.07 cfs @ 12.43 hrs HW=178.66' TW=171.40' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.07 cfs of 9.31 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 1.34 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Roof Drain

Inflow Area = 0.907 ac,100.00% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af
Outflow = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af, Atten= 0%, Lag= 0.0 min
Primary = 2.59 cfs @ 12.08 hrs, Volume= 0.21 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.24' @ 12.08 hrs
Flood Elev= 186.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.43'	**15.0" Round Culvert** L= 53.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.43' / 180.78' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.58 cfs @ 12.08 hrs HW=184.24' TW=181.58' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 2.58 cfs @ 3.06 fps)

Summary for Pond 18P: CB#120

Inflow Area = 1.045 ac, 98.13% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 2.98 cfs @ 12.08 hrs, Volume= 0.24 af
Outflow = 2.98 cfs @ 12.08 hrs, Volume= 0.24 af, Atten= 0%, Lag= 0.0 min
Primary = 2.98 cfs @ 12.08 hrs, Volume= 0.24 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 181.91' @ 13.05 hrs
Flood Elev= 185.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.68'	**15.0" Round Culvert** L= 17.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.68' / 180.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.76 cfs @ 12.08 hrs HW=181.58' TW=181.11' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 2.76 cfs @ 4.06 fps)

Summary for Pond 19P: Infiltration Pond #4

Inflow Area = 1.512 ac, 67.86% Impervious, Inflow Depth > 2.72" for 2-YR Frozen event
Inflow = 3.99 cfs @ 12.09 hrs, Volume= 0.34 af
Outflow = 0.36 cfs @ 13.04 hrs, Volume= 0.33 af, Atten= 91%, Lag= 56.9 min
Discarded = 0.31 cfs @ 13.04 hrs, Volume= 0.32 af
Primary = 0.05 cfs @ 13.04 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 181.91' @ 13.04 hrs Surf.Area= 4,414 sf Storage= 6,399 cf
Flood Elev= 184.25' Surf.Area= 6,860 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 169.8 min (928.6 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	18,117 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)
180.00	2,396	320.8	0	0	2,396
182.00	4,527	397.5	6,811	6,811	6,839
184.00	6,860	378.5	11,306	18,117	8,245

Device	Routing	Invert	Outlet Devices
#1	Discarded	180.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	175.75'	**12.0" Round Culvert** L= 55.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 173.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	181.60'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	182.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	183.85'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.31 cfs @ 13.04 hrs HW=181.91' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.31 cfs)

Primary OutFlow Max=0.05 cfs @ 13.04 hrs HW=181.91' TW=171.33' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.05 cfs of 9.00 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.28 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link A: Wetland

Inflow Area = 1.446 ac, 21.11% Impervious, Inflow Depth > 1.77" for 2-YR Frozen event
Inflow = 1.38 cfs @ 12.08 hrs, Volume= 0.21 af
Primary = 1.38 cfs @ 12.08 hrs, Volume= 0.21 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link B: Central Street

Inflow Area = 2.343 ac, 58.11% Impervious, Inflow Depth > 0.83" for 2-YR Frozen event
Inflow = 1.09 cfs @ 12.09 hrs, Volume= 0.16 af
Primary = 1.09 cfs @ 12.09 hrs, Volume= 0.16 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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 1S: Overland Flow to Runoff Area=20,345 sf 0.00% Impervious Runoff Depth>0.81"
Tc=6.0 min CN=56.7 Runoff=0.34 cfs 0.03 af

Subcatchment 2S: Overland Flow Runoff Area=8,448 sf 13.75% Impervious Runoff Depth>1.41"
Tc=6.0 min CN=66.7 Runoff=0.30 cfs 0.02 af

Subcatchment 3S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=98.0 Runoff=0.07 cfs 0.01 af

Subcatchment 4S: Flow to CB#100 Runoff Area=10,721 sf 65.43% Impervious Runoff Depth>3.07"
Tc=6.0 min CN=87.1 Runoff=0.87 cfs 0.06 af

Subcatchment 5S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=98.0 Runoff=0.07 cfs 0.01 af

Subcatchment 6S: Flow to CB#101 Runoff Area=7,072 sf 68.89% Impervious Runoff Depth>3.00"
Tc=6.0 min CN=86.3 Runoff=0.56 cfs 0.04 af

Subcatchment 7S: Flow to Stormwater Runoff Area=23,453 sf 0.00% Impervious Runoff Depth>1.02"
Flow Length=142' Slope=0.0140 '/' Tc=8.7 min CN=60.5 Runoff=0.50 cfs 0.05 af

Subcatchment 8S: Flow to CB#110 Runoff Area=8,827 sf 75.87% Impervious Runoff Depth>3.26"
Tc=6.0 min CN=89.1 Runoff=0.76 cfs 0.06 af

Subcatchment 9S: Flow to Bioretention Runoff Area=6,113 sf 0.00% Impervious Runoff Depth>1.00"
Tc=6.0 min CN=60.1 Runoff=0.14 cfs 0.01 af

Subcatchment 10S: Flow to CB#111 Runoff Area=2,406 sf 77.93% Impervious Runoff Depth>3.34"
Tc=6.0 min CN=89.8 Runoff=0.21 cfs 0.02 af

Subcatchment 11S: Flow to CB#112 Runoff Area=2,938 sf 58.68% Impervious Runoff Depth>2.66"
Tc=6.0 min CN=82.7 Runoff=0.21 cfs 0.01 af

Subcatchment 12S: Flow to CB#113 Runoff Area=4,124 sf 76.60% Impervious Runoff Depth>3.29"
Tc=6.0 min CN=89.3 Runoff=0.36 cfs 0.03 af

Subcatchment 13S: Flow to Bioretention Runoff Area=3,336 sf 0.00% Impervious Runoff Depth>1.06"
Tc=6.0 min CN=61.0 Runoff=0.08 cfs 0.01 af

Subcatchment 14S: Roof Runoff Area=39,522 sf 100.00% Impervious Runoff Depth>4.22"
Tc=6.0 min CN=98.0 Runoff=3.95 cfs 0.32 af

Subcatchment 15S: Flow to CB#120 Runoff Area=6,013 sf 85.83% Impervious Runoff Depth>3.64"
Tc=6.0 min CN=92.8 Runoff=0.56 cfs 0.04 af

Subcatchment 16S: Flow to Infiltration Runoff Area=20,315 sf 0.00% Impervious Runoff Depth>1.15"
Flow Length=184' Slope=0.0109 '/' Tc=10.7 min CN=62.5 Runoff=0.48 cfs 0.04 af

Pond 1P: Roof Drain Peak Elev=184.26' Inflow=0.07 cfs 0.01 af
6.0" Round Culvert n=0.013 L=45.0' S=0.0200 '/' Outflow=0.07 cfs 0.01 af

Pond 2P: CB#100 Peak Elev=183.22' Inflow=0.94 cfs 0.07 af
15.0" Round Culvert n=0.013 L=90.0' S=0.0100 '/' Outflow=0.94 cfs 0.07 af

Pond 3P: Roof Drain Peak Elev=183.57' Inflow=0.07 cfs 0.01 af
6.0" Round Culvert n=0.013 L=37.0' S=0.0300 '/' Outflow=0.07 cfs 0.01 af

Pond 4P: CB#101 Peak Elev=182.88' Inflow=1.58 cfs 0.11 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=1.58 cfs 0.11 af

Pond 5P: Stormwater Pond #1 Peak Elev=182.88' Storage=15,611 cf Inflow=2.01 cfs 0.16 af
Outflow=0.06 cfs 0.06 af

Pond 6P: DMH#104 Peak Elev=181.59' Inflow=0.06 cfs 0.06 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0055 '/' Outflow=0.06 cfs 0.06 af

Pond 8P: CB#110 Peak Elev=176.50' Inflow=0.76 cfs 0.06 af
12.0" Round Culvert n=0.013 L=13.0' S=0.0200 '/' Outflow=0.76 cfs 0.06 af

Pond 9P: Bioretention Pond #2 Peak Elev=176.50' Storage=823 cf Inflow=0.89 cfs 0.07 af
Outflow=0.21 cfs 0.07 af

Pond 10P: DMH#113 Peak Elev=172.26' Inflow=0.38 cfs 0.08 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0100 '/' Outflow=0.38 cfs 0.08 af

Pond 11P: DMH#114 Peak Elev=171.89' Inflow=0.59 cfs 0.10 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0100 '/' Outflow=0.59 cfs 0.10 af

Pond 12P: DMH#123 Peak Elev=171.47' Inflow=0.59 cfs 0.12 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.59 cfs 0.12 af

Pond 13P: CB#111 - Filterra 4x4 Peak Elev=175.04' Storage=14 cf Inflow=0.21 cfs 0.02 af
Outflow=0.21 cfs 0.02 af

Pond 14P: CB#112 - Filterra 4x4 Peak Elev=175.04' Storage=14 cf Inflow=0.21 cfs 0.01 af
Outflow=0.21 cfs 0.01 af

Pond 15P: CB#113 Peak Elev=178.61' Inflow=0.36 cfs 0.03 af
12.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=0.36 cfs 0.03 af

Pond 16P: Infitlration Pond #3 Peak Elev=178.60' Storage=434 cf Inflow=0.44 cfs 0.03 af
Discarded=0.06 cfs 0.03 af Primary=0.03 cfs 0.00 af Outflow=0.09 cfs 0.03 af

Pond 17P: Roof Drain Peak Elev=184.50' Inflow=3.95 cfs 0.32 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0500 '/' Outflow=3.95 cfs 0.32 af

Pond 18P: CB#120 Peak Elev=182.18' Inflow=4.51 cfs 0.36 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0400 '/' Outflow=4.51 cfs 0.36 af

Pond 19P: Infiltration Pond #4 Peak Elev=182.17' Storage=7,612 cf Inflow=4.86 cfs 0.41 af
Discarded=0.33 cfs 0.35 af Primary=0.07 cfs 0.02 af Outflow=0.40 cfs 0.37 af

Link A: Wetland Inflow=0.38 cfs 0.09 af
Primary=0.38 cfs 0.09 af

Link B: Central Street Inflow=0.89 cfs 0.15 af
Primary=0.89 cfs 0.15 af

Total Runoff Area = 3.789 ac Runoff Volume = 0.75 af Average Runoff Depth = 2.38"
56.01% Pervious = 2.122 ac 43.99% Impervious = 1.667 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 0.34 cfs @ 12.11 hrs, Volume= 0.03 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
480	77.0	Woods, Good, HSG D
16,003	55.0	Woods, Good, HSG B
3,862	61.0	>75% Grass cover, Good, HSG B
20,345	56.7	Weighted Average
20,345	56.7	100.00% Pervious Area

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

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.30 cfs @ 12.10 hrs, Volume= 0.02 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
246	55.0	Woods, Good, HSG B
632	98.0	Paved parking, HSG B
530	98.0	Paved parking, HSG D
6,698	61.0	>75% Grass cover, Good, HSG B
342	80.0	>75% Grass cover, Good, HSG D
8,448	66.7	Weighted Average
7,286	61.7	86.25% Pervious Area
1,162	98.0	13.75% Impervious Area

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

Summary for Subcatchment 3S: Roof Awning

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 4S: Flow to CB#100

Runoff = 0.87 cfs @ 12.09 hrs, Volume= 0.06 af, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
2,792	98.0	Paved parking, HSG B
4,223	98.0	Paved parking, HSG D
2,020	61.0	>75% Grass cover, Good, HSG B
1,209	80.0	>75% Grass cover, Good, HSG D
477	55.0	Woods, Good, HSG B
10,721	87.1	Weighted Average
3,706	66.4	34.57% Pervious Area
7,015	98.0	65.43% Impervious Area

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

Summary for Subcatchment 5S: Roof Awning

Runoff = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 6S: Flow to CB#101

Runoff = 0.56 cfs @ 12.09 hrs, Volume= 0.04 af, Depth> 3.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
2,027	61.0	>75% Grass cover, Good, HSG B
173	55.0	Woods, Good, HSG B
4,872	98.0	Paved parking, HSG B
7,072	86.3	Weighted Average
2,200	60.5	31.11% Pervious Area
4,872	98.0	68.89% Impervious Area

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

Summary for Subcatchment 7S: Flow to Stormwater Pond #1

Runoff = 0.50 cfs @ 12.14 hrs, Volume= 0.05 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
2,021	55.0	Woods, Good, HSG B
21,432	61.0	>75% Grass cover, Good, HSG B
23,453	60.5	Weighted Average
23,453	60.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
1.9	92	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.7	142	Total			

Summary for Subcatchment 8S: Flow to CB#110

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.06 af, Depth> 3.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
2,130	61.0	>75% Grass cover, Good, HSG B
5,476	98.0	Paved parking, HSG B
1,221	98.0	Paved parking, HSG D
8,827	89.1	Weighted Average
2,130	61.0	24.13% Pervious Area
6,697	98.0	75.87% Impervious Area

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

Summary for Subcatchment 9S: Flow to Bioretention Pond #2

Runoff = 0.14 cfs @ 12.10 hrs, Volume= 0.01 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
932	55.0	Woods, Good, HSG B
5,181	61.0	>75% Grass cover, Good, HSG B
6,113	60.1	Weighted Average
6,113	60.1	100.00% Pervious Area

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

Summary for Subcatchment 10S: Flow to CB#111

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.02 af, Depth> 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
531	61.0	>75% Grass cover, Good, HSG B
917	98.0	Paved parking, HSG B
958	98.0	Paved parking, HSG D
2,406	89.8	Weighted Average
531	61.0	22.07% Pervious Area
1,875	98.0	77.93% Impervious Area

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

Summary for Subcatchment 11S: Flow to CB#112

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af, Depth> 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
1,214	61.0	>75% Grass cover, Good, HSG B
1,704	98.0	Paved parking, HSG B
20	98.0	Paved parking, HSG D
2,938	82.7	Weighted Average
1,214	61.0	41.32% Pervious Area
1,724	98.0	58.68% Impervious Area

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

Summary for Subcatchment 12S: Flow to CB#113

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
965	61.0	>75% Grass cover, Good, HSG B
3,159	98.0	Paved parking, HSG B
4,124	89.3	Weighted Average
965	61.0	23.40% Pervious Area
3,159	98.0	76.60% Impervious Area

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

Summary for Subcatchment 13S: Flow to Bioretention Pond #3

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.01 af, Depth> 1.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
3,336	61.0	>75% Grass cover, Good, HSG B
3,336	61.0	100.00% Pervious Area

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

Summary for Subcatchment 14S: Roof

Runoff = 3.95 cfs @ 12.08 hrs, Volume= 0.32 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
39,396	98.0	Roofs, HSG B
126	98.0	Roofs, HSG D
39,522	98.0	Weighted Average
39,522	98.0	100.00% Impervious Area

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

Summary for Subcatchment 15S: Flow to CB#120

Runoff = 0.56 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 3.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
639	98.0	Paved parking, HSG D
4,522	98.0	Paved parking, HSG B
852	61.0	>75% Grass cover, Good, HSG B
6,013	92.8	Weighted Average
852	61.0	14.17% Pervious Area
5,161	98.0	85.83% Impervious Area

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

Summary for Subcatchment 16S: Flow to Infiltration Pond #4

Runoff = 0.48 cfs @ 12.17 hrs, Volume= 0.04 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YEAR Rainfall=4.46"

Area (sf)	CN	Description
2,499	55.0	Woods, Good, HSG B
15,393	61.0	>75% Grass cover, Good, HSG B
2,423	80.0	>75% Grass cover, Good, HSG D
20,315	62.5	Weighted Average
20,315	62.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0109	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
3.1	134	0.0109	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	184	Total			

Summary for Pond 1P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 4.22" for 10-YEAR event
Inflow = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.26' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.10'	**6.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.10' / 183.20' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=184.26' TW=183.21' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.07 cfs @ 1.34 fps)

Summary for Pond 2P: CB#100

Inflow Area = 0.262 ac, 67.57% Impervious, Inflow Depth > 3.14" for 10-YEAR event
Inflow = 0.94 cfs @ 12.09 hrs, Volume= 0.07 af
Outflow = 0.94 cfs @ 12.09 hrs, Volume= 0.07 af, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 12.09 hrs, Volume= 0.07 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.22' @ 12.09 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.70'	**15.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.70' / 181.80' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.92 cfs @ 12.09 hrs HW=183.21' TW=182.59' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.92 cfs @ 2.87 fps)

Summary for Pond 3P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 4.22" for 10-YEAR event
Inflow = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.07 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.57' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.41'	**6.0" Round Culvert** L= 37.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.41' / 182.30' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.07 cfs @ 12.08 hrs HW=183.57' TW=182.59' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 0.07 cfs @ 1.34 fps)

Summary for Pond 4P: CB#101

Inflow Area = 0.441 ac, 69.25% Impervious, Inflow Depth > 3.13" for 10-YEAR event
Inflow = 1.58 cfs @ 12.09 hrs, Volume= 0.11 af
Outflow = 1.58 cfs @ 12.09 hrs, Volume= 0.11 af, Atten= 0%, Lag= 0.0 min
Primary = 1.58 cfs @ 12.09 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.88' @ 17.26 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.70'	**15.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.70' / 181.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.49 cfs @ 12.09 hrs HW=182.59' TW=182.35' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.49 cfs @ 2.23 fps)

Summary for Pond 5P: Stormwater Pond #1

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 1.97" for 10-YEAR event
Inflow = 2.01 cfs @ 12.10 hrs, Volume= 0.16 af
Outflow = 0.06 cfs @ 17.23 hrs, Volume= 0.06 af, Atten= 97%, Lag= 307.8 min
Primary = 0.06 cfs @ 17.23 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Starting Elev= 182.00' Surf.Area= 5,137 sf Storage= 10,729 cf
Peak Elev= 182.88' @ 17.23 hrs Surf.Area= 5,972 sf Storage= 15,611 cf (4,882 cf above start)
Flood Elev= 185.00' Surf.Area= 7,127 sf Storage= 22,939 cf (12,210 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 248.9 min (1,072.8 - 823.9)

Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	22,939 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)
179.00	2,168	252.3	0	0	2,168
180.00	3,043	312.6	2,593	2,593	4,893
181.00	4,069	357.9	3,544	6,137	7,334
182.00	5,137	339.8	4,593	10,729	8,397
184.00	7,127	365.6	12,210	22,939	10,008

Device	Routing	Invert	Outlet Devices
#1	Primary	181.95'	**12.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.95' / 181.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	182.00'	**1.0" W x 2.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	182.84'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	183.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.06 cfs @ 17.23 hrs HW=182.88' TW=181.59' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.06 cfs of 2.00 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.06 cfs @ 4.29 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.00 cfs @ 0.68 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 6P: DMH#104

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 0.73" for 10-YEAR event
Inflow = 0.06 cfs @ 17.23 hrs, Volume= 0.06 af
Outflow = 0.06 cfs @ 17.24 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.5 min
Primary = 0.06 cfs @ 17.24 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 181.59' @ 17.24 hrs
Flood Elev= 186.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.45'	**12.0" Round Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.45' / 180.85' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.06 cfs @ 17.24 hrs HW=181.59' TW=0.00' (Dynamic Tailwater)
1=Culvert (Barrel Controls 0.06 cfs @ 1.39 fps)

Summary for Pond 8P: CB#110

Inflow Area = 0.203 ac, 75.87% Impervious, Inflow Depth > 3.26" for 10-YEAR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.06 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.50' @ 12.52 hrs
Flood Elev= 180.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	175.76'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.76' / 175.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.65 cfs @ 12.09 hrs HW=176.23' TW=176.01' (Dynamic Tailwater)
1=Culvert (Outlet Controls 0.65 cfs @ 2.64 fps)

Summary for Pond 9P: Bioretention Pond #2

Inflow Area = 0.343 ac, 44.83% Impervious, Inflow Depth > 2.34" for 10-YEAR event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.07 af
Outflow = 0.21 cfs @ 12.51 hrs, Volume= 0.07 af, Atten= 77%, Lag= 25.2 min
Primary = 0.21 cfs @ 12.51 hrs, Volume= 0.07 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.50' @ 12.51 hrs Surf.Area= 886 sf Storage= 823 cf
Flood Elev= 178.10' Surf.Area= 1,676 sf Storage= 2,684 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 31.0 min (843.6 - 812.6)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	2,684 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)
175.00	193	87.3	0	0	193
176.00	714	149.7	426	426	1,376
177.00	1,080	196.1	891	1,317	2,664
178.00	1,676	200.8	1,367	2,684	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**10.000 in/hr Exfiltration over Surface area**
#2	Device 1	172.50'	**12.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 171.96' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	176.20'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	176.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.21 cfs @ 12.51 hrs HW=176.50' TW=172.18' (Dynamic Tailwater)
└─**1=Exfiltration** (Exfiltration Controls 0.21 cfs)
  ├─**2=Culvert** (Passes < 4.63 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 0.05 cfs potential flow)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 10P: DMH#113

Inflow Area = 0.398 ac, 49.42% Impervious, Inflow Depth > 2.48" for 10-YEAR event
Inflow = 0.38 cfs @ 12.10 hrs, Volume= 0.08 af
Outflow = 0.38 cfs @ 12.10 hrs, Volume= 0.08 af, Atten= 0%, Lag= 0.0 min
Primary = 0.38 cfs @ 12.10 hrs, Volume= 0.08 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 172.26' @ 12.10 hrs
Flood Elev= 176.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.92'	**12.0" Round Culvert** L= 39.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.92' / 171.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.10 hrs HW=172.25' TW=171.89' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.37 cfs @ 2.42 fps)

Summary for Pond 11P: DMH#114

Inflow Area = 0.466 ac, 50.76% Impervious, Inflow Depth > 2.50" for 10-YEAR event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.10 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.10 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 12.09 hrs, Volume= 0.10 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 171.89' @ 12.10 hrs
Flood Elev= 177.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.48'	**12.0" Round Culvert** L= 38.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.48' / 171.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.58 cfs @ 12.09 hrs HW=171.89' TW=171.47' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.58 cfs @ 2.82 fps)

Summary for Pond 12P: DMH#123

Inflow Area = 2.149 ac, 62.12% Impervious, Inflow Depth > 0.68" for 10-YEAR event
Inflow = 0.59 cfs @ 12.09 hrs, Volume= 0.12 af
Outflow = 0.59 cfs @ 12.09 hrs, Volume= 0.12 af, Atten= 0%, Lag= 0.0 min
Primary = 0.59 cfs @ 12.09 hrs, Volume= 0.12 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 171.47' @ 12.09 hrs
Flood Elev= 176.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.05'	**12.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.05' / 170.85' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.58 cfs @ 12.09 hrs HW=171.47' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.58 cfs @ 2.80 fps)

Summary for Pond 13P: CB#111 - Filterra 4x4

Inflow Area = 0.055 ac, 77.93% Impervious, Inflow Depth > 3.34" for 10-YEAR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.02 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.2 min
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.04' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (795.6 - 794.7)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.97' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=175.04' TW=172.25' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.21 cfs of 6.01 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.90 fps)

Summary for Pond 14P: CB#112 - Filterra 4x4

Inflow Area = 0.067 ac, 58.68% Impervious, Inflow Depth > 2.66" for 10-YEAR event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.21 cfs @ 12.09 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.04' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.8 min (819.1 - 818.4)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.72' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.21 cfs @ 12.09 hrs HW=175.04' TW=171.89' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.21 cfs of 6.01 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.16 cfs @ 0.90 fps)

Summary for Pond 15P: CB#113

Inflow Area = 0.095 ac, 76.60% Impervious, Inflow Depth > 3.29" for 10-YEAR event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.03 af
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.0 min
Primary = 0.36 cfs @ 12.09 hrs, Volume= 0.03 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.61' @ 12.54 hrs
Flood Elev= 181.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.15'	**12.0" Round Culvert** L= 15.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.15' / 178.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.32 cfs @ 12.09 hrs HW=178.48' TW=178.31' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.32 cfs @ 2.12 fps)

Summary for Pond 16P: Infitlration Pond #3

Inflow Area = 0.171 ac, 42.35% Impervious, Inflow Depth > 2.29" for 10-YEAR event
Inflow = 0.44 cfs @ 12.09 hrs, Volume= 0.03 af
Outflow = 0.09 cfs @ 12.53 hrs, Volume= 0.03 af, Atten= 79%, Lag= 26.4 min
Discarded = 0.06 cfs @ 12.53 hrs, Volume= 0.03 af
Primary = 0.03 cfs @ 12.53 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.60' @ 12.53 hrs Surf.Area= 864 sf Storage= 434 cf
Flood Elev= 180.00' Surf.Area= 1,583 sf Storage= 2,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 50.8 min (864.6 - 813.8)

Volume	Invert	Avail.Storage	Storage Description
#1	178.00'	2,141 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)
178.00	585	143.3	0	0	585
179.00	1,078	186.5	819	819	1,731
180.00	1,583	162.2	1,322	2,141	2,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	172.10'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.10' / 171.45' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	178.50'	**6.0" Vert. Orifice/Grate** C= 0.600

#4	Device 2	179.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.53 hrs HW=178.60' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.03 cfs @ 12.53 hrs HW=178.60' TW=171.39' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.03 cfs of 9.27 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.03 cfs @ 1.09 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Roof Drain

Inflow Area = 0.907 ac,100.00% Impervious, Inflow Depth > 4.22" for 10-YEAR event
Inflow = 3.95 cfs @ 12.08 hrs, Volume= 0.32 af
Outflow = 3.95 cfs @ 12.08 hrs, Volume= 0.32 af, Atten= 0%, Lag= 0.0 min
Primary = 3.95 cfs @ 12.08 hrs, Volume= 0.32 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.50' @ 12.08 hrs
Flood Elev= 186.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.43'	**15.0" Round Culvert** L= 53.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.43' / 180.78' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.93 cfs @ 12.08 hrs HW=184.50' TW=181.88' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 3.93 cfs @ 3.52 fps)

Summary for Pond 18P: CB#120

Inflow Area = 1.045 ac, 98.13% Impervious, Inflow Depth > 4.14" for 10-YEAR event
Inflow = 4.51 cfs @ 12.08 hrs, Volume= 0.36 af
Outflow = 4.51 cfs @ 12.08 hrs, Volume= 0.36 af, Atten= 0%, Lag= 0.0 min
Primary = 4.51 cfs @ 12.08 hrs, Volume= 0.36 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.18' @ 13.19 hrs
Flood Elev= 185.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.68'	**15.0" Round Culvert** L= 17.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.68' / 180.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.33 cfs @ 12.08 hrs HW=181.88' TW=181.28' (Dynamic Tailwater)
└**1=Culvert** (Outlet Controls 4.33 cfs @ 4.59 fps)

Summary for Pond 19P: Infiltration Pond #4

Inflow Area = 1.512 ac, 67.86% Impervious, Inflow Depth > 3.22" for 10-YEAR event
Inflow = 4.86 cfs @ 12.09 hrs, Volume= 0.41 af
Outflow = 0.40 cfs @ 13.19 hrs, Volume= 0.37 af, Atten= 92%, Lag= 66.3 min
Discarded = 0.33 cfs @ 13.19 hrs, Volume= 0.35 af
Primary = 0.07 cfs @ 13.19 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.17' @ 13.19 hrs Surf.Area= 4,710 sf Storage= 7,612 cf
Flood Elev= 184.25' Surf.Area= 6,860 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 161.5 min (928.5 - 767.0)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	18,117 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)
180.00	2,396	320.8	0	0	2,396
182.00	4,527	397.5	6,811	6,811	6,839
184.00	6,860	378.5	11,306	18,117	8,245

Device	Routing	Invert	Outlet Devices
#1	Discarded	180.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	175.75'	**12.0" Round Culvert** L= 55.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 173.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	181.60'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	182.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	183.85'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.33 cfs @ 13.19 hrs HW=182.17' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.33 cfs)

Primary OutFlow Max=0.07 cfs @ 13.19 hrs HW=182.17' TW=171.34' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.07 cfs of 9.20 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.07 cfs @ 3.37 fps)
  ├**4=Orifice/Grate** (Controls 0.00 cfs)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link A: Wetland

Inflow Area = 1.446 ac, 21.11% Impervious, Inflow Depth > 0.76" for 10-YEAR event
Inflow = 0.38 cfs @ 12.11 hrs, Volume= 0.09 af
Primary = 0.38 cfs @ 12.11 hrs, Volume= 0.09 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link B: Central Street

Inflow Area = 2.343 ac, 58.11% Impervious, Inflow Depth > 0.74" for 10-YEAR event
Inflow = 0.89 cfs @ 12.09 hrs, Volume= 0.15 af
Primary = 0.89 cfs @ 12.09 hrs, Volume= 0.15 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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 1S: Overland Flow to Runoff Area=20,345 sf 0.00% Impervious Runoff Depth>1.44"
Tc=6.0 min CN=56.7 Runoff=0.70 cfs 0.06 af

Subcatchment 2S: Overland Flow Runoff Area=8,448 sf 13.75% Impervious Runoff Depth>2.24"
Tc=6.0 min CN=66.7 Runoff=0.50 cfs 0.04 af

Subcatchment 3S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>5.41"
Tc=6.0 min CN=98.0 Runoff=0.09 cfs 0.01 af

Subcatchment 4S: Flow to CB#100 Runoff Area=10,721 sf 65.43% Impervious Runoff Depth>4.19"
Tc=6.0 min CN=87.1 Runoff=1.18 cfs 0.09 af

Subcatchment 5S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>5.41"
Tc=6.0 min CN=98.0 Runoff=0.09 cfs 0.01 af

Subcatchment 6S: Flow to CB#101 Runoff Area=7,072 sf 68.89% Impervious Runoff Depth>4.11"
Tc=6.0 min CN=86.3 Runoff=0.76 cfs 0.06 af

Subcatchment 7S: Flow to Stormwater Runoff Area=23,453 sf 0.00% Impervious Runoff Depth>1.73"
Flow Length=142' Slope=0.0140 '/' Tc=8.7 min CN=60.5 Runoff=0.93 cfs 0.08 af

Subcatchment 8S: Flow to CB#110 Runoff Area=8,827 sf 75.87% Impervious Runoff Depth>4.40"
Tc=6.0 min CN=89.1 Runoff=1.01 cfs 0.07 af

Subcatchment 9S: Flow to Bioretention Runoff Area=6,113 sf 0.00% Impervious Runoff Depth>1.70"
Tc=6.0 min CN=60.1 Runoff=0.26 cfs 0.02 af

Subcatchment 10S: Flow to CB#111 Runoff Area=2,406 sf 77.93% Impervious Runoff Depth>4.48"
Tc=6.0 min CN=89.8 Runoff=0.28 cfs 0.02 af

Subcatchment 11S: Flow to CB#112 Runoff Area=2,938 sf 58.68% Impervious Runoff Depth>3.73"
Tc=6.0 min CN=82.7 Runoff=0.29 cfs 0.02 af

Subcatchment 12S: Flow to CB#113 Runoff Area=4,124 sf 76.60% Impervious Runoff Depth>4.43"
Tc=6.0 min CN=89.3 Runoff=0.47 cfs 0.03 af

Subcatchment 13S: Flow to Bioretention Runoff Area=3,336 sf 0.00% Impervious Runoff Depth>1.77"
Tc=6.0 min CN=61.0 Runoff=0.15 cfs 0.01 af

Subcatchment 14S: Roof Runoff Area=39,522 sf 100.00% Impervious Runoff Depth>5.41"
Tc=6.0 min CN=98.0 Runoff=5.01 cfs 0.41 af

Subcatchment 15S: Flow to CB#120 Runoff Area=6,013 sf 85.83% Impervious Runoff Depth>4.81"
Tc=6.0 min CN=92.8 Runoff=0.73 cfs 0.06 af

Subcatchment 16S: Flow to Infiltration Runoff Area=20,315 sf 0.00% Impervious Runoff Depth>1.89"
Flow Length=184' Slope=0.0109 '/' Tc=10.7 min CN=62.5 Runoff=0.84 cfs 0.07 af

Pond 1P: Roof Drain Peak Elev=184.28' Inflow=0.09 cfs 0.01 af
6.0" Round Culvert n=0.013 L=45.0' S=0.0200 '/' Outflow=0.09 cfs 0.01 af

Pond 2P: CB#100 Peak Elev=183.33' Inflow=1.27 cfs 0.09 af
15.0" Round Culvert n=0.013 L=90.0' S=0.0100 '/' Outflow=1.27 cfs 0.09 af

Pond 3P: Roof Drain Peak Elev=183.59' Inflow=0.09 cfs 0.01 af
6.0" Round Culvert n=0.013 L=37.0' S=0.0300 '/' Outflow=0.09 cfs 0.01 af

Pond 4P: CB#101 Peak Elev=183.18' Inflow=2.12 cfs 0.16 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=2.12 cfs 0.16 af

Pond 5P: Stormwater Pond #1 Peak Elev=183.18' Storage=17,444 cf Inflow=2.96 cfs 0.23 af
Outflow=0.12 cfs 0.11 af

Pond 6P: DMH#104 Peak Elev=181.65' Inflow=0.12 cfs 0.11 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0055 '/' Outflow=0.12 cfs 0.11 af

Pond 8P: CB#110 Peak Elev=176.98' Inflow=1.01 cfs 0.07 af
12.0" Round Culvert n=0.013 L=13.0' S=0.0200 '/' Outflow=1.01 cfs 0.07 af

Pond 9P: Bioretention Pond #2 Peak Elev=176.98' Storage=1,294 cf Inflow=1.27 cfs 0.09 af
Outflow=0.25 cfs 0.09 af

Pond 10P: DMH#113 Peak Elev=172.31' Inflow=0.47 cfs 0.11 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0100 '/' Outflow=0.47 cfs 0.11 af

Pond 11P: DMH#114 Peak Elev=171.96' Inflow=0.76 cfs 0.14 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0100 '/' Outflow=0.76 cfs 0.14 af

Pond 12P: DMH#123 Peak Elev=171.55' Inflow=0.80 cfs 0.21 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=0.80 cfs 0.21 af

Pond 13P: CB#111 - Filterra 4x4 Peak Elev=175.07' Storage=14 cf Inflow=0.28 cfs 0.02 af
Outflow=0.28 cfs 0.02 af

Pond 14P: CB#112 - Filterra 4x4 Peak Elev=175.08' Storage=14 cf Inflow=0.29 cfs 0.02 af
Outflow=0.29 cfs 0.02 af

Pond 15P: CB#113 Peak Elev=178.74' Inflow=0.47 cfs 0.03 af
12.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=0.47 cfs 0.03 af

Pond 16P: Infitlration Pond #3 Peak Elev=178.74' Storage=554 cf Inflow=0.62 cfs 0.05 af
Discarded=0.06 cfs 0.04 af Primary=0.15 cfs 0.01 af Outflow=0.22 cfs 0.05 af

Pond 17P: Roof Drain Peak Elev=184.78' Inflow=5.01 cfs 0.41 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0500 '/' Outflow=5.01 cfs 0.41 af

Pond 18P: CB#120 Peak Elev=182.76' Inflow=5.74 cfs 0.46 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0400 '/' Outflow=5.74 cfs 0.46 af

Pond 19P: Infiltration Pond #4 Peak Elev=182.75' Storage=10,523 cf Inflow=6.40 cfs 0.54 af
Discarded=0.37 cfs 0.40 af Primary=0.23 cfs 0.07 af Outflow=0.60 cfs 0.47 af

Link A: Wetland Inflow=0.75 cfs 0.17 af
Primary=0.75 cfs 0.17 af

Link B: Central Street Inflow=1.30 cfs 0.25 af
Primary=1.30 cfs 0.25 af

Total Runoff Area = 3.789 ac Runoff Volume = 1.05 af Average Runoff Depth = 3.31"
56.01% Pervious = 2.122 ac 43.99% Impervious = 1.667 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 0.70 cfs @ 12.10 hrs, Volume= 0.06 af, Depth> 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
480	77.0	Woods, Good, HSG D
16,003	55.0	Woods, Good, HSG B
3,862	61.0	>75% Grass cover, Good, HSG B
20,345	56.7	Weighted Average
20,345	56.7	100.00% Pervious Area

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

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.50 cfs @ 12.09 hrs, Volume= 0.04 af, Depth> 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
246	55.0	Woods, Good, HSG B
632	98.0	Paved parking, HSG B
530	98.0	Paved parking, HSG D
6,698	61.0	>75% Grass cover, Good, HSG B
342	80.0	>75% Grass cover, Good, HSG D
8,448	66.7	Weighted Average
7,286	61.7	86.25% Pervious Area
1,162	98.0	13.75% Impervious Area

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

Summary for Subcatchment 3S: Roof Awning

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 4S: Flow to CB#100

Runoff = 1.18 cfs @ 12.09 hrs, Volume= 0.09 af, Depth> 4.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
2,792	98.0	Paved parking, HSG B
4,223	98.0	Paved parking, HSG D
2,020	61.0	>75% Grass cover, Good, HSG B
1,209	80.0	>75% Grass cover, Good, HSG D
477	55.0	Woods, Good, HSG B
10,721	87.1	Weighted Average
3,706	66.4	34.57% Pervious Area
7,015	98.0	65.43% Impervious Area

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

Summary for Subcatchment 5S: Roof Awning

Runoff = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 6S: Flow to CB#101

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.06 af, Depth> 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
2,027	61.0	>75% Grass cover, Good, HSG B
173	55.0	Woods, Good, HSG B
4,872	98.0	Paved parking, HSG B
7,072	86.3	Weighted Average
2,200	60.5	31.11% Pervious Area
4,872	98.0	68.89% Impervious Area

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

Summary for Subcatchment 7S: Flow to Stormwater Pond #1

Runoff = 0.93 cfs @ 12.13 hrs, Volume= 0.08 af, Depth> 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
2,021	55.0	Woods, Good, HSG B
21,432	61.0	>75% Grass cover, Good, HSG B
23,453	60.5	Weighted Average
23,453	60.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
1.9	92	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.7	142	Total			

Summary for Subcatchment 8S: Flow to CB#110

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.07 af, Depth> 4.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
2,130	61.0	>75% Grass cover, Good, HSG B
5,476	98.0	Paved parking, HSG B
1,221	98.0	Paved parking, HSG D
8,827	89.1	Weighted Average
2,130	61.0	24.13% Pervious Area
6,697	98.0	75.87% Impervious Area

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

Summary for Subcatchment 9S: Flow to Bioretention Pond #2

Runoff = 0.26 cfs @ 12.10 hrs, Volume= 0.02 af, Depth> 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
932	55.0	Woods, Good, HSG B
5,181	61.0	>75% Grass cover, Good, HSG B
6,113	60.1	Weighted Average
6,113	60.1	100.00% Pervious Area

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

Summary for Subcatchment 10S: Flow to CB#111

Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.02 af, Depth> 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
531	61.0	>75% Grass cover, Good, HSG B
917	98.0	Paved parking, HSG B
958	98.0	Paved parking, HSG D
2,406	89.8	Weighted Average
531	61.0	22.07% Pervious Area
1,875	98.0	77.93% Impervious Area

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

Summary for Subcatchment 11S: Flow to CB#112

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.02 af, Depth> 3.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
1,214	61.0	>75% Grass cover, Good, HSG B
1,704	98.0	Paved parking, HSG B
20	98.0	Paved parking, HSG D
2,938	82.7	Weighted Average
1,214	61.0	41.32% Pervious Area
1,724	98.0	58.68% Impervious Area

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

Summary for Subcatchment 12S: Flow to CB#113

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.03 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
965	61.0	>75% Grass cover, Good, HSG B
3,159	98.0	Paved parking, HSG B
4,124	89.3	Weighted Average
965	61.0	23.40% Pervious Area
3,159	98.0	76.60% Impervious Area

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

Summary for Subcatchment 13S: Flow to Bioretention Pond #3

Runoff = 0.15 cfs @ 12.10 hrs, Volume= 0.01 af, Depth> 1.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
3,336	61.0	>75% Grass cover, Good, HSG B
3,336	61.0	100.00% Pervious Area

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

Summary for Subcatchment 14S: Roof

Runoff = 5.01 cfs @ 12.08 hrs, Volume= 0.41 af, Depth> 5.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
39,396	98.0	Roofs, HSG B
126	98.0	Roofs, HSG D
39,522	98.0	Weighted Average
39,522	98.0	100.00% Impervious Area

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

Summary for Subcatchment 15S: Flow to CB#120

Runoff = 0.73 cfs @ 12.08 hrs, Volume= 0.06 af, Depth> 4.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
639	98.0	Paved parking, HSG D
4,522	98.0	Paved parking, HSG B
852	61.0	>75% Grass cover, Good, HSG B
6,013	92.8	Weighted Average
852	61.0	14.17% Pervious Area
5,161	98.0	85.83% Impervious Area

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

Summary for Subcatchment 16S: Flow to Infiltration Pond #4

Runoff = 0.84 cfs @ 12.16 hrs, Volume= 0.07 af, Depth> 1.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YEAR Rainfall=5.65"

Area (sf)	CN	Description
2,499	55.0	Woods, Good, HSG B
15,393	61.0	>75% Grass cover, Good, HSG B
2,423	80.0	>75% Grass cover, Good, HSG D
20,315	62.5	Weighted Average
20,315	62.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0109	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
3.1	134	0.0109	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	184	Total			

Summary for Pond 1P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 5.41" for 25-YEAR event
Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.28' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.10'	**6.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.10' / 183.20' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.09 cfs @ 12.08 hrs HW=184.28' TW=183.33' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.09 cfs @ 1.43 fps)

Summary for Pond 2P: CB#100

Inflow Area = 0.262 ac, 67.57% Impervious, Inflow Depth > 4.26" for 25-YEAR event
Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.09 af
Outflow = 1.27 cfs @ 12.09 hrs, Volume= 0.09 af, Atten= 0%, Lag= 0.0 min
Primary = 1.27 cfs @ 12.09 hrs, Volume= 0.09 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.33' @ 12.09 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.70'	**15.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.70' / 181.80' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.23 cfs @ 12.09 hrs HW=183.33' TW=182.78' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.23 cfs @ 2.89 fps)

Summary for Pond 3P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 5.41" for 25-YEAR event
Inflow = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.59' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.41'	**6.0" Round Culvert** L= 37.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.41' / 182.30' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.09 cfs @ 12.08 hrs HW=183.59' TW=182.78' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.09 cfs @ 1.43 fps)

Summary for Pond 4P: CB#101

Inflow Area = 0.441 ac, 69.25% Impervious, Inflow Depth > 4.25" for 25-YEAR event
Inflow = 2.12 cfs @ 12.09 hrs, Volume= 0.16 af
Outflow = 2.12 cfs @ 12.09 hrs, Volume= 0.16 af, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.09 hrs, Volume= 0.16 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.18' @ 15.83 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.70'	**15.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.70' / 181.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.97 cfs @ 12.09 hrs HW=182.78' TW=182.53' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.97 cfs @ 2.35 fps)

Summary for Pond 5P: Stormwater Pond #1

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 2.86" for 25-YEAR event
Inflow = 2.96 cfs @ 12.10 hrs, Volume= 0.23 af
Outflow = 0.12 cfs @ 15.81 hrs, Volume= 0.11 af, Atten= 96%, Lag= 222.6 min
Primary = 0.12 cfs @ 15.81 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Starting Elev= 182.00' Surf.Area= 5,137 sf Storage= 10,729 cf
Peak Elev= 183.18' @ 15.81 hrs Surf.Area= 6,271 sf Storage= 17,444 cf (6,715 cf above start)
Flood Elev= 185.00' Surf.Area= 7,127 sf Storage= 22,939 cf (12,210 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 245.2 min (1,062.0 - 816.8)

Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	22,939 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)
179.00	2,168	252.3	0	0	2,168
180.00	3,043	312.6	2,593	2,593	4,893
181.00	4,069	357.9	3,544	6,137	7,334
182.00	5,137	339.8	4,593	10,729	8,397
184.00	7,127	365.6	12,210	22,939	10,008

Device	Routing	Invert	Outlet Devices
#1	Primary	181.95'	**12.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.95' / 181.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	182.00'	**1.0" W x 2.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	182.84'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	183.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.12 cfs @ 15.81 hrs HW=183.18' TW=181.65' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.12 cfs of 2.72 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.07 cfs @ 5.04 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.05 cfs @ 2.44 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 6P: DMH#104

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 1.35" for 25-YEAR event
Inflow = 0.12 cfs @ 15.81 hrs, Volume= 0.11 af
Outflow = 0.12 cfs @ 15.80 hrs, Volume= 0.11 af, Atten= 0%, Lag= 0.0 min
Primary = 0.12 cfs @ 15.80 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 181.65' @ 15.80 hrs
Flood Elev= 186.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.45'	**12.0" Round Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.45' / 180.85' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.12 cfs @ 15.80 hrs HW=181.65' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.12 cfs @ 1.69 fps)

Summary for Pond 8P: CB#110

Inflow Area = 0.203 ac, 75.87% Impervious, Inflow Depth > 4.40" for 25-YEAR event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.07 af
Outflow = 1.01 cfs @ 12.09 hrs, Volume= 0.07 af, Atten= 0%, Lag= 0.0 min
Primary = 1.01 cfs @ 12.09 hrs, Volume= 0.07 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.98' @ 12.55 hrs
Flood Elev= 180.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	175.76'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.76' / 175.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.72 cfs @ 12.09 hrs HW=176.43' TW=176.33' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.72 cfs @ 1.82 fps)

Summary for Pond 9P: Bioretention Pond #2

Inflow Area = 0.343 ac, 44.83% Impervious, Inflow Depth > 3.30" for 25-YEAR event
Inflow = 1.27 cfs @ 12.09 hrs, Volume= 0.09 af
Outflow = 0.25 cfs @ 12.54 hrs, Volume= 0.09 af, Atten= 80%, Lag= 26.9 min
Primary = 0.25 cfs @ 12.54 hrs, Volume= 0.09 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 176.98' @ 12.54 hrs Surf.Area= 1,071 sf Storage= 1,294 cf
Flood Elev= 178.10' Surf.Area= 1,676 sf Storage= 2,684 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 43.4 min (848.9 - 805.5)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	2,684 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)
175.00	193	87.3	0	0	193
176.00	714	149.7	426	426	1,376
177.00	1,080	196.1	891	1,317	2,664
178.00	1,676	200.8	1,367	2,684	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**10.000 in/hr Exfiltration over Surface area**
#2	Device 1	172.50'	**12.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 171.96' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	176.20'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	176.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.25 cfs @ 12.54 hrs HW=176.98' TW=172.21' (Dynamic Tailwater)
└─**1=Exfiltration** (Exfiltration Controls 0.25 cfs)
  ├─**2=Culvert** (Passes < 5.32 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 0.09 cfs potential flow)
  └─**4=Orifice/Grate** (Passes < 3.95 cfs potential flow)

Summary for Pond 10P: DMH#113

Inflow Area = 0.398 ac, 49.42% Impervious, Inflow Depth > 3.46" for 25-YEAR event
Inflow = 0.47 cfs @ 12.10 hrs, Volume= 0.11 af
Outflow = 0.47 cfs @ 12.10 hrs, Volume= 0.11 af, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.10 hrs, Volume= 0.11 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 172.31' @ 12.10 hrs
Flood Elev= 176.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.92'	**12.0" Round Culvert** L= 39.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.92' / 171.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.46 cfs @ 12.10 hrs HW=172.31' TW=171.96' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.46 cfs @ 2.47 fps)

Summary for Pond 11P: DMH#114

Inflow Area = 0.466 ac, 50.76% Impervious, Inflow Depth > 3.50" for 25-YEAR event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.14 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.14 af, Atten= 0%, Lag= 0.0 min
Primary = 0.76 cfs @ 12.09 hrs, Volume= 0.14 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 171.96' @ 12.10 hrs
Flood Elev= 177.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.48'	**12.0" Round Culvert** L= 38.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.48' / 171.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.75 cfs @ 12.09 hrs HW=171.96' TW=171.54' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.75 cfs @ 2.93 fps)

Summary for Pond 12P: DMH#123

Inflow Area = 2.149 ac, 62.12% Impervious, Inflow Depth > 1.19" for 25-YEAR event
Inflow = 0.80 cfs @ 12.11 hrs, Volume= 0.21 af
Outflow = 0.80 cfs @ 12.11 hrs, Volume= 0.21 af, Atten= 0%, Lag= 0.0 min
Primary = 0.80 cfs @ 12.11 hrs, Volume= 0.21 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 171.55' @ 12.11 hrs
Flood Elev= 176.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.05'	**12.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.05' / 170.85' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.80 cfs @ 12.11 hrs HW=171.55' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.80 cfs @ 2.99 fps)

Summary for Pond 13P: CB#111 - Filterra 4x4

Inflow Area = 0.055 ac, 77.93% Impervious, Inflow Depth > 4.48" for 25-YEAR event
Inflow = 0.28 cfs @ 12.08 hrs, Volume= 0.02 af
Outflow = 0.28 cfs @ 12.09 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.1 min
Primary = 0.28 cfs @ 12.09 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.07' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (787.6 - 786.7)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.97' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.28 cfs @ 12.09 hrs HW=175.07' TW=172.30' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.28 cfs of 6.04 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.22 cfs @ 1.01 fps)

Summary for Pond 14P: CB#112 - Filterra 4x4

Inflow Area = 0.067 ac, 58.68% Impervious, Inflow Depth > 3.73" for 25-YEAR event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.02 af
Outflow = 0.29 cfs @ 12.09 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.1 min
Primary = 0.29 cfs @ 12.09 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.08' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (809.6 - 808.7)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.72' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.29 cfs @ 12.09 hrs HW=175.08' TW=171.96' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.29 cfs of 6.05 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.24 cfs @ 1.03 fps)

Summary for Pond 15P: CB#113

Inflow Area = 0.095 ac, 76.60% Impervious, Inflow Depth > 4.43" for 25-YEAR event
Inflow = 0.47 cfs @ 12.08 hrs, Volume= 0.03 af
Outflow = 0.47 cfs @ 12.08 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.0 min
Primary = 0.47 cfs @ 12.08 hrs, Volume= 0.03 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.74' @ 12.39 hrs
Flood Elev= 181.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.15'	**12.0" Round Culvert** L= 15.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.15' / 178.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.39 cfs @ 12.08 hrs HW=178.58' TW=178.48' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.39 cfs @ 1.75 fps)

Summary for Pond 16P: Infitlration Pond #3

Inflow Area = 0.171 ac, 42.35% Impervious, Inflow Depth > 3.24" for 25-YEAR event
Inflow = 0.62 cfs @ 12.09 hrs, Volume= 0.05 af
Outflow = 0.22 cfs @ 12.38 hrs, Volume= 0.05 af, Atten= 65%, Lag= 17.7 min
Discarded = 0.06 cfs @ 12.38 hrs, Volume= 0.04 af
Primary = 0.15 cfs @ 12.38 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.74' @ 12.38 hrs Surf.Area= 934 sf Storage= 554 cf
Flood Elev= 180.00' Surf.Area= 1,583 sf Storage= 2,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 48.6 min (855.3 - 806.7)

Volume	Invert	Avail.Storage	Storage Description
#1	178.00'	2,141 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)
178.00	585	143.3	0	0	585
179.00	1,078	186.5	819	819	1,731
180.00	1,583	162.2	1,322	2,141	2,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	172.10'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.10' / 171.45' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	178.50'	**6.0" Vert. Orifice/Grate** C= 0.600

#4	Device 2	179.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.06 cfs @ 12.38 hrs HW=178.74' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.15 cfs @ 12.38 hrs HW=178.74' TW=171.51' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.15 cfs of 9.37 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.15 cfs @ 1.66 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Roof Drain

Inflow Area = 0.907 ac,100.00% Impervious, Inflow Depth > 5.41" for 25-YEAR event
Inflow = 5.01 cfs @ 12.08 hrs, Volume= 0.41 af
Outflow = 5.01 cfs @ 12.08 hrs, Volume= 0.41 af, Atten= 0%, Lag= 0.0 min
Primary = 5.01 cfs @ 12.08 hrs, Volume= 0.41 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.78' @ 12.08 hrs
Flood Elev= 186.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.43'	**15.0" Round Culvert** L= 53.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.43' / 180.78' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.99 cfs @ 12.08 hrs HW=184.77' TW=182.56' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 4.99 cfs @ 4.07 fps)

Summary for Pond 18P: CB#120

Inflow Area = 1.045 ac, 98.13% Impervious, Inflow Depth > 5.33" for 25-YEAR event
Inflow = 5.74 cfs @ 12.08 hrs, Volume= 0.46 af
Outflow = 5.74 cfs @ 12.08 hrs, Volume= 0.46 af, Atten= 0%, Lag= 0.0 min
Primary = 5.74 cfs @ 12.08 hrs, Volume= 0.46 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.76' @ 13.00 hrs
Flood Elev= 185.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.68'	**15.0" Round Culvert** L= 17.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.68' / 180.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.39 cfs @ 12.08 hrs HW=182.56' TW=181.73' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.39 cfs @ 4.39 fps)

Summary for Pond 19P: Infiltration Pond #4

Inflow Area = 1.512 ac, 67.86% Impervious, Inflow Depth > 4.27" for 25-YEAR event
Inflow = 6.40 cfs @ 12.09 hrs, Volume= 0.54 af
Outflow = 0.60 cfs @ 13.02 hrs, Volume= 0.47 af, Atten= 91%, Lag= 55.7 min
Discarded = 0.37 cfs @ 13.02 hrs, Volume= 0.40 af
Primary = 0.23 cfs @ 13.02 hrs, Volume= 0.07 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 182.75' @ 13.02 hrs Surf.Area= 5,348 sf Storage= 10,523 cf
Flood Elev= 184.25' Surf.Area= 6,860 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 156.4 min (921.0 - 764.6)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	18,117 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)
180.00	2,396	320.8	0	0	2,396
182.00	4,527	397.5	6,811	6,811	6,839
184.00	6,860	378.5	11,306	18,117	8,245

Device	Routing	Invert	Outlet Devices
#1	Discarded	180.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	175.75'	**12.0" Round Culvert** L= 55.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 173.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	181.60'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	182.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	183.85'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.37 cfs @ 13.02 hrs HW=182.75' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.37 cfs)

Primary OutFlow Max=0.23 cfs @ 13.02 hrs HW=182.75' TW=171.45' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.23 cfs of 9.64 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.11 cfs @ 4.98 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 1.71 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link A: Wetland

Inflow Area = 1.446 ac, 21.11% Impervious, Inflow Depth > 1.38" for 25-YEAR event
Inflow = 0.75 cfs @ 12.10 hrs, Volume= 0.17 af
Primary = 0.75 cfs @ 12.10 hrs, Volume= 0.17 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link B: Central Street

Inflow Area = 2.343 ac, 58.11% Impervious, Inflow Depth > 1.27" for 25-YEAR event
Inflow = 1.30 cfs @ 12.10 hrs, Volume= 0.25 af
Primary = 1.30 cfs @ 12.10 hrs, Volume= 0.25 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 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 1S: Overland Flow to Runoff Area=20,345 sf 0.00% Impervious Runoff Depth>2.11"
Tc=6.0 min CN=56.7 Runoff=1.09 cfs 0.08 af

Subcatchment 2S: Overland Flow Runoff Area=8,448 sf 13.75% Impervious Runoff Depth>3.07"
Tc=6.0 min CN=66.7 Runoff=0.69 cfs 0.05 af

Subcatchment 3S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>6.51"
Tc=6.0 min CN=98.0 Runoff=0.11 cfs 0.01 af

Subcatchment 4S: Flow to CB#100 Runoff Area=10,721 sf 65.43% Impervious Runoff Depth>5.24"
Tc=6.0 min CN=87.1 Runoff=1.46 cfs 0.11 af

Subcatchment 5S: Roof Awning Runoff Area=707 sf 100.00% Impervious Runoff Depth>6.51"
Tc=6.0 min CN=98.0 Runoff=0.11 cfs 0.01 af

Subcatchment 6S: Flow to CB#101 Runoff Area=7,072 sf 68.89% Impervious Runoff Depth>5.16"
Tc=6.0 min CN=86.3 Runoff=0.95 cfs 0.07 af

Subcatchment 7S: Flow to Stormwater Runoff Area=23,453 sf 0.00% Impervious Runoff Depth>2.47"
Flow Length=142' Slope=0.0140 '/' Tc=8.7 min CN=60.5 Runoff=1.37 cfs 0.11 af

Subcatchment 8S: Flow to CB#110 Runoff Area=8,827 sf 75.87% Impervious Runoff Depth>5.47"
Tc=6.0 min CN=89.1 Runoff=1.24 cfs 0.09 af

Subcatchment 9S: Flow to Bioretention Runoff Area=6,113 sf 0.00% Impervious Runoff Depth>2.43"
Tc=6.0 min CN=60.1 Runoff=0.39 cfs 0.03 af

Subcatchment 10S: Flow to CB#111 Runoff Area=2,406 sf 77.93% Impervious Runoff Depth>5.55"
Tc=6.0 min CN=89.8 Runoff=0.34 cfs 0.03 af

Subcatchment 11S: Flow to CB#112 Runoff Area=2,938 sf 58.68% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=82.7 Runoff=0.37 cfs 0.03 af

Subcatchment 12S: Flow to CB#113 Runoff Area=4,124 sf 76.60% Impervious Runoff Depth>5.50"
Tc=6.0 min CN=89.3 Runoff=0.58 cfs 0.04 af

Subcatchment 13S: Flow to Bioretention Runoff Area=3,336 sf 0.00% Impervious Runoff Depth>2.52"
Tc=6.0 min CN=61.0 Runoff=0.22 cfs 0.02 af

Subcatchment 14S: Roof Runoff Area=39,522 sf 100.00% Impervious Runoff Depth>6.51"
Tc=6.0 min CN=98.0 Runoff=6.00 cfs 0.49 af

Subcatchment 15S: Flow to CB#120 Runoff Area=6,013 sf 85.83% Impervious Runoff Depth>5.89"
Tc=6.0 min CN=92.8 Runoff=0.88 cfs 0.07 af

Subcatchment 16S: Flow to Infiltration Runoff Area=20,315 sf 0.00% Impervious Runoff Depth>2.66"
Flow Length=184' Slope=0.0109 '/' Tc=10.7 min CN=62.5 Runoff=1.22 cfs 0.10 af

Pond 1P: Roof Drain Peak Elev=184.30' Inflow=0.11 cfs 0.01 af
6.0" Round Culvert n=0.013 L=45.0' S=0.0200 '/' Outflow=0.11 cfs 0.01 af

Pond 2P: CB#100 Peak Elev=183.50' Inflow=1.56 cfs 0.12 af
15.0" Round Culvert n=0.013 L=90.0' S=0.0100 '/' Outflow=1.56 cfs 0.12 af

Pond 3P: Roof Drain Peak Elev=183.61' Inflow=0.11 cfs 0.01 af
6.0" Round Culvert n=0.013 L=37.0' S=0.0300 '/' Outflow=0.11 cfs 0.01 af

Pond 4P: CB#101 Peak Elev=183.50' Inflow=2.62 cfs 0.19 af
15.0" Round Culvert n=0.013 L=70.0' S=0.0100 '/' Outflow=2.62 cfs 0.19 af

Pond 5P: Stormwater Pond #1 Peak Elev=183.50' Storage=19,503 cf Inflow=3.88 cfs 0.31 af
Outflow=0.16 cfs 0.15 af

Pond 6P: DMH#104 Peak Elev=181.67' Inflow=0.16 cfs 0.15 af
12.0" Round Culvert n=0.013 L=110.0' S=0.0055 '/' Outflow=0.16 cfs 0.15 af

Pond 8P: CB#110 Peak Elev=177.38' Inflow=1.24 cfs 0.09 af
12.0" Round Culvert n=0.013 L=13.0' S=0.0200 '/' Outflow=1.24 cfs 0.09 af

Pond 9P: Bioretention Pond #2 Peak Elev=177.37' Storage=1,758 cf Inflow=1.62 cfs 0.12 af
Outflow=0.30 cfs 0.12 af

Pond 10P: DMH#113 Peak Elev=172.36' Inflow=0.56 cfs 0.15 af
12.0" Round Culvert n=0.013 L=39.0' S=0.0100 '/' Outflow=0.56 cfs 0.15 af

Pond 11P: DMH#114 Peak Elev=172.03' Inflow=0.93 cfs 0.17 af
12.0" Round Culvert n=0.013 L=38.0' S=0.0100 '/' Outflow=0.93 cfs 0.17 af

Pond 12P: DMH#123 Peak Elev=171.67' Inflow=1.17 cfs 0.33 af
12.0" Round Culvert n=0.013 L=20.0' S=0.0100 '/' Outflow=1.17 cfs 0.33 af

Pond 13P: CB#111 - Filterra 4x4 Peak Elev=175.09' Storage=14 cf Inflow=0.34 cfs 0.03 af
Outflow=0.34 cfs 0.03 af

Pond 14P: CB#112 - Filterra 4x4 Peak Elev=175.10' Storage=15 cf Inflow=0.37 cfs 0.03 af
Outflow=0.37 cfs 0.03 af

Pond 15P: CB#113 Peak Elev=178.85' Inflow=0.58 cfs 0.04 af
12.0" Round Culvert n=0.013 L=15.0' S=0.0100 '/' Outflow=0.58 cfs 0.04 af

Pond 16P: Infitlration Pond #3 Peak Elev=178.84' Storage=654 cf Inflow=0.80 cfs 0.06 af
Discarded=0.07 cfs 0.04 af Primary=0.28 cfs 0.02 af Outflow=0.35 cfs 0.06 af

Pond 17P: Roof Drain Peak Elev=185.09' Inflow=6.00 cfs 0.49 af
15.0" Round Culvert n=0.013 L=53.0' S=0.0500 '/' Outflow=6.00 cfs 0.49 af

Pond 18P: CB#120 Peak Elev=183.40' Inflow=6.88 cfs 0.56 af
15.0" Round Culvert n=0.013 L=17.0' S=0.0400 '/' Outflow=6.88 cfs 0.56 af

Pond 19P: Infiltration Pond #4 Peak Elev=183.21' Storage=13,061 cf Inflow=7.85 cfs 0.66 af
Discarded=0.41 cfs 0.44 af Primary=0.44 cfs 0.14 af Outflow=0.85 cfs 0.58 af

Link A: Wetland Inflow=1.14 cfs 0.23 af
Primary=1.14 cfs 0.23 af

Link B: Central Street Inflow=1.79 cfs 0.38 af
Primary=1.79 cfs 0.38 af

Total Runoff Area = 3.789 ac Runoff Volume = 1.33 af Average Runoff Depth = 4.22"
56.01% Pervious = 2.122 ac 43.99% Impervious = 1.667 ac

Summary for Subcatchment 1S: Overland Flow to Wetland

Runoff = 1.09 cfs @ 12.10 hrs, Volume= 0.08 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
480	77.0	Woods, Good, HSG D
16,003	55.0	Woods, Good, HSG B
3,862	61.0	>75% Grass cover, Good, HSG B
20,345	56.7	Weighted Average
20,345	56.7	100.00% Pervious Area

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

Summary for Subcatchment 2S: Overland Flow

Runoff = 0.69 cfs @ 12.09 hrs, Volume= 0.05 af, Depth> 3.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
246	55.0	Woods, Good, HSG B
632	98.0	Paved parking, HSG B
530	98.0	Paved parking, HSG D
6,698	61.0	>75% Grass cover, Good, HSG B
342	80.0	>75% Grass cover, Good, HSG D
8,448	66.7	Weighted Average
7,286	61.7	86.25% Pervious Area
1,162	98.0	13.75% Impervious Area

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

Summary for Subcatchment 3S: Roof Awning

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 4S: Flow to CB#100

Runoff = 1.46 cfs @ 12.09 hrs, Volume= 0.11 af, Depth> 5.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
2,792	98.0	Paved parking, HSG B
4,223	98.0	Paved parking, HSG D
2,020	61.0	>75% Grass cover, Good, HSG B
1,209	80.0	>75% Grass cover, Good, HSG D
477	55.0	Woods, Good, HSG B
10,721	87.1	Weighted Average
3,706	66.4	34.57% Pervious Area
7,015	98.0	65.43% Impervious Area

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

Summary for Subcatchment 5S: Roof Awning

Runoff = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
707	98.0	Roofs, HSG B
707	98.0	100.00% Impervious Area

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

Summary for Subcatchment 6S: Flow to CB#101

Runoff = 0.95 cfs @ 12.09 hrs, Volume= 0.07 af, Depth> 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
2,027	61.0	>75% Grass cover, Good, HSG B
173	55.0	Woods, Good, HSG B
4,872	98.0	Paved parking, HSG B
7,072	86.3	Weighted Average
2,200	60.5	31.11% Pervious Area
4,872	98.0	68.89% Impervious Area

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

Summary for Subcatchment 7S: Flow to Stormwater Pond #1

Runoff = 1.37 cfs @ 12.13 hrs, Volume= 0.11 af, Depth> 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
2,021	55.0	Woods, Good, HSG B
21,432	61.0	>75% Grass cover, Good, HSG B
23,453	60.5	Weighted Average
23,453	60.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	50	0.0140	0.12		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
1.9	92	0.0140	0.83		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
8.7	142	Total			

Summary for Subcatchment 8S: Flow to CB#110

Runoff = 1.24 cfs @ 12.08 hrs, Volume= 0.09 af, Depth> 5.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
2,130	61.0	>75% Grass cover, Good, HSG B
5,476	98.0	Paved parking, HSG B
1,221	98.0	Paved parking, HSG D
8,827	89.1	Weighted Average
2,130	61.0	24.13% Pervious Area
6,697	98.0	75.87% Impervious Area

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

Summary for Subcatchment 9S: Flow to Bioretention Pond #2

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 2.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
932	55.0	Woods, Good, HSG B
5,181	61.0	>75% Grass cover, Good, HSG B
6,113	60.1	Weighted Average
6,113	60.1	100.00% Pervious Area

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

Summary for Subcatchment 10S: Flow to CB#111

Runoff = 0.34 cfs @ 12.08 hrs, Volume= 0.03 af, Depth> 5.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
531	61.0	>75% Grass cover, Good, HSG B
917	98.0	Paved parking, HSG B
958	98.0	Paved parking, HSG D
2,406	89.8	Weighted Average
531	61.0	22.07% Pervious Area
1,875	98.0	77.93% Impervious Area

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

Summary for Subcatchment 11S: Flow to CB#112

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.03 af, Depth> 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
1,214	61.0	>75% Grass cover, Good, HSG B
1,704	98.0	Paved parking, HSG B
20	98.0	Paved parking, HSG D
2,938	82.7	Weighted Average
1,214	61.0	41.32% Pervious Area
1,724	98.0	58.68% Impervious Area

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

Summary for Subcatchment 12S: Flow to CB#113

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 5.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
965	61.0	>75% Grass cover, Good, HSG B
3,159	98.0	Paved parking, HSG B
4,124	89.3	Weighted Average
965	61.0	23.40% Pervious Area
3,159	98.0	76.60% Impervious Area

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

Summary for Subcatchment 13S: Flow to Bioretention Pond #3

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.02 af, Depth> 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
3,336	61.0	>75% Grass cover, Good, HSG B
3,336	61.0	100.00% Pervious Area

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

Summary for Subcatchment 14S: Roof

Runoff = 6.00 cfs @ 12.08 hrs, Volume= 0.49 af, Depth> 6.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
39,396	98.0	Roofs, HSG B
126	98.0	Roofs, HSG D
39,522	98.0	Weighted Average
39,522	98.0	100.00% Impervious Area

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

Summary for Subcatchment 15S: Flow to CB#120

Runoff = 0.88 cfs @ 12.08 hrs, Volume= 0.07 af, Depth> 5.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
639	98.0	Paved parking, HSG D
4,522	98.0	Paved parking, HSG B
852	61.0	>75% Grass cover, Good, HSG B
6,013	92.8	Weighted Average
852	61.0	14.17% Pervious Area
5,161	98.0	85.83% Impervious Area

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

Summary for Subcatchment 16S: Flow to Infiltration Pond #4

Runoff = 1.22 cfs @ 12.16 hrs, Volume= 0.10 af, Depth> 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 50-YEAR Rainfall=6.75"

Area (sf)	CN	Description
2,499	55.0	Woods, Good, HSG B
15,393	61.0	>75% Grass cover, Good, HSG B
2,423	80.0	>75% Grass cover, Good, HSG D
20,315	62.5	Weighted Average
20,315	62.5	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.6	50	0.0109	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
3.1	134	0.0109	0.73		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
10.7	184	Total			

Summary for Pond 1P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 6.51" for 50-YEAR event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 184.30' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.10'	**6.0" Round Culvert** L= 45.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.10' / 183.20' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.11 cfs @ 12.08 hrs HW=184.30' TW=183.44' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.11 cfs @ 1.50 fps)

Summary for Pond 2P: CB#100

Inflow Area = 0.262 ac, 67.57% Impervious, Inflow Depth > 5.32" for 50-YEAR event
Inflow = 1.56 cfs @ 12.08 hrs, Volume= 0.12 af
Outflow = 1.56 cfs @ 12.08 hrs, Volume= 0.12 af, Atten= 0%, Lag= 0.0 min
Primary = 1.56 cfs @ 12.08 hrs, Volume= 0.12 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.50' @ 15.78 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	182.70'	**15.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 182.70' / 181.80' S= 0.0100 '/' Cc= 0.900

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.49 cfs @ 12.08 hrs HW=183.44' TW=182.96' (Dynamic Tailwater)
1=Culvert (Outlet Controls 1.49 cfs @ 2.84 fps)

Summary for Pond 3P: Roof Drain

Inflow Area = 0.016 ac,100.00% Impervious, Inflow Depth > 6.51" for 50-YEAR event
Inflow = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af
Outflow = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.11 cfs @ 12.08 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.61' @ 12.08 hrs
Flood Elev= 187.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.41'	**6.0" Round Culvert** L= 37.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.41' / 182.30' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.11 cfs @ 12.08 hrs HW=183.61' TW=182.96' (Dynamic Tailwater)
1=Culvert (Inlet Controls 0.11 cfs @ 1.50 fps)

Summary for Pond 4P: CB#101

Inflow Area = 0.441 ac, 69.25% Impervious, Inflow Depth > 5.31" for 50-YEAR event
Inflow = 2.62 cfs @ 12.08 hrs, Volume= 0.19 af
Outflow = 2.62 cfs @ 12.08 hrs, Volume= 0.19 af, Atten= 0%, Lag= 0.0 min
Primary = 2.62 cfs @ 12.08 hrs, Volume= 0.19 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.50' @ 15.76 hrs
Flood Elev= 186.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.70'	**15.0" Round Culvert** L= 70.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.70' / 181.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.40 cfs @ 12.08 hrs HW=182.96' TW=182.71' (Dynamic Tailwater)
1=Culvert (Outlet Controls 2.40 cfs @ 2.40 fps)

Summary for Pond 5P: Stormwater Pond #1

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 3.75" for 50-YEAR event
Inflow = 3.88 cfs @ 12.10 hrs, Volume= 0.31 af
Outflow = 0.16 cfs @ 15.75 hrs, Volume= 0.15 af, Atten= 96%, Lag= 219.0 min
Primary = 0.16 cfs @ 15.75 hrs, Volume= 0.15 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Starting Elev= 182.00' Surf.Area= 5,137 sf Storage= 10,729 cf
Peak Elev= 183.50' @ 15.75 hrs Surf.Area= 6,598 sf Storage= 19,503 cf (8,773 cf above start)
Flood Elev= 185.00' Surf.Area= 7,127 sf Storage= 22,939 cf (12,210 cf above start)

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= 251.1 min (1,062.6 - 811.5)

Volume	Invert	Avail.Storage	Storage Description
#1	179.00'	22,939 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)
179.00	2,168	252.3	0	0	2,168
180.00	3,043	312.6	2,593	2,593	4,893
181.00	4,069	357.9	3,544	6,137	7,334
182.00	5,137	339.8	4,593	10,729	8,397
184.00	7,127	365.6	12,210	22,939	10,008

Device	Routing	Invert	Outlet Devices
#1	Primary	181.95'	**12.0" Round Culvert** L= 90.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.95' / 181.50' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	182.00'	**1.0" W x 2.0" H Vert. Orifice/Grate** C= 0.600
#3	Device 1	182.84'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	183.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.16 cfs @ 15.75 hrs HW=183.50' TW=181.67' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.16 cfs of 3.03 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 5.73 fps)
  ├─**3=Orifice/Grate** (Orifice Controls 0.08 cfs @ 3.65 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 6P: DMH#104

Inflow Area = 0.979 ac, 31.18% Impervious, Inflow Depth > 1.82" for 50-YEAR event
Inflow = 0.16 cfs @ 15.75 hrs, Volume= 0.15 af
Outflow = 0.16 cfs @ 15.75 hrs, Volume= 0.15 af, Atten= 0%, Lag= 0.2 min
Primary = 0.16 cfs @ 15.75 hrs, Volume= 0.15 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 181.67' @ 15.75 hrs
Flood Elev= 186.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	181.45'	**12.0" Round Culvert** L= 110.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 181.45' / 180.85' S= 0.0055 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.16 cfs @ 15.75 hrs HW=181.67' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.16 cfs @ 1.82 fps)

Summary for Pond 8P: CB#110

Inflow Area = 0.203 ac, 75.87% Impervious, Inflow Depth > 5.47" for 50-YEAR event
Inflow = 1.24 cfs @ 12.08 hrs, Volume= 0.09 af
Outflow = 1.24 cfs @ 12.08 hrs, Volume= 0.09 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.08 hrs, Volume= 0.09 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 177.38' @ 12.56 hrs
Flood Elev= 180.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	175.76'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.76' / 175.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.57 cfs @ 12.08 hrs HW=176.66' TW=176.63' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.57 cfs @ 1.00 fps)

Summary for Pond 9P: Bioretention Pond #2

Inflow Area = 0.343 ac, 44.83% Impervious, Inflow Depth > 4.23" for 50-YEAR event
Inflow = 1.62 cfs @ 12.09 hrs, Volume= 0.12 af
Outflow = 0.30 cfs @ 12.55 hrs, Volume= 0.12 af, Atten= 82%, Lag= 27.6 min
Primary = 0.30 cfs @ 12.55 hrs, Volume= 0.12 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 177.37' @ 12.55 hrs Surf.Area= 1,287 sf Storage= 1,758 cf
Flood Elev= 178.10' Surf.Area= 1,676 sf Storage= 2,684 cf

Plug-Flow detention time= 53.3 min calculated for 0.12 af (100% of inflow)
Center-of-Mass det. time= 53.2 min (853.5 - 800.3)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	2,684 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)
175.00	193	87.3	0	0	193
176.00	714	149.7	426	426	1,376
177.00	1,080	196.1	891	1,317	2,664
178.00	1,676	200.8	1,367	2,684	2,912

Device	Routing	Invert	Outlet Devices
#1	Primary	175.00'	**10.000 in/hr Exfiltration over Surface area**
#2	Device 1	172.50'	**12.0" Round Culvert** L= 18.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.50' / 171.96' S= 0.0300 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 1	176.20'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 1	176.80'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.30 cfs @ 12.55 hrs HW=177.37' TW=172.25' (Dynamic Tailwater)
└─**1=Exfiltration** (Exfiltration Controls 0.30 cfs)
  ├─**2=Culvert** (Passes < 5.83 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 0.11 cfs potential flow)
  └─**4=Orifice/Grate** (Passes < 22.72 cfs potential flow)

Summary for Pond 10P: DMH#113

Inflow Area = 0.398 ac, 49.42% Impervious, Inflow Depth > 4.41" for 50-YEAR event
Inflow = 0.56 cfs @ 12.10 hrs, Volume= 0.15 af
Outflow = 0.56 cfs @ 12.10 hrs, Volume= 0.15 af, Atten= 0%, Lag= 0.0 min
Primary = 0.56 cfs @ 12.10 hrs, Volume= 0.15 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 172.36' @ 12.11 hrs
Flood Elev= 176.85'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.92'	**12.0" Round Culvert** L= 39.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.92' / 171.53' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.10 hrs HW=172.35' TW=172.03' (Dynamic Tailwater)
└─**1=Culvert** (Outlet Controls 0.55 cfs @ 2.48 fps)

Summary for Pond 11P: DMH#114

Inflow Area = 0.466 ac, 50.76% Impervious, Inflow Depth > 4.46" for 50-YEAR event
Inflow = 0.93 cfs @ 12.09 hrs, Volume= 0.17 af
Outflow = 0.93 cfs @ 12.09 hrs, Volume= 0.17 af, Atten= 0%, Lag= 0.0 min
Primary = 0.93 cfs @ 12.09 hrs, Volume= 0.17 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Peak Elev= 172.03' @ 12.10 hrs
Flood Elev= 177.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.48'	**12.0" Round Culvert** L= 38.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.48' / 171.10' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.90 cfs @ 12.09 hrs HW=172.03' TW=171.64' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 0.90 cfs @ 2.93 fps)

Summary for Pond 12P: DMH#123

Inflow Area = 2.149 ac, 62.12% Impervious, Inflow Depth > 1.83" for 50-YEAR event
Inflow = 1.17 cfs @ 12.33 hrs, Volume= 0.33 af
Outflow = 1.17 cfs @ 12.33 hrs, Volume= 0.33 af, Atten= 0%, Lag= 0.0 min
Primary = 1.17 cfs @ 12.33 hrs, Volume= 0.33 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 171.67' @ 12.33 hrs
Flood Elev= 176.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	171.05'	**12.0" Round Culvert** L= 20.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 171.05' / 170.85' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.33 hrs HW=171.67' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 1.17 cfs @ 3.25 fps)

Summary for Pond 13P: CB#111 - Filterra 4x4

Inflow Area = 0.055 ac, 77.93% Impervious, Inflow Depth > 5.55" for 50-YEAR event
Inflow = 0.34 cfs @ 12.08 hrs, Volume= 0.03 af
Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.1 min
Primary = 0.34 cfs @ 12.09 hrs, Volume= 0.03 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.09' @ 12.09 hrs Surf.Area= 16 sf Storage= 14 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.7 min (781.7 - 781.0)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 5.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.97' S= 0.0100 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.34 cfs @ 12.09 hrs HW=175.09' TW=172.35' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.34 cfs of 6.07 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.29 cfs @ 1.10 fps)

Summary for Pond 14P: CB#112 - Filterra 4x4

Inflow Area = 0.067 ac, 58.68% Impervious, Inflow Depth > 4.76" for 50-YEAR event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.03 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.03 af, Atten= 0%, Lag= 0.1 min
Primary = 0.37 cfs @ 12.09 hrs, Volume= 0.03 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 175.10' @ 12.09 hrs Surf.Area= 16 sf Storage= 15 cf
Flood Elev= 175.90' Surf.Area= 16 sf Storage= 16 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.9 min (802.8 - 801.9)

Volume	Invert	Avail.Storage	Storage Description
#1	174.19'	16 cf	**4.00'W x 4.00'L x 1.00'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Device 3	174.19'	**140.000 in/hr Exfiltration over Surface area**
#2	Device 3	174.94'	**1.7' long x 0.5' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00
			Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	172.02'	**12.0" Round Culvert**
			L= 6.0' CPP, square edge headwall, Ke= 0.500
			Inlet / Outlet Invert= 172.02' / 171.72' S= 0.0500 '/' Cc= 0.900
			n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.37 cfs @ 12.09 hrs HW=175.10' TW=172.03' (Dynamic Tailwater)
└─**3=Culvert** (Passes 0.37 cfs of 6.08 cfs potential flow)
  ├─**1=Exfiltration** (Exfiltration Controls 0.05 cfs)
  └─**2=Broad-Crested Rectangular Weir** (Weir Controls 0.32 cfs @ 1.13 fps)

Summary for Pond 15P: CB#113

Inflow Area = 0.095 ac, 76.60% Impervious, Inflow Depth > 5.50" for 50-YEAR event
Inflow = 0.58 cfs @ 12.08 hrs, Volume= 0.04 af
Outflow = 0.58 cfs @ 12.08 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min
Primary = 0.58 cfs @ 12.08 hrs, Volume= 0.04 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.85' @ 12.29 hrs
Flood Elev= 181.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	178.15'	**12.0" Round Culvert** L= 15.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 178.15' / 178.00' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.41 cfs @ 12.08 hrs HW=178.70' TW=178.64' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 0.41 cfs @ 1.36 fps)

Summary for Pond 16P: Infitlration Pond #3

Inflow Area = 0.171 ac, 42.35% Impervious, Inflow Depth > 4.17" for 50-YEAR event
Inflow = 0.80 cfs @ 12.09 hrs, Volume= 0.06 af
Outflow = 0.35 cfs @ 12.29 hrs, Volume= 0.06 af, Atten= 56%, Lag= 12.0 min
Discarded = 0.07 cfs @ 12.29 hrs, Volume= 0.04 af
Primary = 0.28 cfs @ 12.29 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 178.84' @ 12.29 hrs Surf.Area= 989 sf Storage= 654 cf
Flood Elev= 180.00' Surf.Area= 1,583 sf Storage= 2,141 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 46.1 min (847.7 - 801.5)

Volume	Invert	Avail.Storage	Storage Description
#1	178.00'	2,141 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)
178.00	585	143.3	0	0	585
179.00	1,078	186.5	819	819	1,731
180.00	1,583	162.2	1,322	2,141	2,427

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	172.10'	**12.0" Round Culvert** L= 13.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 172.10' / 171.45' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	178.50'	**6.0" Vert. Orifice/Grate** C= 0.600

#4	Device 2	179.50'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.07 cfs @ 12.29 hrs HW=178.84' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.07 cfs)

Primary OutFlow Max=0.28 cfs @ 12.29 hrs HW=178.84' TW=171.67' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.28 cfs of 9.45 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.28 cfs @ 1.99 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Summary for Pond 17P: Roof Drain

Inflow Area = 0.907 ac,100.00% Impervious, Inflow Depth > 6.51" for 50-YEAR event
Inflow = 6.00 cfs @ 12.08 hrs, Volume= 0.49 af
Outflow = 6.00 cfs @ 12.08 hrs, Volume= 0.49 af, Atten= 0%, Lag= 0.0 min
Primary = 6.00 cfs @ 12.08 hrs, Volume= 0.49 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 185.09' @ 12.08 hrs
Flood Elev= 186.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.43'	**15.0" Round Culvert** L= 53.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.43' / 180.78' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=5.97 cfs @ 12.08 hrs HW=185.08' TW=183.35' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 5.97 cfs @ 4.87 fps)

Summary for Pond 18P: CB#120

Inflow Area = 1.045 ac, 98.13% Impervious, Inflow Depth > 6.43" for 50-YEAR event
Inflow = 6.88 cfs @ 12.08 hrs, Volume= 0.56 af
Outflow = 6.88 cfs @ 12.08 hrs, Volume= 0.56 af, Atten= 0%, Lag= 0.0 min
Primary = 6.88 cfs @ 12.08 hrs, Volume= 0.56 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.40' @ 12.10 hrs
Flood Elev= 185.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	180.68'	**15.0" Round Culvert** L= 17.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 180.68' / 180.00' S= 0.0400 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.55 cfs @ 12.08 hrs HW=183.35' TW=182.12' (Dynamic Tailwater)
└**1=Culvert** (Inlet Controls 6.55 cfs @ 5.34 fps)

Summary for Pond 19P: Infiltration Pond #4

Inflow Area = 1.512 ac, 67.86% Impervious, Inflow Depth > 5.26" for 50-YEAR event
Inflow = 7.85 cfs @ 12.09 hrs, Volume= 0.66 af
Outflow = 0.85 cfs @ 12.89 hrs, Volume= 0.58 af, Atten= 89%, Lag= 47.9 min
Discarded = 0.41 cfs @ 12.89 hrs, Volume= 0.44 af
Primary = 0.44 cfs @ 12.89 hrs, Volume= 0.14 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 183.21' @ 12.89 hrs Surf.Area= 5,875 sf Storage= 13,061 cf
Flood Elev= 184.25' Surf.Area= 6,860 sf Storage= 18,117 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 145.4 min (908.2 - 762.8)

Volume	Invert	Avail.Storage	Storage Description
#1	180.00'	18,117 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)
180.00	2,396	320.8	0	0	2,396
182.00	4,527	397.5	6,811	6,811	6,839
184.00	6,860	378.5	11,306	18,117	8,245

Device	Routing	Invert	Outlet Devices
#1	Discarded	180.00'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	175.75'	**12.0" Round Culvert** L= 55.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 175.75' / 173.00' S= 0.0500 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#3	Device 2	181.60'	**2.0" Vert. Orifice/Grate** C= 0.600
#4	Device 2	182.50'	**4.0" Vert. Orifice/Grate** C= 0.600
#5	Device 2	183.85'	**48.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Discarded OutFlow Max=0.41 cfs @ 12.89 hrs HW=183.21' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.41 cfs)

Primary OutFlow Max=0.44 cfs @ 12.89 hrs HW=183.21' TW=171.58' (Dynamic Tailwater)
└**2=Culvert** (Passes 0.44 cfs of 9.97 cfs potential flow)
  ├**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 5.94 fps)
  ├**4=Orifice/Grate** (Orifice Controls 0.31 cfs @ 3.53 fps)
  └**5=Orifice/Grate** (Controls 0.00 cfs)

Summary for Link A: Wetland

Inflow Area = 1.446 ac, 21.11% Impervious, Inflow Depth > 1.92" for 50-YEAR event
Inflow = 1.14 cfs @ 12.10 hrs, Volume= 0.23 af
Primary = 1.14 cfs @ 12.10 hrs, Volume= 0.23 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Summary for Link B: Central Street

Inflow Area = 2.343 ac, 58.11% Impervious, Inflow Depth > 1.94" for 50-YEAR event
Inflow = 1.79 cfs @ 12.11 hrs, Volume= 0.38 af
Primary = 1.79 cfs @ 12.11 hrs, Volume= 0.38 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

18. RIP RAP APRON CALCULATIONS

KEACH-NORDSTROM ASSOCIATES, INC.

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

12/15/2021

The purpose of this spreadsheet is to calculate the dimensions of
rip rap required to help prevent soil loss for the 25 year storm event.

Required input to the spreadsheet is

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 One where Tw>1/2Do
La = (1.8Q/Do^3/2)+7Do	La = 3*Q/Do^3/2+7Do
W1=3*Do	W1=3*Do
W2 = 3Do + La	W2=3Do+0.4*La

If defined channel use channel width for W1 and W2

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

Input to Chart					Calculated Output		W2			USE	RIRAP GRADATION ENVELOPE									
											d100		d85		d50		d15			
Description	(Optional)	Q 25 (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	USE depth in.
HW#102	Headwall #102 outlet	2.12	1.25	1.48	13	4	9	0.0	0.35	6	9	12	8	11	6	9	2	3	15	18
HW#105	Headwall #105 outlet	0.12	1.00	0.80	7	3	6	0.0	0.02	3	5	6	4	5	3	5	1	2	7.5	9
HW#111	Headwall #111 outlet	1.01	1.00	1.48	10	3	7	0.0	0.16	3	5	6	4	5	3	5	1	2	7.5	9
HW#121	Headwall #121 outlet	0.47	1.00	0.74	8	3	6	0.0	0.12	3	5	6	4	5	3	5	1	2	7.5	9
HW#131	Headwall #131 outlet	5.74	1.25	2.76	21	4	12	0.1	0.71	9	14	18	12	16	9	14	3	5	22.5	24

19. SITE SPECIFIC SOIL REPORT

SITE-SPECIFIC SOIL SURVEY REPORT
196-202 Central Street
Hudson

1. MAPPING STANDARDS

Site-Specific Soil Mapping Standards for New Hampshire and Vermont. SSSNNE Special Publication No. 3, Version 7.0, July, 2021. This map product is within the technical standards of the National Cooperative Soil Survey. It is a special product, intended for the submission to NH DES Alteration of Terrain. It was produced by a professional soil scientist and is not a product of the USDA Natural Resource Conservation Service.

2. DATE SOIL MAP PRODUCED
Soil Mapping was performed on November 4, 2021
Test pits were performed by Gifford Colburn of KNA, Inc. on October 1, 2021

3. GEOGRAPHIC LOCATION AND SIZE OF SITE
Approximately 5 acres. Tax map 176, Lots 21/22. The site is located in the Town of Hudson, NH. This is a combination of two single family lots, with homes, driveways and outbuildings.

4. PURPOSE OF THE SOIL MAP
The preparation of this map was requested by KNA, Inc. The purpose was to meet the requirements of NH Alteration of Terrain.

5. SOIL IDENTIFICATION LEGEND

MAP UNIT GROUP	MAP NAME	HISS Conversion	HYDROLOGIC SOIL
24	Agawam	211	B
299hghdd	Udorthents,	766	D
115/VP	Scarboro, Very Poorly Drained	611	D

SLOPE PHASE:

0-8%	B
8-15%	C
15-25%	D
25-35%	E

8 Continental Dr Bldg 2 Unit H, Exeter, NH 03833-7526
Ph (603) 778 0644 / *Fax* (603) 778 0654
info@gesinc.biz
www.gesinc.biz

6. SOIL MAP UNIT DESCRIPTIONS

24 Agawam. The Agawam series consists of very deep, well drained soils formed in sandy, water deposited materials. They are level to steep soils on outwash plains and high stream terraces. Slope ranges from 0 to 15 percent. Saturated hydraulic conductivity is moderately high or high in the upper solum and high or very high in the lower solum and substratum. These soils are found throughout the upland area of the site and on the side slopes. They are derived from outwash and are primarily composed of sand and gravel in the lower layers. No ESHWT was encountered with in 40" and no ledge was observed.

299 Udorthents. The Udorthents map unit comprises all of the areas with impervious surfaces of pavement, walkways and buildings. These are classified as HSG D.

115/VP Scarboro. The Scarboro series consists of very deep, very poorly drained soils in sandy glaciofluvial deposits on outwash plains, deltas, and terraces. They are nearly level soils in depressions. Slope ranges from 0 through 3 percent. Saturated hydraulic conductivity is high or very high.

7. RESPONSIBLE SOIL SCIENTIST

Luke D. Hurley, CSS#095

8. OTHER DISTINGUISHING FEATURES OF SITE

No other distinguishing features are on the site.

9. MAXIMUM SIZE OF LIMITING INCLUSIONS

No inclusions were mapped.

10. SPECIAL FEATURE SYMBOLS

None used.

20. INFILTRATION FEASIBILITY REPORT

INFILTRATION FEASIBILITY REPORT

Bluebird Self Storage

Map 176; Lots 21,22,&23
196-202 Central Street
Hudson, New Hampshire

December 17, 2021

TABLE OF CONTENTS:

KEACH-NORDSTROM ASSOCIATES, INC.

I. Location of Practice

Two (2) infiltration practices are proposed for this project. Both infiltration ponds along the southern portion of the development adjacent to Central Street will collect, treat, and recharge storm water.

II. Existing Topography

The existing topography within the area of the proposed infiltration pond is moderate with grades ranging between 10% and 15%.

III. Test Pit Locations

Data from test pits performed within the area of the proposed infiltration basins were used to determine infiltration rates and depth to seasonal high water table.

IV. Seasonal High Water Table Elevation Summaries

The results from the test pit performed is as follows:

Test Pit #2
The existing elevation of the ground = 182.1 (approx. original grade)
Distance to SHWT = 64” (5.33’ bottom of pit)
Elevation of SHWT = 176.77
Lowest Elevation of Test Pit = 176.77

In area of Practice (adjacent to TP#2)
The existing elevation of the ground = 182
Distance to SHWT (same as TP#2) = 64” (5.33’)
Elevation of SHWT = 176.67
Lowest Elevation of Test Pit = 176.67

Test Pit #3
The existing elevation of the ground = 180.0 (approx. original grade)
Distance to SHWT = 60” (5.0’ bottom of pit)
Elevation of SHWT = 175.0
Lowest Elevation of Test Pit = 175.0

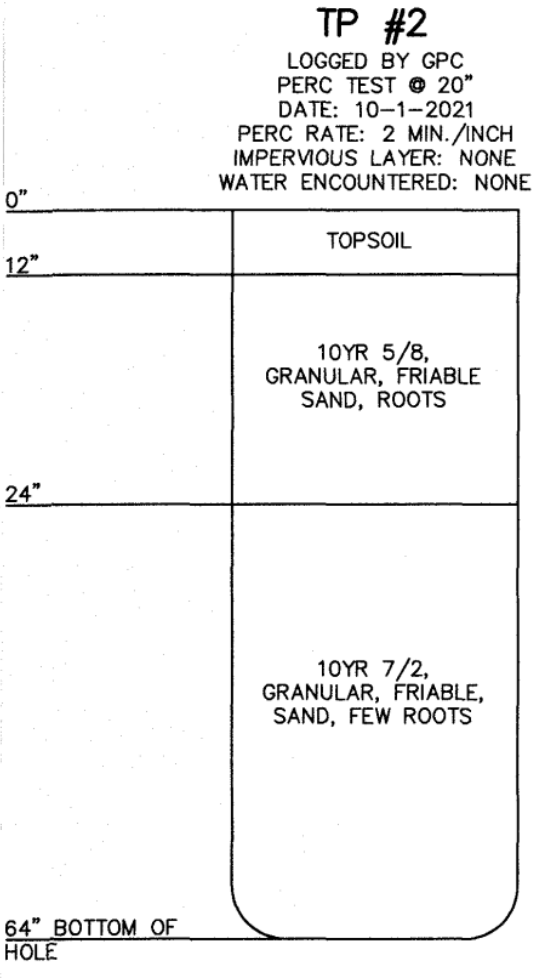
In area of Practice (adjacent to TP#3)
The existing elevation of the ground = 180
Distance to SHWT (same as TP#3) = 60” (5’)
Elevation of SHWT = 175.0
Lowest Elevation of Test Pit = 175.0

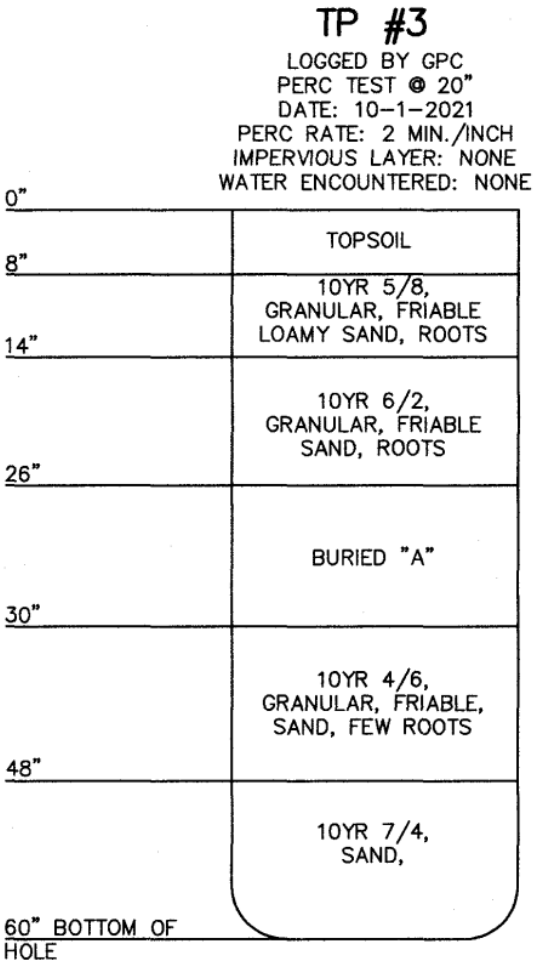
V. Infiltration Rate Summary

Soils in the area of the infiltration practice were determined to be Agawam, loamy sand. Agawam soils are classified as having a Ksat value of 6.0 inches/hour by the New Hampshire Stormwater Manual; Volume 2 dated December, 2008. By applying a 50% factor of safety, as required, a rate of 3.0 inches/hour was used in the analysis.

VI. Profile Descriptions

Profile descriptions are provided as follows.





21. OPERATION AND MAINTENANCE PLAN WITH CHECKLISTS

STORMWATER

OPERATION & MAINTENANCE PLAN

BLUEBIRD SELF STORAGE

196-202 Central Street
Hudson, New Hampshire

Map 176; Lots 21,22,&23

December 17, 2021

KEACH-NORDSTROM ASSOCIATES, INC.

TABLE OF CONTENTS:

I. General

Introduction

The project owner or their assigned heirs will maintain the stormwater treatment facilities after construction is completed. The Applicant of the project is Bluebird Self Storage LLC located at 1 Bayside Road, Greenland, NH. The Applicant will maintain the stormwater management system through the entirety of ownership.

The subject properties are referenced on Map 176; Lots 21,22,&23 in Hudson, New Hampshire. Any transfer of responsibility for inspection and maintenance activities or transfer of ownership shall be documented to the New Hampshire Department of Environmental Services and Hudson in writing. The contract documents will require the contractor to designate a person responsible for maintenance of the sedimentation control features during construction. Long-term operation and maintenance for the stormwater management facilities are presented below.

Maintenance will be performed as described and required in the Alteration of Terrain Permit unless and until the system is formally accepted by a municipality or quasi-municipal district or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system.

Post Construction:

The following standards will be met after construction is complete:

Documentation:

A maintenance log will be kept summarizing inspections, maintenance, and any corrective actions taken. The log will include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean out of any sediments or debris, the location where the sediment and debris was disposed after removal will be indicated. The log will be made accessible to department and/or Hudson staff and a copy provided upon request.

Maintenance Requirements

Stormwater Ponds:

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.

- System embankments should be mowed periodically to maintain grass cover and any other vegetation found on the embankment should be removed at each inspection.
- Trash and debris found within the pond or in the outlet structure should be removed at each inspection.
- Removal of accumulated sediment
- Inspection and repair of embankments, inlet and outlet structures, and appurtenances

Infiltration Ponds:

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Trash and debris should be removed at each inspection.
- Inspection of pre-treatment measures at least twice annually and removal of accumulated sediment as warranted by inspection, but no less than once annually.
- At least once annually, the system should be inspected for drawdown time. If the pond does not drain within 72-hours following a rainfall event, a qualified professional should assess the condition of the facility to determine measures required to restore filtration function or infiltration function (as applicable), including but not limited to the removal of accumulated sediments or reconstruction of the basin bottom.

Sediment Forebays:

- Forebays help reduce the sediment load to downstream BMP's, and will therefore require more frequent cleaning.
- Systems should be inspected at least annually.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Level Spreaders:

- Systems should be inspected at least annually with maintenance or rehabilitation conducted as warranted by such inspection.
- Remove debris and accumulated sediment when exceeds 25% of spreader depth. Disposal of sediment to be done properly.
- Repair eroded areas; remove invasive species and dead vegetation.
- Perform periodic mowing.
- Snow should not be stored within or down-slope of the level spreader.

- Repair any erosion and re-grade was warranted by inspection.
- Reconstruct the spreader if down-slope channelization indicates that the spreader is not level or that discharge has become concentrated, and corrections cannot be made through minor re-grading.

Conveyance Swale:

- Systems should be inspected at least twice annually, and following any rainfall event exceeding 2.5 inches in a 24-hour period, with maintenance or rehabilitation conducted as warranted by such inspection.
- Conduct periodic mowing of embankments (generally two times per year) to control growth of woody vegetation.
- Trash and debris should be removed at each inspection.
- Accumulated sediment should be removed as warranted by such inspection.
- Install and maintain a staff gage or other measuring device, to indicate depth of sediment accumulation and level at which clean-out is required.

Catch Basins and Closed Drainage Network:

- Catch basins may require frequent maintenance. This may require several cleanings of the sumps each year. At a minimum, it is recommended that catch basins be inspected at least twice annually.
- Sediment should be removed when it approaches half of the sump depth.
- If floating hydrocarbons are observed during an inspection, the material should be removed immediately by skimming, absorbent materials, or other methods and disposed in conformance with the applicable state and federal regulations.

Outlet Protection:

- Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

General:

- If any invasive species begin to grow in the stormwater management practices the species shall be disposed of in an appropriate manner that will not allow the pest to survive or spread. The disposal of such species shall be witnessed or approved by a state inspector. Methods for disposal may include, but not be limited to:
    - Encapsulating the plant(s) in plastic bags and disposing of the plant material in one of the following ways:
        - Trash pickup;
        - Discarding;
        - Open burning;
        - Incineration; or
        - Burial of infested nursery.

II. Supporting Documents

Annual Inspection and Maintenance Reporting Form
for
Bluebird Self Storage
Hudson, New Hampshire

Date: _____

To: Bluebird Self Storage LLC

Re: Certification of Inspection and Maintenance; Submittal of Forms

Property Name: _____

Property Address: _____

Contact Name: _____

Contact Phone #: _____

Contact Email Address: _____

I verify that the required stormwater facility inspections and required maintenance have been completed in accordance with the Operation & Maintenance Plan associated with the above referenced property.

The required Long-Term Inspection & Maintenance Plan Checklist is attached to this form.

_____ _____
Name of Party Responsible for Inspection & Maintenance — Property Owner

_____ _____
Authorized Signature — Signature

Long-Term Inspection & Maintenance Plan Checklist
Bluebird Self Storage – Hudson, NH

Current Owner Name:	Date:
Business Address:	Inspector:
Weather:	
Date of Last Rainfall:	Amount: Inches:

Best Management Practice

Stormwater Ponds

Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Sideslopes & berms need repair? Yes ☐ No ☐
Clean inlet & outlet structures? Yes ☐ No ☐

Infiltration Ponds

Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Visual Inspection of vegetation? Yes ☐ No ☐
Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Visual inspection of drawdown time? Yes ☐ No ☐
Drawdown time less than 72 hours? Yes ☐ No ☐
(if no, call a qualified professional for inspection)

Sediment Forebays

Reason for Inspection: Spring ☐ Fall/Yearly ☐ After Major Storm ☐

Maintenance Required? Yes ☐ No ☐
Corrective Action Needed & Notes:

Level Spreaders	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes: Need Repairs? Yes ☐ No ☐			
Conveyance Swale	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Catch Basins & Closed Drainage Network	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
Outlet Protection	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			
General	Reason for Inspection		
	Spring ☐	Fall/Yearly ☐	After Major Storm ☐
Maintenance Required? Yes ☐ No ☐ Corrective Action Needed & Notes:			

Long-Term Inspection & Maintenance Log
Bluebird Self Storage – Hudson, NH

Date	Inspection (Yes or No)	Maintenance (Yes or No)	List BMPs Inspected and/or Provide Comments	Inspected By:

III. Control of Invasive Plants

Invasive plants are introduced, alien, or non-native plants, which have been moved by people from their native habitat to a new area. Some Exotic plants are imported for human use such as landscaping, erosion control, or food crops. They also can arrive as “hitchhikers” among shipments of other plants, seeds, packing materials, or fresh produce. Some exotic plants become invasive and cause harm by:

- becoming weedy and overgrown;
- killing established shade trees;
- obstructing pipes and drainage systems;
- forming dense beds in water;
- lowering water levels in lakes, streams, and wetlands;
- destroying natural communities;
- promoting erosion on stream banks and hillsides; and
- resisting control except by hazardous chemical.

During maintenance activities, check for the presence of invasive plants and suitably remove according to the methods provided in the table below. The following table, based on the “Control of Invasive Plants” published by the New Hampshire Department of Agriculture, describes the most common invasive plants in this region and proper methods of disposal.

Name	Description	Invasive Qualities	Control Methods
Invasive Trees			
Norway Maple	- Large leaves - Will exude milky white sap when leaves are broken - Leaves turn color in Late October (fall foliage is yellow)	- Suppresses growth of grass, garden plants, and forest understory -Wind-borne seeds can germinate and grow in deep shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out plants, including the root systems. Use a forked spade or weed wrench. - Cut down the tree. Grind out the stump, or clip off re-growth. - Girdle[1] - Frill[2] - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray with glyphosate [3]* (mid-October to early November).
Tree of Heaven	- Long compound leaves with 11-25 lance shaped leaflets - Smell like peanut butter or burnt coffee when crushed	- Tough, can grow in poor conditions - Produces large quantities of wind-borne seeds - Grows rapidly - Secretes a toxin that kills other plants - Cannot be removed by mechanical means alone	- Pull seedlings when soil is moist. - Frill[2] (no more than 1” gap between cuts). Use Garlon 3a herbicide. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.* - Foliar spray[3]* (on regrowth) - Paint bottom 12” of bark with Garlon 4 Ultra (February/March). Use maximum strength specified on label for all herbicide applications.
Invasive Shrubs			
Autumn Olive	- Formerly recommended for erosion control and wildlife value	- Highly invasive, diminishes the overall quality of wildlife habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs (up to 4” diameter trunks). - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Bury stump - Do not mow

Invasive Shrubs (continued)			
Multiflora Rose	- Formerly recommended for erosion control, hedges, and wildlife habitat - Covered in white flowers in June - Very hard, curved thorns - Fringed edge to leaf stalk	- Huge shrub that chokes out all other vegetation - Too dense for most birds to nest in - Grows up trees like a vine in Shade	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems (at least 6" from the crown and 6" down). Use a forked spade or weed wrench for trees or shrubs. - Controlled burning[4] (on extensive infestations) - Cut stem/ cut stump with glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (mix Rodeo with extra sticker-spreader, or use Roundup Sure Shot Foam on small plants) - Herbicide may be applied in winter when other plants are dormant.
Bush Honeysuckles	- Includes Belle, Amur, Morrow's, and Tatarian Honeysuckle	- Creates dense shade reducing plant diversity and eliminating nest sites in forest interior spaces	- Deadhead to prevent spread of seeds (on ornamentals). Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year (on shady sites only, brush cut in early spring and fall). - Controlled burning[4] (during growing season) - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate (late in the growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.*

Invasive Shrubs (continued)			
Blunt-Leaved Privet	- Medium sized shrub - Simple, oblong, dark green leaves 1-2” in length - Fragrant white flowers (spring) - Blackish-purple fruit (late summer)	- Toxic to mammals - Loss of valuable habitat	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers - Do not cut back or mow
Burning Bush, Winged Euonymus	- Wide, corky wings on the Branches - Brilliant red autumn leaves - Fruit	- High seed production	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers
Japanese Barberry	- Spiny deciduous shrub - Small leaves	- Very dense, displaces native plants - Can change chemistry of soil	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Cut down the tree. Grind out the stump, or clip off re-growth. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Trim off all flowers

Invasive Woody Vines			
Japanese Honeysuckle	- Gold and White flowers - Heavy scent and sweet nectar in June	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* (fall or early spring when native vegetation is dormant) Plan to re-treat repeatedly
Oriental Bittersweet	- Bright orange seed capsules in clusters all along the stem - Flowers	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle	- Pull seedlings and small or shallow-rooted plants when soil is moist. Dig out larger plants, including the root systems. Use a forked spade or weed wrench for trees or shrubs. - Keep ornamental plants cut back, remove all fruits as soon as they open, and bag or burn fruits. - Cut stem/ cut stump with Garlon 3a. Follow label directions for cut stump application. Clip off sucker sprouts or paint with Garlon 3a.*
Japanese Knotweed, Mexican Bamboo	- The stems have knotty joints, similar to bamboo - Grows 6-10’ tall - Large, pointed oval or triangular leaves	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Can grow in shade	- Cut stem/ cut stump with Glyphosate (at least 3 times each during growing season). Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]* - Treat with Rodeo - In gardens, heavy mulch or dense shade may kill it.

Invasive Herbaceous Plants			
Garlic Mustard	- White-flowered biennial - Rough scalloped leaves (kidney, heart, or arrow shaped) - Garlic smell, mustard taste when its leaves are crushed	- Shade shrubs and young trees of the forest understory, eventually killing them, and changing the open structure of the forest into a dense tangle - Rampant grower - Spirals around trees, often strangling them	- Pull seedlings and small or shallow-rooted plants when soil is moist (before it flowers in spring). Dig out larger plants, including the crown and root systems. Use a forked spade or weed wrench for trees or shrubs. Tamp down soil afterwards. - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn or send to a landfill. - Foliar spray[3]* (may be appropriate in some settings)
Japanese Stilt Grass	- Lime green color - Line of silvery hairs down the middle of the 2-3” long blade	- Tolerates sun or dense shade -Quickly invades areas left bare or disturbed by tilling or flooding - Builds a large seed bank in the soil	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants’ store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.

Invasive Herbaceous Plants (continued)			
Mile-A-Minute Vine, Devil's Tail Tearthumb	- Triangular leaves - Barbed stems - Turquoise berries	- Rapid growth - Quickly covers and shades out herbaceous plants	- Pull seedlings and small or shallow-rooted plants when soil is moist (pulled easily in early to mid-summer).Dig out larger plants, including root systems. Use a forked spade or weed wrench for trees or shrubs. Be sure to pull before it goes to seed. If seeds have formed, bag and burn or send to a landfill. - Mow or cutting at least 4 times a season to deplete plants' store of nutrients and carbohydrates, reduce seed formation, and kill or minimize spread of plants. If necessary, repeat each year. Mowing weekly or when it has just begun to flower may prevent it from setting seed. - Foliar spray[3]* (use glyphosate or herbicidal soap on large infestations. - Use a corn-based pre-emergence herbicide on annual weeds (spring). This product is also an organic fertilizer, i.e., it can stimulate growth of existing plants, including weeds, so it is appropriate for lawns and gardens but may not be appropriate in woodlands.
Spotted Knapweed	- Thistle-like flowers	- Dense, crowds out native species	- Do not pull unless the plant is young and the ground is very soft. The root will break and produce several new plants. - Wear sturdy gloves - Deadhead to prevent spread of seeds. Cut off seeds or fruits before they ripen. Bag and burn, or send to a landfill. - In lawns, spot treat with broad-leaf weed killer. Good lawn care practices (test soil; use lime and fertilizer only when soil test shows a need; mow high and frequently; leave clippings on lawn) reduce weed infestations. - Cut stem/ cut stump with Glyphosate. Follow label directions for cut stump application. Clip off sucker sprouts or paint with glyphosate.* - Foliar spray[3]*

[1]Girdle: Cut through the bark and growing layer all around the trunk, about 6” above the ground. Girdling is most effective in spring (when the sap is rising) & middle-late summer (when the tree is sending food to the roots). Clip off sucker sprouts.

[2]Frill: Using a machete, hatchet, or similar device, hack scars (several holes in larger trees) downward into the growing layer, and squirt in glyphosate (or triclopyr if specified in table). Follow label directions for injection and frill applications. This is most effective from middle to late summer. Clip off any sucker sprouts or treat with glyphosate.

[3]Foliar Spray: Use a backpack or garden sprayer or mist blower, following label directions. Avoid overspray and/or dripping onto non-target plants, because glyphosate kills most plants except moss. If it rolls off waxy or grass-like foliage, use additional sticker-spreader. Deciduous trees, shrubs, and perennials move nutrients down to the roots in late summer. Glyphosate is particularly effective at this time and when plants have just gone out of flowering. Several invasive species retain their foliage after native plants have lost theirs, and resume growth earlier in spring than most natives. This allows you to treat them without harming the natives. However, the plant must be actively growing for the herbicide to work. Retreatments may be necessary the following year if suckering occurs or the plant hasn’t been entirely killed.

[4]Controlled Burning: Burning during the spring (repeated over several years) will allow native vegetation to compete more effectively with the invasive species. This requires a permit. Spot treatment with glyphosate in late fall can be used to make this method more effective

*Herbicides: It is highly recommended that small populations try to be controlled using non-chemical methods where feasible. However, for large infestations, and for a few plants herbicide use is essential. Apply herbicides carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most cases. Add food coloring for visibility, and a soap-based sticker such as Cide-Kick. Glyphosate is ineffective on some plants; for these, triclopyr or Garlon 3a may be indicated. When using herbicides read the entire label and observe all precautions listed, including proper disposal. If in doubt, call your local Cooperative Extension Service.

IV. Stormwater Practice Location Plan

22. PLANS

NON-RESIDENTIAL PLAN SET (22” X 34”)
PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34”)
POST-DEVELOPMENT DRAINAGE AREAS PLANS (22” X 34”)
PRE-DEVELOPMENT DRAINAGE AREAS PLAN (22” X 34” – COLOR)
POST-DEVELOPMENT DRAINAGE AREAS PLANS (22” X 34” – COLOR)

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
24B	AGAWAM LOAMY SAND	0–8%	WELL DRAINED	B
24C	AGAWAM LOAMY SAND	8–15%	WELL DRAINED	B
24D	AGAWAM LOAMY SAND	15–25%	WELL DRAINED	B
115/VP	SCARBORO MUCKY FINE SANDY LOAM	3–8%	VERY POORLY DRAINED	D
299	UDORTHENTS, URBAN LAND	3–8%	POORLY DRAINED	D

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SCS SOILS LEGEND

WdB	WINDSOR LOAM SAND, 3–8% SLOPES
WdC	WINDSOR LOAM SAND, 8–15% SLOPES

SOURCE: USDA–SCS WEB SOIL SURVEY

DRAINAGE LEGEND:

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

- SCS SOIL LINES
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DIG SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — RI/ME–NH/VT–MA 811 CALL TOLL FREE

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
1 inch = 30 ft.

PRE DEVELOPMENT DRAINAGE AREA PLAN
BLUEBIRD SELF STORAGE

MAP 176 LOTS 21, 22 & 23
196-202 CENTRAL STREET
HUDSON, NEW HAMPSHIRE
HILLSBOROUGH COUNTY

OWNER OF RECORD:
RONALD CRAVEN TRUST
c/o NANCY CRAVEN TRUST
88 SPEARE ROAD
HUDSON, NH 03051
H.C.R.D. BK. 6079 PG. 1294

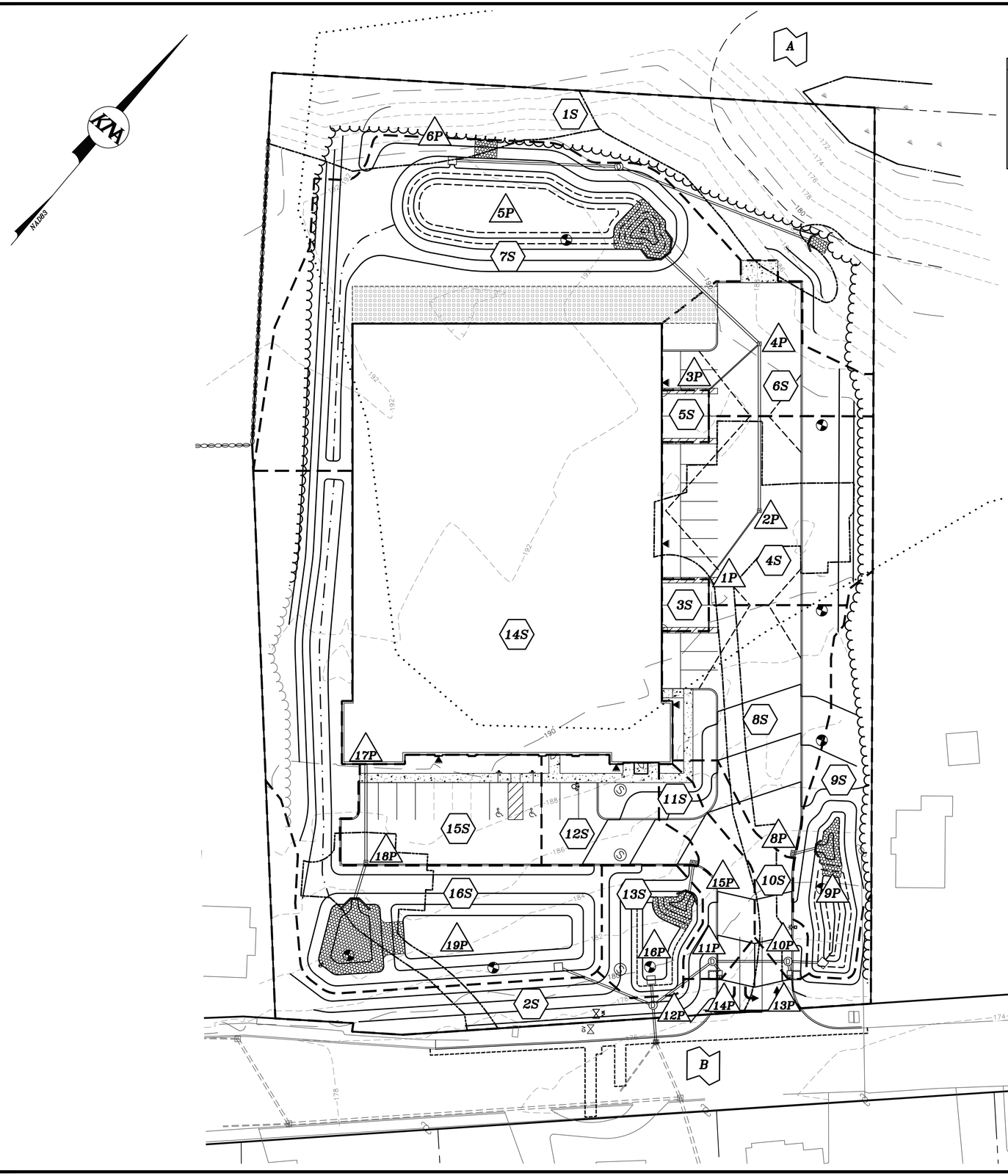
APPLICANT:
BLUEBIRD SELF STORAGE LLC.
125 OCEAN ROAD
GREENLAND, NH 03840

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

REVISIONS

No.	DATE	DESCRIPTION	BY

DATE: DECEMBER 20, 2021 | SCALE: 1" = 30'
PROJECT NO: 21–0709–3 | SHEET 1 OF 4



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DIG SAFE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM — RI/MA/NH/VT-MA 811 CALL: TOLL FREE

GRAPHIC SCALE

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(IN FEET)
1 inch = 30 ft.

POST DEVELOPMENT DRAINAGE AREA PLAN
BLUEBIRD SELF STORAGE

MAP 176 LOTS 21, 22 & 23
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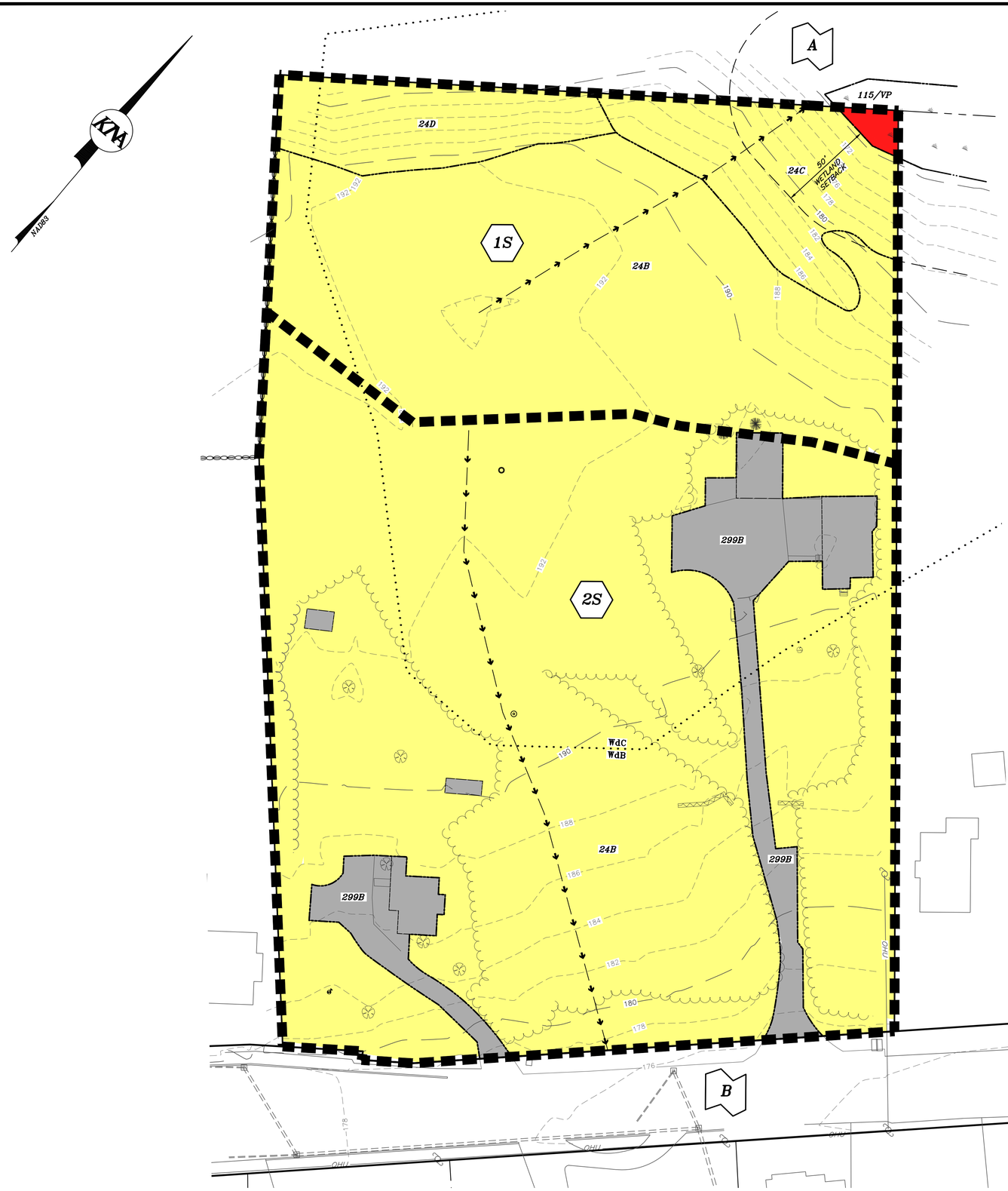
DATE: DECEMBER 20, 2021 | **SCALE:** 1" = 30'
PROJECT NO: 21–0709–3 | **SHEET** 2 **OF** 4



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DRAINAGE LEGEND:

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DIG SAFE — IT'S NOT JUST A GOOD IDEA, IT'S THE LAW — CALL TOLL FREE 811 — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

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(IN FEET)
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PRE DEVELOPMENT DRAINAGE AREA PLAN
BLUEBIRD SELF STORAGE

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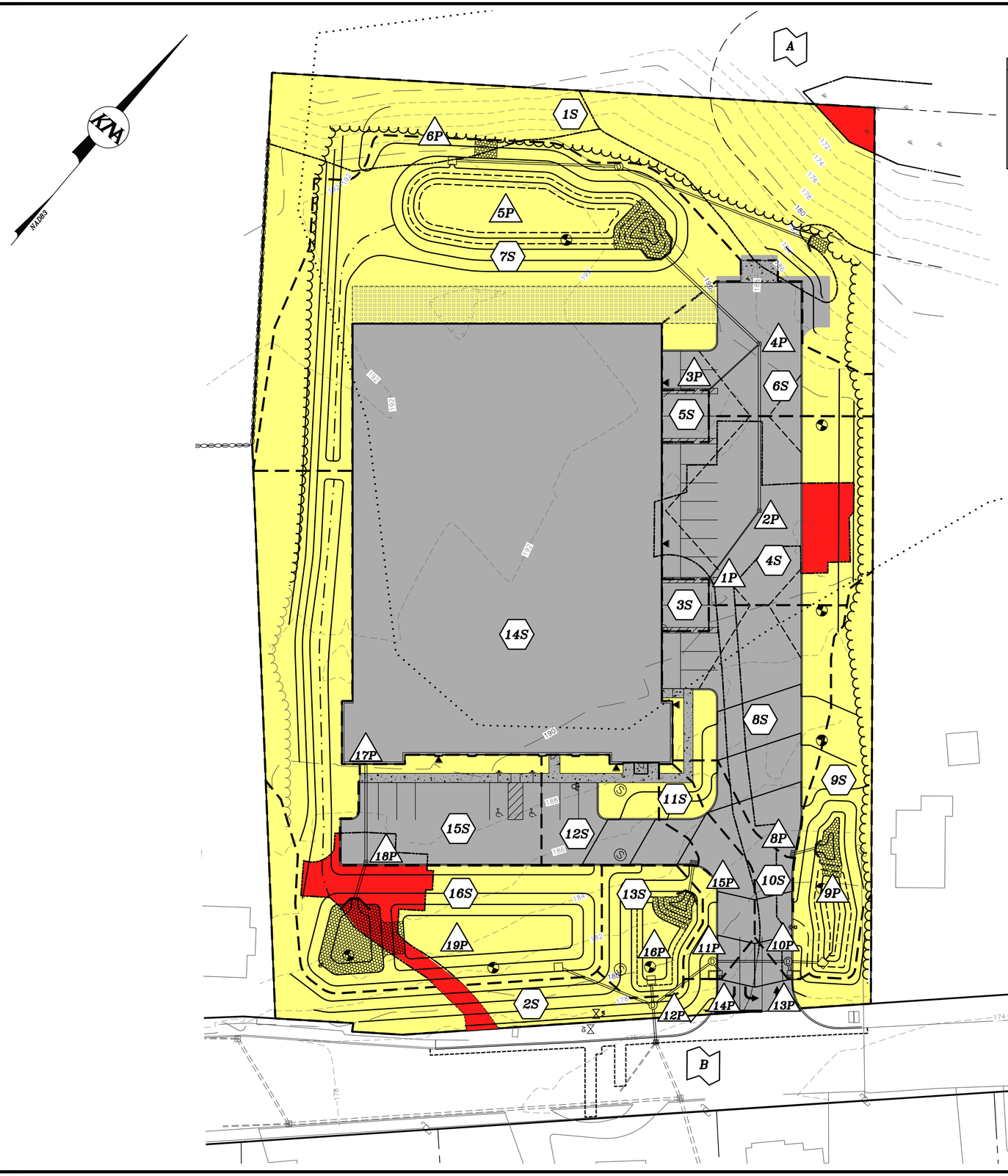
PROJECT NO: 21-0709-3 | **SHEET** 3 **OF** 4



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DIG SAFE — DIAL 811 CALL TOLL FREE — UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

GRAPHIC SCALE

30 0 15 30 60 120

(IN FEET)
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POST DEVELOPMENT DRAINAGE AREA PLAN
BLUEBIRD SELF STORAGE

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No.	DATE	DESCRIPTION	BY

DATE: DECEMBER 20, 2021 — SCALE: 1" = 30'
PROJECT NO: 21–0709–3 — SHEET 4 OF 4