TOWN OF RAYMOND
Planning Board Agenda
June 6, 2024
7 p.m. - Raymond High School
Media Center - 45 Harriman Hill

Public Announcement

If this meeting is canceled or postponed for any reason the information can be found on our website, posted at Town Hall, Facebook Notification, and RCTV.

*

1) **Pledge of Allegiance**
2) **Roll Call**
3) **Public Hearing**

A. **Application #2024-001 Scott's Roofing:** A site plan application is being submitted by James M. Lavelle Associates on behalf of Sean Nadeau of Scott's Roofing. The property currently houses an existing building previously used as an automotive garage, with proposed conversion through this site plan review to an office building to house office space associated with the roofing business, with parking of construction vehicles related to the business. The property is located at 27 Old Fremont Road which is identified as Raymond Tax Map 17 Lot 31-3 and within Zone C.2 of the Town of Raymond (Commercial/Residential). **(Continued from 2/15/2024 and 3/21/2024) *Request for Continuance to August 1, 2024**

B. **Application #2024-003 Gemini Valve:** A proposal for additions to existing building and site improvements has been submitted by Paul Chisholm of Keach-Nordstrom Associates, Inc on behalf of Parker & Harper Companies, LLC. The property is identified as Raymond Tax Map #28-4, Lot #3 within the Town of Raymond. **(Rescheduled from 4/4/2024)**

C. **Application #2023-012 Autumn Trail Realty:** A Site Plan has been submitted by Brandon Richards of Fieldstone Land Consultants, PLLC on behalf of Autumn Trail Realty, LLC. The applicant is proposing an 8,000 S.F. commercial building. The applicant is also proposing a Conditional Use Permit for exceedance of 15% impervious surface within the Groundwater Conservation District. The property is identified as Raymond Tax Map 32, Lot 72 located 1000 feet south of the Deerfield Rd. and Long Hill Rd. intersection within the Town of Raymond and is within the C1 zoning district. **(Continued from 12/21/2023, 1/25/2024, 3/7/2024 and 4/18/2024)**

D. **Application #2022-016 Woodside Village:** An Amended SUBDIVISION application is being submitted by Kevin Hatch of Cornerstone Survey, Inc. The intent of this application is to amend a previously approved 4 lot subdivision (1/5/2023) to subdivide the property into 3 lots. The property is owned by Woodside Village located on Route 27, Raymond NH also known as Tax Map 33, Lot 106 in Zone C2. **(Rescheduled from 5/2/24)**

E. **Application # 2023-007 Meindl Road Subdivision:** A subdivision application is being submitted by Joseph Falzone and Beals Associates PLLC on behalf of Frances and Raymond Scanlon. The intent of this application is to subdivide a 10 +/- acre lot on Meindl Road into 3 individual lots. The parcel is Map 41/Lot 47, Zone B with associated Zone G lands and located on Meindl Road in Raymond NH. **(Continued from 10/12/23, 11/2/23, 12/7/23, 1/4/24, 1/25/24, 3/7/24, 4/18/24 and 5/9/24)**

* Note: If you require personal assistance for audio, visual or other special aid, please contact the Selectmen's Office at least 72 hours prior to the meeting. If this meeting is postponed for any reason, it will be rescheduled to the next regularly scheduled Public Hearing date.

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4) **Public Comment**

5) **Approval of Minutes**

- May 2, 2024
- May 9, 2024
- May 16, 2024

6) **Staff Updates**

7) **Board Member Updates**

8) **Any other business brought before the board.**

9) **Adjournment (NO LATER THAN 10:00 P.M.)**

Planning Board 2024 Submittal and Meeting Dates

Submittal Deadline for Completed Application & Materials	**Planning Board Meeting Dates (1st & 3rd Thursdays of the Month)**	
	Thursday June 13, 2024	(6:00 PM) **2024-010 197 Lane Rd** - Conservation Subdivision w/ SP (Rescheduled from 5/16/24) **Work Session** 6:30-9:00 PM
Wednesday, May 22, 2024	Thursday, June 20, 2024	**2022-008 Onyx Warehouse** - Site Plan w/ CU and SP (Continued from 11-2-23, 12-7-23, 1/18/2024, 3/7/2024, & 4/18/2024) **2022-010 Onyx Excavation** - Excavation Permit (Continued from 10/19/2023, 11/30/2023 & 5/2/2024) *Request to continue to July 18th* **2024-009 AutoZone -** Non-binding Design Review
	Thursday, July 4, 2024	*Holiday, No Meeting*

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Submittal Deadline for Completed Application & Materials	Planning Board Meeting Dates (1st & 3rd Thursdays of the Month)	
Wednesday, June 12, 2024	Thursday, July 11, 2024	**2024-002 Lamprey Waters, LLC** – Lot Line Adjustment (Continued from 2/15/24, 3/21/24 & 5/2/24) **2022-009 Jewett Warehouse** - Site Plan w/ CU and SP (Continued from 1-4-24, 2/15/2024 & 3/21/2024) **2023-008 Onway Lake Village (Phase 1)** - Conservation Subdivision w/ SP (Rescheduled from 1/11/2024, 2/22/2024 & 3/28/2024)
Wednesday, June 19, 2024	Thursday, July 18, 2024	*Tentative 2022-010 Onyx Excavation*
	Thursday, July 25, 2024	**Work Session** 6:30-9:00 PM
Wednesday, July 3, 2024	Thursday, August 1, 2024	*Tentative 2024-001 Scott's Roofing*
	Thursday, August 8, 2024	**Work Session** 6:30-9:00 PM
Wednesday, July 17, 2024	Thursday, August 15, 2024	
	Thursday, August 29, 2024	**Work Session** 6:30-9:00 PM (TBD)
Wednesday, August 7, 2024	Thursday, September 5, 2024	
	Thursday, September 12, 2024	**Work Session** 6:30-9:00 PM
Wednesday, August 21, 2024	Thursday, September 19, 2024	
Wednesday, September 4, 2024	Thursday, October 3, 2024	
	Thursday, October 10, 2024	**Work Session** 6:30-9:00 PM
Wednesday, September 18, 2024	Thursday, October 17, 2024	
	Thursday, October 24, 2024	**Work Session** 6:30-9:00 PM (TBD)
Wednesday, October 9, 2024	Thursday, November 7, 2024	
	Thursday, November 14, 2024	**Work Session** 6:30-9:00 PM
Wednesday, October 23, 2024	Thursday, November 21, 2024	
Wednesday, November 6, 2024	Thursday, December 5, 2024	
	Thursday, December 12, 2024	**Work Session** 6:30-9:00 PM

* Note: If you require personal assistance for audio, visual or other special aid, please contact the Selectmen's Office at least 72 hours prior to the meeting. If this meeting is postponed for any reason, it will be rescheduled to the next regularly scheduled Public Hearing date.

A. Application #2024-001 Scott’s Roofing

James McLeod

From: James McLeod
Sent: Friday, May 24, 2024 1:32 PM
To: Deanna Cheli
Subject: RE: 27 Old Fremont

Good Afternoon Deanna,

Thank you for the confirmation. The hearing for your application will open on June6th, 2024 exclusively for the purpose of continuing it to August 1st, 2024 per our mutual consent. You will not need to be present and the continuation at the public hearing will serve as notice for the new hearing date. If you have any questions in the meantime , please reach out to my office anytime.

I hope you all have a safe and enjoyable weekend.

Respectfully,

Jim

James McLeod
Director of Planning and Development
Town of Raymond New Hampshire
4 Epping Street
Raymond, NH 03077
Phone: 603-895-7018

From: Deanna Cheli <deanna@andrewsullivanlaw.com>
Sent: Friday, May 24, 2024 1:28 PM
To: James McLeod <communitydevdirector@raymondnh.gov>
Subject: 27 Old Fremont
Importance: High

Good afternoon,

As per our conversation this afternoon, I am requesting that our Planning Board Meeting be rescheduled to August 1st. The original date was on June 6th. If you need anything further from me please contact the office.

Thank you!

Deanna

Deanna Cheli
Legal Assistant
Law Office of Andrew H. Sullivan, Esq.
24 Eastman Avenue
Bedford, NH 03110

B. Application #2024-003 Gemini Valve

KNA KEACH-NORDSTROM ASSOCIATES, INC.

February 20, 2024

Town of Raymond
Planning & Zoning Department
4 Epping Street
Raymond, New Hampshire 03077

Subject: **Gemini Valve Site Plan Application**
Tax Map 28; Lot 4-3
2 Otter Court
Raymond, New Hampshire 03077
KNA Project No. 22-0110-2

Dear Chairman and Board Members:

The above referenced parcel is being submitted for Site Plan approval from the Town of Raymond Planning Board. The property is located at 2 Otter Court and is approximately 11.16 acres in area. The parcel is currently developed with an existing 2-story industrial building and associated parking lots. The rest of the site is undeveloped and consists of forested areas and wetlands associated with the Lamprey River, which borders the site to the south and west. The applicant is proposing to develop the site to accommodate two proposed building additions, consisting of 6,011 sf of office space and 20,162 sf of industrial space, additional parking lots and driveways, utility improvements, and stormwater management provisions. In addition to local site plan approval, the project will also require an Alteration of Terrain Permit, a Shoreland Permit, and an Individual Sewage Disposal System Permit from the New Hampshire Department of Environmental Services (NHDES). The included documents outline the applicants request for approval. All required information has been included within the submittal package. Keach-Nordstrom Associates, Inc. will be present to further discuss the Site Plan Application at the scheduled hearing.

Enclosed is the following material for your review and approval:

1. Application for Site Plan
2. Application fees:

Site Plan Review Fee:	**= $10,922.28**
Escrow for Peer Review & Abutters	= $2,500.00
Abutter fee @ 10.00 per (7):	= $70.00
Total Escrow Fee:	**= $2,570.00**

3. Seven (7) Full Size and Two (2) Half Size Copies of the Plan Set
4. Abutter's List & Labels
5. Signed Owner Affidavit
6. One (1) Copy of the Alteration of Terrain Application
7. Seven (7) Full and Two (2) Half Size Copies of the Architectural Building Elevations
8. All Submittal Documents Sent Digitally via Email to Town Staff

If you have any questions or comments, please contact me at (603) 627-2881.

Sincerely,

Peter Madsen, EIT
Project Engineer
Keach Nordstrom Associates
10 Commerce Park North, Suite 3
Bedford, NH 03110

Map # 28 Lot # 4-3

Site Plan Review Application

Town of Raymond, NH

Project Name: Gemini Valve

Location: 2 Otter Court Raymond, NH

Project Description: Proposed additions to existing building, site improvements

Zone: D New Industrial/Commercial Square Footage: 26,173 or Number of Residential Units: N/A

Applicant/Agent Information:

Name: Paul Chisholm

Phone: (603) 627-2881 Email: pchisholm@keachnordstrom.com

Company: Keach-Nordstrom Associates, Inc.

Address: 10 Commerce Park North, Suite 3

By signing this application, you are agreeing to all rules and regulations of the Town of Raymond, and are agreeing to allow agents of the Town of Raymond to conduct inspections on your property during normal business hours to ensure compliance with all Raymond Zoning and Site Plan Review Regulations while your application is under consideration and during any construction and operational phases after approval is granted.

Signed*: _____ Date: _____

*Requires notarized letter of permission

Owner Information:

Name: Parker & Harper Companies, LLC

Phone: (603) 244-7918 Email: pdoe@geminivalve.com

Company: Parker & Harper Companies, Inc.

Address: 2 Otter Court Raymond, NH

Signed: Paul C. Doe FOR GEMINI VALVE Date: 2/16/24

Designers of Record: (Provide Name, Email Address, & License Number for each)

Engineer: Keach-Nordstrom Associates, Inc. (Paul Chisholm, PE #15076)

Surveyor: Keach-Nordstrom Associates, Inc. (Chris Hickey, LLS #911)

Soil Scientist: Stoney Ridge Environmental LLC (Cindy Balcius CSS#84)

Landscape Architect: N/A

Fire Protection Engineer: N/A

Other(s): _____

FEES: See attached Fee Schedule

For Office Use Only:

Date Application Received: _____ Total Fees Collected w/Application: _____

Abutters List Received: _____ Plans & Checklist Received: _____

Appendix II

Site Plan Review Fees

Sample Chart Using 180 sf per space	
1	$ 514.80
2	$ 579.60
3	$ 644.40
4	$ 709.20
5	$ 774.00
6	$ 838.80
7	$ 903.60
8	$ 968.40
9	$ 1,183.20
10	$ 1,248.00
11	$ 1,312.80
12	$ 1,377.60
13	$ 1,442.40
14	$ 1,657.20
15	$ 1,722.00
16	$ 1,786.80
17	$ 1,851.60
18	$ 1,916.40
19	$ 2,131.20
20	$ 2,196.00
21	$ 2,260.80
22	$ 2,325.60
23	$ 2,390.40

Base Rate:	**$ 300.00**
(Includes staff wages with a 23 % roll-up rate)	
Variable Costs (per newly created space):	**$ 0.36**

	Units - SF
POV Spaces:	180
Handicap Accessible Spaces:	320
Tractor Trailer	600

# Spaces	Formula for Calculation of Fees
1 - 8	$ 0.36 per sf + (1.5 x $ 300 base rate)
9 - 13	$ 0.36 per sf + (2.0 x $ 300 base rate)
14 - 18	$ 0.36 per sf + (2.5 x $ 300 base rate)
19 - 23	$ 0.36 per sf + (3.0 x $ 300 base rate)
24 - 50	$ 0.36 per sf + (3.5 x $ 300 base rate)
51 - 75	$ 0.36 per sf + (4.0 x $ 300 base rate)
76 - 100	$ 0.36 per sf + (4.5 x $ 300 base rate)
101 - 150	$ 0.36 per sf + (5.0 x $ 300 base rate)
151 - 200	$ 0.36 per sf + (5.5 x $ 300 base rate)

ABUTTERS FEE: $10.00 PER NOTICE

Escrow Deposits for Legal/Engineering/Other Peer Review Expenses[1] Minimum Fee (Discretion of the Technical Review Committee):	**$ 1,250.00**
Disturbed Area[2] - Up to 5 Acres:	**$ 2,500.00**
Up to 10 Acres	**$ 3,250.00**
Up to 15 Acres:	**$ 4,000.00**
Up to 20 Acres:	**$ 4,500.00**
Over 20 Acres, but less than 30 acres:	**$ 5,000.00**
Over 30 Acres - To be determined by Town Engineer/Legal Counsel	**TBD**

[1] ***Once a balance is reduced to 50% of the original deposit, the applicant shall replenish it to 100%.***

[2] ***Disturbed area is defined as: That portion of the site that is altered due to construction of streets, roadways, parking areas, utilities, buildings or other physical improvements, including earth excavation, removal or altercation.***

Site Plan Review Checklist

TOWN OF RAYMOND, NH **Updated 2023**

PROJECT NAME: Gemini Valve **APPLICANT NAME:** Parker & Harper Companies, LLC **DATE RECEIVED:** _____

MAP#: 28 **LOT #:** 4-3 **APPLICATION DATE:** 2-23-2024 **APPLICATION #:** _____

A copy of all plans and technical reports must be sent to the Town engineer. Proof of submittal must be provided to the Community Development Department at the time of application. If proof of transmittal is not provided, the application may be delayed until the following month's Planning Board meeting. Address is: ***Dubois & King, 15 Constitution Dr. Suite 1L, Bedford NH 03110, ATTN: Jeffrey Adler, P.E.***

SUBMITTED				WAIVER REQUEST	
YES	*NO*			*YES*	*NO*
X		1.	Name of project; names and addresses and letters of authorization of all owners of record; Tax Map and Lot number.		
X		2.	Name, license number and seal of surveyor,architect, landscape architect, or other design professional; north arrow, scale, and date of plan; signature block of 4 inches (long) by 2 inches (wide).		
X		3.	Vicinity map and zoning district(s) of all parcels within the application.		
X		4.	Abutters and uses of abutting land within 200 feet of the site.		
X		5.	Shape, size, height, location, and use of existing and proposed structures located on the site and within 200 feet of the site.		
X		6.	Boundary lines, dimensions, and bearings; lot(s) area in acres and square feet and a calculation of the total disturbed area in square feet.		
X		7.	Location, name, and widths of any existing and proposed roads on the property and within 200 feet of the site.		
X		8.	Location of all existing and proposed sidewalks and driveways, with indication of the direction of travel for both pedestrian and vehicular traffic.		
X		9.	All proposed access points to the site, sight distance at access point(s), curb cuts (existing or proposed) and any proposed changes to existing streets; copy of driveway permit.		
X		10.	Location and number of parking spaces (including ADA accessible spaces) and loading spaces.		
X		11.	Location, type, and nature of all existing and proposed landscaping and screening including size. Include an Invasive Species checklist and plan designation of NH Native Species.		

Site Plan Review Checklist

TOWN OF RAYMOND, NH **Updated 2023**

SUBMITTED				WAIVER REQUEST	
YES	*NO*			*YES*	*NO*
X		12.	Location, type, and nature of all existing and proposed exterior lighting and show the illumination rate in footcandles.		
X		13.	All natural features within the site (streams, ponds, vernal pools, wetlands, etc. *(If there is Zone G land the conservation committee must be notified)*		
X		14.	Waste/dumpster locations and elevations of their enclosures and snow storage Areas.		
X		15.	Existing and proposed grades and contour lines, including Base Flood Elevation (BFE) where appropriate.		
X		16.	Size and location of all existing and proposed water mains, sewers, culverts, and distances to the existing fire hydrants, cisterns and/ or fire ponds.		
	X	17.	Copy of certification from licensed septic designer as to sufficiency of the OSTDS.		
X		18.	Location and type of proposed wastewater disposal system; outline of 4,000 sq. ft. area; test pits; record of percolation tests.		
X		19.	Existing and proposed stormwater drainage system.		
	X	20.	Location of existing and proposed on-site wells (showing required radii on the property).		
X		21.	Soil survey data (see: requirements for soils and wetlands data).		
X		22.	Location and dimensions of any existing or proposed easements, deed restrictions, covenants, or other encumbrances upon the lot(s).		
	X	23.	Information about any hazardous issues or conditions within the subject property or adjacent properties known to the application prior to the application. (IE. Phase 1)		
	X	24.	Copy of the NHDES OSTDS application, if applicable.		
	X	25.	NHDES Alteration of Wetlands Application or Permit, if applicable.		
X		26.	NHDES Alteration of Terrain Application or Permit, if applicable.		
	X	27.	NHDOT Driveway Application or Permit, if applicable.		
	X	28.	All state applications related to underground storage tanks (USTs).		
	X	29.	Army Corps of Engineers (ACOE) Application or Permit, if applicable.		
X		30.	Written narrative summarizing the project, separate from the site plan pages themselves.		

Site Plan Review Checklist

TOWN OF RAYMOND, NH **Updated 2023**

SUBMITTED YES	SUBMITTED NO			WAIVER REQUEST YES	WAIVER REQUEST NO
X		31.	Copy of all submitted materials submitted on a thumb drive or sent to the Town of Raymond via Dropbox link or other filesharing method.		
OTHER:					
	X	1.	Any other federal, state, or local permits.		
X		2.	Building elevations (in color and of all four sides) and depiction of overall design.		
	X	3.	Proposed sign location, size, height, and design.		
	X	4.	Such additional studies as may have been required by the Planning Board during Conceptual or Design Review or through the Technical Review Committee.		
X		5.	Seven (7) full-size copies (24 x 36) of all plans and two (2) copiesof all plans in 11 X 17 format, and digital copy of plans.		
X		6.	Seven (7) copies of all studies.		
FEES:					
X		1.	Application Fees		
X		2.	Abutter Notice Fees *(include three (3) labels per abutter) ($10.00 per abutter)*		
X		3.	Engineering and Legal Escrow		
X		4.	Site Review-Administrative Fee		

Name of the person and date performing the Site Plan Checklist: Peter Madsen 2/21/2024

Abutters List
Gemini Valve
Raymond, NH
KNA# 22-0110-2
Updated: 2/23/24

Tax Map	Lot	Owner/Applicant
28	4-3	Parker & Harper Companies, LLC 2 Otter Court Raymond, NH 03077

Tax Map	Lot	Abutter
28	2	Casella Waste Management 25 Green Hills Lane Rutland, VT 05701
28	4	Wayne J. Travers 4 Otter Court Raymond, NH 03077
28	5	Wal-Mart Stores, Inc. PO Box 850 Bentonville, AR 72716-0555
28	7	Edward W. Moulton 2 Old Fremont Road Raymond, NH 03077

Professionals to be notified:

Engineer/ Surveyor/Wetland Scientist

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

Stoney Ridge Environmental, LLC
c/o Cynthia M. Balcius, CSS
233 Prospect Mountain Road
Alton, NH 03809

Parker & Harper Companies, LLC
2 Otter Court
Raymond, NH 03077

Casella Waste Management
25 Green Hills Lane
Rutland, VT 05701

Wayne J. Travers
4 Otter Court
Raymond, NH 03077

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Stoney Ridge Environmental, LLC
c/o Cynthia M. Balcius, CSS
233 Prospect Mountain Road
Alton, NH 03809

Owner Affidavit

I, PAUL C. DOE, authorized representative and owner of Tax Map 28; Lot 4-3 in Raymond, 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. I do so with the understanding and pre-condition that I will not incur any financially liability to Keach Nordstrom or its agents relative to any submittals made in my behalf and subject to the condition that all such submittals shall be reviewed and approved by me prior to any said submissions be made to any state or local agency.

Signature of Owner: Paul C. Doe

Printed Name of Owner: PAUL C. DOE

Address of Owner: 2 Otter Court
Raymond, NH 03077

Date: FEB 16, 2024

State of NH County of Rockingham
The foregoing instrument was acknowledged before me
this 16 day of February, 20 24
by Paul Doe
Lynne Gagnon Notary Public
My Commission Expires

LYNNE GAGNON
NOTARY PUBLIC
State of New Hampshire
My Commission Expires
September 7, 2027

KNA KEACH-NORDSTROM ASSOCIATES, INC.

May 21, 2024

Jeffrey Adler, P.E.
DuBois & King, Inc.
15 Constitution Drive, Suite 1L
Bedford, NH 03110

Subject: **AOT Permit Application #240311-053**
Gemini Valve - Map 28 Lot 4-3
KNA Project No. 22-0110-2

Dear Mr. Adler:

Our office is in receipt of your comments, dated March 22, 2024. Based on the comments, we have made the required modifications and attached revisions for final review. A response to each comment has been provided below.

Traffic Impact Analysis

1. We recommend the Applicant provide a Traffic Impact Analysis for the proposed industrial development, in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.03.13.

   Please see the attached Traffic Impact Analysis for the proposed development.

Overview Plan (Sheet 1 of 15)

2. Provide the gross floor area of the existing building, as used in the parking calculations, on the plan. It appears that there is a discrepancy between the existing parking spots shown on the existing conditions plan (61 parking spots) and note 12 regarding parking calculations (46 parking spots). It may be helpful to clarify that 46 of the 61 existing spaces will remain if that is what Note 12 is intending to convey.

   Note #12 has been clarified and now shows the existing gross floor area, total gross floor area, and the number of spaces being removed.

3. The height of the existing building and proposed additions should be shown on the plans.

   The existing building is 20 feet high, and the height of the addition will match. An additional row has been added to the table under Note #5 with existing and proposed building heights.

Existing Conditions Plan (Sheet 2 of 15)

4. There are multiple overlapping lines of similar line type (existing contours and soil lines).

We recommend changing the line style (existing contours and soil lines) to make the plan easier to read.

The linetype for SCS soils and SSS soils has been swapped for plan cleanliness.

5. The locations and widths of adjacent streets, buildings and drives within 200 feet of the site boundaries are not shown in accordance with Town of Raymond Site Plan Review Regulations Section 5.02.06.

   Both the existing gravel driveway for Lot 4-4 and the existing paved driveway for Lot 4-2 have been added to the plans as requested.

6. The height and size of the existing buildings on the site and within 200 feet of the site boundaries are not shown on the plans in accordance with Town of Raymond Site Plan Review Regulations Section 5.02.07.

   The viewport has been expanded to include the location of the two existing buildings within 200 feet of the site boundaries. Appropriate labels have been added as well.

7. The uses of the abutting buildings are not identified in accordance with Town of Raymond Site Plan Review Regulations Section 5.02.09.

   The land uses of the abutting buildings have been added to the plans as requested.

8. The size, location, and elevation of all existing public and private utilities onsite and off-site with which connection is planned, or that are located within 200' of the site boundaries is not identified on the plans in accordance with Town of Raymond Site Plan Review Regulations Section 5.02.10.

   Additional utilities within 200' of the site boundaries have been added to the plans as requested. Overhead utility lines and poles are now shown on Map 28 Lot 4-5 and the existing water service is now shown on Map 28 Lot 4-2.

9. All building setbacks should be shown on the plans in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.02.13.

   Building setback lines are shown appropriately throughout the plan set. They are trimmed where they intersect wetland setback lines, or the 50-foot primary structure setback lines as conventionally done in standard surveying/engineering practice.

10. Three different possible boundary lines are shown along Otter Court. We recommend the boundary be resolved by a Licensed Land Surveyor and a plat plan be recorded with the County Registry of Deeds to resolve the conflicting information.

    A boundary resolution is forthcoming. Once the final boundary is determined, the plans will be revised accordingly. The Overview Plan will display the final boundary and will

be recorded to resolve the conflict.

Non Residential Site Plan (Sheet 4 of 15)

1. Three different possible boundary lines are shown along Otter Court. We recommend the boundary be resolved by a Licensed Land Surveyor. The proposed project shows parking spaces and proposed structures within the unresolved boundary area, which could potentially be within a right-of-way or not on the applicant's property.

   A boundary resolution is forthcoming. Once the final boundary is determined, the plans will be revised accordingly. The Overview Plan will display the final boundary and will be recorded to resolve the conflict.

2. The size and height of all proposed additions should be labeled on the plans in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.03.02.

   The size of each building addition is represented in plan view on Sheet 1 as required. Both existing and proposed building heights have been added to the table of dimensional requirements under Note #5 on Sheet 1. Sheet 4 has a large note stating "See Sheet 1 for General Notes and reference Plans."

3. Proposed driveways and parking spaces should show indication of direction of travel and the width of proposed drives should be identified on plan in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.03.03.

   Directional arrows showing the direction of travel have been added to the plans as requested. Additional width dimensions have been added throughout the parking lots as well.

4. We recommend the Applicant revise the plan to indicate the proposed loading spaces and facilities (trash enclosures) associated with the structure on site in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.03.04. A detail for a dumpster enclosure has been included within the plan set, but it is not clear where the proposed dumpster will be located on the site.

   The site dumpster will be located under the dumpster canopy and loading docks as shown on the architectural plans (N.1 Elevation). The dumpster enclosure detail has been removed from the plans as it is no longer applicable to the design of the enclosure. Loading spaces have been added to the plans as requested.

5. The location of the proposed Infiltration Pond and conveyance swale should be shown on the plan or the partial components that have been shown should be turned off.

   The location of the redesigned stormwater system is shown on the plans as requested. The conveyance swale is no longer proposed as part of the redesign.

6. We recommend the Applicant provide a fire truck turning movement plan.

   A Fire Truck Turning Plan is included under the current cover for review.

7. It is not clear what the purpose of the gate located south of the building is.

   The gate to the south of the building is an existing gate used for temporary trailer storage and roof drainage maintenance.

8. We recommend the Applicant turn off drainage structures or turn on associated piping.

   Existing and proposed drainage structures have been frozen in the viewport.

Grading and Drainage Plan (Sheet 5 of 15)

9. We recommend the Applicant provide finished floor elevations for the existing building and proposed additions.

   Finished floor elevations have been added where requested.

10. We recommend that the Applicant revise the legend to include sheet-relevant line types and symbols in accordance with Town of Raymond Site Plan Review Regulations Section 5.03.12. (i.e. FM, F192, retaining wall).

    The legend has been expanded as requested.

11. We recommend the Applicant provide additional spot elevations (including existing building, the proposed building additions, and parking lot edges) to better clarify the intent of grading. Additionally, we recommend turning on the existing and proposed striping and making the edge of pavement line bolder to improve plan legibility.

    Additional spot elevations and building elevations have been added to the plans as requested. Proposed slopes and direction of flow arrows have also been added. The existing and proposed striping is not typically shown on grading and drainage plans not only for plan cleanliness reasons but to avoid confusion between proposed contour lines, edge of pavement lines, and striping lines. The additional spot elevations and flow arrows should provide enough information for the proposed grading.

12. It appears that the proposed curb along the sidewalk has different reveals (TOC 192.17, BOC 191.46 versus TOC 192.2, BOC 191.7). The callouts should be reviewed and revised as necessary.

    The TOC elevation of 192.17 at BOC elevation 191.46 was incorrect and has been revised to provide the desired 6" reveal.

13. There are multiple overlapping lines of similar line type (existing contours and soil lines).

We recommend turning off the soil types and soil lines for legibility unless they are on a sheet for a specific purpose. This comment applies to all plans. We recommend the soil lines and soil types be shown on the existing conditions plan only, unless they serve a specific purpose.

The soil lines have been frozen in the viewport and are only shown on the Existing Conditions Plan as requested.

14. We recommend that the Applicant review and revise the callout regarding the drainage-electrical conflict. It appears that the existing overhead electrical line from the building to the existing electrical pole (PSNH 4A/4C), will remain in place and there will be no conflict with the underground closed drainage.

The callout regarding the electrical service was related to a potential conflict between the proposed drainage line and an existing underground electric service from the transformer whose location is unknown. The current plans propose to remove the existing transformer and replace it in a new location. The new location is adjacent to the proposed septic tanks therefore, the conflict no longer exists. The note has been removed accordingly.

Utility Plan (Sheet 6 of 15)

15. We recommend that the Applicant meet with the Fire Department to review the fire protection activities, in accordance with Town of Raymond, Site Plan Regulations, Section 6.09.01.

The applicant has attempted to set up multiple meetings with the Fire Department and has not received a response.

16. The location of the proposed Infiltration Pond and conveyance swale should be shown on the plan or the partial components that have been shown should be turned off.

The location of the stormwater pond is shown on the plans as requested. A conveyance swale is no longer part of the design.

17. We recommend that the Applicant review and revise the callout regarding the drainage-electrical conflict. It appears that the existing overhead electrical line from the building to the existing electrical pole (PSNH 4A/4C), will remain in place and there will be no conflict with the underground closed drainage.

The callout has been removed.

18. A septic plan and details regarding the proposed leach field, force main, and septic tank were not included in the submittal as referenced on Sheet 6.

Sheets 16 & 17, which provide additional detail regarding the effluent disposal design, have been added to the plan set as requested.

Construction Details (Sheets 10, 11, 12, 13, 14 of 15)

19. The Applicant is providing a vinyl trash enclosure detail on Sheet 10. We recommend showing the trash enclosure on the site plan.

    The trash enclosure detail has been removed as it is no longer applicable.

20. The detail for the pipe outlet with rip-rap shows values for HW #1 and HW #3. We recommend adding the rip-rap calculations for HW #3 in the spreadsheet attached to the drainage report.

    Calculations for HW#3 are now included in the revised rip-rap spreadsheet (see attached).

Drainage Analysis

21. We recommend the Applicant include the 1-inch Rainfall event for post-development conditions to the drainage report.

    The HydroCAD calculations for the 1-inch rainfall event are now included in the drainage report as requested.

22. Peak flow discharge rates values for Point of Analysis A (Lamprey River) - 25-year and 50-year storm – are not consistent between the narrative table and drainage report. We recommend reviewing and revising as necessary.

    The drainage report and table have been revised accordingly (see attached).

23. We recommend showing Pond 16P on the post-development drainage area plan.

    Pond 16P is no longer part of the analysis.

24. We recommend reviewing device #1 for Pond 16P and 15P. Values for inverts, pipe size, length, and slope are not consistent between plans and drainage report. (i.e. 185.20 on Sheet 5 versus 184.91 in the drainage report)

    Ponds 15P and 16P are no longer part of the analysis.

25. It appears that Pond 7P, DCB #8, overflows during the 50-year storm (rim = 189.58, peak elevation = 189.64).

    Drainage pipes have been upsized as necessary to eliminate overtopping in the 50-year storm event.

26. We recommend the Applicant submit a complete summary for the 25-year storm.

A complete summary for the 25-year storm event is attached under the current cover.

27. Rip-rap calculations for the 25-year storm were not included in the submitted drainage report. Also, the peak flow value for the 10-year-storm used for the rip-rap calculations, does not match the drainage report. (i.e. 1.07cfs used in the calculation versus 1.21cfs to the primary device in the drainage report)

    Rip-rap calculations have been updated for the 25-year storm event as requested (see attached).

28. For the Infiltration Practice Criteria calculations, we recommend reviewing the total area, impervious area, and peak elevations for the 10 and 50-year storm event and revising as necessary to be consistent with the drainage report.

    The BMP worksheet has been revised as requested.

General Comments

29. There is an unidentified square present on all plans (north of the proposed brick paver patio).

    The unidentified square is an existing electric box. Labels have been added to all appropriate sheets.

30. There is an unidentified set of circles present within the existing tree line south of the southernmost entrance on all plans (with the exception of sheet 7).

    The marking is an existing iron rod. Labels have been added to all appropriate sheets.

31. There is an unidentified circle (between the existing building and paved parking area to the north) present on all plans (northwest of the proposed brick paver patio).

    The circle is a post indicator valve. Labels have been added to all appropriate sheets.

32. There are text size inconsistencies in the notes on sheet 1.

    Text inconsistencies on Sheet 1 have been rectified.

33. Many sheets contain partial information. We recommend reviewing drainage information (closed and surface) and its purpose on each plan sheet and revising as necessary. (i.e. drainage structures shown, pipes not; riprap and overflow shown, boundary of pond not; centerline of swale shown, boundary not)

    The sheets have been revised as requested.

If you have any questions or comments, please reach out by phone at (603) 627-2881 or by email at pmadsen@keachnordstrom.com.

Respectfully,

Peter Madsen, EIT
Project Engineer
Keach Nordstrom Associates, Inc.
10 Commerce Park North, Suite 3
Bedford, NH 03110

7. PROJECT NARRATIVE

I. INTRODUCTION

A. Project Description

The project proposes to develop the site to accommodate two proposed additions to the existing 2-story building. Site work includes the development of the building additions and installation of the associated driveways and parking lots, and stormwater management provisions.

B. Existing Site Conditions

The subject property currently consists of one lot, approximately 11.16 acres in total area, located at 2 Otter Court in Raymon's Industrial (D) Zoning District. The lot is currently developed with a 2-story building and associated driveways and parking lots. It is comprised of sparse woodlands, several wetlands and the Lamprey River. The subject lot is surrounded by Town owned land to the west and industry buildings to the north and east, NH Route 27 to the north, NH Route 102 to the east and NH Route 101 to the south.

A site-specific soil survey, performed onsite by Cindy Balsius of Stoney Brook Environmental, LLC in July of 2021, listed the following soils as the predominant soil types found onsite. Canton fine sandy loam with slopes ranging from 0-25%, Hinckley loamy sand with slopes from 0-50%, Sudbury fine sandy loam with slopes from 3-50%, and Rippowam fine sandy loam with slopes from 0-3%.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the provisions of NHDES, the town of Raymond, and generally accepted engineering practice, the 1-inch rainstorm, 2-year, 10-year, 25-year, 50-year, and 100-year storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site.

KNA utilizes HydroCAD version 10.0 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 design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Pre/Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In the pre-development scenario, four (4) points of analysis (POA) have been identified as the appropriate points to compare pre vs. post development rates of stormwater discharge.

These points of analysis reflect the main discharge points of the site and were analyzed to show the impact from the proposed improvements.

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

- Link A — Lamprey River
- Link B — Otter Court
- Link C — Map 28 Lot 4-4
- Link D — Map 28 Lot 4-5

In general, the site slopes from a high point to the northeast and directs runoff downhill to the Lamprey River (Link A), which acts as the site property line. Runoff from a portion of the high point is directed offsite to Map 28; Lot 4-5 to the northeast and to Otter Court to the east. Runoff from a small portion of the northwestern corner is directed to Map 28; Lot 4-4. Links B, C and D account for small sections of the property that discharge runoff onto the abutting lots. 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 four 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 continue to discharge to the same points of analysis identified in the pre-development scenario. The improvements, however, also provide stormwater treatment and groundwater recharge for the new impervious areas created for the proposed development. These new impervious areas include the building additions, parking lots and driveways.

The proposed stormwater management system utilizes both open and closed practices for the collection, detention, treatment, and recharge of runoff. Runoff generated from the new development and the northern portion of the existing site is collected by a series of deep sump catch basins and piped to a proposed Bioretention Pond. This pond is located directly west of the proposed building addition and it outlets to the adjacent Lamprey River (Link A). The pond utilizes Low Impact Development (LID) design strategies by both reducing stormwater runoff volumes in the 2-year frequency storm event and maintaining predevelopment site hydrology as the pond is located adjacent an existing pond previously used to detain the majority of the site's runoff. Additionally, the proposed practice provides adequate removal of Total Suspended Solids (TSS), phosphorous, and nitrogen with removal efficiencies of 95%, 65%, and 65% respectively.

Runoff generated on the highpoint located in the northeast corner is directed to the deep sump catch basins as well as offsite to Links B and D. Runoff generated in a small portion of the northwestern corner of the property flows offsite to Link C. For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

D. Summary:

The subject site complies with the Town of Raymond 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 Raymond Stormwater Regulations and NHDES Regulations Env-Wq 1500. The results are reported below in Table 1 and 2.

Table 1: Peak Flow Discharge Rate

Site Pre-Development vs. Post-Development (cfs)										
Description	**1-Inch**		**2-Year**		**10-Year**		**25-Year**		**50-Year**	
24-hr Rainfall	1.00 in/hr		3.04 in/hr		4.60 in/hr		5.83 in/hr		6.98 in/hr	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
A	**1.15**	1.12	**4.06**	3.97	**6.99**	6.85	**9.84**	9.57	**13.82**	12.33
B	**0.08**	0.01	**0.31**	0.04	**0.74**	0.06	**1.15**	0.08	**1.59**	0.12
C	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00
D	**0.00**	0.00	**0.01**	0.01	**0.09**	0.08	**0.19**	0.16	**0.30**	0.24

Table 2: Channel Protection Requirements (Env-Wq 1507.05)

Site Pre-Development vs. Post Development (Storm Volume in Acre-Feet)			
Description	**2-Year**		
24-hr Rainfall	3.04 in/hr		
	Pre	Post	Comments
A	**0.42**	0.41	Complies with Env-Wq 1507.05 (b)(1)a
B	**0.03**	0.00	Complies with Env-Wq 1507.05 (b)(1)b&b
C	**0.00**	0.00	Complies with Env-Wq 1507.05 (b)(1)a&b
D	**0.00**	0.00	Complies with Env-Wq 1507.05 (b)(1)a&b

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, erosion control blankets, and seeding have been specified for use during the construction period. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the contractor to recognize that proper judgment in the implementation of work will be essential

if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Further, 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; and

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

3) One (1) BMP was designed to reduce runoff and volume.

16. BMP WORKSHEETS

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FILTRATION PRACTICE DESIGN CRITERIA (Env-Wq 1508.07)

Type/Node Name: **Bioretention Pond**

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

Yes		Check if you reviewed the restrictions on unlined systems outlined in Env-Wq 1508.07(a).	
3.43	ac	A = Area draining to the practice	
1.98	ac	A_I = Impervious area draining to the practice	
0.58	decimal	I = Percent impervious area draining to the practice, in decimal form	
0.57	unitless	Rv = Runoff coefficient = 0.05 + (0.9 x I)	
1.95	ac-in	WQV= 1" x Rv x A	
7,081	cf	WQV conversion (ac-in x 43,560 sf/ac x 1ft/12")	
1,770	cf	25% x WQV (check calc for sediment forebay volume)	
5,311	cf	75% x WQV (check calc for surface sand filter volume)	
Sediment Forebay		Method of Pretreatment? (not required for clean or roof runoff)	
1,858	cf	V_{SED} = Sediment forebay volume, if used for pretreatment	≥ 25%WQV
Calculate time to drain if system IS NOT underdrained:			
4,938	sf	A_{SA} = Surface area of the practice	
3.00	iph	$Ksat_{DESIGN}$ = Design infiltration rate[1]	
		If Ksat (prior to factor of safety) is < 0.50 iph, has an underdrain been provided?	
N/A	Yes/No	(Use the calculations below)	
5.7	hours	T_{DRAIN} = Drain time = V / (A_{SA} * I_{DESIGN})	≤ 72-hrs
Calculate time to drain if system IS underdrained:			
	ft	E_{WQV} = Elevation of WQV (attach stage-storage table)	
	cfs	Q_{WQV} = Discharge at the E_{WQV} (attach stage-discharge table)	
-	hours	T_{DRAIN} = Drain time = 2WQV/Q_{WQV}	≤ 72-hrs
179.50	feet	E_{FC} = Elevation of the bottom of the filter course material[2]	
178.50	feet	E_{UD} = Invert elevation of the underdrain (UD), if applicable	
178.42	feet	E_{SHWT} = Elevation of SHWT (if none found, enter the lowest elevation of the test pit)	
176.58	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'
2.92	feet	$D_{FC\ to\ ROCK}$ = Depth to bedrock from the bottom of the filter course	≥ 1'
1.08	feet	$D_{FC\ to\ SHWT}$ = Depth to SHWT from the bottom of the filter course	≥ 1'
183.55	ft	Peak elevation of the 50-year storm event (infiltration can be used in analysis)	
183.75	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
33,692	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 14		Note what sheet in the plan set contains the filter course specification	
3.0	:1	Pond side slopes	≥ 3:1
Sheet 14		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:

Stage-Area-Storage for Pond 3P: BIORETENTION POND

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
179.50	4,938	0	180.02	5,058	1,027
179.51	4,938	20	180.03	5,063	1,047
179.52	4,938	40	180.04	5,067	1,067
179.53	4,938	59	180.05	5,071	1,086
179.54	4,938	79	180.06	5,075	1,106
179.55	4,938	99	180.07	5,080	1,126
179.56	4,938	119	180.08	5,084	1,146
179.57	4,938	138	180.09	5,088	1,165
179.58	4,938	158	180.10	5,092	1,185
179.59	4,938	178	180.11	5,096	1,205
179.60	4,938	198	180.12	5,101	1,225
179.61	4,938	217	180.13	5,105	1,244
179.62	4,938	237	180.14	5,109	1,264
179.63	4,938	257	180.15	5,113	1,284
179.64	4,938	277	180.16	5,118	1,304
179.65	4,938	296	180.17	5,122	1,323
179.66	4,938	316	180.18	5,126	1,343
179.67	4,938	336	180.19	5,130	1,363
179.68	4,938	356	180.20	5,134	1,383
179.69	4,938	375	180.21	5,139	1,402
179.70	4,938	395	180.22	5,143	1,422
179.71	4,938	415	180.23	5,147	1,442
179.72	4,938	435	180.24	5,151	1,462
179.73	4,938	454	180.25	5,156	1,481
179.74	4,938	474	180.26	5,160	1,501
179.75	4,938	494	180.27	5,164	1,521
179.76	4,938	514	180.28	5,168	1,541
179.77	4,938	533	180.29	5,172	1,560
179.78	4,938	553	180.30	5,177	1,580
179.79	4,938	573	180.31	5,181	1,600
179.80	4,938	593	180.32	5,185	1,620
179.81	4,938	612	180.33	5,189	1,639
179.82	4,938	632	180.34	5,193	1,659
179.83	4,938	652	180.35	5,198	1,679
179.84	4,938	672	180.36	5,202	1,699
179.85	4,938	691	180.37	5,206	1,718
179.86	4,938	711	180.38	5,210	1,738
179.87	4,938	731	180.39	5,215	1,758
179.88	4,938	751	180.40	5,219	1,778
179.89	4,938	770	180.41	5,223	1,797
179.90	4,938	790	180.42	5,227	1,817
179.91	4,938	810	180.43	5,231	1,837
179.92	4,938	830	180.44	5,236	1,857
179.93	4,938	849	180.45	5,240	1,876
179.94	4,938	869	180.46	5,244	1,896
179.95	4,938	889	180.47	5,248	1,916
179.96	4,938	909	180.48	5,253	1,936
179.97	4,938	928	180.49	5,257	1,955
179.98	4,938	948	180.50	5,261	1,975
179.99	4,938	968	180.51	5,267	1,995
180.00	5,050	988	180.52	5,272	2,015
180.01	5,054	1,007	180.53	5,278	2,034

Stage-Area-Storage for Pond 3P: BIORETENTION POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
180.54	5,283	2,054
180.55	5,289	2,074
180.56	5,294	2,094
180.57	5,300	2,113
180.58	5,305	2,133
180.59	5,311	2,153
180.60	5,316	2,173
180.61	5,322	2,192
180.62	5,327	2,212
180.63	5,333	2,232
180.64	5,338	2,252
180.65	5,344	2,271
180.66	5,349	2,291
180.67	5,355	2,311
180.68	5,360	2,331
180.69	5,366	2,350
180.70	5,371	2,370
180.71	5,377	2,390
180.72	5,382	2,410
180.73	5,388	2,429
180.74	5,393	2,449
180.75	5,399	2,469
180.76	5,404	2,489
180.77	5,410	2,509
180.78	5,415	2,528
180.79	5,421	2,548
180.80	5,426	2,568
180.81	5,432	2,588
180.82	5,437	2,607
180.83	5,443	2,627
180.84	5,449	2,647
180.85	5,454	2,667
180.86	5,460	2,686
180.87	5,465	2,706
180.88	5,471	2,726
180.89	5,476	2,746
180.90	5,482	2,765
180.91	5,487	2,785
180.92	5,493	2,805
180.93	5,498	2,825
180.94	5,504	2,844
180.95	5,509	2,864
180.96	5,515	2,884
180.97	5,520	2,904
180.98	5,526	2,923
180.99	5,531	2,943
181.00	5,537	2,963
181.01	5,669	3,013
181.02	5,802	3,064
181.03	5,935	3,117
181.04	6,067	3,170
181.05	6,200	3,226
181.06	6,333	3,282
181.07	6,465	3,340
181.08	6,598	3,399
181.09	6,731	3,459
181.10	6,863	3,520
181.11	6,996	3,583
181.12	7,129	3,647
181.13	7,261	3,712
181.14	7,394	3,779
181.15	7,527	3,847
181.16	7,659	3,916
181.17	7,792	3,986
181.18	7,925	4,058
181.19	8,057	4,131
181.20	8,190	4,205
181.21	8,323	4,280
181.22	8,455	4,357
181.23	8,588	4,435
181.24	8,720	4,514
181.25	8,853	4,595
181.26	8,986	4,676
181.27	9,118	4,759
181.28	9,251	4,844
181.29	9,384	4,929
181.30	9,516	5,016
181.31	9,649	5,104
181.32	9,782	5,194
181.33	9,914	5,285
181.34	10,047	5,377
181.35	10,180	5,470
181.36	10,312	5,564
181.37	10,445	5,660
181.38	10,578	5,757
181.39	10,710	5,856
181.40	10,843	5,955
181.41	10,976	6,056
181.42	11,108	6,158
181.43	11,241	6,262
181.44	11,374	6,366
181.45	11,506	6,472
181.46	11,639	6,579
181.47	11,772	6,688
181.48	11,904	6,798
181.49	12,037	6,909
181.50	12,170	7,021
181.51	12,196	7,134
181.52	12,222	7,247
181.53	12,248	7,361
181.54	12,274	7,474
181.55	12,300	7,588
181.56	12,326	7,702
181.57	12,352	7,817

Stage-Area-Storage for Pond 3P: BIORETENTION POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
181.58	12,378	7,931
181.59	12,404	8,046
181.60	12,430	8,161
181.61	12,456	8,276
181.62	12,482	8,391
181.63	12,508	8,507
181.64	12,534	8,622
181.65	12,560	8,738
181.66	12,586	8,855
181.67	12,612	8,971
181.68	12,638	9,087
181.69	12,665	9,204
181.70	12,691	9,321
181.71	12,717	9,438
181.72	12,743	9,556
181.73	12,769	9,673
181.74	12,795	9,791
181.75	12,821	9,909
181.76	12,847	10,027
181.77	12,873	10,146
181.78	12,899	10,264
181.79	12,925	10,383
181.80	12,951	10,502
181.81	12,977	10,621
181.82	13,003	10,741
181.83	13,029	10,860
181.84	13,055	10,980
181.85	13,081	11,100
181.86	13,107	11,220
181.87	13,134	11,341
181.88	13,160	11,461
181.89	13,186	11,582
181.90	13,212	11,703
181.91	13,238	11,825
181.92	13,264	11,946
181.93	13,290	12,068
181.94	13,316	12,190
181.95	13,342	12,312
181.96	13,368	12,434
181.97	13,394	12,557
181.98	13,420	12,679
181.99	13,446	12,802
182.00	13,472	12,925
182.01	13,499	13,049
182.02	13,525	13,172
182.03	13,551	13,296
182.04	13,578	13,420
182.05	13,604	13,544
182.06	13,630	13,668
182.07	13,657	13,793
182.08	13,683	13,918
182.09	13,709	14,043
182.10	13,736	14,168
182.11	13,762	14,293
182.12	13,789	14,419
182.13	13,815	14,545
182.14	13,841	14,671
182.15	13,868	14,797
182.16	13,894	14,923
182.17	13,920	15,050
182.18	13,947	15,177
182.19	13,973	15,304
182.20	13,999	15,431
182.21	14,026	15,559
182.22	14,052	15,687
182.23	14,078	15,814
182.24	14,105	15,943
182.25	14,131	16,071
182.26	14,157	16,199
182.27	14,184	16,328
182.28	14,210	16,457
182.29	14,237	16,586
182.30	14,263	16,716
182.31	14,289	16,845
182.32	14,316	16,975
182.33	14,342	17,105
182.34	14,368	17,235
182.35	14,395	17,366
182.36	14,421	17,496
182.37	14,447	17,627
182.38	14,474	17,758
182.39	14,500	17,889
182.40	14,526	18,021
182.41	14,553	18,152
182.42	14,579	18,284
182.43	14,606	18,416
182.44	14,632	18,549
182.45	14,658	18,681
182.46	14,685	18,814
182.47	14,711	18,947
182.48	14,737	19,080
182.49	14,764	19,213
182.50	14,790	19,347
182.51	14,881	19,481
182.52	14,972	19,616
182.53	15,063	19,752
182.54	15,154	19,889
182.55	15,245	20,026
182.56	15,336	20,165
182.57	15,428	20,305
182.58	15,519	20,445
182.59	15,610	20,586
182.60	15,701	20,729
182.61	15,792	20,872

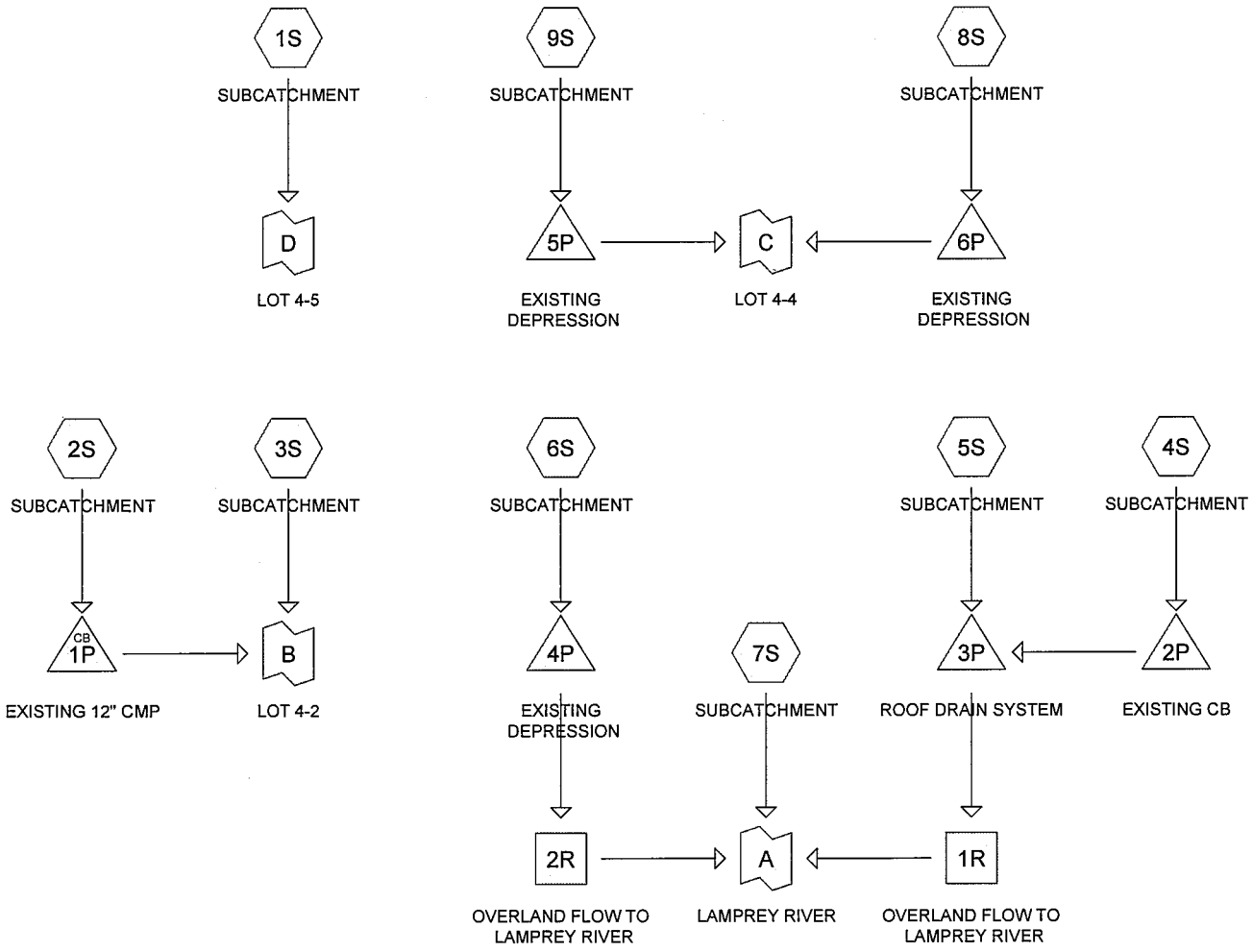
Stage-Area-Storage for Pond 3P: BIORETENTION POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
182.62	15,883	21,016
182.63	15,974	21,161
182.64	16,065	21,307
182.65	16,156	21,454
182.66	16,247	21,602
182.67	16,338	21,750
182.68	16,429	21,900
182.69	16,521	22,050
182.70	16,612	22,202
182.71	16,703	22,354
182.72	16,794	22,507
182.73	16,885	22,661
182.74	16,976	22,816
182.75	17,067	22,972
182.76	17,093	23,129
182.77	17,119	23,286
182.78	17,146	23,443
182.79	17,172	23,600
182.80	17,198	23,758
182.81	17,224	23,916
182.82	17,250	24,074
182.83	17,277	24,232
182.84	17,303	24,391
182.85	17,329	24,550
182.86	17,355	24,709
182.87	17,381	24,868
182.88	17,407	25,028
182.89	17,434	25,188
182.90	17,460	25,348
182.91	17,486	25,509
182.92	17,512	25,669
182.93	17,538	25,830
182.94	17,565	25,991
182.95	17,591	26,153
182.96	17,617	26,315
182.97	17,643	26,477
182.98	17,669	26,639
182.99	17,696	26,802
183.00	17,722	26,965
183.01	17,748	27,128
183.02	17,774	27,291
183.03	17,800	27,455
183.04	17,827	27,618
183.05	17,853	27,783
183.06	17,879	27,947
183.07	17,905	28,112
183.08	17,931	28,277
183.09	17,957	28,442
183.10	17,984	28,607
183.11	18,010	28,773
183.12	18,036	28,939
183.13	18,062	29,105
183.14	18,088	29,272
183.15	18,115	29,438
183.16	18,141	29,605
183.17	18,167	29,773
183.18	18,193	29,940
183.19	18,219	30,108
183.20	18,246	30,276
183.21	18,272	30,444
183.22	18,298	30,613
183.23	18,324	30,782
183.24	18,350	30,951
183.25	18,377	31,120
183.26	18,403	31,290
183.27	18,429	31,460
183.28	18,455	31,630
183.29	18,481	31,800
183.30	18,507	31,971
183.31	18,534	32,142
183.32	18,560	32,313
183.33	18,586	32,485
183.34	18,612	32,656
183.35	18,638	32,828
183.36	18,665	33,001
183.37	18,691	33,173
183.38	18,717	33,346
183.39	18,743	33,519
183.40	18,769	33,692
183.41	18,796	33,866
183.42	18,822	34,040
183.43	18,848	34,214
183.44	18,874	34,388
183.45	18,900	34,563
183.46	18,926	34,738
183.47	18,953	34,913
183.48	18,979	35,088
183.49	19,005	35,264
183.50	19,031	35,440
183.51	19,057	35,616
183.52	19,084	35,792
183.53	19,110	35,969
183.54	19,136	36,146
183.55	19,162	36,323
183.56	19,188	36,501
183.57	19,215	36,679
183.58	19,241	36,857
183.59	19,267	37,035
183.60	19,293	37,213
183.61	19,319	37,392
183.62	19,346	37,571
183.63	19,372	37,751
183.64	19,398	37,930
183.65	19,424	38,110

Stage-Area-Storage for Pond 3P: BIORETENTION POND (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
183.66	19,450	38,290
183.67	19,476	38,471
183.68	19,503	38,651
183.69	19,529	38,832
183.70	19,555	39,013
183.71	19,581	39,195
183.72	19,607	39,376
183.73	19,634	39,558
183.74	19,660	39,740
183.75	**19,686**	**39,923**

17. HYDROCAD DRAINAGE ANALYSIS



Subcat Reach Pond Link

Routing Diagram for 2201102-PRE DEVELOPMENT_REV1, Revised May 9, 2024

Prepared by Keach-Nordstrom Associates, Inc., Printed 5/22/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.413	39.0	>75% Grass cover, Good, HSG A (2S, 4S, 6S, 7S, 9S)
0.522	61.0	>75% Grass cover, Good, HSG B (2S, 3S, 4S, 6S, 7S)
0.003	74.0	>75% Grass cover, Good, HSG C (7S)
0.869	98.0	Paved parking, HSG A (3S, 4S, 6S, 9S)
1.273	98.0	Roofs, HSG A (4S, 5S, 6S)
3.118	30.0	Woods, Good, HSG A (1S, 2S, 3S, 6S, 7S, 8S, 9S)
2.690	55.0	Woods, Good, HSG B (1S, 2S, 3S, 6S, 7S, 8S, 9S)
1.275	70.0	Woods, Good, HSG C (7S, 8S)
11.163	**56.2**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
6.673	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S
3.212	HSG B	1S, 2S, 3S, 4S, 6S, 7S, 8S, 9S
1.278	HSG C	7S, 8S
0.000	HSG D	
0.000	Other	
11.163		**TOTAL AREA**

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

Subcatchment1S: SUBCATCHMENT Runoff Area=7,380 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment2S: SUBCATCHMENT Runoff Area=11,238 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=133' Tc=6.5 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=26,796 sf 14.49% Impervious Runoff Depth>0.11"
Flow Length=200' Tc=6.2 min CN=WQ Runoff=0.08 cfs 0.01 af

Subcatchment4S: SUBCATCHMENT Runoff Area=13,408 sf 40.80% Impervious Runoff Depth>0.32"
Tc=6.0 min CN=WQ Runoff=0.11 cfs 0.01 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,792 sf 100.00% Impervious Runoff Depth>0.79"
Tc=6.0 min CN=98.0 Runoff=1.04 cfs 0.08 af

Subcatchment6S: SUBCATCHMENT Runoff Area=74,605 sf 33.78% Impervious Runoff Depth>0.27"
Flow Length=540' Tc=10.9 min CN=WQ Runoff=0.44 cfs 0.04 af

Subcatchment7S: SUBCATCHMENT Runoff Area=247,667 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=338' Tc=19.3 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment8S: SUBCATCHMENT Runoff Area=15,117 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=148' Tc=14.9 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment9S: SUBCATCHMENT Runoff Area=39,256 sf 20.36% Impervious Runoff Depth>0.16"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.14 cfs 0.01 af

Reach 1R: OVERLAND FLOW TO Avg. Flow Depth=0.16' Max Vel=3.53 fps Inflow=1.15 cfs 0.09 af
n=0.022 L=111.0' S=0.0526 '/' Capacity=71.18 cfs Outflow=1.15 cfs 0.09 af

Reach 2R: OVERLAND FLOW TO Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.00 af
n=0.022 L=234.0' S=0.0306 '/' Capacity=14.85 cfs Outflow=0.00 cfs 0.00 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.22' Inflow=0.00 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.00 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.11 cfs 0.01 af
Primary=0.11 cfs 0.01 af

Pond 3P: ROOF DRAIN SYSTEM Inflow=1.15 cfs 0.09 af
Primary=1.15 cfs 0.09 af

Pond 4P: EXISTING DEPRESSION Peak Elev=182.54' Storage=860 cf Inflow=0.44 cfs 0.04 af
Discarded=0.04 cfs 0.03 af Primary=0.00 cfs 0.00 af Outflow=0.04 cfs 0.03 af

Pond 5P: EXISTING DEPRESSION Peak Elev=179.91' Storage=138 cf Inflow=0.14 cfs 0.01 af
Discarded=0.05 cfs 0.01 af Primary=0.00 cfs 0.00 af Outflow=0.05 cfs 0.01 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.50' Storage=0 cf Inflow=0.00 cfs 0.00 af
Discarded=0.00 cfs 0.00 af Primary=0.00 cfs 0.00 af Outflow=0.00 cfs 0.00 af

Link A: LAMPREY RIVER Inflow=1.15 cfs 0.09 af
Primary=1.15 cfs 0.09 af

Link B: LOT 4-2 Inflow=0.08 cfs 0.01 af
Primary=0.08 cfs 0.01 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Total Runoff Area = 11.163 ac Runoff Volume = 0.14 af Average Runoff Depth = 0.15"
80.80% Pervious = 9.020 ac 19.20% Impervious = 2.143 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=7,380 sf 0.00% Impervious Runoff Depth>0.16"
Tc=6.0 min CN=WQ Runoff=0.01 cfs 0.00 af

Subcatchment2S: SUBCATCHMENT Runoff Area=11,238 sf 0.00% Impervious Runoff Depth>0.12"
Flow Length=133' Tc=6.5 min CN=WQ Runoff=0.01 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=26,796 sf 14.49% Impervious Runoff Depth>0.54"
Flow Length=200' Tc=6.2 min CN=WQ Runoff=0.30 cfs 0.03 af

Subcatchment4S: SUBCATCHMENT Runoff Area=13,408 sf 40.80% Impervious Runoff Depth>1.17"
Tc=6.0 min CN=WQ Runoff=0.37 cfs 0.03 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,792 sf 100.00% Impervious Runoff Depth>2.81"
Tc=6.0 min CN=98.0 Runoff=3.44 cfs 0.27 af

Subcatchment6S: SUBCATCHMENT Runoff Area=74,605 sf 33.78% Impervious Runoff Depth>0.99"
Flow Length=540' Tc=10.9 min CN=WQ Runoff=1.48 cfs 0.14 af

Subcatchment7S: SUBCATCHMENT Runoff Area=247,667 sf 0.00% Impervious Runoff Depth>0.24"
Flow Length=338' Tc=19.3 min CN=WQ Runoff=0.72 cfs 0.11 af

Subcatchment8S: SUBCATCHMENT Runoff Area=15,117 sf 0.00% Impervious Runoff Depth>0.22"
Flow Length=148' Tc=14.9 min CN=WQ Runoff=0.03 cfs 0.01 af

Subcatchment9S: SUBCATCHMENT Runoff Area=39,256 sf 20.36% Impervious Runoff Depth>0.59"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.47 cfs 0.04 af

Reach 1R: OVERLAND FLOW TO Avg. Flow Depth=0.29' Max Vel=4.84 fps Inflow=3.81 cfs 0.30 af
n=0.022 L=111.0' S=0.0526 '/' Capacity=71.18 cfs Outflow=3.80 cfs 0.30 af

Reach 2R: OVERLAND FLOW TO Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.00 af
n=0.022 L=234.0' S=0.0306 '/' Capacity=14.85 cfs Outflow=0.00 cfs 0.00 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.29' Inflow=0.01 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.01 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.37 cfs 0.03 af
Primary=0.37 cfs 0.03 af

Pond 3P: ROOF DRAIN SYSTEM Inflow=3.81 cfs 0.30 af
Primary=3.81 cfs 0.30 af

Pond 4P: EXISTING DEPRESSION Peak Elev=183.75' Storage=3,741 cf Inflow=1.48 cfs 0.14 af
Discarded=0.07 cfs 0.08 af Primary=0.00 cfs 0.00 af Outflow=0.07 cfs 0.08 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.40' Storage=638 cf Inflow=0.47 cfs 0.04 af
Discarded=0.10 cfs 0.04 af Primary=0.00 cfs 0.00 af Outflow=0.10 cfs 0.04 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.50' Storage=0 cf Inflow=0.03 cfs 0.01 af
Discarded=0.03 cfs 0.01 af Primary=0.00 cfs 0.00 af Outflow=0.03 cfs 0.01 af

Link A: LAMPREY RIVER Inflow=4.06 cfs 0.42 af
Primary=4.06 cfs 0.42 af

Link B: LOT 4-2 Inflow=0.31 cfs 0.03 af
Primary=0.31 cfs 0.03 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.01 cfs 0.00 af
Primary=0.01 cfs 0.00 af

Total Runoff Area = 11.163 ac Runoff Volume = 0.64 af Average Runoff Depth = 0.69"
80.80% Pervious = 9.020 ac 19.20% Impervious = 2.143 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=7,380 sf 0.00% Impervious Runoff Depth>1.68"
Tc=6.0 min CN=WQ Runoff=0.30 cfs 0.02 af

Subcatchment2S: SUBCATCHMENT Runoff Area=11,238 sf 0.00% Impervious Runoff Depth>1.30"
Flow Length=133' Tc=6.5 min CN=WQ Runoff=0.32 cfs 0.03 af

Subcatchment3S: SUBCATCHMENT Runoff Area=26,796 sf 14.49% Impervious Runoff Depth>2.06"
Flow Length=200' Tc=6.2 min CN=WQ Runoff=1.28 cfs 0.11 af

Subcatchment4S: SUBCATCHMENT Runoff Area=13,408 sf 40.80% Impervious Runoff Depth>3.35"
Tc=6.0 min CN=WQ Runoff=0.98 cfs 0.09 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,792 sf 100.00% Impervious Runoff Depth>6.74"
Tc=6.0 min CN=98.0 Runoff=7.98 cfs 0.65 af

Subcatchment6S: SUBCATCHMENT Runoff Area=74,605 sf 33.78% Impervious Runoff Depth>2.93"
Flow Length=540' Tc=10.9 min CN=WQ Runoff=4.10 cfs 0.42 af

Subcatchment7S: SUBCATCHMENT Runoff Area=247,667 sf 0.00% Impervious Runoff Depth>1.71"
Flow Length=338' Tc=19.3 min CN=WQ Runoff=7.11 cfs 0.81 af

Subcatchment8S: SUBCATCHMENT Runoff Area=15,117 sf 0.00% Impervious Runoff Depth>1.78"
Flow Length=148' Tc=14.9 min CN=WQ Runoff=0.50 cfs 0.05 af

Subcatchment9S: SUBCATCHMENT Runoff Area=39,256 sf 20.36% Impervious Runoff Depth>1.86"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=1.31 cfs 0.14 af

Reach 1R: OVERLAND FLOW TO Avg. Flow Depth=0.42' Max Vel=6.03 fps Inflow=8.96 cfs 0.74 af
n=0.022 L=111.0' S=0.0526 '/' Capacity=71.18 cfs Outflow=8.96 cfs 0.74 af

Reach 2R: OVERLAND FLOW TO Avg. Flow Depth=0.25' Max Vel=3.24 fps Inflow=4.34 cfs 0.14 af
n=0.022 L=234.0' S=0.0306 '/' Capacity=14.85 cfs Outflow=2.80 cfs 0.14 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.54' Inflow=0.32 cfs 0.03 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.32 cfs 0.03 af

Pond 2P: EXISTING CB Inflow=0.98 cfs 0.09 af
Primary=0.98 cfs 0.09 af

Pond 3P: ROOF DRAIN SYSTEM Inflow=8.96 cfs 0.74 af
Primary=8.96 cfs 0.74 af

Pond 4P: EXISTING DEPRESSION Peak Elev=184.67' Storage=6,867 cf Inflow=4.10 cfs 0.42 af
Discarded=0.13 cfs 0.15 af Primary=4.34 cfs 0.14 af Outflow=4.47 cfs 0.29 af

Pond 5P: EXISTING DEPRESSION Peak Elev=181.18' Storage=2,215 cf Inflow=1.31 cfs 0.14 af
Discarded=0.18 cfs 0.14 af Primary=0.00 cfs 0.00 af Outflow=0.18 cfs 0.14 af

Pond 6P: EXISTING DEPRESSION Peak Elev=179.15' Storage=686 cf Inflow=0.50 cfs 0.05 af
Discarded=0.11 cfs 0.05 af Primary=0.00 cfs 0.00 af Outflow=0.11 cfs 0.05 af

Link A: LAMPREY RIVER Inflow=13.82 cfs 1.69 af
Primary=13.82 cfs 1.69 af

Link B: LOT 4-2 Inflow=1.59 cfs 0.13 af
Primary=1.59 cfs 0.13 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.30 cfs 0.02 af
Primary=0.30 cfs 0.02 af

Total Runoff Area = 11.163 ac Runoff Volume = 2.31 af Average Runoff Depth = 2.49"
80.80% Pervious = 9.020 ac 19.20% Impervious = 2.143 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=7,380 sf 0.00% Impervious Runoff Depth>0.61"
Tc=6.0 min CN=WQ Runoff=0.09 cfs 0.01 af

Subcatchment2S: SUBCATCHMENT Runoff Area=11,238 sf 0.00% Impervious Runoff Depth>0.44"
Flow Length=133' Tc=6.5 min CN=WQ Runoff=0.09 cfs 0.01 af

Subcatchment3S: SUBCATCHMENT Runoff Area=26,796 sf 14.49% Impervious Runoff Depth>1.04"
Flow Length=200' Tc=6.2 min CN=WQ Runoff=0.64 cfs 0.05 af

Subcatchment4S: SUBCATCHMENT Runoff Area=13,408 sf 40.80% Impervious Runoff Depth>1.93"
Tc=6.0 min CN=WQ Runoff=0.59 cfs 0.05 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,792 sf 100.00% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=98.0 Runoff=5.24 cfs 0.42 af

Subcatchment6S: SUBCATCHMENT Runoff Area=74,605 sf 33.78% Impervious Runoff Depth>1.65"
Flow Length=540' Tc=10.9 min CN=WQ Runoff=2.41 cfs 0.24 af

Subcatchment7S: SUBCATCHMENT Runoff Area=247,667 sf 0.00% Impervious Runoff Depth>0.69"
Flow Length=338' Tc=19.3 min CN=WQ Runoff=2.71 cfs 0.33 af

Subcatchment8S: SUBCATCHMENT Runoff Area=15,117 sf 0.00% Impervious Runoff Depth>0.69"
Flow Length=148' Tc=14.9 min CN=WQ Runoff=0.17 cfs 0.02 af

Subcatchment9S: SUBCATCHMENT Runoff Area=39,256 sf 20.36% Impervious Runoff Depth>1.00"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.76 cfs 0.07 af

Reach 1R: OVERLAND FLOW TO Avg. Flow Depth=0.35' Max Vel=5.40 fps Inflow=5.83 cfs 0.47 af
n=0.022 L=111.0' S=0.0526 '/' Capacity=71.18 cfs Outflow=5.83 cfs 0.47 af

Reach 2R: OVERLAND FLOW TO Avg. Flow Depth=0.00' Max Vel=0.33 fps Inflow=0.01 cfs 0.00 af
n=0.022 L=234.0' S=0.0306 '/' Capacity=14.85 cfs Outflow=0.00 cfs 0.00 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.39' Inflow=0.09 cfs 0.01 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.09 cfs 0.01 af

Pond 2P: EXISTING CB Inflow=0.59 cfs 0.05 af
Primary=0.59 cfs 0.05 af

Pond 3P: ROOF DRAIN SYSTEM Inflow=5.83 cfs 0.47 af
Primary=5.83 cfs 0.47 af

Pond 4P: EXISTING DEPRESSION Peak Elev=184.40' Storage=6,353 cf Inflow=2.41 cfs 0.24 af
Discarded=0.12 cfs 0.13 af Primary=0.01 cfs 0.00 af Outflow=0.12 cfs 0.13 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.70' Storage=1,133 cf Inflow=0.76 cfs 0.07 af
Discarded=0.13 cfs 0.07 af Primary=0.00 cfs 0.00 af Outflow=0.13 cfs 0.07 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.72' Storage=162 cf Inflow=0.17 cfs 0.02 af
Discarded=0.06 cfs 0.02 af Primary=0.00 cfs 0.00 af Outflow=0.06 cfs 0.02 af

Link A: LAMPREY RIVER Inflow=6.99 cfs 0.80 af
Primary=6.99 cfs 0.80 af

Link B: LOT 4-2 Inflow=0.74 cfs 0.06 af
Primary=0.74 cfs 0.06 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.09 cfs 0.01 af
Primary=0.09 cfs 0.01 af

Total Runoff Area = 11.163 ac Runoff Volume = 1.20 af Average Runoff Depth = 1.29"
80.80% Pervious = 9.020 ac 19.20% Impervious = 2.143 ac

Summary for Subcatchment 1S: SUBCATCHMENT

Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af, Depth> 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
1,670	30.0	Woods, Good, HSG A
5,710	55.0	Woods, Good, HSG B
7,380		Weighted Average
7,380	49.3	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: SUBCATCHMENT

Runoff = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af, Depth> 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
3,021	30.0	Woods, Good, HSG A
3,082	39.0	>75% Grass cover, Good, HSG A
3,697	55.0	Woods, Good, HSG B
1,438	61.0	>75% Grass cover, Good, HSG B
11,238		Weighted Average
11,238	44.7	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.2	29	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.2040	3.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	133	Total			

Summary for Subcatchment 3S: SUBCATCHMENT

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.05 af, Depth> 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
12,708	30.0	Woods, Good, HSG A
3,882	98.0	Paved parking, HSG A
1,923	55.0	Woods, Good, HSG B
8,283	61.0	>75% Grass cover, Good, HSG B
26,796		Weighted Average
22,914	43.3	85.51% Pervious Area
3,882	98.0	14.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	38	0.1840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	12	0.0830	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
0.3	60	0.1860	3.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	90	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.2	200	Total			

Summary for Subcatchment 4S: SUBCATCHMENT

Runoff = 0.59 cfs @ 12.08 hrs, Volume= 0.05 af, Depth> 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
6,899	39.0	>75% Grass cover, Good, HSG A
3,645	98.0	Paved parking, HSG A
1,825	98.0	Roofs, HSG A
1,039	61.0	>75% Grass cover, Good, HSG B
13,408		Weighted Average
7,938	41.9	59.20% Pervious Area
5,470	98.0	40.80% Impervious Area

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

Summary for Subcatchment 5S: SUBCATCHMENT

Runoff = 5.24 cfs @ 12.08 hrs, Volume= 0.42 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
50,792	98.0	Roofs, HSG A
50,792	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: SUBCATCHMENT

Runoff = 2.41 cfs @ 12.15 hrs, Volume= 0.24 af, Depth> 1.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
27,733	39.0	>75% Grass cover, Good, HSG A
5,464	61.0	>75% Grass cover, Good, HSG B
11,142	30.0	Woods, Good, HSG A
5,065	55.0	Woods, Good, HSG B
2,849	98.0	Roofs, HSG A
22,352	98.0	Paved parking, HSG A
74,605		Weighted Average
49,404	41.0	66.22% Pervious Area
25,201	98.0	33.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.1200	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.2	23	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	29	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	282	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	54	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	102	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.9	540	Total			

Summary for Subcatchment 7S: SUBCATCHMENT

Runoff = 2.71 cfs @ 12.30 hrs, Volume= 0.33 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
85,995	30.0	Woods, Good, HSG A
13,495	39.0	>75% Grass cover, Good, HSG A
87,973	55.0	Woods, Good, HSG B
6,525	61.0	>75% Grass cover, Good, HSG B
53,547	70.0	Woods, Good, HSG C
132	74.0	>75% Grass cover, Good, HSG C
247,667		Weighted Average
247,667	48.9	100.00% Pervious 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"
6.2	288	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.3	338	Total			

Summary for Subcatchment 8S: SUBCATCHMENT

Runoff = 0.17 cfs @ 12.24 hrs, Volume= 0.02 af, Depth> 0.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
4,158	30.0	Woods, Good, HSG A
8,984	55.0	Woods, Good, HSG B
1,975	70.0	Woods, Good, HSG C
15,117		Weighted Average
15,117	50.1	100.00% Pervious 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"
1.9	98	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	148	Total			

Summary for Subcatchment 9S: SUBCATCHMENT

Runoff = 0.76 cfs @ 12.14 hrs, Volume= 0.07 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
17,123	30.0	Woods, Good, HSG A
10,325	39.0	>75% Grass cover, Good, HSG A
7,994	98.0	Paved parking, HSG A
3,814	55.0	Woods, Good, HSG B
39,256		Weighted Average
31,262	36.0	79.64% Pervious Area
7,994	98.0	20.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.8	69	0.0870	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	119	Total			

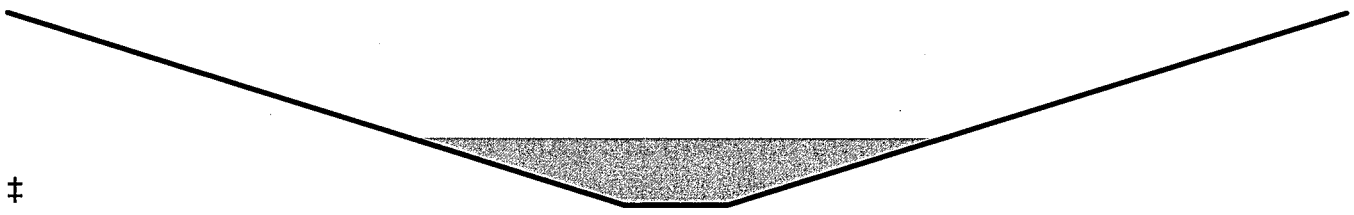
Summary for Reach 1R: OVERLAND FLOW TO LAMPREY RIVER

Inflow Area = 1.474 ac, 87.64% Impervious, Inflow Depth > 3.85" for 10-YEAR event
Inflow = 5.83 cfs @ 12.08 hrs, Volume= 0.47 af
Outflow = 5.83 cfs @ 12.09 hrs, Volume= 0.47 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.40 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 1.0 min

Peak Storage= 120 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 71.18 cfs

1.00' x 1.00' deep channel, n= 0.022
Side Slope Z-value= 6.0 '/' Top Width= 13.00'
Length= 111.0' Slope= 0.0526 '/'
Inlet Invert= 182.84', Outlet Invert= 177.00'



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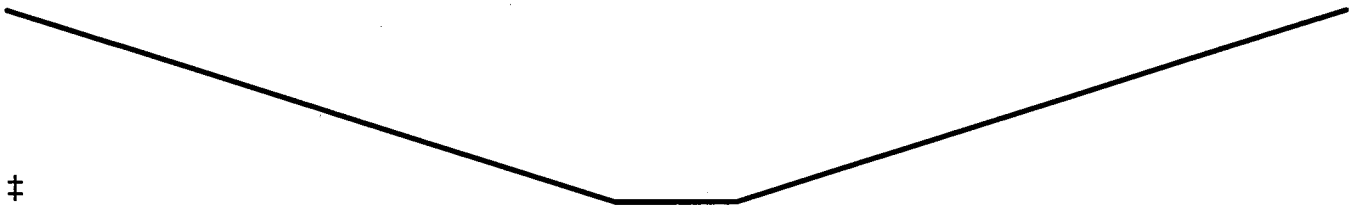
Summary for Reach 2R: OVERLAND FLOW TO LAMPREY RIVER

Inflow Area = 1.713 ac, 33.78% Impervious, Inflow Depth = 0.00" for 10-YEAR event
Inflow = 0.01 cfs @ 15.43 hrs, Volume= 0.00 af
Outflow = 0.00 cfs @ 15.35 hrs, Volume= 0.00 af, Atten= 68%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.33 fps, Min. Travel Time= 11.7 min
Avg. Velocity = 0.33 fps, Avg. Travel Time= 11.7 min

Peak Storage= 1 cf @ 15.35 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 0.50' Flow Area= 3.0 sf, Capacity= 14.85 cfs

1.00' x 0.50' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 11.00'
Length= 234.0' Slope= 0.0306 '/'
Inlet Invert= 184.40', Outlet Invert= 177.25'



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Summary for Pond 1P: EXISTING 12" CMP

Inflow Area = 0.258 ac, 0.00% Impervious, Inflow Depth > 0.44" for 10-YEAR event
Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af
Outflow = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.39' @ 12.11 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	187.22'	**12.0" Round Culvert** L= 61.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 187.22' / 186.02' S= 0.0197 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.09 cfs @ 12.11 hrs HW=187.39' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.09 cfs @ 1.56 fps)

Summary for Pond 2P: EXISTING CB

Inflow Area = 0.308 ac, 40.80% Impervious, Inflow Depth > 1.93" for 10-YEAR event
Inflow = 0.59 cfs @ 12.08 hrs, Volume= 0.05 af
Primary = 0.59 cfs @ 12.08 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 3P: ROOF DRAIN SYSTEM

Inflow Area = 1.474 ac, 87.64% Impervious, Inflow Depth > 3.85" for 10-YEAR event
Inflow = 5.83 cfs @ 12.08 hrs, Volume= 0.47 af
Primary = 5.83 cfs @ 12.08 hrs, Volume= 0.47 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 4P: EXISTING DEPRESSION

Inflow Area = 1.713 ac, 33.78% Impervious, Inflow Depth > 1.65" for 10-YEAR event
Inflow = 2.41 cfs @ 12.15 hrs, Volume= 0.24 af
Outflow = 0.12 cfs @ 15.43 hrs, Volume= 0.13 af, Atten= 95%, Lag= 197.0 min
Discarded = 0.12 cfs @ 15.39 hrs, Volume= 0.13 af
Primary = 0.01 cfs @ 15.43 hrs, Volume= 0.00 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 184.40' @ 15.39 hrs Surf.Area= 5,181 sf Storage= 6,353 cf
Flood Elev= 184.50' Surf.Area= 5,561 sf Storage= 6,867 cf

Plug-Flow detention time= 344.4 min calculated for 0.13 af (53% of inflow)
Center-of-Mass det. time= 214.6 min (987.1 - 772.4)

Volume	Invert	Avail.Storage	Storage Description
#1	181.50'	6,867 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
181.50	145	0	0
182.00	778	231	231
184.00	3,574	4,352	4,583
184.50	5,561	2,284	6,867

Device	Routing	Invert	Outlet Devices
#1	Discarded	181.50'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	184.40'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.12 cfs @ 15.39 hrs HW=184.40' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 15.43 hrs HW=184.40' TW=184.40' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DEPRESSION

Inflow Area = 0.901 ac, 20.36% Impervious, Inflow Depth > 1.00" for 10-YEAR event
Inflow = 0.76 cfs @ 12.14 hrs, Volume= 0.07 af
Outflow = 0.13 cfs @ 12.69 hrs, Volume= 0.07 af, Atten= 83%, Lag= 32.9 min
Discarded = 0.13 cfs @ 12.69 hrs, Volume= 0.07 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= 0.01 hrs
Peak Elev= 180.70' @ 12.69 hrs Surf.Area= 1,883 sf Storage= 1,133 cf
Flood Elev= 184.00' Surf.Area= 8,046 sf Storage= 16,886 cf

Plug-Flow detention time= 85.1 min calculated for 0.07 af (100% of inflow)
Center-of-Mass det. time= 83.5 min (857.4 - 774.0)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	16,886 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	12	0	0
182.00	3,922	4,918	4,918
184.00	8,046	11,968	16,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	179.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	183.90'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.13 cfs @ 12.69 hrs HW=180.70' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: EXISTING DEPRESSION

Inflow Area = 0.347 ac, 0.00% Impervious, Inflow Depth > 0.69" for 10-YEAR event
Inflow = 0.17 cfs @ 12.24 hrs, Volume= 0.02 af
Outflow = 0.06 cfs @ 12.72 hrs, Volume= 0.02 af, Atten= 63%, Lag= 28.6 min
Discarded = 0.06 cfs @ 12.72 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= 0.01 hrs
Peak Elev= 178.72' @ 12.72 hrs Surf.Area= 908 sf Storage= 162 cf
Flood Elev= 180.50' Surf.Area= 3,654 sf Storage= 4,168 cf

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

Center-of-Mass det. time= 16.3 min (907.1 - 890.8)

Volume	Invert	Avail.Storage	Storage Description
#1	178.50'	4,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
178.50	583	0	0
180.00	2,817	2,550	2,550
180.50	3,654	1,618	4,168

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	180.40'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.06 cfs @ 12.72 hrs HW=178.72' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=178.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link A: LAMPREY RIVER

Inflow Area = 8.872 ac, 21.08% Impervious, Inflow Depth > 1.08" for 10-YEAR event
Inflow = 6.99 cfs @ 12.10 hrs, Volume= 0.80 af
Primary = 6.99 cfs @ 12.10 hrs, Volume= 0.80 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link B: LOT 4-2

Inflow Area = 0.873 ac, 10.21% Impervious, Inflow Depth > 0.86" for 10-YEAR event
Inflow = 0.74 cfs @ 12.10 hrs, Volume= 0.06 af
Primary = 0.74 cfs @ 12.10 hrs, Volume= 0.06 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link C: LOT 4-4

Inflow Area = 1.248 ac, 14.70% Impervious, Inflow Depth = 0.00" for 10-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link D: LOT 4-5

Inflow Area = 0.169 ac, 0.00% Impervious, Inflow Depth > 0.61" for 10-YEAR event
Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af
Primary = 0.09 cfs @ 12.11 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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

Subcatchment1S: SUBCATCHMENT Runoff Area=7,380 sf 0.00% Impervious Runoff Depth>1.11"
Tc=6.0 min CN=WQ Runoff=0.19 cfs 0.02 af

Subcatchment2S: SUBCATCHMENT Runoff Area=11,238 sf 0.00% Impervious Runoff Depth>0.83"
Flow Length=133' Tc=6.5 min CN=WQ Runoff=0.19 cfs 0.02 af

Subcatchment3S: SUBCATCHMENT Runoff Area=26,796 sf 14.49% Impervious Runoff Depth>1.52"
Flow Length=200' Tc=6.2 min CN=WQ Runoff=0.96 cfs 0.08 af

Subcatchment4S: SUBCATCHMENT Runoff Area=13,408 sf 40.80% Impervious Runoff Depth>2.63"
Tc=6.0 min CN=WQ Runoff=0.77 cfs 0.07 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,792 sf 100.00% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=98.0 Runoff=6.66 cfs 0.54 af

Subcatchment6S: SUBCATCHMENT Runoff Area=74,605 sf 33.78% Impervious Runoff Depth>2.28"
Flow Length=540' Tc=10.9 min CN=WQ Runoff=3.20 cfs 0.32 af

Subcatchment7S: SUBCATCHMENT Runoff Area=247,667 sf 0.00% Impervious Runoff Depth>1.17"
Flow Length=338' Tc=19.3 min CN=WQ Runoff=4.83 cfs 0.55 af

Subcatchment8S: SUBCATCHMENT Runoff Area=15,117 sf 0.00% Impervious Runoff Depth>1.20"
Flow Length=148' Tc=14.9 min CN=WQ Runoff=0.33 cfs 0.03 af

Subcatchment9S: SUBCATCHMENT Runoff Area=39,256 sf 20.36% Impervious Runoff Depth>1.40"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=1.01 cfs 0.11 af

Reach 1R: OVERLAND FLOW TO Avg. Flow Depth=0.39' Max Vel=5.74 fps Inflow=7.43 cfs 0.61 af
n=0.022 L=111.0' S=0.0526 '/' Capacity=71.18 cfs Outflow=7.42 cfs 0.61 af

Reach 2R: OVERLAND FLOW TO Avg. Flow Depth=0.16' Max Vel=2.48 fps Inflow=1.37 cfs 0.06 af
n=0.022 L=234.0' S=0.0306 '/' Capacity=14.85 cfs Outflow=0.98 cfs 0.06 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.47' Inflow=0.19 cfs 0.02 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.19 cfs 0.02 af

Pond 2P: EXISTING CB Inflow=0.77 cfs 0.07 af
Primary=0.77 cfs 0.07 af

Pond 3P: ROOF DRAIN SYSTEM Inflow=7.43 cfs 0.61 af
Primary=7.43 cfs 0.61 af

Pond 4P: EXISTING DEPRESSION Peak Elev=184.56' Storage=6,867 cf Inflow=3.20 cfs 0.32 af
Discarded=0.13 cfs 0.14 af Primary=1.37 cfs 0.06 af Outflow=1.50 cfs 0.20 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.94' Storage=1,632 cf Inflow=1.01 cfs 0.11 af
Discarded=0.16 cfs 0.10 af Primary=0.00 cfs 0.00 af Outflow=0.16 cfs 0.10 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.94' Storage=402 cf Inflow=0.33 cfs 0.03 af
Discarded=0.09 cfs 0.03 af Primary=0.00 cfs 0.00 af Outflow=0.09 cfs 0.03 af

Link A: LAMPREY RIVER Inflow=9.84 cfs 1.23 af
Primary=9.84 cfs 1.23 af

Link B: LOT 4-2 Inflow=1.15 cfs 0.10 af
Primary=1.15 cfs 0.10 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.19 cfs 0.02 af
Primary=0.19 cfs 0.02 af

Total Runoff Area = 11.163 ac Runoff Volume = 1.74 af Average Runoff Depth = 1.87"
80.80% Pervious = 9.020 ac 19.20% Impervious = 2.143 ac

Summary for Subcatchment 1S: SUBCATCHMENT

Runoff = 0.19 cfs @ 12.10 hrs, Volume= 0.02 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
1,670	30.0	Woods, Good, HSG A
5,710	55.0	Woods, Good, HSG B
7,380		Weighted Average
7,380	49.3	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: SUBCATCHMENT

Runoff = 0.19 cfs @ 12.11 hrs, Volume= 0.02 af, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
3,021	30.0	Woods, Good, HSG A
3,082	39.0	>75% Grass cover, Good, HSG A
3,697	55.0	Woods, Good, HSG B
1,438	61.0	>75% Grass cover, Good, HSG B
11,238		Weighted Average
11,238	44.7	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	50	0.1400	0.14		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.2	29	0.1700	2.06		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	54	0.2040	3.16		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
6.5	133	Total			

Summary for Subcatchment 3S: SUBCATCHMENT

Runoff = 0.96 cfs @ 12.09 hrs, Volume= 0.08 af, Depth> 1.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
12,708	30.0	Woods, Good, HSG A
3,882	98.0	Paved parking, HSG A
1,923	55.0	Woods, Good, HSG B
8,283	61.0	>75% Grass cover, Good, HSG B
26,796		Weighted Average
22,914	43.3	85.51% Pervious Area
3,882	98.0	14.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	38	0.1840	0.15		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
1.1	12	0.0830	0.19		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.84"
0.3	60	0.1860	3.02		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.5	90	0.0220	3.01		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
6.2	200	Total			

Summary for Subcatchment 4S: SUBCATCHMENT

Runoff = 0.77 cfs @ 12.08 hrs, Volume= 0.07 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
6,899	39.0	>75% Grass cover, Good, HSG A
3,645	98.0	Paved parking, HSG A
1,825	98.0	Roofs, HSG A
1,039	61.0	>75% Grass cover, Good, HSG B
13,408		Weighted Average
7,938	41.9	59.20% Pervious Area
5,470	98.0	40.80% Impervious Area

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

Summary for Subcatchment 5S: SUBCATCHMENT

Runoff = 6.66 cfs @ 12.08 hrs, Volume= 0.54 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
50,792	98.0	Roofs, HSG A
50,792	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: SUBCATCHMENT

Runoff = 3.20 cfs @ 12.15 hrs, Volume= 0.32 af, Depth> 2.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
27,733	39.0	>75% Grass cover, Good, HSG A
5,464	61.0	>75% Grass cover, Good, HSG B
11,142	30.0	Woods, Good, HSG A
5,065	55.0	Woods, Good, HSG B
2,849	98.0	Roofs, HSG A
22,352	98.0	Paved parking, HSG A
74,605		Weighted Average
49,404	41.0	66.22% Pervious Area
25,201	98.0	33.78% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.4	50	0.1200	0.13		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.2	23	0.1100	1.66		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	29	0.0690	1.84		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.5	282	0.0250	3.21		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
0.7	54	0.0370	1.35		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
1.8	102	0.0340	0.92		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.9	540	Total			

Summary for Subcatchment 7S: SUBCATCHMENT

Runoff = 4.83 cfs @ 12.28 hrs, Volume= 0.55 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
85,995	30.0	Woods, Good, HSG A
13,495	39.0	>75% Grass cover, Good, HSG A
87,973	55.0	Woods, Good, HSG B
6,525	61.0	>75% Grass cover, Good, HSG B
53,547	70.0	Woods, Good, HSG C
132	74.0	>75% Grass cover, Good, HSG C
247,667		Weighted Average
247,667	48.9	100.00% Pervious 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"
6.2	288	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.3	338	Total			

Summary for Subcatchment 8S: SUBCATCHMENT

Runoff = 0.33 cfs @ 12.23 hrs, Volume= 0.03 af, Depth> 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
4,158	30.0	Woods, Good, HSG A
8,984	55.0	Woods, Good, HSG B
1,975	70.0	Woods, Good, HSG C
15,117		Weighted Average
15,117	50.1	100.00% Pervious 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"
1.9	98	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.9	148	Total			

Summary for Subcatchment 9S: SUBCATCHMENT

Runoff = 1.01 cfs @ 12.14 hrs, Volume= 0.11 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
17,123	30.0	Woods, Good, HSG A
10,325	39.0	>75% Grass cover, Good, HSG A
7,994	98.0	Paved parking, HSG A
3,814	55.0	Woods, Good, HSG B
39,256		Weighted Average
31,262	36.0	79.64% Pervious Area
7,994	98.0	20.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.8	69	0.0870	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	119	Total			

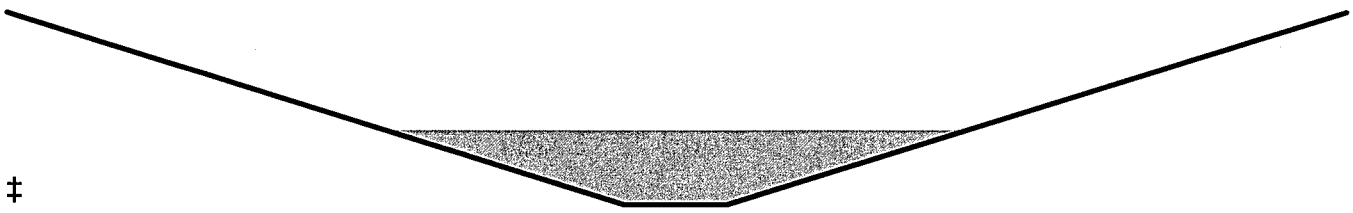
Summary for Reach 1R: OVERLAND FLOW TO LAMPREY RIVER

Inflow Area = 1.474 ac, 87.64% Impervious, Inflow Depth > 4.97" for 25-YEAR event
Inflow = 7.43 cfs @ 12.08 hrs, Volume= 0.61 af
Outflow = 7.42 cfs @ 12.09 hrs, Volume= 0.61 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.74 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 2.07 fps, Avg. Travel Time= 0.9 min

Peak Storage= 143 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.39'
Bank-Full Depth= 1.00' Flow Area= 7.0 sf, Capacity= 71.18 cfs

1.00' x 1.00' deep channel, n= 0.022
Side Slope Z-value= 6.0 '/' Top Width= 13.00'
Length= 111.0' Slope= 0.0526 '/'
Inlet Invert= 182.84', Outlet Invert= 177.00'



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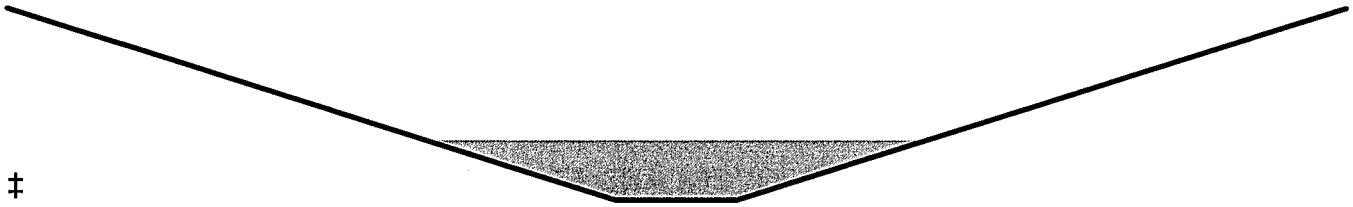
Summary for Reach 2R: OVERLAND FLOW TO LAMPREY RIVER

Inflow Area = 1.713 ac, 33.78% Impervious, Inflow Depth = 0.45" for 25-YEAR event
Inflow = 1.37 cfs @ 12.48 hrs, Volume= 0.06 af
Outflow = 0.98 cfs @ 12.52 hrs, Volume= 0.06 af, Atten= 28%, Lag= 2.3 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.48 fps, Min. Travel Time= 1.6 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 3.4 min

Peak Storage= 93 cf @ 12.52 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 3.0 sf, Capacity= 14.85 cfs

1.00' x 0.50' deep channel, n= 0.022 Earth, clean & straight
Side Slope Z-value= 10.0 '/' Top Width= 11.00'
Length= 234.0' Slope= 0.0306 '/'
Inlet Invert= 184.40', Outlet Invert= 177.25'



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Summary for Pond 1P: EXISTING 12" CMP

Inflow Area = 0.258 ac, 0.00% Impervious, Inflow Depth > 0.83" for 25-YEAR event
Inflow = 0.19 cfs @ 12.11 hrs, Volume= 0.02 af
Outflow = 0.19 cfs @ 12.11 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 12.11 hrs, Volume= 0.02 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.47' @ 12.11 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	187.22'	**12.0" Round Culvert** L= 61.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 187.22' / 186.02' S= 0.0197 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.19 cfs @ 12.11 hrs HW=187.47' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 0.19 cfs @ 1.92 fps)

Summary for Pond 2P: EXISTING CB

Inflow Area = 0.308 ac, 40.80% Impervious, Inflow Depth > 2.63" for 25-YEAR event
Inflow = 0.77 cfs @ 12.08 hrs, Volume= 0.07 af
Primary = 0.77 cfs @ 12.08 hrs, Volume= 0.07 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 3P: ROOF DRAIN SYSTEM

Inflow Area = 1.474 ac, 87.64% Impervious, Inflow Depth > 4.97" for 25-YEAR event
Inflow = 7.43 cfs @ 12.08 hrs, Volume= 0.61 af
Primary = 7.43 cfs @ 12.08 hrs, Volume= 0.61 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 4P: EXISTING DEPRESSION

Inflow Area = 1.713 ac, 33.78% Impervious, Inflow Depth > 2.28" for 25-YEAR event
Inflow = 3.20 cfs @ 12.15 hrs, Volume= 0.32 af
Outflow = 1.50 cfs @ 12.48 hrs, Volume= 0.20 af, Atten= 53%, Lag= 19.9 min
Discarded = 0.13 cfs @ 12.48 hrs, Volume= 0.14 af
Primary = 1.37 cfs @ 12.48 hrs, Volume= 0.06 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 184.56' @ 12.52 hrs Surf.Area= 5,561 sf Storage= 6,867 cf
Flood Elev= 184.50' Surf.Area= 5,561 sf Storage= 6,867 cf

Plug-Flow detention time= 265.6 min calculated for 0.20 af (62% of inflow)
Center-of-Mass det. time= 147.8 min (925.0 - 777.3)

Volume	Invert	Avail.Storage	Storage Description
#1	181.50'	6,867 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
181.50	145	0	0
182.00	778	231	231
184.00	3,574	4,352	4,583
184.50	5,561	2,284	6,867

Device	Routing	Invert	Outlet Devices
#1	Discarded	181.50'	**1.000 in/hr Exfiltration over Surface area**
#2	Primary	184.40'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.13 cfs @ 12.48 hrs HW=184.52' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.13 cfs)

Primary OutFlow Max=0.00 cfs @ 12.48 hrs HW=184.52' TW=184.53' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 5P: EXISTING DEPRESSION

Inflow Area = 0.901 ac, 20.36% Impervious, Inflow Depth > 1.40" for 25-YEAR event
Inflow = 1.01 cfs @ 12.14 hrs, Volume= 0.11 af
Outflow = 0.16 cfs @ 12.82 hrs, Volume= 0.10 af, Atten= 84%, Lag= 40.5 min
Discarded = 0.16 cfs @ 12.82 hrs, Volume= 0.10 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= 0.01 hrs
Peak Elev= 180.94' @ 12.82 hrs Surf.Area= 2,259 sf Storage= 1,632 cf
Flood Elev= 184.00' Surf.Area= 8,046 sf Storage= 16,886 cf

Plug-Flow detention time= 107.5 min calculated for 0.10 af (99% of inflow)
Center-of-Mass det. time= 104.0 min (888.9 - 784.9)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	16,886 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	12	0	0
182.00	3,922	4,918	4,918
184.00	8,046	11,968	16,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	179.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	183.90'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.16 cfs @ 12.82 hrs HW=180.94' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: EXISTING DEPRESSION

Inflow Area = 0.347 ac, 0.00% Impervious, Inflow Depth > 1.20" for 25-YEAR event
Inflow = 0.33 cfs @ 12.23 hrs, Volume= 0.03 af
Outflow = 0.09 cfs @ 12.81 hrs, Volume= 0.03 af, Atten= 74%, Lag= 34.9 min
Discarded = 0.09 cfs @ 12.81 hrs, Volume= 0.03 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= 0.01 hrs
Peak Elev= 178.94' @ 12.81 hrs Surf.Area= 1,239 sf Storage= 402 cf
Flood Elev= 180.50' Surf.Area= 3,654 sf Storage= 4,168 cf

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

Center-of-Mass det. time= 38.9 min (915.9 - 877.0)

Volume	Invert	Avail.Storage	Storage Description
#1	178.50'	4,168 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
178.50	583	0	0
180.00	2,817	2,550	2,550
180.50	3,654	1,618	4,168

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	180.40'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.09 cfs @ 12.81 hrs HW=178.94' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.09 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=178.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link A: LAMPREY RIVER

Inflow Area = 8.872 ac, 21.08% Impervious, Inflow Depth > 1.66" for 25-YEAR event
Inflow = 9.84 cfs @ 12.10 hrs, Volume= 1.23 af
Primary = 9.84 cfs @ 12.10 hrs, Volume= 1.23 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link B: LOT 4-2

Inflow Area = 0.873 ac, 10.21% Impervious, Inflow Depth > 1.32" for 25-YEAR event
Inflow = 1.15 cfs @ 12.10 hrs, Volume= 0.10 af
Primary = 1.15 cfs @ 12.10 hrs, Volume= 0.10 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link C: LOT 4-4

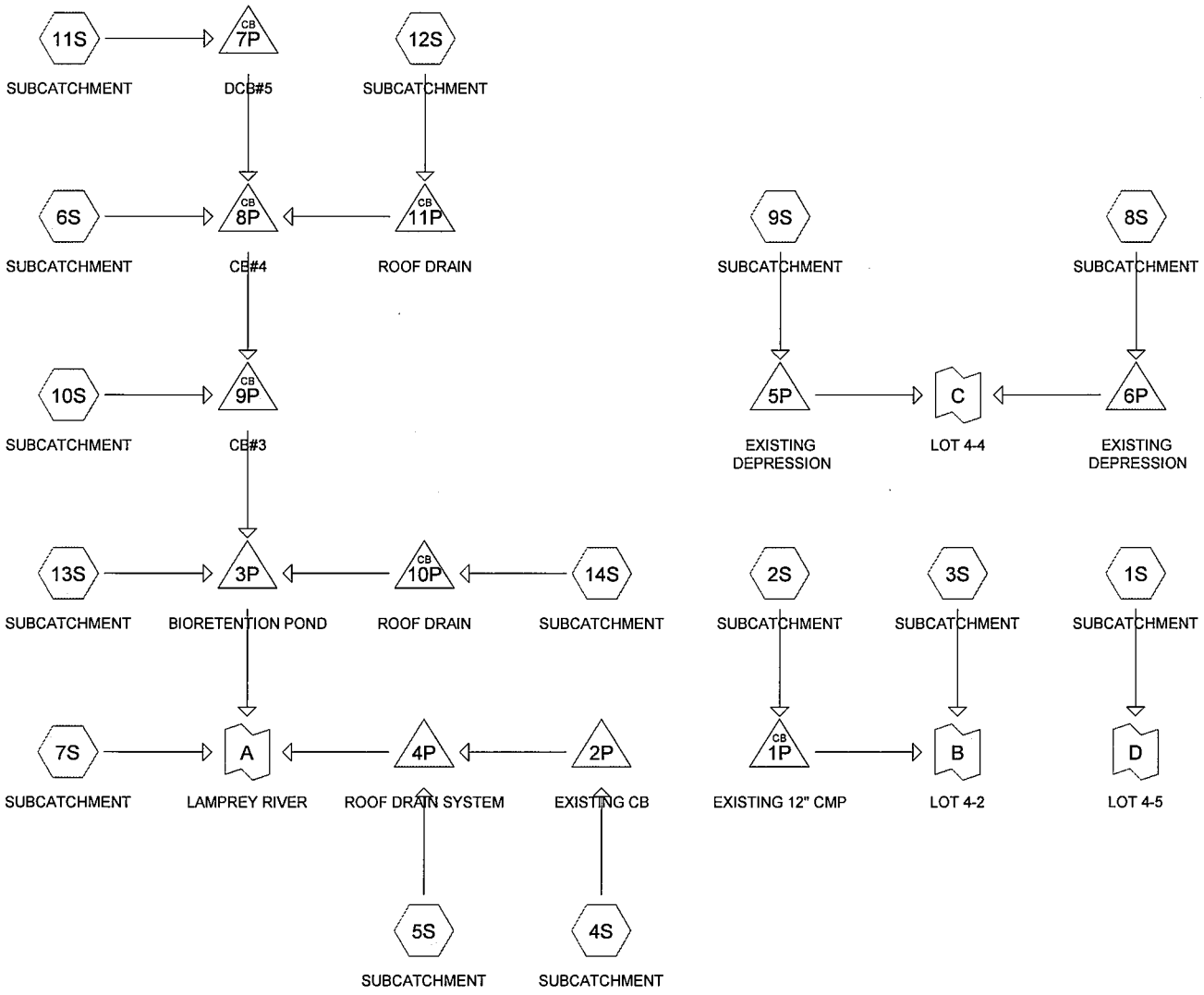
Inflow Area = 1.248 ac, 14.70% Impervious, Inflow Depth = 0.00" for 25-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link D: LOT 4-5

Inflow Area = 0.169 ac, 0.00% Impervious, Inflow Depth > 1.11" for 25-YEAR event
Inflow = 0.19 cfs @ 12.10 hrs, Volume= 0.02 af
Primary = 0.19 cfs @ 12.10 hrs, Volume= 0.02 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs



Routing Diagram for 2201102-POST DEVELOPMENT_REV1, Revised May 9, 2024

Prepared by Keach-Nordstrom Associates, Inc., Printed 5/22/2024

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.932	39.0	>75% Grass cover, Good, HSG A (2S, 3S, 4S, 7S, 8S, 9S, 10S, 11S, 13S)
0.898	61.0	>75% Grass cover, Good, HSG B (1S, 4S, 6S, 7S, 8S, 10S, 11S, 13S)
0.141	74.0	>75% Grass cover, Good, HSG C (7S)
1.106	98.0	Paved parking, HSG A (3S, 4S, 6S, 9S, 10S, 11S, 13S)
0.413	98.0	Paved parking, HSG B (6S, 10S, 11S)
1.766	98.0	Roofs, HSG A (5S, 12S, 14S)
0.116	98.0	Roofs, HSG B (14S)
1.869	30.0	Woods, Good, HSG A (1S, 7S, 8S, 9S, 10S, 11S, 13S)
1.785	55.0	Woods, Good, HSG B (1S, 7S, 8S, 9S, 10S, 11S)
1.137	70.0	Woods, Good, HSG C (7S, 8S)
11.163	**63.4**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
6.673	HSG A	1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S, 14S
3.212	HSG B	1S, 4S, 6S, 7S, 8S, 9S, 10S, 11S, 13S, 14S
1.278	HSG C	7S, 8S
0.000	HSG D	
0.000	Other	
11.163		**TOTAL AREA**

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

Subcatchment1S: SUBCATCHMENT Runoff Area=5,913 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment2S: SUBCATCHMENT Runoff Area=1,302 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39.0 Runoff=0.00 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=2,341 sf 26.57% Impervious Runoff Depth>0.21"
Tc=6.0 min CN=WQ Runoff=0.01 cfs 0.00 af

Subcatchment4S: SUBCATCHMENT Runoff Area=8,572 sf 44.42% Impervious Runoff Depth>0.35"
Tc=6.0 min CN=WQ Runoff=0.08 cfs 0.01 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,829 sf 100.00% Impervious Runoff Depth>0.79"
Tc=6.0 min CN=98.0 Runoff=1.04 cfs 0.08 af

Subcatchment6S: SUBCATCHMENT Runoff Area=5,075 sf 86.56% Impervious Runoff Depth>0.68"
Tc=6.0 min CN=WQ Runoff=0.09 cfs 0.01 af

Subcatchment7S: SUBCATCHMENT Runoff Area=223,754 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=250' Tc=19.4 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment8S: SUBCATCHMENT Runoff Area=12,061 sf 0.00% Impervious Runoff Depth>0.00"
Flow Length=116' Tc=14.3 min CN=WQ Runoff=0.00 cfs 0.00 af

Subcatchment9S: SUBCATCHMENT Runoff Area=32,257 sf 20.11% Impervious Runoff Depth>0.16"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.11 cfs 0.01 af

Subcatchment10S: SUBCATCHMENT Runoff Area=36,100 sf 70.35% Impervious Runoff Depth>0.56"
Tc=6.0 min CN=WQ Runoff=0.52 cfs 0.04 af

Subcatchment11S: SUBCATCHMENT Runoff Area=40,800 sf 51.26% Impervious Runoff Depth>0.41"
Tc=6.0 min CN=WQ Runoff=0.43 cfs 0.03 af

Subcatchment12S: SUBCATCHMENT Runoff Area=11,033 sf 100.00% Impervious Runoff Depth>0.79"
Tc=6.0 min CN=98.0 Runoff=0.23 cfs 0.02 af

Subcatchment13S: SUBCATCHMENT Runoff Area=36,103 sf 12.59% Impervious Runoff Depth>0.10"
Tc=6.0 min CN=WQ Runoff=0.09 cfs 0.01 af

Subcatchment14S: SUBCATCHMENT Runoff Area=20,132 sf 100.00% Impervious Runoff Depth>0.79"
Tc=6.0 min CN=WQ Runoff=0.41 cfs 0.03 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.22' Inflow=0.00 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.00 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.08 cfs 0.01 af
Primary=0.08 cfs 0.01 af

Pond 3P: BIORETENTION POND Peak Elev=181.13' Storage=3,706 cf Inflow=1.76 cfs 0.13 af
Discarded=0.12 cfs 0.06 af Primary=0.00 cfs 0.00 af Outflow=0.12 cfs 0.06 af

Pond 4P: ROOF DRAIN SYSTEM Inflow=1.12 cfs 0.08 af
Primary=1.12 cfs 0.08 af

Pond 5P: EXISTING DEPRESSION Peak Elev=179.86' Storage=105 cf Inflow=0.11 cfs 0.01 af
Discarded=0.04 cfs 0.01 af Primary=0.00 cfs 0.00 af Outflow=0.04 cfs 0.01 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.50' Storage=0 cf Inflow=0.00 cfs 0.00 af
Discarded=0.00 cfs 0.00 af Primary=0.00 cfs 0.00 af Outflow=0.00 cfs 0.00 af

Pond 7P: DCB#5 Peak Elev=185.90' Inflow=0.43 cfs 0.03 af
15.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=0.43 cfs 0.03 af

Pond 8P: CB#4 Peak Elev=185.40' Inflow=0.74 cfs 0.05 af
15.0" Round Culvert n=0.013 L=205.0' S=0.0050 '/' Outflow=0.74 cfs 0.05 af

Pond 9P: CB#3 Peak Elev=184.23' Inflow=1.26 cfs 0.09 af
18.0" Round Culvert n=0.013 L=183.0' S=0.0050 '/' Outflow=1.26 cfs 0.09 af

Pond 10P: ROOF DRAIN Peak Elev=184.52' Inflow=0.41 cfs 0.03 af
12.0" Round Culvert n=0.013 L=18.0' S=0.0100 '/' Outflow=0.41 cfs 0.03 af

Pond 11P: ROOF DRAIN Peak Elev=186.60' Inflow=0.23 cfs 0.02 af
12.0" Round Culvert n=0.013 L=132.0' S=0.0100 '/' Outflow=0.23 cfs 0.02 af

Link A: LAMPREY RIVER Inflow=1.12 cfs 0.08 af
Primary=1.12 cfs 0.08 af

Link B: LOT 4-2 Inflow=0.01 cfs 0.00 af
Primary=0.01 cfs 0.00 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Total Runoff Area = 11.163 ac Runoff Volume = 0.22 af Average Runoff Depth = 0.24"
69.53% Pervious = 7.762 ac 30.47% Impervious = 3.401 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=5,913 sf 0.00% Impervious Runoff Depth>0.18"
Tc=6.0 min CN=WQ Runoff=0.01 cfs 0.00 af

Subcatchment2S: SUBCATCHMENT Runoff Area=1,302 sf 0.00% Impervious Runoff Depth=0.00"
Tc=6.0 min CN=39.0 Runoff=0.00 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=2,341 sf 26.57% Impervious Runoff Depth>0.75"
Tc=6.0 min CN=WQ Runoff=0.04 cfs 0.00 af

Subcatchment4S: SUBCATCHMENT Runoff Area=8,572 sf 44.42% Impervious Runoff Depth>1.29"
Tc=6.0 min CN=WQ Runoff=0.26 cfs 0.02 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,829 sf 100.00% Impervious Runoff Depth>2.81"
Tc=6.0 min CN=98.0 Runoff=3.44 cfs 0.27 af

Subcatchment6S: SUBCATCHMENT Runoff Area=5,075 sf 86.56% Impervious Runoff Depth>2.48"
Tc=6.0 min CN=WQ Runoff=0.30 cfs 0.02 af

Subcatchment7S: SUBCATCHMENT Runoff Area=223,754 sf 0.00% Impervious Runoff Depth>0.27"
Flow Length=250' Tc=19.4 min CN=WQ Runoff=0.78 cfs 0.12 af

Subcatchment8S: SUBCATCHMENT Runoff Area=12,061 sf 0.00% Impervious Runoff Depth>0.27"
Flow Length=116' Tc=14.3 min CN=WQ Runoff=0.03 cfs 0.01 af

Subcatchment9S: SUBCATCHMENT Runoff Area=32,257 sf 20.11% Impervious Runoff Depth>0.59"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.38 cfs 0.04 af

Subcatchment10S: SUBCATCHMENT Runoff Area=36,100 sf 70.35% Impervious Runoff Depth>2.00"
Tc=6.0 min CN=WQ Runoff=1.73 cfs 0.14 af

Subcatchment11S: SUBCATCHMENT Runoff Area=40,800 sf 51.26% Impervious Runoff Depth>1.49"
Tc=6.0 min CN=WQ Runoff=1.44 cfs 0.12 af

Subcatchment12S: SUBCATCHMENT Runoff Area=11,033 sf 100.00% Impervious Runoff Depth>2.81"
Tc=6.0 min CN=98.0 Runoff=0.75 cfs 0.06 af

Subcatchment13S: SUBCATCHMENT Runoff Area=36,103 sf 12.59% Impervious Runoff Depth>0.44"
Tc=6.0 min CN=WQ Runoff=0.35 cfs 0.03 af

Subcatchment14S: SUBCATCHMENT Runoff Area=20,132 sf 100.00% Impervious Runoff Depth>2.81"
Tc=6.0 min CN=WQ Runoff=1.36 cfs 0.11 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.22' Inflow=0.00 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.00 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.26 cfs 0.02 af
Primary=0.26 cfs 0.02 af

Pond 3P: BIORETENTIONPOND Peak Elev=182.08' Storage=13,925 cf Inflow=5.92 cfs 0.48 af
Discarded=0.23 cfs 0.25 af Primary=0.00 cfs 0.00 af Outflow=0.23 cfs 0.25 af

Pond 4P: ROOF DRAIN SYSTEM Inflow=3.70 cfs 0.29 af
Primary=3.70 cfs 0.29 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.29' Storage=496 cf Inflow=0.38 cfs 0.04 af
Discarded=0.09 cfs 0.04 af Primary=0.00 cfs 0.00 af Outflow=0.09 cfs 0.04 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.50' Storage=0 cf Inflow=0.03 cfs 0.01 af
Discarded=0.03 cfs 0.01 af Primary=0.00 cfs 0.00 af Outflow=0.03 cfs 0.01 af

Pond 7P: DCB#5 Peak Elev=186.30' Inflow=1.44 cfs 0.12 af
15.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=1.44 cfs 0.12 af

Pond 8P: CB#4 Peak Elev=185.88' Inflow=2.48 cfs 0.20 af
15.0" Round Culvert n=0.013 L=205.0' S=0.0050 '/' Outflow=2.48 cfs 0.20 af

Pond 9P: CB#3 Peak Elev=184.79' Inflow=4.21 cfs 0.34 af
18.0" Round Culvert n=0.013 L=183.0' S=0.0050 '/' Outflow=4.21 cfs 0.34 af

Pond 10P: ROOF DRAIN Peak Elev=184.87' Inflow=1.36 cfs 0.11 af
12.0" Round Culvert n=0.013 L=18.0' S=0.0100 '/' Outflow=1.36 cfs 0.11 af

Pond 11P: ROOF DRAIN Peak Elev=186.84' Inflow=0.75 cfs 0.06 af
12.0" Round Culvert n=0.013 L=132.0' S=0.0100 '/' Outflow=0.75 cfs 0.06 af

Link A: LAMPREY RIVER Inflow=3.97 cfs 0.41 af
Primary=3.97 cfs 0.41 af

Link B: LOT 4-2 Inflow=0.04 cfs 0.00 af
Primary=0.04 cfs 0.00 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.01 cfs 0.00 af
Primary=0.01 cfs 0.00 af

Total Runoff Area = 11.163 ac Runoff Volume = 0.93 af Average Runoff Depth = 1.00"
69.53% Pervious = 7.762 ac 30.47% Impervious = 3.401 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=5,913 sf 0.00% Impervious Runoff Depth>1.67"
Tc=6.0 min CN=WQ Runoff=0.24 cfs 0.02 af

Subcatchment2S: SUBCATCHMENT Runoff Area=1,302 sf 0.00% Impervious Runoff Depth>0.76"
Tc=6.0 min CN=39.0 Runoff=0.01 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=2,341 sf 26.57% Impervious Runoff Depth>2.35"
Tc=6.0 min CN=WQ Runoff=0.11 cfs 0.01 af

Subcatchment4S: SUBCATCHMENT Runoff Area=8,572 sf 44.42% Impervious Runoff Depth>3.66"
Tc=6.0 min CN=WQ Runoff=0.70 cfs 0.06 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,829 sf 100.00% Impervious Runoff Depth>6.74"
Tc=6.0 min CN=98.0 Runoff=7.99 cfs 0.65 af

Subcatchment6S: SUBCATCHMENT Runoff Area=5,075 sf 86.56% Impervious Runoff Depth>6.19"
Tc=6.0 min CN=WQ Runoff=0.74 cfs 0.06 af

Subcatchment7S: SUBCATCHMENT Runoff Area=223,754 sf 0.00% Impervious Runoff Depth>1.85"
Flow Length=250' Tc=19.4 min CN=WQ Runoff=6.95 cfs 0.79 af

Subcatchment8S: SUBCATCHMENT Runoff Area=12,061 sf 0.00% Impervious Runoff Depth>2.05"
Flow Length=116' Tc=14.3 min CN=WQ Runoff=0.48 cfs 0.05 af

Subcatchment9S: SUBCATCHMENT Runoff Area=32,257 sf 20.11% Impervious Runoff Depth>1.90"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=1.10 cfs 0.12 af

Subcatchment10S: SUBCATCHMENT Runoff Area=36,100 sf 70.35% Impervious Runoff Depth>5.08"
Tc=6.0 min CN=WQ Runoff=4.23 cfs 0.35 af

Subcatchment11S: SUBCATCHMENT Runoff Area=40,800 sf 51.26% Impervious Runoff Depth>4.03"
Tc=6.0 min CN=WQ Runoff=3.73 cfs 0.31 af

Subcatchment12S: SUBCATCHMENT Runoff Area=11,033 sf 100.00% Impervious Runoff Depth>6.74"
Tc=6.0 min CN=98.0 Runoff=1.73 cfs 0.14 af

Subcatchment13S: SUBCATCHMENT Runoff Area=36,103 sf 12.59% Impervious Runoff Depth>1.94"
Tc=6.0 min CN=WQ Runoff=1.46 cfs 0.13 af

Subcatchment14S: SUBCATCHMENT Runoff Area=20,132 sf 100.00% Impervious Runoff Depth>6.74"
Tc=6.0 min CN=WQ Runoff=3.16 cfs 0.26 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.29' Inflow=0.01 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.01 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.70 cfs 0.06 af
Primary=0.70 cfs 0.06 af

Pond 3P: BIORETENTIONPOND Peak Elev=183.55' Storage=36,297 cf Inflow=15.05 cfs 1.26 af
Discarded=0.23 cfs 0.31 af Primary=0.54 cfs 0.18 af Outflow=0.78 cfs 0.49 af

Pond 4P: ROOF DRAIN SYSTEM Inflow=8.69 cfs 0.71 af
Primary=8.69 cfs 0.71 af

Pond 5P: EXISTING DEPRESSION Peak Elev=181.01' Storage=1,793 cf Inflow=1.10 cfs 0.12 af
Discarded=0.16 cfs 0.12 af Primary=0.00 cfs 0.00 af Outflow=0.16 cfs 0.12 af

Pond 6P: EXISTING DEPRESSION Peak Elev=179.11' Storage=635 cf Inflow=0.48 cfs 0.05 af
Discarded=0.10 cfs 0.05 af Primary=0.00 cfs 0.00 af Outflow=0.10 cfs 0.05 af

Pond 7P: DCB#5 Peak Elev=189.88' Inflow=3.73 cfs 0.31 af
15.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=3.73 cfs 0.31 af

Pond 8P: CB#4 Peak Elev=189.35' Inflow=6.20 cfs 0.52 af
15.0" Round Culvert n=0.013 L=205.0' S=0.0050 '/' Outflow=6.20 cfs 0.52 af

Pond 9P: CB#3 Peak Elev=186.87' Inflow=10.44 cfs 0.87 af
18.0" Round Culvert n=0.013 L=183.0' S=0.0050 '/' Outflow=10.44 cfs 0.87 af

Pond 10P: ROOF DRAIN Peak Elev=185.52' Inflow=3.16 cfs 0.26 af
12.0" Round Culvert n=0.013 L=18.0' S=0.0100 '/' Outflow=3.16 cfs 0.26 af

Pond 11P: ROOF DRAIN Peak Elev=189.76' Inflow=1.73 cfs 0.14 af
12.0" Round Culvert n=0.013 L=132.0' S=0.0100 '/' Outflow=1.73 cfs 0.14 af

Link A: LAMPREY RIVER Inflow=12.33 cfs 1.69 af
Primary=12.33 cfs 1.69 af

Link B: LOT 4-2 Inflow=0.12 cfs 0.01 af
Primary=0.12 cfs 0.01 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.24 cfs 0.02 af
Primary=0.24 cfs 0.02 af

Total Runoff Area = 11.163 ac Runoff Volume = 2.96 af Average Runoff Depth = 3.19"
69.53% Pervious = 7.762 ac 30.47% Impervious = 3.401 ac

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

Subcatchment1S: SUBCATCHMENT Runoff Area=5,913 sf 0.00% Impervious Runoff Depth>0.62"
Tc=6.0 min CN=WQ Runoff=0.08 cfs 0.01 af

Subcatchment2S: SUBCATCHMENT Runoff Area=1,302 sf 0.00% Impervious Runoff Depth>0.13"
Tc=6.0 min CN=39.0 Runoff=0.00 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=2,341 sf 26.57% Impervious Runoff Depth>1.25"
Tc=6.0 min CN=WQ Runoff=0.06 cfs 0.01 af

Subcatchment4S: SUBCATCHMENT Runoff Area=8,572 sf 44.42% Impervious Runoff Depth>2.13"
Tc=6.0 min CN=WQ Runoff=0.42 cfs 0.04 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,829 sf 100.00% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=98.0 Runoff=5.25 cfs 0.42 af

Subcatchment6S: SUBCATCHMENT Runoff Area=5,075 sf 86.56% Impervious Runoff Depth>3.93"
Tc=6.0 min CN=WQ Runoff=0.47 cfs 0.04 af

Subcatchment7S: SUBCATCHMENT Runoff Area=223,754 sf 0.00% Impervious Runoff Depth>0.76"
Flow Length=250' Tc=19.4 min CN=WQ Runoff=2.72 cfs 0.33 af

Subcatchment8S: SUBCATCHMENT Runoff Area=12,061 sf 0.00% Impervious Runoff Depth>0.83"
Flow Length=116' Tc=14.3 min CN=WQ Runoff=0.17 cfs 0.02 af

Subcatchment9S: SUBCATCHMENT Runoff Area=32,257 sf 20.11% Impervious Runoff Depth>1.00"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.62 cfs 0.06 af

Subcatchment10S: SUBCATCHMENT Runoff Area=36,100 sf 70.35% Impervious Runoff Depth>3.18"
Tc=6.0 min CN=WQ Runoff=2.69 cfs 0.22 af

Subcatchment11S: SUBCATCHMENT Runoff Area=40,800 sf 51.26% Impervious Runoff Depth>2.41"
Tc=6.0 min CN=WQ Runoff=2.29 cfs 0.19 af

Subcatchment12S: SUBCATCHMENT Runoff Area=11,033 sf 100.00% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=98.0 Runoff=1.14 cfs 0.09 af

Subcatchment13S: SUBCATCHMENT Runoff Area=36,103 sf 12.59% Impervious Runoff Depth>0.88"
Tc=6.0 min CN=WQ Runoff=0.68 cfs 0.06 af

Subcatchment14S: SUBCATCHMENT Runoff Area=20,132 sf 100.00% Impervious Runoff Depth>4.36"
Tc=6.0 min CN=WQ Runoff=2.08 cfs 0.17 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.24' Inflow=0.00 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.00 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.42 cfs 0.04 af
Primary=0.42 cfs 0.04 af

Pond 3P: BIORETENTION POND Peak Elev=182.79' Storage=23,611 cf Inflow=9.35 cfs 0.77 af
Discarded=0.23 cfs 0.28 af Primary=0.00 cfs 0.00 af Outflow=0.23 cfs 0.28 af

Pond 4P: ROOF DRAIN SYSTEM Inflow=5.67 cfs 0.46 af
Primary=5.67 cfs 0.46 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.56' Storage=895 cf Inflow=0.62 cfs 0.06 af
Discarded=0.12 cfs 0.06 af Primary=0.00 cfs 0.00 af Outflow=0.12 cfs 0.06 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.71' Storage=154 cf Inflow=0.17 cfs 0.02 af
Discarded=0.06 cfs 0.02 af Primary=0.00 cfs 0.00 af Outflow=0.06 cfs 0.02 af

Pond 7P: DCB#5 Peak Elev=186.65' Inflow=2.29 cfs 0.19 af
15.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=2.29 cfs 0.19 af

Pond 8P: CB#4 Peak Elev=186.28' Inflow=3.90 cfs 0.32 af
15.0" Round Culvert n=0.013 L=205.0' S=0.0050 '/' Outflow=3.90 cfs 0.32 af

Pond 9P: CB#3 Peak Elev=185.20' Inflow=6.59 cfs 0.54 af
18.0" Round Culvert n=0.013 L=183.0' S=0.0050 '/' Outflow=6.59 cfs 0.54 af

Pond 10P: ROOF DRAIN Peak Elev=185.09' Inflow=2.08 cfs 0.17 af
12.0" Round Culvert n=0.013 L=18.0' S=0.0100 '/' Outflow=2.08 cfs 0.17 af

Pond 11P: ROOF DRAIN Peak Elev=187.02' Inflow=1.14 cfs 0.09 af
12.0" Round Culvert n=0.013 L=132.0' S=0.0100 '/' Outflow=1.14 cfs 0.09 af

Link A: LAMPREY RIVER Inflow=6.85 cfs 0.78 af
Primary=6.85 cfs 0.78 af

Link B: LOT 4-2 Inflow=0.06 cfs 0.01 af
Primary=0.06 cfs 0.01 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.08 cfs 0.01 af
Primary=0.08 cfs 0.01 af

Total Runoff Area = 11.163 ac Runoff Volume = 1.65 af Average Runoff Depth = 1.77"
69.53% Pervious = 7.762 ac 30.47% Impervious = 3.401 ac

Summary for Subcatchment 1S: SUBCATCHMENT

Runoff = 0.08 cfs @ 12.11 hrs, Volume= 0.01 af, Depth> 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
1,670	30.0	Woods, Good, HSG A
3,255	55.0	Woods, Good, HSG B
988	61.0	>75% Grass cover, Good, HSG B
5,913		Weighted Average
5,913	48.9	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: SUBCATCHMENT

Runoff = 0.00 cfs @ 14.58 hrs, Volume= 0.00 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
1,302	39.0	>75% Grass cover, Good, HSG A
1,302	39.0	100.00% Pervious Area

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

Summary for Subcatchment 3S: SUBCATCHMENT

Runoff = 0.06 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 1.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
1,719	39.0	>75% Grass cover, Good, HSG A
622	98.0	Paved parking, HSG A
2,341		Weighted Average
1,719	39.0	73.43% Pervious Area
622	98.0	26.57% Impervious Area

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

Summary for Subcatchment 4S: SUBCATCHMENT

Runoff = 0.42 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
3,680	39.0	>75% Grass cover, Good, HSG A
3,808	98.0	Paved parking, HSG A
1,084	61.0	>75% Grass cover, Good, HSG B
8,572		Weighted Average
4,764	44.0	55.58% Pervious Area
3,808	98.0	44.42% Impervious Area

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

Summary for Subcatchment 5S: SUBCATCHMENT

Runoff = 5.25 cfs @ 12.08 hrs, Volume= 0.42 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
50,829	98.0	Roofs, HSG A
50,829	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: SUBCATCHMENT

Runoff = 0.47 cfs @ 12.08 hrs, Volume= 0.04 af, Depth> 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
682	61.0	>75% Grass cover, Good, HSG B
780	98.0	Paved parking, HSG A
3,613	98.0	Paved parking, HSG B
5,075		Weighted Average
682	61.0	13.44% Pervious Area
4,393	98.0	86.56% Impervious Area

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

Summary for Subcatchment 7S: SUBCATCHMENT

Runoff = 2.72 cfs @ 12.31 hrs, Volume= 0.33 af, Depth> 0.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
59,548	30.0	Woods, Good, HSG A
28,177	39.0	>75% Grass cover, Good, HSG A
61,344	55.0	Woods, Good, HSG B
20,994	61.0	>75% Grass cover, Good, HSG B
47,550	70.0	Woods, Good, HSG C
6,141	74.0	>75% Grass cover, Good, HSG C
223,754		Weighted Average
223,754	50.6	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	50	0.0150	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.7	200	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.4	250	Total			

Summary for Subcatchment 8S: SUBCATCHMENT

Runoff = 0.17 cfs @ 12.23 hrs, Volume= 0.02 af, Depth> 0.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
2,046	30.0	Woods, Good, HSG A
7,351	55.0	Woods, Good, HSG B
1,975	70.0	Woods, Good, HSG C
21	39.0	>75% Grass cover, Good, HSG A
668	61.0	>75% Grass cover, Good, HSG B
12,061		Weighted Average
12,061	53.5	100.00% Pervious 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"
1.2	66	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	116	Total			

Summary for Subcatchment 9S: SUBCATCHMENT

Runoff = 0.62 cfs @ 12.14 hrs, Volume= 0.06 af, Depth> 1.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
12,778	30.0	Woods, Good, HSG A
9,179	39.0	>75% Grass cover, Good, HSG A
3,814	55.0	Woods, Good, HSG B
6,486	98.0	Paved parking, HSG A
32,257		Weighted Average
25,771	36.9	79.89% Pervious Area
6,486	98.0	20.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.8	69	0.0870	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	119	Total			

Summary for Subcatchment 10S: SUBCATCHMENT

Runoff = 2.69 cfs @ 12.08 hrs, Volume= 0.22 af, Depth> 3.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
2,493	30.0	Woods, Good, HSG A
4,833	39.0	>75% Grass cover, Good, HSG A
1,605	55.0	Woods, Good, HSG B
1,771	61.0	>75% Grass cover, Good, HSG B
21,728	98.0	Paved parking, HSG A
3,670	98.0	Paved parking, HSG B
36,100		Weighted Average
10,702	42.9	29.65% Pervious Area
25,398	98.0	70.35% Impervious Area

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

Summary for Subcatchment 11S: SUBCATCHMENT

Runoff = 2.29 cfs @ 12.08 hrs, Volume= 0.19 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
2,594	30.0	Woods, Good, HSG A
12,099	39.0	>75% Grass cover, Good, HSG A
385	55.0	Woods, Good, HSG B
4,806	61.0	>75% Grass cover, Good, HSG B
10,200	98.0	Paved parking, HSG A
10,716	98.0	Paved parking, HSG B
40,800		Weighted Average
19,884	43.5	48.74% Pervious Area
20,916	98.0	51.26% Impervious Area

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

Summary for Subcatchment 12S: SUBCATCHMENT

Runoff = 1.14 cfs @ 12.08 hrs, Volume= 0.09 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
11,033	98.0	Roofs, HSG A
11,033	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 13S: SUBCATCHMENT

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.06 af, Depth> 0.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
23,144	39.0	>75% Grass cover, Good, HSG A
8,116	61.0	>75% Grass cover, Good, HSG B
296	30.0	Woods, Good, HSG A
4,547	98.0	Paved parking, HSG A
36,103		Weighted Average
31,556	44.6	87.41% Pervious Area
4,547	98.0	12.59% Impervious Area

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

Summary for Subcatchment 14S: SUBCATCHMENT

Runoff = 2.08 cfs @ 12.08 hrs, Volume= 0.17 af, Depth> 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
15,081	98.0	Roofs, HSG A
5,051	98.0	Roofs, HSG B
20,132		Weighted Average
20,132	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 Pond 1P: EXISTING 12" CMP

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.13" for 10-YEAR event
Inflow = 0.00 cfs @ 14.58 hrs, Volume= 0.00 af
Outflow = 0.00 cfs @ 14.58 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.58 hrs, Volume= 0.00 af

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

Peak Elev= 187.24' @ 14.58 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	187.22'	**12.0" Round Culvert** L= 61.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 187.22' / 186.02' S= 0.0197 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 14.58 hrs HW=187.24' TW=0.00' (Dynamic Tailwater)
↳**1=Culvert** (Barrel Controls 0.00 cfs @ 0.32 fps)

Summary for Pond 2P: EXISTING CB

Inflow Area = 0.197 ac, 44.42% Impervious, Inflow Depth > 2.13" for 10-YEAR event
Inflow = 0.42 cfs @ 12.08 hrs, Volume= 0.04 af
Primary = 0.42 cfs @ 12.08 hrs, Volume= 0.04 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 3P: BIORETENTION POND

Inflow Area = 3.426 ac, 57.90% Impervious, Inflow Depth > 2.69" for 10-YEAR event
Inflow = 9.35 cfs @ 12.08 hrs, Volume= 0.77 af
Outflow = 0.23 cfs @ 10.46 hrs, Volume= 0.28 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.23 cfs @ 10.46 hrs, Volume= 0.28 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= 0.01 hrs
Peak Elev= 182.79' @ 16.97 hrs Surf.Area= 17,174 sf Storage= 23,611 cf
Flood Elev= 183.75' Surf.Area= 19,686 sf Storage= 39,923 cf

Plug-Flow detention time= 414.6 min calculated for 0.28 af (36% of inflow)
Center-of-Mass det. time= 245.2 min (1,004.0 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	39,923 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	180.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,858 cf Overall x 0.0% Voids
		39,923 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	4,938	0.0	0	0
181.00	4,938	40.0	2,963	2,963
181.50	11,295	100.0	4,058	7,021
182.00	12,322	100.0	5,904	12,925
182.50	13,364	100.0	6,422	19,347
182.75	15,641	100.0	3,626	22,972
183.75	18,260	100.0	16,951	39,923

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	112	0	0
180.50	323	109	109
182.50	1,426	1,749	1,858

Device	Routing	Invert	Outlet Devices
#1	Discarded	181.00'	**3.000 in/hr Exfiltration over Surface area from 181.00' - 181.25'** Excluded Surface area = 5,537 sf
#2	Primary	183.40'	**4.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.23 cfs @ 10.46 hrs HW=181.25' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 4P: ROOF DRAIN SYSTEM

Inflow Area = 1.364 ac, 91.98% Impervious, Inflow Depth > 4.04" for 10-YEAR event
Inflow = 5.67 cfs @ 12.08 hrs, Volume= 0.46 af
Primary = 5.67 cfs @ 12.08 hrs, Volume= 0.46 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 5P: EXISTING DEPRESSION

Inflow Area = 0.741 ac, 20.11% Impervious, Inflow Depth > 1.00" for 10-YEAR event
Inflow = 0.62 cfs @ 12.14 hrs, Volume= 0.06 af
Outflow = 0.12 cfs @ 12.67 hrs, Volume= 0.06 af, Atten= 81%, Lag= 31.4 min
Discarded = 0.12 cfs @ 12.67 hrs, Volume= 0.06 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= 0.01 hrs
Peak Elev= 180.56' @ 12.67 hrs Surf.Area= 1,673 sf Storage= 895 cf
Flood Elev= 184.00' Surf.Area= 8,046 sf Storage= 16,886 cf

Plug-Flow detention time= 73.9 min calculated for 0.06 af (100% of inflow)
Center-of-Mass det. time= 72.5 min (849.5 - 777.1)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	16,886 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	12	0	0
182.00	3,922	4,918	4,918
184.00	8,046	11,968	16,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	179.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	183.90'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.12 cfs @ 12.67 hrs HW=180.56' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.12 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: EXISTING DEPRESSION

Inflow Area = 0.277 ac, 0.00% Impervious, Inflow Depth > 0.83" for 10-YEAR event
Inflow = 0.17 cfs @ 12.23 hrs, Volume= 0.02 af
Outflow = 0.06 cfs @ 12.69 hrs, Volume= 0.02 af, Atten= 63%, Lag= 27.9 min
Discarded = 0.06 cfs @ 12.69 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= 0.01 hrs
Peak Elev= 178.71' @ 12.69 hrs Surf.Area= 893 sf Storage= 154 cf
Flood Elev= 180.50' Surf.Area= 3,654 sf Storage= 4,168 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 15.4 min (903.2 - 887.8)

Volume	Invert	Avail.Storage	Storage Description
#1	178.50'	4,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
178.50	583	0	0
180.00	2,817	2,550	2,550
180.50	3,654	1,618	4,168

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	180.40'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.06 cfs @ 12.69 hrs HW=178.71' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.06 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=178.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: DCB#5

Inflow Area = 0.937 ac, 51.26% Impervious, Inflow Depth > 2.41" for 10-YEAR event
Inflow = 2.29 cfs @ 12.08 hrs, Volume= 0.19 af
Outflow = 2.29 cfs @ 12.08 hrs, Volume= 0.19 af, Atten= 0%, Lag= 0.0 min
Primary = 2.29 cfs @ 12.08 hrs, Volume= 0.19 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 186.65' @ 12.09 hrs
Flood Elev= 189.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	185.54'	**15.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 185.54' / 185.04' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.24 cfs @ 12.08 hrs HW=186.64' TW=186.28' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.24 cfs @ 2.60 fps)

Summary for Pond 8P: CB#4

Inflow Area = 1.306 ac, 63.86% Impervious, Inflow Depth > 2.93" for 10-YEAR event
Inflow = 3.90 cfs @ 12.08 hrs, Volume= 0.32 af
Outflow = 3.90 cfs @ 12.08 hrs, Volume= 0.32 af, Atten= 0%, Lag= 0.0 min
Primary = 3.90 cfs @ 12.08 hrs, Volume= 0.32 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 186.28' @ 12.09 hrs
Flood Elev= 190.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.94'	**15.0" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.94' / 183.91' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=3.88 cfs @ 12.08 hrs HW=186.28' TW=185.20' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 3.88 cfs @ 3.67 fps)

Summary for Pond 9P: CB#3

Inflow Area = 2.135 ac, 66.38% Impervious, Inflow Depth > 3.02" for 10-YEAR event
Inflow = 6.59 cfs @ 12.08 hrs, Volume= 0.54 af
Outflow = 6.59 cfs @ 12.08 hrs, Volume= 0.54 af, Atten= 0%, Lag= 0.0 min
Primary = 6.59 cfs @ 12.08 hrs, Volume= 0.54 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 185.20' @ 12.08 hrs
Flood Elev= 188.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.66'	**18.0" Round Culvert** L= 183.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.66' / 182.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=6.58 cfs @ 12.08 hrs HW=185.20' TW=181.98' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 6.58 cfs @ 4.51 fps)

Summary for Pond 10P: ROOF DRAIN

Inflow Area = 0.462 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-YEAR event
Inflow = 2.08 cfs @ 12.08 hrs, Volume= 0.17 af
Outflow = 2.08 cfs @ 12.08 hrs, Volume= 0.17 af, Atten= 0%, Lag= 0.0 min
Primary = 2.08 cfs @ 12.08 hrs, Volume= 0.17 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 185.09' @ 12.08 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.18' / 184.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.07 cfs @ 12.08 hrs HW=185.08' TW=181.98' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.07 cfs @ 3.66 fps)

Summary for Pond 11P: ROOF DRAIN

Inflow Area = 0.253 ac,100.00% Impervious, Inflow Depth > 4.36" for 10-YEAR event
Inflow = 1.14 cfs @ 12.08 hrs, Volume= 0.09 af
Outflow = 1.14 cfs @ 12.08 hrs, Volume= 0.09 af, Atten= 0%, Lag= 0.0 min
Primary = 1.14 cfs @ 12.08 hrs, Volume= 0.09 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.02' @ 12.09 hrs
Flood Elev= 190.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	186.36'	**12.0" Round Culvert** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 186.36' / 185.04' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.12 cfs @ 12.08 hrs HW=187.02' TW=186.28' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 1.12 cfs @ 2.90 fps)

Summary for Link A: LAMPREY RIVER

Inflow Area = 9.926 ac, 32.62% Impervious, Inflow Depth > 0.95" for 10-YEAR event
Inflow = 6.85 cfs @ 12.09 hrs, Volume= 0.78 af
Primary = 6.85 cfs @ 12.09 hrs, Volume= 0.78 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link B: LOT 4-2

Inflow Area = 0.084 ac, 17.07% Impervious, Inflow Depth > 0.85" for 10-YEAR event
Inflow = 0.06 cfs @ 12.08 hrs, Volume= 0.01 af
Primary = 0.06 cfs @ 12.08 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link C: LOT 4-4

Inflow Area = 1.017 ac, 14.64% Impervious, Inflow Depth = 0.00" for 10-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link D: LOT 4-5

Inflow Area = 0.136 ac, 0.00% Impervious, Inflow Depth > 0.62" for 10-YEAR event
Inflow = 0.08 cfs @ 12.11 hrs, Volume= 0.01 af
Primary = 0.08 cfs @ 12.11 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

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

Subcatchment1S: SUBCATCHMENT Runoff Area=5,913 sf 0.00% Impervious Runoff Depth>1.11"
Tc=6.0 min CN=WQ Runoff=0.16 cfs 0.01 af

Subcatchment2S: SUBCATCHMENT Runoff Area=1,302 sf 0.00% Impervious Runoff Depth>0.40"
Tc=6.0 min CN=39.0 Runoff=0.00 cfs 0.00 af

Subcatchment3S: SUBCATCHMENT Runoff Area=2,341 sf 26.57% Impervious Runoff Depth>1.78"
Tc=6.0 min CN=WQ Runoff=0.08 cfs 0.01 af

Subcatchment4S: SUBCATCHMENT Runoff Area=8,572 sf 44.42% Impervious Runoff Depth>2.89"
Tc=6.0 min CN=WQ Runoff=0.55 cfs 0.05 af

Subcatchment5S: SUBCATCHMENT Runoff Area=50,829 sf 100.00% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=98.0 Runoff=6.67 cfs 0.54 af

Subcatchment6S: SUBCATCHMENT Runoff Area=5,075 sf 86.56% Impervious Runoff Depth>5.09"
Tc=6.0 min CN=WQ Runoff=0.61 cfs 0.05 af

Subcatchment7S: SUBCATCHMENT Runoff Area=223,754 sf 0.00% Impervious Runoff Depth>1.28"
Flow Length=250' Tc=19.4 min CN=WQ Runoff=4.74 cfs 0.55 af

Subcatchment8S: SUBCATCHMENT Runoff Area=12,061 sf 0.00% Impervious Runoff Depth>1.41"
Flow Length=116' Tc=14.3 min CN=WQ Runoff=0.32 cfs 0.03 af

Subcatchment9S: SUBCATCHMENT Runoff Area=32,257 sf 20.11% Impervious Runoff Depth>1.42"
Flow Length=119' Tc=10.7 min CN=WQ Runoff=0.84 cfs 0.09 af

Subcatchment10S: SUBCATCHMENT Runoff Area=36,100 sf 70.35% Impervious Runoff Depth>4.14"
Tc=6.0 min CN=WQ Runoff=3.47 cfs 0.29 af

Subcatchment11S: SUBCATCHMENT Runoff Area=40,800 sf 51.26% Impervious Runoff Depth>3.22"
Tc=6.0 min CN=WQ Runoff=2.99 cfs 0.25 af

Subcatchment12S: SUBCATCHMENT Runoff Area=11,033 sf 100.00% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=98.0 Runoff=1.45 cfs 0.12 af

Subcatchment13S: SUBCATCHMENT Runoff Area=36,103 sf 12.59% Impervious Runoff Depth>1.38"
Tc=6.0 min CN=WQ Runoff=0.99 cfs 0.10 af

Subcatchment14S: SUBCATCHMENT Runoff Area=20,132 sf 100.00% Impervious Runoff Depth>5.59"
Tc=6.0 min CN=WQ Runoff=2.64 cfs 0.22 af

Pond 1P: EXISTING 12" CMP Peak Elev=187.26' Inflow=0.00 cfs 0.00 af
12.0" Round Culvert n=0.025 L=61.0' S=0.0197 '/' Outflow=0.00 cfs 0.00 af

Pond 2P: EXISTING CB Inflow=0.55 cfs 0.05 af
Primary=0.55 cfs 0.05 af

Pond 3P: BIORETENTION POND Peak Elev=183.34' Storage=32,599 cf Inflow=12.14 cfs 1.02 af
Discarded=0.23 cfs 0.29 af Primary=0.00 cfs 0.00 af Outflow=0.23 cfs 0.29 af

Pond 4P: ROOF DRAIN SYSTEM Inflow=7.22 cfs 0.59 af
Primary=7.22 cfs 0.59 af

Pond 5P: EXISTING DEPRESSION Peak Elev=180.79' Storage=1,307 cf Inflow=0.84 cfs 0.09 af
Discarded=0.14 cfs 0.09 af Primary=0.00 cfs 0.00 af Outflow=0.14 cfs 0.09 af

Pond 6P: EXISTING DEPRESSION Peak Elev=178.92' Storage=375 cf Inflow=0.32 cfs 0.03 af
Discarded=0.08 cfs 0.03 af Primary=0.00 cfs 0.00 af Outflow=0.08 cfs 0.03 af

Pond 7P: DCB#5 Peak Elev=187.97' Inflow=2.99 cfs 0.25 af
15.0" Round Culvert n=0.013 L=100.0' S=0.0050 '/' Outflow=2.99 cfs 0.25 af

Pond 8P: CB#4 Peak Elev=187.63' Inflow=5.04 cfs 0.42 af
15.0" Round Culvert n=0.013 L=205.0' S=0.0050 '/' Outflow=5.04 cfs 0.42 af

Pond 9P: CB#3 Peak Elev=186.00' Inflow=8.51 cfs 0.71 af
18.0" Round Culvert n=0.013 L=183.0' S=0.0050 '/' Outflow=8.51 cfs 0.71 af

Pond 10P: ROOF DRAIN Peak Elev=185.26' Inflow=2.64 cfs 0.22 af
12.0" Round Culvert n=0.013 L=18.0' S=0.0100 '/' Outflow=2.64 cfs 0.22 af

Pond 11P: ROOF DRAIN Peak Elev=187.92' Inflow=1.45 cfs 0.12 af
12.0" Round Culvert n=0.013 L=132.0' S=0.0100 '/' Outflow=1.45 cfs 0.12 af

Link A: LAMPREY RIVER Inflow=9.57 cfs 1.14 af
Primary=9.57 cfs 1.14 af

Link B: LOT 4-2 Inflow=0.08 cfs 0.01 af
Primary=0.08 cfs 0.01 af

Link C: LOT 4-4 Inflow=0.00 cfs 0.00 af
Primary=0.00 cfs 0.00 af

Link D: LOT 4-5 Inflow=0.16 cfs 0.01 af
Primary=0.16 cfs 0.01 af

Total Runoff Area = 11.163 ac Runoff Volume = 2.29 af Average Runoff Depth = 2.47"
69.53% Pervious = 7.762 ac 30.47% Impervious = 3.401 ac

Summary for Subcatchment 1S: SUBCATCHMENT

Runoff = 0.16 cfs @ 12.10 hrs, Volume= 0.01 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
1,670	30.0	Woods, Good, HSG A
3,255	55.0	Woods, Good, HSG B
988	61.0	>75% Grass cover, Good, HSG B
5,913		Weighted Average
5,913	48.9	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: SUBCATCHMENT

Runoff = 0.00 cfs @ 12.36 hrs, Volume= 0.00 af, Depth> 0.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
1,302	39.0	>75% Grass cover, Good, HSG A
1,302	39.0	100.00% Pervious Area

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

Summary for Subcatchment 3S: SUBCATCHMENT

Runoff = 0.08 cfs @ 12.08 hrs, Volume= 0.01 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
1,719	39.0	>75% Grass cover, Good, HSG A
622	98.0	Paved parking, HSG A
2,341		Weighted Average
1,719	39.0	73.43% Pervious Area
622	98.0	26.57% Impervious Area

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

Summary for Subcatchment 4S: SUBCATCHMENT

Runoff = 0.55 cfs @ 12.08 hrs, Volume= 0.05 af, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
3,680	39.0	>75% Grass cover, Good, HSG A
3,808	98.0	Paved parking, HSG A
1,084	61.0	>75% Grass cover, Good, HSG B
8,572		Weighted Average
4,764	44.0	55.58% Pervious Area
3,808	98.0	44.42% Impervious Area

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

Summary for Subcatchment 5S: SUBCATCHMENT

Runoff = 6.67 cfs @ 12.08 hrs, Volume= 0.54 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
50,829	98.0	Roofs, HSG A
50,829	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: SUBCATCHMENT

Runoff = 0.61 cfs @ 12.08 hrs, Volume= 0.05 af, Depth> 5.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
682	61.0	>75% Grass cover, Good, HSG B
780	98.0	Paved parking, HSG A
3,613	98.0	Paved parking, HSG B
5,075		Weighted Average
682	61.0	13.44% Pervious Area
4,393	98.0	86.56% Impervious Area

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

Summary for Subcatchment 7S: SUBCATCHMENT

Runoff = 4.74 cfs @ 12.29 hrs, Volume= 0.55 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
59,548	30.0	Woods, Good, HSG A
28,177	39.0	>75% Grass cover, Good, HSG A
61,344	55.0	Woods, Good, HSG B
20,994	61.0	>75% Grass cover, Good, HSG B
47,550	70.0	Woods, Good, HSG C
6,141	74.0	>75% Grass cover, Good, HSG C
223,754		Weighted Average
223,754	50.6	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.7	50	0.0150	0.06		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
4.7	200	0.0200	0.71		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
19.4	250	Total			

Summary for Subcatchment 8S: SUBCATCHMENT

Runoff = 0.32 cfs @ 12.22 hrs, Volume= 0.03 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
2,046	30.0	Woods, Good, HSG A
7,351	55.0	Woods, Good, HSG B
1,975	70.0	Woods, Good, HSG C
21	39.0	>75% Grass cover, Good, HSG A
668	61.0	>75% Grass cover, Good, HSG B
12,061		Weighted Average
12,061	53.5	100.00% Pervious 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"
1.2	66	0.0310	0.88		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
14.3	116	Total			

Summary for Subcatchment 9S: SUBCATCHMENT

Runoff = 0.84 cfs @ 12.14 hrs, Volume= 0.09 af, Depth> 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
12,778	30.0	Woods, Good, HSG A
9,179	39.0	>75% Grass cover, Good, HSG A
3,814	55.0	Woods, Good, HSG B
6,486	98.0	Paved parking, HSG A
32,257		Weighted Average
25,771	36.9	79.89% Pervious Area
6,486	98.0	20.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	50	0.0400	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.84"
0.8	69	0.0870	1.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
10.7	119	Total			

Summary for Subcatchment 10S: SUBCATCHMENT

Runoff = 3.47 cfs @ 12.08 hrs, Volume= 0.29 af, Depth> 4.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
2,493	30.0	Woods, Good, HSG A
4,833	39.0	>75% Grass cover, Good, HSG A
1,605	55.0	Woods, Good, HSG B
1,771	61.0	>75% Grass cover, Good, HSG B
21,728	98.0	Paved parking, HSG A
3,670	98.0	Paved parking, HSG B
36,100		Weighted Average
10,702	42.9	29.65% Pervious Area
25,398	98.0	70.35% Impervious Area

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

Summary for Subcatchment 11S: SUBCATCHMENT

Runoff = 2.99 cfs @ 12.08 hrs, Volume= 0.25 af, Depth> 3.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
2,594	30.0	Woods, Good, HSG A
12,099	39.0	>75% Grass cover, Good, HSG A
385	55.0	Woods, Good, HSG B
4,806	61.0	>75% Grass cover, Good, HSG B
10,200	98.0	Paved parking, HSG A
10,716	98.0	Paved parking, HSG B
40,800		Weighted Average
19,884	43.5	48.74% Pervious Area
20,916	98.0	51.26% Impervious Area

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

Summary for Subcatchment 12S: SUBCATCHMENT

Runoff = 1.45 cfs @ 12.08 hrs, Volume= 0.12 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
11,033	98.0	Roofs, HSG A
11,033	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 13S: SUBCATCHMENT

Runoff = 0.99 cfs @ 12.09 hrs, Volume= 0.10 af, Depth> 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
23,144	39.0	>75% Grass cover, Good, HSG A
8,116	61.0	>75% Grass cover, Good, HSG B
296	30.0	Woods, Good, HSG A
4,547	98.0	Paved parking, HSG A
36,103		Weighted Average
31,556	44.6	87.41% Pervious Area
4,547	98.0	12.59% Impervious Area

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

Summary for Subcatchment 14S: SUBCATCHMENT

Runoff = 2.64 cfs @ 12.08 hrs, Volume= 0.22 af, Depth> 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YEAR Rainfall=5.83"

Area (sf)	CN	Description
15,081	98.0	Roofs, HSG A
5,051	98.0	Roofs, HSG B
20,132		Weighted Average
20,132	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 Pond 1P: EXISTING 12" CMP

Inflow Area = 0.030 ac, 0.00% Impervious, Inflow Depth > 0.40" for 25-YEAR event
Inflow = 0.00 cfs @ 12.36 hrs, Volume= 0.00 af
Outflow = 0.00 cfs @ 12.36 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.36 hrs, Volume= 0.00 af

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

Peak Elev= 187.26' @ 12.36 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	187.22'	**12.0" Round Culvert** L= 61.0' CMP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 187.22' / 186.02' S= 0.0197 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.79 sf

Primary OutFlow Max=0.00 cfs @ 12.36 hrs HW=187.26' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Barrel Controls 0.00 cfs @ 0.62 fps)

Summary for Pond 2P: EXISTING CB

Inflow Area = 0.197 ac, 44.42% Impervious, Inflow Depth > 2.89" for 25-YEAR event
Inflow = 0.55 cfs @ 12.08 hrs, Volume= 0.05 af
Primary = 0.55 cfs @ 12.08 hrs, Volume= 0.05 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 3P: BIORETENTION POND

Inflow Area = 3.426 ac, 57.90% Impervious, Inflow Depth > 3.56" for 25-YEAR event
Inflow = 12.14 cfs @ 12.08 hrs, Volume= 1.02 af
Outflow = 0.23 cfs @ 9.58 hrs, Volume= 0.29 af, Atten= 98%, Lag= 0.0 min
Discarded = 0.23 cfs @ 9.58 hrs, Volume= 0.29 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= 0.01 hrs
Peak Elev= 183.34' @ 18.14 hrs Surf.Area= 18,603 sf Storage= 32,599 cf
Flood Elev= 183.75' Surf.Area= 19,686 sf Storage= 39,923 cf

Plug-Flow detention time= 421.7 min calculated for 0.29 af (29% of inflow)
Center-of-Mass det. time= 217.2 min (976.1 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	39,923 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)
#2	180.00'	0 cf	**Sediment Forebay (No Storage) (Prismatic)** Listed below (Recalc) 1,858 cf Overall x 0.0% Voids
		39,923 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	4,938	0.0	0	0
181.00	4,938	40.0	2,963	2,963
181.50	11,295	100.0	4,058	7,021
182.00	12,322	100.0	5,904	12,925
182.50	13,364	100.0	6,422	19,347
182.75	15,641	100.0	3,626	22,972
183.75	18,260	100.0	16,951	39,923

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
180.00	112	0	0
180.50	323	109	109
182.50	1,426	1,749	1,858

Device	Routing	Invert	Outlet Devices
#1	Discarded	181.00'	**3.000 in/hr Exfiltration over Surface area from 181.00' - 181.25'** Excluded Surface area = 5,537 sf
#2	Primary	183.40'	**4.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=0.23 cfs @ 9.58 hrs HW=181.25' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.23 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 4P: ROOF DRAIN SYSTEM

Inflow Area = 1.364 ac, 91.98% Impervious, Inflow Depth > 5.20" for 25-YEAR event
Inflow = 7.22 cfs @ 12.08 hrs, Volume= 0.59 af
Primary = 7.22 cfs @ 12.08 hrs, Volume= 0.59 af, Atten= 0%, Lag= 0.0 min

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

Summary for Pond 5P: EXISTING DEPRESSION

Inflow Area = 0.741 ac, 20.11% Impervious, Inflow Depth > 1.42" for 25-YEAR event
Inflow = 0.84 cfs @ 12.14 hrs, Volume= 0.09 af
Outflow = 0.14 cfs @ 12.78 hrs, Volume= 0.09 af, Atten= 83%, Lag= 37.8 min
Discarded = 0.14 cfs @ 12.78 hrs, Volume= 0.09 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= 0.01 hrs
Peak Elev= 180.79' @ 12.78 hrs Surf.Area= 2,022 sf Storage= 1,307 cf
Flood Elev= 184.00' Surf.Area= 8,046 sf Storage= 16,886 cf

Plug-Flow detention time= 94.2 min calculated for 0.09 af (100% of inflow)
Center-of-Mass det. time= 91.5 min (879.3 - 787.8)

Volume	Invert	Avail.Storage	Storage Description
#1	179.50'	16,886 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
179.50	12	0	0
182.00	3,922	4,918	4,918
184.00	8,046	11,968	16,886

Device	Routing	Invert	Outlet Devices
#1	Discarded	179.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	183.90'	**25.0' long x 7.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.40 2.52 2.70 2.68 2.68 2.67 2.66 2.65 2.65 2.65 2.66 2.65 2.66 2.68 2.70 2.73 2.78

Discarded OutFlow Max=0.14 cfs @ 12.78 hrs HW=180.79' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=179.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 6P: EXISTING DEPRESSION

Inflow Area = 0.277 ac, 0.00% Impervious, Inflow Depth > 1.41" for 25-YEAR event
Inflow = 0.32 cfs @ 12.22 hrs, Volume= 0.03 af
Outflow = 0.08 cfs @ 12.77 hrs, Volume= 0.03 af, Atten= 74%, Lag= 33.4 min
Discarded = 0.08 cfs @ 12.77 hrs, Volume= 0.03 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= 0.01 hrs
Peak Elev= 178.92' @ 12.77 hrs Surf.Area= 1,207 sf Storage= 375 cf
Flood Elev= 180.50' Surf.Area= 3,654 sf Storage= 4,168 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 36.5 min (909.5 - 873.0)

Volume	Invert	Avail.Storage	Storage Description
#1	178.50'	4,168 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
178.50	583	0	0
180.00	2,817	2,550	2,550
180.50	3,654	1,618	4,168

Device	Routing	Invert	Outlet Devices
#1	Discarded	178.50'	**3.000 in/hr Exfiltration over Surface area**
#2	Primary	180.40'	**2.0' long x 10.0' breadth Broad-Crested Rectangular Weir**
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60
			Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Discarded OutFlow Max=0.08 cfs @ 12.77 hrs HW=178.92' (Free Discharge)
↑—**1=Exfiltration** (Exfiltration Controls 0.08 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=178.50' TW=0.00' (Dynamic Tailwater)
↑—**2=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Pond 7P: DCB#5

Inflow Area = 0.937 ac, 51.26% Impervious, Inflow Depth > 3.22" for 25-YEAR event
Inflow = 2.99 cfs @ 12.08 hrs, Volume= 0.25 af
Outflow = 2.99 cfs @ 12.08 hrs, Volume= 0.25 af, Atten= 0%, Lag= 0.0 min
Primary = 2.99 cfs @ 12.08 hrs, Volume= 0.25 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.97' @ 12.10 hrs
Flood Elev= 189.58'

Device	Routing	Invert	Outlet Devices
#1	Primary	185.54'	**15.0" Round Culvert** L= 100.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 185.54' / 185.04' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.54 cfs @ 12.08 hrs HW=187.86' TW=187.61' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 2.54 cfs @ 2.07 fps)

Summary for Pond 8P: CB#4

Inflow Area = 1.306 ac, 63.86% Impervious, Inflow Depth > 3.85" for 25-YEAR event
Inflow = 5.04 cfs @ 12.08 hrs, Volume= 0.42 af
Outflow = 5.04 cfs @ 12.08 hrs, Volume= 0.42 af, Atten= 0%, Lag= 0.0 min
Primary = 5.04 cfs @ 12.08 hrs, Volume= 0.42 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.63' @ 12.09 hrs
Flood Elev= 190.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.94'	**15.0" Round Culvert** L= 205.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.94' / 183.91' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf

Primary OutFlow Max=4.99 cfs @ 12.08 hrs HW=187.60' TW=185.99' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 4.99 cfs @ 4.07 fps)

Summary for Pond 9P: CB#3

Inflow Area = 2.135 ac, 66.38% Impervious, Inflow Depth > 3.96" for 25-YEAR event
Inflow = 8.51 cfs @ 12.08 hrs, Volume= 0.71 af
Outflow = 8.51 cfs @ 12.08 hrs, Volume= 0.71 af, Atten= 0%, Lag= 0.0 min
Primary = 8.51 cfs @ 12.08 hrs, Volume= 0.71 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 186.00' @ 12.08 hrs
Flood Elev= 188.97'

Device	Routing	Invert	Outlet Devices
#1	Primary	183.66'	**18.0" Round Culvert** L= 183.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 183.66' / 182.75' S= 0.0050 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf

Primary OutFlow Max=8.49 cfs @ 12.08 hrs HW=185.99' TW=182.29' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 8.49 cfs @ 4.81 fps)

Summary for Pond 10P: ROOF DRAIN

Inflow Area = 0.462 ac,100.00% Impervious, Inflow Depth > 5.59" for 25-YEAR event
Inflow = 2.64 cfs @ 12.08 hrs, Volume= 0.22 af
Outflow = 2.64 cfs @ 12.08 hrs, Volume= 0.22 af, Atten= 0%, Lag= 0.0 min
Primary = 2.64 cfs @ 12.08 hrs, Volume= 0.22 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 185.26' @ 12.08 hrs
Flood Elev= 190.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	184.18'	**12.0" Round Culvert** L= 18.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 184.18' / 184.00' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=2.64 cfs @ 12.08 hrs HW=185.26' TW=182.29' (Dynamic Tailwater)
↑—**1=Culvert** (Barrel Controls 2.64 cfs @ 3.87 fps)

Summary for Pond 11P: ROOF DRAIN

Inflow Area = 0.253 ac,100.00% Impervious, Inflow Depth > 5.59" for 25-YEAR event
Inflow = 1.45 cfs @ 12.08 hrs, Volume= 0.12 af
Outflow = 1.45 cfs @ 12.08 hrs, Volume= 0.12 af, Atten= 0%, Lag= 0.0 min
Primary = 1.45 cfs @ 12.08 hrs, Volume= 0.12 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs
Peak Elev= 187.92' @ 12.10 hrs
Flood Elev= 190.84'

Device	Routing	Invert	Outlet Devices
#1	Primary	186.36'	**12.0" Round Culvert** L= 132.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 186.36' / 185.04' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 0.79 sf

Primary OutFlow Max=1.14 cfs @ 12.08 hrs HW=187.79' TW=187.60' (Dynamic Tailwater)
↑—**1=Culvert** (Outlet Controls 1.14 cfs @ 1.46 fps)

Summary for Link A: LAMPREY RIVER

Inflow Area = 9.926 ac, 32.62% Impervious, Inflow Depth > 1.37" for 25-YEAR event
Inflow = 9.57 cfs @ 12.10 hrs, Volume= 1.14 af
Primary = 9.57 cfs @ 12.10 hrs, Volume= 1.14 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link B: LOT 4-2

Inflow Area = 0.084 ac, 17.07% Impervious, Inflow Depth > 1.28" for 25-YEAR event
Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.01 af
Primary = 0.08 cfs @ 12.09 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link C: LOT 4-4

Inflow Area = 1.017 ac, 14.64% Impervious, Inflow Depth = 0.00" for 25-YEAR event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.00 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

Summary for Link D: LOT 4-5

Inflow Area = 0.136 ac, 0.00% Impervious, Inflow Depth > 1.11" for 25-YEAR event
Inflow = 0.16 cfs @ 12.10 hrs, Volume= 0.01 af
Primary = 0.16 cfs @ 12.10 hrs, Volume= 0.01 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

18. RIP RAP APRON CALCULATIONS

KEACH-NORDSTROM ASSOCIATES, INC.

RIP RAP OUTLET PROTECTION APRON CALCULATIONS

Project:	**Gemini Valve Site Expansion**	Date:	**5/7/2024**
KNA #:	22-0110-2		

The purpose of this spreadsheet is to calculate the dimensions of Inlet/Outlet Protection apron (riprap) required during the SCS/NRCS 25-year type III 24-hr storm event. The spillway weir(s) inlet/outlet apron protection will be sized for the SCS/NRCS 25-year type III 24-hr storm event.

Required Input:

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

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

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

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

Rock Rip Rap Size:

d50 = (0.02*Q^4/3)/(Tw*Do)

RIRAP GRADATION ENVELOPE

Calculation Summary Table:

Input to Chart Description (Optional)		Q-25 (cfs)	Do (ft)	Tw (ft)	Calculated Output La	W1	W2 no channel	d50, ft	d50 in	USE d50 in.	d100 FROM in	d100 TO in	d85 FROM in	d85 TO in	d50 FROM in	d50 TO in	d15 FROM in	d15 TO in	depth in	USE Depth in.	USE Length ft.	USE W1 ft.	USE W2 ft.
HW#1	Roof Drain Inlet	2.64	1.00	0.64	15	3	9	0.1	1.37	3	5	6	4	5	3	5	1	2	7.5	8	15	3	9
HW#2	Pond Inlet	8.51	1.50	1.50	24	5	14	0.2	1.85	3	5	6	4	5	3	5	1	2	7.5	8	24	5	14

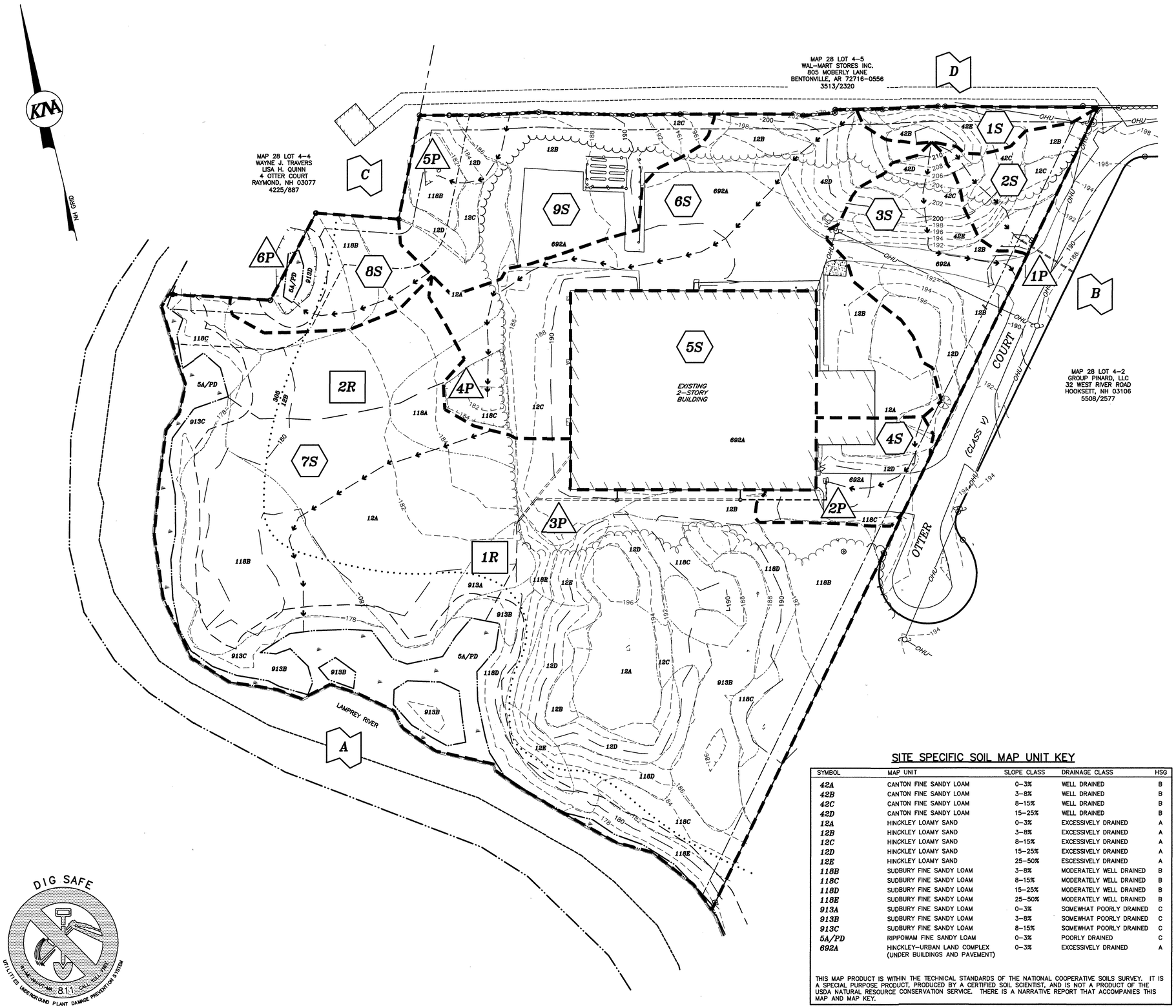
* Center Apron with Headwall and Outlet Pipe (All Cases)
* Line Apron with 6.0 oz. Geotextile Fabric (All Cases)

22. APPENDICES

NON-RESIDENTIAL SITE PLAN (22" X 34" – COLORLESS)

PRE-DEVELOPMENT DRAIN AREA PLAN (22" X 34" – COLORLESS)

POST-DEVELOPMENT DRAIN AREA PLAN (22" X 34" – COLORLESS)



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL PRIOR TO DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "EXISTING CONDITIONS PLAN, GEMINI VALVE, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. DATED FEBRUARY 15, 2024".

DRAINAGE LEGEND:

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

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 42A — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
- L — DENOTES POINT OF INTEREST
- R — DENOTES REACH
- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

SCS SOILS LEGEND

12B	HINCKLEY LOAMY SAND 3 TO 8 PERCENT SLOPES
305	LIM-POOTATUCK COMPLEX

SOURCE: USDA-SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

GRAPHIC SCALE

50 0 25 50 100 400

(IN FEET)
1 inch = 50 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON FINE SANDY LOAM	0-3%	WELL DRAINED	B
42B	CANTON FINE SANDY LOAM	3-8%	WELL DRAINED	B
42C	CANTON FINE SANDY LOAM	8-15%	WELL DRAINED	B
42D	CANTON FINE SANDY LOAM	15-25%	WELL DRAINED	B
12A	HINCKLEY LOAMY SAND	0-3%	EXCESSIVELY DRAINED	A
12B	HINCKLEY LOAMY SAND	3-8%	EXCESSIVELY DRAINED	A
12C	HINCKLEY LOAMY SAND	8-15%	EXCESSIVELY DRAINED	A
12D	HINCKLEY LOAMY SAND	15-25%	EXCESSIVELY DRAINED	A
12E	HINCKLEY LOAMY SAND	25-50%	ESCESSIVELY DRAINED	A
118B	SUDBURY FINE SANDY LOAM	3-8%	MODERATELY WELL DRAINED	B
118C	SUDBURY FINE SANDY LOAM	8-15%	MODERATELY WELL DRAINED	B
118D	SUDBURY FINE SANDY LOAM	15-25%	MODERATELY WELL DRAINED	B
118E	SUDBURY FINE SANDY LOAM	25-50%	MODERATELY WELL DRAINED	B
913A	SUDBURY FINE SANDY LOAM	0-3%	SOMEWHAT POORLY DRAINED	C
913B	SUDBURY FINE SANDY LOAM	3-8%	SOMEWHAT POORLY DRAINED	C
913C	SUDBURY FINE SANDY LOAM	8-15%	SOMEWHAT POORLY DRAINED	C
5A/PD	RIPPOWAM FINE SANDY LOAM	0-3%	POORLY DRAINED	C
692A	HINCKLEY-URBAN LAND COMPLEX (UNDER BUILDINGS AND PAVEMENT)	0-3%	EXCESSIVELY DRAINED	A

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

DIG SAFE
811
IT'S THE LAW!
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

PRE DEVELOPMENT DRAIN AREA PLAN
GEMINI VALVE
MAP 28 LOT 4-3
2 OTTER COURT
RAYMOND, NEW HAMPSHIRE
ROCKINGHAM COUNTY

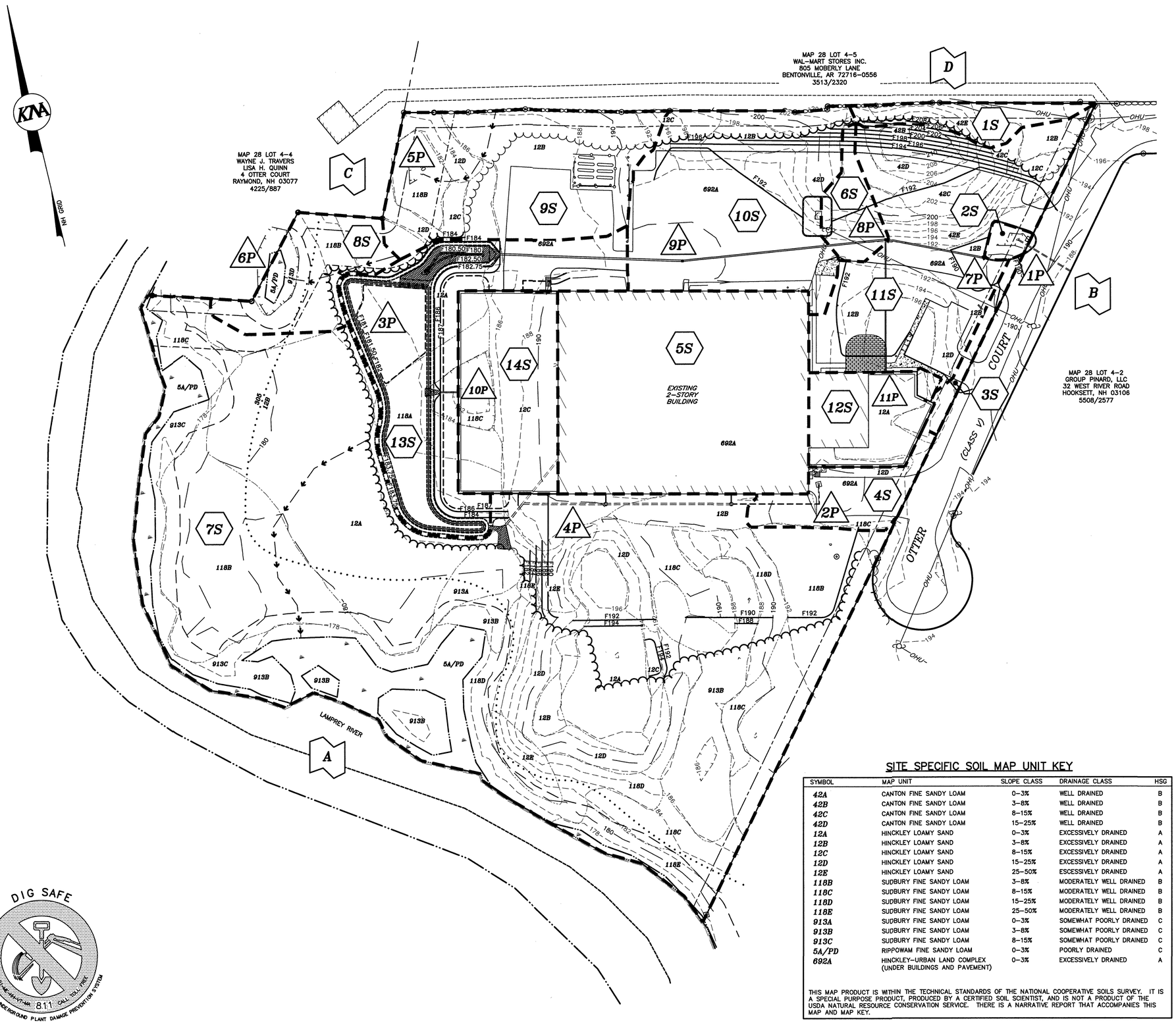
OWNER/APPLICANT:
PARKER & HARPER COMPANIES, INC.
2 OTTER COURT
RAYMOND, N.H. 03077
BK. 2523 PG. 1660

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
1	5/17/24	AOT & REVIEW ENGINEER REVISIONS	PCM

DATE: FEBRUARY 15, 2024 **SCALE:** 1" = 50
PROJECT NO: 22-0110-2 **SHEET** 1 OF 4



NOTES:

1. THE PURPOSE OF THIS PLAN IS TO DEPICT THE VARIOUS STORMWATER SUBCATCHMENT AREAS, CORRESPONDING TIMES OF CONCENTRATION, PONDS, AND REACHES ASSOCIATED WITH THE SUBJECT PARCEL AFTER DEVELOPMENT.
2. EXISTING FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "EXISTING CONDITIONS PLAN, GEMINI VALVE, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. DATED FEBRUARY 15, 2024".
3. PROPOSED FEATURES DEPICTED ON THIS PLAN WERE TAKEN FROM "GRADING & DRAINAGE PLAN, GEMINI VALVE, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. DATED FEBRUARY 15, 2024".

DRAINAGE LEGEND:

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

- SCS SOIL LINES
- SITE SPECIFIC SOIL LINES
- 42A — DENOTES SOIL TYPE
- P — DENOTES POND
- S — DENOTES SUBCATCHMENT AREA
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- LIMIT OF SUBCATCHMENT AREA
- TIME OF CONCENTRATION
- REACH

SCS SOILS LEGEND

12B	HINCKLEY LOAMY SAND 3 TO 8 PERCENT SLOPES
305	LIM-POOTATUCK COMPLEX

SOURCE: USDA-SCS WEB SOIL SURVEY ROCKINGHAM COUNTY

GRAPHIC SCALE

50 0 25 50 100 400

(IN FEET)
1 inch = 50 ft.

SITE SPECIFIC SOIL MAP UNIT KEY

SYMBOL	MAP UNIT	SLOPE CLASS	DRAINAGE CLASS	HSG
42A	CANTON FINE SANDY LOAM	0-3%	WELL DRAINED	B
42B	CANTON FINE SANDY LOAM	3-8%	WELL DRAINED	B
42C	CANTON FINE SANDY LOAM	8-15%	WELL DRAINED	B
42D	CANTON FINE SANDY LOAM	15-25%	WELL DRAINED	B
12A	HINCKLEY LOAMY SAND	0-3%	EXCESSIVELY DRAINED	A
12B	HINCKLEY LOAMY SAND	3-8%	EXCESSIVELY DRAINED	A
12C	HINCKLEY LOAMY SAND	8-15%	EXCESSIVELY DRAINED	A
12D	HINCKLEY LOAMY SAND	15-25%	EXCESSIVELY DRAINED	A
12E	HINCKLEY LOAMY SAND	25-50%	ESCESSIVELY DRAINED	A
118B	SUDBURY FINE SANDY LOAM	3-8%	MODERATELY WELL DRAINED	B
118C	SUDBURY FINE SANDY LOAM	8-15%	MODERATELY WELL DRAINED	B
118D	SUDBURY FINE SANDY LOAM	15-25%	MODERATELY WELL DRAINED	B
118E	SUDBURY FINE SANDY LOAM	25-50%	MODERATELY WELL DRAINED	B
913A	SUDBURY FINE SANDY LOAM	0-3%	SOMEWHAT POORLY DRAINED	C
913B	SUDBURY FINE SANDY LOAM	3-8%	SOMEWHAT POORLY DRAINED	C
913C	SUDBURY FINE SANDY LOAM	8-15%	SOMEWHAT POORLY DRAINED	C
5A/PD	RIPPOWAM FINE SANDY LOAM	0-3%	POORLY DRAINED	C
692A	HINCKLEY-URBAN LAND COMPLEX (UNDER BUILDINGS AND PAVEMENT)	0-3%	EXCESSIVELY DRAINED	A

THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOILS SURVEY. IT IS A SPECIAL PURPOSE PRODUCT, PRODUCED BY A CERTIFIED SOIL SCIENTIST, AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE. THERE IS A NARRATIVE REPORT THAT ACCOMPANIES THIS MAP AND MAP KEY.

DIG SAFE
811 IT'S THE LAW! CALL TOLL FREE
DIAL 811 OR 1-888-DIG-SAFE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

POST DEVELOPMENT DRAIN AREA PLAN
GEMINI VALVE

MAP 28 LOT 4-3
2 OTTER COURT
RAYMOND, NEW HAMPSHIRE
ROCKINGHAM COUNTY

OWNER/APPLICANT:
PARKER & HARPER COMPANIES, INC.
2 OTTER COURT
RAYMOND, N.H. 03077
BK. 2523 PG. 1660

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
1	5/17/24	AOT & REVIEW ENGINEER REVISIONS	PCM

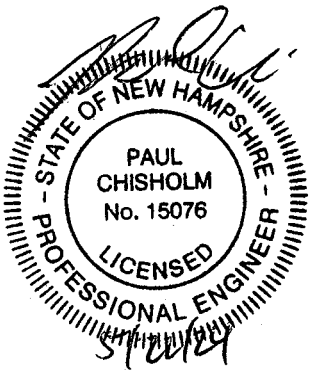
DATE: FEBRUARY 15, 2024 **SCALE:** 1" = 50
PROJECT NO: 22-0110-2 **SHEET** 2 **OF** 4

TRAFFIC IMPACT ANALYSIS

SHORT TRIP GENERATION MEMO

For

GEMINI VALVE



Map 28 Lot 4-3

2 Otter Court
Raymond, New Hampshire

May 21, 2024
KNA Project No. 22-0110-2

Prepared For: Parker & Harper Companies, Inc.
2 Otter Court
Raymond, New Hampshire 03077

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

KNA KEACH-NORDSTROM ASSOCIATES, INC.

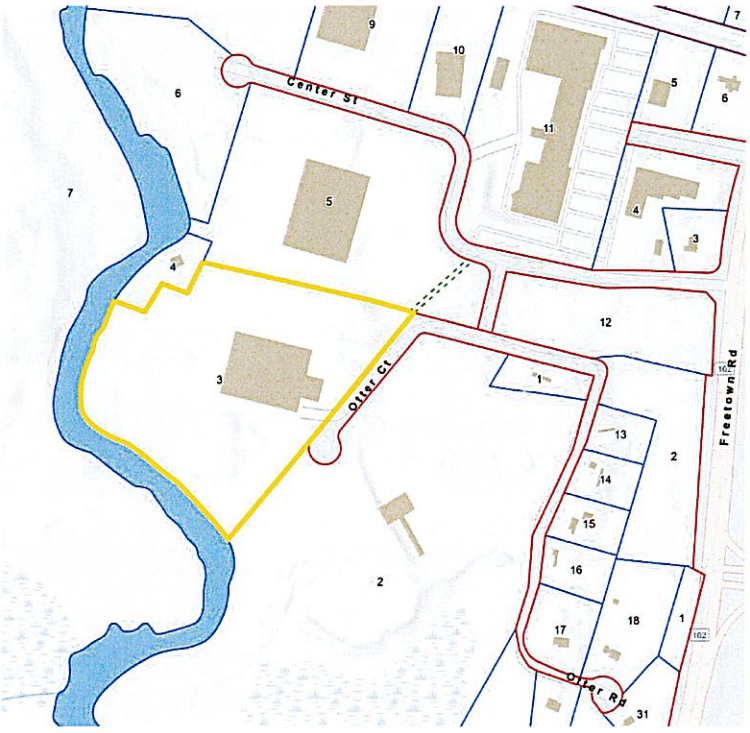
May 21, 2024

Town of Raymond
Planning Department
4 Epping Street
Raymond, NH 03077

Subject: **Gemini Valve**
Short Form Traffic Impact Assessment
Map 28 Lot 4-3; 2 Otter Court, Raymond, New Hampshire
KNA Job No. 22-0110-2

On behalf of Parker & Harper Companies, Inc., (Owner & Applicant), Keach-Nordstrom Associates, Inc. respectfully submits the following short Traffic Impact Analysis (TIA), in accordance with the Town of Raymond Site Plan Review Regulations, Section 5.03.13.

The project proposes the construction of two building additions to an existing 2-story valve manufacturing facility. The first addition is comprised of 6,011 square feet of office space while the second is for 20,162 square feet of additional industrial space for the facility. The project also entails construction of a parking lot, septic improvements, and the required stormwater management provisions to support the new additions.



The resulting traffic density falls under the "short" TIA criteria, since the project is anticipated to generate substantially less than 1,000 ADT and 100 PHT. As such, this TIA will include a description of the site, roadways, proposed driveway sight distances, and ITE trip generation with reasonable localized distribution analysis.

Project location map to the left was prepared using the local GIS mapping.

(Please also refer to additional USGS and Tax Map exhibits contained in the TIA appendix)

DESCRIPTION OF SITE:

The lot is located at 2 Otter Court and is approximately 11.16 acres in total area. The property has approximately 501.50 feet of frontage along Otter Court. The existing site is developed with a 54,840 square foot industrial building and associated parking lots, which are accessed by two separate curb cuts on Otter Court.

DESCRIPTION OF ROADWAYS:

The property has frontage on Otter Court, which is classified as a local road. Due to lack of available traffic data on this local road, the analysis will focus on Freetown Road (NH Route 107), which is classified as a major collector. Please refer to Table 1.0: Roadway Summary below for more information regarding each roadway.

Table 1.0: Roadway Summary

Road Name	Classification	Proximity to Site	NHDOT AADT (2022)
Otter Court	Local	Provides Site Access	Not Available
Freetown Road	Major Collector	Provides Access to Otter Court	10,488

** NHDOT AADT data is included within this TIA appendix*

OTTER COURT:

Otter Court is an existing Class V, dead-end, paved, two (2) lane public local road, which provides access to the subject property in Raymond, New Hampshire. The existing pavement is in poor condition and its width varies from 18 feet to 29 feet near the neck of the cul-de-sac.

FREETOWN ROAD:

Freetown Road (NH Route 107) is an existing Class I, paved, two (2) lane public major collector, which intersetcs with NH Route 27 and provides access to both the subject site and NH Route 101. The pavement width is approximately 38 feet. According to NHDOT traffic data from 2022, the Adjusted Average Daily Traffic (AADT) is 10,488 vehicles per day (VPD).

TRIP GENERATION:

This TIA relies on empirical data provided by the Institute of Transportation Engineers (ITE) in their publication entitled Trip Generation Manual (10th edition) under Land Use Code 140: Manufacturing, in order to derive estimates of site generated traffic volumes (ITE Land Use Code 140 references data contained in TIA Appendix).

Trip Generation Calculation:

4.75 vehicles per day (vpd) x 26,173 sf GFA/1,000 sf GFA = 124.32 VPD
(weekday rate with 50% entering & 50% exiting)

1.49 vehicles per day (vpd) x 26,173 sf GFA/1,000 sf GFA = 39.00 VPD
(Saturday rate with 50% entering & 50% exiting)

AM Peak (Weekday)

0.80 vehicles per hour (vph) x 26,173 sf GFA/1,000 sf GFA = 20.94 VPH
(weekday rate with 73% entering & 27% exiting)

PM Peak (Weekday)

0.80 vehicles per hour (vph) x 26,173 sf GFA/1,000 sf GFA = 20.94 VPH
(weekday rate with 42% entering & 58% exiting)

Peak Hour (Saturday)

0.18 vehicles per hour (vph) x 26,173 sf GFA/1,000 sf GFA = 4.71 VPH
(weekend rate with 52% entering & 48% exiting)

Based on the above calculations, the proposed development is anticipated to generate the following traffic volumes at full build-out and occupancy:

A weekday average of 125 vpd with 62.5 vpd entering and 62.5 vpd exiting;
A Saturday average of 39 vpd with 19.5 vpd entering and 19.5 vpd exiting;
A weekday AM peak average of 21 vph with 15 vph entering and 6 vph exiting;
A weekday PM peak average of 21 vph with 9 vph entering and 12 vph exiting; and
A Saturday peak hour average of 5 vph with 3 vph entering and 2 vph exiting.

TRIP DISTRIBUTION:

The proposed development will utilize an existing road (Otter Court) and will not create any new road(s). The most conservative approach to analyzing the impacts from this development is to assign the full trip distribution to each direction, heading north and south on Freetown Road. This TIA assumes that the worst-case scenario of 125 vpd (weekday average daily traffic) will be added to the most recent traffic count along Freetown Road as follows:

$$\frac{125 \text{ vpd}}{(10{,}488 \text{ vpd})} \times 100 = \mathbf{1.2\%}$$

Overall, the additional daily traffic increase to the adjacent roadway will be approximately one (1) percent and is anticipated to be negligible. Additionally, the proposed development will generate substantially less than 1,000 average daily trips and 100 peak hour trips. Therefore, due to the minor nature of this project and negligible traffic increases, specific onsite traffic counts and peak hour distribution analysis were not performed as part of this "Short Form" TIA.

SUMMARY:

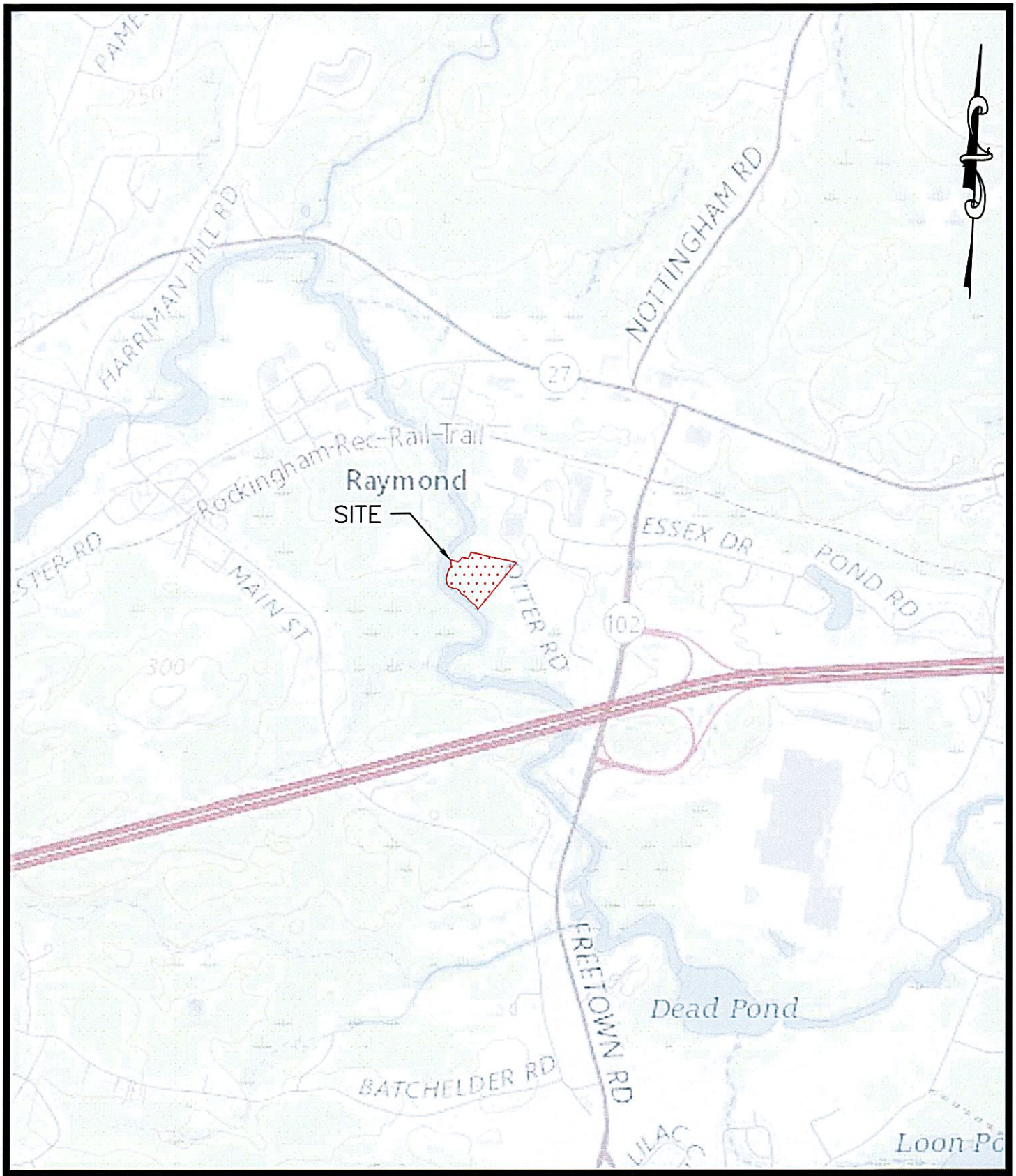
Although the proposed development will slightly increase local traffic, the minor quantitative increase is unlikely to adversely impact existing local traffic operations.

APPENDIX

USGS Location and Tax Map Aerial Exhibits

ITE Trip Generation Land Use Code 140

NHDOT Traffic Counts



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:

GEMINI VALVE

MAP 28; LOT 4-3

2 OTTER COURT - RAYMOND, NEW HAMPSHIRE

DATE: 10/13/2023	JOB. NO. 22-0110-2
SCALE: 1" = 2000'	SHEET 1 OF 1

2 Otter Court Tax Map

Town of Raymond, NH

1 inch = 350 Feet

0 350 700 1050

May 21, 2024

CAI Technologies
Precision Mapping Geospatial Solutions
www.cai-tech.com

Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

Manufacturing
(140)

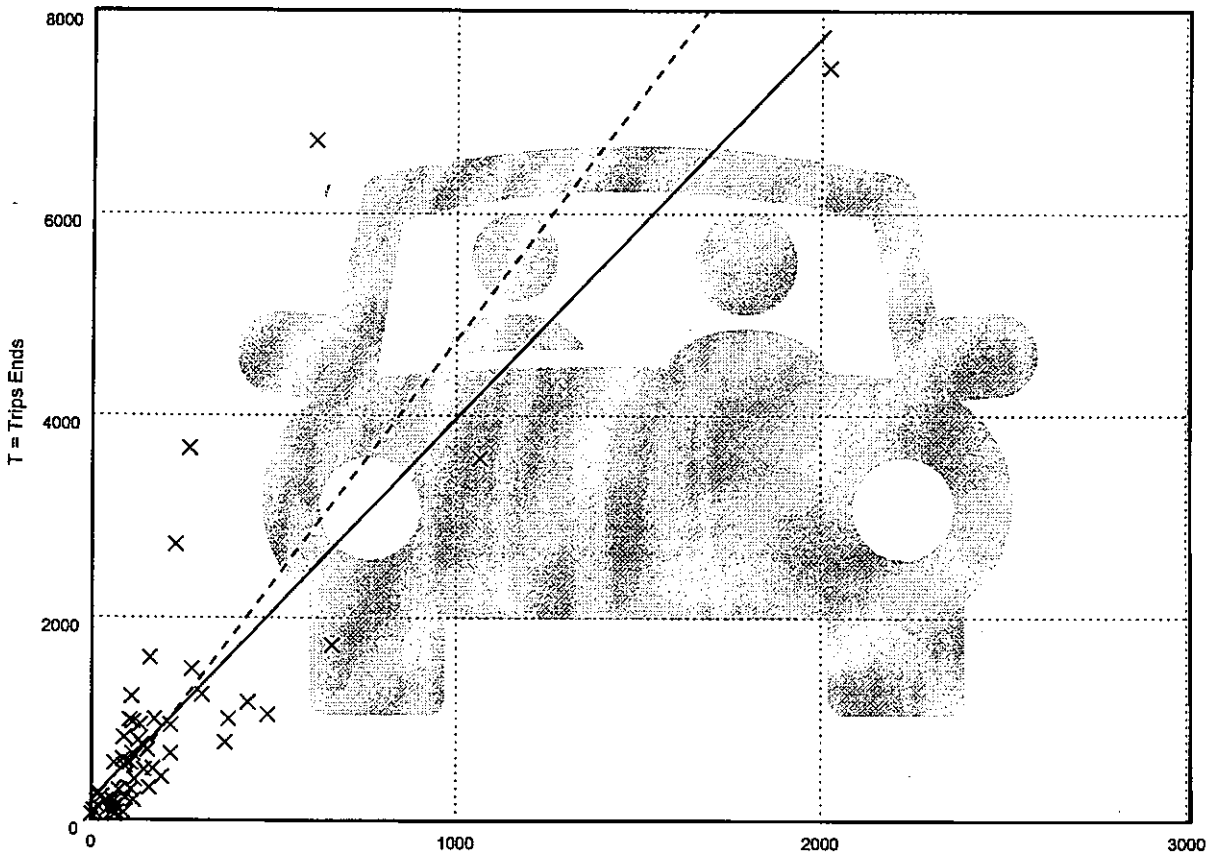
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday

Setting/Location: General Urban/Suburban
Number of Studies: 53
Avg. 1000 Sq. Ft. GFA: 208
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
4.75	0.83 - 49.50	3.20

Data Plot and Equation



Fitted Curve Equation: T = 3.77(X) + 201.98

R^2= 0.68

Manufacturing
(140)

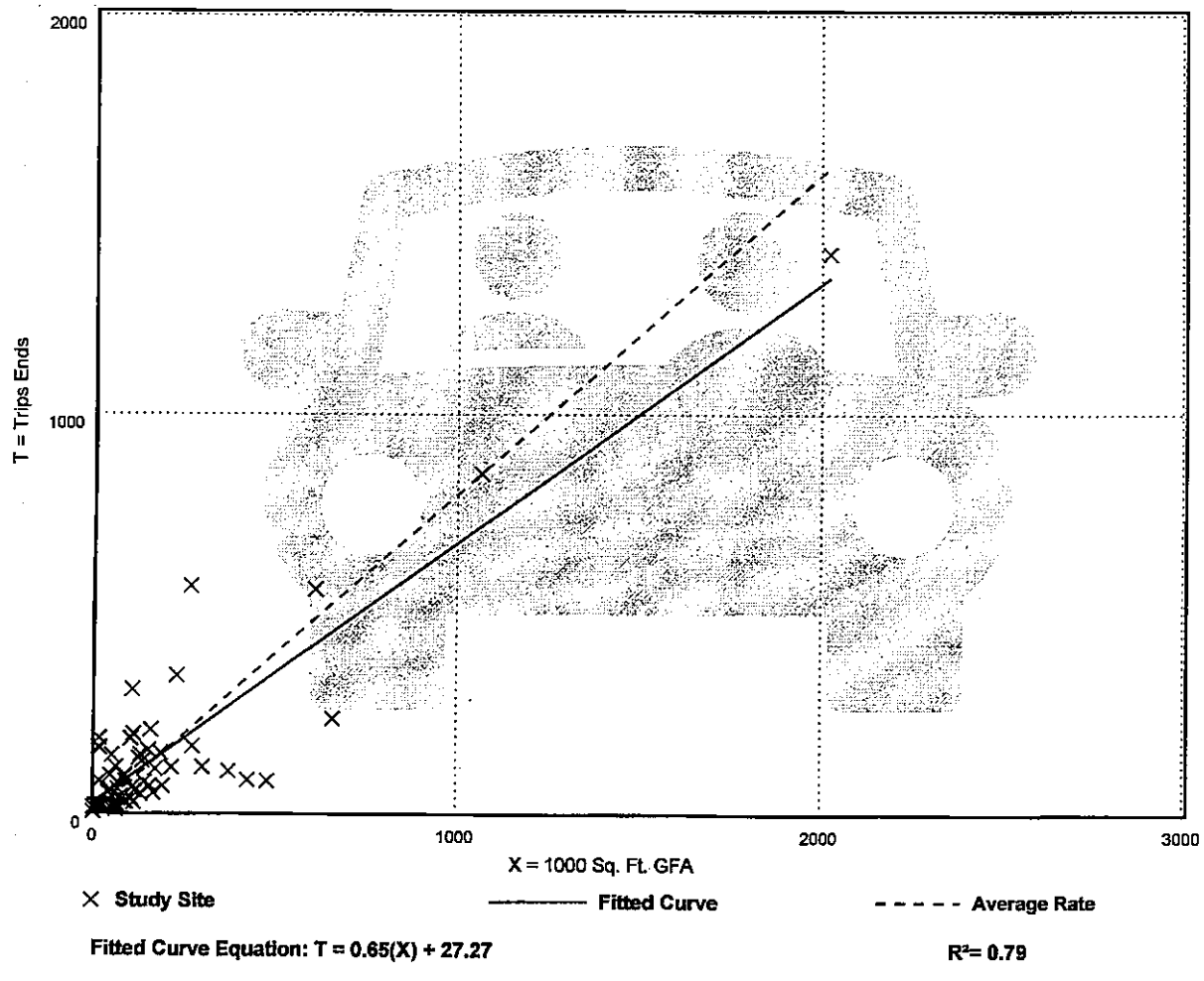
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
AM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 62
Avg. 1000 Sq. Ft. GFA: 178
Directional Distribution: 73% entering, 27% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.80	0.17 - 11.93	0.87

Data Plot and Equation



Fitted Curve Equation: T = 0.65(X) + 27.27

R^2= 0.79

Manufacturing
(140)

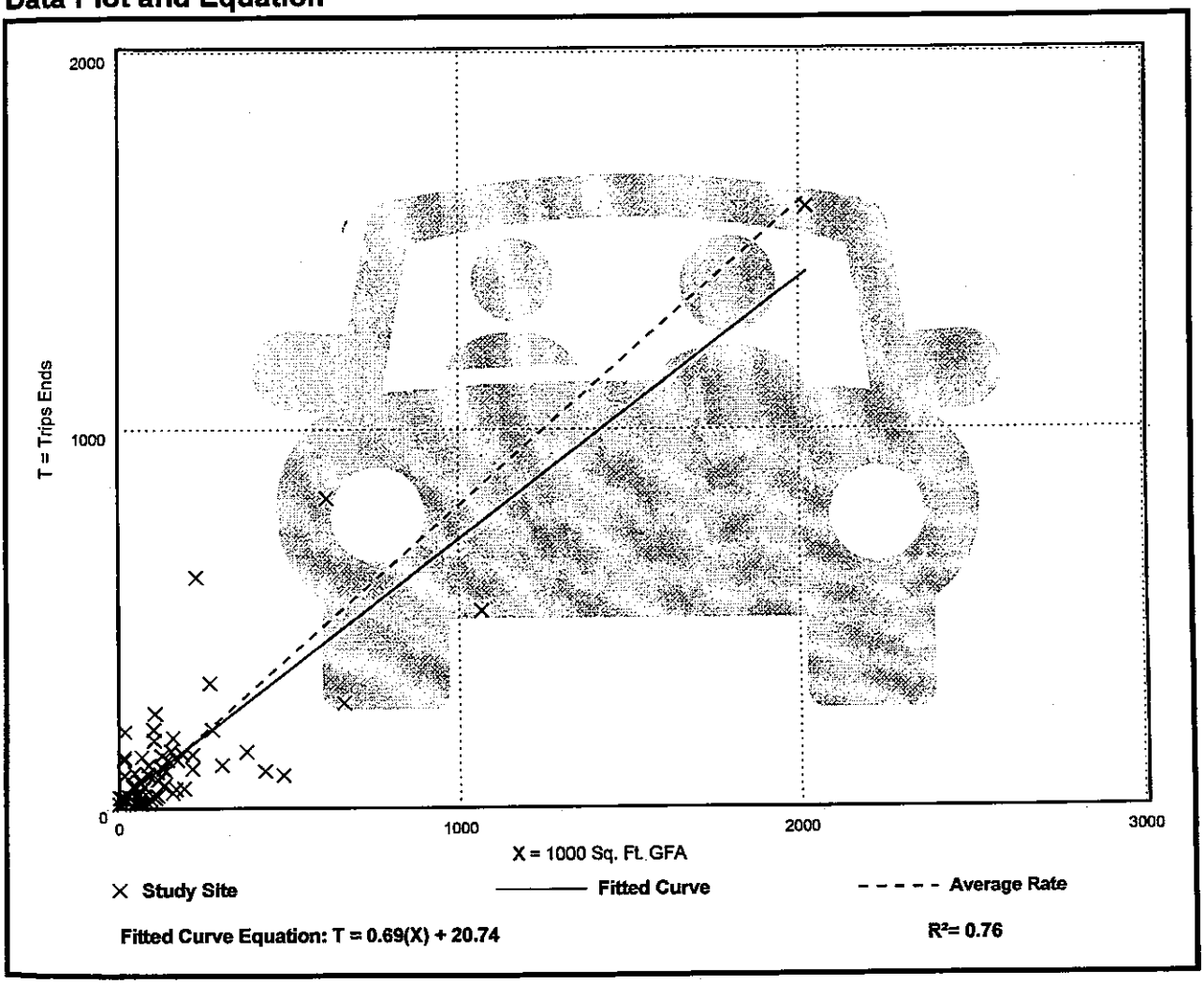
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
PM Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 62
Avg. 1000 Sq. Ft. GFA: 180
Directional Distribution: 42% entering, 58% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.80	0.15 - 11.37	0.82

Data Plot and Equation



Fitted Curve Equation: T = 0.69(X) + 20.74

R^2= 0.76

Manufacturing
(140)

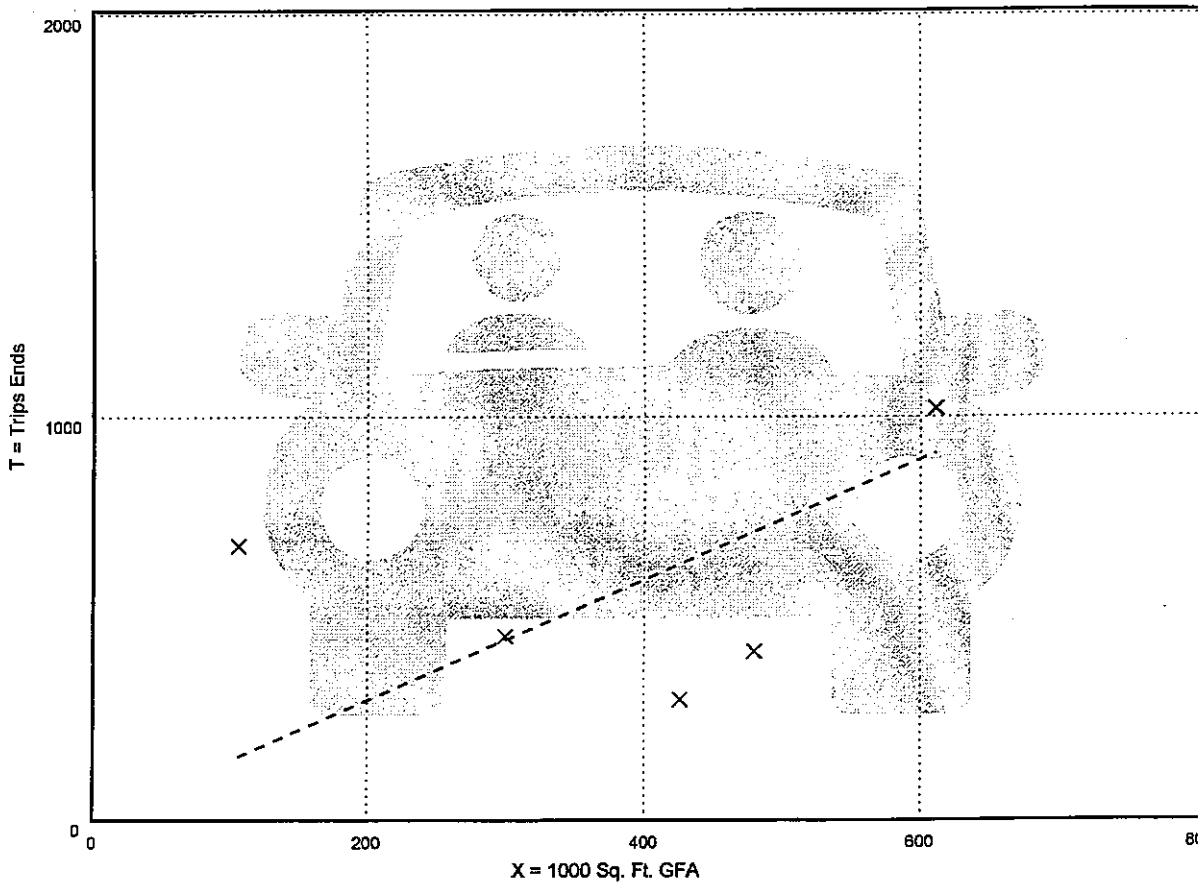
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 385
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.49	0.70 - 6.42	1.41

Data Plot and Equation



Fitted Curve Equation: Not Given

R^2= ***

Manufacturing
(140)

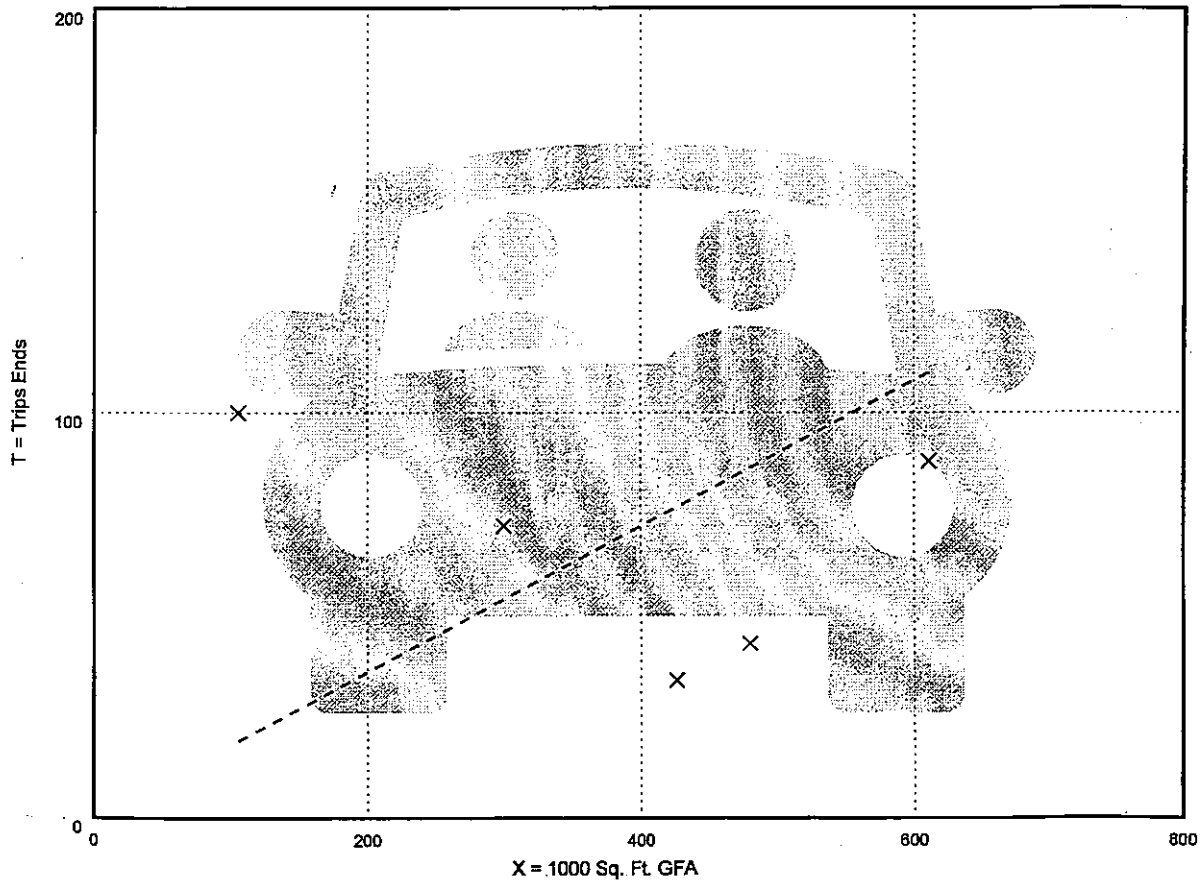
Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Saturday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GFA: 385
Directional Distribution: 52% entering, 48% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.18	0.08 - 0.94	0.22

Data Plot and Equation



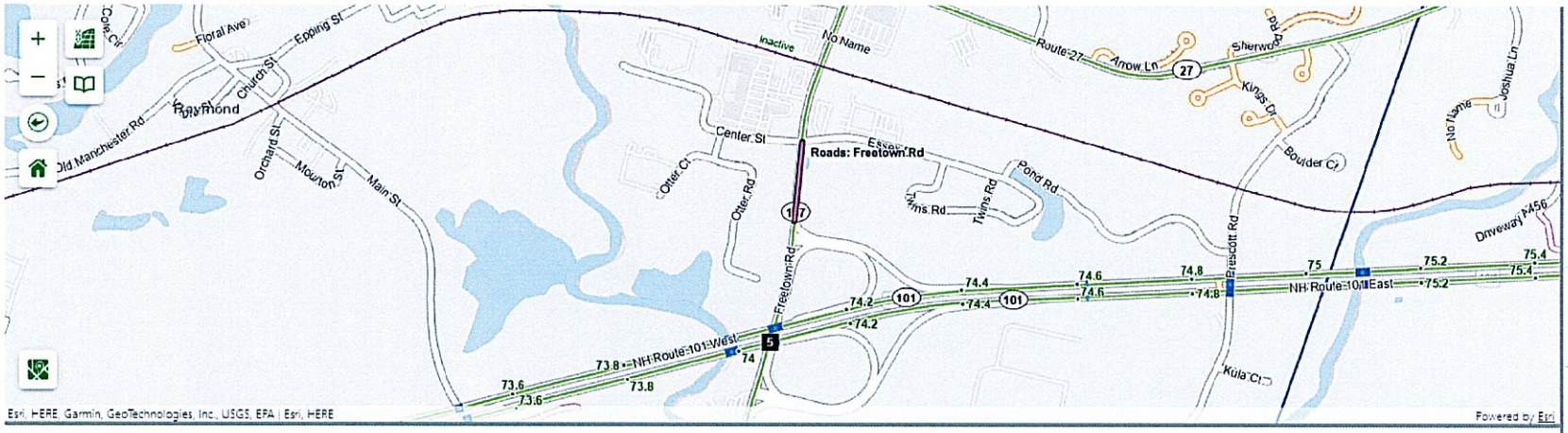
Fitted Curve Equation: Not Given

R^2= ***

NH DOT Roads and Projects

Project Information Center

Identify | Drawings | Pan/Zoom | Measurements | Print



Roads (1) | NH Routes (1)

AADT	AADT Current Yr	AGGREGATE_AADT	Counter ID	County	CREATE_DATE	DUAL_CARRIAGEWAY_DESC
10,488	2,022		82383054	ROCKINGHAM	Mar 30, 2024, 11:15 PM	

Results: (2)

Refine

Roads: Freetown Rd

Town: **RAYMOND**
Street Name: **Freetown Rd**

NH 107

I. INTRODUCTION

A. Project Description

The project proposes to develop the site to accommodate two proposed additions to the existing 2-story building. Site work includes the development of the building additions and installation of the associated driveways and parking lots, and stormwater management provisions.

B. Existing Site Conditions

The subject property currently consists of one lot, approximately 11.16 acres in total area, located at 2 Otter Court in Raymon's Industrial (D) Zoning District. The lot is currently developed with a 2-story building and associated driveways and parking lots. It is comprised of sparse woodlands, several wetlands and the Lamprey River. The subject lot is surrounded by Town owned land to the west and industry buildings to the north and east, NH Route 27 to the north, NH Route 102 to the east and NH Route 101 to the south.

A site-specific soil survey, performed onsite by Cindy Balsius of Stoney Brook Environmental, LLC in July of 2021, listed the following soils as the predominant soil types found onsite. Canton fine sandy loam with slopes ranging from 0-25%, Hinckley loamy sand with slopes from 0-50%, Sudbury fine sandy loam with slopes from 3-50%, and Rippowam fine sandy loam with slopes from 0-3%.

II. STORM DRAINAGE ANALYSIS & DESIGN

A. Methodology

In accordance with the provisions of NHDES, the town of Raymond, and generally accepted engineering practice, the 1-inch rainstorm, 2-year, 10-year, 25-year, 50-year, and 100-year storms have each been used in the various aspects of analysis and design of stormwater management considerations for the subject site.

KNA utilizes HydroCAD version 10.0 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 design and analysis calculations performed using the referenced methodologies are attached to this report. The minimum time of concentrations used for the analysis is 6 minutes. These calculations document each catchment area, a breakdown of surface type, time of concentration, rainfall intensity, peak discharge volume, Manning's "n" value, peak velocity, and other descriptive design data for each watershed and pipe segment evaluated. In addition, the "Pre/Post Development Drainage Area Plans" graphically define and illustrate the extent of each watershed or catchment area investigated.

B. Pre-Development Drainage Conditions

In the pre-development scenario, four (4) points of analysis (POA) have been identified as the appropriate points to compare pre vs. post development rates of stormwater discharge.

These points of analysis reflect the main discharge points of the site and were analyzed to show the impact from the proposed improvements.

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

- Link A Lamprey River
- Link B Otter Court
- Link C Map 28 Lot 4-4
- Link D Map 28 Lot 4-5

In general, the site slopes from a high point to the northeast and directs runoff downhill to the Lamprey River (Link A), which acts as the site property line. Runoff from a portion of the high point is directed offsite to Map 28; Lot 4-5 to the northeast and to Otter Court to the east. Runoff from a small portion of the northwestern corner is directed to Map 28; Lot 4-4. Links B, C and D account for small sections of the property that discharge runoff onto the abutting lots. 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 nine 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 continue to discharge to the same points of analysis identified in the pre-development scenario. The improvements, however, also provide stormwater treatment and groundwater recharge for the new impervious areas created for the proposed development. These new impervious areas include the building additions, parking lots and driveways.

The proposed stormwater management system utilizes both open and closed practices for the collection, detention, treatment, and recharge of runoff. Runoff generated from the new development and most of the existing site is collected by a series of deep sump catch basins and piped to the Infiltration Pond. This pond is located directly west of the proposed building addition and it outlets to the adjacent Lamprey River (Link A). The pond utilizes Low Impact Development (LID) design strategies by both reducing stormwater runoff volumes in the 2-year frequency storm event and maintaining predevelopment site hydrology as the pond is located adjacent an existing pond previously used to detain the majority of the site's runoff. Additionally, the proposed practice provides adequate removal of Total Suspended Solids (TSS), phosphorous, and nitrogen with removal efficiencies of 90%, 60%, and 65% respectively.

Runoff generated on the highpoint located in the northeast corner is directed to the deep sump catch basins as well as offsite to Links B and D. Runoff generated in a small portion of the northwestern corner of the property flows offsite to Link C. For a more visual description of the information presented in this section, please refer to the attached "Post-Development Drainage Areas Plan" attached in the appendix of this report.

D. Summary:

The subject site complies with the Town of Raymond 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 Raymond Stormwater Regulations and NHDES Regulations Env-Wq 1500. The results are reported below in Table 1 and 2.

Table 1: Peak Flow Discharge Rate

Site Pre-Development vs. Post-Development (cfs)										
Description	**1-Inch**		**2-Year**		**10-Year**		**25-Year**		**50-Year**	
24-hr Rainfall	1.00 in/hr		3.04 in/hr		4.60 in/hr		5.83 in/hr		6.98 in/hr	
	Pre	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**	**Pre**	**Post**
A	**1.15**	0.00	**4.06**	0.81	**6.99**	4.08	**9.84**	8.46	**13.82**	12.54
B	**0.08**	0.01	**0.31**	0.04	**0.74**	0.06	**1.15**	0.08	**1.59**	0.12
C	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00	**0.00**	0.00
D	**0.00**	0.00	**0.01**	0.01	**0.09**	0.08	**0.19**	0.16	**0.30**	0.24

Table 2: Channel Protection Requirements (Env-Wq 1507.05)

Site Pre-Development vs. Post Development (Storm Volume in Acre-Feet)			
Description	**2-Year**		
24-hr Rainfall	3.04 in/hr		
	Pre	Post	Comments
A	**0.42**	0.12	Complies with Env-Wq 1507.05 (b)(1)a&b
B	**0.03**	0.00	Complies with Env-Wq 1507.05 (b)(1)b&b
C	**0.00**	0.00	Complies with Env-Wq 1507.05 (b)(1)a&b
D	**0.00**	0.00	Complies with Env-Wq 1507.05 (b)(1)a&b

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, erosion control blankets, and seeding have been specified for use during the construction period. In preparation of these provisions, reference was made to the New Hampshire Stormwater Manual; Volume 3: Erosion and Sediment Temporary Controls During Construction. Construction details for each temporary erosion control measure and practice specified have been added to the project plans. These plans also contain a number of erosion control notes, which are offered to the selected contractor in order to supplement the specified measures and practices to the extent practical.

B. Construction Sequence

A site-specific construction sequence sensitive to limiting soil loss due to erosion and associated water quality degradation was prepared specifically for this project and is shown on the project plans. As pointed out in the erosion control notes, it is important for the

contractor to recognize that proper judgment in the implementation of work will be essential if erosion is to be limited and protection of completed work is to be realized. Moreover, any specific changes in sequence and/or field conditions affecting the ability of specific erosion control measures to adequately serve their intended purpose should be reported to this office by the contractor. Further, 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.

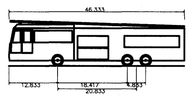
C. Permanent Erosion Control Measures

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; and

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

3) One (1) BMP was designed to reduce runoff and volume.



E-ONE Emergency One Ocala FL

Overall Length	46.333ft
Overall Width	8.333ft
Overall Body Height	11.833ft
Min Body Ground Clearance	1.333ft
Track Width	8.333ft
Lock-to-lock time	6.00s
Max Wheel Angle	45.00°

MAP 28 LOT 4-5
WAL-MART STORES INC.
805 MOBERLY LANE
BENTONVILLE, AR 72716-0556
3513/2320
LAND USE: INDUSTRIAL

EXISTING SINGLE-FAMILY HOUSE

MAP 28 LOT 4-4
WAYNE J. TRAVERS
LISA H. QUINN
4 OTTER COURT
RAYMOND, NH 03077
4225/887
LAND USE: RESIDENTIAL

99.46'

201.83'

PROPOSED ADDITION #2
20,162± S.F.

EXISTING 2-STORY BUILDING

TAX MAP 28 LOT 4-3
486,200 S.F.±
11.16 Ac.±

99.48'

PROPOSED ADDITION #1
6,011± S.F.

48.95'

23.43'

CANOPY

19.9'

69.39'

96.65'

GATE

SIGN

COURT

OTTER

(CLASS V)

OHU

MAP 28 LOT 4-2
GROUP PINARD, LLC
32 WEST RIVER ROAD
HOOKSETT, NH 03106
5508/2577
LAND USE: INDUSTRIAL

LAMPREY RIVER

KNA

GRID NH

LEGEND

- UTILITY POLE
- LIGHT
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- OVERHEAD UTILITIES
- TREELINE
- RETAINING WALL
- EDGE OF PAVEMENT
- BITUMINOUS CURB
- EDGE OF GRAVEL
- PROPOSED EDGE OF PAVEMENT
- PROPOSED BITUMINOUS CURB
- LIMIT OF CLEARING

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

DIG SAFE
811 CALL TOLL FREE
UTILITIES UNDERGROUND PLANT DAMAGE PREVENTION SYSTEM

FIRE TRUCK TURNING PLAN
GEMINI VALVE
MAP 28 LOT 4-3
2 OTTER COURT
RAYMOND, NEW HAMPSHIRE
ROCKINGHAM COUNTY

OWNER/APPLICANT:
PARKER & HARPER COMPANIES, INC.
2 OTTER COURT
RAYMOND, N.H. 03077
BK. 2523 PG. 1660

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
1	5/17/24	AOT & REVIEW ENGINEER REVISIONS	PCM

DATE: FEBRUARY 15, 2024 | **SCALE:** 1" = 40'
PROJECT NO: 22-0110-2 | **SHEET** 1 **OF** 1

Lamprey River Advisory Committee

c/o 71 Allen Farm Road
Northwood, NH 03261
www.lampreyriver.org

Protecting the Lamprey, Little, North, North Branch, Pawtuckaway, and Piscassic rivers that connect our fourteen communities

Barrington, Brentwood, Candia, Deerfield, Durham, Epping, Exeter, Fremont, Lee, Newfields, Newmarket, Northwood, Nottingham, Raymond

April 17, 2024

Mr. Michael Schlosser
NHDES
PO Box 95
Concord, NH 03302-0095

Re: Gemini Valve, 2 Otter Court
Raymond, NH
File Number: 20240311-053

Dear Mr. Schlosser:

The above-referenced project is within the quarter mile corridor of the Lamprey River and is, therefore, subject to review by the Lamprey River Advisory Committee (LRAC) in accordance with NHRSA 483. Upon final review, we offer the following comments:

1. Materials reviewed were alteration of terrain application, signed and dated February 24, 2024, engineering plans dated February 15, 2024, Natural Heritage Bureau Report dated December 12, 2023, and other supporting materials.

2. The applicant desires to expand existing buildings and parking on site, along with drainage improvements. The site has extensive frontage on the Lamprey River and lies within the 100-year floodplain. Total impervious cover will be 147,407 square feet. Slopes on site direct stormwater to the Lamprey River.

3. The Natural Heritage Bureau Report indicates that Blanding's turtles and black racers have been reported in proximity to the site. In addition, bridle shiners have been reported in the waters upstream and downstream of the site. We will defer to NH Fish and Game recommendations for these three rare species.

4. We note that the proposed stormwater infiltration pond is located entirely in the 100-year flood plain and that it is also within the protected shoreland. A shoreland permit is required and we have reviewed that separately. In the event

of a 100-year flood, the proposed storm management system will be underwater and could be rendered inoperable even after flood waters recede. We respectfully request that a professional engineer render an independent review of this system and its functionality. We question the purpose of this detention pond, especially when the natural riparian buffer will be removed to construct this pond.

5. The plan should include a scaled profile of the drainage system for this site.

6. There are no details for the septic system and leachfield.

7. We note that the inspection and maintenance manual includes a worksheet for de-icing. Given the proximity of the site to the Lamprey River, we strongly recommend that Green Sno-Pro certification be required for snow removal contractors to minimize the amount of salt applied to the parking lot.

8. The Walmart Distribution Center is located immediately to the northeast of the Gemini Valve property. The amount of already-massive impervious area in the floodplain in this area will grow larger with the addition of new buildings and parking lot proposed in this permit application. The Raymond Master Plan identifies flooding along the Lamprey River as a serious concern for the town. Additional development and impervious surface in and just outside the floodplain in Raymond does not serve the needs of the Lamprey River or the Town of Raymond. We recommend that this alteration of terrain permit as designed <u>not</u> be granted.

Thank you for the opportunity to comment on this project.

Grace Levergood

Grace Levergood, PE, chair

CC: Tracie Sales, NHDES
Raymond Planning Board, DL.Raymondpb@gmail.com
Raymond Conservation Commission, consomchair@raymondnh.gov
Peter Madsen, project engineer, pmadsen@keachnordstrom.com

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April 17, 2024

Mr. Calvin Diessner
NHDES
PO Box 95
Concord, NH 03302-0095

Re: Gemini Valve, 2 Otter Court
Raymond, NH
File Number: 2024-00816

Dear Mr. Diessner:

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3. The Natural Heritage Bureau Report indicates that Blanding's turtles and black racers have been reported in proximity to the site. In addition, bridle shiners have been reported in the waters upstream and downstream of the site. We will defer to NH Fish and Game recommendations for these three rare species.

4. We note that the proposed stormwater infiltration pond is located entirely in the 100-year flood plain. In the event of a 100-year flood, the proposed storm management system will be underwater, not treating stormwater in any way, and could be rendered ineffective even after the flood recedes. Even under dry conditions, the bottom of the infiltration pond is at most 6" above the elevation of the river bank, so infiltration will not be robust. As designed, it appears the drainage apron will be just feet from the river.

5. The Walmart Distribution Center is located immediately to the northeast of the Gemini Valve property. The amount of already-massive impervious area in the floodplain in this area will grow larger with the addition of new buildings and parking lot proposed in the Alteration of Terrain Permit application. While this project does not add more impervious surface to the floodplain, it does further erode the land's ability to reduce flood risk and impacts. The Raymond Master Plan identifies flooding along the Lamprey River as a serious concern for the town. Additional development and impervious surface in and just outside the floodplain in Raymond do not serve the needs of the Lamprey River or the Town of Raymond. We recommend that this shoreland development permit not be issued.

Thank you for the opportunity to comment on this project.

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CC: Tracie Sales, NHDES
Raymond Planning Board, DL.Raymondpb@gmail.com
Raymond Conservation Commission, consomchair@raymondnh.gov
Paul Chisholm, project engineer, chisholm@keachnordstrom.com

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

REQUEST FOR MORE INFORMATION

RECEIVED
MAY 06 2024
TOWN OF RAYMOND

April 30, 2024

Parker & Harper Companies, LLC
Attn: Paul C. Doe
2 Otter Court
Raymond, New Hampshire 03077

RE: Alteration of Terrain Permit Application #240311-053
Gemini Valve
Tax Map 28, Lot 4-3, Raymond, NH

Dear Applicant:

The Department of Environmental Services (DES) is in receipt of an application, and supporting plans and information, for an Alteration of Terrain Permit for the above referenced project. After review of the information submitted, the following items need to be addressed in order for DES to make a **final determination** on the application for a permit:

1) The project requires consultation with the New Hampshire NH Fish & Game Department (NHFG). Please provide an update on the status of consultation with NHFG.

2) Please consider and address, as appropriate, comments received from the Lamprey River Advisory Committee, dated April 17, 2024.

3) Provide pertinent information from the Federal Emergency Management Agency Flood Insurance Rate Map to support the 100-year flood elevation indicated on the plans.

4) Provide additional information/mapping to support the *Cut/Fill Report* provided to demonstrate the net cut/fill within the 100-year floodplain.

5) Provide calculations to demonstrate that the proposed infiltration basin is located above the 10-year floodplain per Env-Wq 1507.02(b)(1).

6) Comparison of the areas (acres) of specific hydrologic soil groups assumed in the pre- and post-development analysis indicates a discrepancy between the two analyses. Please review and modify as necessary.

7) A stone berm is proposed to achieve the minimum required forebay depth of 2 feet. The berm needs to be constructed of less transmissive material (i.e., an earthen berm) or contain a cut-off core to meet the function of a forebay.

8) The Infiltration Feasibility Report indicates the ground surface of Test Pit #10 at elevation 182.50.

RAYMOND CONSERVATION COMMISSION

4 EPPING STREET, RAYMOND, NEW HAMPSHIRE 03077
(603) 895-7017

May 19, 2024

TO: Raymond Planning Board

RE: Gemini Valve – 2024-003

The Conservation Commission reviewed the above plan on April 24, 2024, and the letters from Lamprey River Advisory Committee (LRAC) dated April 17, 2024. The letters were in reference to the NHDES Shoreland Permit Application 2024-00816 and NHDES Alteration of Terrain Application 20240311-053.

The Conservation Commission agrees with LRAC comments to NHDES, especially #4.

4. We note that the proposed stormwater infiltration pond is located entirely in the 100-year flood plain. In the event of a 100-year flood, the proposed storm management system will be underwater, not treating stormwater in any way, and could be rendered ineffective even after the flood recedes. Even under dry conditions, the bottom of the infiltration pond is at most 6" above the elevation of the river bank, so infiltration will not be robust. As designed, it appears the drainage apron will be just feet from the river.

The Conservation Commission requests that the applicant reconsider the shape of the infiltration pond to be longer and narrower in order to be farther away the the Lamprey River shoreline, and or locate the stormwater management under the driveway or be buried.

The Conservation Commission was not able to provide these comments to NHDES prior to the approval, as the Shoreland Application was approved on April 25, 2024

Thank You,

Raymond Conservation Commission
ConsComChair@raymond-nh.gov

Enc: LRAC Letters (2)
NHDES Shoreland Approval Letter

Lamprey River Advisory Committee

c/o 71 Allen Farm Road
Northwood, NH 03261
www.lampreyriver.org

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Concord, NH 03302-0095

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File Number: 20240311-053

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Grace Levergood

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PO Box 95
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Raymond Planning Board, DL.Raymondpb@gmail.com
Raymond Conservation Commission, consomchair@raymondnh.gov
Paul Chisholm, project engineer, chisholm@keachnordstrom.com

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

SHORELAND IMPACT PERMIT 2024-00816

NOTE CONDITIONS

PERMITTEE:	**PARKER & HARPER COMPANIES INC** **2 OTTER CT** **RAYMOND NH 03077**
PROJECT LOCATION:	**2 OTTER CT, RAYMOND** **Tax Map/Block/Lot(s): 28/no block/4-3**
WATERBODY:	**LAMPREY RIVER**
APPROVAL DATE:	**APRIL 25, 2024** **EXPIRATION DATE: APRIL 25, 2029**

Shoreland Permit Application 2024-00816 has been found to meet or exceed the requirements of RSA 483-B as required per RSA 483-B:6, II. The New Hampshire Department of Environmental Services (NHDES) hereby issues this Shoreland Impact Permit with conditions pursuant to RSA 483-B:6, II.

PERMIT DESCRIPTION:
Impact 52,752 square feet of protected shoreland in order to develop the site to accommodate two proposed building additions, two new parking lots a new septic system, and the associated stormwater management provisions.

Impervious Surface Percentage Approved: .09%

Natural Woodland Area Required per RSA 483-B:9, V, (b): 22,750 square feet.

THE FOLLOWING PROJECT-SPECIFIC CONDITIONS HAVE BEEN APPLIED TO THE PERMIT PURSUANT TO ENV-WQ 1406.15(c):

1. All work shall be in accordance with plans by Keach-Nordstrom Associates, Inc. dated March 26, 2004 and received by the New Hampshire Department of Environmental Services (NHDES) on March 28, 2024 pursuant to Env-Wq 1406.15(f).
2. Within three days of final grading or temporary suspension of work in an area that is in or adjacent to wetlands or surface waters, all exposed soil areas shall be stabilized by seeding and mulching during the growing season, or if not within the growing season, by mulching with tack or netting and pinning on slopes steeper than 3:1 as required pursuant to RSA 483-B:9, V(d) Erosion and Siltation, (1).
3. This permit shall not preclude NHDES from taking any enforcement or revocation action as authorized pursuant to 483-B:5, I, if NHDES later determines that any of the structures depicted as "existing" on the plans submitted by the applicant were not previously permitted or grandfathered.

THE FOLLOWING STANDARD PROJECT CONDITIONS SHALL BE MET PURSUANT TO ENV-WQ 1406.20:

1. Erosion and siltation control measures shall be installed prior to the start of work, be maintained throughout the project, and remain in place until all disturbed surfaces are stabilized.
2. Erosion and siltation controls shall be appropriate to the size and nature of the project and to the physical characteristics of the site, including slope, soil type, vegetative cover, and proximity to wetlands or surface waters.

3. No person undertaking any activity in the protected shoreland shall cause or contribute to, or allow the activity to cause or contribute to, any violations of the surface water quality standards established in Env-Wq 1700, and the requirements in Env-Wq 1404.01(a) and(b).
4. Any fill used shall be clean sand, gravel, rock, or other suitable material.
5. For any project where mechanized equipment will be used, orange construction fence shall be installed prior to the start of work at the limits of the temporary impact area as shown on the approved plans; be maintained throughout the project; and remain in place until all mechanized equipment has been removed from the site.

ANY INDIVIDUAL CONDUCTING WORK UNDER THIS PERMIT IS ADVISED OF THE FOLLOWING:

1. During construction, a copy of this permit should be posted on site in a prominent location visible to inspecting personnel.
2. This permit does not convey a property right, nor authorize any injury to property of others, nor invasion of rights of others.
3. Pursuant to Env-Wq 1406.21, transfer of this permit to a new owner requires notification to, and approval of, NHDES.
4. This project has been screened for potential impact to **known** occurrences of protected species and exemplary natural communities in the immediate area. Since many areas have never been surveyed, or only cursory surveys have been performed, unidentified sensitive species or communities may be present. This permit does not absolve the permittee from due diligence in regard to state, local or federal laws regarding such communities or species. This permit does not authorize in any way the take of threatened or endangered species, as defined by RSA 212-A:2, or of any protected species or exemplary natural communities, as defined in RSA 217-A:3.

APPROVED:

Craig W. Day
Shoreland/Shoreline Specialist, Shoreland Program
Wetlands Bureau, Land Resources Management
Water Division

THIS PERMIT IS NOT VALID UNTIL SIGNED BY THE PARTIES BELOW (Env-Wq 1406.21(c))

PERMITTEE SIGNATURE (required)

PRINCIPAL CONTRACTOR SIGNATURE (required, if any)

C. Application #2023-012 Autumn Trail Realty

Application for Conditional Use Permit
Groundwater Conservation Overlay District
Town of Raymond, NH

Conditional Use Permits are Subject to Site Plan Approval by the Planning Board
Raymond Zoning Ordinance, Article 5, Section 5.2

Map # 32 Lot # 72 Application Date 11/16/23 Application # _____

Project Name: Contractor Bays, Autumn Trail Realty, LLC.

Location: Deerfield Road (N.H. Route 27 & 107), Raymond, NH 03077

Zone: c1 New Industrial/Commercial Square Footage: 8,000 or Number of Residential Units: 0

Applicant/Agent Information:

Name: Brandon Richards Phone: (603)-672-5456

Company: Fieldstone Land Consultants, PLLC. Fax: _____

Address: 206 Elm St, Milford, NH 03055

Signed*: BR Date: 11/16/2023

Please Check All that Apply:

5.2.11. CONDITIONAL USES: The issuance of a Conditional Use Permit is subject to Site Plan Approval by the Planning Board. The Planning Board may grant a Conditional Use Permit for a use that is otherwise permitted within the underlying district, if the permitted use is or is involved in one or more of the following:

[ ] 5.2.11.1. Storage, handling, and use of regulated substances in quantities exceeding 100 gallons or 800 pounds dry weight at any one time, provided that an adequate spill prevention, control and countermeasure (SPCC) plan prepared in accordance with Section 5.2.7 by a qualified professional, submitted to the Technical Review Committee for review and approval, with the final plan also submitted to the Raymond Fire Department and the Raymond Community Development Department for its records. The Technical Review Committee may employ the services of a qualified peer review professional to review the plan at the applicant's expense.

[X] 5.2.11.2. Any use that will render impervious more than 15% or 2,500 square feet of any lot, whichever is greater.

5.2.11.3
In granting such approval the Planning Board must first determine that the proposed use is not a prohibited use and will be in compliance with the Performance Standards as well as all applicable local, state and federal requirements. The Planning Board may, at its discretion, require a performance guaranty or bond, in an amount and with surety conditions satisfactory to the Board, to be posted to ensure completion of construction of any facilities required for compliance with the Performance Standards. The amount of this bond shall be in addition to any other bond required by the Board under either the Subdivision or Site Plan Review Regulations.

(Continued)

Application for Conditional Use Permit
Groundwater Conservation Overlay District
Town of Raymond, NH

If you chose 5.2.11.1, above, you must provide a SPCC plan in accordance with the following:

5.2.7 SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN: Conditional Uses, as described under Section 5.2.11 of this Ordinance shall submit a spill control and countermeasure (SPCC) plan to the Technical Review Committee (TRC) who shall determine whether the plan will prevent, contain, and minimize releases from ordinary or catastrophic events such as spills, floods or fires that may cause large releases of regulated substances. It shall include:

5.2.7.1 A description of the physical layout and a facility diagram, including all surrounding surface waters and wellhead protection areas;

5.2.7.2 Contact list and phone numbers for the facility response coordinator, cleanup contractors, and all appropriate federal, state, and local agencies who must be contacted in case of a release to the environment;

5.2.7.3 A list of all regulated substances in use and locations of use and storage;

5.2.7.4 A prediction of the direction, rate of flow, and total quantity of regulated substance that could be released where industry experience indicates a potential for equipment failure;

5.2.7.5 A description of containment and/or diversionary structures or equipment to prevent regulated substances from infiltrating into the ground; and

5.2.7.6 Emergency response plan describing and assigning responsibilities and actions to be taken.

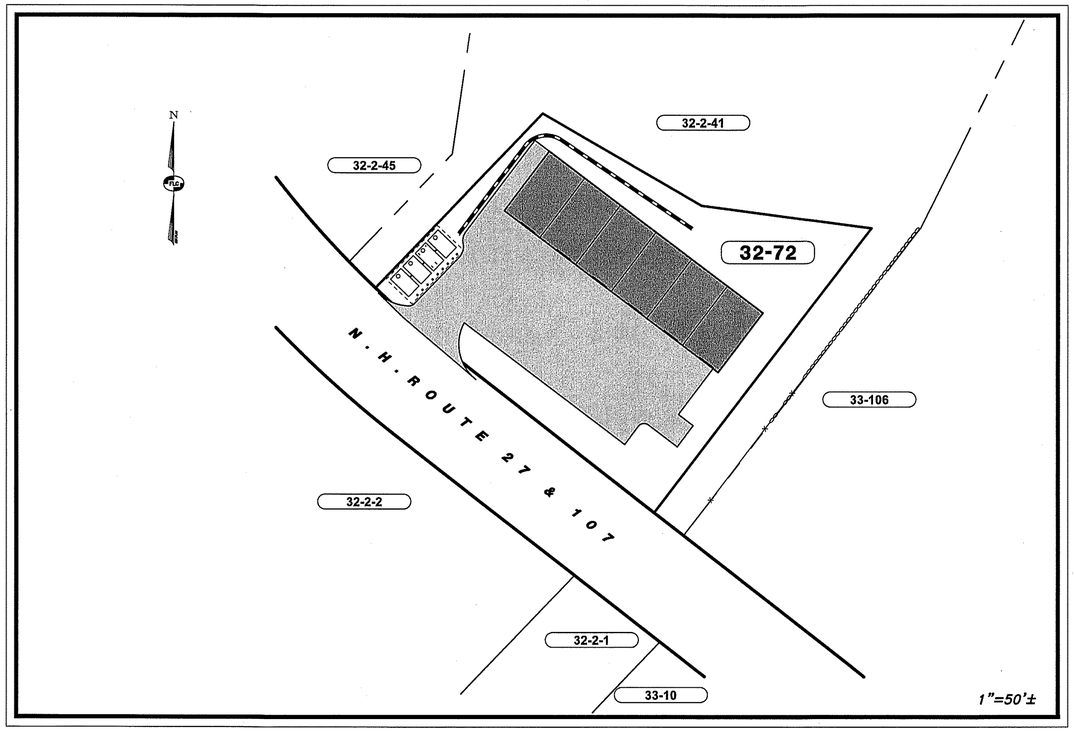
SITE DEVELOPMENT PLANS

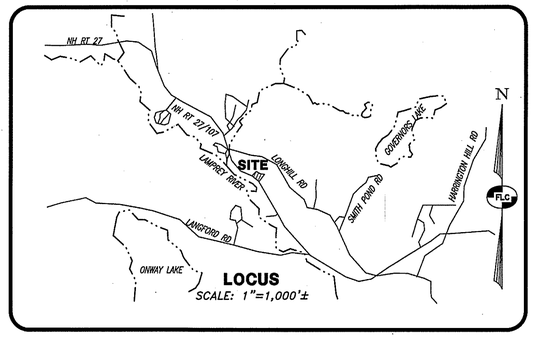
TAX MAP 32 LOT 72

CONTRACTOR BAY FACILITY

DEERFIELD ROAD (N.H. ROUTE 27)
RAYMOND, NH

DATE: NOVEMBER 10, 2023
LAST REVISED: MAY 13, 2024





SHEET INDEX

EXHIBIT SHEET INDEX

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC
P.O. BOX 351
PITTSFIELD, NH 03263

1. THE LOCATION OF THE UTILITIES SHOWN ARE APPROXIMATE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND PRESERVE ALL UTILITY SERVICES.
2. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING AND COORDINATING WITH ALL UTILITY COMPANIES AND JURISDICTIONAL AGENCIES PRIOR TO AND DURING CONSTRUCTION.
3. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND PROPOSED WORK PRIOR TO CONSTRUCTION.

CONTACT DIG SAFE
72 HOURS PRIOR
TO CONSTRUCTION
DIGSAFE.COM
811

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

FIELDSTONE
LAND CONSULTANTS, PLLC

206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
Phone: (603)-672-5456 Fax: (603)-413-5456
www.FieldstoneLandConsultants.com

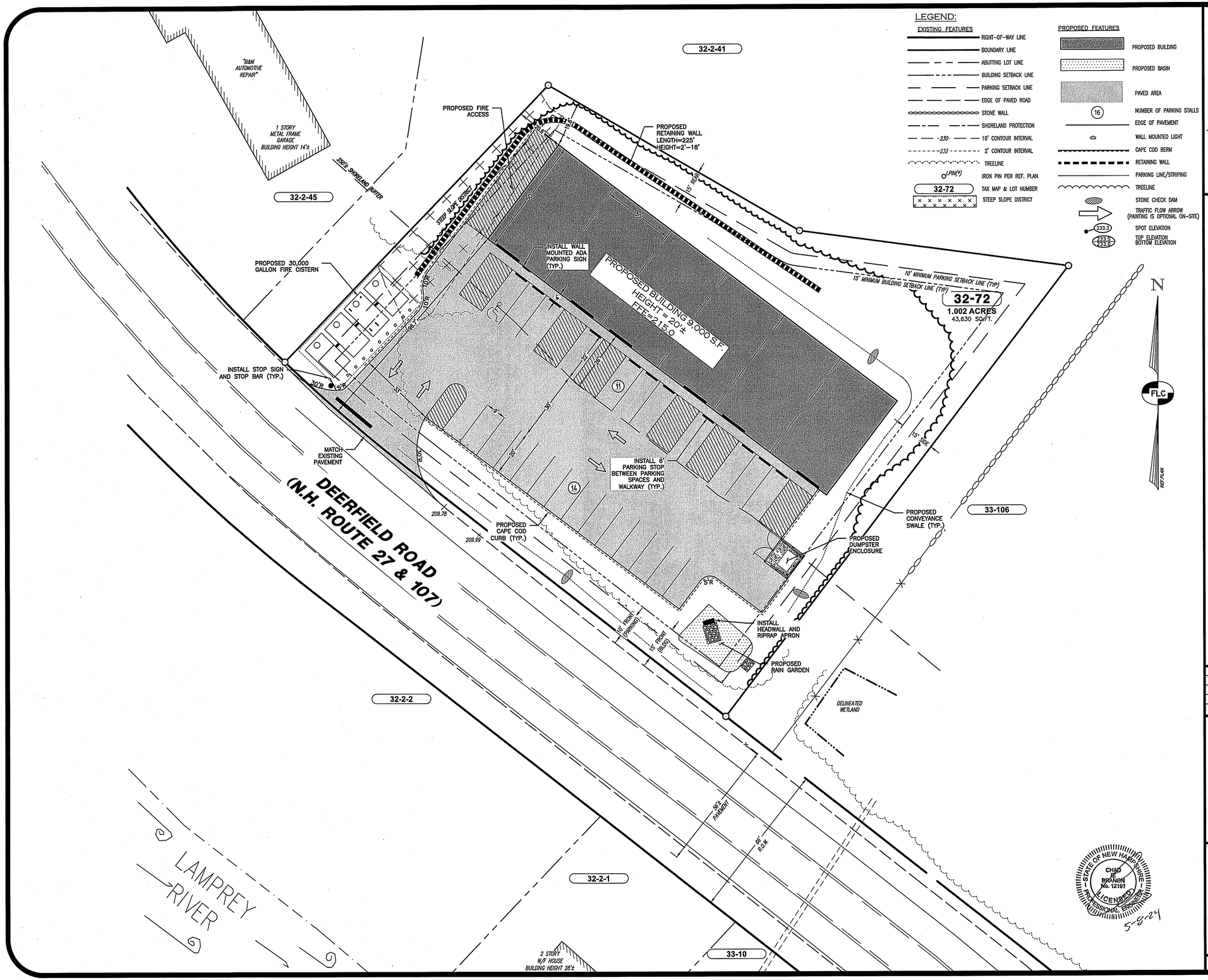
STATE OF NEW HAMPSHIRE
CHAD E. BRANON
No. 12191
LICENSED
PROFESSIONAL ENGINEER
6/13/2024

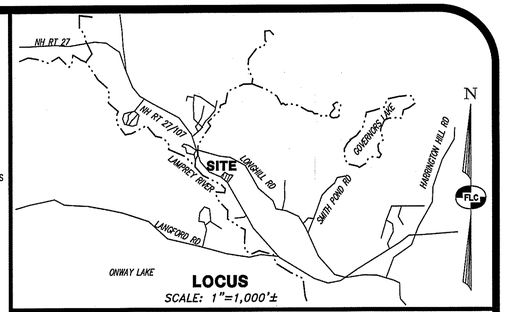
APPROVED BY THE RAYMOND PLANNING BOARD

ON: _____ CERTIFIED BY
CHAIRMAN: _____ AND
SECRETARY: _____

REV.	DATE	DESCRIPTION	C/O	DR	CK
E	5/13/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

FILE:3649CV00D.DWG | PROJ. NO. 3649.00 | SHEET: CV-1 | PAGE NO. 1 OF 12





GENERAL NOTES:

1. THE OWNER OF RECORD FOR TAX MAP 32 LOT 72 IS AUTUMN TRAIL REALTY, LLC, P.O. BOX 351 PITTSFIELD, NH 03263. DEED REFERENCE FOR THE LOT IS BK.6457 PG.1000 DATED DECEMBER 3, 2022 IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SERVICE BUILDING DEVELOPMENT ON TAX MAP LOT 32–72.
3. THE TOTAL AREA OF TAX MAP 32 LOT 72 IS 43,630 SQ.FT. OR 1.002 ACRES. LOT FRONTAGE IS 240.06 FT. ALONG N.H. ROUTE 27.
4. ZONING FOR THE PARCEL IS COMMERCIAL DISTRICT (C1; ART. 4.3):

   MIN. LOT SIZE = 21,780 SQFT. OR 0.5 ACRES
   MIN. LOT FRONTAGE = 50'
   MIN. BUILDING SETBACKS = 15' FRONT, SIDE & REAR
   MIN. PARKING SETBACK = 10' FRONT, SIDE & REAR
   OTHER = 50 FT FROM RESIDENTIAL STRUCTURE

   THE LOT IS ALSO SUBJECT TO THE REGULATIONS OF THE GROUND WATER PROTECTION ZONE 2012, THE GROUNDWATER CONSERVATION DISTRICT (ART. 5.2), ZONE G – CONSERVATION DISTRICT (ART. 4.9) WETLAND (OFF SITE) & STEEP SLOPES (25%+).
5. NO PORTION OF THE PROPERTY LIES WITHIN A FLOOD HAZARD AREA AS DETERMINED FROM THE FLOOD INSURANCE STUDY (FIRM), ROCKINGHAM COUNTY, TOWN OF RAYMOND, NEW HAMPSHIRE, COMMUNITY NO.330140, PREPARED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, MAP NUMBER: 33015C0191E, DATED: MAY 17, 2005.
6. PARKING CALCULATION:
   INDUSTRIAL – LIGHT
   REQUIRED:
   1 SPACE/200SF GFA = 45 PARKING SPACES
   OR
   1 SPACE PER 2 EMPLOYEES (ASSUMED 4 EMPLOYEES PER UNIT) = 12 PARKING SPACES

   PROVIDED:
   25 PARKING SPACES (INCLUDING 1 ADA VAN ACCESSIBLE PARKING SPOT)
7. THERE IS NO SIGN INCLUDED WITH THIS SUBMISSION. ANY FUTURE SIGNS MUST BE IN COMPLIANCE WITH THE RAYMOND ZONING ORDINANCE.
8. SITE ACCESS MEETS SAFE SIGHT DISTANCE REQUIREMENTS. ACCESS WILL REQUIRE AN NHDOT DRIVEWAY PERMIT.
9. THE PROPOSED BUILDING SHALL BE SPRINKLERED.
10. TOTAL SITE DISTURBANCE = 39,075± S.F.
11. TOTAL IMPERVIOUS AREA = 25,218± S.F.

GRAPHIC SCALE
20' 10' 0 20' 40' 60'
IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

SITE PLAN
TAX MAP 32 LOT 72
(N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

STATE OF NEW HAMPSHIRE – CHAD E. BRANON No. 12181 – LICENSED PROFESSIONAL ENGINEER
5-8-24

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

FIELDSTONE LAND CONSULTANTS, PLLC

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45 Roxbury Street, Keene, NH 03431
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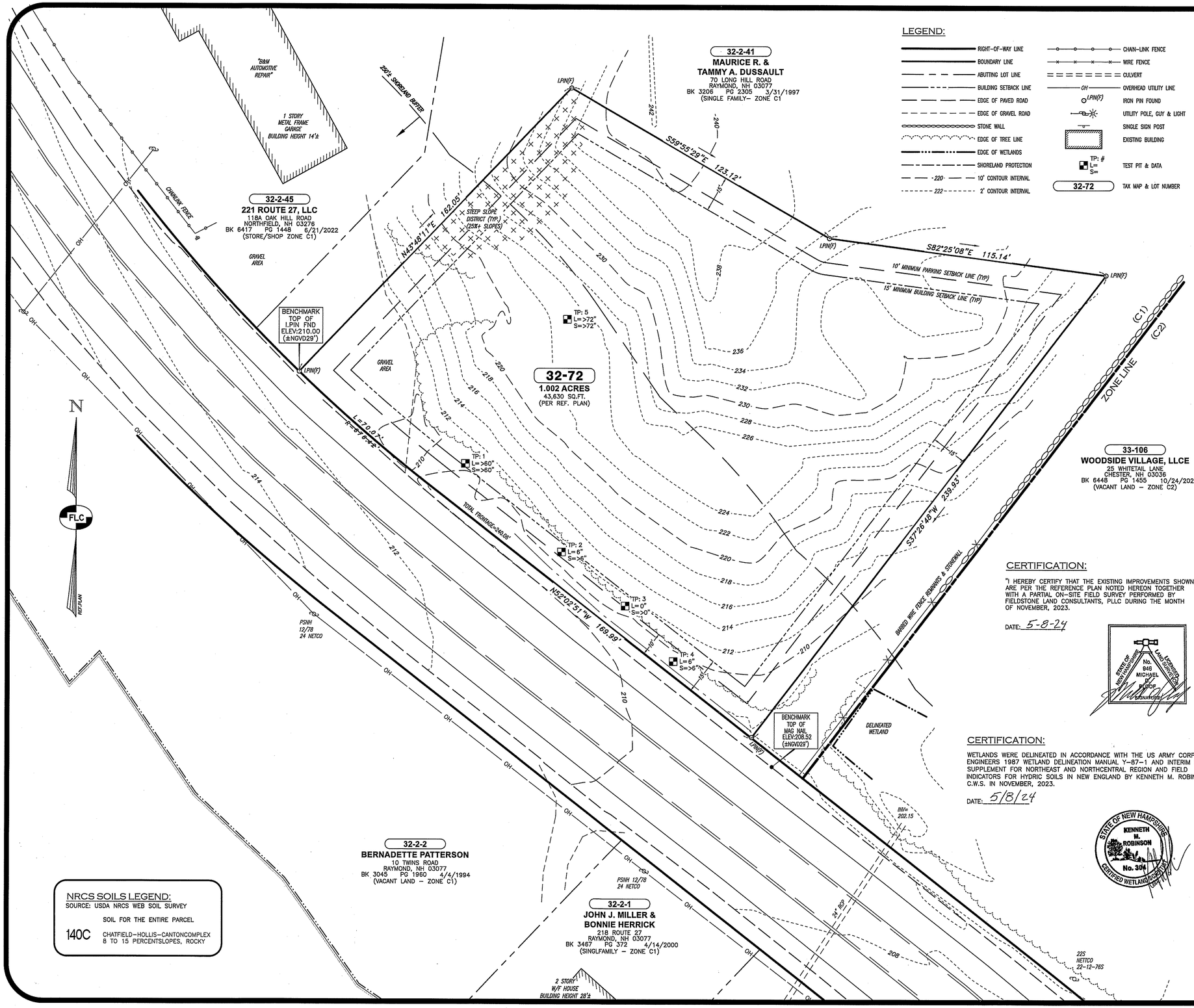


LEGEND:

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- BUILDING SETBACK LINE
- EDGE OF PAVED ROAD
- EDGE OF GRAVEL ROAD
- STONE WALL
- EDGE OF TREE LINE
- EDGE OF WETLANDS
- SHORELAND PROTECTION
- 220 — 10' CONTOUR INTERVAL
- 222 — 2' CONTOUR INTERVAL
- CHAIN-LINK FENCE
- WIRE FENCE
- CULVERT
- OH — OVERHEAD UTILITY LINE
- I.PIN(F) — IRON PIN FOUND
- UTILITY POLE, GUY & LIGHT
- SINGLE SIGN POST
- EXISTING BUILDING
- TP: # L= S= — TEST PIT & DATA
- 32-72 — TAX MAP & LOT NUMBER

NRCS SOILS LEGEND:

SOURCE: USDA NRCS WEB SOIL SURVEY

SOIL FOR THE ENTIRE PARCEL

140C — CHATFIELD–HOLLIS–CANTONCOMPLEX 8 TO 15 PERCENTSLOPES, ROCKY

CERTIFICATION:

"I HEREBY CERTIFY THAT THE EXISTING IMPROVEMENTS SHOWN ARE PER THE REFERENCE PLAN NOTED HEREON TOGETHER WITH A PARTIAL ON–SITE FIELD SURVEY PERFORMED BY FIELDSTONE LAND CONSULTANTS, PLLC DURING THE MONTH OF NOVEMBER, 2023.

DATE: 5-8-24

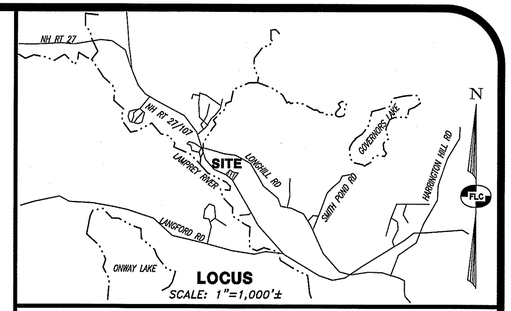
STATE OF NEW HAMPSHIRE — No. 848 — MICHAEL D. PLOOS — LICENSED LAND SURVEYOR

CERTIFICATION:

WETLANDS WERE DELINEATED IN ACCORDANCE WITH THE US ARMY CORPS OF ENGINEERS 1987 WETLAND DELINEATION MANUAL Y–87–1 AND INTERIM REGIONAL SUPPLEMENT FOR NORTHEAST AND NORTHCENTRAL REGION AND FIELD INDICATORS FOR HYDRIC SOILS IN NEW ENGLAND BY KENNETH M. ROBINSON, C.W.S. IN NOVEMBER, 2023.

DATE: 5/8/24

STATE OF NEW HAMPSHIRE — KENNETH M. ROBINSON — No. 304 — CERTIFIED WETLAND SCIENTIST



REFERENCE PLAN:

"EXISTING CONDITIONS PLAN – PLAT OF LAND – FOR – AUTUMN TRAIL – REALTY, LLC – IN – RAYMOND, N.H. – ROCKINGHAM COUNTY" SCALE: 1"=30', DATED AUGUST, 2023, PREPARED BY LANDRY SURVEYING, LLC.

NOTES:

1. THE OWNER OF RECORD FOR TAX MAP 32 LOT 72 IS AUTUMN TRAIL REALTY, LLC, P.O. BOX 351 PITTSFIELD, NH 03263. DEED REFERENCE FOR THE LOT IS BK.6457 PG.1000 DATED DECEMBER 3, 2022 IN THE ROCKINGHAM COUNTY REGISTRY OF DEEDS.
2. THE PURPOSE OF THIS PLAN IS TO DEPICT THE EXISTING CONDITIONS FOR TAX MAP LOT 32–72 AS SHOWN.
3. THE TOTAL AREA OF TAX MAP 32 LOT 72 IS 43,630 SQ.FT. OR 1.002 ACRES WITH 240.06 FT. OF FRONTAGE ALONG N.H. ROUTE 27(PER THE REFERENCE PLAN NOTED HEREON).
4. ZONING FOR THE PARCEL IS COMMERCIAL DISTRICT (C1; ART. 4.3):

   MIN. LOT SIZE = 21,780 SQFT. OR 0.5 ACRES
   MIN. LOT FRONTAGE = 50'
   MIN. BUILDING SETBACKS = 15' FRONT, SIDE & REAR
   MIN. PARKING SETBACK = 10' FRONT, SIDE & REAR
   OTHER = 50 FT FROM RESIDENTIAL STRUCTURE
5. PARCEL IS SUBJECT TO THE REGULATIONS OF THE GROUND WATER PROTECTION ZONE 2012, THE GROUNDWATER CONSERVATION DISTRICT (ART. 5.2), ZONE G – CONSERVATION DISTRICT (ART. 4.9) WETLAND (OFF SITE) & STEEP SLOPES (25%+).
6. THE BOUNDARY INFORMATION SHOWN IS BASED ENTIRELY ON THE REFERENCE PLAN NOTED HEREON. THIS IS NOT TO BE CONSIDERED A BOUNDARY SURVEY BY THIS OFFICE.
7. HORIZONTAL ORIENTATION IS BASED UPON THE REFERENCE PLAN NOTED HEREON. VERTICAL DATUM IS NGVD29± PER THE REFERENCE PLAN NOTED HEREON.
8. THE SURFACE FEATURES SHOWN ARE PER THE REFERENCE PLAN NOTED HEREON TOGETHER WITH A PARTIAL ON–SITE FIELD SURVEY PERFORMED BY FIELDSTONE LAND CONSULTANTS, PLLC DURING THE MONTH OF NOVEMBER, 2023.
9. SUBJECT PARCEL LIES OUTSIDE OF THE 100 YEAR FLOOD HAZARD AREA PER FEMA FLOOD INSURANCE RATE MAP NO. 33015C0187E, EFFECTIVE DATE 5/17/2006.

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
B	5/7/24	ADDRESS DUBOIS & KING, INC. COMMENTS		JGL	MDP
A	1/18/24	ADDRESS DUBOIS & KING, INC. COMMENTS		CDF	MDP

EXISTING CONDITIONS PLAN

TAX MAP 32 LOT 72

(N.H. ROUTE 27)

RAYMOND, NEW HAMPSHIRE

PREPARED FOR & LAND OF:

AUTUMN TRAIL REALTY, LLC

P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' NOVEMBER 16, 2023

Surveying ✦ Engineering ✦ Land Planning ✦ Permitting ✦ Septic Designs

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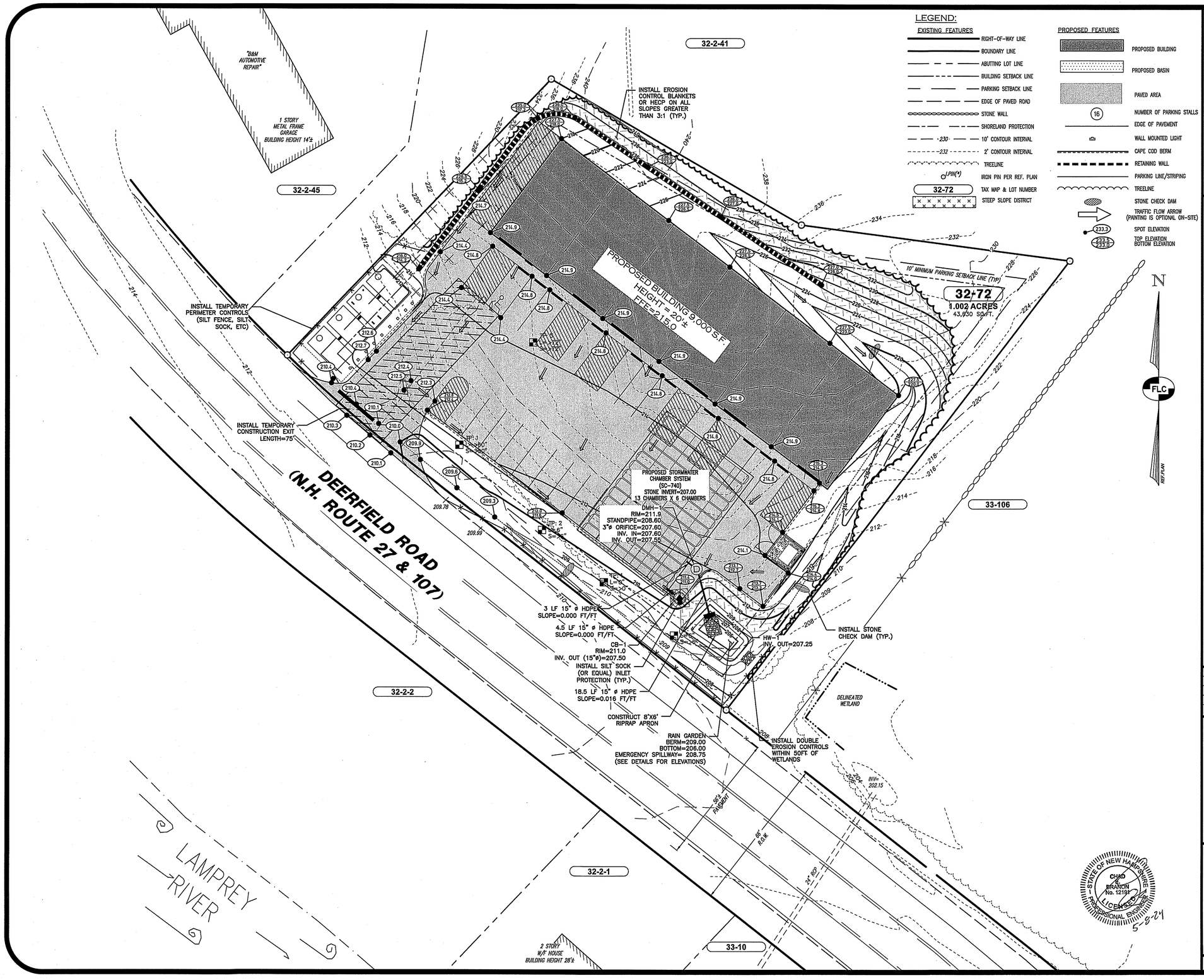
www.FieldstoneLandConsultants.com

FILE: 3649EX00A.dwg	PROJ. NO. 3649.00	SHEET: EX–1	PAGE NO. 3 OF 10



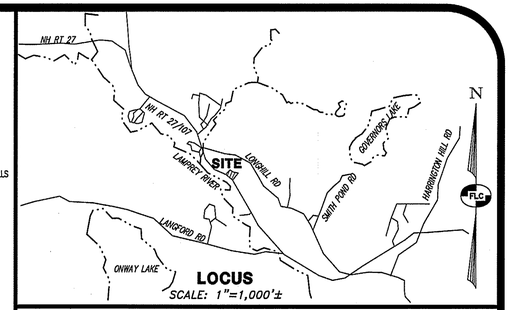
LEGEND:

EXISTING FEATURES

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- BUILDING SETBACK LINE
- PARKING SETBACK LINE
- EDGE OF PAVED ROAD
- STONE WALL
- SHORELAND PROTECTION
- 230 10' CONTOUR INTERVAL
- 232 2' CONTOUR INTERVAL
- TREELINE
- IPIN(*) IRON PIN PER REF. PLAN
- 32-72 TAX MAP & LOT NUMBER
- STEEP SLOPE DISTRICT

PROPOSED FEATURES

- PROPOSED BUILDING
- PROPOSED BASIN
- PAVED AREA
- 16 NUMBER OF PARKING STALLS
- EDGE OF PAVEMENT
- WALL MOUNTED LIGHT
- CAPE COD BERM
- RETAINING WALL
- PARKING LINE/STRIPING
- TREELINE
- STONE CHECK DAM
- TRAFFIC FLOW ARROW (PAINTING IS OPTIONAL ON-SITE)
- 233.3 SPOT ELEVATION
- 233.5 / 233.0 TOP ELEVATION / BOTTOM ELEVATION



CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF RAYMOND AND SHALL BE BUILT IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE TOWN OF RAYMOND DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS FOR ROAD CONSTRUCTION AND SEWERS AND DRAINS AND THE NHDOT STANDARDS FOR ROAD AND BRIDGE CONSTRUCTION APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
2. ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS AND THE SPECIFICATIONS NOTED ABOVE. ANY ALTERATION OF THIS DESIGN OR CHANGE DURING CONSTRUCTION MAY REQUIRE APPROVAL OF VARIOUS TOWN/CITY BOARDS OR AGENCIES AND SHALL BE DISCUSSED WITH THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL VERIFY THAT ALL THE INFORMATION SHOWN HEREON IS CONSISTENT, COMPLETE, ACCURATE, AND CAN BE CONSTRUCTED PRIOR TO AND/OR DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES, ERRORS, OMISSIONS, OR EXISTING UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION SO THAT REMEDIAL ACTION MAY BE TAKEN BEFORE PROCEEDING WITH THE WORK.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACT "DIGSAFE" AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION (1-888-344-7233)
5. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE APPROPRIATE TOWN DEPARTMENTS PRIOR TO CONSTRUCTION TO ARRANGE FOR NECESSARY INSPECTIONS.
6. BLASTING, IF REQUIRED, SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF RAYMOND FIRE DEPARTMENT REGULATIONS
7. ALL DISTURBED NON-PAVED AREAS SHALL BE LOAMED AND SEEDED IMMEDIATELY UPON BEING CONSTRUCTED THE RETAINING WALLS SHOWN SHALL BE DESIGNED BY OTHERS UNLESS OTHERWISE NOTED
8. ALL TRAFFIC SIGNS SHALL CONFORM TO THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES LATEST EDITION
9. EXISTING PAVEMENT SHALL BE SAW-CUT AS NECESSARY. THE CONTRACTOR SHALL ENSURE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW PAVEMENT.
10. ALL POWER WORK SHALL CONFORM TO EVERSOURCE & NHEC STANDARDS.
11. ALL TELEPHONE WORK SHALL CONFORM TO CONSOLIDATED COMMUNICATIONS SPECIFICATIONS.
12. CONTRACTOR SHALL OBTAIN STRUCTURAL DESIGN PLANS, DETAILS AND SPECIFICATIONS FOR ALL RETAINING WALLS SHOWN ON THIS PLAN PRIOR TO CONSTRUCTION.

GRAPHIC SCALE
20' 10' 0 20' 40' 60'
IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
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A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

GRADING & DRAINAGE PLAN

TAX MAP 32 LOT 72

(N.H. ROUTE 27)

RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC

P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

STATE OF NEW HAMPSHIRE — CHAD A. BRANON No. 12191 — LICENSED PROFESSIONAL ENGINEER — 5-8-24

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

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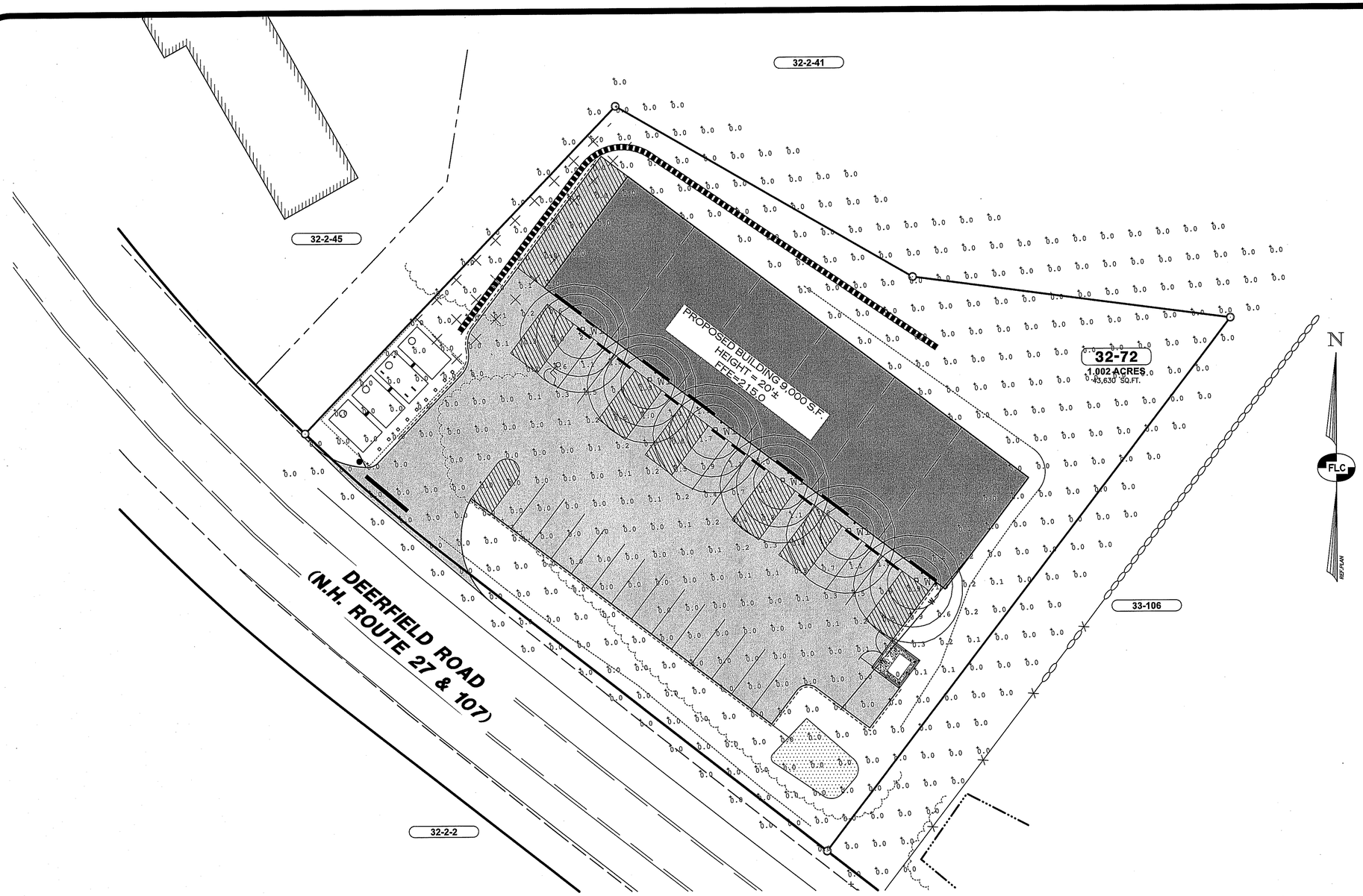

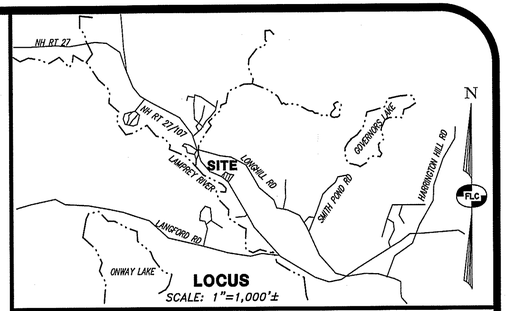

LIGHTING NOTES:

1. LIGHTING SHALL BE INSTALLED AND ARRANGED SO AS NOT TO REFLECT OR CAUSE GLARE UPON ABUTTING LAND, HIGHWAYS, AND ROADS.
2. ALL FIXTURES ARE FULL CUTOFF, LED FIXTURES. FLOOD LIGHTING AND UPLIGHTING ARE PROHIBITED.
3. LIGHTING IS PROVIDED VIA WALL MOUNTED LIGHTS.
4. MOUNTING HEIGHT OF ALL PROPOSED WALL MOUNT LIGHTING FIXTURES SHALL BE 16 FEET ABOVE FINISH GRADE ON THE BUILDING. LOCATED AT EACH BUILDING UNIT.
5. ALL LIGHTS ARE TO BE SETUP ON PHOTOCELLS TO AUTOMATICALLY TURN OFF DURING DAYLIGHT HOURS. TIMER SHALL BE INSTALLED TO LIMIT HOURS FROM 6 AM – 10 PM. IF OPERATING 24/7 THE LIGHTING MUST REDUCE BY 50% FOR SECURITY LIGHTING, HALF OF THE WALL PACKS SHALL BE INSTALLED WITH MOTION SENSORS.
6. ALL FIXTURES AND HARDWARE ARE TO BE DARK BRONZE IN COLOR TO MATCH.
7. LIGHT FIXTURES ARE AVAILABLE THROUGH EXPOSURE 2 LIGHTING. ANY CHANGE IN FIXTURE MUST BE APPROVED BY THE OWNER, DESIGN ENGINEER, AND TOWN OF RAYMOND.

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
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LIGHTING PLAN

TAX MAP 32 LOT 72

(N.H. ROUTE 27)

RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

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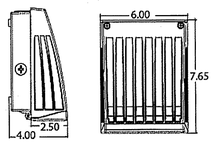
SCALE: 1" = 20' OCTOBER 13, 2023

Slim Wall Pack (WPSLS)

Small LED Slim Wall Pack



PARKING LOT

Illuminance (Fc)
Average = 0.32
Maximum = 2.0
Minimum = 0.0
Avg/Min Ratio = N.A.
Max/Min Ratio = N.A.

Luminaire Schedule					
Symbol	Qty	Label	Arrangement	Description	[MANUFAC]
	6	W1	Single	WPSLS-1L-30-BZA / WALL MTD 16' AFG	LSI INDUSTRIES, INC.

STATE OF NEW HAMPSHIRE
CHAD E. BRANNON
No. 12191
LICENSED
PROFESSIONAL ENGINEER
5-8-24

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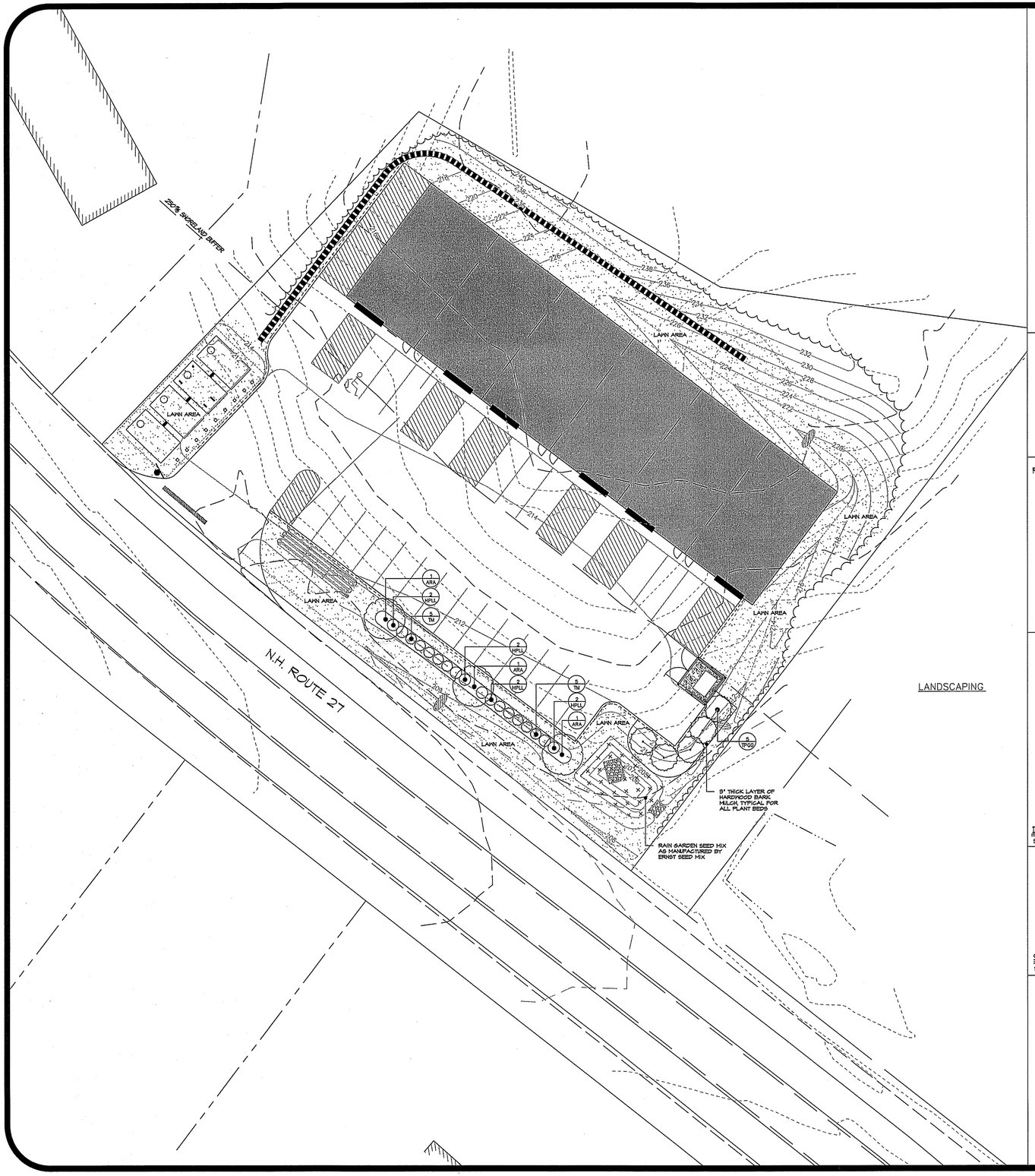


LANDSCAPING

PLANTING PLAN NOTES

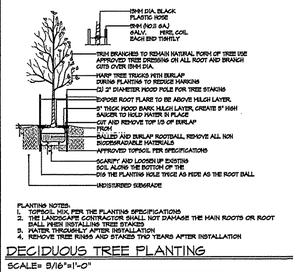
1. THE EXISTING CONDITIONS BACKGROUND WAS AN ELECTRONIC CAD FILE AS SUPPLIED BY FIELDSTONE LAND CONSULTANTS, PLLC. AND DATED 01/23/2024.
2. ALL OF THE PROPOSED PLANT MATERIAL SHALL BE INSTALLED AS SHOWN ON THE CONTRACT DOCUMENTS AND SPECIFICATIONS.
3. IT IS THE LANDSCAPE CONTRACTOR RESPONSIBILITY TO COORDINATE ALL ELEMENTS WITH THE GENERAL CONTRACTOR AND IF NECESSARY OTHER SUB CONTRACTORS AS REQUIRED TO SUCCESSFULLY PLANT ALL OF THE PROPOSED MATERIAL.
4. IT IS THE LANDSCAPE CONTRACTOR RESPONSIBILITY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO STARTING WORK. ANY CONFLICTS THAT ARISE DURING THIS TIME SHALL BE BROUGHT TO THE DESIGN TEAMS ATTENTION IMMEDIATELY.
5. THE PLANT MATERIAL INSTALLATION SHALL HAPPEN BEFORE THE ROUGH GRADING HAS BEEN APPROVED BY THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
6. ALL PLANT MATERIAL SHALL CONFORM TO THE GUIDELINES ESTABLISHED BY THE CURRENT AMERICAN STANDARD FOR NURSERY STOCK, PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSERYMAN. ALL TREES AND SHRUBS OF THE SAME SPECIES AND SIZE SHALL HAVE MATCHING HEIGHT AND FORM UNLESS OTHERWISE NOTED ON THE PLANS AND BE APPROVED BY LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
7. THE LANDSCAPE CONTRACTOR SHALL SUPPLY ALL PLANT MATERIAL IN QUANTITIES SUFFICIENT TO COMPLETE THE PLANTINGS SHOWN IN THE CONTRACT DOCUMENTS. DISCREPANCIES IN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT IMMEDIATELY SO I AM ABLE TO RESOLVE THE ISSUE IN A TIMELY MANNER.
8. ALL PROPOSED TREES, SHRUBS AND ORNAMENTAL GRASSES SHALL BE STAKED PRIOR TO EXCAVATING OF THE PLANTING AREAS. ADDITIONALLY, THE CONTRACTOR SHALL PAINT ON THE GROUND THE EXTENDS OF THE PROPOSED PLANT BEDS AND ALSO SHOW THE AREAS OF THE GROUND COVER AND PERENNIALS. THE FINAL LAYOUT TO BE APPROVED BY LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE.
9. THE CONTRACTOR SHALL FURNISH PLANT MATERIAL FREE OF PESTS OR PLANT DISEASES. PRESELECTED OR STAGGED MATERIAL SHALL BE INSPECTED BY THE LANDSCAPE ARCHITECT AND CERTIFIED PEST AND DISEASE FREE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO WARRANTY ALL PLANT MATERIAL FOR (1) ONE FULL YEAR FROM THE TIME OF FINAL ACCEPTANCE OF THE PLANTING.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF ANY EXISTING MATERIALS THAT WERE DAMAGED DURING PLANTING OPERATIONS.
11. ALL TREES, PLANT BEDS AND GROUNDCOVER SHALL BE COVERED WITH 3A OF ORGANIC BARK MUCH AS NOTED IN THE SPECIFICATIONS.
12. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH (1) YEAR GUARANTEE FROM THE TIME OF SUBSTANTIAL COMPLETION.

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	NOTES
STREET TREES					
ARA	3	ACER RUBRUM 'AUTUMN FLAME'	AUTUMN FLAME RED MAPLE	2-2.5 CAL.	
EVERGREEN TREES					
TPGS	5	THUJA STANDISHII X PLICATA 'GREEN GIANT'	GREEN GIANT ARBORVITAE	6-7' HT.	
STREET TREES					
HPLL	8	HYDRANGEA PANICULATA 'LIME LIGHT'	LIME LIGHT HYDRANGEA	2.5-3' HT.	
TM	10	TAXUS X MEDIA 'HICKSII'	HICKS YEW	2.5-3' HT.	

RAIN GARDEN SEED MIX - ERNMX-180

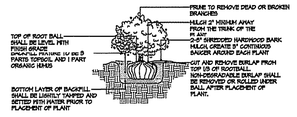
SCHIZACHYRIUM SCOPARIUM, FORT INDIANTOWN GAP-PA ECOTYPE LITTLE BLUESTEM, FORT INDIANTOWN GAP-PA ECOTYPE, ELYMUS VIRGINICUS, MADISON-NY ECOTYPE VIRGINIA WILDRYE, MADISON-NY ECOTYPE ECHINACEA PURPUREA PURPLE CONEFLOWER, CAREX VULPINOIDEA, PA ECOTYPE FOX SEDGE, PA ECOTYPE, PANICUM RIGIDULUM, PA ECOTYPE REDTOP PANICGRASS, PA ECOTYPE, CHASMANTHIUM LATIFOLIUM, NY ECOTYPE RIVER OATS, NY ECOTYPE, CHAMAECRISTA FASCICULATA, PA ECOTYPE PARTRIDGE PEA, PA ECOTYPE, COREOPSIS LANCEOLATA LANCELEAF COREOPSIS, RUDBECKIA HIRTA BLACKEYED SUSAN, HELIOPSIS HELIANTHOIDES, PA ECOTYPE OXEYE SUNFLOWER, PA ECOTYPE, PANICUM CLANDESTINUM, TIOGA DEERTONGUE, TIOGA, VERBENA HASTATA, PA ECOTYPE BLUE VERVAIN, PA ECOTYPE, ASCLEPIAS INCARNATA, PA ECOTYPE SWAMP MILKWEED, PA ECOTYPE, MONARDA FISTULOSA, FORT INDIANTOWN GAP-PA ECOTYPE WILD BERGAMOT, FORT INDIANTOWN GAP-PA ECOTYPE, CAREX SCOPARIA, PA ECOTYPE BLUNT BROOM SEDGE, PA ECOTYPE, PENSTEMON DIGITALIS, PA ECOTYPE TALL WHITE BEARDTONGUE, PA ECOTYPE, SENNA HEBECARPA, VA & NY ECOTYPE WILD SENNA, VA & NY ECOTYPE, ZIZIA AUREA, PA ECOTYPE GOLDEN ALEXANDERS, PA ECOTYPE, BAPTISIA AUSTRALIS, SOUTHERN NY ECOTYPE BLUE FALSE INDIGO, SOUTHERN NY ECOTYPE, JUNCUS EFFUSUS SOFT RUSH, JUNCUS TENUIS, PA ECOTYPE PATH RUSH, PA ECOTYPE, VERNONIA NOVEBORAGENSIS, PA ECOTYPE NEW YORK IRONWEED, PA ECOTYPE, ASTER NOVAE-ANGLIAE NEW ENGLAND ASTER, ASTER LANCEOLATUS LANCE LEAVED ASTER, ASTER PRENANTHOIDES, PA ECOTYPE ZIGZAG ASTER, PA ECOTYPE, SOLIDAGO NEMORALIS, PA ECOTYPE GRAY GOLDENROD, PA ECOTYPE, ASTER LATERIFLORUS CALICO ASTER, ASTER PILOSUS, PA ECOTYPE HEATH ASTER, PA ECOTYPE, EUPATORIUM PERFOLIATUM, PA ECOTYPE BONESET, PA ECOTYPE, MIMULUS RINGENS, PA ECOTYPE SQUARE STEMMED MONKEYFLOWER, PA ECOTYPE, SOLIDAGO RUGOSA, PA ECOTYPE WRINKLELEAF GOLDENROD, PA ECOTYPE 2



PLANTING NOTES:
1. TOPSOIL MIX, PER THE PLANTING SPECIFICATIONS
2. THE LANDSCAPE CONTRACTOR SHALL NOT DAMAGE THE MAIN ROOTS OR ROOT BALL WHEN INSTALLING TREE STAKES
3. WATER THOROUGHLY AFTER INSTALLATION
4. REMOVE TREE RING AND STAKES TWO YEARS AFTER INSTALLATION

DECIDUOUS TREE PLANTING

SCALE= 3/16"=1'-0"



SHRUB PLANTING

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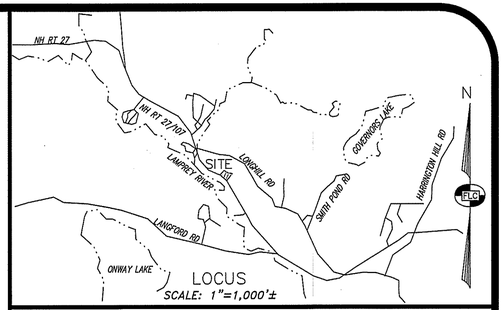

Jay Miller LANDSCAPE ARCHITECTURE
2043 VT. RT. 18
WATERFORD,VT. 05819
p:802.535.2026
e:JAY@MILLERLANDSCAPE.COM
LANDSCAPE ARCHITECT

GRAPHIC SCALE

GRAPHIC SCALE
20' 10' 0 20' 40' 60'
IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
C	05/07/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		JPM	JPM
B	1/16/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

LANDSCAPING PLAN

TAX MAP 32 LOT 72
(N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

Surveying ✦ **E**ngineering ✦ **L**and **P**lanning ✦ **P**ermitting ✦ **S**eptic **D**esigns
FIELDSTONE
LAND CONSULTANTS, PLLC
206 Elm Street, Milford, NH 03055
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Phone: (603) 672-5456 Fax: (603) 413-5456
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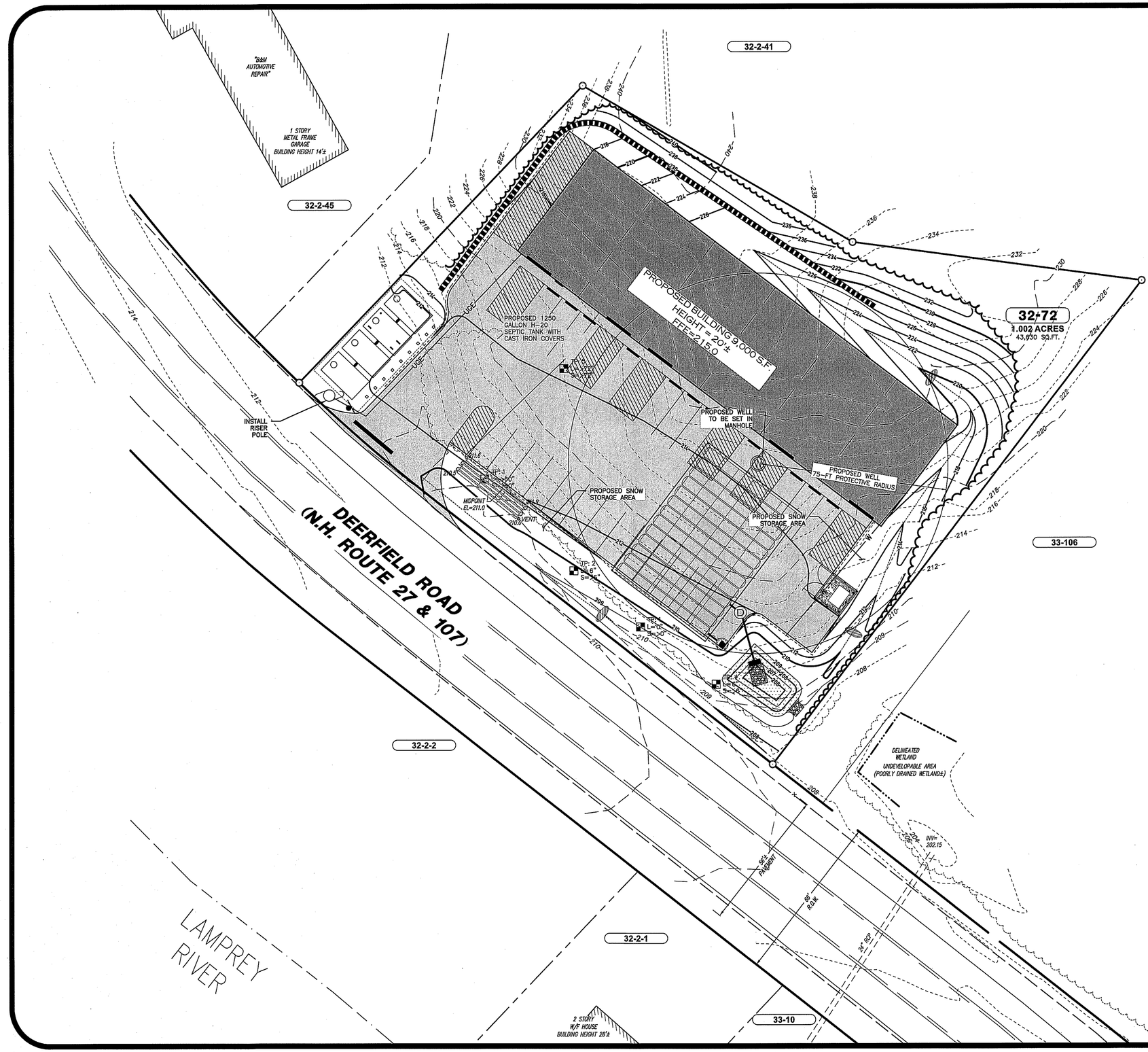
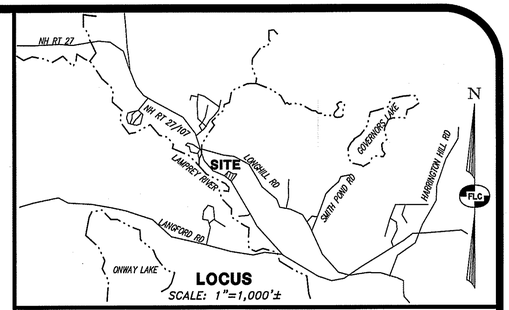




UTILITY NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL VERIFY THAT ALL THE INFORMATION SHOWN HEREON IS CONSISTENT, COMPLETE, ACCURATE, AND CAN BE CONSTRUCTED PRIOR TO AND/OR DURING CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES, ERRORS, OMISSIONS, OR EXISTING UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION SO THAT REMEDIAL ACTION MAY BE TAKEN BEFORE PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACT "DIGSAFE" AT LEAST 72 HOURS PRIOR TO THE START OF CONSTRUCTION (1-888-344-7233)
3. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE APPROPRIATE TOWN DEPARTMENTS PRIOR TO CONSTRUCTION TO ARRANGE FOR NECESSARY INSPECTIONS.
4. BLASTING, IF REQUIRED, SHALL BE PERFORMED IN ACCORDANCE WITH THE TOWN OF RAYMOND FIRE DEPARTMENT REGULATIONS
5. ALL DISTURBED NON-PAVED AREAS SHALL BE LOAMED AND SEEDED IMMEDIATELY UPON BEING CONSTRUCTED THE RETAINING WALLS SHOWN SHALL BE DESIGNED BY OTHERS UNLESS OTHERWISE NOTED
6. EXISTING PAVEMENT SHALL BE SAW-CUT AS NECESSARY. THE CONTRACTOR SHALL ENSURE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW PAVEMENT.
7. ALL POWER WORK SHALL CONFORM TO EVERSOURCE & NHEC STANDARDS.
8. ALL TELEPHONE WORK SHALL CONFORM TO CONSOLIDATED COMMUNICATIONS SPECIFICATIONS.
9. CONTRACTOR SHALL OBTAIN STRUCTURAL DESIGN PLANS, DETAILS AND SPECIFICATIONS FOR ALL RETAINING WALLS SHOWN ON THIS PLAN PRIOR TO CONSTRUCTION.
10. THE SEPTIC SYSTEM DEPICTED ON THIS PLAN HAS BEEN SIZED AND POSITIONED TO MEET APPLICABLE STANDARDS. A FORMAL DESIGN WILL BE SUBMITTED FOR APPROVAL AFTER SITE PLAN APPROVAL.

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

UTILITY PLAN

TAX MAP 32 LOT 72

(N.H. ROUTE 27)

RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC

P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

STATE OF NEW HAMPSHIRE — CHAD E. BRANON NO. 12191 — LICENSED PROFESSIONAL ENGINEER

5-8-24

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

FIELDSTONE LAND CONSULTANTS, PLLC

206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
Phone: (603) 672-5456 Fax: (603) 413-5456
www.FieldstoneLandConsultants.com

1. PRIOR TO STARTING ANY WORK ON THE SITE THE CONTRACTOR SHALL NOTIFY APPROPRIATE AGENCIES.

2. ALL SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS THEREOF IN NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICE STORM WATER MANUALS, VOLUME 1–3, LATEST EDITION.

3. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PER PLANS AND DETAILS. PERIMETER CONTROLS SHALL BE IN PLACE PRIOR TO COMMENCEMENT OF EARTH DISTURBING ACTIVITIES.

4. INSTALL INLET PROTECTION AROUND ALL STORM DRAIN STRUCTURES. INLET PROTECTION BMP'S SHALL REMAIN UNTIL THE SITE IS STABILIZED. CONSTRUCTION OF STORMWATER BASINS AND TREATMENT SWALES SHALL OCCUR PRIOR TO AND EARTH MOVING OPERATION THAT WILL INFLUENCE STORM WATER RUNOFF.

5. THE WORK AREA SHALL BE GRADED, SHAPED AND OTHERWISE DRAINED IN SUCH A MANNER AS TO MINIMIZE SOIL EROSION, SILTATION OF DRAINAGE CHANNELS, DAMAGE TO EXISTING VEGETATION, AND DAMAGE TO PROPERTY OUTSIDE THE LIMITS OF THE WORK AREA.

6. EXISTING VEGETATION IS TO REMAIN UNDISTURBED WHEN POSSIBLE.

7. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE KEPT CLEAN DURING CONSTRUCTION. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE A WEEK AND AFTER EVERY 0.25–INCH OR GREATER RAINFALL. SEDIMENTS SHALL BE DISPOSED OF IN AN UPLAND AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF–SITE AND BE PERMANENTLY STABILIZED.

8. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION. AT NO TIME SHALL THE TOTAL UNSTABILIZED DISTURBED AREA, INCLUDING LOT DISTURBANCES, BE GREATER THAN FIVE (5) ACRES.

9. THE LAND AREA EXPOSED SHALL BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME. ALL NON–ACTIVE DISTURBED AREAS SHALL BE STABILIZED WITHIN 30 DAYS OF THE DISTURBANCE. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS OF FINAL GRADING.

10. DITCHES, SWALES AND DRAINAGE BASINS SHALL BE CONSTRUCTED DURING THE INITIAL PHASE OF CONSTRUCTION AND STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.

11. AN AREA SHALL BE CONSIDERED STABILIZED IF ONE OF THE FOLLOWING HAS OCCURRED:
   A. BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
   B. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
   C. A MINIMUM OF 3–INCHES OF NON–EROSIVE MATERIAL, SUCH AS STONE OR RIPRAP, HAS BEEN INSTALLED; OR
   D. EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.

12. EROSION CONTROL BLANKETS SHALL BE INSTALLED ON ALL SLOPES THAT ARE STEEPER THAN 3:1 (HORIZONTAL / VERTICAL). UNLESS OTHERWISE SPECIFIED THE CONTRACTOR SHALL USE NORTH AMERICAN GREEN SC150, OR APPROVED EQUAL.

13. ALL AREAS RECEIVING EROSION CONTROL STONE OR RIPRAP SHALL HAVE A GEOTEXTILE MATERIAL INSTALLED BELOW THE STONE (SEE APPROPRIATE DETAILS).

14. ALL DISTURBED AREAS TO TURF FINISHED SHALL BE COVERED WITH A MINIMUM THICKNESS OF 6 INCHES OF COMPACTED LOAM. LOAM SHALL BE COVERED WITH THE APPROPRIATE SEED MIXTURE AS INDICATED BELOW:

PERMANENT SEED (LAWN AREAS)	LBS / 1,000 SQ. FT.	PERMANENT SLOPE SEED MIX	LBS / 1,000 SQ. FT.
CREEPING RED FESCUE	0.92 LBS	CREEPING RED FESCUE	0.80 LBS
PERENNIAL RYEGRASS	1.15 LBS	PERENNIAL RYEGRASS	0.69 LBS
KENTUCKY BLUEGRASS	0.58 LBS	REDTOP	0.12 LBS
REDTOP	0.12 LBS	ALSIKE CLOVER	0.12 LBS
		BIRDSFOOT TREFOIL	
APPLICATION RATE TOTALS 2.8 LBS PER 1,000 SF		**APPLICATION RATE TOTALS *1.85 LBS PER 1,000 SF**	

15. TEMPORARY STABILIZATION OF DISTURBED AREAS:
STRIPPED SOIL SHALL BE STOCKPILED UNCOMPACTED, AND STABILIZED AGAINST EROSION AS OUTLINED BELOW:
SEED BED PREPARATION: 10–10–10 FERTILIZATION TO BE SPREAD AT THE RATE OF 7 LBS. PER 100 SF AND AGRICULTURAL LIMESTONE AT A RATE OF 90 LBS PER 1000 SF AND INCORPORATED INTO THE SOIL. THE SOIL, FERTILIZER AND LIMESTONE SHALL BE TILLED TO PREPARE FOR SEEDING.

A. SEED MIXTURE: USE ANY OF THE FOLLOWING:

SPECIES	RATE PER 1,000 SF	DEPTH	SEEDING DATES
WINTER RYE	2.5 LBS	1 INCH	8/15 TO 9/15
OATS	2.5 LBS	1 INCH	4/15 TO 10/15
ANNUAL RYEGRASS	1.0 LBS	0.25 INCH	8/15 TO 9/15

B. MULCHING: MULCH SHOULD BE USED ON HIGHLY ERODIBLE AREAS, AND WHERE CONSERVATION OF MOISTURE WILL FACILITATE PLANT ESTABLISHMENT AS FOLLOWS:

TYPE	RATE PER 1,000 SF	USE AND COMMENTS
STRAW	70 TO 90 LBS	MAY BE USED WITH PLANTINGS, MUST BE ANCHORED TO BE USED ALONE
WOOD CHIPS OR BARK MULCH	460 TO 920 LBS	USED WITH TREE AND SHRUB PLANTINGS
FIBROUS MATTING	AS RECOMMENDED BY MANUFACTURER	MUST BE BIODEGRADABLE. USE IN SLOPE AREAS AND AREAS DIFFICULT TO VEGETATE
CRUSHED STONE 1/4" TO 1–1/2" DIA.	SPREAD TO GREATER THAN 1/2" THICKNESS	USE IN SPECIFIC AREAS AS SHOWN ON PLAN OR AS NEEDED

16. APPLY LIMESTONE AND FERTILIZER ACCORDING TO SOIL TEST RECOMMENDATIONS. IF SOIL TESTING IS NOT FEASIBLE (CRITICAL TIME FRAMES OR VARIABLE SITES) THEN APPLY FERTILIZER AT A RATE OF 11 POUNDS PER 1,000 SF AND LIMESTONE AT A RATE OF 90 POUNDS PER 1,000 SF. FERTILIZER SHALL BE LOW PHOSPHATE (LESS THAN 2% PHOSPHORUS).

17. CAUTION SHOULD BE TAKE WHEN THE PROPERTY IS LOCATED WITHIN 250 FEET OF A WATER BODY. IN THIS CASE ALL FERTILIZERS SHALL BE RESTRICTED TO A LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER. SLOW RELEASE FERTILIZERS MUST BE AT LEAST 50% SLOW RELEASE NITROGEN COMPONENT. NO FERTILIZER EXCEPT LIMESTONE SHALL BE APPLIED WITHIN 25 FEET OF THE SURFACE WATER. THESE ARE REGULATED LIMITATIONS.

18. PERMANENT OR TEMPORARY COVER MUST BE IN PLACE BEFORE THE GROWING SEASON ENDS (SEE WINTER CONSTRUCTION NOTES). NO DISTURBED AREAS SHALL BE LEFT EXPOSED DURING THE WINTER MONTHS.

19. A VIGOROUS DUST CONTROL PROGRAM SHALL BE APPLIED BY THE SITE CONTRACTOR. DUST SHALL BE MANAGED THROUGH THE USE OF WATER AND/OR CALCIUM CHLORIDE.

20. IN NO WAY ARE THE MEASURES INDICATED ON THE PLANS OR IN THESE NOTES TO BE CONSIDERED ALL INCLUSIVE. THE CONTRACTOR SHALL USE JUDGMENT TO INSTALL ADDITIONAL EROSION CONTROL MEASURES AS SITE CONDITIONS, WEATHER OR CONSTRUCTION METHODS WARRANT.

21. FOLLOWING PERMANENT STABILIZATION, TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED AND ACCUMULATED SEDIMENTATION IS TO BE DISPOSED OF IN AN APPROVED LOCATION, OUTSIDE OF JURISDICTIONAL WETLANDS.

22. LOT DISTURBANCE OTHER THAN 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.

23. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR OBSERVING AND MANAGING THE PROJECT PER RSA 430:53 AND AGR 3800 REGARDING INVASIVE SPECIES (PLANTS AND INSECTS). NO INVASIVE SPECIES PLANT OR INSECT SHALL BE INTRODUCED ONTO THE SITE.

EROSION CONTROL NOTES — 1 / DT - 1

CONTACT DIG SAFE
72 HOURS PRIOR
TO CONSTRUCTION
DIGSAFE.COM
OR DIAL 8 1 1
IT'S SMART. IT'S FREE. IT'S THE LAW.

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED. STABILIZATION METHODS SHALL INCLUDE 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 FROZEN GROUND AND SHALL BE COMPLETED IN ADVANCE OF THAW OR SPRING MELT EVENTS.

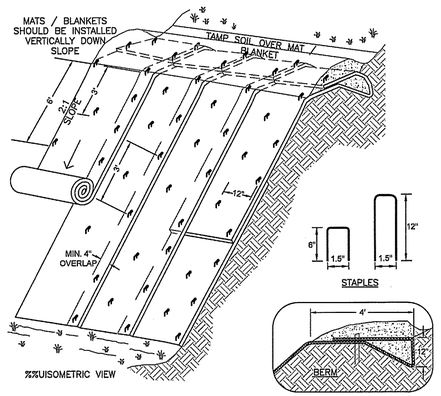
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATED GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.

3. AFTER NOVEMBER 15TH, 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 OR PROPERLY INSTALLED EROSION CONTROL BLANKETS COVERED WITH HAY. OTHER STABILIZATION OPTIONS ARE TO BE APPROVED BY THE APPROPRIATE AGENCIES AND THE DESIGN ENGINEER. IF CONSTRUCTION IS TO CONTINUE THROUGH THE WINTER MONTHS THEN THE ROAD SHOULD BE CLEARED OF ACCUMULATED SNOW AFTER EACH STORM EVENT.

WINTER CONSTRUCTION NOTES — 2 / DT - 1

1. INSTALL SILTATION CONTROL FENCES IN LOCATIONS SHOWN HEREON. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING OPERATION.
2. INSTALL STABILIZED CONSTRUCTION EXIT(S).
3. CUT AND CLEAR TREES; DISPOSE OF DEBRIS. STUMPS ARE TO BE REMOVED FROM THE SITE AND DISPOSED OF PROPERLY.
4. REMOVE TOPSOIL AND STOCKPILE AWAY FROM ANY WETLAND. STABILIZE STOCKPILE IMMEDIATELY BY SEEDING. PLACE SILT FENCE AROUND THE DOWN SLOPE SIDE OF EARTH STOCKPILES.
5. ROUGH GRADE SITE – CONSTRUCT DRAINAGE BASINS AND DRAINAGE SWALES DURING INITIAL PORTION OF CONSTRUCTION. STABILIZE IMMEDIATELY PER THE CONSTRUCTION AND EROSION CONTROL DETAILS. DO NOT DIRECT STORM WATER RUNOFF TO THESE STRUCTURES UNTIL A HEALTHY VEGETATIVE COVER IS ESTABLISHED.
6. BEGIN BUILDING CONSTRUCTION.
7. CONSTRUCT GRAVEL PARKING AREA (PAVEMENT OPTIONAL) AND BUILDING PAD. INSTALL UTILITIES AND STRUCTURES. ALL CUT AND FILL SLOPES SHALL BE STABILIZED UPON COMPLETION OF ROUGH GRADING PER THE THE EROSION CONTROL NOTES.
8. INSPECT AND MAINTAIN EROSION CONTROL MEASURES ON A WEEKLY BASIS AND AFTER EVERY 0.25" OR GREATER RAINFALL.
9. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, CULVERTS, DITCHES, SILTATION FENCES, SEDIMENT TRAPS, ETC. MULCH AND SEED AS REQUIRED.
10. FINISH GRADING TO PREPARE FOR PAVING (IF ANY) AND LOAMING. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 72 HOURS AFTER FINAL GRADING.
11. FINISH PAVING (IF ANY). PERMANENT SEEDING SHALL BE PERFORMED UPON COMPLETION OF PARKING AREA (SEE EROSION CONTROL NOTES).
12. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
13. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WHEN ALL DISTURBED AREAS HAVE BEEN STABILIZED.
14. ALL STRUCTURES SHALL BE CLEANED OF SEDIMENTS ONCE CONSTRUCTION IS COMPLETE.

CONSTRUCTION SEQUENCE — 3 / DT - 1

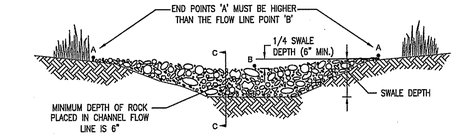


%%UISOMETRIC VIEW

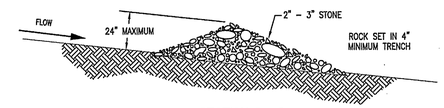
NOTES:

1. DIMENSIONS GIVEN IN THIS DETAIL ARE EXAMPLES: DEVICE SHOULD BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
2. INSTALL STRAW/COCONUT FIBER EROSION CONTROL MAT SUCH AS NORTH AMERICAN GREEN SC150 OR EQUAL ON ALL SLOPES EXCEEDING 3' HORZ : 1' VERT.
3. THE EROSION CONTROL MATERIAL(S) SHALL BE ANCHORED WITH "U" SHAPED 11 GAUGE WIRE STAPLES OR WOODEN STAKES WITH A MINIMUM TOP WIDTH OF 1 INCH AND LENGTH OF 6 INCH.
4. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS / BLANKETS SHALL HAVE GOOD SOIL CONTACT.
5. APPLY LIME, FERTILIZER AND PERMANENT SEEDING BEFORE PLACING BLANKETS.
6. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET AS SHOWN. ROLL THE BLANKETS DOWN THE SLOPE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES OR STAKES IN APPROPRIATE LOCATIONS. REFER TO MANUFACTURERS STAPLE GUIDE FOR CORRECT STAPLE PATTERN.
7. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
8. IN LOOSE SOIL CONDITIONS THE USE OF STAPLES OR STAKE LENGTHS GREATER THAN 6 INCHES MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.
9. THE CONTRACTOR SHALL MAINTAIN THE BLANKET UNTIL ALL WORK ON THE CONTRACT HAS BEEN COMPLETED AND ACCEPTED. MAINTENANCE SHALL CONSIST OF THE REPAIR OF AREAS WHERE DAMAGED BY ANY CAUSE. ALL DAMAGED AREAS SHALL BE REPAIRED TO REESTABLISH THE CONDITIONS AND GRADE OF THE SOIL PRIOR TO APPLICATION OF THE COVERING AND SHALL BE REFERTILIZED, RESEEDED AND REMULCHED AS DIRECTED.

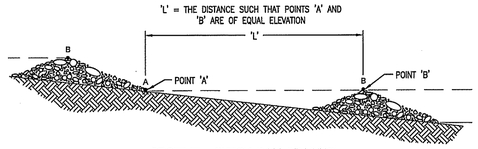
EROSION BLANKETS - SLOPE INSTALLATION — 4 / DT - 1



VIEW LOOKING UPSTREAM



SECTION C – C

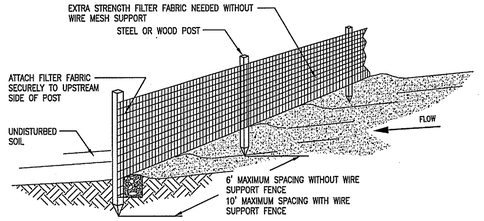


PROFILE – CHECK DAM SPACING

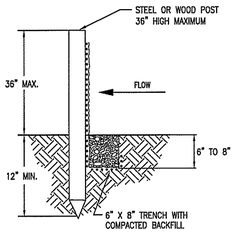
NOTES:

1. STONE CHECK DAMS SHOULD BE INSTALLED BEFORE RUNOFF IS DIRECTED TO THE SWALE OR DRAINAGE DITCH.
2. THE MAXIMUM CONTRIBUTING DRAINAGE AREA TO THE CHECK DAM SHOULD BE LESS THAN ONE ACRE.
3. STONE CHECK DAMS SHOULD NOT BE USED IN A FLOWING STREAM.
4. STONE CHECK DAMS SHOULD BE CONSTRUCTED OF WELL–GRADED ANGULAR 2 TO 3 INCH STONE. THE INSTALLATION OF 3/4–INCH STONE ON THE UPGRADIENT FACE IS RECOMMENDED FOR BETTER FILTERING.
5. WHEN INSTALLING STONE CHECK DAMS THE CONTRACTOR SHALL KEY THE STONE INTO THE CHANNEL BANKS AND EXTEND THE STONE BEYOND THE ABUTMENTS A MINIMUM OF 18–INCHES TO PREVENT FLOW AROUND THE DAM.
6. STONE CHECK DAMS SHOULD BE REMOVED ONCE THE SWALE OR DITCH HAS BEEN STABILIZED UNLESS OTHERWISE SPECIFIED.

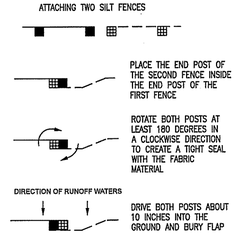
STONE CHECK DAM — 5 / DT - 1



PERSPECTIVE VIEW



SECTION VIEW

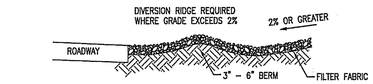


ATTACHING TWO SILT FENCES

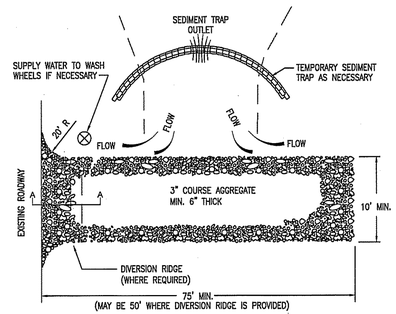
NOTES:

1. SILT FENCES SHOULD NOT BE USED ACROSS STREAMS, CHANNELS, SWALES, DITCHES OR OTHER DRAINAGE WAYS.
2. SILT FENCE SHOULD BE INSTALLED FOLLOWING THE CONTOUR OF THE LAND AS CLOSELY AS POSSIBLE AND THE ENDS OF THE SILT FENCE SHOULD BE FLARED UPSLOPE.
3. IF THE SITE CONDITIONS INCLUDE FROZEN GROUND, LEDGE OR THE PRESENCE OF HEAVY ROOTS THE BASE OF THE FABRIC SHOULD BE EMBEDDED WITH A MINIMUM THICKNESS OF 8 INCHES OF 3/4–INCH STONE.
4. SILT FENCES PLACED AT THE TOE OF SLOPES SHOULD BE INSTALLED AT LEAST 6 FEET FROM THE TOE TO ALLOW SPACE FOR SHALLOW PONDING AND ACCESS FOR MAINTENANCE.
5. THE MAXIMUM SLOPE ABOVE THE FENCE SHOULD BE 2:1 AND THE MAXIMUM LENGTH OF SLOPE ABOVE THE FENCE SHOULD BE 100 FEET.
6. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.
7. SILT FENCES SHOULD BE REMOVED WHEN THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

SILT FENCE — 6 / DT - 1



SECTION A-A



PLAN VIEW

NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT–OF–WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. THE MINIMUM STONE USED SHOULD BE 3–INCH CRUSHED STONE.
3. THE MINIMUM LENGTH OF THE PAD SHOULD BE 75 FEET, EXCEPT THAT THE MINIMUM LENGTH MAY BE REDUCED TO 50 FEET IF A 3–INCH TO 6–INCH HIGH BERM IS INSTALLED AT THE ENTRANCE OF THE PROJECT SITE.
4. THE PAD SHOULD EXTEND THE FULL WIDTH OF THE CONSTRUCTION ACCESS ROAD OR 10 FEET, WHICHEVER IS GREATER.
5. THE PAD SHOULD SLOPE AWAY FROM THE EXISTING ROADWAY.
6. THE PAD SHOULD BE AT LEAST 6–INCHES THICK.
7. THE GEOTEXTILE FILTER FABRIC SHOULD BE PLACED BETWEEN THE STONE PAD AND THE EARTH SURFACE BELOW THE PAD.
8. THE PAD SHALL BE MAINTAINED OR REPLACED WHEN MUD AND SOIL PARTICLES CLOG THE VOIDS IN THE STONE SUCH THAT MUD AND SOIL PARTICLES ARE TRACKED OFF–SITE.
9. NATURAL DRAINAGE THAT CROSSES THE LOCATION OF THE STONE PAD SHOULD BE INTERCEPTED AND PIPED BENEATH THE PAD, AS NECESSARY, WITH SUITABLE OUTLET PROTECTION.
10. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT–OF–WAY.
11. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

SCALE: N.T.S.

GRAVEL CONSTRUCTION EXIT — 7 / DT - 1

STATE OF NEW HAMPSHIRE
CHAD E. BRANON
No. 12194
LICENSED
PROFESSIONAL ENGINEER
5-9-24

GRAPHIC SCALE
20' 10' 0 20' 40' 60'
IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

EROSION CONTROL DETAILS

TAX MAP 32 LOT 72
(N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

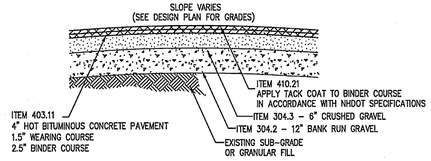
PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

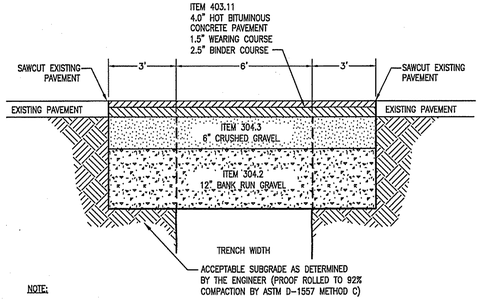
Surveying ✣ Engineering ✣ Land Planning ✣ Permitting ✣ Septic Designs
FIELDSTONE LAND CONSULTANTS, PLLC
206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
Phone: (603) 672-5456 Fax: (603) 413-5456
www.FieldstoneLandConsultants.com

1. ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REQUIREMENTS AND SPECIFICATIONS OF THE TOWN OF RAYMOND.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES SHOWN OR NOT SHOWN ON THESE PLANS AND SHALL VERIFY THAT ALL THE INFORMATION SHOWN HEREON IS CONSISTENT, COMPLETE, ACCURATE, AND CAN BE CONSTRUCTED PRIOR TO AND/OR DURING CONSTRUCTION. FIELDSTONE LAND CONSULTANTS, PLLC, AS THE DESIGN ENGINEER, SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES, ERRORS, OMISSIONS, OR EXISTING UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION SO THAT REMEDIAL ACTION MAY BE TAKEN BEFORE PROCEEDING WITH THE WORK.
3. THE CONTRACTOR SHALL CONTACT "DIGSAFE" 72 HOURS PRIOR TO THE START OF CONSTRUCTION (1-800-255-4977 IN NH, 1-888-344-7233 IN MA).
4. COMPLIANCE WITH ALL APPLICABLE REGULATIONS AND SPECIAL CONDITIONS OF TOWN/CITY AGENCIES, SUCH AS THE PLANNING BOARD, ZONING BOARD, CONSERVATION COMMISSION, AND OTHERS, IS MANDATORY AND IS THE RESPONSIBILITY OF THE OWNER.
5. ANY ALTERATION OF THIS DESIGN OR CHANGE DURING CONSTRUCTION MAY REQUIRE APPROVAL OF VARIOUS TOWN/CITY BOARDS OR AGENCIES AND SHALL BE DISCUSSED WITH THE OWNER AND FIELDSTONE LAND CONSULTANTS, PLLC PRIOR TO CONSTRUCTION.
6. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE APPROPRIATE CITY DEPARTMENTS PRIOR TO CONSTRUCTION TO ARRANGE FOR NECESSARY INSPECTIONS.
7. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCURATE AS-BUILT INFORMATION OF ALL WORK, ESPECIALLY UNDERGROUND CONSTRUCTION OF UTILITY LINES, SERVICES, CONNECTIONS, ETC. AND APPROPRIATE TIES TO ABOVE GROUND PERMANENT STRUCTURES, FIELD SURVEY COORDINATES, OR SOME OTHER METHOD OF ESTABLISHING THE AS-BUILT CONDITION OF ALL CONSTRUCTION.
8. THE CONTRACTOR AND OWNER ARE RESPONSIBLE FOR OBSERVING AND MANAGING THE PROJECT PER RSA 430:53 AND AGR 3800 REGARDING INVASIVE SPECIES (PLANTS AND INSECTS). NO INVASIVE SPECIES PLANT OR INSECT SHALL BE INTRODUCED ONTO THE SITE.

GENERAL CONSTRUCTION NOTES — 1 / DT-2

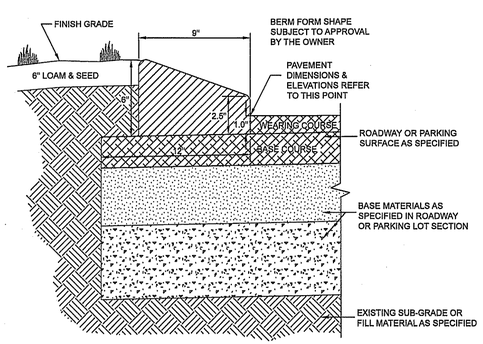


PAVEMENT SECTION — 2 / DT-2

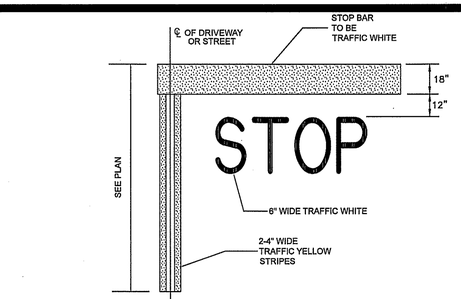


NOTE:
THE BINDER COURSE SHALL BE PLACED IMMEDIATELY AFTER TRENCH CONSTRUCTION AND ALLOWED TO STAND A MINIMUM OF 90 DAYS. A LEVELING COURSE SHALL BE APPLIED OVER THE TRENCH AFTER 90 DAYS AND THE ENTIRE ROAD OVERLAID TO THE LIMITS SHOWN ON THE PLANS.

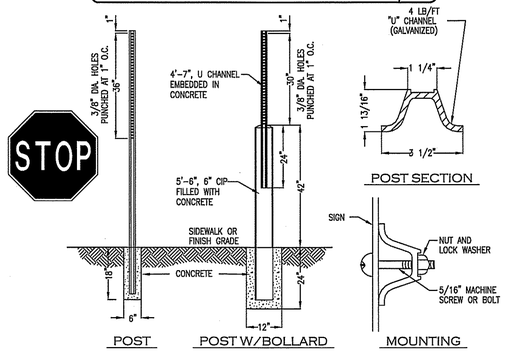
PAVEMENT TRENCH PATCH — 3 / DT-2



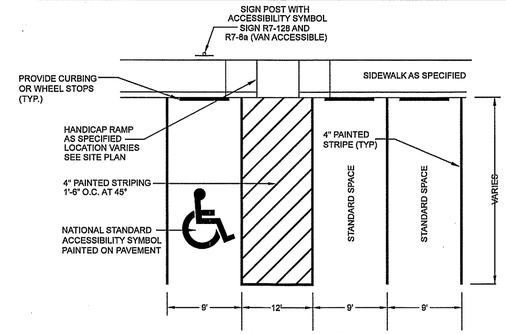
CURB - ASPHALT (CAPE COD BERM) — 4 / DT-2



STOP BAR DETAIL — 5 / DT-2



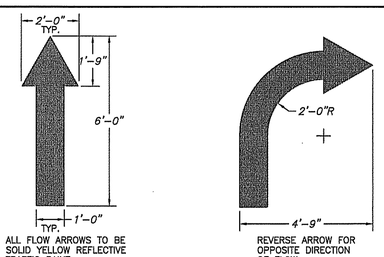
SIGN POST - STANDARD & W/BOLLARD — 6 / DT-2



NOTES:
1. MAXIMUM SLOPE IN ANY DIRECTION IS 2.0% FOR HANDICAP SPACES.
2. SEE SITE PLAN FOR LOCATION OF HANDICAP SPACES AND TYPE OF HANDICAP RAMP TO BE USED.
3. HANDICAP SYMBOL SHALL BE CENTERED ON WIDTH OF PARKING STALL AND LOCATED 6'6" FROM ACCESS DRIVE, INTO PARKING SPACE.
4. THE HANDICAP SYMBOL SHALL HAVE A 5' x 5' CONTRASTING BACKGROUND, NORMALLY BLUE. A BACKGROUND IS NOT REQUIRED IF WHITE OR YELLOW SYMBOL IS ON BLACK ASPHALT.

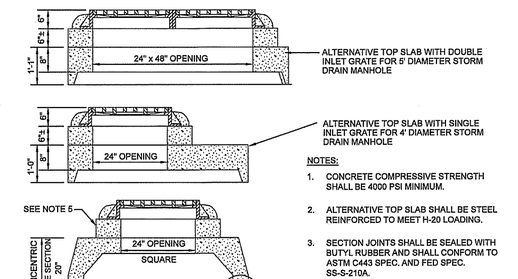
SCALE: N.T.S.

PARKING STALL LAYOUT — 7 / DT-2



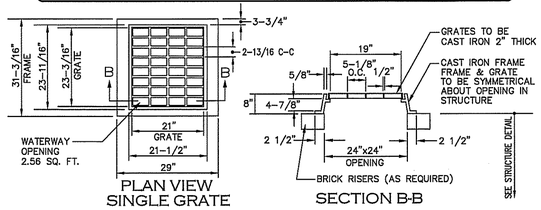
SCALE: N.T.S.

PAINTED TRAFFIC ARROWS — 8 / DT-2

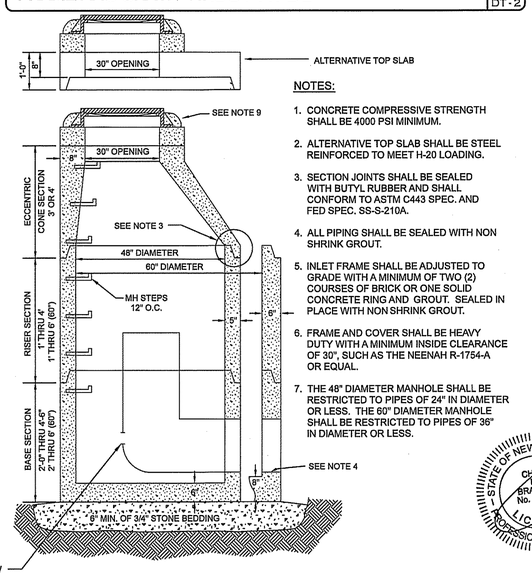


NOTES:
1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI MINIMUM.
2. ALTERNATIVE TOP SLAB SHALL BE STEEL REINFORCED TO MEET H-20 LOADING.
3. SECTION JOINTS SHALL BE SEALED WITH BUTYL RUBBER AND SHALL CONFORM TO ASTM C443 SPEC. AND FED SPEC. SS-S-210A.
4. ALL PIPING SHALL BE SEALED WITH NON SHRINK GROUT.
5. INLET FRAME SHALL BE ADJUSTED TO GRADE WITH BRICK AND MORTAR (8" MIN - 12" MAX) OR ONE SOLID CONCRETE RING AND GROUT. SEALED IN PLACE WITH NON SHRINK GROUT.
6. INLET GRATE AND FRAME IS TO BE NEENAH MODEL R-3570 FOR SINGLE GRATE AND MODEL R-3571 FOR A DOUBLE GATE STRUCTURE OR EQUAL.
7. THE 48" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 24" IN DIAMETER OR LESS. THE 60" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 36" IN DIAMETER OR LESS.

CATCH BASIN — 9 / DT-2

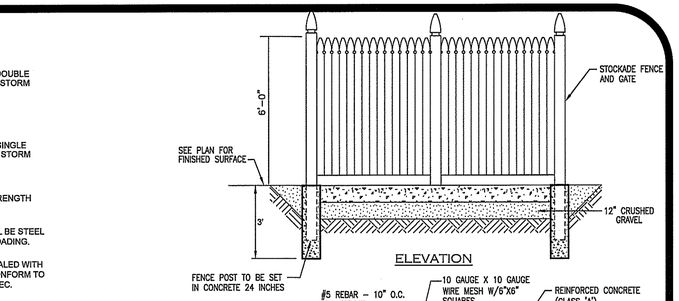


FRAME AND GRATE - NHDOT TYPE B — 10 / DT-2



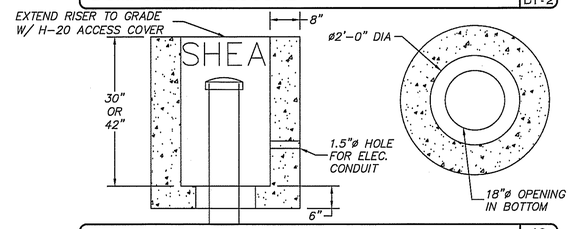
NOTES:
1. CONCRETE COMPRESSIVE STRENGTH SHALL BE 4000 PSI MINIMUM.
2. ALTERNATIVE TOP SLAB SHALL BE STEEL REINFORCED TO MEET H-20 LOADING.
3. SECTION JOINTS SHALL BE SEALED WITH BUTYL RUBBER AND SHALL CONFORM TO ASTM C443 SPEC. AND FED SPEC. SS-S-210A.
4. ALL PIPING SHALL BE SEALED WITH NON SHRINK GROUT.
5. INLET FRAME SHALL BE ADJUSTED TO GRADE WITH A MINIMUM OF TWO (2) COURSES OF BRICK OR ONE SOLID CONCRETE RING AND GROUT. SEALED IN PLACE WITH NON SHRINK GROUT.
6. FRAME AND COVER SHALL BE HEAVY DUTY WITH A MINIMUM INSIDE CLEARANCE OF 30", SUCH AS THE NEENAH R-1754-A OR EQUAL.
7. THE 48" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 24" IN DIAMETER OR LESS. THE 60" DIAMETER MANHOLE SHALL BE RESTRICTED TO PIPES OF 36" IN DIAMETER OR LESS.

4' DIA. MANHOLE - STORM DRAIN (DMH 1) — 11 / DT-2



NOTE:
PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE SCREEN FENCE TO THE ENGINEER FOR APPROVAL.

DUMPSTER ENCLOSURE — 12 / DT-2



WELL MANHOLE — 13 / DT-2

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

CONSTRUCTION DETAILS

TAX MAP 32 LOTS 72
(N.H. ROUTE 127)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

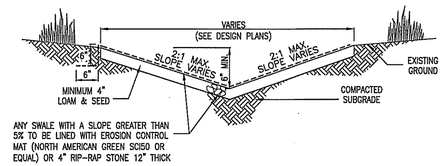
SCALE: AS NOTED — NOVEMBER 10, 2023

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

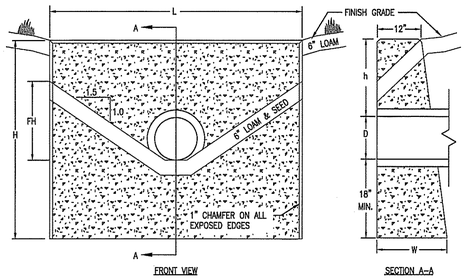
FIELDSTONE
LAND CONSULTANTS, PLLC

206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
Phone: (603) 672-5456 Fax: (603) 413-5456
www.FieldstoneLandConsultants.com

STATE OF NEW HAMPSHIRE — CHAD E. BRANSON No. 12191 — LICENSED PROFESSIONAL ENGINEER
5-8-24



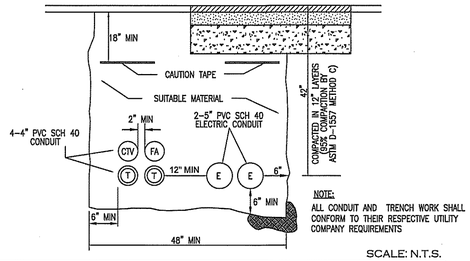
TYPICAL SWALE DETAIL — 1 / DT-3



CULVERT DIAM.	HEADWALL LENGTH	HEADWALL HEIGHT	FILL HEIGHT	TOP HEIGHT	HEADWALL BOTTOM
D	L	H	FH	h	WIDTH W
INCHES	FEET & INCHES				
12	4'-3"	3'-9"	1'-1"	1'-3"	1'-11.25"
15	6'-0"	4'-3"	1'-7"	1'-6"	2'-0.75"
18	7'-0"	4'-6"	1'-10"	1'-6"	2'-1.50"
24	9'-0"	5'-0"	2'-4"	1'-6"	2'-3.00"

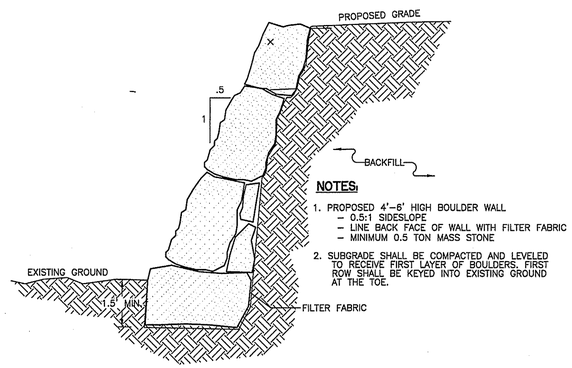
HEADWALL SHALL BE STEEL REINFORCED AND CONFORM TO NHDOT STANDARD PLAN HW-2, LAST REVISED JUNE 16, 2010.

HEADWALL - PRECAST CONCRETE (HW1) — 2 / DT-3

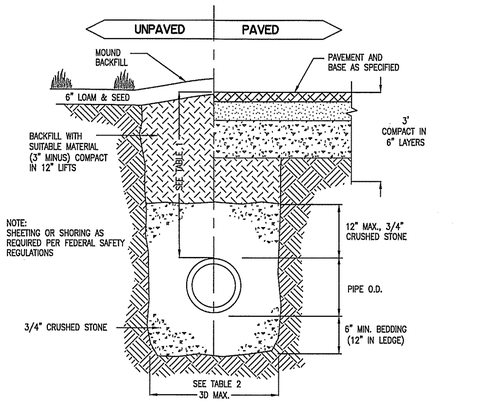


SCALE: N.T.S.

TYPICAL UTILITY TRENCH — 3 / DT-3



BOULDER WALL — 4 / DT-3

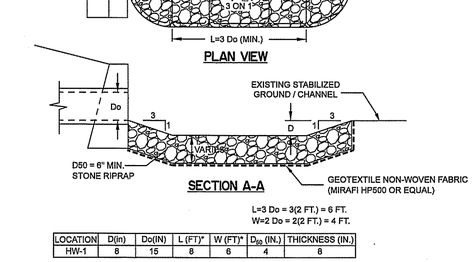


NOTE:
SHEETING OR SHORING AS REQUIRED PER FEDERAL SAFETY REGULATIONS

TABLE 1 (RECOMMENDED COVER)		
LOCATION	PIPE MATERIAL	MINIMUM COVER
PAVED ROADS	ALL	3 FT.
GRAVEL ROADS	ALL	2 FT.
DRIVEWAYS	ALL	1 FT.
UNPAVED AREAS	ALL	2 FT.

TABLE 2 (RECOMMENDED TRENCH WIDTH)	
INSIDE DIAMETER	TOTAL WIDTH
12" TO 24" OVER 24"	I.D. + 24" 2 x I.D.

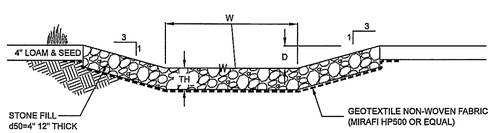
DRAINAGE TRENCH (TYPICAL) — 5 / DT-3



L=3 Do = 3(2 FT.) = 6 FT.
W=2 Do = 2(2 FT.) = 4 FT.

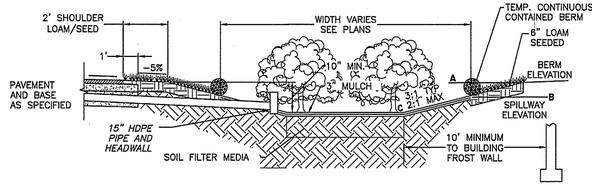
LOCATION	D(in)	Do(IN)	L (FT)*	W (FT)*	D_{50} (IN.)	THICKNESS (IN.)
HW-1	8	15	6	6	4	8

PREFORMED SCOUR HOLE — 6 / DT-3



STRUCTURE	W	D	TH	d50
RAIN GARDEN	5 FT	3"	12"	4"

EMERGENCY SPILLWAY DETAIL — 7 / DT-3



NOTES:

1. DO NOT PLACE RAIN GARDEN SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND ITS CONTRIBUTING DRAINAGE AREA(S) HAVE BEEN FULLY STABILIZED.
2. TO PREVENT DEGRADATION OF INFILTRATION FUNCTION:

   A. DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

   B. DO NOT COMPACT THE EXCAVATION.

   C. DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE RAIN GARDEN AREA DURING ANY STAGE OF CONSTRUCTION.

   FROM UNHSC BIORETENTION SOIL SPECIFICATION FEBRUARY 2017.

2.1 SOIL MEDIA SPECIFIED ACCORDING TO PERFORMANCE REQUIREMENTS: PARTICLE SIZE DISTRIBUTION ACCORDING TO ASTM D422 (STANDARD TEST METHOD FOR PATRICLE-SIZE ANALYSIS OF SOILS).

1. PARTICLE SIZE DISTRIBUTION BY SEPARATES:
   a. EXCLUDE ANY MATERIAL >4.76 mm - 0%
   b. VERY COARSE SAND/GRAVEL: GRAVEL (2.0 TO 4.76 mm) 5% MAXIMUM (PERCENT BY DRY WEIGHT).
   c. SAND (0.42 TO 2.0 mm) 60 - 85% (PERCENT BY DRYWEIGHT).
   d. SILT (0.075 TO 0.42 mm) 20% MAXIMUM (PERCENT BY DRYWEIGHT).
   e. CLAY (LESS THAN 0.075 mm) 5% MAXIMUM (PERCENT BY DRYWEIGHT).

TABLE 1: ACCEPTABLE PARTICLE SIZE DISTRIBUTION OF FINAL BIORETENTION SOIL MIX.

SIEVE #	SIEVE SIZE (mm)	% PASSING
4	0.187 (4.76)	100
10	0.079 (2)	95
40	0.017 (0.42)	40-15
200	0.003 (0.075)	10-20
>200	PAN	0-5

GARDEN #	RAIN GARDEN INVERT INFORMATION		
	ELEVATION		
	A	B	C
1	209.00	208.75	206.00

RAIN GARDEN TYPICAL SECTION — 8 / DT-3

REV.	DATE	DESCRIPTION	C/O	DR	CK
E	5/13/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

CONSTRUCTION DETAILS

TAX MAP 32 LOTS 72
(N.H. ROUTE 127)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: AS NOTED — NOVEMBER 10, 2023

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

FIELDSTONE
LAND CONSULTANTS, PLLC

206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
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www.FieldstoneLandConsultants.com

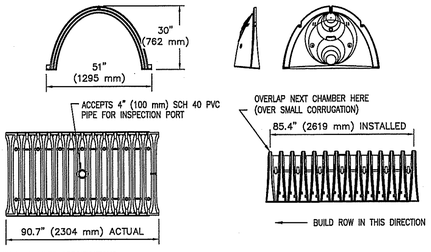
1. REMOVE ALL ORGANIC MATERIAL FROM AREA BELOW PROPOSED INFILTRATION BASINS AND TO EXPOSE UNDERLYING SOILS.
2. CARE SHALL BE TAKEN TO PROTECT THE UNDERLYING SOILS FROM CONSTRUCTION TRAFFIC AND THE DISCHARGE OF SEDIMENT LADEN RUNOFF. IF FEASIBLE, POSITION EQUIPMENT OUTSIDE THE LIMITS OF THE INFILTRATION PRACTICE.
3. ONCE EXCAVATED AND PRIOR TO FILLING, THE UNDERLYING SOILS SHALL BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH LEVELING DRAG.
4. FILL BELOW THE INFILTRATION PRACTICE SHALL CONFORM TO THE SPECIFICATIONS FOR NHDOT ITEM 209.1, "GRANULAR BACKFILL".
5. DO NOT PLACE INFILTRATION PRACTICES INTO SERVICE UNTIL ALL CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

INFILTRATION PRACTICE CONSTRUCTION NOTES

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH DESIGN MANUAL.
2. THE INSTALLATION OF STORMTECH SC-740 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION. CALL 1-888-892-2694 OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF THE LATEST STORMTECH INSTALLATION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

SC-740 NOTES

SCALE: NONE



NOMINAL CHAMBER SPECIFICATIONS

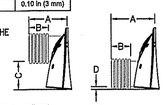
SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" (1295 mm x 762 mm x 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET (1.30 m³)
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET (2.12 m³)
WEIGHT	75 lbs. (33.6 kg)

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	A	PIPE SIZE B	C	D
SC740EPE06T	SC 740	6 in (150 mm)	10.90 in (277 mm)	3.85 in (98 mm)	18.50 in (470 mm)	N/A
SC740EPE06B	SC 740	6 in (150 mm)	10.90 in (277 mm)	3.85 in (98 mm)	N/A	0.50 in (13 mm)
SC740EPE12T	SC 740	12 in (300 mm)	14.70 in (373 mm)	7.70 in (196 mm)	12.50 in (318 mm)	N/A
SC740EPE12B	SC 740	12 in (300 mm)	14.70 in (373 mm)	7.70 in (196 mm)	N/A	1.20 in (30 mm)
SC740EPE15T	SC 740	15 in (375 mm)	18.40 in (467 mm)	10.38 in (263 mm)	9.00 in (229 mm)	N/A
SC740EPE15B	SC 740	15 in (375 mm)	18.40 in (467 mm)	10.38 in (263 mm)	N/A	1.30 in (33 mm)
SC740EPE18T	SC 740	18 in (460 mm)	19.70 in (500 mm)	10.72 in (272 mm)	6.00 in (127 mm)	N/A
SC740EPE18B	SC 740	18 in (460 mm)	19.70 in (500 mm)	10.72 in (272 mm)	N/A	1.60 in (41 mm)
SC740EPE24B	SC 740	24 in (600 mm)	18.50 in (470 mm)	9.45 in (240 mm)	N/A	0.10 in (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

*FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

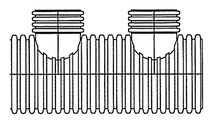


SC-740 TECHNICAL DETAILS

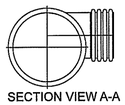
SCALE: NONE

MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS. WHEN USING STANDARD END CAPS, CORRUGATE DPIPE UP TO 18 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 24" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

FOR INFORMATION
CALL 1-888-892-2694



STORMTECH DOUBLE MANIFOLD MANUFACTURED BY ADS



STUB SIZE	48"	42"	36"	30"	24"	18"	15"	12"	10"	8"
24"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-	-
18"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-	-
15"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-
12"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-
10"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
8"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL
6"	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL

AVAIL - STANDARD HEADERS AVAILABLE

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 AND SC-310 CHAMBER SYSTEMS

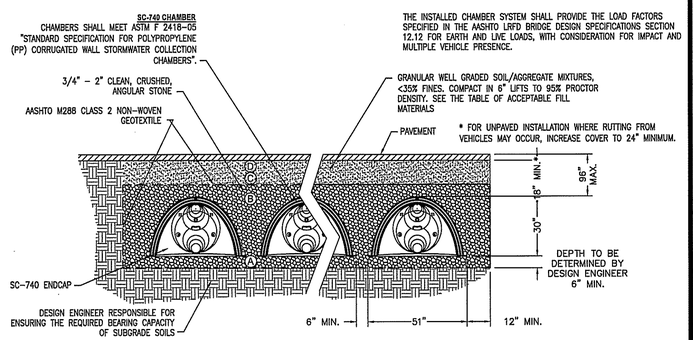
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
(D) FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
(C) FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (152 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
(B) EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 – 2 INCH (19 – 51 mm)	3, 357, 4, 457, 5, 56, 57	NO COMPACTION REQUIRED.
(A) FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 – 2 INCH (19 – 51 mm)	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY*.

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (229 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

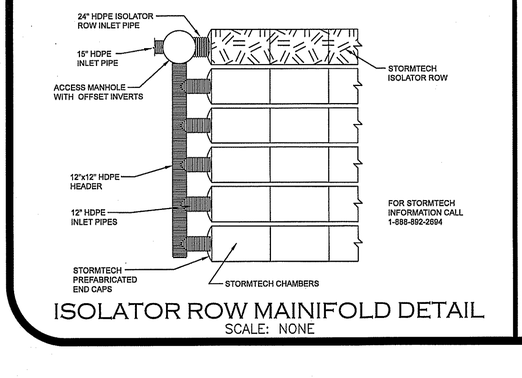
STORMTECH ACCEPTABLE FILL MATERIALS

SCALE: NONE



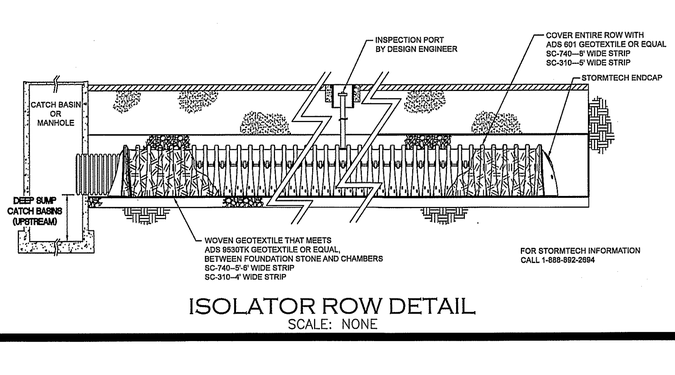
SC-740 STANDARD CROSS SECTION

SCALE: NONE



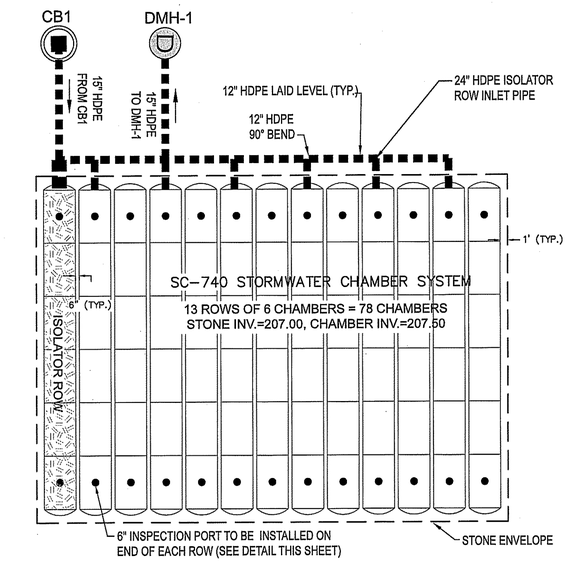
ISOLATOR ROW MAINIFOLD DETAIL

SCALE: NONE



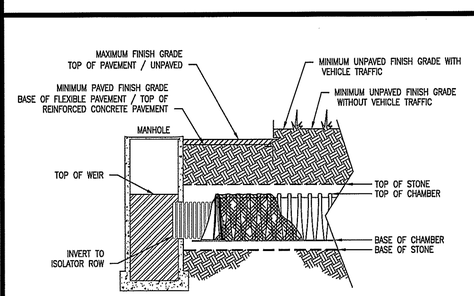
ISOLATOR ROW DETAIL

SCALE: NONE



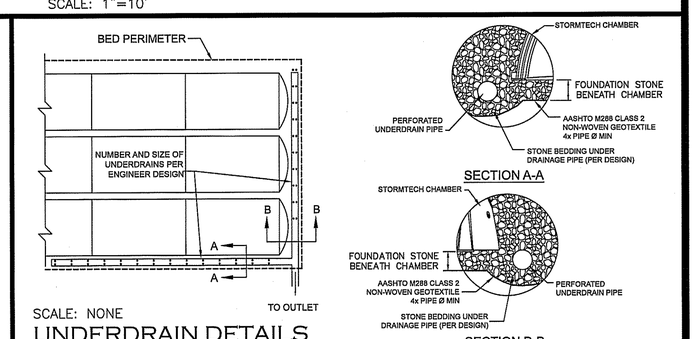
STORMWATER INFILTRATION SYSTEM - STORMTECH SC-740 CHAMBER LAYOUT

SCALE: 1"=10'



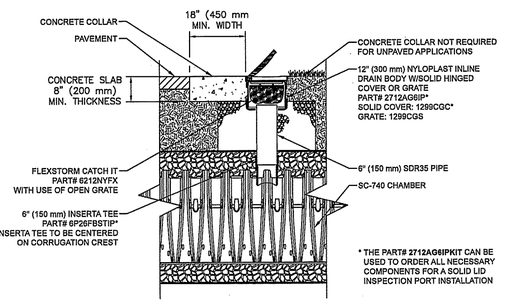
SECTION AT DRAIN STRUCTURE

SCALE: NONE



SCALE: NONE

UNDERDRAIN DETAILS



SC-740 6" INSPECTION PORT DETAIL

SCALE: NONE

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

STATE OF NEW HAMPSHIRE — CHAD E. BRANON No. 12191 — LICENSED PROFESSIONAL ENGINEER — 5-9-24

CONSTRUCTION DETAILS

TAX MAP 32 LOTS 72
(N.H. ROUTE 127)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: AS NOTED — NOVEMBER 10, 2023

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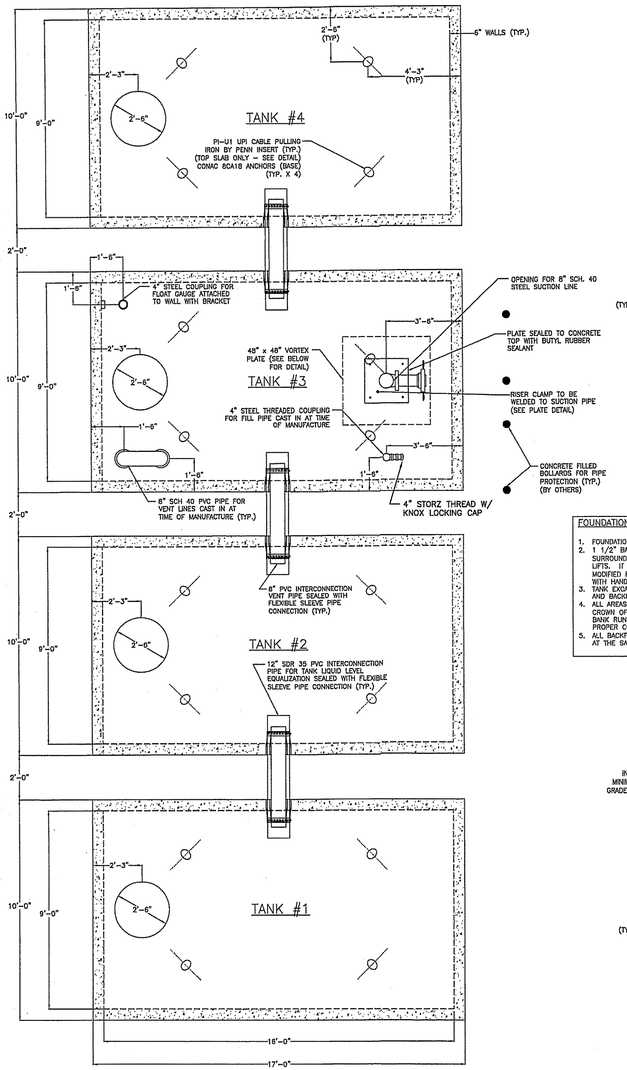
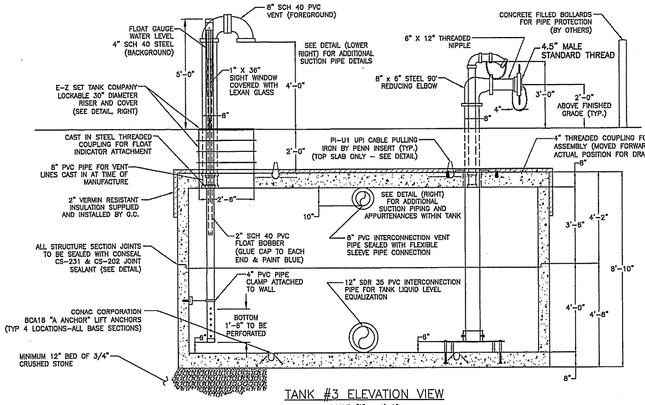
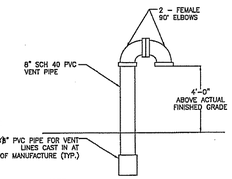
FILE: 3649DTOOD.DWG	PROJ. NO. 3649.00	SHEET: DT-4	PAGE NO. 11 OF 12



PLAN VIEW
SCALE: 3/8" = 1'-0"

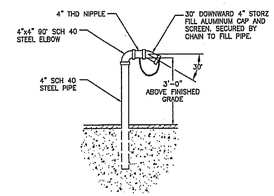


TANK #3 ELEVATION VIEW
SCALE: ⅜" = 1'-0"

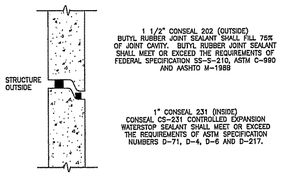


NOTE:
THE BUG SCREEN TO BE PLACED IN THE VENT PIPE. THE FULL INSIDE DIAMETER OF PIPE IS NEEDED.

VENT PIPE DETAIL



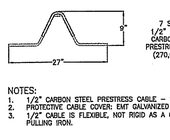
FILL LINE DETAIL



1 1/2" CONSEAL 202 (OUTSIDE) BUTYL RUBBER JOINT SEALANT SHALL FILL 75% OF JOINT CAVITY. BUTYL RUBBER JOINT SEALANT SHALL MEET OR EXCEED THE REQUIREMENTS OF FEDERAL SPECIFICATION SS-S-210, ASTM C-990 AND AASHTO M-1988

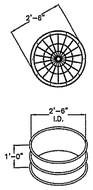
1" CONSEAL 231 (INSIDE) CONSEAL CS-231 CONTROLLED EXPANSION WATERSTOP SEALANT SHALL MEET OR EXCEED THE REQUIREMENTS OF ASTM SPECIFICATION NUMBERS D-71, D-4, D-6 AND D-217.

11 S1 CONSEAL JOINT SEALANTS



NOTES:
1. 1/2" CARBON STEEL PRESTRESS CABLE - 270 KIP
2. PROTECTIVE CABLE COVER: EMT GALVANIZED CONDUIT.
3. 1/2" CABLE IS FLEXIBLE, NOT RIGID AS A GALVANIZED PULLING IRON.

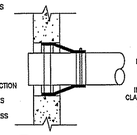
UPI PULLING CABLE IRON
(FOR TOP SLABS ONLY)



30" I.D. LIDS:
-WATER TIGHT SEAL USING MOLDED GASKET
-HIGH STRENGTH POLYPROPYLENE CONTAINING MAXIMUM UV INHIBITORS TO PREVENT DEGRADATION CAUSED BY SUNLIGHT.
SECURED WITH SIX (6) STAINLESS STEEL BOLTS OR SELF TAPPING SCREWS.
-SLIP RESISTANT SURFACE.
-1,500 LB WHEEL LOAD.

30" I.D. RISERS:
-PRE-CASTING RING FOR INSTALLATION IN CONCRETE TANKS.
-VACUUM TESTED TO 13" Hg W/ZERO DEFLECTION IN SIDEWALLS AND CONNECTION POINTS
-WITH INTERLOCKING DESIGN, E-Z SET RISERS ARE STACKABLE TO ANY HEIGHT.
-RISERS ARE SECURED WITH SIX (6) STAINLESS STEEL BOLTS OR SELF-TAPPING SCREWS.

E-Z SET TANK RISER



FLEXIBLE SLEEVE PIPE CONNECTION RUBBER ELEMENT SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM C-923 FOR "RESILIENT CONNECTORS BETWEEN CONCRETE MANHOLE STRUCTURES & PIPES", AND HAVE A MINIMUM TENSILE STRENGTH OF 2800 PSI.

INTERNAL EXPANSION BAND AND EXTERNAL PIPE CLAMP SHALL BE CONSTRUCTED OF SERIES 304 AND SERIES 305 NON-MAGNETIC STAINLESS STEEL (DOUBLE CLAMPS)

10 S1 FLEXIBLE SLEEVE PIPE CONNECTION

Product Code	SLAB Min. 90°	A - Anchor SWL AT 90° TENSION	SWL AT 90° SHEAR	Edge Distance
4CA14	4	3,500	5,400	24"
5CA14	5	5,500	8,500	28"
5CA18	5	6,000	9,300	30"
6CA14	6	6,500	10,100	34"
6CA18	6	7,500	11,600	35"
8CA18	8	13,000	20,000	40"

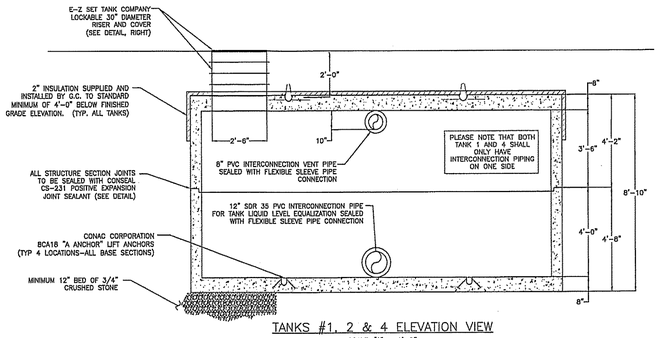
Note:Safe working Load provides a factr of safety of approximately 4:1 based on a minimum concrete strenght of 4,000 psi.

For use as Pulling Iron load maybe increased by 33% with 3 to 1 Safety Factor

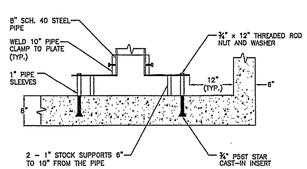
8 S1 CONAC CORP A ANCHOR
(FOR BASE SLABS ONLY)

FOUNDATION & BACKFILL NOTES:

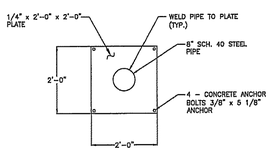
1. FOUNDATION MATERIAL SHALL BE 3/4" CRUSHED STONE, MINIMUM 12" THICK.
2. 1 1/2" BANK RUN GRAVEL SHALL BE USED FOR BACKFILL OPERATIONS SURROUNDING TANK. BACKFILL SHALL BE PLACED IN MAXIMUM 12" LOOSE LIFTS. IT SHALL BE COMPACTED TO 65% OF MAXIMUM DRY DENSITY BY MODIFIED PROCTOR METHOD (ASTM 1557). ALL COMPACTION SHALL BE DONE WITH HAND-OPERATED COMPACTION EQUIPMENT.
3. TANK EXCAVATION SHALL BE KEPT DEWATERED THROUGHOUT INSTALLATION AND BACKFILL OPERATIONS.
4. ALL AREAS BETWEEN TANKS SHALL BE FILLED TO A MINIMUM OF 12" ABOVE CROWN OF INTERCONNECTION PIPE WITH 3/4" CRUSHED STONE. 1 1/2" BANK RUN GRAVEL MAY BE USED ABOVE THIS ELEVATION, PROVIDED THAT PROPER COMPACTION AS STATED IN NOTE 2 ABOVE CAN BE ACHIEVED.
5. ALL BACKFILL MATERIAL BETWEEN TANKS SHALL BE PLACED IN 12" LIFTS AT THE SAME TIME AS THE MATERIAL SURROUND THE TANKS.



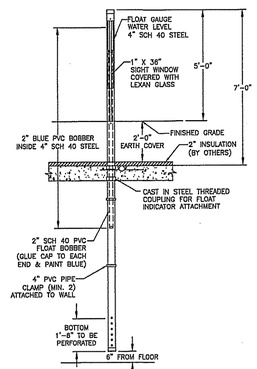
TANKS #1, 2 & 4 ELEVATION VIEW
SCALE: ⅜" - 1'-0"



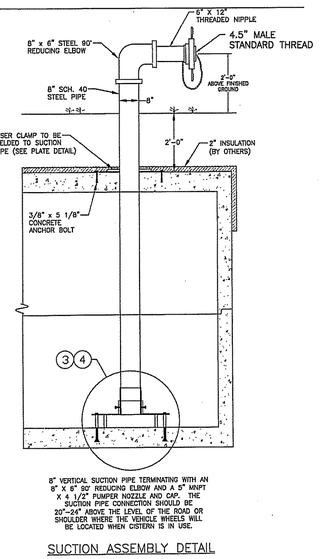
3 ANTIVORTEX PLATE



4 RISER CLAMP PLATE DETAIL



5 S1 TYPICAL WATER LEVEL FLOAT INDICATOR DETAIL



8" VERTICAL SUCTION PIPE TERMINATING WITH AN 8" X 6" 90° REDUCING ELBOW AND A 5" MNPT X 4 1/2" PUMPER NOZZLE AND CAP. THE SUCTION PIPE CONNECTION SHOULD BE 20"-24" ABOVE THE LEVEL OF THE ROAD OR SHOULDER WHERE THE VEHICLE WHEELS WILL BE LOCATED WHEN CISTERN IS IN USE.

SUCTION ASSEMBLY DETAIL

NOTES:
1. CONCRETE: 5,000 PSI @ 28 DAYS. CEMENT TO BE TYPE III PER ASTM C-150.
2. REINFORCING TO BE PER ASTM A-615, GRADE 60 DEFORMED BILLET STEEL WITH 1" MINIMUM COVER UNLESS OTHERWISE NOTED.
3. REINFORCED TO MEET OR EXCEED REQUIREMENTS OF AASHTO HS20-44, COVER: 1" - 5".
4. ALL SECTION JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT PER ASTM C-990 & AASHTO M-198.
5. EXTERIOR TO BE COATED WITH CONSEAL CS-55 ACRYLIC COATING OR SEABOARD LN-12 ASPHALT GILSONITE PAINT THAT MEETS THE REQUIREMENTS OF FEDERAL SPECIFICATION TT-C-494, TYPES I, II & III.
6. HEAVIEST SECTION TO WEIGH: 33,789# (16.10 YDS³ TOTAL, 8.05 YDS³ PER SECTION).

MICHIE CORPORATION, INC.
11 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

OR EQUAL

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DIGSAFE.COM
OR DIAL 811
CALL 811 - KNOW WHAT'S BELOW

STATE OF NEW HAMPSHIRE — CHAD E. BRANNON No. 12191 — LICENSED PROFESSIONAL ENGINEER — 5-8-24

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

CONSTRUCTION DETAILS

TAX MAP 32 LOTS 72
(N.H. ROUTE 127)
RAYMOND, NEW HAMPSHIRE

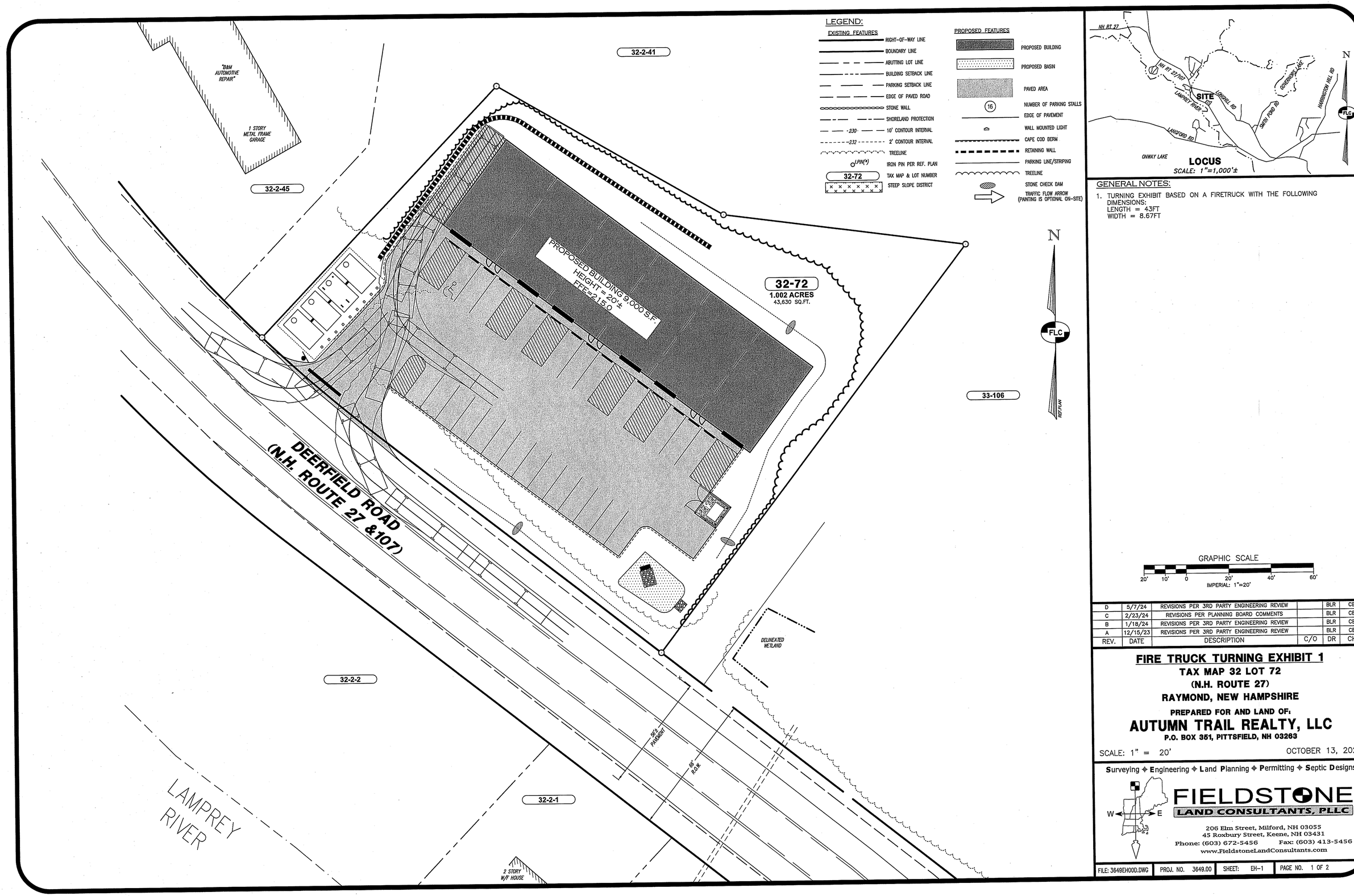
PREPARED FOR AND LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: AS NOTED — NOVEMBER 10, 2023

Surveying ✦ Engineering ✦ Land Planning ✦ Permitting ✦ Septic Designs
FIELDSTONE LAND CONSULTANTS, PLLC
206 Elm Street, Milford, NH 03055
45 Roxbury Street, Keene, NH 03431
Phone: (603) 672-5456 Fax: (603) 413-5456
www.FieldstoneLandConsultants.com

FILE: 3649DTOOD.DWG | PROJ. NO. 3649.00 | SHEET: DT-5 | PAGE NO. 12 OF 12

3055
03431



REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

FIRE TRUCK TURNING EXHIBIT 1

TAX MAP 32 LOT 72

(N.H. ROUTE 27)

RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC

P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

Surveying ⌖ Engineering ⌖ Land Planning ⌖ Permitting ⌖ Septic Designs

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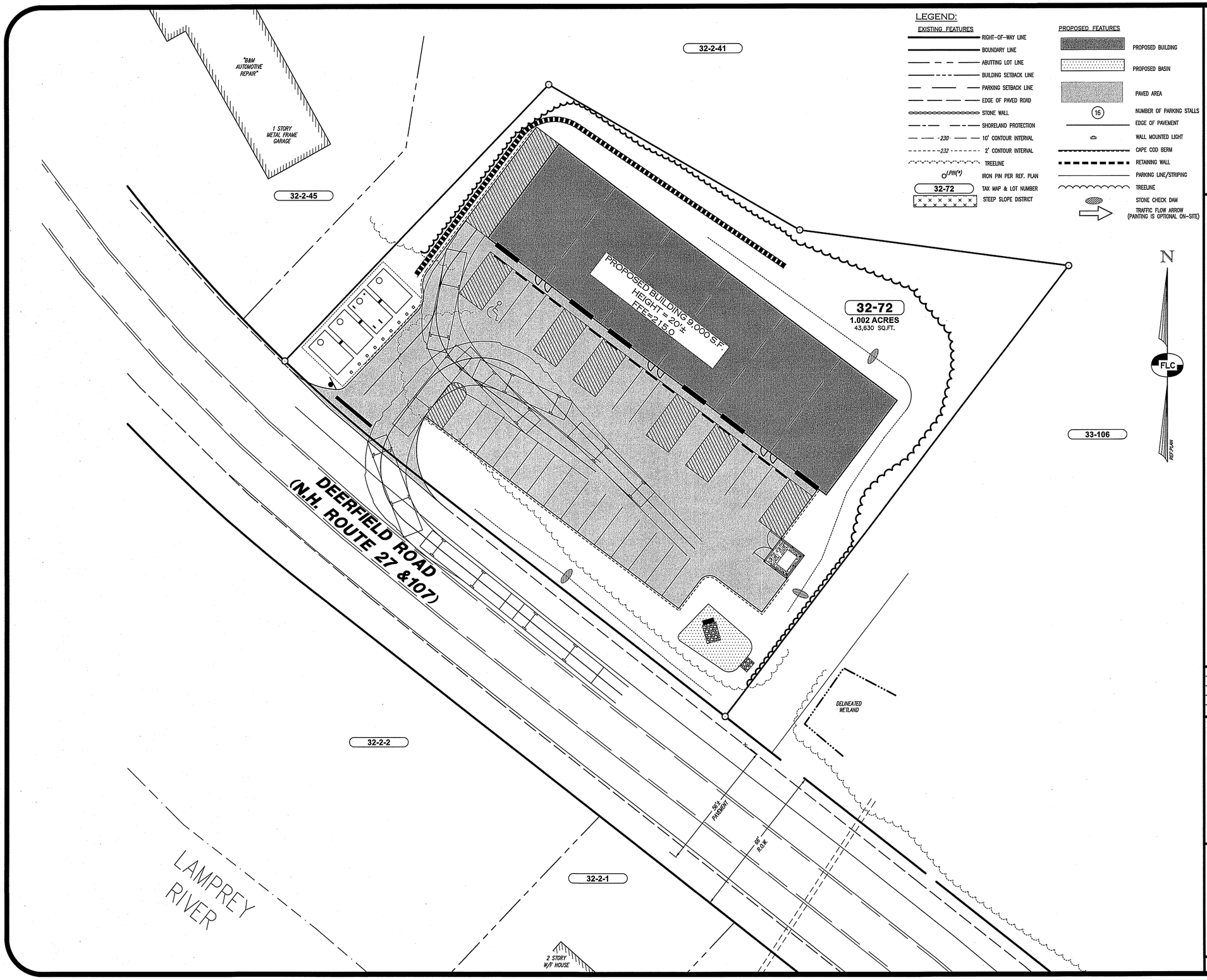
FILE: 3649EHOOD.DWG	PROJ. NO. 3649.00	SHEET: EH-1	PAGE NO. 1 OF 2



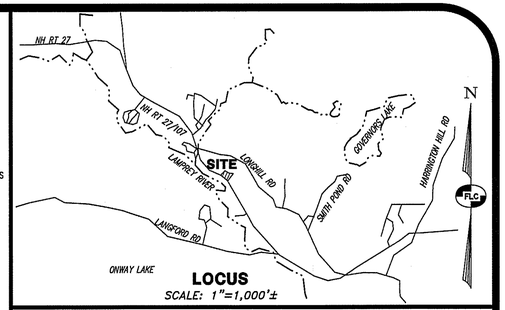
LEGEND:

EXISTING FEATURES

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- BUILDING SETBACK LINE
- PARKING SETBACK LINE
- EDGE OF PAVED ROAD
- STONE WALL
- SHORELAND PROTECTION
- 230 10' CONTOUR INTERVAL
- 232 2' CONTOUR INTERVAL
- TREELINE
- IPIN(*) IRON PIN PER REF. PLAN
- 32-72 TAX MAP & LOT NUMBER
- STEEP SLOPE DISTRICT

PROPOSED FEATURES

- PROPOSED BUILDING
- PROPOSED BASIN
- PAVED AREA
- 16 NUMBER OF PARKING STALLS
- EDGE OF PAVEMENT
- WALL MOUNTED LIGHT
- CAPE COD BERM
- RETAINING WALL
- PARKING LINE/STRIPING
- TREELINE
- STONE CHECK DAM
- TRAFFIC FLOW ARROW (PAINTING IS OPTIONAL ON-SITE)



GENERAL NOTES:

1. TURNING EXHIBIT BASED ON A FIRETRUCK WITH THE FOLLOWING DIMENSIONS:
   LENGTH = 43FT
   WIDTH = 8.67FT

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
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A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

FIRE TRUCK TURNING EXHIBIT 2

TAX MAP 32 LOT 72
(N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' OCTOBER 13, 2023

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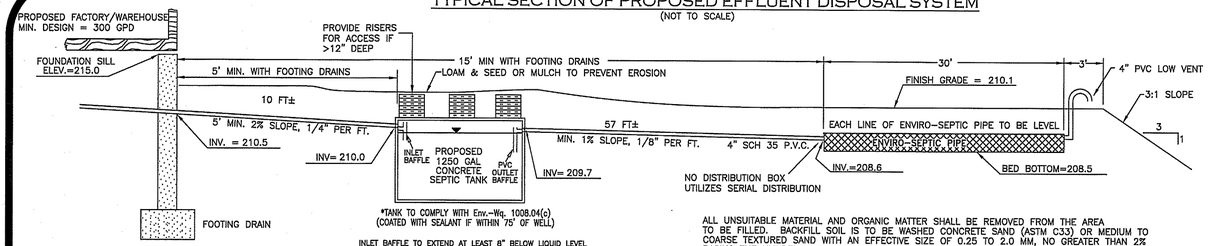
TYPICAL SECTION OF PROPOSED EFFLUENT DISPOSAL SYSTEM

(NOT TO SCALE)



SPECIFIED SEPTIC SAND

ASTM C-33 STANDARD SAND SPECIFICATION

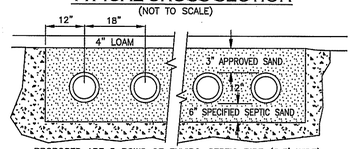
SIEVE (SPECIFICATION E11) PERCENT PASSING

9.5-MM (3/8 IN) 100%
4.75-MM (No.4) 95-100%
2.36-MM (No.8) 80-100%
1.18-MM (No.16) 50-85%
600-uM (No.30) 25-60%
300-uM (No.50) 5-30%
150-uM (No.100) 0-10%

And Presby Environmental, Inc. Requires:
75-uM (No.200) 0-2%
(Value must obtained by washing)

TYPICAL CROSS SECTION

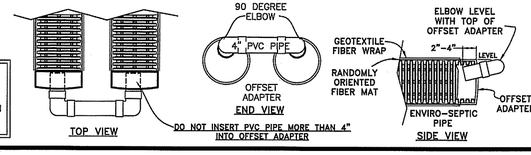
(NOT TO SCALE)



PROPOSED ARE 5 ROWS OF ENVIRO-SEPTIC PIPE (8.5' WIDE)
PIPES ARE TO BE LAID LEVEL WITH CENTER SPACING AT 1.5 FT.

RAISED CONNECTION DETAIL

(NOT TO SCALE)



ANY DISCREPANCIES, CHANGES, SUBSTITUTIONS OR DEVIATIONS FROM THIS PLAN REQUIRES NOTIFICATION OF THE DESIGNER. USE OF THIS PLAN FOR ANY PURPOSE OTHER THAN THE CONSTRUCTION OF THE SEWAGE DISPOSAL SYSTEM SHALL BE AT THE USERS RISK.

-WETLANDS WERE DELINEATED IN PROXIMITY TO THE LEACHFIELD AREA-
"WETLANDS WERE DELINEATED IN ACCORANCE WITH Env-Wq 1014.06
DELINEATION OF WETLANDS: HYDRIC SOILS DETERMINATION

MID-POINT NOTE:
AT LEAST 50% OF THE LEACHFIELD IS BEYOND THE MID-POINT ELEVATION OF 209.8 EXISTING GRADE, AND WILL MAINTAIN AT LEAST 2.5 FT BETWEEN BED BOTTOM AND ESHWT
NO PART OF THE LEACHFIELD SHALL BE CLOSER THAN 2.0 FT TO SHWT.

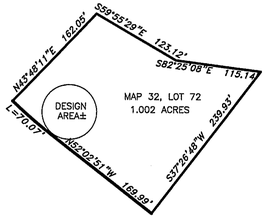
NOTES

1. THIS IS NOT A PROPERTY LINE SURVEY. ALL PROPERTY LINES SHALL BE VERIFIED BY OWNER AND CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CONTRACTOR AND OWNER ARE RESPONSIBLE FOR CONTACTING DIGSAFE FOR MARKING OF UNDERGROUND UTILITIES PRIOR TO BREAKING GROUND. ANY UTILITIES SHOWN HEREIN ARE APPROXIMATE ONL
3. THERE ARE NO POORLY DRAINED WETLANDS WITHIN 50 FEET OF THE LEACHFIELD.
4. THERE ARE NO VERY POORLY DRAINED WETLANDS, WELLS OR STANDING SURFACE WATER WITHIN 75 FEET OF THE LEACHFIELD.
5. INSTALLER SHALL NOT ALLOW ANY VEHICULAR TRAVEL TO OCCUR OVER THE PROPOSED EFFLUENT DISPOSAL SYSTEM (EDS) EXCEPT DURING CONSTRUCTION.
6. ALL PIPE CONNECTIONS TO THE SEPTIC TANK SHALL BE SEALED WITH A WATER-TIGHT FLEXIBLE JOINT CONNECTOR IN ACCORDANCE WITH ENV-WQ 1010.08(A).
7. THIS DESIGN DOES NOT PROVIDE FOR THE USE OF A GARBAGE GRINDER IF A GARBAGE GRINDER IS INSTALLED THE SEPTIC TANK CAPACITY WOULD NEED TO BE INCREASED.
8. THIS SYSTEM IS NOT DESIGNED FOR DISCHARGES FROM WATER PURIFICATION SYSTEMS OR FLOOR DRAINS.
9. REPLACEMENT SYSTEM TO BE LOCATED IN THE SAME AREA WHEN OR IF NECESSARY.
10. CONTRACTOR SHALL USE CAUTION WHEN PREPARING THE SITE AND PLACING FILL MATERIALS TO AVOID COMPACTION AND/OR SMEARING OF THE INFILTRATIVE SOILS.
11. ALL INVERT ELEVATIONS AND GRADES ARE REFERENCED FROM THE T.B.M.
12. DESIGNER SHALL BE NOTIFIED OF ANY CONDITIONS CONTRARY TO THOSE DEPICTED ON THIS PLAN.
13. WATER SUPPLY IS ON-SITE WELL
14. ALL PIPING SHALL BE SCH 35 PVC UNLESS OTHERWISE SPECIFIED ON PLANS.
15. SEPTIC TANK SHALL BE PUMPED AND CLEANED A MINIMUM OF EVERY THREE YEARS OR AT MORE FREQUENT INTERVALS IF NEEDED
16. SEPTIC TANK ARE TO BE SUPPLIED BY LAMARRE CONCRETE CORP. OR EQUAL.
17. ENVIRO-SEPTIC PRODUCTS TO BE SUPPLIED BY PRESBY ENVIRONMENTAL, INC. 1-800-473-5298.
18. NO KNOWN BURIAL SITES OR CEMETERIES WITHIN 100' OF ANY SEPTIC SYSTEM COMPONENT, PER ENV.WQ 1003.13(A)3.

ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEMS ARE APPROVED BY NHDES AS AN ITA IN ACCORDANCE WITH SECTION ENV-Ws 1024 OF THE STATE REGULATIONS. THE SYSTEM IS DESIGNED IN ACCORDANCE WITH THE ENVIRO-SEPTIC AND SIMPLE SEPTIC LEACHING SYSTEM DESIGN AND INSTALLATION MANUAL AND THE ENVIRO-SEPTIC WASTEWATER TREATMENT SYSTEM DESIGN AND INSTALLATION MANUAL NEW HAMPSHIRE STATE ATTACHMENT.

PLOT PLAN

NO SCALE



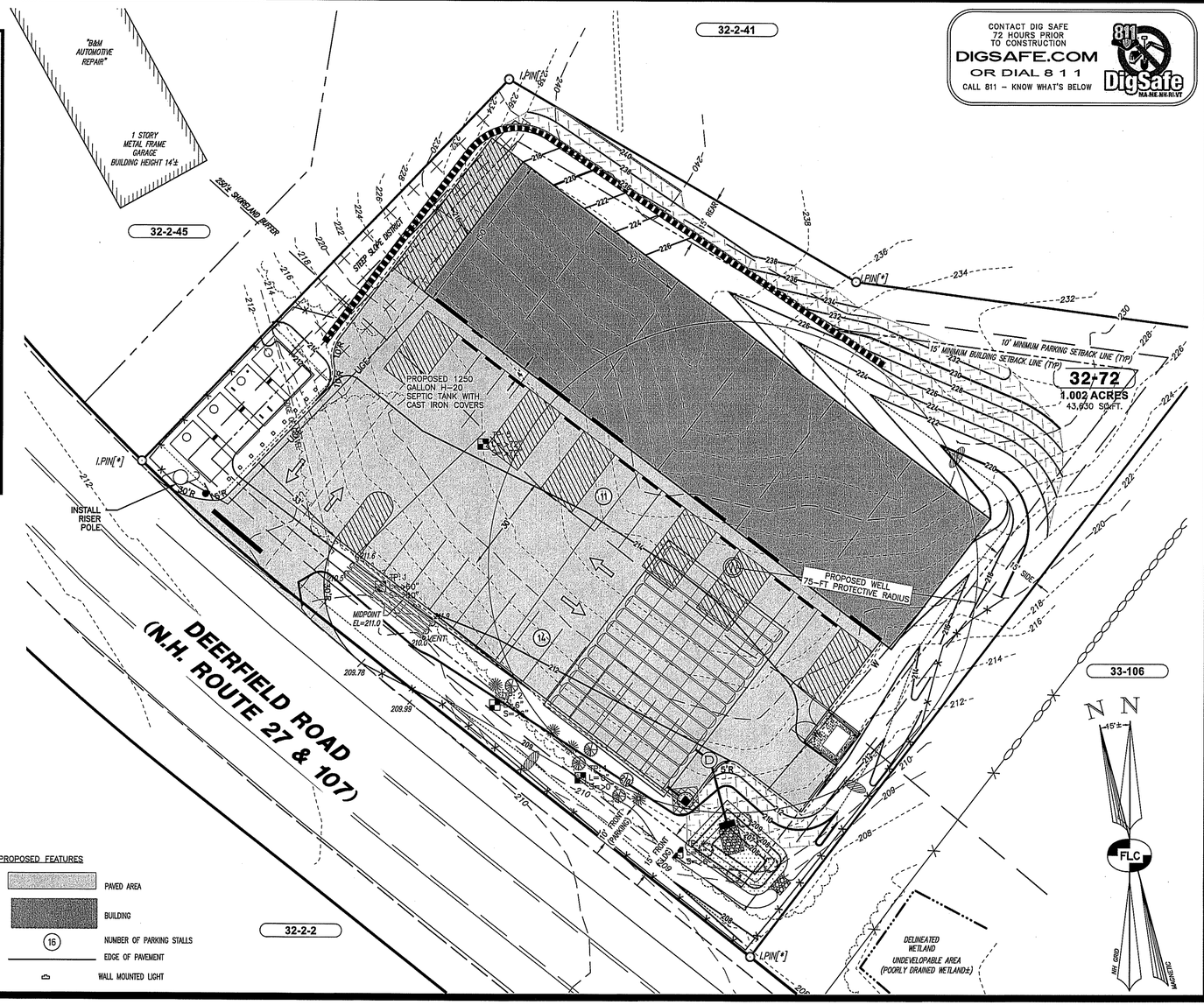
LEGEND:

EXISTING FEATURES

- RIGHT-OF-WAY LINE
- BOUNDARY LINE
- ABUTTING LOT LINE
- BUILDING SETBACK LINE
- PARKING SETBACK LINE
- EDGE OF PAVED ROAD
- STONE WALL
- SHORELAND PROTECTION
- 230 10' CONTOUR INTERVAL
- 232 2' CONTOUR INTERVAL
- I.PIN(*) IRON PIN PER REF. PLAN
- 32-72 TAX MAP & LOT NUMBER

PROPOSED FEATURES

- PAVED AREA
- BUILDING
- (16) NUMBER OF PARKING STALLS
- EDGE OF PAVEMENT
- WALL MOUNTED LIGHT



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TO CONSTRUCTION
DIGSAFE.COM
OR DIAL 811
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811 DigSafe
RI & ME NH-RI-VT

DESIGN INTENT

SEPTIC LOADING DATA

COMMERCIAL LOADING: FACTORY/WAREHOUSE WITHOUT CAFETERIA OR SHOWERS
6 UNITS W/ 4 EMPLOYEES EACH = 24 EMPLOYEES @ 10 GPD/EMPLOYEE = 240 GPD.
MINIMUM DESIGN = 300 GPD @ 5 MIN/INCH REQUIRES 150
LINEAR FEET OF ENVIRO-SEPTIC LARGE DIAMETER LEACHING PIPE
PROPOSED ARE 5 ROWS OF 30 LINEAR FEET EACH OR 150 TOTAL LINEAR FEET.

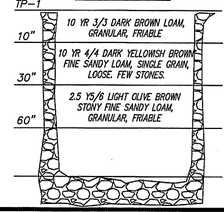
SOIL DATA - CHATFIELD-HOLLIS-CANTON, 8-TO-15 PERCENT SLOPES, STONY

DESIGN INTENT

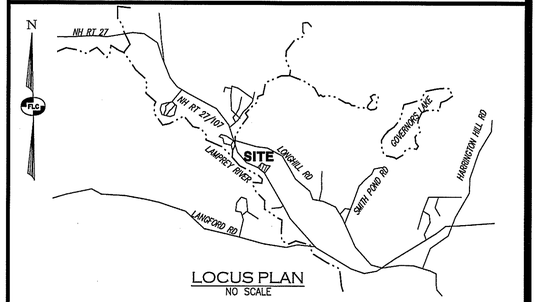
DUE TO SHWT AT >60" THE BOTTOM OF THE EFFLUENT
DISPOSAL SYSTEM (EDS) SHALL BE CONSTRUCTED AT 208.0 ELEVATION. THIS
IS APPROXIMATELY 2.2' ~~ABOVE~~ / BELOW ~~ORIGINAL~~ EXISTING GROUND ON THE HIGH
CONTOUR OF THE EFFLUENT DISPOSAL SYSTEM (EDS).
LEACHFIELD IS TO BE REBUILT IN PLACE IF REPLACEMENT BECOMES NECESSARY.
SUBDIVISION APPROVAL # PRE-1967
PREVIOUS CONST. APPROVAL #

TEST PIT DATA

TP-1 10/27/23



ROOTS 40"
E.S.H.W.T. NONE
WATER NONE
HARDPAN NONE
LEDGE NONE
PERC. TEST 6 MIN./IN. AT 24"
DATE 10/27/23



LOCUS PLAN
NO SCALE

REV	DATE	NOTES	DR	CK

GRAPHIC SCALE
20 10 0 20 40
IMPERIAL: 1"=20'

DRAFT

DESIGNER'S STAMP

PROPOSED SEWAGE DISPOSAL SYSTEM PLAN
TAX MAP 32 LOT 72
(N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE
PREPARED FOR & LAND OF:
AUTUMN TRAIL REALTY, LLC
P.O. BOX 351, PITTSFIELD, NH 03263

SCALE: 1" = 20' DECEMBER 19, 2023

Surveying + Engineering + Land Planning + Permitting + Septic Designs
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FILE: 3649SP00D.dwg	PROJ. NO. 3649.00	SHEET: ST-1	SHEET NO. 1 OF 1

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www.FieldstoneLandConsultants.com

Stormwater Management Report

AUTUMN TRAIL REALTY, LLC.

Prepared for:

Autumn Trail Realty, LLC.
PO Box 351
Pittsfield, NH 03263

Date: 11/16/2023

Last Revised: 5/13/2024

Job No: 03649.00

STATE OF NEW HAMPSHIRE
CHAD E. BRANON
No. 12191
LICENSED
PROFESSIONAL ENGINEER

5/13/2024

Index

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www.FieldstoneLandConsultants.com

STORM WATER MANAGEMENT REPORT
TAX MAP PARCEL 32-72
N.H. ROUTE 27
RAYMOND, NEW HAMPSHIRE

Prepared for:
Autumn Trail Realty, LLC.

November 10, 2023

Last Revised: May 13TH, 2024

I) INTRODUCTION

The following are storm water drainage calculations for the proposed development of Tax Map Parcel 32-72 in Raymond, New Hampshire. The subject parcel consists of 1.002 acres. The property is currently vacant and wooded. The property is surrounded by a lot that is currently used as a single-family residential lot. The project is located on Deerfield Road (N.H. Route 27), and is known as Tax Map Parcel 32-72 on the Town of Raymonds Assessor's map. The applicant is proposing to construct a 9,000 S.F. building that will be used as contractor bays/ a flex building as necessary. The construction will also include associated parking and site improvements. The site will be serviced by onsite septic, well, and underground electric/communication services.

The purpose of this report is to analyze the qualitative and quantitative impacts of the proposed development. The objective of the proposed stormwater management system for this project is to mitigate any increases resulting from the proposed development and to meet the drainage requirements outlined in the Town of Raymond Site Plan Review Regulations (Section 6.11.01.03.i).

II) SITE DESCRIPTION (EXISTING)

The subject parcel is currently vacant and completely wooded other than a small section of gravel along the western frontage of the property. Access to the site is located along the parcels frontage on Deerfield Road (N.H. Route 27). The entire parcel is composed of woods and slopes upwards away from Deerfield Road, with the majority of the site being between 10% and 30% grade. NRCS soil survey maps indicated the the soils present on the property consist of Chatfield-Hollis-Canton complex. These are a Hydrologic Soil Group (HSG) "B" soils.

III) METHODOLOGY

The quantity of runoff and the conveyance of that flow through the site are determined using the software package HydroCAD 10.20-3g by HydroCAD Software Solutions, LLC. HydroCAD is a computer aided design program for modeling storm water hydrology based on the Soil Conservation Service (SCS) TR-20 method combined with standard hydraulics calculations used to model detention basins and culverts.

Stormwater management systems and erosion control are designed in accordance with the methodology for the "Best Management Practices" (BMP's), as outlined in the New Hampshire Storm Water Manual, Volume 2.

IV) DRAINAGE DESIGN

The Town of Raymond Site Plan Regulations requires that the two (2), ten (10), twenty-five (25), fifty (50) year and one (1) inch storm events be evaluated. These design storms have therefore been analyzed to compare the pre and post-development peak flow rates for the site (see attached comparison table).

Pre-Development Drainage Conditions:

As can be seen on the Pre-Development drainage plan, the property is broken up into a single subcatchment with one observation point. The subcatchment drains south east to the existing roadside swale (OP-1) that runs along Deerfield Road (N.H. Route 27).

Post-Development Drainage Conditions:

As can be seen on the Post-Development Drainage Plan, the applicant is proposing to construct a single building on the parcel with parking and other site improvements as necessary. The majority of the site will be captured in the southeast corner of the parking lot where water will be captured in CB-1 where it will be directed into a proposed stormwater chamber system (2P), which will control stormwater runoff rates from the site. From the proposed chamber system stormwater will outlet through a drainage manhole, which contains a standpipe which will assist the chamber system with rate control, to a headwall (HW-1). The outlet structure (HW-1) releases the stormwater into the proposed rain garden (1P) where stormwater will be treated prior to leaving the property. Stormwater will leave the proposed rain garden (1P) when the rain garden (1P) overflows through its emergency spillway which outlets into the existing roadside swale that runs along Deerfield Road (N.H. Route 27).

V) SUMMARY

The intent of the stormwater management system for this project is to address the qualitative and quantitative aspects of the stormwater runoff so that there are no downstream adverse impacts created by the project. The proposed development will result in a decrease in stormwater flow to the observation point (OP-1) due to the site improvements.

The net result is that new impervious areas will receive qualitative treatment and that due to the proposed Stormwater BMPs there will be minimal increase to stormwater runoff rates leaving the site.

The following table is a summary of the attached calculations and show a comparison of the peak flow rates and volumes at the observation points for the site. The values presented are based on pre- and post-development conditions.

Table 1.1: Peak Flow Rates (CFS) to N.H. Route 27 Roadside Swale-OP-1

Location	Q1-INCH (CFS)			Q2-YR (CFS)			Q10-YR (CFS)			Q25-YR (CFS)			Q50-YR (CFS)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
OP-1	0.00	0.00	0.00	0.33	0.33	-0.00	1.41	1.14	-0.27	2.48	2.42	-0.06	3.58	3.45	-0.13

Table 1.2: Volume (AF) to N.H. Route 27 Roadside Swale-OP-1

Location	V1-INCH (AF)			V2-YR (AF)			V10-YR (AF)			V25-YR (AF)			V50-YR (AF)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
OP-1	0.000	0.001	0.001	0.039	0.056	0.017	0.112	0.178	0.066	0.185	0.279	0.094	0.260	0.378	0.118

Extreme Precipitation Tables

Northeast Regional Climate Center

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

Metadata for Point	
Smoothing	Yes
State	New Hampshire
Location	New Hampshire, United States
Latitude	43.050 degrees North
Longitude	71.21 degrees West
Elevation	60 feet
Date/Time	Fri Feb 23 2024 08:48:42 GMT-0500 (Eastern Standard Time)

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.26	0.40	0.50	0.65	0.81	1.03	**1yr**	0.70	0.98	1.20	1.53	1.95	2.51	2.73	**1yr**	2.23	2.62	3.03	3.73	4.32	**1yr**
2yr	0.32	0.49	0.61	0.81	1.02	1.28	**2yr**	0.88	1.17	1.49	1.88	2.37	3.01	3.34	**2yr**	2.66	3.22	3.72	4.42	5.05	**2yr**
5yr	0.38	0.58	0.73	0.98	1.26	1.61	**5yr**	1.08	1.46	1.87	2.37	3.00	3.80	4.28	**5yr**	3.36	4.11	4.73	5.60	6.32	**5yr**
10yr	0.42	0.66	0.83	1.14	1.48	1.91	**10yr**	1.27	1.73	2.23	2.84	3.59	4.54	5.15	**10yr**	4.02	4.96	5.67	6.69	7.51	**10yr**
25yr	0.49	0.78	1.00	1.38	1.83	2.38	**25yr**	1.58	2.15	2.80	3.58	4.55	5.74	6.60	**25yr**	5.08	6.35	7.22	8.48	9.42	**25yr**
50yr	0.56	0.90	1.15	1.60	2.15	2.83	**50yr**	1.86	2.55	3.34	4.28	5.44	6.86	7.96	**50yr**	6.08	7.66	8.67	10.15	11.20	**50yr**
100yr	0.63	1.02	1.31	1.86	2.54	3.37	**100yr**	2.19	3.02	3.99	5.13	6.51	8.21	9.61	**100yr**	7.27	9.24	10.41	12.16	13.32	**100yr**
200yr	0.72	1.17	1.52	2.17	2.99	4.00	**200yr**	2.58	3.58	4.75	6.12	7.79	9.82	11.60	**200yr**	8.69	11.16	12.51	14.58	15.86	**200yr**
500yr	0.85	1.40	1.83	2.66	3.73	5.02	**500yr**	3.22	4.48	5.99	7.75	9.88	12.46	14.89	**500yr**	11.03	14.32	15.94	18.55	19.98	**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	0.88	**1yr**	0.61	0.86	1.01	1.31	1.56	2.10	2.52	**1yr**	1.86	2.42	2.81	3.43	3.85	**1yr**
2yr	0.31	0.48	0.59	0.80	0.99	1.17	**2yr**	0.85	1.15	1.34	1.77	2.27	2.91	3.21	**2yr**	2.57	3.08	3.58	4.24	4.84	**2yr**
5yr	0.35	0.54	0.68	0.93	1.18	1.40	**5yr**	1.02	1.37	1.59	2.07	2.66	3.45	3.83	**5yr**	3.06	3.68	4.25	5.22	5.75	**5yr**
10yr	0.39	0.60	0.75	1.04	1.35	1.60	**10yr**	1.16	1.56	1.79	2.34	2.99	3.91	4.36	**10yr**	3.46	4.20	4.83	6.05	6.48	**10yr**
25yr	0.45	0.69	0.85	1.22	1.60	1.89	**25yr**	1.38	1.85	2.11	2.72	3.49	4.59	5.17	**25yr**	4.06	4.97	5.71	7.34	8.10	**25yr**
50yr	0.50	0.76	0.95	1.36	1.83	2.15	**50yr**	1.58	2.11	2.38	3.05	3.92	5.16	5.85	**50yr**	4.56	5.62	6.47	8.49	9.27	**50yr**
100yr	0.56	0.85	1.06	1.53	2.10	2.46	**100yr**	1.82	2.40	2.69	3.42	4.40	5.80	6.60	**100yr**	5.13	6.35	7.34	9.84	10.59	**100yr**
200yr	0.63	0.94	1.19	1.73	2.41	2.79	**200yr**	2.08	2.73	3.03	3.84	4.95	6.49	8.47	**200yr**	5.74	8.14	8.32	11.41	12.09	**200yr**
500yr	0.73	1.09	1.40	2.04	2.90	3.33	**500yr**	2.50	3.25	3.56	4.47	5.80	7.49	10.20	**500yr**	6.63	9.81	9.79	13.89	14.38	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.29	0.45	0.54	0.73	0.90	1.08	**1yr**	0.78	1.05	1.23	1.65	2.09	2.74	3.09	**1yr**	2.42	2.97	3.42	4.02	4.75	**1yr**
2yr	0.33	0.51	0.63	0.85	1.05	1.25	**2yr**	0.91	1.23	1.44	1.89	2.41	3.16	3.52	**2yr**	2.80	3.38	3.91	4.63	5.32	**2yr**
5yr	0.41	0.62	0.78	1.06	1.35	1.60	**5yr**	1.17	1.56	1.84	2.39	3.05	4.16	4.78	**5yr**	3.68	4.60	5.24	6.01	6.96	**5yr**
10yr	0.48	0.74	0.92	1.29	1.66	1.94	**10yr**	1.43	1.90	2.22	2.88	3.66	5.18	6.06	**10yr**	4.58	5.83	6.58	7.41	8.64	**10yr**
25yr	0.61	0.93	1.15	1.64	2.16	2.53	**25yr**	1.87	2.47	2.87	3.69	4.65	6.91	8.33	**25yr**	6.11	8.01	8.88	9.78	10.82	**25yr**
50yr	0.72	1.09	1.36	1.96	2.63	3.08	**50yr**	2.27	3.01	3.48	4.45	5.58	8.60	10.63	**50yr**	7.61	10.22	11.16	12.09	13.26	**50yr**
100yr	0.86	1.30	1.63	2.35	3.23	3.75	**100yr**	2.78	3.67	4.23	5.38	6.71	10.71	13.55	**100yr**	9.48	13.03	14.02	14.95	16.29	**100yr**
200yr	1.02	1.54	1.95	2.82	3.93	4.58	**200yr**	3.40	4.47	5.15	6.50	8.06	13.39	15.46	**200yr**	11.85	14.86	17.64	18.49	20.04	**200yr**
500yr	1.30	1.93	2.48	3.60	5.12	5.96	**500yr**	4.42	5.82	6.67	8.36	10.30	17.99	20.93	**500yr**	15.92	20.12	23.89	24.51	26.40	**500yr**

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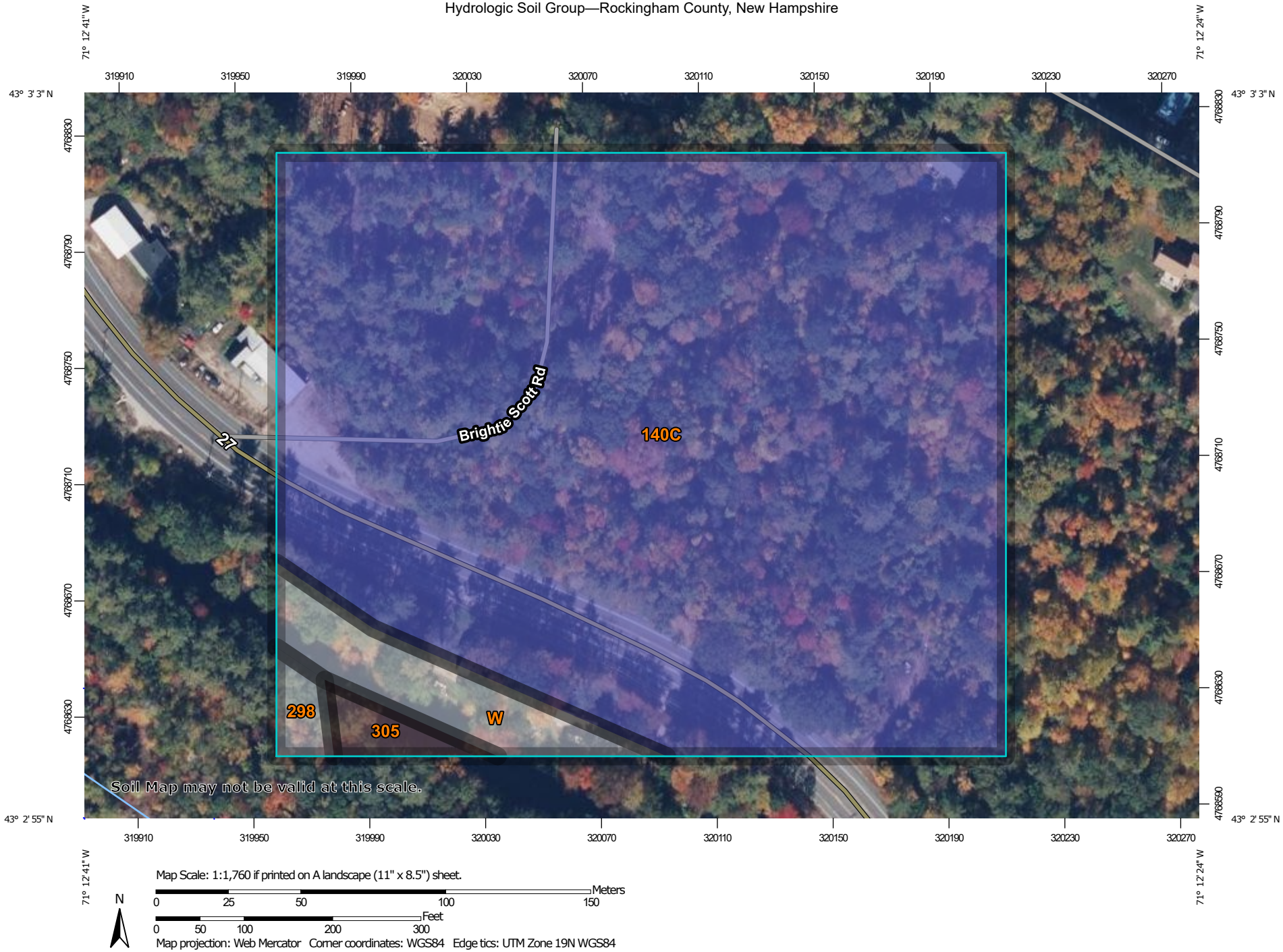
Northeast Regional Climate Center



Map Scale: 1:1,760 if printed on A landscape (11" x 8.5") 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 1:24,000.

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: Rockingham County, New Hampshire
Survey Area Data: Version 26, Aug 22, 2023

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

Date(s) aerial images were photographed: Sep 19, 2021—Nov 1, 2021

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
140C	Chatfield-Hollis-Canton complex, 8 to 15 percent slopes, rocky	B	12.0	92.2%
298	Pits, sand and gravel		0.1	1.1%
305	Lim-Pootatuck complex	B/D	0.2	1.4%
W	Water		0.7	5.3%
Totals for Area of Interest			**13.0**	**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.

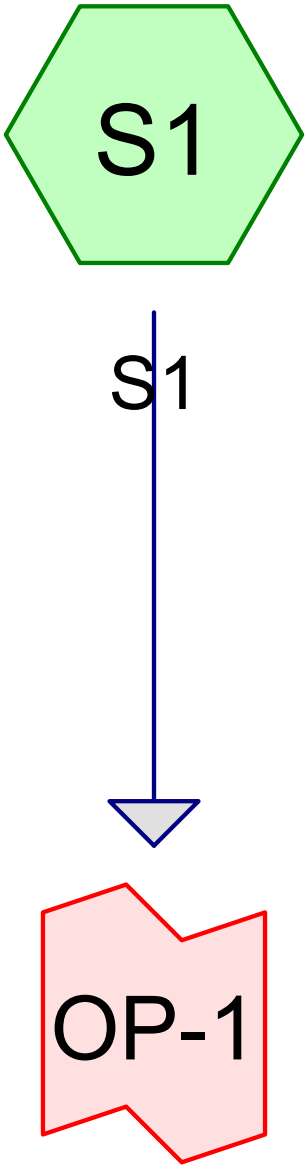
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Section 1.0: Pre-Developed Conditions



[ROADSIDE SWALE]

Subcat Reach Pond Link

Routing Diagram for 3649EX00
Prepared by Fieldstone Land Consultants, Printed 1/17/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-INCH	Type III 24-hr		Default	24.00	1	1.00	2
2	2-YR	Type III 24-hr		Default	24.00	1	3.01	2
3	10-YR	Type III 24-hr		Default	24.00	1	4.54	2
4	25-YR	Type III 24-hr		Default	24.00	1	5.74	2
5	50-YR	Type III 24-hr		Default	24.00	1	6.86	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	61	>75% Grass cover, Good HSG B (S1)
0.058	85	Gravel roads HSG B (S1)
0.137	98	Paved parking HSG B (S1)
0.962	55	Woods, Good HSG B (S1)
1.157	**62**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.157	HSG B	S1
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.157		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 Runoff Area=50,419 sf 11.88% Impervious Runoff Depth=0.00"
Flow Length=365' Slope=0.2103 '/' Tc=6.0 min CN=62 Runoff=0.00 cfs 0.000 af

Link OP-1: [ROADSIDE SWALE] Inflow=0.00 cfs 0.000 af
Primary=0.00 cfs 0.000 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.000 af Average Runoff Depth = 0.00"
88.12% Pervious = 1.020 ac 11.88% Impervious = 0.137 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 Runoff Area=50,419 sf 11.88% Impervious Runoff Depth=0.40"
Flow Length=365' Slope=0.2103 '/' Tc=6.0 min CN=62 Runoff=0.33 cfs 0.039 af

Link OP-1: [ROADSIDE SWALE] Inflow=0.33 cfs 0.039 af
Primary=0.33 cfs 0.039 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.039 af Average Runoff Depth = 0.40"
88.12% Pervious = 1.020 ac 11.88% Impervious = 0.137 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 Runoff Area=50,419 sf 11.88% Impervious Runoff Depth=1.16"
Flow Length=365' Slope=0.2103 '/' Tc=6.0 min CN=62 Runoff=1.41 cfs 0.112 af

Link OP-1: [ROADSIDE SWALE] Inflow=1.41 cfs 0.112 af
Primary=1.41 cfs 0.112 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.112 af Average Runoff Depth = 1.16"
88.12% Pervious = 1.020 ac 11.88% Impervious = 0.137 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 Runoff Area=50,419 sf 11.88% Impervious Runoff Depth=1.91"
Flow Length=365' Slope=0.2103 '/' Tc=6.0 min CN=62 Runoff=2.48 cfs 0.185 af

Link OP-1: [ROADSIDE SWALE] Inflow=2.48 cfs 0.185 af
Primary=2.48 cfs 0.185 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.185 af Average Runoff Depth = 1.91"
88.12% Pervious = 1.020 ac 11.88% Impervious = 0.137 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment S1: S1 Runoff Area=50,419 sf 11.88% Impervious Runoff Depth=2.70"
Flow Length=365' Slope=0.2103 '/' Tc=6.0 min CN=62 Runoff=3.58 cfs 0.260 af

Link OP-1: [ROADSIDE SWALE] Inflow=3.58 cfs 0.260 af
Primary=3.58 cfs 0.260 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.260 af Average Runoff Depth = 2.70"
88.12% Pervious = 1.020 ac 11.88% Impervious = 0.137 ac

Section 1.1: Pre-Developed Conditions
25-year Storm – Full Summary

Summary for Subcatchment S1: S1

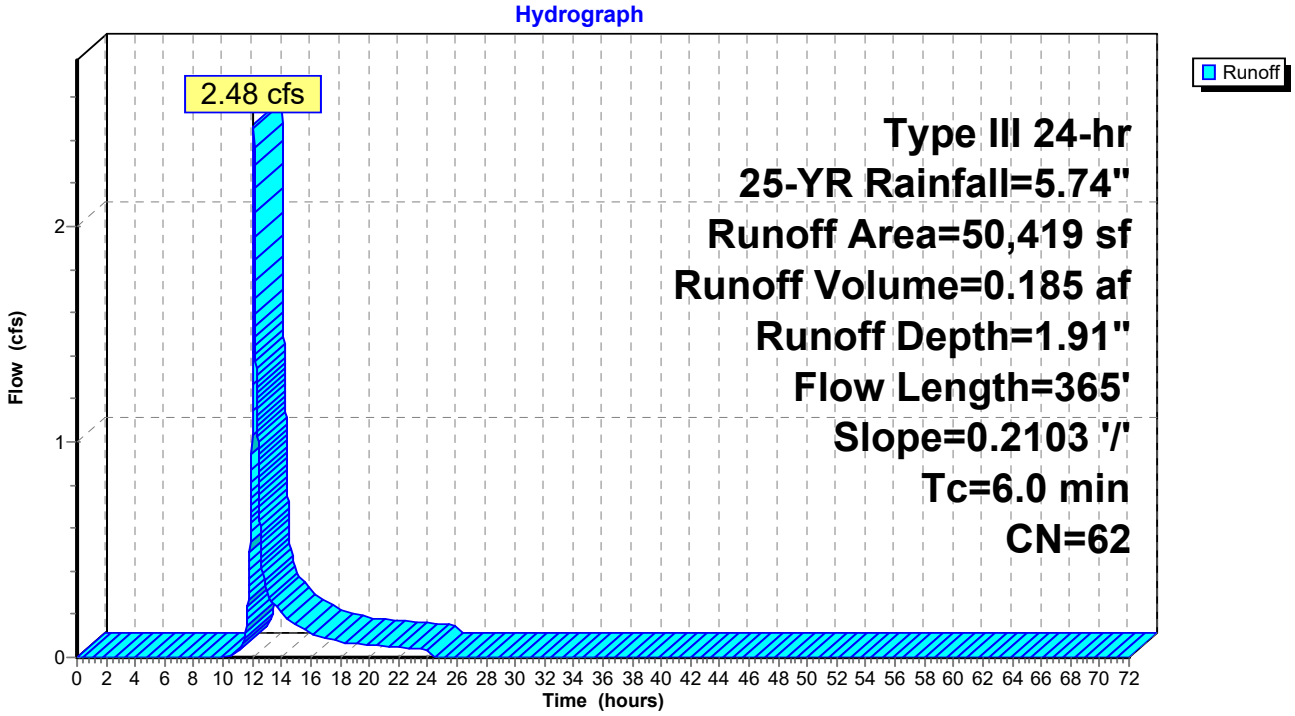
Runoff = 2.48 cfs @ 12.10 hrs, Volume= 0.185 af, Depth= 1.91"
Routed to Link OP-1 : [ROADSIDE SWALE]

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.74"

Area (sf)	CN	Description
5,988	98	Paved parking HSG B
2,540	85	Gravel roads HSG B
41,884	55	Woods, Good HSG B
7	61	>75% Grass cover, Good HSG B
50,419	62	Weighted Average
44,431		88.12% Pervious Area
5,988		11.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	365	0.2103	1.19		**Lag/CN Method,**
5.1	365	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S1: S1

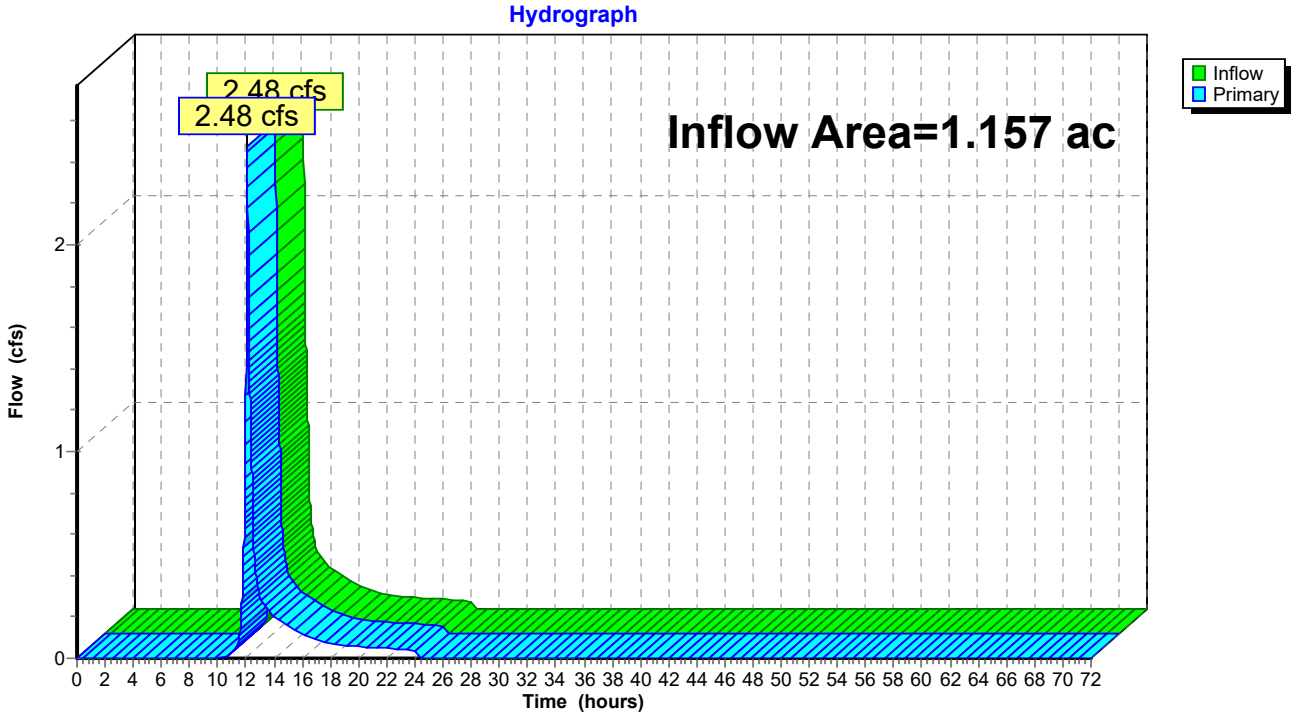


Summary for Link OP-1: [ROADSIDE SWALE]

Inflow Area = 1.157 ac, 11.88% Impervious, Inflow Depth = 1.91" for 25-YR event
Inflow = 2.48 cfs @ 12.10 hrs, Volume= 0.185 af
Primary = 2.48 cfs @ 12.10 hrs, Volume= 0.185 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: [ROADSIDE SWALE]



Section 1.2: Pre-Developed Conditions
50-year Storm – Full Summary

Summary for Subcatchment S1: S1

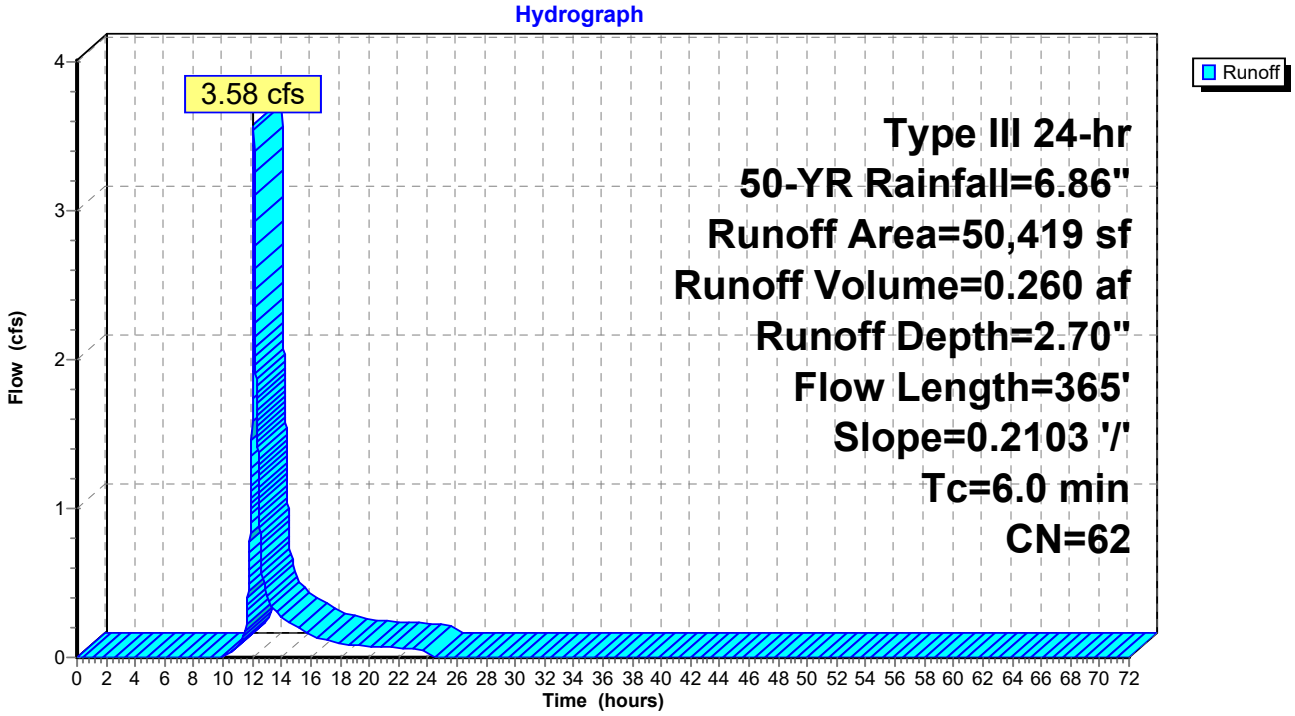
Runoff = 3.58 cfs @ 12.09 hrs, Volume= 0.260 af, Depth= 2.70"
Routed to Link OP-1 : [ROADSIDE SWALE]

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=6.86"

Area (sf)	CN	Description
5,988	98	Paved parking HSG B
2,540	85	Gravel roads HSG B
41,884	55	Woods, Good HSG B
7	61	>75% Grass cover, Good HSG B
50,419	62	Weighted Average
44,431		88.12% Pervious Area
5,988		11.88% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	365	0.2103	1.19		**Lag/CN Method,**
5.1	365	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S1: S1

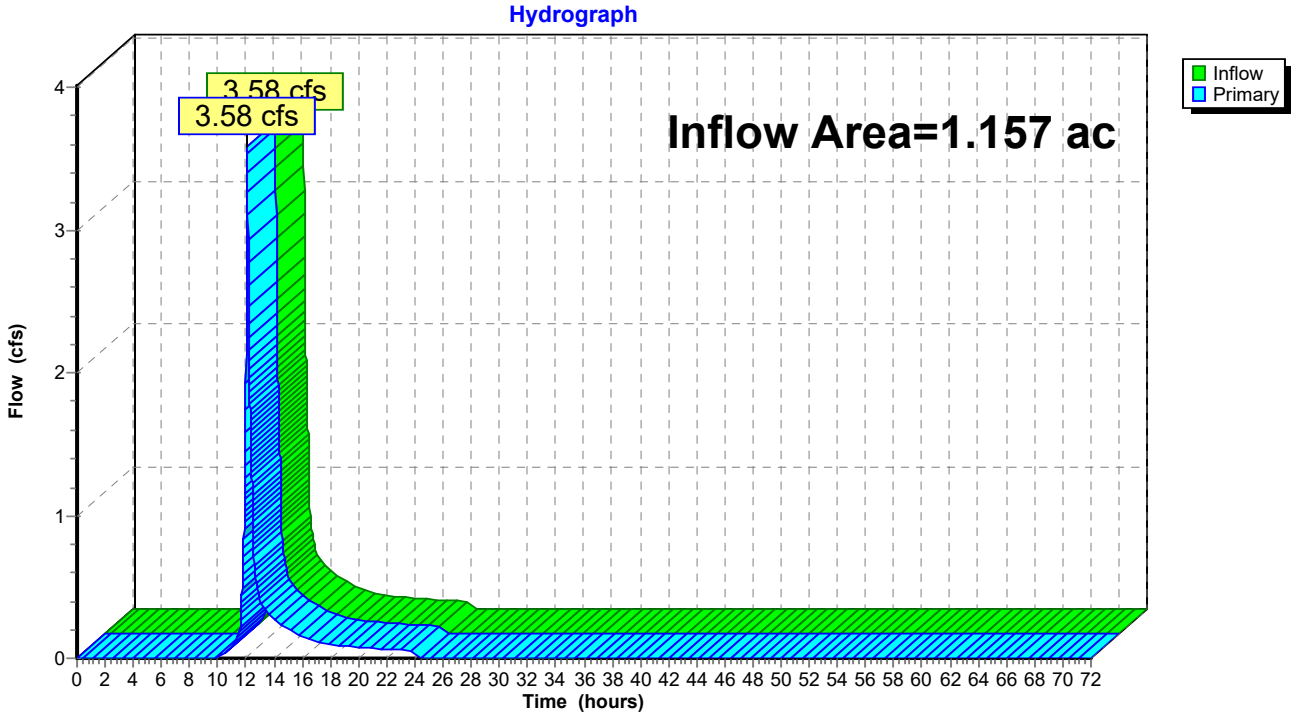


Summary for Link OP-1: [ROADSIDE SWALE]

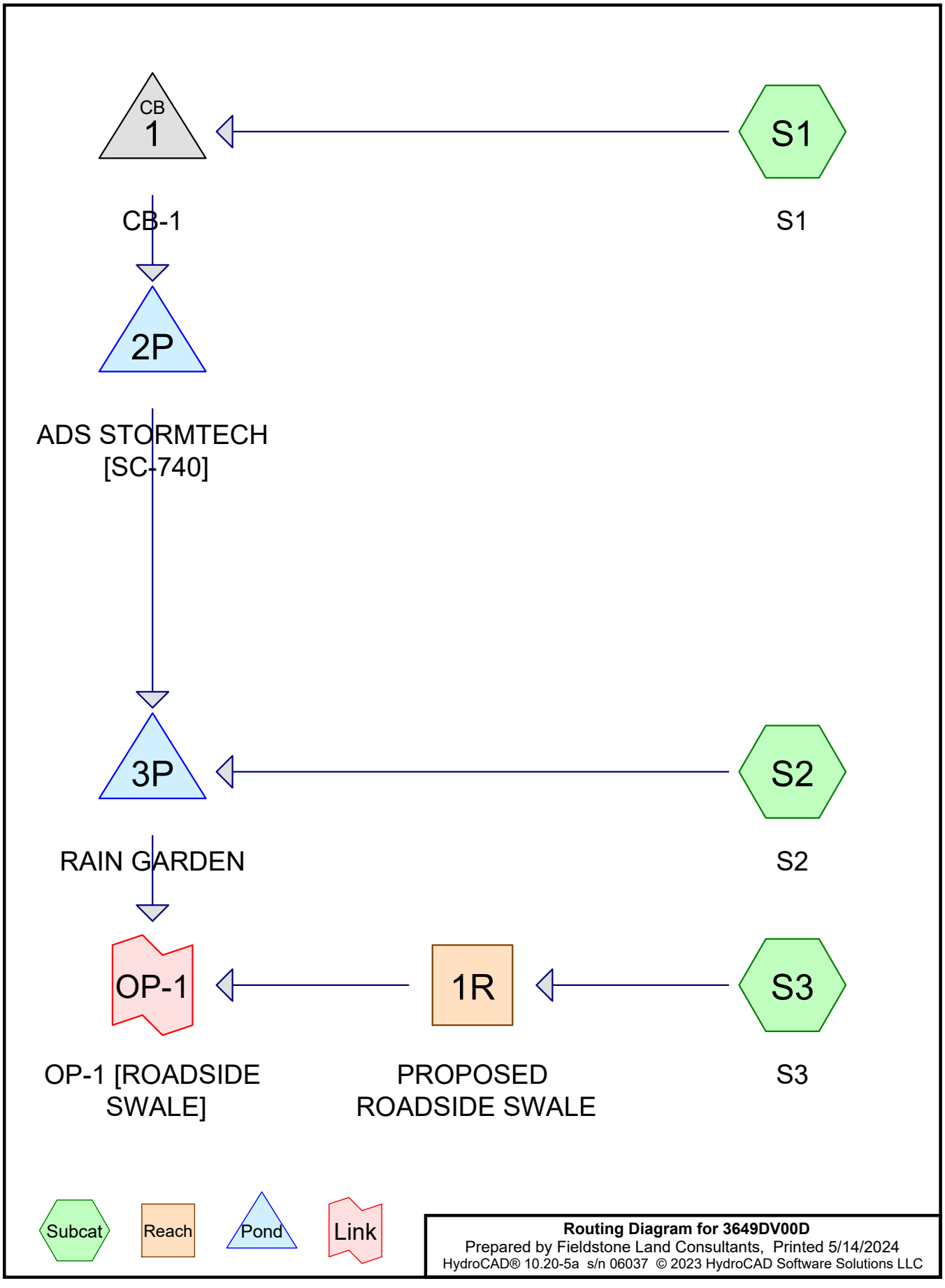
Inflow Area = 1.157 ac, 11.88% Impervious, Inflow Depth = 2.70" for 50-YR event
Inflow = 3.58 cfs @ 12.09 hrs, Volume= 0.260 af
Primary = 3.58 cfs @ 12.09 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: [ROADSIDE SWALE]



Section 2.0: Post-Developed Conditions



Routing Diagram for 3649DV00D
Prepared by Fieldstone Land Consultants, Printed 5/14/2024

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-INCH	Type III 24-hr		Default	24.00	1	1.00	2
2	2-YR	Type III 24-hr		Default	24.00	1	3.01	2
3	10-YR	Type III 24-hr		Default	24.00	1	4.54	2
4	25-YR	Type III 24-hr		Default	24.00	1	5.74	2
5	50-YR	Type III 24-hr		Default	24.00	1	6.86	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.346	61	>75% Grass cover, Good HSG B (S1, S2, S3)
0.501	98	Paved parking HSG B (S1, S3)
0.207	98	Roofs HSG B (S1, S2)
0.104	55	Woods, Good HSG B (S1, S2, S3)
1.157	**83**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
1.157	HSG B	S1, S2, S3
0.000	HSG C	
0.000	HSG D	
0.000	Other	
1.157		**TOTAL AREA**

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 S1: S1 Runoff Area=22,188 sf 92.41% Impervious Runoff Depth=0.56"
Flow Length=346' Slope=0.1083 '/' Tc=6.0 min CN=95 Runoff=0.34 cfs 0.024 af

Subcatchment S2: S2 Runoff Area=10,724 sf 30.40% Impervious Runoff Depth=0.01"
Flow Length=284' Slope=0.3662 '/' Tc=6.0 min CN=72 Runoff=0.00 cfs 0.000 af

Subcatchment S3: S3 Runoff Area=17,507 sf 40.23% Impervious Runoff Depth=0.02"
Flow Length=349' Tc=10.7 min CN=74 Runoff=0.00 cfs 0.001 af

Reach 1R: PROPOSED ROADSIDE Avg. Flow Depth=0.03' Max Vel=0.36 fps Inflow=0.00 cfs 0.001 af
n=0.030 L=162.2' S=0.0123 '/' Capacity=10.04 cfs Outflow=0.00 cfs 0.001 af

Pond 1: CB-1 Peak Elev=207.87' Inflow=0.34 cfs 0.024 af
15.0" Round Culvert n=0.012 L=4.5' S=0.0000 '/' Outflow=0.34 cfs 0.024 af

Pond 2P: ADS STORMTECH [SC-740] Peak Elev=207.65' Storage=0.022 af Inflow=0.34 cfs 0.024 af
Outflow=0.00 cfs 0.005 af

Pond 3P: RAIN GARDEN Peak Elev=207.31' Storage=212 cf Inflow=0.00 cfs 0.005 af
Outflow=0.00 cfs 0.000 af

Link OP-1: OP-1 [ROADSIDE SWALE] Inflow=0.00 cfs 0.001 af
Primary=0.00 cfs 0.001 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.025 af Average Runoff Depth = 0.26"
38.90% Pervious = 0.450 ac 61.10% Impervious = 0.707 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 S1: S1 Runoff Area=22,188 sf 92.41% Impervious Runoff Depth=2.46"
Flow Length=346' Slope=0.1083 '/' Tc=6.0 min CN=95 Runoff=1.39 cfs 0.104 af

Subcatchment S2: S2 Runoff Area=10,724 sf 30.40% Impervious Runoff Depth=0.81"
Flow Length=284' Slope=0.3662 '/' Tc=6.0 min CN=72 Runoff=0.21 cfs 0.017 af

Subcatchment S3: S3 Runoff Area=17,507 sf 40.23% Impervious Runoff Depth=0.91"
Flow Length=349' Tc=10.7 min CN=74 Runoff=0.34 cfs 0.031 af

Reach 1R: PROPOSED ROADSIDE Avg. Flow Depth=0.28' Max Vel=1.43 fps Inflow=0.34 cfs 0.031 af
n=0.030 L=162.2' S=0.0123 '/' Capacity=10.04 cfs Outflow=0.33 cfs 0.031 af

Pond 1: CB-1 Peak Elev=208.78' Inflow=1.39 cfs 0.104 af
15.0" Round Culvert n=0.012 L=4.5' S=0.0000 '/' Outflow=1.39 cfs 0.104 af

Pond 2P: ADS STORMTECH [SC-740] Peak Elev=208.78' Storage=0.081 af Inflow=1.39 cfs 0.104 af
Outflow=0.16 cfs 0.025 af

Pond 3P: RAIN GARDEN Peak Elev=208.78' Storage=714 cf Inflow=0.35 cfs 0.041 af
Outflow=0.06 cfs 0.025 af

Link OP-1: OP-1 [ROADSIDE SWALE] Inflow=0.33 cfs 0.056 af
Primary=0.33 cfs 0.056 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.152 af Average Runoff Depth = 1.57"
38.90% Pervious = 0.450 ac 61.10% Impervious = 0.707 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 S1: S1 Runoff Area=22,188 sf 92.41% Impervious Runoff Depth=3.96"
Flow Length=346' Slope=0.1083 '/' Tc=6.0 min CN=95 Runoff=2.19 cfs 0.168 af

Subcatchment S2: S2 Runoff Area=10,724 sf 30.40% Impervious Runoff Depth=1.85"
Flow Length=284' Slope=0.3662 '/' Tc=6.0 min CN=72 Runoff=0.52 cfs 0.038 af

Subcatchment S3: S3 Runoff Area=17,507 sf 40.23% Impervious Runoff Depth=2.00"
Flow Length=349' Tc=10.7 min CN=74 Runoff=0.80 cfs 0.067 af

Reach 1R: PROPOSED ROADSIDE Avg. Flow Depth=0.38' Max Vel=1.77 fps Inflow=0.80 cfs 0.067 af
n=0.030 L=162.2' S=0.0123 '/' Capacity=10.04 cfs Outflow=0.78 cfs 0.067 af

Pond 1: CB-1 Peak Elev=209.06' Inflow=2.19 cfs 0.168 af
15.0" Round Culvert n=0.012 L=4.5' S=0.0000 '/' Outflow=2.19 cfs 0.168 af

Pond 2P: ADS STORMTECH [SC-740] Peak Elev=209.05' Storage=0.094 af Inflow=2.19 cfs 0.168 af
Outflow=0.47 cfs 0.089 af

Pond 3P: RAIN GARDEN Peak Elev=208.89' Storage=764 cf Inflow=0.63 cfs 0.127 af
Outflow=0.62 cfs 0.110 af

Link OP-1: OP-1 [ROADSIDE SWALE] Inflow=1.14 cfs 0.178 af
Primary=1.14 cfs 0.178 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.273 af Average Runoff Depth = 2.83"
38.90% Pervious = 0.450 ac 61.10% Impervious = 0.707 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 S1: S1 Runoff Area=22,188 sf 92.41% Impervious Runoff Depth=5.15"
Flow Length=346' Slope=0.1083 '/' Tc=6.0 min CN=95 Runoff=2.80 cfs 0.219 af

Subcatchment S2: S2 Runoff Area=10,724 sf 30.40% Impervious Runoff Depth=2.78"
Flow Length=284' Slope=0.3662 '/' Tc=6.0 min CN=72 Runoff=0.80 cfs 0.057 af

Subcatchment S3: S3 Runoff Area=17,507 sf 40.23% Impervious Runoff Depth=2.97"
Flow Length=349' Tc=10.7 min CN=74 Runoff=1.19 cfs 0.099 af

Reach 1R: PROPOSED ROADSIDE Avg. Flow Depth=0.45' Max Vel=1.96 fps Inflow=1.19 cfs 0.099 af
n=0.030 L=162.2' S=0.0123 '/' Capacity=10.04 cfs Outflow=1.18 cfs 0.099 af

Pond 1: CB-1 Peak Elev=209.49' Inflow=2.80 cfs 0.219 af
15.0" Round Culvert n=0.012 L=4.5' S=0.0000 '/' Outflow=2.80 cfs 0.219 af

Pond 2P: ADS STORMTECH [SC-740] Peak Elev=209.46' Storage=0.112 af Inflow=2.80 cfs 0.219 af
Outflow=0.84 cfs 0.139 af

Pond 3P: RAIN GARDEN Peak Elev=208.96' Storage=799 cf Inflow=1.25 cfs 0.196 af
Outflow=1.24 cfs 0.180 af

Link OP-1: OP-1 [ROADSIDE SWALE] Inflow=2.42 cfs 0.279 af
Primary=2.42 cfs 0.279 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.375 af Average Runoff Depth = 3.89"
38.90% Pervious = 0.450 ac 61.10% Impervious = 0.707 ac

Time span=0.00-72.00 hrs, dt=0.01 hrs, 7201 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 S1: S1 Runoff Area=22,188 sf 92.41% Impervious Runoff Depth=6.27"
Flow Length=346' Slope=0.1083 '/' Tc=6.0 min CN=95 Runoff=3.37 cfs 0.266 af

Subcatchment S2: S2 Runoff Area=10,724 sf 30.40% Impervious Runoff Depth=3.71"
Flow Length=284' Slope=0.3662 '/' Tc=6.0 min CN=72 Runoff=1.07 cfs 0.076 af

Subcatchment S3: S3 Runoff Area=17,507 sf 40.23% Impervious Runoff Depth=3.92"
Flow Length=349' Tc=10.7 min CN=74 Runoff=1.58 cfs 0.131 af

Reach 1R: PROPOSED ROADSIDE Avg. Flow Depth=0.50' Max Vel=2.10 fps Inflow=1.58 cfs 0.131 af
n=0.030 L=162.2' S=0.0123 '/' Capacity=10.04 cfs Outflow=1.56 cfs 0.131 af

Pond 1: CB-1 Peak Elev=210.04' Inflow=3.37 cfs 0.266 af
15.0" Round Culvert n=0.012 L=4.5' S=0.0000 '/' Outflow=3.37 cfs 0.266 af

Pond 2P: ADS STORMTECH [SC-740] Peak Elev=209.97' Storage=0.129 af Inflow=3.37 cfs 0.266 af
Outflow=1.17 cfs 0.186 af

Pond 3P: RAIN GARDEN Peak Elev=209.02' Storage=819 cf Inflow=1.88 cfs 0.262 af
Outflow=1.95 cfs 0.246 af

Link OP-1: OP-1 [ROADSIDE SWALE] Inflow=3.45 cfs 0.378 af
Primary=3.45 cfs 0.378 af

Total Runoff Area = 1.157 ac Runoff Volume = 0.473 af Average Runoff Depth = 4.91"
38.90% Pervious = 0.450 ac 61.10% Impervious = 0.707 ac

Section 2.1: Post-Developed Conditions
25-year Storm – Full Summary

Summary for Subcatchment S1: S1

CarlsonPlanXYPos|0.0000|0.0000|

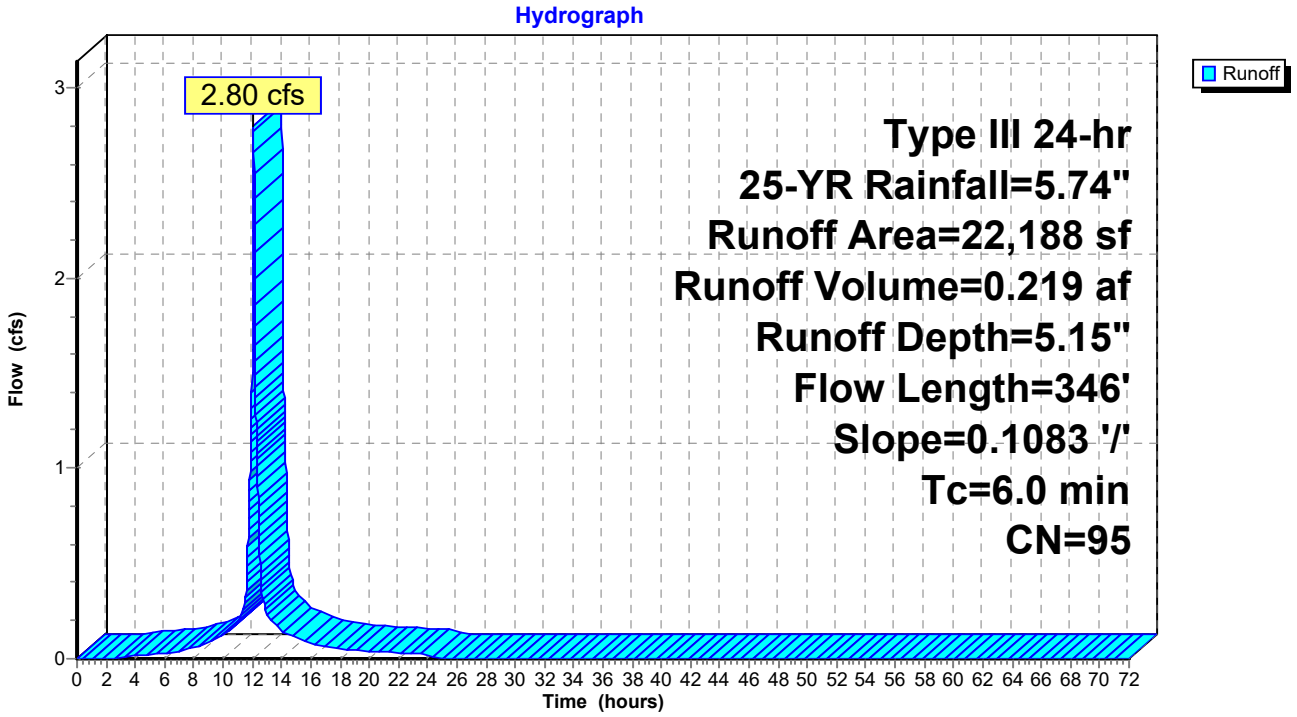
Runoff = 2.80 cfs @ 12.08 hrs, Volume= 0.219 af, Depth= 5.15"
Routed to Pond 1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.74"

Area (sf)	CN	Description
5,740	98	Roofs HSG B
14,764	98	Paved parking HSG B
101	55	Woods, Good HSG B
1,584	61	>75% Grass cover, Good HSG B
22,188	95	Weighted Average
1,684		7.59% Pervious Area
20,504		92.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	346	0.1083	2.50		**Lag/CN Method,**
2.3	346	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S1: S1



Summary for Subcatchment S2: S2

CarlsonPlanXYPos|0.0000|0.0000|

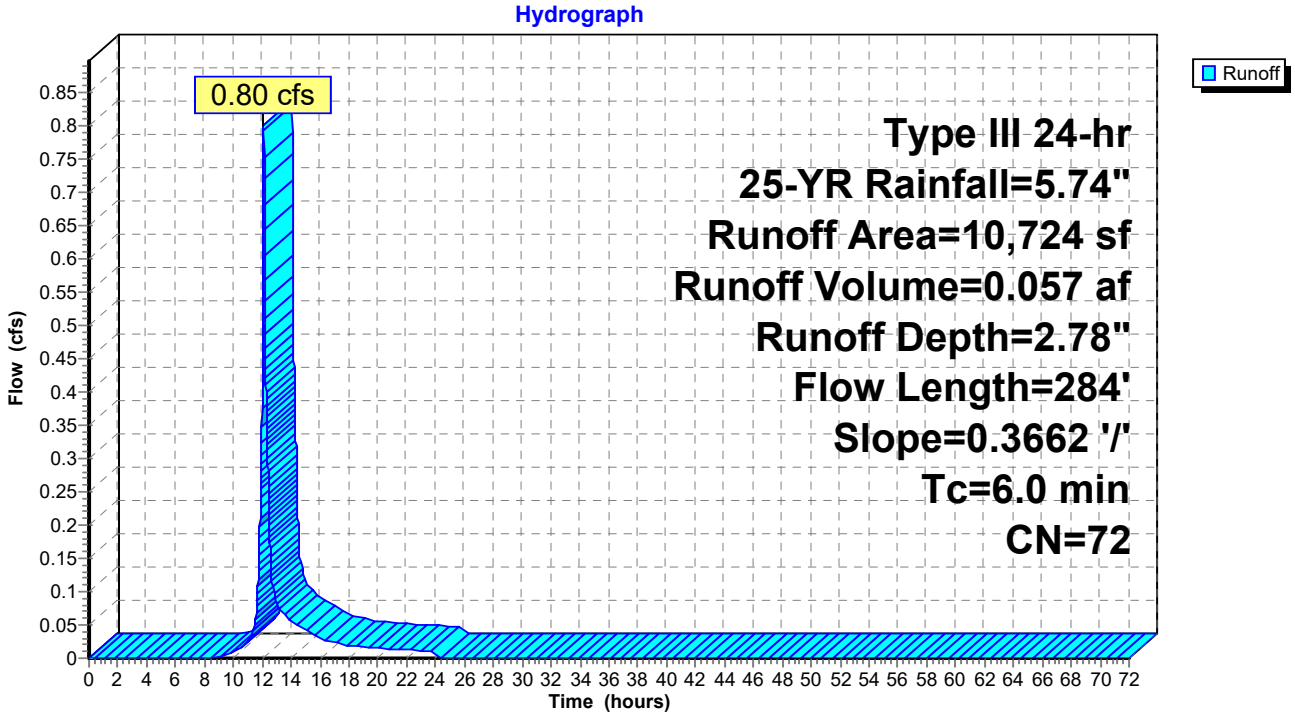
Runoff = 0.80 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 2.78"
Routed to Pond 3P : RAIN GARDEN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.74"

Area (sf)	CN	Description
3,260	98	Roofs HSG B
306	55	Woods, Good HSG B
7,158	61	>75% Grass cover, Good HSG B
10,724	72	Weighted Average
7,465		69.60% Pervious Area
3,260		30.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	284	0.3662	1.95		**Lag/CN Method,**
2.4	284	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S2: S2



Summary for Subcatchment S3: S3

CarlsonPlanXYPos|0.0000|0.0000|

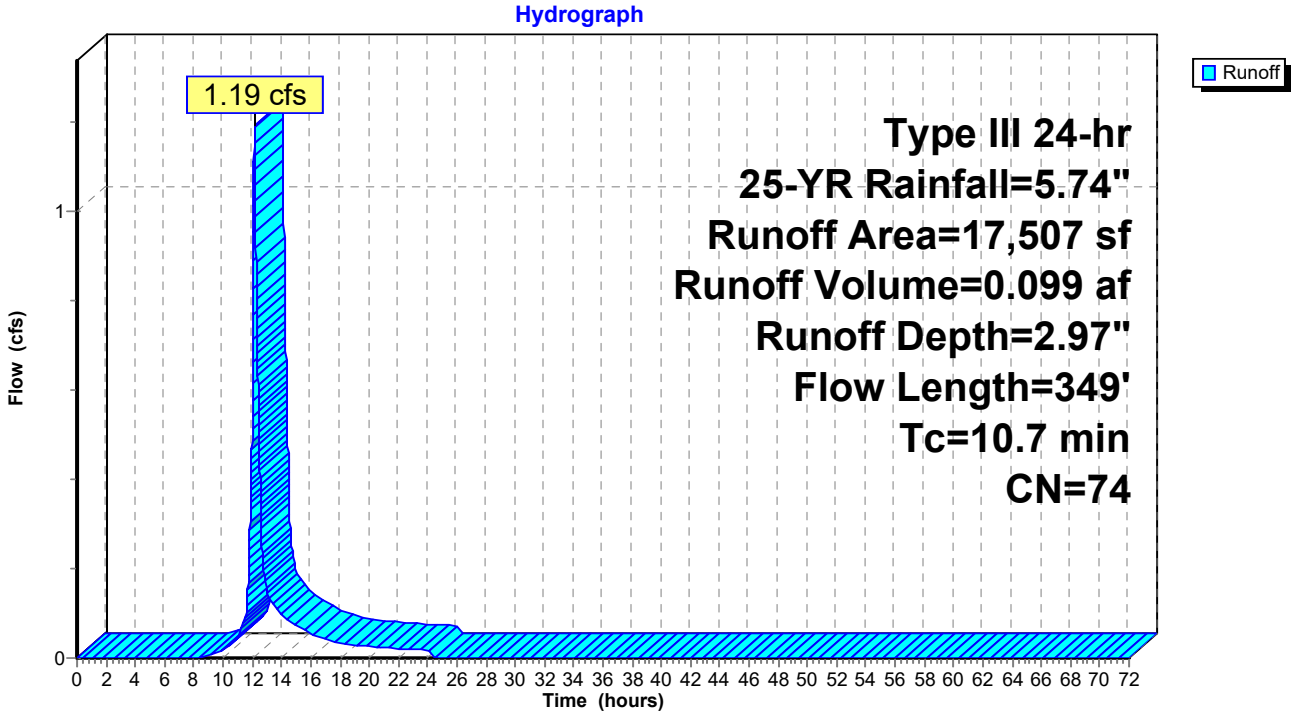
Runoff = 1.19 cfs @ 12.15 hrs, Volume= 0.099 af, Depth= 2.97"
Routed to Reach 1R : PROPOSED ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-YR Rainfall=5.74"

Area (sf)	CN	Description
7,043	98	Paved parking HSG B
4,127	55	Woods, Good HSG B
6,337	61	>75% Grass cover, Good HSG B
17,507	74	Weighted Average
10,464		59.77% Pervious Area
7,043		40.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.01"
0.2	38	0.1353	2.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	211	0.1839	11.31	33.92	**Channel Flow,** Area= 3.0 sf Perim= 12.3' r= 0.24' n= 0.022 Earth, clean & straight
10.7	349	Total			

Subcatchment S3: S3



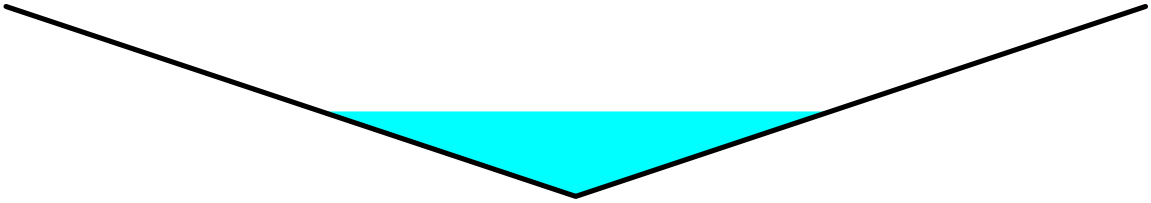
Summary for Reach 1R: PROPOSED ROADSIDE SWALE

Inflow Area = 0.402 ac, 40.23% Impervious, Inflow Depth = 2.97" for 25-YR event
Inflow = 1.19 cfs @ 12.15 hrs, Volume= 0.099 af
Outflow = 1.18 cfs @ 12.17 hrs, Volume= 0.099 af, Atten= 1%, Lag= 1.1 min
Routed to Link OP-1 : OP-1 [ROADSIDE SWALE]

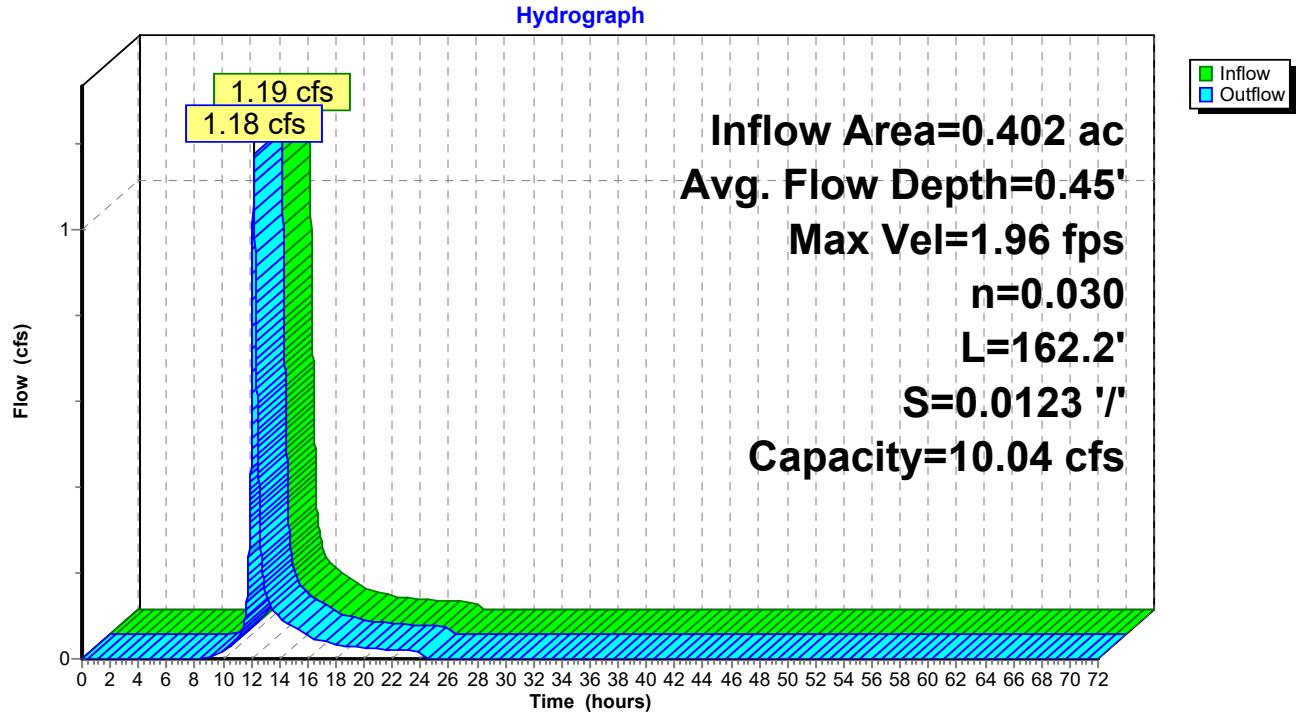
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 1.96 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 3.3 min

Peak Storage= 98 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.45' , Surface Width= 2.69'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 10.04 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 162.2' Slope= 0.0123 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'



Reach 1R: PROPOSED ROADSIDE SWALE



Summary for Pond 1: CB-1

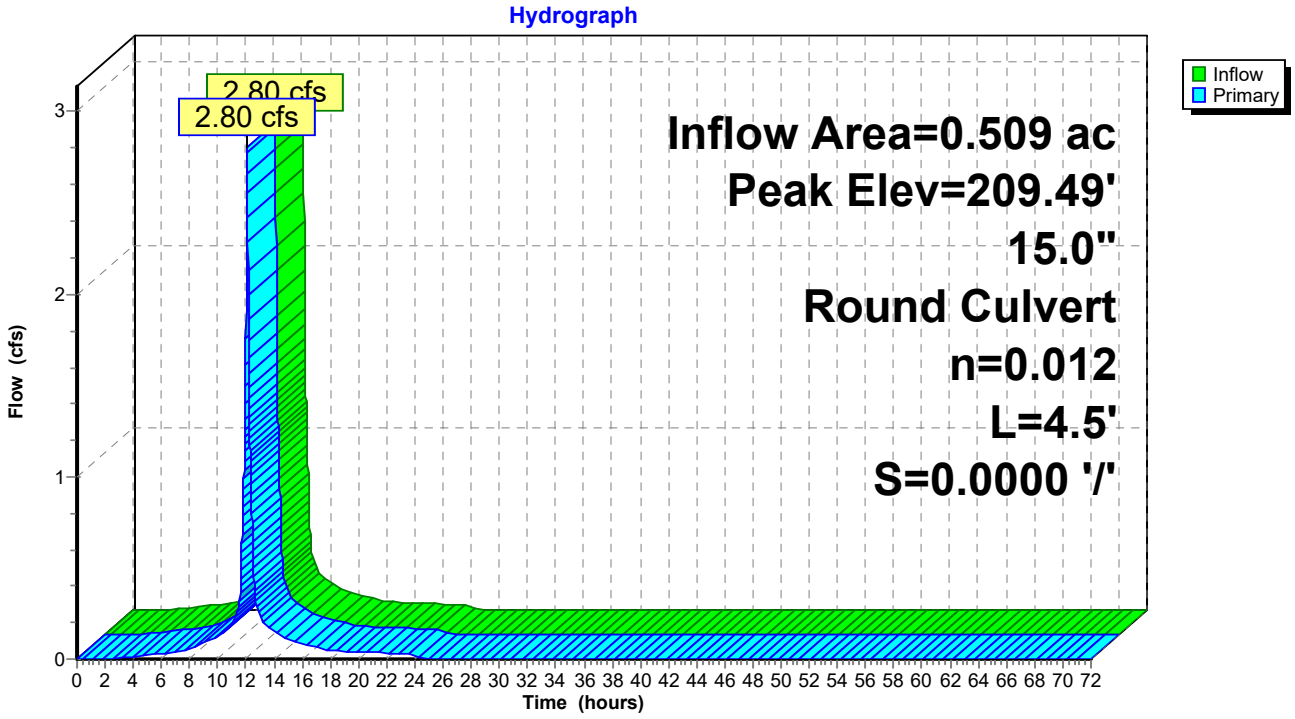
Inflow Area = 0.509 ac, 92.41% Impervious, Inflow Depth = 5.15" for 25-YR event
Inflow = 2.80 cfs @ 12.08 hrs, Volume= 0.219 af
Outflow = 2.80 cfs @ 12.08 hrs, Volume= 0.219 af, Atten= 0%, Lag= 0.0 min
Primary = 2.80 cfs @ 12.08 hrs, Volume= 0.219 af
Routed to Pond 2P : ADS STORMTECH [SC-740]

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 209.49' @ 12.37 hrs
Flood Elev= 210.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.50'	**15.0" Round TO CHAMBER** L= 4.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 207.50' / 207.50' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.62 cfs @ 12.08 hrs HW=209.28' TW=208.97' (Dynamic Tailwater)
└**1=TO CHAMBER** (Inlet Controls 2.62 cfs @ 2.13 fps)

Pond 1: CB-1



Summary for Pond 2P: ADS STORMTECH [SC-740]

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=7)
[80] Warning: Exceeded Pond 1 by 1.27' @ 24.22 hrs (3.23 cfs 2.708 af)

Inflow Area = 0.509 ac, 92.41% Impervious, Inflow Depth = 5.15" for 25-YR event
Inflow = 2.80 cfs @ 12.08 hrs, Volume= 0.219 af
Outflow = 0.84 cfs @ 12.41 hrs, Volume= 0.139 af, Atten= 70%, Lag= 19.7 min
Primary = 0.84 cfs @ 12.41 hrs, Volume= 0.139 af
Routed to Pond 3P : RAIN GARDEN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 209.46' @ 12.40 hrs Surf.Area= 0.067 ac Storage= 0.112 af
Flood Elev= 211.90' Surf.Area= 0.067 ac Storage= 0.144 af

Plug-Flow detention time= 209.0 min calculated for 0.139 af (64% of inflow)
Center-of-Mass det. time= 107.6 min (872.3 - 764.7)

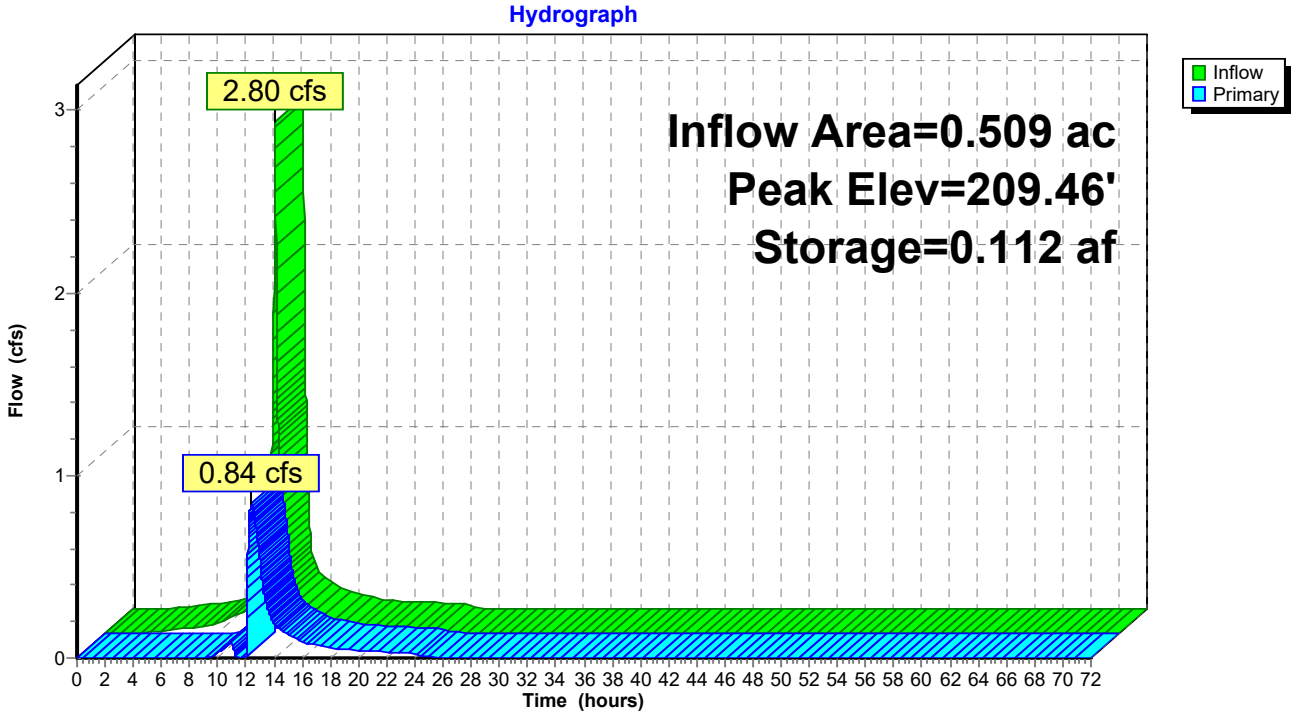
Volume	Invert	Avail.Storage	Storage Description
#1A	207.00'	0.061 af	**63.25'W x 46.34'L x 3.50'H Field A** 0.235 af Overall - 0.082 af Embedded = 0.153 af x 40.0% Voids
#2A	207.50'	0.082 af	**ADS_StormTech SC-740 +Cap** x 78 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 78 Chambers in 13 Rows
		0.144 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	207.55'	**15.0" Round Culvert** L= 18.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.55' / 207.25' S= 0.0162 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	208.60'	**6.0" Vert. STANDPIPE** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.60'	**3.0" Vert. LOW FLOW ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.84 cfs @ 12.41 hrs HW=209.46' TW=208.95' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.84 cfs of 4.22 cfs potential flow)
  ├─**2=STANDPIPE** (Orifice Controls 0.68 cfs @ 3.44 fps)
  └─**3=LOW FLOW ORIFICE** (Orifice Controls 0.17 cfs @ 3.44 fps)

Pond 2P: ADS STORMTECH [SC-740]



Summary for Pond 3P: RAIN GARDEN

[80] Warning: Exceeded Pond 2P by 0.16' @ 12.00 hrs (0.20 cfs 0.007 af)

Inflow Area = 0.756 ac, 72.20% Impervious, Inflow Depth = 3.12" for 25-YR event
Inflow = 1.25 cfs @ 12.13 hrs, Volume= 0.196 af
Outflow = 1.24 cfs @ 12.15 hrs, Volume= 0.180 af, Atten= 1%, Lag= 1.2 min
Primary = 1.24 cfs @ 12.15 hrs, Volume= 0.180 af
Routed to Link OP-1 : OP-1 [ROADSIDE SWALE]

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 208.96' @ 12.15 hrs Surf.Area= 488 sf Storage= 799 cf
Flood Elev= 209.00' Surf.Area= 495 sf Storage= 819 cf

Plug-Flow detention time= 61.5 min calculated for 0.180 af (92% of inflow)
Center-of-Mass det. time= 19.7 min (881.3 - 861.7)

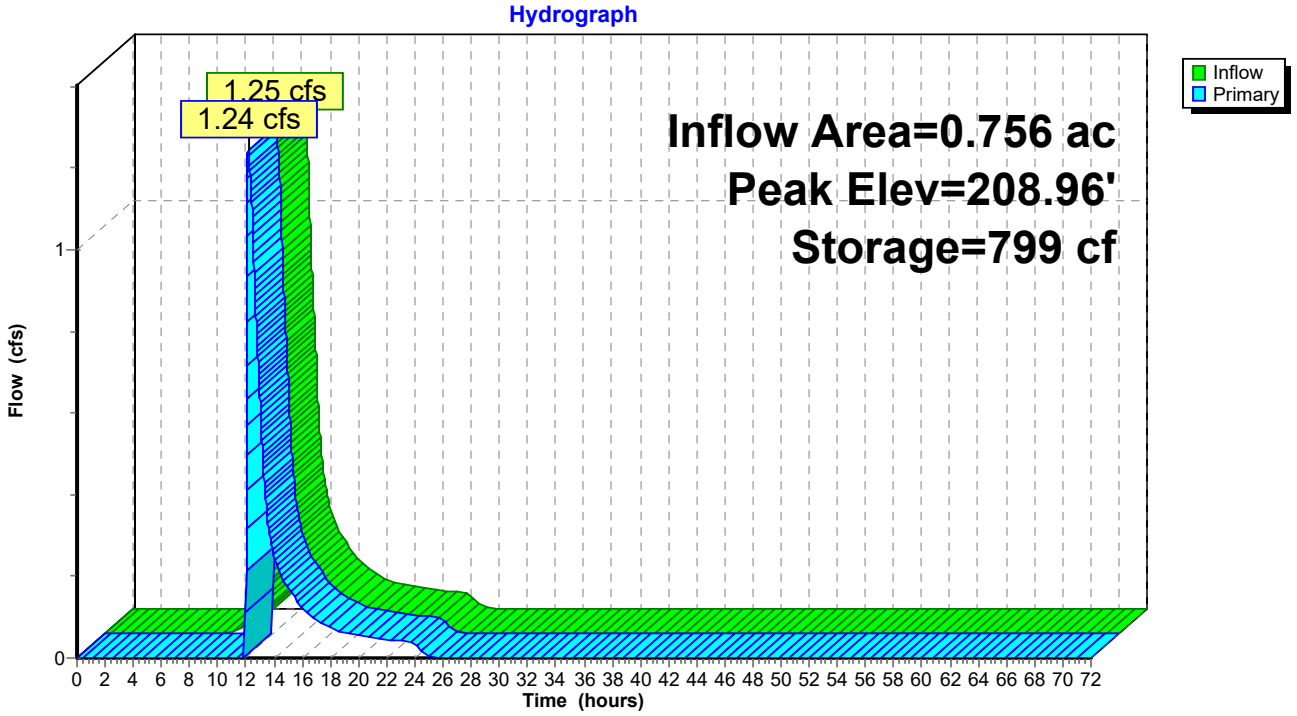
Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	819 cf	**PONDING AREA (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	97	43.9	0	0	97
208.00	334	73.9	407	407	402
209.00	495	87.2	412	819	590

Device	Routing	Invert	Outlet Devices
#1	Primary	208.75'	**5.0' long + 3.0 '/' SideZ x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.24 cfs @ 12.15 hrs HW=208.96' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.24 cfs @ 1.05 fps)

Pond 3P: RAIN GARDEN

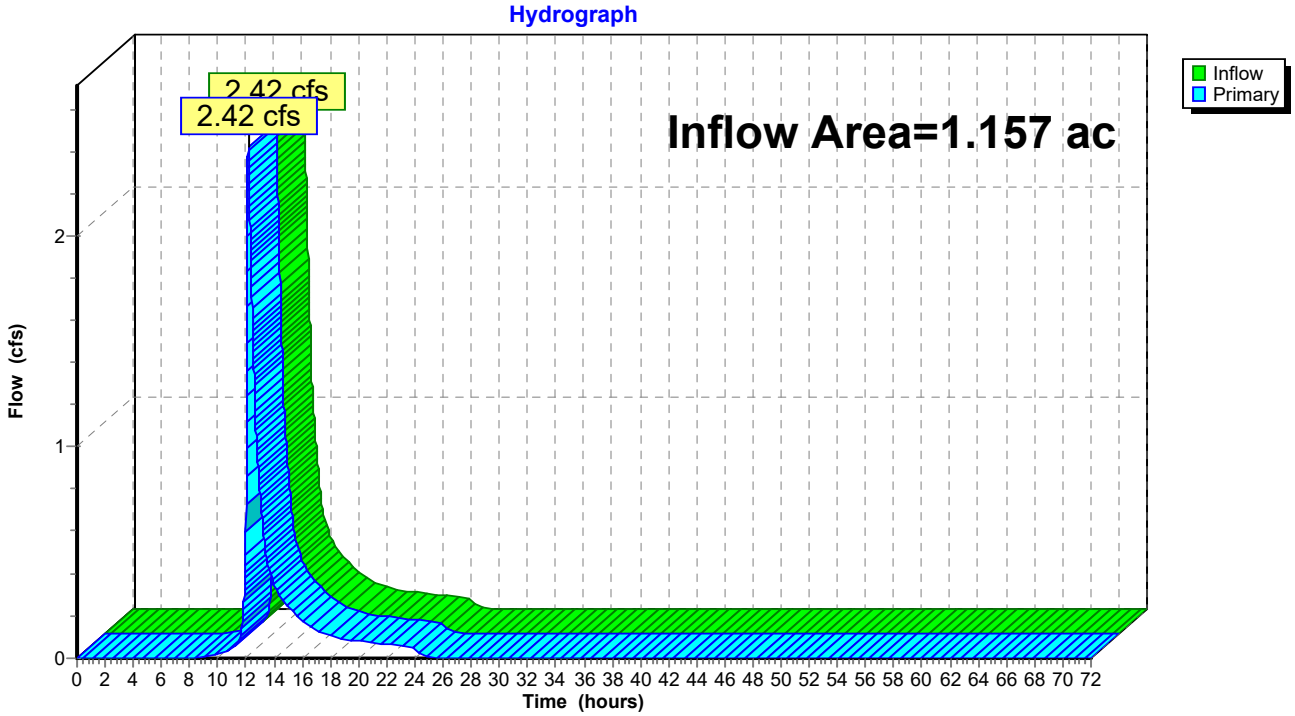


Summary for Link OP-1: OP-1 [ROADSIDE SWALE]

Inflow Area = 1.157 ac, 61.10% Impervious, Inflow Depth = 2.90" for 25-YR event
Inflow = 2.42 cfs @ 12.16 hrs, Volume= 0.279 af
Primary = 2.42 cfs @ 12.16 hrs, Volume= 0.279 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: OP-1 [ROADSIDE SWALE]



Section 2.2: Post-Developed Conditions
50-year Storm – Full Summary

Summary for Subcatchment S1: S1

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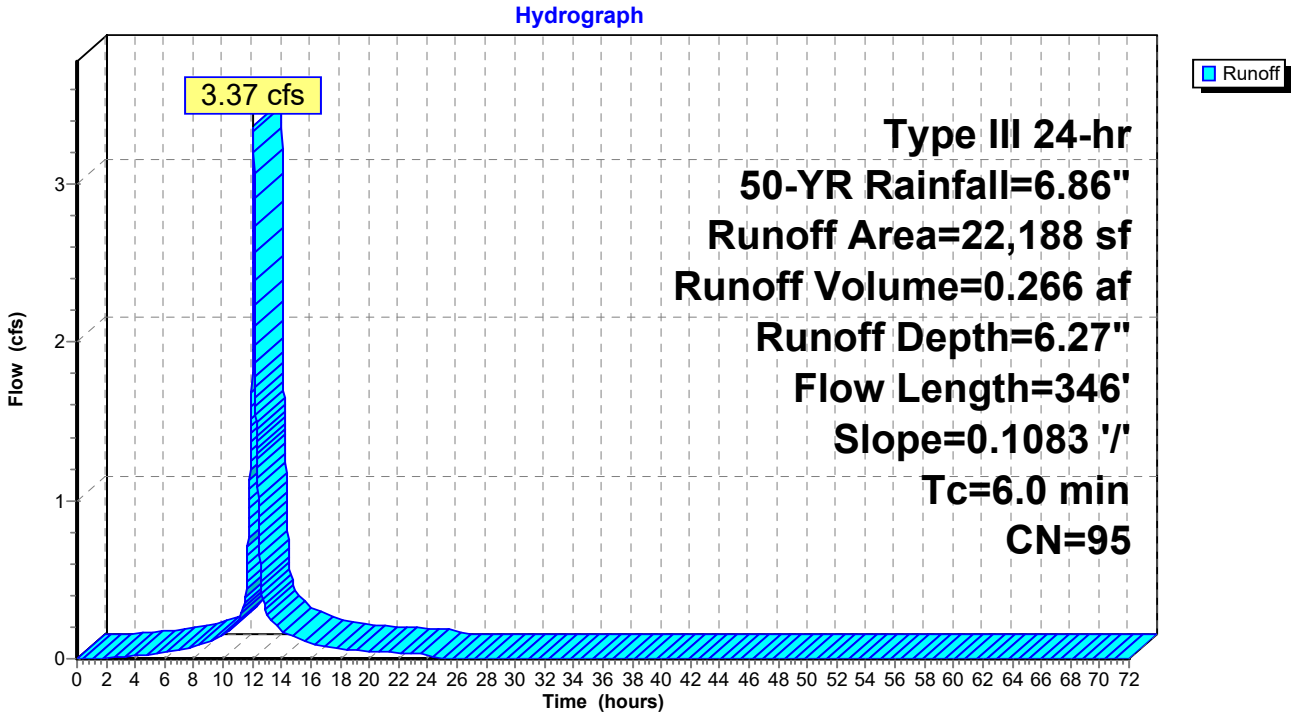
Runoff = 3.37 cfs @ 12.08 hrs, Volume= 0.266 af, Depth= 6.27"
Routed to Pond 1 : CB-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=6.86"

Area (sf)	CN	Description
5,740	98	Roofs HSG B
14,764	98	Paved parking HSG B
101	55	Woods, Good HSG B
1,584	61	>75% Grass cover, Good HSG B
22,188	95	Weighted Average
1,684		7.59% Pervious Area
20,504		92.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	346	0.1083	2.50		**Lag/CN Method,**
2.3	346	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S1: S1



Summary for Subcatchment S2: S2

CarlsonPlanXYPos|0.0000|0.0000|

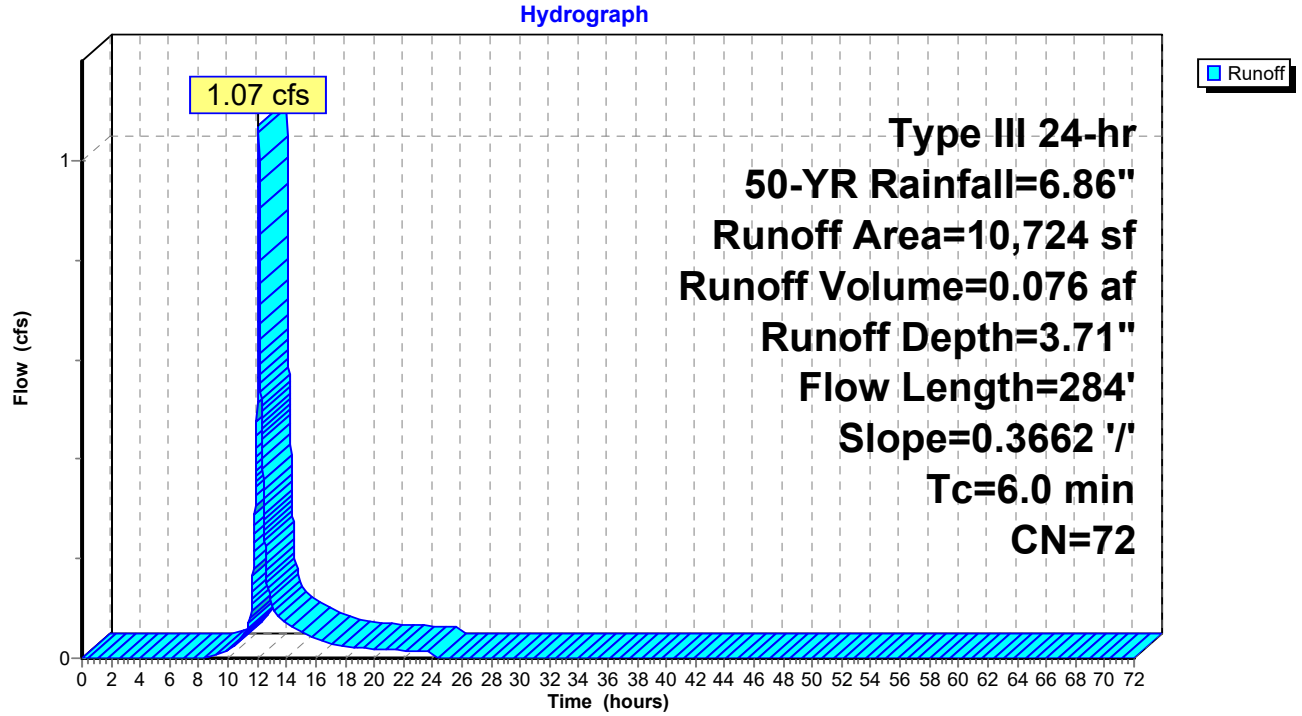
Runoff = 1.07 cfs @ 12.09 hrs, Volume= 0.076 af, Depth= 3.71"
Routed to Pond 3P : RAIN GARDEN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=6.86"

Area (sf)	CN	Description
3,260	98	Roofs HSG B
306	55	Woods, Good HSG B
7,158	61	>75% Grass cover, Good HSG B
10,724	72	Weighted Average
7,465		69.60% Pervious Area
3,260		30.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.4	284	0.3662	1.95		**Lag/CN Method,**
2.4	284	Total, Increased to minimum Tc = 6.0 min			

Subcatchment S2: S2



Summary for Subcatchment S3: S3

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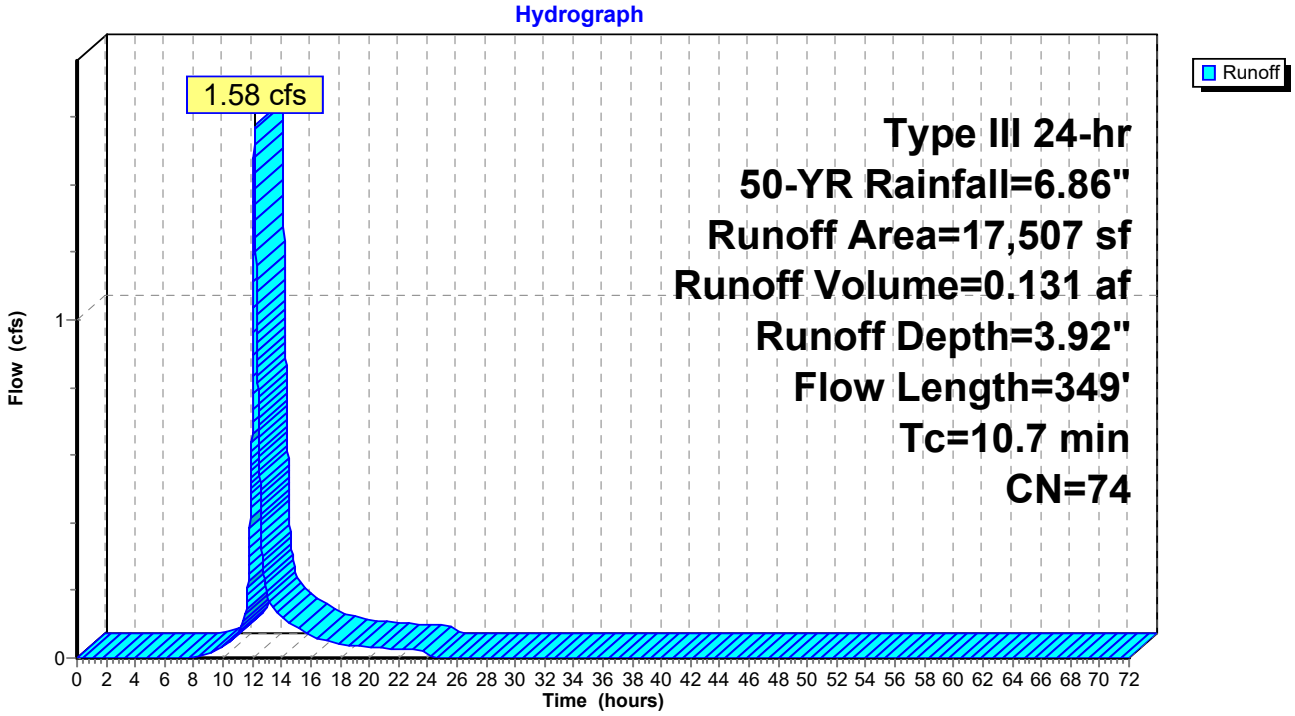
Runoff = 1.58 cfs @ 12.15 hrs, Volume= 0.131 af, Depth= 3.92"
Routed to Reach 1R : PROPOSED ROADSIDE SWALE

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Type III 24-hr 50-YR Rainfall=6.86"

Area (sf)	CN	Description
7,043	98	Paved parking HSG B
4,127	55	Woods, Good HSG B
6,337	61	>75% Grass cover, Good HSG B
17,507	74	Weighted Average
10,464		59.77% Pervious Area
7,043		40.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.1400	0.16		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 3.01"
0.2	38	0.1353	2.57		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
0.3	211	0.1839	11.31	33.92	**Channel Flow,** Area= 3.0 sf Perim= 12.3' r= 0.24' n= 0.022 Earth, clean & straight
10.7	349	Total			

Subcatchment S3: S3



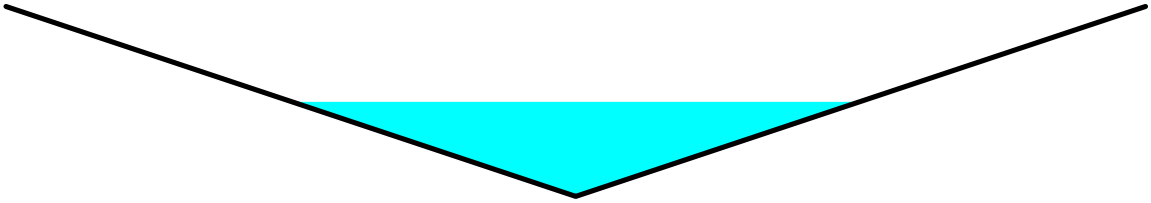
Summary for Reach 1R: PROPOSED ROADSIDE SWALE

Inflow Area = 0.402 ac, 40.23% Impervious, Inflow Depth = 3.92" for 50-YR event
Inflow = 1.58 cfs @ 12.15 hrs, Volume= 0.131 af
Outflow = 1.56 cfs @ 12.17 hrs, Volume= 0.131 af, Atten= 1%, Lag= 1.0 min
Routed to Link OP-1 : OP-1 [ROADSIDE SWALE]

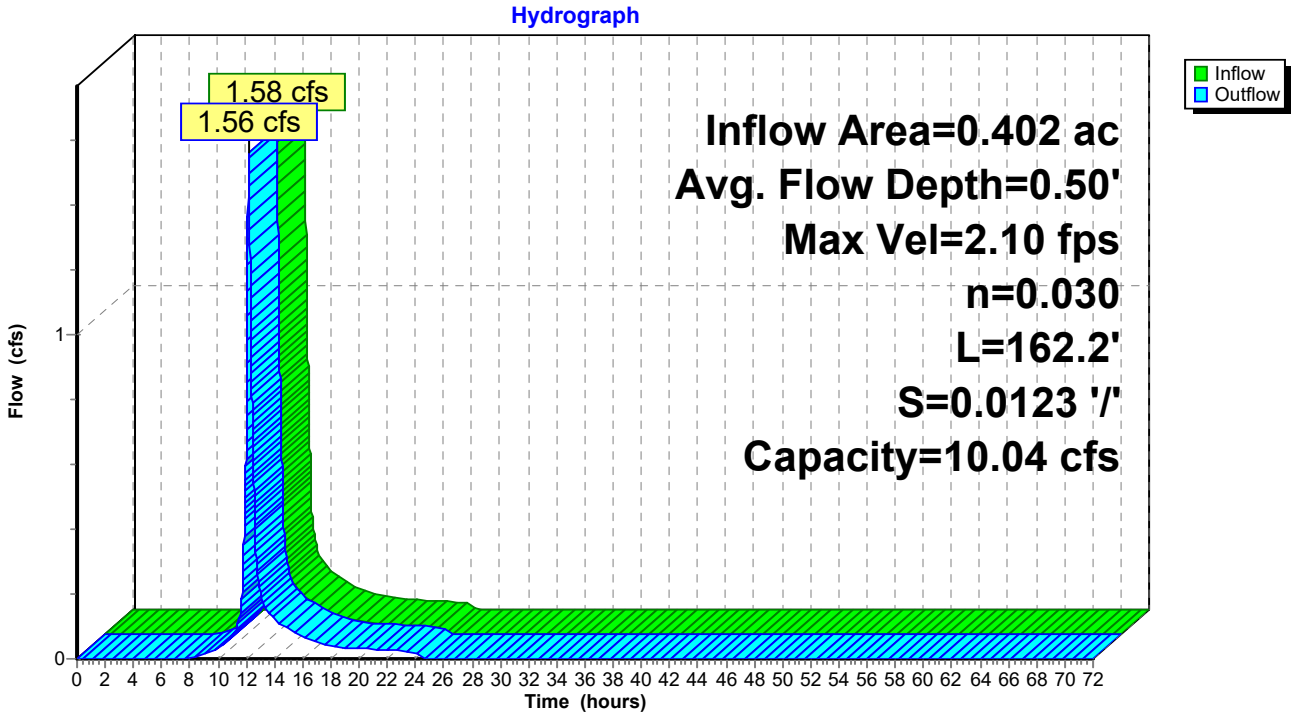
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Max. Velocity= 2.10 fps, Min. Travel Time= 1.3 min
Avg. Velocity = 0.86 fps, Avg. Travel Time= 3.1 min

Peak Storage= 121 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.50' , Surface Width= 2.99'
Bank-Full Depth= 1.00' Flow Area= 3.0 sf, Capacity= 10.04 cfs

0.00' x 1.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 3.0 '/' Top Width= 6.00'
Length= 162.2' Slope= 0.0123 '/'
Inlet Invert= 210.00', Outlet Invert= 208.00'



Reach 1R: PROPOSED ROADSIDE SWALE



Summary for Pond 1: CB-1

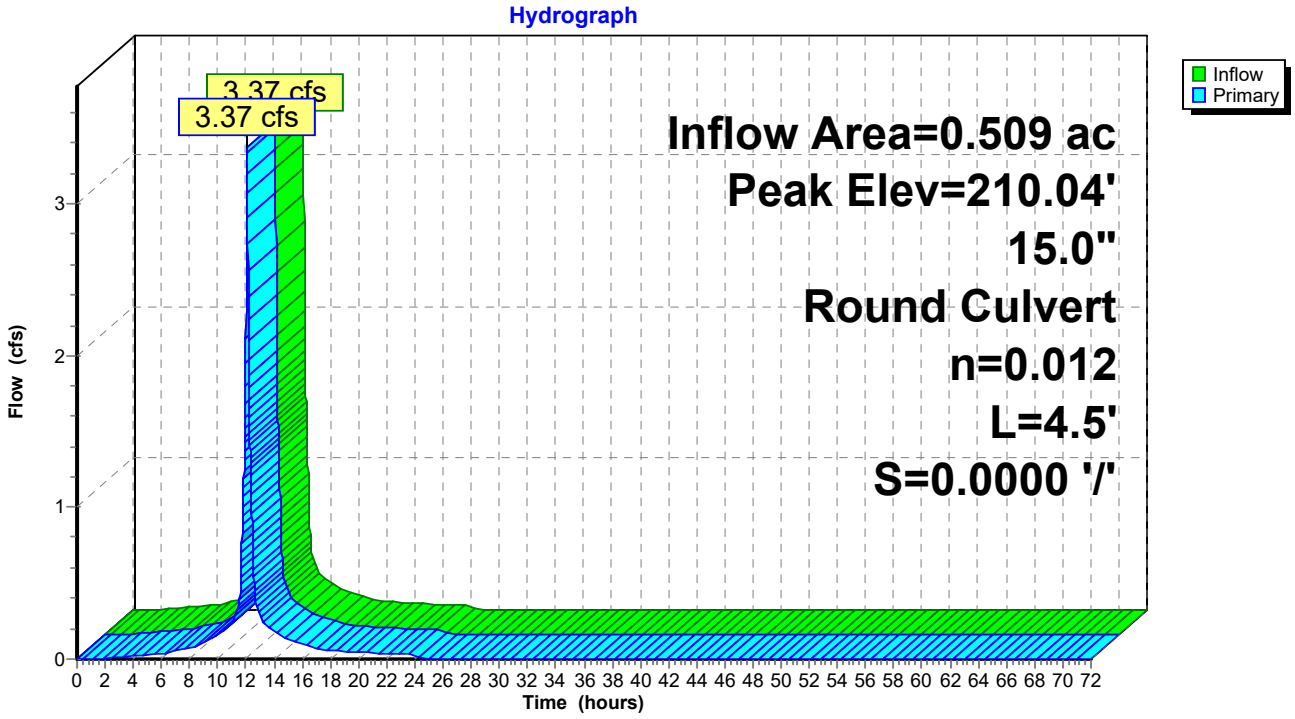
Inflow Area = 0.509 ac, 92.41% Impervious, Inflow Depth = 6.27" for 50-YR event
Inflow = 3.37 cfs @ 12.08 hrs, Volume= 0.266 af
Outflow = 3.37 cfs @ 12.08 hrs, Volume= 0.266 af, Atten= 0%, Lag= 0.0 min
Primary = 3.37 cfs @ 12.08 hrs, Volume= 0.266 af
Routed to Pond 2P : ADS STORMTECH [SC-740]

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 210.04' @ 12.32 hrs
Flood Elev= 210.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	207.50'	**15.0" Round TO CHAMBER** L= 4.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 207.50' / 207.50' S= 0.0000 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.20 cfs @ 12.08 hrs HW=209.84' TW=209.38' (Dynamic Tailwater)
└**1=TO CHAMBER** (Inlet Controls 3.20 cfs @ 2.60 fps)

Pond 1: CB-1



Summary for Pond 2P: ADS STORMTECH [SC-740]

[80] Warning: Exceeded Pond 1 by 1.27' @ 24.14 hrs (3.25 cfs 2.719 af)

Inflow Area = 0.509 ac, 92.41% Impervious, Inflow Depth = 6.27" for 50-YR event
Inflow = 3.37 cfs @ 12.08 hrs, Volume= 0.266 af
Outflow = 1.17 cfs @ 12.36 hrs, Volume= 0.186 af, Atten= 65%, Lag= 16.4 min
Primary = 1.17 cfs @ 12.36 hrs, Volume= 0.186 af
Routed to Pond 3P : RAIN GARDEN

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 209.97' @ 12.35 hrs Surf.Area= 0.067 ac Storage= 0.129 af
Flood Elev= 211.90' Surf.Area= 0.067 ac Storage= 0.144 af

Plug-Flow detention time= 192.2 min calculated for 0.186 af (70% of inflow)
Center-of-Mass det. time= 98.8 min (859.3 - 760.5)

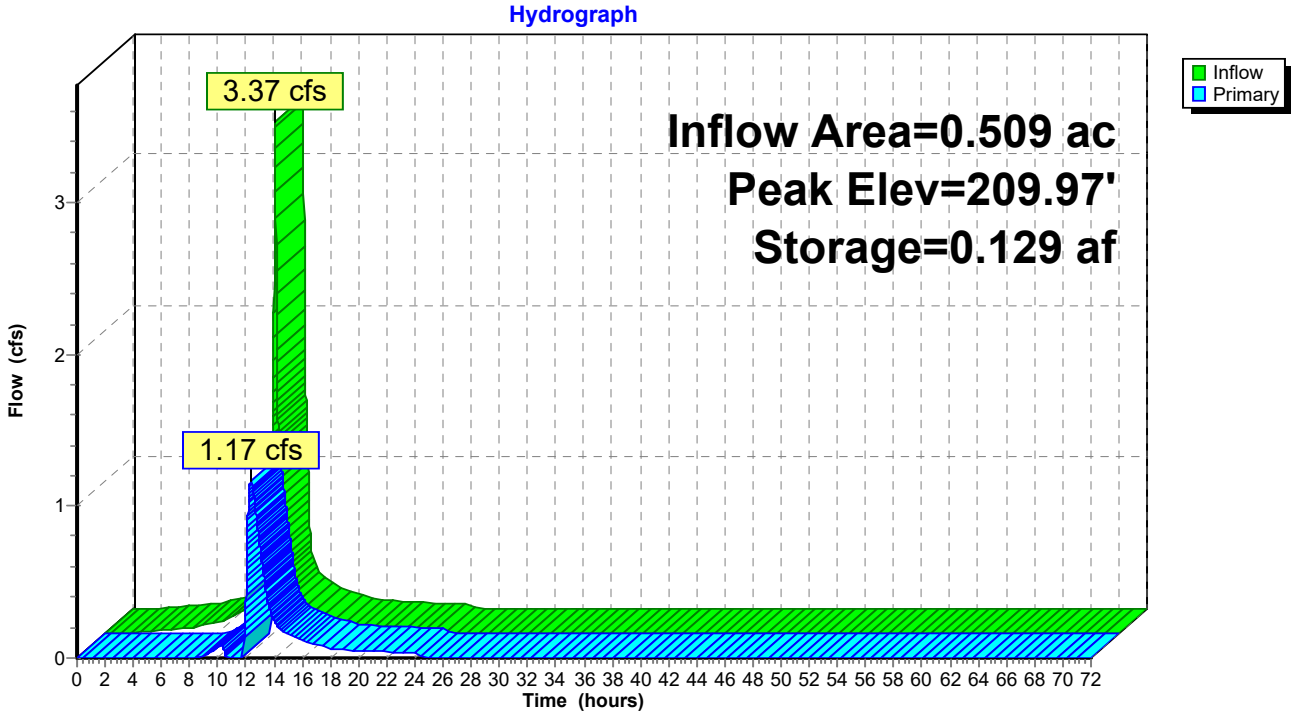
Volume	Invert	Avail.Storage	Storage Description
#1A	207.00'	0.061 af	**63.25'W x 46.34'L x 3.50'H Field A** 0.235 af Overall - 0.082 af Embedded = 0.153 af x 40.0% Voids
#2A	207.50'	0.082 af	**ADS_StormTech SC-740 +Cap** x 78 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 78 Chambers in 13 Rows
		0.144 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	207.55'	**15.0" Round Culvert** L= 18.5' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 207.55' / 207.25' S= 0.0162 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 1.23 sf
#2	Device 1	208.60'	**6.0" Vert. STANDPIPE** C= 0.600 Limited to weir flow at low heads
#3	Device 1	207.60'	**3.0" Vert. LOW FLOW ORIFICE** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.17 cfs @ 12.36 hrs HW=209.97' TW=208.99' (Dynamic Tailwater)
↑**1=Culvert** (Passes 1.17 cfs of 5.84 cfs potential flow)
↑**2=STANDPIPE** (Orifice Controls 0.93 cfs @ 4.76 fps)
3=LOW FLOW ORIFICE (Orifice Controls 0.23 cfs @ 4.76 fps)

Pond 2P: ADS STORMTECH [SC-740]



Summary for Pond 3P: RAIN GARDEN

[93] Warning: Storage range exceeded by 0.02'
[58] Hint: Peaked 0.02' above defined flood level
[90] Warning: Qout>Qin may require smaller dt or Finer Routing
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=4)
[80] Warning: Exceeded Pond 2P by 0.16' @ 11.83 hrs (0.18 cfs 0.009 af)

Inflow Area = 0.756 ac, 72.20% Impervious, Inflow Depth = 4.17" for 50-YR event
Inflow = 1.88 cfs @ 12.11 hrs, Volume= 0.262 af
Outflow = 1.95 cfs @ 12.11 hrs, Volume= 0.246 af, Atten= 0%, Lag= 0.0 min
Primary = 1.95 cfs @ 12.11 hrs, Volume= 0.246 af
Routed to Link OP-1 : OP-1 [ROADSIDE SWALE]

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs
Peak Elev= 209.02' @ 12.11 hrs Surf.Area= 495 sf Storage= 819 cf
Flood Elev= 209.00' Surf.Area= 495 sf Storage= 819 cf

Plug-Flow detention time= 48.8 min calculated for 0.246 af (94% of inflow)
Center-of-Mass det. time= 16.0 min (866.0 - 850.0)

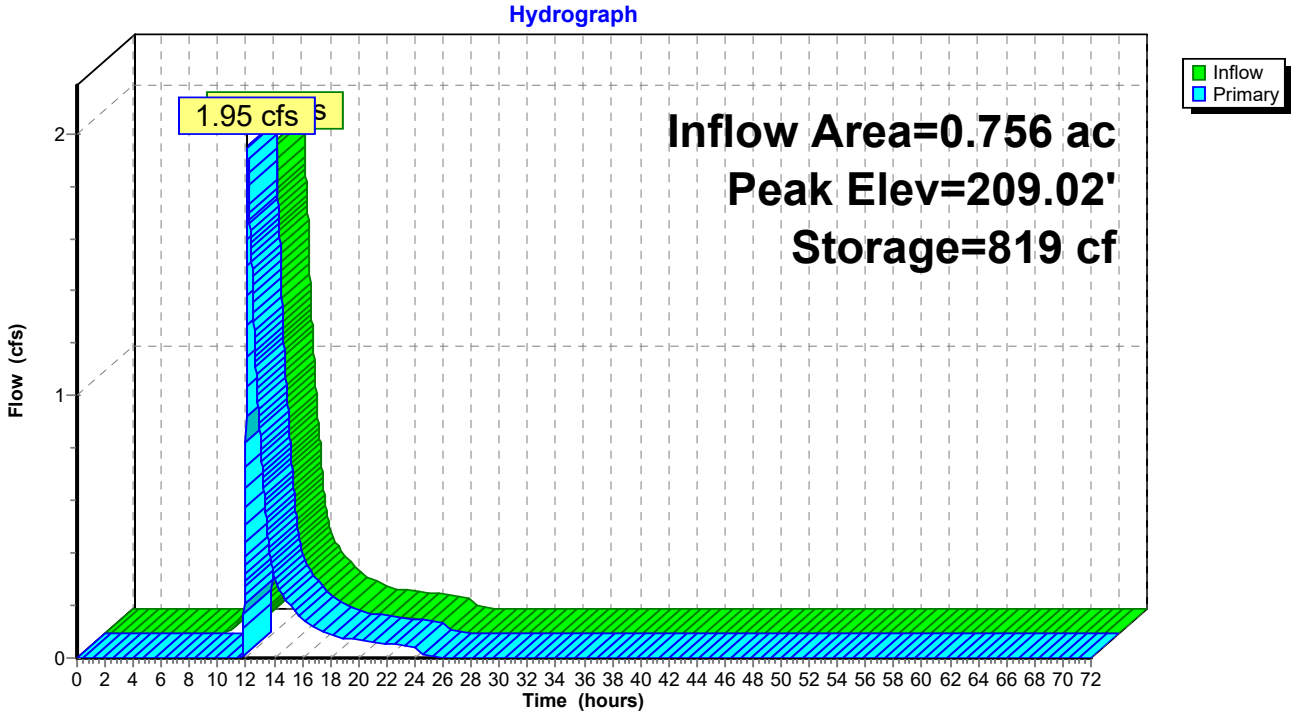
Volume	Invert	Avail.Storage	Storage Description
#1	206.00'	819 cf	**PONDING AREA (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
206.00	97	43.9	0	0	97
208.00	334	73.9	407	407	402
209.00	495	87.2	412	819	590

Device	Routing	Invert	Outlet Devices
#1	Primary	208.75'	**5.0' long + 3.0 '/' SideZ x 5.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.35 2.51 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.69 2.73 2.77 2.86

Primary OutFlow Max=1.95 cfs @ 12.11 hrs HW=209.02' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Weir Controls 1.95 cfs @ 1.22 fps)

Pond 3P: RAIN GARDEN

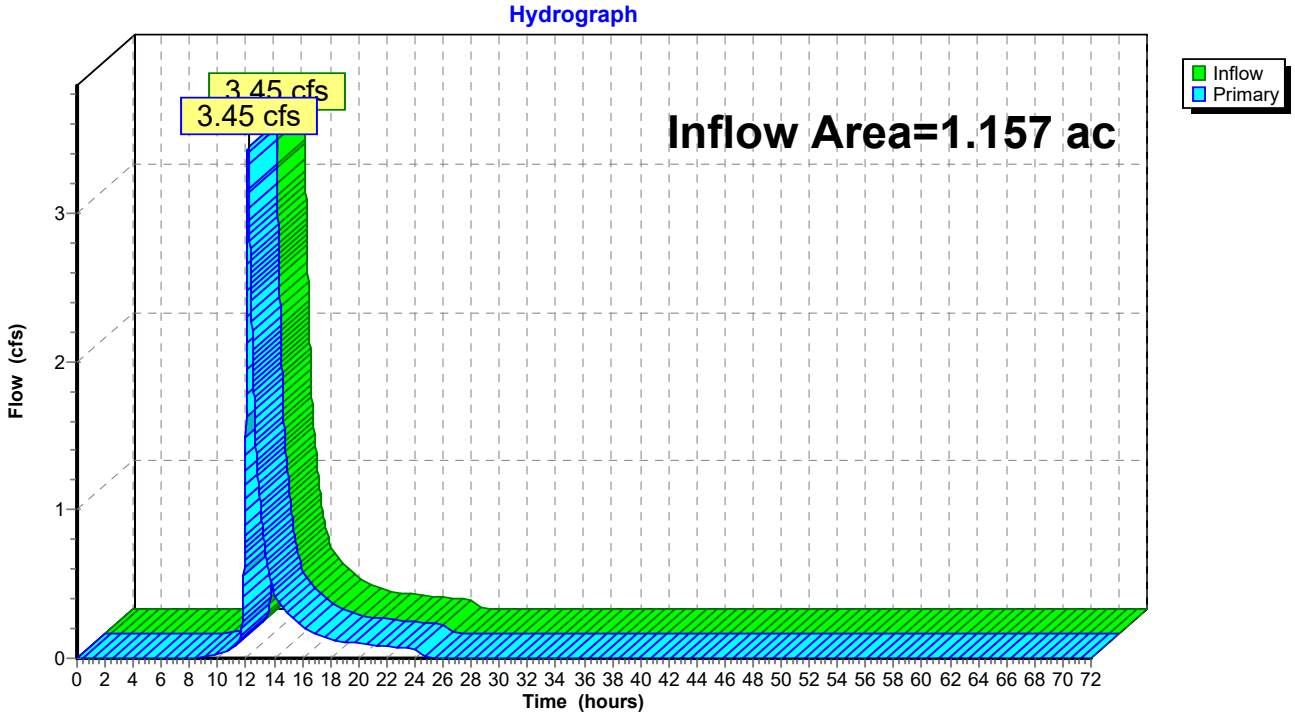


Summary for Link OP-1: OP-1 [ROADSIDE SWALE]

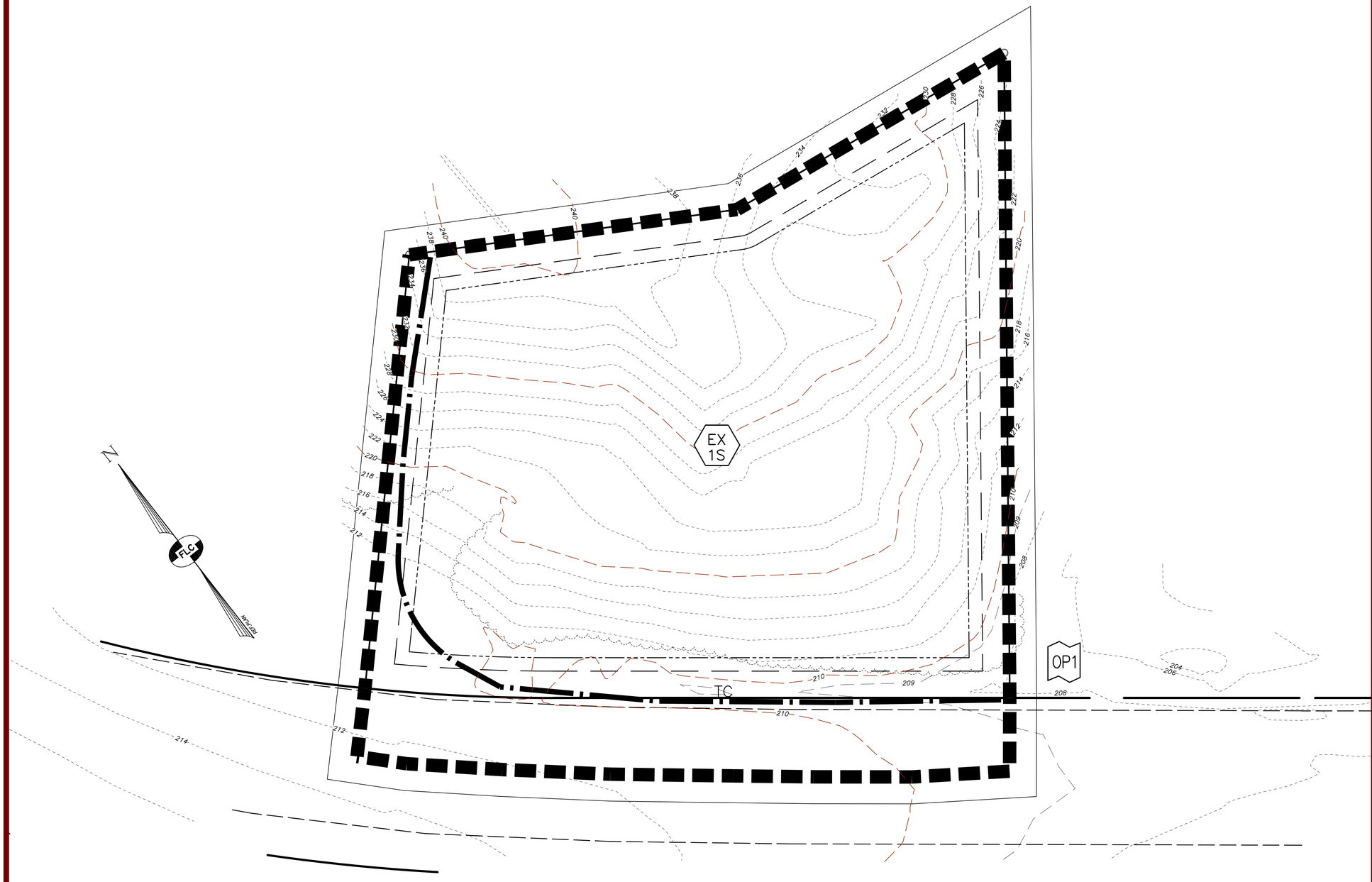
Inflow Area = 1.157 ac, 61.10% Impervious, Inflow Depth = 3.92" for 50-YR event
Inflow = 3.45 cfs @ 12.15 hrs, Volume= 0.378 af
Primary = 3.45 cfs @ 12.15 hrs, Volume= 0.378 af, Atten= 0%, Lag= 0.0 min

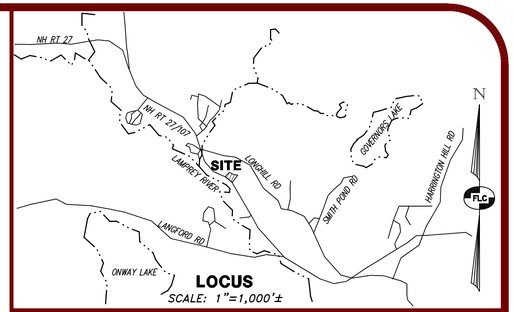
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.01 hrs

Link OP-1: OP-1 [ROADSIDE SWALE]



Section 3.0: Drainage Area Plans





DRAINAGE SYMBOLS:

- P 2 — PIPE OR BASIN
- 101 S — SUBCATCHMENT
- R2 — REACH
- 0P1 — OBSERVATION POINT
- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- SURFACE WATER FLOW

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

REV.	DATE	DESCRIPTION	C/O	DR	CK
E	5/13/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
D	5/7/24	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB
C	2/23/24	REVISIONS PER PLANNING BOARD COMMENTS		BLR	CEB
B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

PRE-DEVELOPMENT DRAINAGE PLAN

TAX MAP 32 LOT 72
DEERFIELD ROAD (N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

AUTUMN TRAIL REALTY, LLC

P.O. BOX 351 PITTSFIELD, NH 03263

SCALE: 1"=20' NOVEMBER 10, 2023

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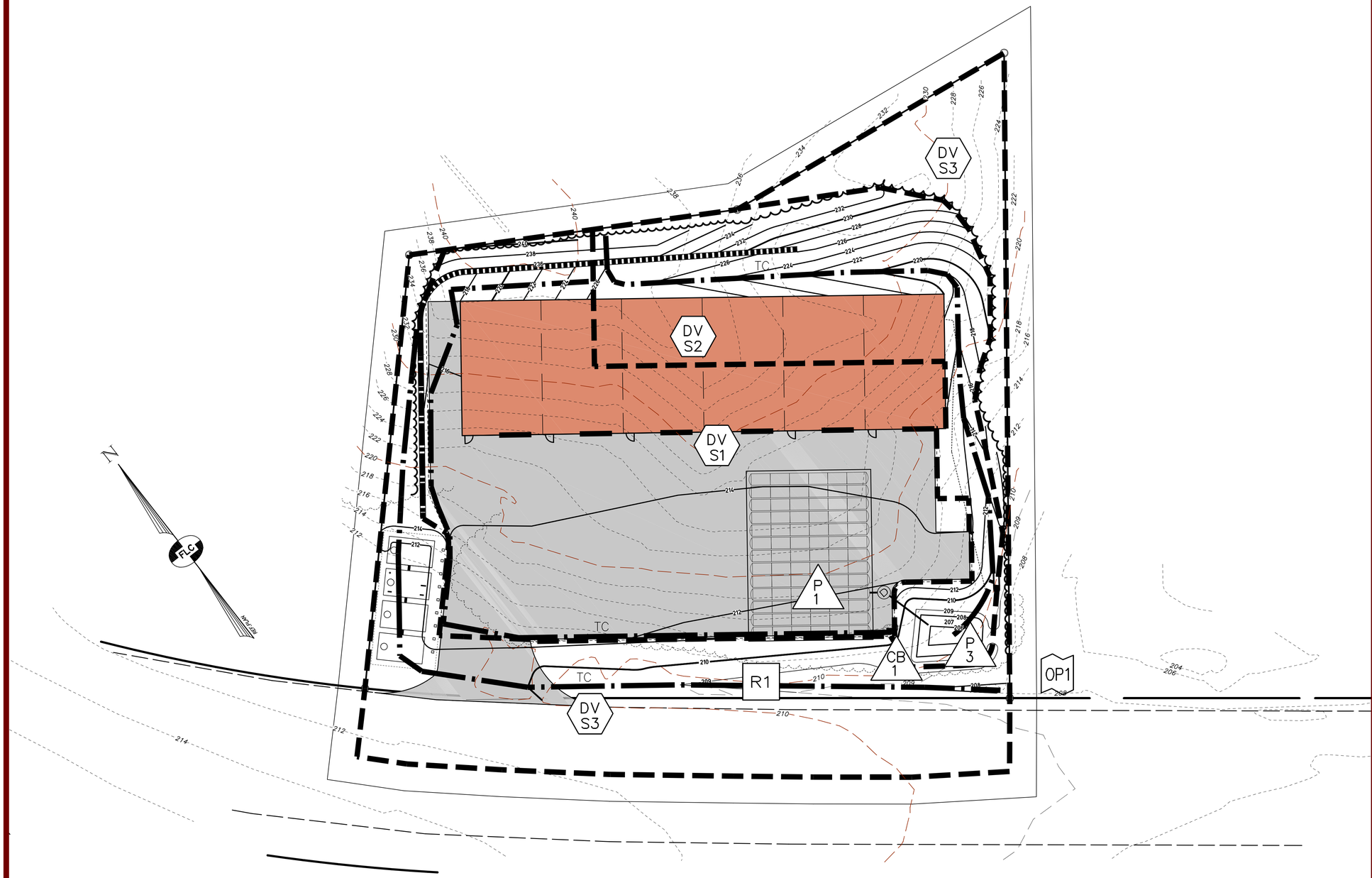
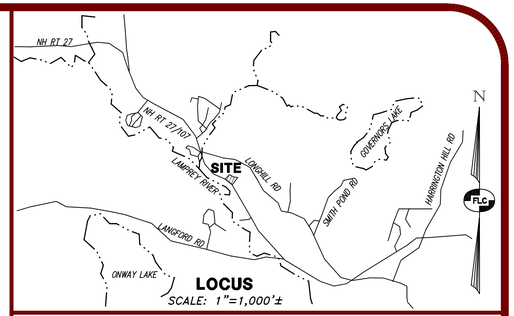
www.FieldstoneLandConsultants.com





DRAINAGE SYMBOLS:

- P 2 — PIPE OR BASIN
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- OP1 — OBSERVATION POINT
- WATERSHED BOUNDARY
- TIME OF CONCENTRATION
- SURFACE WATER FLOW

GRAPHIC SCALE

20' 10' 0 20' 40' 60'

IMPERIAL: 1"=20'

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B	1/18/24	REVISIONS PER 3RD PART ENGINEERING REVIEW		BLR	CEB
A	12/15/23	REVISIONS PER 3RD PARTY ENGINEERING REVIEW		BLR	CEB

POST-DEVELOPMENT DRAINAGE PLAN

TAX MAP 32 LOT 72
DEERFIELD ROAD (N.H. ROUTE 27)
RAYMOND, NEW HAMPSHIRE

PREPARED FOR AND LAND OF:

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Appendix A:
Inspection and Maintenance Manual

Contractor Bays

Autumn Trail Realty, LLC.
Map 32 Lot 72
Raymond, New Hampshire
Storm Water Management System
Inspection and Maintenance Manual
November 16, 2023

Introduction:

The operation and maintenance of a storm water management system and its individual components is as critical to system performance as the design. Without proper maintenance, best management practices (BMPs) are likely to become functionally impaired or to fail, providing reduced or no treatment of storm water. Proper operation and maintenance will ensure that the storm water system and individual BMPs will remain effective at removing pollutants as designed and meeting New Hampshire's water quality objectives. Proper maintenance will:

- Maintain the volume of storm water treated over the long term;
- Sustain the pollutant removal efficiency of the BMP;
- Reduce the risk of re-suspending sediment and other pollutants captured by the BMP;
- Prevent structural deterioration of the BMP and minimize the need for expensive repairs;
- Decrease the potential for failure of the BMP.

The NH Department of Environmental Services Alteration of Terrain (AoT) regulations (Env-Wq 1500) require the long-term maintenance of storm water practices and stipulate the establishment of a mechanism to provide for ongoing inspections and maintenance.

Facilities Information:

Owner of Record: Autumn Trail Realty, LLC.
PO Box 351
Pittsfield, NH 03263

Report Information:

- Every effort has been made to provide a comprehensive operation and maintenance plan for this project. All measures and guidelines presented within this plan are the minimum efforts required to achieve the intent of the erosion and sedimentation control program and minimize off site impacts.
- Should any omissions or inconsistencies arise in the plan, the owner, and governing officials are expected to use reasonable and experienced judgment in the field relative to evaluation and implementing measures based on the intent of this plan.
- This manual does not preclude any requirements for additional controls identified in the approved plan set or support documents or any other appropriate techniques to limit erosion and sedimentation of the site.
- Any measures deemed necessary by the town planning board, conservation commission, zoning board, or the town's representative shall become part of this inspection and maintenance plan.
- Autumn Trail Realty, LLC. will be responsible for implementing the required reporting, inspection, and maintenance activities identified in this Inspection and Maintenance (I&M) manual.
- Autumn Trail Realty, LLC. shall maintain all record keeping required by the I&M manual. Any transfer of responsibility for I&M activities or transfer in ownership shall be documented to the DES in writing.
- Inspection and maintenance reports shall be completed after each inspection. Copies of the report forms to be completed by the inspector are attached at the end of this manual, including:
    - Inspection checklist to be used during each inspection;
    - Inspection and maintenance logs to document each inspection and maintenance activity;
- A plan showing the locations of all the storm water practices described in the I&M manual is attached at the end of this manual.
- **Inspection and maintenance records must be provided to DES upon request.**

Storm water management systems present at Contractor Bays

Description:

All impervious on the parcel will drain to the southeast corner of the parking lot where there will be a curb break, stormwater will flow into a rain garden where it will be treated prior to flowing into a subsurface stormwater chamber system (SC-740) which will control stormwater rates coming from the developed site.

Maintenance:

1. Regular inspection and routine maintenance are necessary to ensure that the storm water management system continues to control and treat runoff.
2. Structural components of the site's drainage system must be inspected and maintained on an annual basis (minimum).
3. The outlets of the storm water management system must be inspected bi-annually.
4. All outfalls shall be cleaned of all siltation and debris at the completion of the construction process when the site has been stabilized with loam, seed, and landscaping.
5. Any evidence of erosion, structural damage to the outlet, or other damage must be reported to the appropriate on-site representative and epaired as soon as possible.
6. Any sediment and/or trash should be removed from the outlet structures and pipes cleaned of all silt.
7. Subsurface pipe detention systems must be inspected and maintained on an annual basis (minimum).

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Bioretention System (underdrained)

Description:

A bioretention system (sometimes referred to as a "rain garden") is a type of filtration BMP designed to collect and filter moderate amounts of stormwater runoff using conditioned planting soil beds, gravel beds and vegetation within shallow depressions. The bioretention system may be designed with an underdrain, to collect treated water and convey it to discharge, or it may be designed to infiltrate the treated water directly to the subsoil. Bioretention cells can reduce sediment, nutrients, oil and grease, and trace metals. Bioretention systems should be sited near the origin of the stormwater runoff to be treated.

The major difference between bioretention systems and other filtration systems is the use of vegetation. A typical surface sand filter is designed to be maintained with no vegetation, whereas a bioretention cell is planted with a variety of shrubs and perennials whose roots assist with pollutant uptake. The use of vegetation allows these systems to blend in with other landscaping features.

Maintenance:

1. 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.
2. Pretreatment measures should be inspected at least twice annually, and cleaned of accumulated sediment as warranted by inspection, but no less than once annually.
3. Trash and debris should be removed at each inspection.
4. At least once annually, system should be inspected for drawdown time. If bioretention system does not drain within 72-hours following a rainfall event, then 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 removal of accumulated sediments or reconstruction of the filter media.
5. Vegetation should be inspected at least annually, and maintained in healthy condition, including pruning, removal and replacement of dead or diseased vegetation, and removal of invasive species.

Inspection Checklist and Maintenance Report
Bioretention system (underdrained)

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of trash or debris	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Structural damage at inlet or outlet	❑ Yes	❒ No
Drains with 72 hours of rainfall	❑ Yes	❒ No
Presence of invasive species	❑ Yes	❒ No

Maintenance Performed

Conveyance Swales

Description:

Conveyance swales are stabilized channels designed to convey runoff at non-erosive velocities. They may be stabilized using vegetation, riprap, or a combination, or with an alternative lining designed to accommodate design flows while protecting the integrity of the sides and bottom of the channel. Conveyance channels may provide incidental water quality benefits but are not specifically designed to provide treatment. Conveyance swales are not considered a Treatment or Pretreatment Practice under the AoT regulations, unless they are also designed to meet the requirements of an acceptable Treatment/Pretreatment Practice as described elsewhere in this Chapter.

Maintenance:

1. Grassed channels should be inspected periodically (at least annually) for sediment accumulation, erosion, and condition of surface lining (vegetation or riprap).
2. Repairs, including stone or vegetation replacement, should be made based on this inspection.
3. Remove sediment and debris annually, or more frequently as warranted by inspection.
4. Mow vegetated channels based on frequency specified by design. Mowing at least once per year is required to control establishment of woody vegetation. It is recommended to cut grass no shorter than 4 inches.

Inspection Checklist and Maintenance Report
Conveyance Swales

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of erosion or vegetation loss	❑ Yes	❒ No
Presence of accumulated sediment	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Permanent Outlet Protection

Description:

Outlet protection is typically provided at stormwater discharge conduits from structural best management practices to reduce the velocity of concentrated stormwater flows to prevent scour and minimize the potential for downstream erosion. Outlet protection is also provided where conduits discharge runoff into an in-ground stormwater management practice (e.g., pond or swale) to prevent scour where flow enters the BMP.

Standard engineering practices allow for many different types of outlet protection which provide energy dissipation. Common outlet protection measures include:

- Riprap aprons, the design of which is covered within this section;
- Riprap lined scour holes, stilling basins or plunge pools. Design references for stilling basins are provided under 'Design References'.

Maintenance:

1. Inspect the outlet protection annually for damage and deterioration. Repair damages immediately.

Inspection Checklist and Maintenance Report
Permanent Outlet Protection

Practice Location: _____

Date: _____

Performed By: _____ Signature _____

Inspection Checklist		
Presence of accumulated sediment	❑ Yes	❒ No
Damage to outlet	❑ Yes	❒ No
Presence of trash or debris	❑ Yes	❒ No

Maintenance Performed

Invasive Species Information:

Description:

With respect to a particular ecosystem, any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem.

Maintenance:

1. Remove invasive plant species from the storm water management practices by pulling, either by hand for small plants or by hand shovel for shrubs and bushes.
2. Refer to the following fact sheet prepared by the University of New Hampshire Cooperative Extension entitled Methods for Disposing Non-Native Invasive Plants for recommended methods to dispose of invasive plant species.

UNIVERSITY of NEW HAMPSHIRE COOPERATIVE EXTENSION

Methods for Disposing Non-Native Invasive Plants

Prepared by the Invasives Species Outreach Group, volunteers interested in helping people control invasive plants. Assistance provided by the Piscataquog Land Conservancy and the NH Invasives Species Committee. Edited by Karen Bennett, Extension Forestry Professor and Specialist.

Tatarian honeysuckle
Lonicera tatarica
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions.* Vol. 3: 282.

Non-native invasive plants crowd out natives in natural and managed landscapes. They cost taxpayers billions of dollars each year from lost agricultural and forest crops, decreased biodiversity, impacts to natural resources and the environment, and the cost to control and eradicate them.

Invasive plants grow well even in less than desirable conditions such as sandy soils along roadsides, shaded wooded areas, and in wetlands. In ideal conditions, they grow and spread even faster. There are many ways to remove these non-native invasives, but once removed, care is needed to dispose the removed plant material so the plants don't grow where disposed.

Knowing how a particular plant reproduces helps determine the appropriate disposal method. Most are spread by seed and are dispersed by wind, water, animals, or people. Some reproduce by vegetative means from pieces of stems or roots forming new plants. Others spread through both seed and vegetative means.

Because movement and disposal of viable plant parts is restricted (see NH Regulations), viable invasive parts can't be brought to most transfer stations in the state. Check with your transfer station to see if there is an approved, designated area for invasives disposal. This fact sheet gives recommendations for rendering plant parts non-viable.

Control of invasives is beyond the scope of this fact sheet. For information about control visit www.nhinvasives.org or contact your UNH Cooperative Extension office.

New Hampshire Regulations

Prohibited invasive species shall only be disposed of in a manner that renders them nonliving and nonviable. (Agr. 3802.04)

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species, which includes all of their cultivars and varieties, listed in Table 3800.1 of the New Hampshire prohibited invasive species list. (Agr 3802.01)

How and When to Dispose of Invasives?

To prevent seed from spreading remove invasive plants before seeds are set (produced). Some plants continue to grow, flower and set seed even after pulling or cutting. Seeds can remain viable in the ground for many years. If the plant has flowers or seeds, place the flowers and seeds in a heavy plastic bag "head first" at the weeding site and transport to the disposal site. The following are general descriptions of disposal methods. See the chart for recommendations by species.

Burning: Large woody branches and trunks can be used as firewood or burned in piles. For outside burning, a written fire permit from the local forest fire warden is required unless the ground is covered in snow. Brush larger than 5 inches in diameter can't be burned. Invasive plants with easily airborne seeds like black swallow-wort with mature seed pods (indicated by their brown color) shouldn't be burned as the seeds may disperse by the hot air created by the fire.

Japanese knotweed
Polygonum cuspidatum
USDA-NRCS PLANTS Database / Britton, N.L., and A. Brown. 1913. *An illustrated flora of the northern United States, Canada and the British Possessions*. Vol. 1: 676.

Bagging (solarization): Use this technique with softer-tissue plants. Use heavy black or clear plastic bags (contractor grade), making sure that no parts of the plants poke through. Allow the bags to sit in the sun for several weeks and on dark pavement for the best effect.

Tarping and Drying: Pile material on a sheet of plastic and cover with a tarp, fastening the tarp to the ground and monitoring it for escapes. Let it dry for several weeks.

Chipping: Use this method for woody plants that don't reproduce vegetatively.

Burying: This is risky, but can be done with watchful diligence. Lay thick plastic in a deep pit before placing the cut up plant material in the hole. Place the material away from the edge of the plastic before covering it with more heavy plastic. Eliminate as much air as possible and toss in soil to weight down the material in the pit. Note that the top of the buried material should be at least three feet underground. Japanese knotweed should be at least 5 feet underground!

Drowning: Fill a large barrel with water and place soft-tissue plants in the water. Check after a few weeks and look for rotted plant material (roots, stems, leaves, flowers). Well-rotted plant material may be composted. A word of caution- seeds may still be viable after using this method. Do this before seeds are set. This method isn't used often. Be prepared for an awful stink!

Composting: Invasive plants can take root in compost. Don't compost any invasives unless you know there is no viable (living) plant material left. Use one of the above techniques (bagging, tarping, drying, chipping, or drowning) to render the plants non-viable before composting. Closely examine the plant before composting and avoid composting seeds.

Finally, *be diligent* looking for seedlings for *years* in areas where removal and disposal took place.

Suggested Disposal Methods for Non-Native Invasive Plants

This table provides information concerning the disposal of removed invasive plant material. If the infestation is treated with herbicide and left in place, these guidelines don't apply. Don't bring invasives to a local transfer station, unless there is a designated area for their disposal, or they have been rendered non-viable. This listing includes wetland and upland plants from the New Hampshire Prohibited Invasive Species List. The disposal of aquatic plants isn't addressed.

Plant Name	Method of Reproducing	Time of Year To Dispose	Methods of Disposal
Woody Plants*	**Fruit/Seeds**		
Norway Maple *(Acer platanoides)* European Barberry *(Berberis vulgaris)* Japanese Barberry *(Berberis thunbergii)* Autumn Olive *(Elaeagnus umbellata)* Burning Bush *(Euonymus alatus)* Morrow's Honeysuckle *(Lonicera morrowii)* Tatarian Honeysuckle *(Lonicera tatarica)* Showy Bush Honeysuckle *(Lonicera x bella)* Common Buckthorn *(Rhamnus cathartica)* Glossy Buckthorn *(Frangula alnus)*		Prior to fruit/seed ripening	Seedlings and small plants. ▪ Pull or cut and leave on site with roots up. No special care needed. Larger plants ▪ Use as firewood. ▪ Make a brush pile. ▪ Chip. ▪ Burn.
		After fruit/seed is ripe	Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip once all fruit has dropped from branches. ▪ Leave resulting chips on site and monitor.
Woody Plants*	**Fruits/Seeds/Plant Fragments**		
Oriental Bittersweet *(Celastrus orbiculatus)* Multiflora Rose *(Rosa multiflora)*		Prior to fruit/seed ripening	Seedlings and small plants. ▪ Pull or cut and leave on site with roots up. No special care needed. Larger plants ▪ Make a brush pile. ▪ Burn.
		After fruit/seed is ripe	Don't remove from site. ▪ Burn. ▪ Make a covered brush pile. ▪ Chip – only after material has fully dried (1 year) and all fruit has dropped from branches. Leave resulting chips on site and monitor.

Plant Name	Method of Reproducing	Time of Year To Dispose	Methods of Disposal
Non-woody plants	**Fruits/Seeds**		
Garlic Mustard *(Alliaria petiolata)* Spotted Knapweed *(Centaurea maculosa)* ▪ Sap of related knapweed can cause skin irritation and tumors. Wear gloves when handling. Black Swallow-wort *(Cynanchum nigrum)* ▪ May cause skin rash. Wear gloves and long sleeves when handling. Pale swallow-wort *(Cynanchum rossicum)* Giant Hogweed *(Heracleum mantegazzianum)* ▪ Can cause major skin rash. Wear gloves and long sleeves when handling. Dame's Rocket *(Hesperis matronalis)* Perennial Pepperweed *(Lepidium latifolium)* Purple loosestrife *(Lythrum salicaria)* Japanese Stilt Grass *(Microstegium vimineum)* Mile-a-Minute Weed *(Polygonum perfoliatum)*		Prior to flowering	Depends on scale of infestation Small infestation: ▪ Remove and scatter Large infestation: ▪ Remove and pile. (You can pile on or cover with plastic sheeting) ▪ Monitor. Remove any re-sprouting material
		During and following flowering	Do nothing until the following year; Or Remove flowering heads and bag and let rot. Small infestation: ▪ Remove and scatter remaining material Large infestation: ▪ Remove and pile remaining material. (You can pile on or cover with plastic sheeting) ▪ Monitor. Remove any re-sprouting material
Non-woody plants *	**Fruits/seeds/plant parts**		
Common Reed (*Phragmites australis*) Japanese Knotweed *(Polygonum cuspidatum)* Bohemian Knotweed *(Polygonum x bohemicum)*	Primary means of spread in these species is by plant parts. Although all care should be given to preventing the dispersal of seed during control activities, the presence of seed doesn't materially influence disposal activities.		Small infestation: ▪ Bag all plant material and let rot. ▪ Never pile and use resulting material as compost. ▪ Burn Large infestation: ▪ Remove material to unsuitable habitat (dry, hot sunny or dry shaded location) and scatter or pile. • Monitor and remove any sprouting material. • Pile, let dry, and burn.

October, 2009

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Deicing Log

Access Drives & Parking Areas

Do Not Apply Sand To Permeable Pavements

Date: _____

Performed By: _____ Signature _____

Maintenance Performed:

Air Temperature	Pavement Temperature	Relative Humidity	Dew Point	Sky

Reason for applying:

Chemical:

Application Time:

Application Amount:

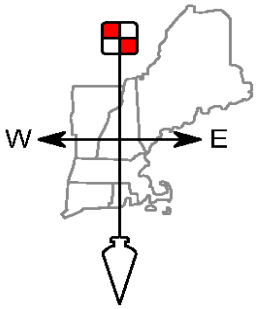
Observation (first day):

Observation (after event):

Observation (before next application):

Inspection and Maintenance Log					
	BMP	**Inspection Date**	**Inspected By**	**Maintenance Required?**	**Maintenance Performed**
1				❑Yes ❑No	
2				❑Yes ❑No	
3				❑Yes ❑No	
4				❑Yes ❑No	
5				❑Yes ❑No	
6				❑Yes ❑No	
7				❑Yes ❑No	
8				❑Yes ❑No	
9				❑Yes ❑No	

Appendix B:
Pre-Formed Scour Hole Sizing Calculations



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Land Planning ⌖ Septic Designs
206 Elm Street, Milford, NH 03055 - Phone: 603-672-5456 - Fax: 603-413-5456
www.FieldstoneLandConsultants.com

PRE-FORMED SCOUR HOLES

Equations: Depth = 0.5d
Length = 3d + 6(Depth)
Width = 2d + 6(Depth)

Design Storm:	25 Year

				SCOUR HOLE DESIGN				
Location	Q	Dia. Pipe	Tw	Size (FT)			Stone Size	Thickness
(STRUCT.)	(CFS)	(FT.)	(FT.)	Depth	Length	Width	(d50 - INCHES)	(INCHES)
HW-1	0.84	1.25	1.00	0.63	8	6	4	8

Appendix C:
Test Pit Logs

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NEW HAMPSHIRE
Designer
of
Subsurface Disposal
Systems
★ ★ ★
Kenneth M. Robinson
No. 1896
Department of Environmental Services

TEST PIT DATA
AUTUMN TRAIL REALTY, LLC
TAX MAP 32 LOT 72
NH ROUTE 27
RAYMOND, NH

10/27/23
Test Pit #1
0-10" – 10YR 3/3 Dark brown loam, granular, friable.
10-30" – 10YR 4/4 Dark yellowish brown fine sandy loam, single grain, loose. Few stones.
30-60" – 2.5Y 5/6 Light olive brown stony fine sandy loam, granular, friable.
ESHWT = None **Observed Water = None** **Boulders = 60"** **Roots = 40"**
Perc Rate = 6 minutes per inch (mpi)

10/27/23
Test Pit #2
0-6" – 10YR 3/3 Dark brown loam, granular, friable.
ESHWT = None **Observed Water = None** **Ledge = 6"** **Roots = 6"**

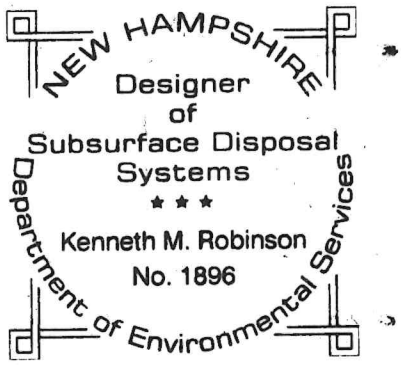
10/27/23
Test Pit #3
0-0" – Ledge at surface
ESHWT = None **Observed Water = None** **Ledge = 0"** **Roots = None**

10/27/23
Test Pit #4
0-6" – 10YR 3/3 Dark brown loam, granular, friable.
ESHWT = None **Observed Water = None** **Ledge = 6"** **Roots = 6"**

10/27/23
Test Pit #5
0-8" – 10YR 3/3 Dark brown loam, granular, friable.
8-36" – 10YR 4/4 Dark yellowish brown fine sandy loam, single grain, loose. Few stones.
36-72" – 2.5Y 5/6 Light olive brown stony fine sandy loam, granular, friable.
ESHWT = None **Observed Water = None** **Ledge/Boulders = None** **Roots = 40"**
Perc Rate = 6 mpi

Test Pits were logged by:

Kenneth M. Robinson, CWS
NH Septic Designer # 1896



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May 8, 2024

Marie Lee, Planning Technician
Raymond Planning and Development
4 Epping Street
Raymond, NH 03077

RE: 2023-012 Autumn Trail Realty Contractor Bays
Tax Map 32, Lot 72
Deerfield Road (N.H. Route 27)
(Response Letter to Engineering Review Comments)

Dear Ms. Lee,

In an effort to simplify the review process I have prepared a response letter to address the third-party engineering review comments in a letter dated May 2, 2024. Your comments are shown below and our responses are in italics and blue.

Traffic Impact Analysis

1. The Applicant provided a Traffic Assessment Report by VHB, dated January 19, 2024 and revised February 14, 2024 for the proposed development, in accordance with Town of Raymond, Site Plan Review Regulations, Section 5.03.13.
DuBois and King submitted a separate letter, dated April 25, 2024 to the Town of Raymond addressing the Traffic Assessment Report.
A Traffic Analysis has been submitted and there were no additional comments from Dubois & King.

Cover Sheet, Sheet CV-1.

1. In the sheet index, the title for page 11, sheet DT-5, does not match the title on sheet DT-5 and should read "Construction Details".
The sheet index has been updated to match title on sheet DT-5.

Site Plan, Sheet SP-1.

1. Where the proposed retaining wall exceeds 4 feet in height, it will require PE stamped engineered drawings. It is our understanding that these plans will be required during the building permit process.
The Applicant stated that a PE stamped engineering plan will be provided for the building permit process.
Acknowledged.

Existing Conditions Plan, Sheet EX-1.

1. **Repeat Comment.** Height of the existing buildings (i.e. 1 story metal frame building to the NW of the property, and 2-story house to the south) within 200 feet of the site boundaries should be shown in accordance with the Town of Raymond, Site Plan Review Regulations, Section 5.02.07.

The Raymond Tax Map indicates a building on Lot 32-1 and the applicant has identified the use as Single Family, but no structure is shown on the existing conditions plan. The adjacent lot, Lot 32-2, appears to be a vacant lot and is annotated as such. We recommend the applicant clarify whether or not a structure exists on Lot 32-1.

The plans were revised to accurately show the abutting lot lines for lot 32-1. The original structure was field located and is shown in the correct location, on lot 32-1. The previous lot lines were developed from our reference plan which was determined to be incorrect.

Grading and Drainage Plan, Sheet GR-1.

1. Top and bottom elevations (236.0 / 218.0 and 236.0 / 226.0) for the proposed retaining wall on the north side of the property. The bottom of wall elevation of 226 does not line up with the location in between the proposed 222 and 224 contours. The top of wall elevation of 236 does not line up with the location in between the existing 238 and 240 contours.

The bottom of the wall elevation of 226.0 was updated to be 223.0.

The top of the wall elevation is correct as the 236.0 contour rides along the top of the wall, see grade label along the top of the wall.

2. Top of foundation elevation at the northeast corner of the building (221). It is not clear how the top of foundation can drop 6.5 feet from 227.5.

The grade label has been adjusted to show the top of foundation as 227.5.

3. Add top of foundation elevation at the northwest corner of the building.

A grade label has been added to the northwest corner of the building.

Landscaping & Utility Plan, Sheet LS-1.

1. **Repeat Comment.** We recommend that the Applicant provide a landscape plan prepared by a New Hampshire Licensed Landscape Architect in accordance with Town of Raymond, Site Plan Review regulations, Section 3.03.03c.

The Applicant stated that a Landscaping Plan signed by a Licensed Landscape Architect is still being prepared and will be submitted when available.

A Landscaping Plan signed by a Licensed Landscape Architect has been provided.

Construction Details, Sheet 9.

2. The emergency spillway elevation (208.70') on the rain\garden typical elevation detail (sheet 9), does not match the elevation (208.75') on the grading plan (sheet 4) or the elevation used in the drainage report (208.75'). We recommend the applicant review and revise as necessary.

The emergency spillway depth was revised to be 3", matching the elevation on the grading plan as well as in the drainage report.

Stormwater Management Report and Pre- and Post-Development Drainage Plan.

1. **Repeat Comment.** We recommend that the Applicant submit plans with a graphic scale of 1"=20' up to 1"=50' in accordance with the Town of Raymond, Site Plan Review Regulations, Section 5.02.03.
Plans being submitted are plotted to a scale of 1"=20'.

2. The pipe diameter values used in the rip-rap calculations (1.3') differ from the pipe diameter values shown on the plans (1.25'). We recommend the applicant review and revise as necessary.
The rip-rap calculations were reviewed and revised.

3. The parcel size is annotated as 1.002 AC on the existing conditions plan and the drainage report narrative references a parcel size of 1.21 AC. We recommend the applicant review and revise as necessary.
The drainage narrative was revised to reference the correct parcel size.

We trust that this letter in conjunction with the revised plans and attachments address your comments and concerns regarding this application. If you have questions, please don't hesitate to call.

Sincerely,
Fieldstone Land Consultants, PLLC

Brandon L. Richards
Project Engineer

329518P
May 13, 2024

Ms. Diana Luszcz, Chairwoman
Raymond Planning Board
4 Epping Street
Raymond, New Hampshire 03077

Subject: 2023-012 Autumn Trail Realty Contractor Bays
Tax Map 32, Lot 72
Deerfield Road (N.H. Route 27)
Engineering Review Services

Dear Ms. Luszcz:

As requested, we have completed our review of the plans and materials resubmitted for the above referenced project. The submitted materials consist of the following:

- Letter of Transmittal, prepared by Fieldstone Land Consultants, PLLC, dated May 8, 2024.
- Response Letter, prepared by Fieldstone Land Consultants, PLLC, dated May 8, 2024.
- Site Development Plans Set, prepared by Fieldstone Land Consultants, PLLC, consisting of 12 sheets, dated December 15, 2023 and revised May 7, 2024.
- Exhibit Plans, prepared by Fieldstone Land Consultants, PLLC, consisting of 2 sheets, dated December 15, 2023 and revised May 7, 2024.
- Proposed Sewage Disposal System Plan, prepared by Fieldstone Land Consultants, PLLC, consisting of 1 sheet, dated December 19, 2023.
- Stormwater Management Report, prepared by Fieldstone Land Consultants, dated November 16, 2023 and revised May 6, 2024.

The following were comments noted during the review.

Site Plan, Sheet SP-1.

1. ***Repeat Comment.*** Where the proposed retaining wall exceeds 4 feet in height, it will require PE stamped engineered drawings. It is our understanding that these plans will be required during the building permit process.

   The Applicant stated and acknowledged that a PE stamped engineering plan will be provided for the building permit process. We recommend the Town ensure the plans are reviewed by a structural engineer when submitted.

Construction Details, Sheet 10

2. ***Repeat Comment.*** The emergency spillway elevation (208.70') on the rain garden typical elevation detail (sheet 10), does not match the elevation (208.75') on the grading plan

(sheet 4) or the elevation used in the drainage report (208.75'). We recommend the applicant review and revise as necessary.

Stormwater Management Report and Pre- and Post-Development Drainage Plan.

1. The primary runoff value for the 25-year storm used in the rip-rap calculations (1.24 CFS) is the rain garden primary outflow. The Applicant should consider the ADS primary outflow of 0.84 CFS for the rip-rap apron. We recommend the applicant review and revise the calculations.
2. On the Post-Development Drainage Plan, it is unclear if the area in the northeast corner is included in DV S3 or if it is an independent subcatchment area (not labeled) due to the thickness and overlapping of the boundary lines. It is our assumption, based on the areas within the drainage report that it is part of DV S3. Based on this assumption, we disagree with the Time of Concentration (TOC) line shown on the plan and believe the TOC line for DV S3 should start at the northwestern corner of the property. We recommend that the Applicant provide an explanation on how the stormwater runoff from this area will flow towards the Observation Point and clarify if this area is included in subcatchment DV S3. Additionally, we recommend the applicant review and revise the TOC path as necessary.

If you have any questions or comments, please do not hesitate to contact us.

Very truly yours,

DuBOIS & KING, Inc.

Jeffrey A. Adler, P.E.
Principal

FIELDSTONE
LAND CONSULTANTS, PLLC
Surveying ✦ Engineering
Land Planning ✦ Septic Designs
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www.FieldstoneLandConsultants.com

May 14, 2024

Marie Lee, Planning Technician
Raymond Planning and Development
4 Epping Street
Raymond, NH 03077

RE: 2023-012 Autumn Trail Realty Contractor Bays
Tax Map 32, Lot 72
Deerfield Road (N.H. Route 27)
(Response Letter to Engineering Review Comments)

Dear Ms. Lee,

In an effort to simplify the review process I have prepared a response letter to address the third-party engineering review comments in a letter dated May 13, 2024. Your comments are shown below and our responses are in italics and blue.

Site Plan, Sheet SP-1.

1. Where the proposed retaining wall exceeds 4 feet in height, it will require PE stamped engineered drawings. It is our understanding that these plans will be required during the building permit process. **The Applicant stated that a PE stamped engineering plan will be provided for the building permit process.**
Acknowledged.

Construction Details, Sheet 9.

2. The emergency spillway elevation (208.70') on the rain\garden typical elevation detail (sheet 10), does not match the elevation (208.75') on the grading plan (sheet 4) or the elevation used in the drainage report (208.75'). We recommend the applicant review and revise as necessary.
The emergency spillway elevation on detail 8, on sheet DT-3, was revised to match the grading plan as well as drainage report.

Stormwater Management Report and Pre- and Post-Development Drainage Plan.

1. The primary runoff value for the 25-year storm used in the rip-rap calculations (1.24 CFS) is the rain garden primary outflow. The Applicant should consider the ADS primary outflow of 0.84 CFS for the rip-rap apron. We recommend the applicant review and revise the calculations.
The rip-rap calculations have been adjusted to show the correct outflow resulting from the ADS Stormtech Chambers during the 25-year storm event.

2. On the Post-Development Drainage Plan, it is unclear if the area in the northeast corner is included in DV S3 or if it is an independent subcatchment area (not labeled) due to the thickness and overlapping of the boundary lines. It is our assumption, based on the areas within the drainage report that it is part of DV S3. Based on this assumption, we disagree with the Time of Concentration (TOC) line shown on the plan and believe the TOC line for DV S3 should start at the northwestern corner of the property. We recommend that the Applicant provide an explanation on how the stormwater runoff from this area will flow towards the Observation Point and clarify if this area is included in subcatchment DV S3. Additionally, we recommend the applicant review and revise the TOC path as necessary.
The northeast corner is included within DV S3. This subcatchment is composed of areas that are not being captured and are flowing off-site. The Time of concentration line was adjusted to start in the Northwestern corner of the property and work its way around similarly to the existing Time of Concentration line.

All stormwater on-site captured or not is conveyed downhill towards Deerfield road, the Observation Point is located at the Southeast corner of the property as this is where the roadside swale and hillside drains towards.

We trust that this letter in conjunction with the revised plans and attachments address your comments and concerns regarding this application. If you have questions, please don't hesitate to call.

Sincerely,
Fieldstone Land Consultants, PLLC

Brandon L. Richards
Project Engineer

DuBois & King inc.

ENGINEERING • PLANNING • DEVELOPMENT • MANAGEMENT

329518P
May 20, 2024

Ms. Diana Luszcz, Chairwoman
Raymond Planning Board
4 Epping Street
Raymond, New Hampshire 03077

Subject: 2023-012 Autumn Trail Realty Contractor Bays - Engineering Review Services
Tax Map 32, Lot 72, Deerfield Road (N.H. Route 27)

Dear Ms. Luszcz:

As requested, we have completed our review of the plans and materials resubmitted for the above referenced project. The submitted materials consist of the following:

- Letter of Transmittal, prepared by Fieldstone Land Consultants, PLLC, dated May 14, 2024.
- Response Letter, prepared by Fieldstone Land Consultants, PLLC, dated May 14, 2024.
- Site Development Plans Set, prepared by Fieldstone Land Consultants, PLLC, consisting of 12 sheets, dated December 15, 2023 and revised May 13, 2024.
- Exhibit Plans, prepared by Fieldstone Land Consultants, PLLC, consisting of 2 sheets, dated December 15, 2023 and revised May 7, 2024.
- Proposed Sewage Disposal System Plan, prepared by Fieldstone Land Consultants, PLLC, consisting of 1 sheet, dated December 19, 2023.
- Stormwater Management Report, prepared by Fieldstone Land Consultants, dated November 16, 2023 and revised May 13, 2024.

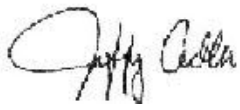
Based on our review, the applicant has addressed our previous comments and we have no further comments.

We would like to note, to be consistent with our previous review, the Applicant acknowledged and stated that he will provide a PE-stamped, engineered plan for the proposed wall (exceeding 4 feet in height) during the building permit application process.

If you have any questions or comments, please do not hesitate to contact us.

Very truly yours,

DuBOIS & KING, Inc.



Jeffrey A. Adler, P.E.
Principal

D. Application #2022-016 Woodside Village

Cornerstone Survey Inc

Kevin E. Hatch LLS **25 Whitetail Lane Chester NH 03036** **(603) 887-6647**

Planning Director
Raymond Planning Board
Raymond, NH 03077

March 1, 2024

Enclosed is a copy of an amended subdivision application for property owned by Woodside Village LLC on Route 27 in Raymond. This property was granted subdivision approval for 4 lot on January 5, 2023 by the Raymond Planning Board. (application #2022-016).

The amended application reduces the number of lots to 3 proposed lots. These 3 lots are located in the C2 zone and will require individual site plans prior to development therefore, this application simply creates the lots and does not propose any new development at this time. I believe there is $895 remaining in my escrow account for this site which should cover the noticing fees and planners review, let me know if additional fees are required and I can drop a check off at town hall. I understand the board's schedule is very busy, but I believe this application will be quick and simple and are hopeful this amendment can be scheduled at the first meeting in April.

Please feel free to contact me with any questions or comments, my email address is CornerstoneSurvey@Comcast.net.

Thank You,

Kevin E Hatch LLS

SUBDIVISION APPLICATION
Town of Raymond NH

Map # 33 Lot # 106 Application Date 3/1/24 Application #_____

Project Name: Ammended Woodside Village 3 lot subdivision

Location: Route 27

Project Description: Revise previosly aproved 4 lot subdivision to a 3 lot subdivision

Zone: C2 New Industrial / Commercial Square Footage: 0 or Number of Residential Units: 0

Applicant/Agent Information:

Name: Kevin Hatch Phone: 603-887-6647

Company: Cornerstone Survey Inc Fax: _____

Address: 25 Whitetail Lane Chester, NH 03036

Signed*: Kevin E Hatch Date: 3/1/24

Requires notarized letter of permission.

By signing this application, you are agreeing to all rules and regulations of the Town of Raymond, and are agreeing to allow agents of the Town of Raymond to conduct inspections, during normal business hours to ensure compliance with all Raymond Zoning and Site Review regulations while your application is under consideration and during any construction and operational phases after approval is granted.

Owner Information:

Name: Kevin Hatch Phone: 603-490-0538

Company: Woodside Village LLC Fax: _____

Address: 25 Whitetail Lane Chester, NH 03036

Signed: Kevin E Hatch Date: _____

Designers of Record:

Engineer: _____

Surveyor: Kevin E Hatch LLS

Soil Scientist: Bruce Gilday CWS

Landscape Architect: _____

Fees: See Attached Fee Schedule

FOR OFFICE USE ONLY

Date Application Received: _____ Total Fees Collected with Application: $_____ *Abutters List Received:* _____ *Check List Received:* _____

PB Hearing Date: _____ *Notice Date:* _____

PB Application Acceptance Date: _____

RECEIVED
MAR 6 2024
TOWN OF RAYMOND

Subdivision Checklist

TOWN OF RAYMOND, NH

RECEIVED
MAR 6 2024
TOWN OF RAYMOND

PROJECT NAME Woodside Village Route 27 4 Lot Subdivision

MAP# 33 LOT # 106 APPLICATION DATE 10/10/23 APPLICATION #

This checklist can be used for either a major or minor subdivision. For a minor subdivision, several of the items would likely be waived by the Planning Board due to lack of relevancy (e.g., topographic or soils data) The Board, however, reserves the right to require that all items be met if, in its judgment, the data are necessary to make an informed decision.

A copy of all plans and technical reports must be sent to the Town engineer. Proof of submittal must be provided to the Community Development Department at the time of application. If proof of transmittal is not provided, the application may be delayed until the following month's Planning Board meeting. Address is: ***Dubois & King, 18 Constitution Dr., Bedford NH 03110, ATTN: Jeff Adler.***

SUBMITTED YES	SUBMITTED NO			WAIVED YES	WAIVED NO
✓		1.	Name of subdivision; name and address of subdivider.		
✓		2.	Name, license number and seal of surveyor or other persons north arrow, scale and date of plan.		
✓		3.	Names and addresses of all abutters and all holders of conservation preservation or agricultural preservation easements (on the plat or on separate sheet.)		
✓		4.	Locus plan, showing zoning designations		
✓		5.	Signature block for Planning Board endorsement.		
✓		6.	Names of abutting subdivisions, streets, driveways, easements, building lines, parks/public spaces, notation of use of abutting land, and similar facts regarding abutting properties.		
✓		7.	Boundary survey and location of permanent markers.		
✓		8.	Location of property lines, lot areas in square feet and acres; lots numbered According to Town tax map system.		
✓		9.	Location and amount of frontage on public right-of-way		
✓		10.	Location of building setback lines.		
✓		11.	Existing and/or proposed buildings, other structures.		
✓		12.	Location of any existing or proposed easements, land to be dedicated to public use.		
✓		13.	Existing and proposed water mains, culverts, drains, sewers; proposed connections or alternative means of providing water supply and sewage disposal.		

Subdivision Checklist

TOWN OF RAYMOND, NH

SUBMITTED YES	SUBMITTED NO			WAIVED YES	WAIVED NO
✓		14.	Existing and proposed streets, with names, classification, width of travel surface and rights-of-way.		
n/a		15.	Final road profiles, centerline stationing, cross sections.		
✓		16.	Location and width of existing and proposed driveways.		
✓		17.	Location of all surface water, wetlands, rock ledges, stone walls, open space to be preserved, and any other man-made or natural features.		
✓		18.	Existing and proposed topographic contours.		
✓		19.	Soil and wetland delineation. *(see: requirements for soils and wetlands data).*		
✓		20.	Location of perc tests, test results, outline of 4,000 area, applicable septic square-foot septic setback lines.		
✓		21.	Location of existing and proposed wells, with required radius on property.		
✓		22.	Base flood elevations.		
OTHER:					
	✓	23.	Plans for stormwater management and erosion control.		
	✓	24.	Copy of state subdivision approval for septic system.		
	✓	25.	Alteration of Terrain Permit.		
pending		26.	Town or DOT Driveway Permit		
✓		27.	Copies of any proposed or existing easements, deed restrictions, covenants, and street deeds.		
	✓	28.	Such additional studies as may be required.		
✓		29.	Six (6) full-size copies of all plans and ten (10) copies of all plans in 11 X 17 format, and digital copy of plans. *		
✓		30.	Three (3) copies of all studies*		

FEES

✓		1. Application Fees
✓		2. Abutters Notice Fees ***(to include three (3) labels per abutter)***
✓		3. Engineering and Legal Review Escrow

4/24/24 MEETING

Cornerstone Survey Inc

Kevin E. Hatch LLS **25 Whitetail Lane Chester NH 03036** **(603) 887-6647**

RECEIVED
MAR 6 2024
TOWN OF RAYMOND

Planning Director
Raymond Planning Board
Raymond, NH 03077

March 1, 2024

Enclosed is a copy of an amended subdivision application for property owned by Woodside Village LLC on Route 27 in Raymond. This property was granted subdivision approval for 4 lot on January 5, 2023 by the Raymond Planning Board. (application #2022-016).

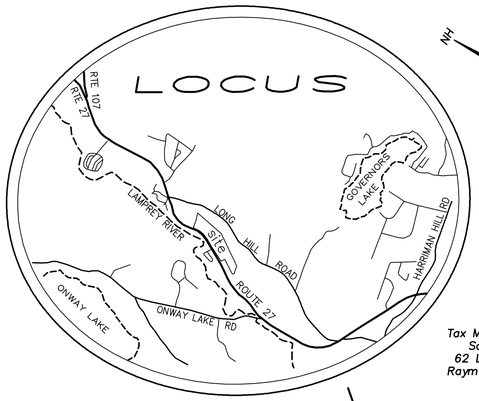
The amended application reduces the number of lots to 3 proposed lots. These 3 lots are located in the C2 zone and will require individual site plans prior to development therefore, this application simply creates the lots and does not propose any new development at this time. I believe there is $895 remaining in my escrow account for this site which should cover the noticing fees and planners review, let me know if additional fees are required and I can drop a check off at town hall. I understand the board's schedule is very busy, but I believe this application will be quick and simple and are hopeful this amendment can be scheduled at the first meeting in April.

Please feel free to contact me with any questions or comments, my email address is CornerstoneSurvey@Comcast.net.

Kevin's cell phone
603-490-0538

Thank You,

Kevin E Hatch LLS



NOTES;

1) OWNERS OF RECORD; WOODSIDE VILLAGE LLC
25 WHITETAIL LANE
CHESTER, NH 03036

2) SOURCE OF TITLE; R.C.R.D. BOOK 6448 PAGE 1455

3) THE INTENT OF THIS PLAN IS TO SUBDIVIDE THE EXISTING 19.64 ACRE (855,542sf) LOT INTO 3 LOTS.

4) ALL LOTS SHALL BE SERVICED BY ON SITE WELLS AND SEPTIC SYSTEMS AND DRIVEWAYS.

5) THIS PROPERTY IS ZONED C-2;;
CURRENT BUILDING SETBACK AND AREA REQUIREMENTS ARE AS FOLLOWS;
SETBACKS; FRONT=15' SIDE=15' AND REAR=15'
WETLAND=75'
FRONTAGE; 50'
MAX BUILDING HEIGHT; 35'
AREA; 21,780 S.F. (0.50 ACRES)
(ADDITIONAL SETBACK MAY APPLY BASED UPON PROPOSED USE)

6) A PORTION OF THESE LOTS ARE LOCATED WITHIN THE "ZONE G" OVERLAY DISTRICT AND THE GROUNDWATER PROTECTION ZONE,

6) THIS PROPERTY IS NOT LOCATED WITHIN THE FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0556E DATED 5/27/2005.

7) ELEVATIONS SHOWN ON THIS PLAN ARE BASED UPON NAVD '88 DATUM, AND BEARINGS ARE BASED UPON NH STATE PLANE COORDINATE SYSTEM.

8) STATE SUBDIVISION APPROVAL # eSA20220083001A .

9) NH DOT DRIVEWAY PERMIT # PENDING .

10) WETLAND DELINEATION AND SOIL MAPPING WAS PERFORMED BY B.A.G. LAND CONSULTANTS IN AUGUST 2022 USING THE STANDARDS SET FORTH IN THE SSSNNE PUBLICATION #1. WETLANDS WERE IDENTIFIED USING THE 1987 FEDERAL MANUAL FOR IDENTIFYING WETLANDS. HYDRIC SOIL COMPONENT WAS DETERMINED BY USING THE THE FIELD INDICATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND VERSION 3. NO VERNAL POOLS EXIST ON THIS SITE.

11) S.C.S. SOIL TYPE; 43C CANTON.

12) A NOTICE OF INTENT MAY BE REQUIRED BY THE E.P.A. AT THE TIME OF LOT DEVELOPMENT.

13) INDIVIDUAL LOT DEVELOPMENT SHALL REQUIRE PLANNING BOARD APPROVAL.

14) PLAN REFERENCES;
A) A SURVEY PLAT AND SUBDIVISION PREPARED FOR ROBERT E BONDS LOCATED IN RAYMOND NH PREPARED BY RSL LAYOUT AND DESIGN DATED JUNE 1986 AND RECORDED AT THE R.C.R.D. AS PLAN D-15381.

GRAPHIC SCALE
80 0 40 80 160 320
1 INCH = 80 FEET

LEGEND

STONE WALL
5/8" IRON PIN SET WITH YELLOW I.D. CAP
UTILITY POLE
IRON PIN FOUND WITH RSL CAP
DRILL HOLE FOUND
BUILDING SETBACK

I CERTIFY THAT THE ERROR OF CLOSURE USED IN THE PREPARATION OF THIS PLAN DOES NOT EXCEED 1 PART IN 10,000.

KEVIN E. HATCH L.L.S.

NO.	DATE	DESCRIPTION	BY
2	9/25/23	REVISE LOT LINES	K.E.H.
1	1/5/23	REVISE NOTE 4	K.E.H.
0	8/6/22	INITIAL RELEASE	K.E.H.

APPROVED BY THE TOWN OF RAYMOND
PLANNING BOARD ON _____

THIS SUBDIVISION PLAN CONTAINS A TOTAL OF 2 SHEETS. SHEET NUMBER 1 IS RECORDED AT THE ROCKINGHAM COUNTY REGISTRY OF DEEDS. THE REMAINING SHEET IS ON FILE AT THE TOWN OF RAYMOND PLANNING BOARD OFFICE, WHICH IN ITS ENTIRETY CONSTITUTES THE SUBDIVISION PLAN AS APPROVED BY THE PLANNING BOARD.

SUBDIVISION PLAN

Tax Map 33 Lot 106
NH Route 27
Raymond, NH

PREPARED BY:
CORNERSTONE SURVEY INC.
25 WHITETAIL LANE. CHESTER, N.H. 03036
PHONE/FAX (603) 887-6647

STATE OF NEW HAMPSHIRE LICENSED LAND SURVEYOR NO. 848 KEVIN E. HATCH SIGNATURE

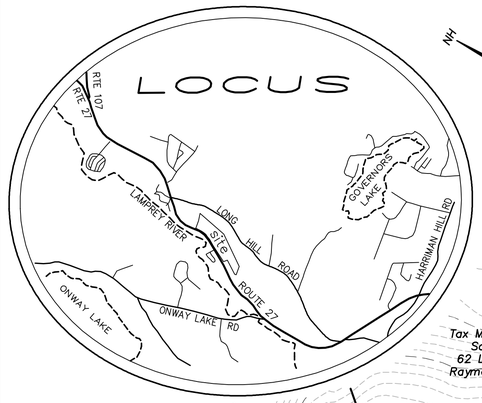
OWNER:
Woodside Village LLC
25 Whitetail Lane
Chester, NH 03037

SCALE: 1" = 80' DATE: August 2022

SHEET 1 OF 2

1740subdivision.DWG

22-1740



NH STATE PLANE

Tax Map 33 Lot 98
Robert Romeo
52 Long Hill Road
Raymond, NH 03077
(zone B)

Tax Map 33 Lot 96
Marcel Lavallee Jr
48 Long Hill Road
Raymond, NH 03077
(zone B)

Tax Map 33 Lot 116
Haley Livingston
46 Long Hill Road
Raymond, NH 03077
(zone B)

Tax Map 33 Lot 115
Jason Butler
44 Long Hill Road
Raymond, NH 03077
(zone B)

Tax Map 33 Lot 95
John Flanagan
42 Long Hill Road
Raymond, NH 03077
(zone B)

N: 199,380.66
E: 1107915.47

Tax Map 33 Lot 99
Jeffrey DaSilva
60 Long Hill Road
Raymond, NH 03077
(zone B)

S 27°16'28" E
619.30'

S 27°16'22" E
82.58'

S 27°16'22" E
445.44'

S 49°23'28" E
399.54'

Tax Map 33 Lot 100
Scott Nadeau
62 Long Hill Road
Raymond, NH 03077
(zone B)

75' WELL RADIUS

PROPOSED WELL

WETLAND

Tax Map 33 Lot 90
Joseph C Reed
181 Route 27
Raymond, NH 03077
(zone C-1)

S 23°14'48" W
189.74'

S 13°53'56" W
32.46'

S 16°29'56" W
105.00'

N 71°43'42" W
62.00'

606.05'

S 49°23'28" E

Tax Map 33 Lot 101
Richard Patterson Trust
64 Long Hill Road
Raymond, NH 03077
(zone B)

TAX MAP 33
LOT 106
558,640 sq.ft.
12.83 acres

TP#3

non-zone G

4,000s.f. AREA

TP#1

TP#2

250' SHORELAND SETBACK

EXISTING DRIVEWAY

N 27°42'47" W
363.82'

TAX MAP 33
LOT 106-1
96,900 sq.ft.
2.22 acres

zone G

S 29°56'11" W
283.52'

N 75°06'42" E
176.74'

N 75°06'42" E
453.95'

277.20'

TP#5

TAX MAP 33
LOT 106-2
200,050 sq.ft.
4.59 acres

non-zone G

N 26°04'10" W
225.12'

N 22°55'57" W
76.67'

115.73'

N 29°22'17" W

N 29°34'05" W
82.48'

Tax Map 33 Lot 107
191 Route 27 LLC
22 Brady Drive
Hudson, NH 03051
(zone C-1)

Tax Map 33 Lot 108
Anthony Borg
189 Route 27
Raymond, NH 03077
(zone C-1)

driveway

S 66°15'21" W
152.48'

50.00'
N 31°14'19" W

160.32'

S 31°14'19" E
394.55'

N 31°14'19" W
281.44'

R2730.00'

N.H. ROUTE 27

N 21°12'36" E
34.65'

N 20°37'20" E
154.82'

N 22°09'05" E
306.54'

WETLAND

R749.25'
L=470.64'

driveway
S 67°14'19" W
139.30'

RIVER

LAMPREY

Tax Map 32 Lot 2-41
Maurice Dussault
70 Long Hill Road
Raymond, NH 03077
(zone C-1)

Tax Map 33 Lot 10
Garrett Ennis
216 Route 27
Raymond, NH 03077
(zone C-1)

Tax Map 33 Lot 8
Charles Collins
P.O. Box 108
Raymond, NH 03077
(zone C-1)

Tax Map 33 Lot 9
NH River Manor LTD Partnership
380 Union Street Suite
300West Springfield MA 01089
(zone C-1)

APPROVED BY THE TOWN OF RAYMOND
PLANNING BOARD ON _____

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25 WHITETAIL LANE
CHESTER, NH 03036

2) SOURCE OF TITLE; R.C.R.D. BOOK 6448 PAGE 1455

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4) ALL LOTS SHALL BE SERVICED BY ON SITE WELLS AND SEPTIC SYSTEMS AND DRIVEWAYS.

5) THIS PROPERTY IS ZONED C-2;;
CURRENT BUILDING SETBACK AND AREA REQUIREMENTS ARE AS FOLLOWS;
SETBACKS; FRONT=15' SIDE=15' AND REAR=15'
WETLAND=75'
FRONTAGE; 50'
MAX BUILDING HEIGHT; 35'
AREA; 21,780 S.F. (0.50 ACRES)
(ADDITIONAL SETBACK MAY APPLY BASED UPON PROPOSED USE)

6) A PORTION OF THESE LOTS ARE LOCATED WITHIN THE "ZONE G" OVERLAY DISTRICT AND THE GROUNDWATER PROTECTION ZONE,

6) THIS PROPERTY IS NOT LOCATED WITHIN THE FLOOD HAZARD ZONE AS SHOWN ON FIRM PANEL 33015C0556E DATED 5/27/2005.

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11) S.C.S. SOIL TYPE; 43C CANTON.

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LEGEND

STONE WALL
5/8" IRON PIN SET WITH YELLOW I.D. CAP
UTILITY POLE
PROPOSED WELL
TEST PIT
SEPTIC SETBACK
SHORELAND ZONE

NEW HAMPSHIRE
Designer of Subsurface Disposal Systems
Kevin E. Hatch
No. 1196
Department of Environmental Services

STATE OF NEW HAMPSHIRE
BRUCE A. GILDAY
No. 088
CERTIFIED WETLANDS SCIENTIST

WETLAND MAPPING BY;
BRUCE A GILDAY, CSS

GRAPHIC SCALE
80 0 40 80 160 320
1 INCH = 80 FEET

NO.	DATE	DESCRIPTION	BY
2	9/25/23	REVISE LOT LINES	K.E.H.
1	1/5/23	REVISE NOTE 4	K.E.H.
0	8/6/22	INITIAL RELEASE	K.E.H.

TOPOGRAPHY PLAN

Tax Map 33 Lot 106
NH Route 27
Raymond, NH

PREPARED BY:
CORNERSTONE SURVEY INC.
25 WHITETAIL LANE. CHESTER, N.H. 03036
PHONE/FAX (603) 887-6647

STATE OF NEW HAMPSHIRE
No. 846
KEVIN E. HATCH
LICENSED LAND SURVEYOR

OWNER:
Woodside Village LLC
25 Whitetail Lane
Chester, NH 03037

SCALE: 1" = 80'

DATE: August 2022

1740subdivision.DWG

22-1740

Cornerstone Survey Inc.

CornerstoneSurvey@comcast.net (603) 887-6647 25 Whitetail Lane Chester NH 03036

Test Pit Logs

Woodside Village LLC Route 27 Raymond, NH

TEST PIT 1

0-6”	2.5Y 4/4 olive brown	sandy loam	granular	friable
6-40”	2.5Y 6/6 olive yellow	medium coarse sand	single	loose
40-96”	2.5Y 7/6 yellow	medium sand	single	loose

SHWT 90”
OWT N/O
ROOTS 30”
LEDGE N/O

TEST PIT 2

0-10”	10YR 3/2 very dark grayish brown	sandy loam	granular	very friable
10-50”	10YR 5/8 yellowish brown	stony medium sand	single	loose
50-72””	2.5Y 6/4 light yellowish brown	stony loamy fine sand	blocky	friable (compact)

SHWT 90”
OWT N/O
ROOTS 61”
LEDGE N/O

Cornerstone Survey Inc.

CornerstoneSurvey@comcast.net (603) 887-6647 25 Whitetail Lane Chester NH 03036

TEST PIT 3

0-6" 10YR 3/2 loam granular friable
very dark grayish brown

6-36" 10YR 5/6 fine sandy loam granular friable
yellowish brown

36-62" 10YR 7/3 loamy fine sand massive friable (compact)
very pale brown

SHWT 60"
OWT N/O
ROOTS 56"
LEDGE N/O

TEST PIT 4

0-6" 10YR 4/2 loam granular friable
dark grayish brown

6-40" 10YR 5/8 gravely sand single grain loose
yellowish brown

40-60" 10YR 5/8 medium sand massive friable (compact)
Yellowish brown

SHWT 40"
OWT N/O
ROOTS 42"
LEDGE N/O

Cornerstone Survey Inc.

CornerstoneSurvey@comcast.net (603) 887-6647 25 Whitetail Lane Chester NH 03036

TEST PIT 5

0-6" 10YR 3/2 loam granular friable
very dark grayish brown

6-50" 10YR 5/6 fine sandy loam granular friable
yellowish brown

50-62" 10YR 6/4 loamy fine sand granular friable
Light yellowish brown

SHWT 60"
OWT N/O
ROOTS 60"
LEDGE 62"?

NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

District 1, 641 Main St, Lancaster, NH 03584
District 2, 8 Eastman Hill Road, Enfield, NH 03748
District 3, 2 Sawmill Rd, Gilford, NH 03249
District 4, 19 Base Hill Road, Swanzey, NH 03446
District 5, 16 East Point Drive, Bedford, NH 03110
District 6, PO Box 740, Durham, NH 03824

APPLICATION FOR DRIVEWAY PERMIT

Pursuant to the provisions of **Revised Statutes Annotated, Chapter 236, Section 13** (printed on reverse of application) and amendments thereto, and **Declaratory Ruling 2000-01**, permission is requested to: (*select one*): **Construct** (*Indicate quantity of)* **3** driveway entrance(s) to my property on the *(select):* **EAST** side of **NH Route** **Route 27** or **Street/Road:** _____ In the **Town of** **Raymond** at a location which will meet the requirements for safety specified in said statutes.

The driveway entrance(s) requested is (are) for access to: **Business** *(select)*. Other: **Future development**

Describe nature and size of industry, business or subdivision: **3 lot commercial subdivision**
_____**Feet** *(select):* **North** of Utility Pole Number: _____
_____ **Feet** *(select **Feet** or **Miles**):* **North** of Road or Junction: _____

Town Tax Map # **33** and Lot # **106**

As the landowner (or designated applicant) I agree to the following:

1. To construct driveway entrance(s) only for the bonafide purpose of securing access to private property such that the highway right-of-way is used for no purpose other than travel.
2. To construct driveway entrance(s) at permitted location(s).
3. To construct driveway entrance(s) in accordance with statutes, rules, standard drawings, and permit specifications as issued by the New Hampshire Department of Transportation.
4. To defend, indemnify and hold harmless the New Hampshire Department of Transportation and its duly appointed agents and employees against any action for personal injury and/or property damage sustained by reason of the exercise of this permit.
5. To furnish and install drainage structures that are necessary to maintain existing highway drainage and adequately handle increased runoff resulting from the land development and obtain all easements thereto.
6. I am the owner or a duly authorized agent of the owner of the parcel upon which the driveway will be constructed. I have provided accurate and complete title and subdivision information concerning the parcel to the Department. I understand that the Department is relying on this information in considering this application and that the Department does not perform independent title research or make judgments about title or access disputes.

- For new driveway(s), include copy of current deed and, if not the same, previous deed dated prior to July 1, 1971 of the parcel. If this parcel is part of a larger tract subdivided after July 1, 1971, then provide complete subdivision plans and deed history dating back to at least July 1, 1971.

- Attach sketch or plan showing existing and proposed driveway(s) and the adjacent highway indicating distance to town road, town line, or other readily identifiable feature or landmark and also to the nearest utility pole (including pole numbers)

Signature of Landowner (Applicant)	Mailing Address
Kevin Hatch (Woodside Village LLC)	**25 Whitetail Lane Chester NH 03036**
Printed Name of Landowner	Town/City, State, Zip Code
Date: **2/22/24**	Telephone Number(s) **603-887-6647**

Contact /Agent, if not Landowner: _____

FOR OFFICE USE ONLY:
GPS N = _____ GPS W = _____
Section: _____ Width: _____ Speed: _____
Right of Way: _____ Drainage: _____ SLD: _____
Conditions: _____
Permit Number Assigned:_____

§ 236:13 Driveways and Other Accesses to the Public Way. – I. It shall be unlawful to construct, or alter in any way that substantially affects the size or grade of, any driveway, entrance, exit, or approach within the limits of the right-of-way of any class I or class III highway or the state-maintained portion of a class II highway that does not conform to the terms and specifications of a written permit issued by the Commissioner of transportation.

II. Pursuant to this section, a written construction permit application must be obtained from and filed with the department of transportation by any abutter affected by the provisions of paragraph I. Before any construction or alteration work is commenced, said permit application shall have been reviewed, and a construction permit issued by said department. Said permit shall:

(a) Describe the location of the driveway, entrance, exit, or approach. The location shall be selected to most adequately protect the safety of the traveling public.

(b) Describe any drainage structures, traffic control devices, and channelization islands to be installed by the abutter.

(c) Establish grades that adequately protect and promote highway drainage and permit a safe and controlled approach to the highway in all seasons of the year.

(d) Include any other terms and specifications necessary for the safety of the traveling public.

III. For access to a proposed commercial or industrial enterprise, or to a subdivision, all of which for the purposes of this section shall be considered a single parcel of land, even though acquired by more than one conveyance or held nominally by more than one owner:

(a) Said permit application shall be accompanied by engineering drawings showing information as set forth in paragraph II.

(b) Unless all season safe sight distance of 400 feet in both directions along the highway can be obtained, the commissioner shall not permit more than one access to a single parcel of land, and this access shall be at that location which the commissioner determines to be safest. The commissioner shall not give final approval for use of any additional access until it has been proven to him that the 400-foot all season safe sight distance has been provided.

(c) For the purposes of this section, all season safe sight distance is defined as a line which encounters no visual obstruction between 2 points, each at a height of 3 feet 9 inches above the pavement, and so located as to represent the critical line of sight between the operator of a vehicle using the access and the operator of a vehicle approaching from either direction.

IV. No construction permit shall allow:

(a) A driveway, entrance, exit, or approach to be constructed more than 50 feet in width, except that a driveway, entrance, exit, or approach may be flared beyond a width of 50 feet at its junction with the highway to accommodate the turning radius of vehicles expected to use the particular driveway, entrance, exit or approach.

(b) More than 2 driveways, entrances, exits or approaches from any one highway to any one parcel of land unless the frontage along that highway exceeds 500 feet.

V. The same powers concerning highways under their jurisdiction as are conferred upon the commissioner of transportation by paragraphs I, II, III and IV shall be conferred upon the planning board in cities and towns in which the planning board has been granted the power to regulate the subdivision of land as provided in RSA 674:35, and they shall adopt such regulations as are necessary to carry out the provisions of this section. Such regulations may delegate administrative duties, including actual issuance of permits, to a highway agent, board of selectmen, or other qualified official or body. Such regulations, or any permit issued under them, may contain provisions governing the breach, removal, and reconstruction of stone walls or fences within, or at the boundary of, the public right of way, and any landowner or landowner's agent altering a boundary in accordance with such provisions shall be deemed to be acting under a mutual agreement with the city or town pursuant to RSA 472:6, II (a).

VI. The commissioner of transportation or planning board shall retain continuing jurisdiction over the adequacy and safety of every existing driveway, entrance, exit, and approach to a highway, whether or not such access was constructed or installed pursuant to a permit under this section, and, unless the access is a public highway, the owners of property to which the access is appurtenant shall have continuing responsibility for the adequacy of the access and any grades, culverts, or other structures pertaining to such access, whether or not located within the public right of way. If any such access is or becomes a potential threat to the integrity of the highway or its surface, ditches, embankments, bridges, or other structures, or a hazard to the safety of the traveling public, by reason of siltation, flooding, erosion, frost action, vegetative growth, improper grade, or the failure of any culvert, traffic control device, drainage structure, or any other feature, the commissioner of transportation or planning board or their designee may issue an order to the landowner or other party responsible for such access to repair or remove such hazardous condition and to obtain any and all permits required therefor. The order shall describe the hazard, prescribe what corrective action or alteration in the location or configuration of such access shall be required, and set a reasonable time within which the action shall be completed. Such an order shall be sent by certified mail, and shall be enforceable to the same extent as a permit issued under this section. If the order is not complied with within the time prescribed, the commissioner or planning board or their designee may cause to be taken whatever action is necessary to protect the highway and the traveling public, and the owner or other responsible party shall be civilly liable to the state or municipality for its costs in taking such action.

§ 236:14 Penalty. – Any person who violates any provision of this subdivision or the rules and regulations made under authority thereof shall be guilty of a violation if a natural person, or guilty of a misdemeanor if any other person; and, in addition, shall be liable for the cost of restoration of the highway to a condition satisfactory to the person empowered to give such written permission.

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

APPROVAL FOR SUBDIVISION OF LAND

AS AUTHORIZED BY THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES, WATER DIVISION PURSUANT TO RSA 485-A, WATER POLLUTION AND WASTE DISPOSAL AND ENV-WQ 1000, SUBDIVISION AND INDIVIDUAL SEWAGE DISPOSAL SYSTEM DESIGN

SUBDIVISION APPROVAL DATE: 11/6/2023

APPROVAL NUMBER: eSA2023110602

I. PROJECT LOCATION
Subdivision Name: WOODSIDE VILLAGE
Address: ROUTE 27
RAYMOND NH 03077
Tax Map: 33
Parent Lot No.: 106
No. of Lots: 2
Lot Nos.: 106-1, 106-2

II. OWNER INFORMATION
Name: WOODSIDE VILLAGE LLC
Address: WOODSIDE VILLAGE LLC
25 WHITETAIL LANE
CHESTER NH 03036

III. APPLICANT INFORMATION
Name: KEVIN E HATCH
Address: 25 WHITETAIL LN
CHESTER NH 03036

IV. DESIGNER INFORMATION
Name: KEVIN E HATCH
Address: 25 WHITETAIL LN
CHESTER NH 03036
Permit No.: 01196

V. SURVEYOR INFORMATION
Name: KEVIN E HATCH
Address: 25 WHITETAIL LN
CHESTER NH 03036
Permit No.: 00846

IV. SPECIFIC TERMS AND CONDITIONS: Applicable to this Approval for Subdivision of Land

A. OTHER CONDITIONS AND WAIVERS:

1. Dredge or fill in a jurisdictional wetland or stream requires DES Wetland Bureau approval per RSA 482-A.
2. Approved for lots 106-1, 106-2: lot loading approved based on site conditions.

Travis Guest
Subsurface Systems Bureau

Raymond Planning Board

I'm writing regarding the May 2, 2024 meeting #2022-016 The Woodside Village revising of 4 lots into 3 lots. As a butter to this property we are wondering, there is a brook/swampy area behind our house that runs into that property where is all the water going to go? Are they going to keep this as wet lands? As this is not a seasonal run off it flows all year long.

Thank you,
John and Tracy
Flanagan

RECEIVED
APR 16 2024
TOWN OF RAYMOND