

City of Biddeford
Planning Board
November 03, 2021 6:00 PM City Hall
Council Chambers, & via Zoom
Nov 3, 2021 06:00 PM Eastern Time (US and Canada)
Topic: Planning Board Meeting

Please click the link below to join the webinar:

<https://biddeford.zoom.us/j/95656775502?pwd=RkIzeE8yMnZvTDY0WE9uZ2JqdjUxZz09>

Passcode: 885994

Or One tap mobile :

US: +13017158592,,95656775502#,,,,*885994# or

+13126266799,,95656775502#,,,,*885994#

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US: +1 301 715 8592 or +1 312 626 6799 or +1 646 558 8656 or +1 253 215 8782 or +1
346 248 7799 or +1 669 900 9128

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1. **PLEDGE OF ALLEGIANCE**
2. **DECLARATION OF QUORUM/VOTING MEMBERS**
3. **ADJUSTMENTS TO THE AGENDA**
4. **PLANNER'S BUSINESS**
5. **CONSENT AGENDA**
 - 5.A. Approval of Planning Board Meeting Minutes of October 6, 2021
[PB Minutes 100621-DRAFT.pdf](#)
6. **UNFINISHED BUSINESS**
7. **NEW BUSINESS**
 - 7.A. 2021.47 Public Hearing for proposed zoning amendments to change the zoning district for the following parcels from Suburban Residential-1 (SR-1) to Institutional (IN): 1 Hills Beach Rd, (Map 51, Lot 11), 583 Pool St, (Map 51, Lot 10), 590 Pool St, (Map 51, Lot 18-1). Each of these parcels have been acquired by the University of New England (UNE) since 2010. Changing these parcels to the IN Zone would be consistent with other parcels owned by the UNE.

[2021.47 UNE Application Submission.pdf](#)
[2021.47 UNE Zoning Amendment - 3 Parcels into IN - PB Memo 102921-signed.pdf](#)
 - 7.B. 2021.44 Conditional Use Permit for a Home Occupation for Scott Pollock to convert the one car garage at 356 South Street (Tax Map 31, Lot 9) into a wellness center in the R-3

Zone.

[2021.44 Pollock-356 South Street CUP SR-signed.pdf](#)

[Application Package.pdf](#)

[AMENDED 2021.44 Pollock-356 South Street CUP FOF.pdf](#)

[Abutter Comments.pdf](#)

- 7.C. 2021.31 Review a Preliminary 6-Lot Cluster Subdivision Application for Ginger Hill Design + Build at 918 Pool Road (Tax Map 4, Lot 48) in the Coastal Residential (CR) and Rural Farm (RF) Zones.

[1.0 Board Report - Windward Ridge \(Pool St\) Prelim Subdv Plan.pdf](#)

[2.0 Response to Engineer Review.pdf](#)

[3.0 Windward Ridge Wildlife Suggestions Letter.pdf](#)

[4.0 Declaration of covenants & restrictions - windward ridge \(rev 1\).pdf](#)

[5.0 NEW Prelim Plan Set Rev 2.pdf](#)

[6.0 NEW Stormwater Report Rev 1.pdf](#)

[7.0 2021-09-15 Windward Ridge Prelim Package.pdf](#)

[8.0 BCC Comments - Ginger Hill Applications 071621.pdf](#)

- 7.D. 2021.30 Review a Preliminary 6-Lot Cluster Subdivision for Ginger Hill Design + Build at 158 Oak Ridge Road (Tax Map 4, Lot 57) in the Rural Farm (RF) Zone.

[1.0 Board Report - Leeward Meadows \(Oak Ridge Rd\) Prelim Subdv Plan.pdf](#)

[2.0 Response to Engineer Review.pdf](#)

[3.0 Leeward Meadows Wildlife Suggestions Letter.pdf](#)

[4.0 Declaration of covenants & restrictions - leeward meadows \(rev 1\).pdf](#)

[5.0 NEW Prelim Plan Set Rev 2.pdf](#)

[6.0 NEW Stormwater Report Rev 1.pdf](#)

[7.0 2021-09-15 Leeward Meadows Prelim Package \(since Amended\).pdf](#)

[8.0 BCC Comments - Ginger Hill Applications 071621.pdf](#)

- 7.E. 2021.50 Sketch Plan Review for a new substation for Central Maine Power Company at 466-468 South Street (Tax Map 2, Lot 40-1) in the SR1 Zone.

[Biddeford Substation Application.pdf](#)

[Board Report - CMP Substation Sketch Plan.pdf](#)

- 7.F. 2021.52 Sketch Site Plan Review & Contract Zone for BVH Biddeford, LLC at 424 Alfred Street (Tax Map 20, Lot 26-1) in the I-3 Zone. The proposal is for the Biddeford Regional Center of Technology to expand into the Shopping Center.

[1.0 Board Report - 5 Points BRCOT Sketch Plan.pdf](#)

[2.0 BRCOT 5 Points Application Package.pdf](#)

[3.0 BRCOT 5 Points Site Plans.pdf](#)

[4.0 BRCOT 5 Points Architecturals.pdf](#)

[5.0 BRCOT 5 Points Renderings.pdf](#)

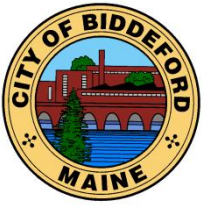
[6.0 420 Alfred St Contract Zone Request Letter.pdf](#)

[7.0 Five Points Shopping Traffic Memorandum.pdf](#)

8. OTHER BUSINESS

9. ADJOURN

The Board reserves the right to halt official business at 9:30 p.m. Items not heard at tonight's meeting shall be rescheduled to the next meeting of the Board. All materials pertaining to items on the agenda are available for public review at the Biddeford Planning Department, second floor, Biddeford City Hall during normal business hours.



CITY OF BIDDEFORD

Planning and Development Department

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Biddeford, ME 04005
(207) 282-7119 or (207) 284-9115
Greg.Tansley@biddefordmaine.org

Planning Board Meeting Minutes (DRAFT)

Date: October 6, 2021
Time: 6:00 PM
Location: City Hall Council Chambers & REMOTE ACCESS MEETING (1MRSA § 403-A permits public proceedings through remote access during the declaration of state of emergency due to COVID-19).

1. Pledge of Allegiance
2. Declaration of Quorum/Voting Members
Quorum Present: Bill Southwick (chair), Roch Angers (via Zoom), Bruce Benway, Sean Tarpey, Spiros Droggitis, and Michael Cantara (Alternate via Zoom)
Chair Southwick opened the meeting at 6:06 PM
3. Adjustments to the Agenda
 - Planner Tansley reiterated that the suggested motion for item 7B #2021.35 is to either be tabled or removed from the agenda.
4. Planner's Business
5. Consent Agenda
 5. A. Approval of Planning Board Meeting Minutes from September 29, 2021
MOTIONS: 6:08
Benway-Motion- to approve the Consent Agenda for September 29, 2021
Angers-Second
Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Angers, Tarpey & Droggitis)
6. Unfinished Business
7. New Business
 7. A. 2021.40 An amendment to Article VI, Section 77 (Marijuana establishments) that removes marijuana odor management standards from the Zoning Ordinance and creates a new Chapter 34, Article V of the Code of Ordinances to address odor in general (not specific to marijuana establishments) and to reference Chapter 34, Article V in the Zoning Ordinance for "Marijuana establishments"
 - Planner Tansley gave a brief introduction of the proposal.
 - He explained it is to take the odor section out of the Marijuana chapter and create a chapter in the ordinance covering odor in general
 - The Board discussed the proposal, its subjectivity, the fact that there is no measuring stick for odors, the language to be used in the ordinance etc.
 - There were no comments or questions from the public.

MOTIONS: 6:20

Benway-Motion- to forward item #2021.40 to the City Council with a positive recommendation that it should pass.

Motion Failed-No second

Further discussion brought up that the Board wants to know how this will be enforced, how misuse will be handled and how this will affect small businesses.

Benway-Motion-No change be made to current ordinance

Droggitis-Second

The Board mentioned wanting clarification on unattended consequences. The Board fears the proposed ordinance is too vague; it needs more meat and more explanation of discipline.

Mr. Benway and Mr. Droggitis withdrew their motion and second.

Angers-Motion-to table this item until the staff can work on the proposal to make it more concrete and acceptable to the Board

Benway-Second

Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Benway, Angers Tarpey, & Droggitis)

7. B. 2021.35 An amendment to Article XIV (Shoreland Zoning) to allow the redevelopment of properties within the GD-1 District on public sewer and water within new structures at a density of residential and non-residential units that is consistent with the existing conditions within the district at this time

- Planner Tansley introduced the project and explained that the proposed change is more complicated than initially thought, the Planning Department is currently working with DEP and that is why the recommendation is to table this item.
- No public comments were made

MOTIONS: 6:31

Benway-Motion- to table item #2021.35 pending additional stakeholder feedback

Angers-Second

The Board would like to see a Workshop on this item.

Planner Tansley explained how the removal of Merc has affected portions of this zone.

Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Angers, Benway, Tarpey, & Droggitis)

Benway-Motion to take the item up in a workshop

Angers-Second

Chair Southwick-Roll Call for Vote-Motion Passed, Unanimous Approval 4-0 (Angers, Benway, Tarpey, & Droggitis)

7. C. 2021.46 Request for a Conditional Use Permit for 565 Elm Street, LLC - Redstone to Establish a redemption center for recycling processing (CLYNK processing) at 565 Elm Street (Tax Map 31, Lot 43) in the B-2 Zone.

- Consulting Planner, Chris Di Matteo did a brief introduction of the project.
- Joe Engelken of Redstone & Steve Ballou of Clynk spoke on behalf of the application.
- The Board discussed the project and asked questions.

- Wetland concerns for Thatcher & Richardson Brooks were discussed.
- The left over area and what will become of it was a concern.

MOTIONS:

Benway-Motion-to waive Full Site Plan Review

Droggitis-Second

Amendments to the motion were discussed before the vote

Tarpey-Motion-to amend the original motion to make as a Condition of Approval to restrict occupancy of the building for the new tenant until the Engineering Department is satisfied.

Benway-Second

Chairman Southwick-Roll Call for Vote-(for the amendment) - Motion Passed, Unanimous Approval 4-0 (Benway, Angers Tarpey, & Droggitis)

Chairman Southwick-Roll Call for Vote-(for the original motion) - Motion Passed, Unanimous Approval 4-0 (Benway, Angers, Tarpey, & Droggitis)

Benway-Motion-to approve the Conditional Use Permit for 565 Elm Street, LLC for the re-use of 565 Elm Street for a redemption center processing facility and approve the findings of fact based on the conditions recommended by Staff in the Draft Findings of Fact to be amended with a requirement that the gravel area be cordoned off for future tenant use.

Droggitis-Second

Chairman Southwick-Roll Call for Vote-(for the original motion) - Motion Passed, Unanimous Approval 4-0 (Benway, Angers, Tarpey, & Droggitis)

8. Other Business

- Planner Tansley announced there would be no other meeting in October

9. Adjourn

MOTIONS: 7:22

Benway-Motion-to adjourn

Angers-Second

Vice Chair Angers-Roll Call for Vote- Motion Passed, Unanimous Approval 4-0 (Benway, Angers Tarpey, & Droggitis)

Meeting adjourned at 7:23 PM

Planning Board Chair/Vice Chair

Date

These minutes are summary and are not intended to be verbatim. Archived meetings are viewable on the City's website: www.biddefordmaine.org.



UNIVERSITY OF
NEW ENGLAND

Biddeford Campus
11 Hills Beach Road
Biddeford, ME 04005
(207) 283-0171 T

Portland Campus
716 Stevens Avenue
Portland, ME 04103
(207) 797-7261 T

October 6 2021

Carmen J. Morris, City Clerk
City of Biddeford
P.O. Box 586
Biddeford, Maine, 04005

RE: Rezoning of 3 parcels acquired after the Institutional Zone boundaries were established

Dear Carmen,

The University is pleased to submit an application to rezone three parcels acquired by the University of New England, after the Institutional Zone boundaries were established. These properties are as follows:

- 1 Hills Beach Road, Map 51, Lot 11, acquired 09/01/2010
- 583 Pool Street, Map 51, Lot 10, acquired 07/23/2018
- 590 Pool Street, Map 51, Lot 18-1, acquired 11/26/2018

All three of these parcels are currently zoned SR-1, and are abutting Institutional Zone properties. The University is seeking to have them be rezoned to Institutional Zone, IN. Please see the attached map, *City GIS Map of UNE Parcels to be Rezoned.pfd*, for parcel locations.

The parcel at 1 Hills Beach Road, is currently used as the residence of the President of the University, and for hosting small university events.

The house and the driveway at 583 Pool Street were recently removed, and the lot is currently vacant. The University would like to consider additional landscaping and signage on this parcel.

The property at 590 Pool Street is vacant and the University currently has no plans to utilize the small house that sits on the lot.

Sincerely,

Alan Thibeault,
Vice President for University Operations

Cc: Greg D. Tansley, City Planner
William Emhiser, City Councilor, Ward 1
Betsy Martin, Hills Beach Association
Eric Mora, Director for Campus Planning
Tom Saucier, Site Design Associates

Yours truly

CITY OF BIDDEFORD, MAINE
PLANNING BOARD
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

APPLICATION FORM

Type of Application:

- ☐ Shoreland Zoning Permit ☐ Site Plan Review ☐ Extraction
☐ Conditional Use Permit ☐ Subdivision ☐ Private Way
☒ Other: Rezoning from SR1 to Institutional Zone (3 abutting parcels)

Applicant Information:

Applicant's Name: Alan Thibeault

Applicant's Mailing Address: 11 Hills Beach Road, Biddeford ME 04005

Applicant's Telephone: 207-602-2253

What is Applicant's legal interest in the property?

- ☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: University of New England

Owner's Address: 11 Hills Beach Road, Biddeford ME 04005

Owner's Telephone: 207-283-0170

Agent's Name: _____

Agent's Address: _____

Telephone: _____

Engineer/Surveyor: _____

Engineer/Surveyor's Address: _____

Telephone: _____

Project Location and Lot Information:

Street Address: 1) 1 Hills Beach Rd, Map 51, Lot 11 2) 583 Pool Street, Map 51, Lot 10

Tax Map: _____ Lot: _____ 3) 590 Pool St. Map 51, Lot 18-1

Current Zoning: SR1, SR1, SR1 Shoreland Zoning: 1 Hills Beach, Map 51, Lot 11

Size of lot: 2.0, 0.3, 1.0 ☒ acres ☐ s.f. Lot Frontage: 70', 144', 161'

Existing Use of Property: University/Institutional

Property currently serviced by:

☒ City Road	☐ Private Road
☐ Public Sewer	☒ Septic System
☒ Public Water	☐ Private Well
☐ Public Trash	☒ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3 % slope) ☐ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15% + slope)

Are there any wetlands or waterbodies on the site? ☐ Yes ☒ No If yes, attach information

Do you plan to bring fill onto the lot? ☐ Yes ☒ No If yes, attach information

Description of proposed use of property:

Project/Proposed Use Description: Rezone from SR1 to IN, (Institutional Zone)

Property to be serviced by:

☒ City Road	☐ Private Road
☐ Public Sewer	☒ Septic System
☒ Public Water	☐ Private Well
☐ Public Trash	☒ Private Hauler

Is this project part of a larger project? ☐ Yes ☒ No

☒ If in a Shoreland Zone:

Percent of residential lot coverage (Max. 20%): 2%

Percent of structure expansion (Max. 30%): 0%

☐ If Subdivision Review, number of lots proposed: _____

☐ If a Private Way is proposed, number of lots served: _____

☐ If Site Plan Review, you must provide the following information:

Total new square feet footprint of structures: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

- ☐ Fire Department - Contact - 282-9986
- ☐ Ability to Serve – Maine Water - 282-1543
- ☐ Ability to Serve - Engineering Department (Sewer) - Contact - 284-9118
- ☐ Police Department - E-911 Road Name Designation - Contact - 282-5127

B. Letter to Planning Board describing project, waiver requests, proposed improvements, addressing permit requirements, etc.

C. Photographs of site.

D. Architectural renderings/drawings of proposed buildings, as required.

E. Engineered Plans, as required.

Fees (due at time of application):

Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

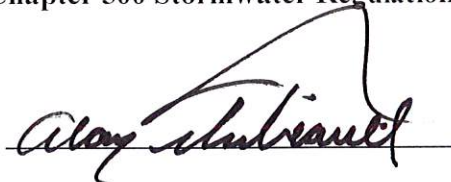
By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

☐ Project proposed to have 1 acre or more of site disturbance:

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of applicant:

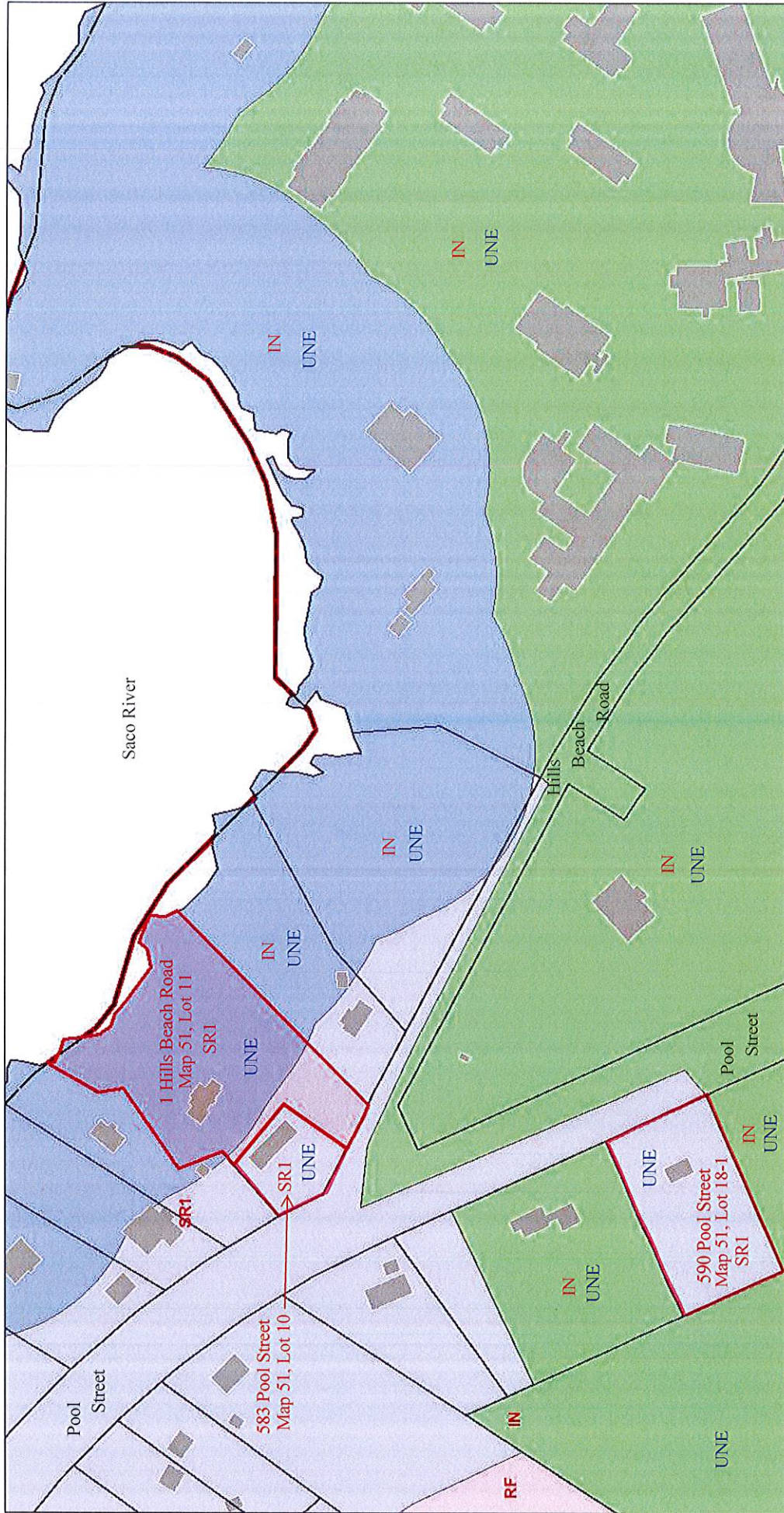


Date: 10/6/21

Signature of owner of property:

Date: _____

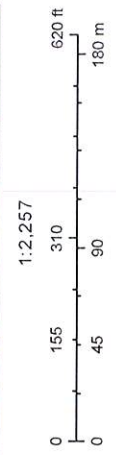
UNE Parcels to be rezoned



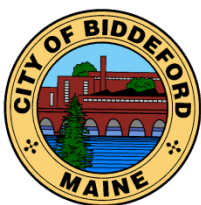
September 14, 2021

- Municipal Boundaries
- Parcels
- Buildings
- APO
- CFMA
- GD-1
- GD-2
- LC
- LR
- MHP
- RP
- RP-1
- SP
- B1
- B2
- CR
- I1
- I2
- I3
- IN
- LRF
- M
- MSRD1
- MSRD2
- MSRD3
- OR
- R1A
- R2
- R3
- RF
- SR1
- W1
- W2
- W3
- Parcels to be Rezoned**

Data and scale shown on this map are provided for planning and informational purposes only. Biddeford, ME and Vision Government Solutions are not responsible for any use for other purposes or misuse or misrepresentation of this information. Powered by Esri Technology



Sources: Esri, Airbus DS, USGS, NASA, CIGAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatasystemen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



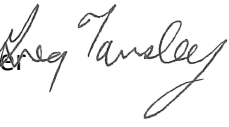
CITY OF BIDDEFORD

Planning and Development Department

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Greg.Tansley@biddefordmaine.org

PLANNING BOARD REPORT

TO: William Southwick, Chair & Members of the Biddeford Planning Board

FROM: Greg Tansley, AICP, City Planner 

DATE: October 29, 2021

RE: Public Hearing – Proposed zoning amendments to change the zoning district for the following parcels from Suburban Residential-1 (SR-1) to Institutional (IN): 1 Hills Beach Rd, (Map 51, Lot 11), 583 Pool St, (Map 51, Lot 10), 590 Pool St, (Map 51, Lot 18-1).

MEETING/PUBLIC HEARING DATE: November 3, 2021 @ 6:00 PM

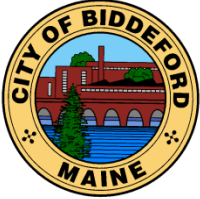
From a zoning perspective, the University of New England is governed by the Institutional (IN) Zone. The IN Zone is unique to the University of New England. It is described as follows (LDR, Article V, Section 2):

I. Institutional Zone (IN): The purpose of the Institutional Zone is to accommodate college and university uses while minimizing the adverse effects that such uses may have on the predominantly residentially zoned neighborhoods surrounding the institutional zone. All university uses or uses conducted by a college or university shall conform to an institutional master plan approved by the Planning Board in accordance with Article V, Section 11 of this Code.

As such, it is presumed all properties owned by the UNE would be subject to the IN Zone.

Over the past 10 years, the UNE has acquired 3 properties and now wish to have them included in the IN Zone. From Staff's perspective, this is consistent with the intent of the IN Zone and should be recommended to the City Council for approval. If the University wished to do anything with these properties in the future, any uses would then be required to be consistent with the UNE Master Plan, which must be approved by the Planning Board.

Staff Recommend the Planning Board recommend this zoning amendment be approved by the City Council.



CITY OF BIDDEFORD

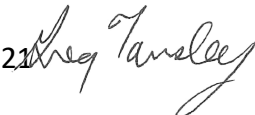
Planning and Development Department

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PLANNING BOARD REPORT

TO: Chair Southwick and Members of the Biddeford Planning Board

FROM: Greg Tansley, AICP, City Planner

DATE: October 29, 2021 

RE: **2021.44 Conditional Use Permit (Home Occupation) for Scott Pollock to convert the one-car garage at 356 South Street (Tax Map 31, Lot 9) into a Wellness Center. The property is located in the R-3 Zone.**

MEETING DATE: Wednesday, November 3, 2021 @ 6:00 PM

1. INTRODUCTION

The applicant, Mr. Scott Pollock, would like to convert the existing garage at 356 South Street into a Wellness Center. See the attached application materials for more information.

The application qualified for Minor Review through the Staff Review Committee, a designee of the Planning Board. We notified abutters of the application and received several comments back reflecting concern regarding the application. Due to the nature and amount of comments received, we decided to have the Planning Board review this rather than staff.

2. PROJECT DATA/INFORMATION

Note: **HIGHLIGHTED** information is pending.

	<i>SUBJECT</i>	<i>DATA/INFORMATION</i>
1	Applicant:	Scott Pollock 356 South Street Biddeford, ME 04005
2	Owner of Property:	Scott and Danielle Pollock 356 South Street

		Biddeford, ME 04005
3	Agent:	N/A
4	Engineer/Surveyor:	N/A
5	Project Location:	356 South Street
6	Project Tax Map #/Lot #:	Tax Map 31, Lot 9
7	Existing Zoning:	R-3
8	Overlay Zoning:	None
9	Existing Use:	Residential
10	Proposed Use:	Wellness Center (Home Occupation)
11	City Approvals Required:	Conditional Use Permit – Home Occupation
12	Uses in the Vicinity:	Residential
13	Parcel Size:	2.75 Acres
14	Water Supply:	Maine Water (Public)
15	Sewerage Disposal:	City of Biddeford
16	Solid Waste Disposal:	City of Biddeford
17	Fire Protection:	City of Biddeford
18	Floodplain Status:	The garage is not within a floodplain
19	Wetland/Surface Water Impacts:	None
20	Soil Study Provided:	N/A
21	Parking Spaces Required:	4
22	Parking Spaces Provided (total):	4+ spaces provided on-site
23	Ownership of Road:	South Street is a public street.
24	Impervious Surface Area:	N/A
25	Estimated Site Development Costs:	None
26	Financial Capacity Letter:	N/A
27	Waivers Needed:	Full Site Plan Review
28	Waivers Granted:	Full Site Plan Review
29	Variances Needed for Approval:	None
30	Other Non-City Permits Required:	None
31	Other Non-City Permits Obtained:	N/A
32	Covenants, By-laws, Restrictions Required by the Planning Board:	None
33	LDR Attachment A: Fees Paid:	All Fees Paid
34	Planning Board Review History:	November 3, 2021 Meeting Date

3. EXISTING CONDITIONS

356 South Street is a single-family home with one access point to South Street. It is served by public water (Maine Water) and public sewer (City of Biddeford). 356 South Street has enough parking available to it for the home (2 car requirement) and the home occupation (2 car requirement).



Source: GoogleEarth.

4. PROJECT PROPOSAL

Conversion of the one-car garage into a wellness center. See attached application materials for more information.

5. STAFF REVIEW

- a. ZONING: Home Occupations are a Conditional (C) Use in the R-3 Zone.
- b. REVIEW STANDARDS: Site Plan Review (Article XI), Conditional Uses (Article VII), Performance Standards (Article VI).
- c. WAIVERS: Full Site Plan Review - Article XI, II (Procedure for Site Development Submission Requirements)
- d. OUTSTANDING ITEMS TO BE ADDRESSED PRIOR TO APPROVAL:
 - Staff have received numerous comments from abutters/neighbors regarding this proposal. Please see the attached emails for more information.
 - Reviewing the comments the themes presented appear to reflect:
 - A. Traffic safety Impacts, including Bicycles
 - B. Parking-related demands
 - C. Commerical Development in a residential area

D. Questions about business operation (hours of operation, for example)

- Staff have requested input from the Biddeford Police Department regarding concerns about traffic and parking along South Street. We will provide response(s) to the Board before or at the meeting.
- From a traffic generation perspective, the amount of traffic generated from a service business such as this is negligible compared to the current amount of traffic on South Street.
- Maine DOT collect traffic data on South and Main Street in the vicinity of 356 South Street.
<https://mainedottrafficdata.drakewell.com/publicmultinodemap.asp>
 - o Average Annual Daily Traffic (AADT) west of the intersection of South and Main was 5,220.
 - o Main Street, east of that intersection in 2016 was 2,220 (AADT)
 - o The AADT for South Street east of that intersection was 3,770 in 2016.
- If the Institute of Traffic Engineers (ITE) Trip Generation Manual (10th Edition) were referenced based on Land Use Code 492 (Fitness Center) the trip generation rate is 3.45 trips in the peak PM hour per 1,000 square feet. Most traffic analysis is done at the peak hour level to observe when an land use may have the largest impact on the system.
- The garage space is approximately 420 square feet in size. Based on the ITE Trip Generation rate (above), this would equate to 1.45 trips in the peak hour. Adding 1.45 trips to the system which currently sees over 5,200 cars/day (west of the intersection of South and Main) could be seen as negligible.

6. NEXT STEPS/SUGGESTED ACTIONS

- **Recommend the Planning Board grant the waiver request for a full site plan review submittal given the scale, location, and nature of the proposal.**
- **If the Planning Board approves the project, Staff recommend doing so with the following Conditions of Approval attached:**
 1. **Best management practices shall be adhered to during all ground disturbance operations. All Catch Basin's in the vicinity of earthwork operations shall have silt sacks installed & maintained for the duration of the work.**
 2. **The applicant shall obtain all other pertinent local, state and federal permits, licenses, and insurance such as blasting, building, electrical, plumbing, etc., prior to commencing business, unless authority issuing said permit allows for such actions.**

3. Standard Conditions of Approval apply.

7. SAMPLE MOTIONS

- A. *Motion to Waive Article XI, Section II – Full Site Plan Review.*
- B. *Motion to approve the Conditional Use Permit for Scott Pollock for a Wellness Center in the garage at 356 South Street and approve the findings of fact based on the conditions recommended by Staff in its Draft Findings of Fact dated November 3, 2021.*
- C. *Motion to deny the Conditional Use Permit for the Scott Pollock based upon the following reasons:*
 - a) _____
 - b) _____

ATTACHMENTS

- 1. Application Package and Plans
- 2. Draft Findings of Fact and Conclusions of Law



(space above reserved for recording information)

WARRANTY DEED

Maine Statutory Short Form

KNOW ALL MEN BY THESE PRESENTS, That **SCOTT PERRY POLLOCK** and **DANIELLE J. POLLOCK**, both having a mailing address of 356 South Street, Biddeford, ME 04005, for consideration paid, grant to **SCOTT PERRY POLLOCK** having a mailing address of 356 South Street, Biddeford, ME 04005, with **WARRANTY COVENANTS**, the land in Biddeford in the County of York and State of Maine, being further described in EXHIBIT A attached hereto and made a part hereof. As used in said EXHIBIT A, the word "grantor" means Pauline D. Pollock.

The above described premises are conveyed subject to and together with the benefit of the provisions of Dedication of Easement Area and Cost Sharing Agreement dated April 12, 1995, and recorded in York Registry of Deeds in Book 7993, page 30.

WITNESS our hands this 26th day of September, 2017.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF:

Witness

Witness

Scott Perry Pollock

Danielle J. Pollock

STATE OF MAINE
County of York, ss.

September 27, 2017

Personally appeared the above named **Danielle J. Pollock** and acknowledged the foregoing instrument to be her free act and deed.

Before me,

Notary Public/Maine Attorney-At-Law

Print Name: **NANCY J. ANDERSEN**

MY COMMISSION EXPIRES

My Commission Expires **JULY 22, 2018**

After recording Return To:
Scott Perry Pollock
Danielle Pollock
356 South Street
Biddeford, ME 04005

ldrive/7243-001/deedtoscottbackland/tg/rev/9/20/17

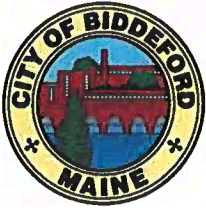
8.25.21

Home occupation application summary

I, Scott Pollock and wife, Danielle Pollock would like to convert our 1 car garage into a small wellness center. We will offer home spa equipment for demo and purchase. We will also offer skin care treatments (facials). I, Scott Pollock, am a current esthetician licensed in Maine and NH since 2011. We will also sell our apothecary products (skin care, lotions, body butters, toners ect). Services will be by appointment only one at a time. Online booking will be available. Employees will be either Scott or Danielle Pollock.

Estimated 5-10 clients per week.

We will not need to change the outside structure at all.



CITY OF BIDDEFORD PLANNING DEPARTMENT

Greg D. Tansley, A.I.C.P.
205 Main Street
PO Box 586
Biddeford, ME 04005
207-284-9115

HOME OCCUPATIONS APPLICATION PACKAGE

Permit Required:

All NEW Home Occupations require a Conditional Use Permit (CUP). The *Biddeford Staff Review Committee* can normally grant a CUP for a Home Occupation. On rare occasions, such as when there is neighborhood opposition, the *Biddeford Planning Board* must grant the CUP.

Application Requirements:

A CUP application form is attached to this package.

Ten (10) Copies of the following must be submitted for your application to be complete:

- ☒ A cover (summary) letter describing the proposal.
- ☒ A completed City of Biddeford Application Form.
- ☒ A sketch of the property, to scale, that shows the following:
 - Property Lines (approximate)
 - Location of all structures, with approximate distances to lot lines
 - Location and Dimensions of Driveway
 - Location and Dimensions of Parking

One (1) Copy of the following must also be submitted for your application to be complete:

- ☒ A Copy of your deed, purchase and sale agreement, or lease, showing right, title, and interest in the property.

**CITY OF BIDDEFORD, MAINE
PLANNING BOARD**

P.O. Box 586, 205 Main Street, Biddeford, Maine 04005
207-284-9115

HOME OCCUPATION APPLICATION FORM

Type of Application:

☒ Conditional Use Permit/Site Plan Review

Applicant Information:

Applicant's Name: Scott Pollock

Applicant's Mailing Address: 356 South St Biddeford ME 04005

Applicant's Telephone: 207-608-6224

What is Applicant's legal interest in the property?

☒ Owner

☐ Potential Buyer with Contract

☐ Lease/Rental Agreement

Owner's Name: Scott & Danielle Pollock

Owner's Address: 356 South St

Owner's Telephone: 207-608-6224

Agent's Name: _____

Agent's Address: _____

Telephone: _____

Project Location and Lot Information:

Street Address: 356 South St Biddeford ME 04005

Tax Map: 31 Lot: 9

Current Zoning: _____ Shoreland Zoning: _____

Size of lot: 2.75 ☒ acres ☐ s.f. Lot Frontage: 104.27'

Existing Use of Property: Permanent Residence

Property currently serviced by:

☒ City Road	☐ Private Road
☒ Public Sewer	☐ Septic System
☒ Public Water	☐ Private Well
☒ Public Trash	☐ Private Hauler

Description of proposed use of property:

Project/Proposed Use Description: Converting garage single car
into Wellness Center.

Waiver Requests (attach details):

1. FULL SITE PLAN REVIEW
2. _____
3. _____

Fees (due at time of application):

Conditional Use Permit Application Fee: \$200.00

Administrative Fee: \$40.00

TOTAL: \$240.00

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

Signature of applicant:



Date:

8.25.21

Signature of property owner:

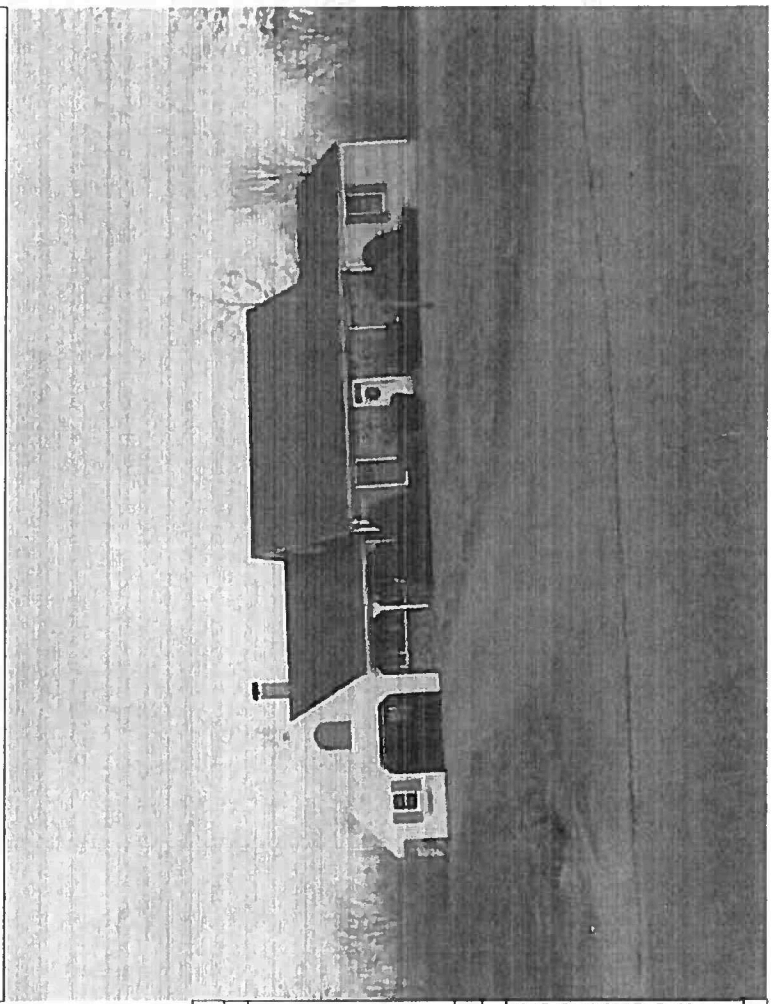
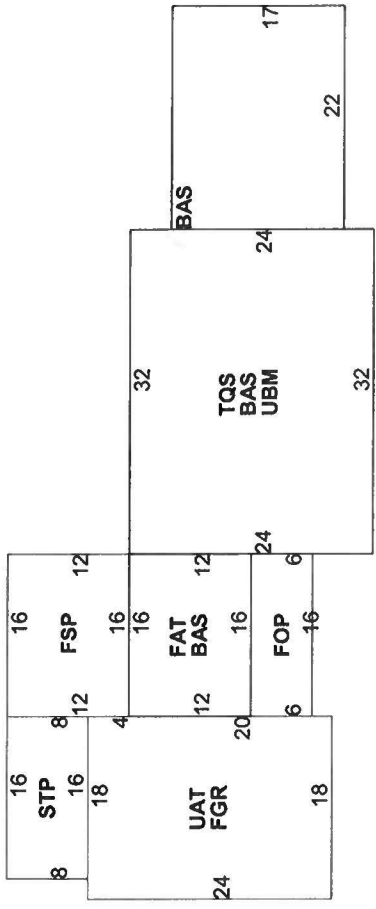


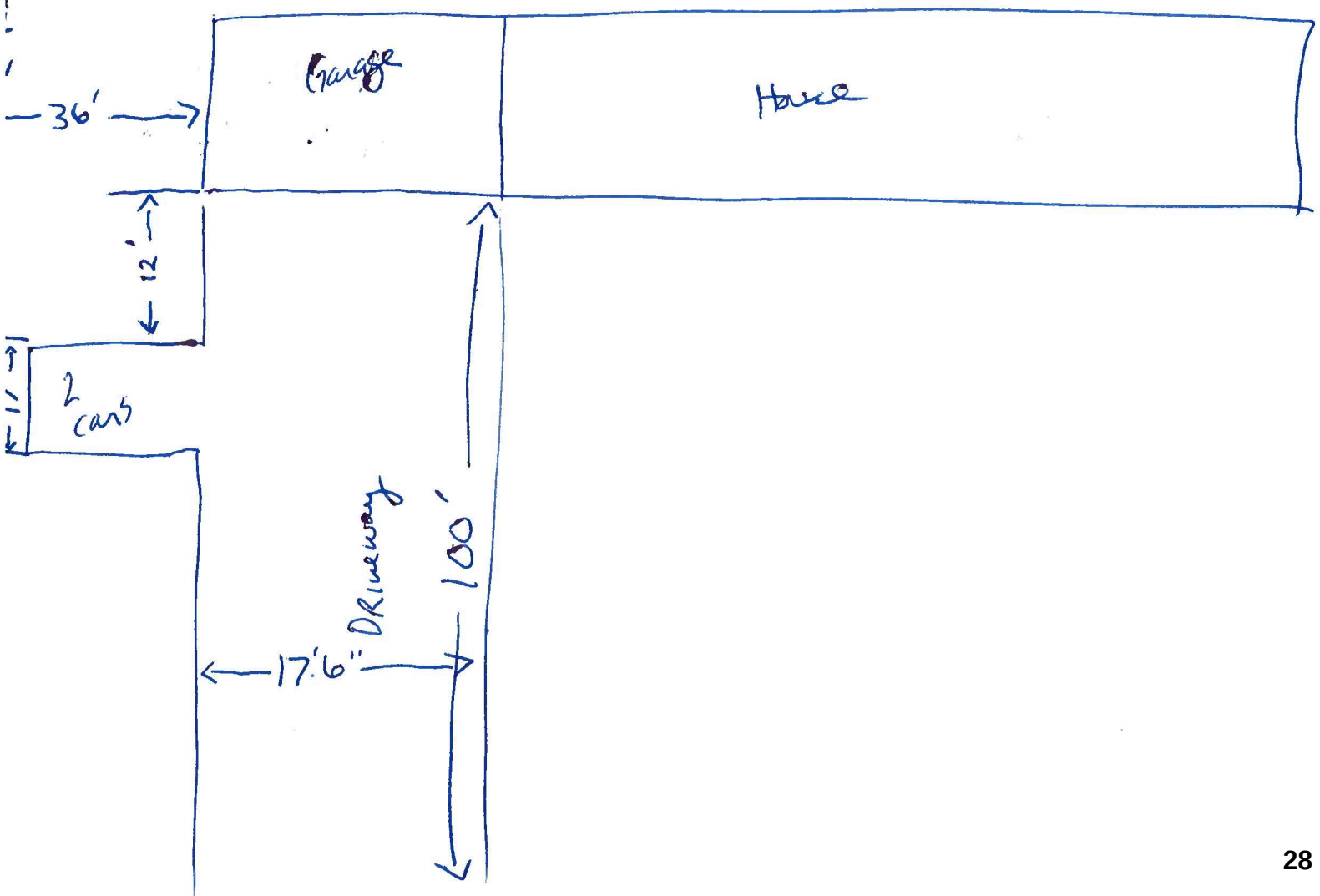
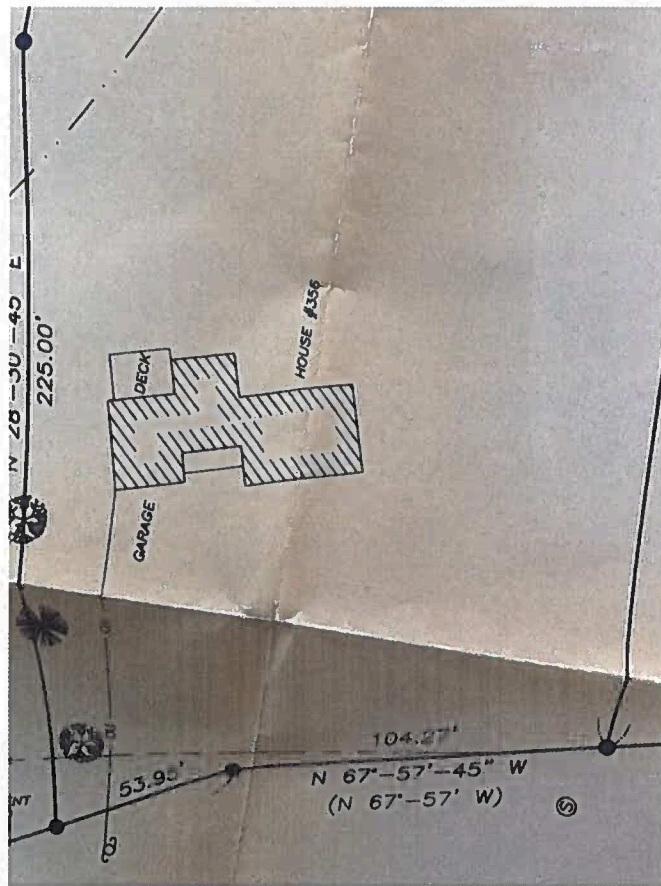
Date:

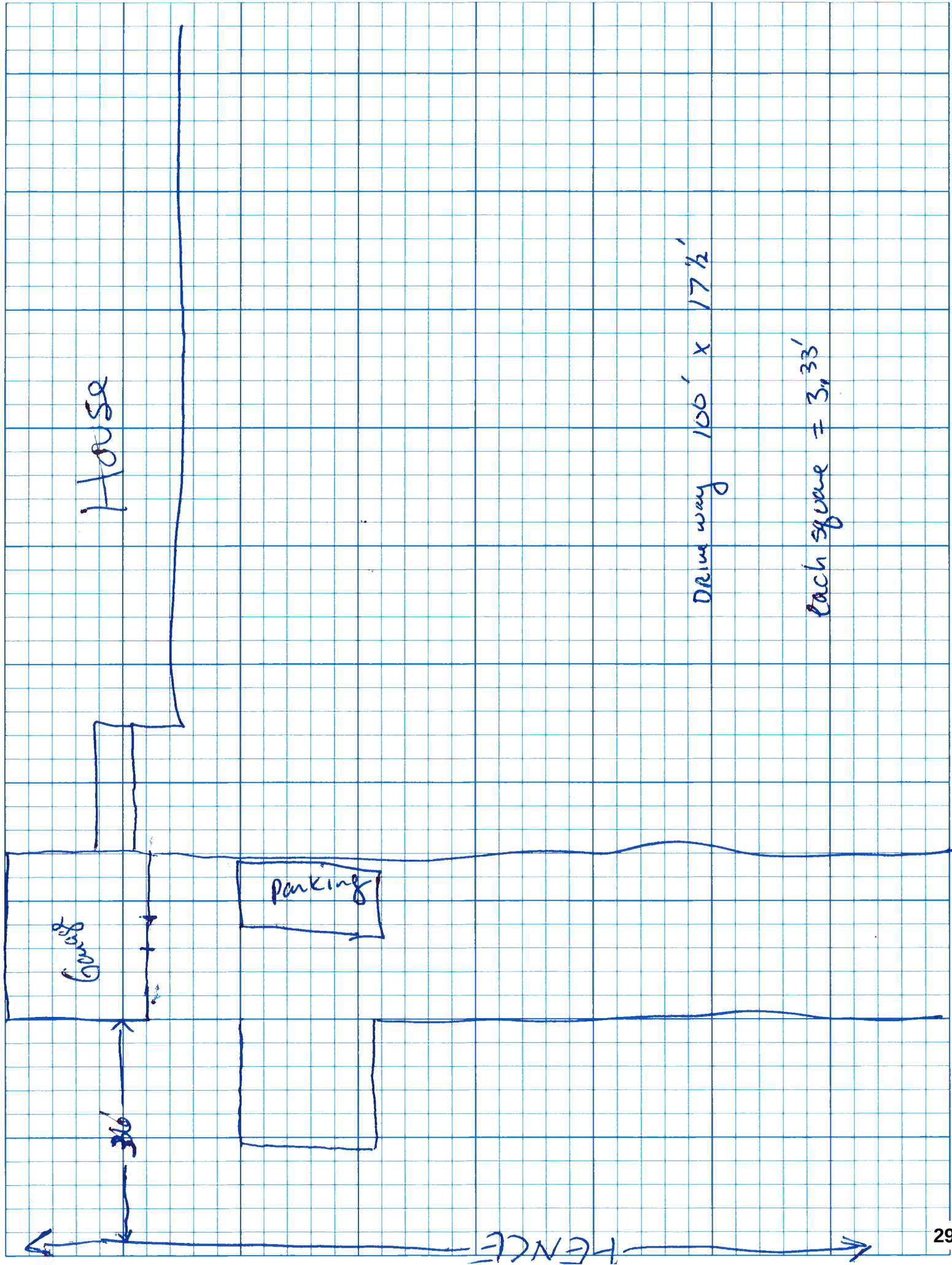
8.25.21

CONSTRUCTION DETAIL				CONSTRUCTION DETAIL (CONTINUED)								
Element	Cd.	Ch.	Description	Element	Cd.	Ch.	Description					
Style	104		Cape									
Model	01		Residential									
Grade	03		Average									
Stories	1.5		1 1/2 Stories									
Occupancy	1											
Exterior Wall 1	14		Wood Shingle									
Exterior Wall 2												
Roof Structure	03		Gable/Hip									
Roof Cover	03		Asph/F GlS/Cmp									
Interior Wall 1	05		Drywall/Sheet									
Interior Wall 2												
Interior Flr 1	14		Carpet									
Interior Flr 2	12		Hardwood									
Heat Fuel	03		Gas									
Heat Type	04		Forced Air-Duc									
AC Type	01		None									
Total Bedrooms	03		3 Bedrooms									
Total Bthrms	2											
Total Half Baths	1											
Total Xtra Fixtrs												
Total Rooms	7		7 Rooms									
Bath Style	02		Average									
Kitchen Style	02		Modern									
OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)				BUILDING SUB-AREA SUMMARY SECTION								
Code	Description	Sub	Sub Description	L/B Units	Unit Price	Yr	Gde	Dp	Rt	Cnd	%Cnd	Apr Value
FPL1	FIREPLACE 1			B	1	2,900.00	2001		1		100	2,500
				Living Area	Gross Area	Eff. Area					Unit Cost	Undeprac. Value
BAS	First Floor			1,334	1,334	1,334					73.06	97,462
FAT	Attic, Finished			38	192	38					14.46	2,776
FGR	Garage			0	432	173					29.26	12,639
FOP	Porch, Open, Finished			0	96	19					14.46	1,388
FSP	Porch, Screen, Finished			0	192	48					18.27	3,507
STP	Stoop			0	128	13					7.42	950
TQS	Three Quarter Story			614	768	614					58.41	44,859
UAT	Attic, Unfinished			0	432	43					7.27	3,142
UBM	Basement, Unfinished			0	768	154					14.65	11,251
Ttl Gross Liv/Lease Area:				1,986	4,342	2,436						
				27								

16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16</
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FINDINGS OF FACT AND CONCLUSIONS OF LAW CONDITIONAL USE PERMIT (CUP)

Pursuant to the provisions of the City of Biddeford Code of Ordinances Land Development Regulations, Article VII (Conditional Use Permits), Article XI (Site Plan Review), and Article VI (Performance Standards), the Biddeford Planning Board has considered the application of **Scott Pollock** to operate a Wellness Center at his residence at 356 South Street. Based on its review, including supportive data, public hearing testimony and related materials contained in the record, the Planning board makes the following Findings of Fact and Conclusions of Law:

Findings of Fact:

	<i>SUBJECT</i>	<i>DATA/INFORMATION</i>
1	Applicant:	Scott Pollock 356 South Street Biddeford, ME 04005
2	Owner of Property:	Scott and Danielle Pollock 356 South Street Biddeford, ME 04005
3	Agent:	N/A
4	Engineer/Surveyor:	N/A
5	Project Location:	356 South Street
6	Project Tax Map #/Lot #:	Tax Map 31, Lot 9
7	Existing Zoning:	R-3
8	Overlay Zoning:	None
9	Existing Use:	Residential
10	Proposed Use:	Wellness Center (Home Occupation)
11	City Approvals Required:	Conditional Use Permit – Home Occupation
12	Uses in the Vicinity:	Residential
13	Parcel Size:	2.75 Acres
14	Water Supply:	Maine Water (Public)
15	Sewerage Disposal:	City of Biddeford
16	Solid Waste Disposal:	City of Biddeford
17	Fire Protection:	City of Biddeford
18	Floodplain Status:	The garage is not within a floodplain
19	Wetland/Surface Water Impacts:	None
20	Soil Study Provided:	N/A
21	Parking Spaces Required:	4
22	Parking Spaces Provided (total):	4+ spaces provided on-site
23	Ownership of Road:	South Street is a public street.
24	Impervious Surface Area:	N/A

25	Estimated Site Development Costs:	None
26	Financial Capacity Letter:	N/A
27	Waivers Needed:	Full Site Plan Review
28	Waivers Granted:	Full Site Plan Review
29	Variances Needed for Approval:	None
30	Other Non-City Permits Required:	None
31	Other Non-City Permits Obtained:	N/A
32	Covenants, By-laws, Restrictions Required by the Planning Board:	None
33	LDR Attachment A: Fees Paid:	All Fees Paid
34	Planning Board Review History:	November 3, 2021 Meeting Date

Conclusions of Law:

1. The proposed use meets specific requirements set forth in this ordinance and would be in compliance with applicable state or federal laws;
2. The proposed use would not create fire safety hazards by providing adequate access to the site, or to the buildings on the site, for emergency vehicles and would not create hazards through the storage of chemicals and wastes;
3. The proposed exterior lighting, where allowed, would not create hazards to motorists traveling on adjacent public streets or is adequate for the safety of occupants or users of the site or would not damage the value and diminish the usability of adjacent properties;
4. The provisions for buffers and on-site landscaping provide adequate protection to neighboring properties from detrimental or unsightly features of the development;
5. The proposed use would not have a significant, detrimental effect on the use and peaceful enjoyment of abutting property as the result of noise, vibrations, fumes, odor, dust, glare, hours of operation, or other causes;
6. The provisions for vehicular loading and unloading and parking and for vehicular and pedestrian circulation on the site and onto adjacent public streets would not create hazards to public safety or traffic congestion;
7. The proposed use would generate a volume of traffic that can reasonably be accommodated by the existing road network, or would not create unreasonable traffic hazards or would not exacerbate an existing traffic hazard, or would not create unreasonable traffic congestion;

8. The proposed use would not have a significant, detrimental effect on the value of adjacent properties which could be avoided by reasonable modification of the proposal;
9. The proposed use would not have an adverse impact on the privacy of the residents of the immediate area (within 500 feet) which could be avoided by reasonable modification of the proposal;
10. The proposed use would be in compliance with Biddeford's Comprehensive Plan;
11. The proposed use would not have an adverse impact on the immediate neighborhood or the community relative to architectural design, scale, bulk and building height, identity and historical character, or visual integrity, which could be avoided by reasonable modification of the proposal;
12. The design of the site would not result in significant flood hazards or flood damage or would be in conformance with applicable flood hazard protection requirements;
13. Adequate provision has been made for disposal of wastewater or solid waste or for the prevention of ground or surface water contamination;
14. Adequate provision has been made to control erosion or sedimentation;
15. Adequate provision has been made to handle stormwater runoff or other drainage problems on the site; and the proposed development will not unduly burden off-site surface water systems;
16. The proposed water supply would meet the demands of the proposed use for fire protection purposes;
17. Adequate provision has been made for the transportation, storage, and disposal of hazardous substances and materials as defined by state law;
18. The proposed use would not have an adverse impact on scenic vistas or on significant wildlife habitat or wetland areas and water bodies which could be avoided by reasonable modification of the proposal;
19. When located in the Shoreland Zone, the proposed use would meet the purposes of Shoreland Zoning as identified in Article XIV, Section 1 (Purposes) of this ordinance.

Approval Granted:

Based on the evidence available and the conclusions above, the Biddeford Planning Board approves the Conditional Use Permit for the proposed project summarized above, located at 356 South Street (Tax Map 31, Lot 9) in accordance with the submitted application, supporting

data, representations made, other related materials on file, and the following Conditions of Approval:

- 1. Best management practices shall be adhered to during all ground disturbance operations. All Catch Basin's in the vicinity of earthwork operations shall have silt sacks installed & maintained for the duration of the work.**
- 2. The applicant shall obtain all other pertinent local, state and federal permits, licenses, and insurance such as blasting, building, electrical, plumbing, etc., prior to commencing business, unless authority issuing said permit allows for such actions.**
- 3. Standard Conditions of Approval apply.**

Planning Board Chairperson

Date

From: **James Flint** jflint@maine.rr.com
Subject: Conditional use permit application by Scott Pollock, 356 South Street
Date: October 1, 2021 at 1:58 PM
To: nan.whitten@biddefordmaine.org

JF

Dear Ms. Whitten and Review Committee members;

We submit the following comments in opposition to the above cited application as abutters to the property in question:

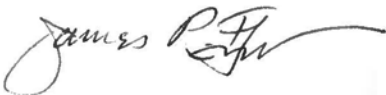
1.) This section of South Street is already quite congested. In less than a thousand feet from the intersection of South and Main Streets there are multiple driveways including entrance/egress for two recreational areas, multiple single family residences, a church, three apartment complexes and two condo developments, five residential streets, and a ma&pa/convenience/snack-bar store. In addition, the unimproved intersection of South And Main Streets is awkward, dangerous and poorly distinguished from abutting parking lots. The speed limit is 35mph, without doubt too high, and is neither much observed nor well enforced. Adding another commercial establishment to the mix seems injudicious in light of existing conditions.

2.) It seems clear that any commercial enterprise emerging at 356 South Street would require additional parking. Already, cars are routinely parked along the street as well as on the premise's lawn at different times during the week. Adequate parking would probably exceed the SRCC's guidelines for allowable square footage of use per lot acreage.

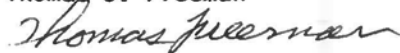
3.) The Eastern Trail follows this section of South Street for several hundred yards. The Trail is a wonderful resource for the community; bicycle traffic on South Street is a good thing which should be encouraged. But safe biking would not be enhanced by further commercial development.

4.) We are concerned that any further commercial development of this section of South Street, along with the inevitable attendant increase in congestion, traffic and activity such development brings, would accelerate the erosion of the residential quality and property values of this neighborhood. Biddeford already has commercial venues on much of Main Street and the Downtown area, nearly the entire length of Elm Street, as well as extensive commercial development on most of Alfred Street, not to mention various grandfathered enterprises scattered throughout the city. There is no need, nor is there any particular civic benefit, to opening yet another part of town to commercial development. Established residential neighborhoods ought to be protected and nurtured. We don't see how this proposal does that.

Respectfully,
James R. Flint



Thomas J. Freeman



Tansley, Greg

From: James Flint <jflint@maine.rr.com>
Sent: Friday, October 1, 2021 2:00 PM
To: Whitten, Nan
Subject: Conditional use permit application by Scott Pollock, 356 South Street

Dear Ms. Whitten and Review Committee members;

We submit the following comments in opposition to the above cited application as abutters to the property in question:

1.) This section of South Street is already quite congested. In less than a thousand feet from the intersection of South and Main Streets there are multiple driveways including entrance/egress for two recreational areas, multiple single family residences, a church, three apartment complexes and two condo developments, five residential streets, and a ma&pa/convenience/snack-bar store. In addition, the unimproved intersection of South And Main Streets is awkward, dangerous and poorly distinguished from abutting parking lots. The speed limit is 35mph, without doubt too high, and is neither much observed nor well enforced. Adding another commercial establishment to the mix seems injudicious in light of existing conditions.

2.) It seems clear that any commercial enterprise emerging at 356 South Street would require additional parking. Already, cars are routinely parked along the street as well as on the premise's lawn at different times during the week. Adequate parking would probably exceed the SRCC's guidelines for allowable square footage of use per lot acreage.

3.) The Eastern Trail follows this section of South Street for several hundred yards. The Trail is a wonderful resource for the community; bicycle traffic on South Street is a good thing which should be encouraged. But safe biking would not be enhanced by further commercial development.

4.) We are concerned that any further commercial development of this section of South Street, along with the inevitable attendant increase in congestion, traffic and activity such development brings, would accelerate the erosion of the residential quality and property values of this neighborhood. Biddeford already has commercial venues on much of Main Street and the Downtown area, nearly the entire length of Elm Street, as well as extensive commercial development on most of Alfred Street, not to mention various grandfathered enterprises scattered throughout the city. There is no need, nor is there any particular civic benefit, to opening yet another part of town to commercial development. Established residential neighborhoods ought to be protected and nurtured. We don't see how this proposal does that.

Respectfully,
James R. Flint

Thomas J. Freeman

Tansley, Greg

From: Candi Devine <cdevine47@msn.com>
Sent: Thursday, September 30, 2021 5:22 PM
To: Whitten, Nan
Subject: Concerns Re: Wellness Center @ 356 South Street, Biddeford

Good Evening, Nan:

We just received your postcard regarding a permit request from Scott Pollock to open a Wellness Center in his home's garage. We would like to voice our concerns about parking and safety issues to begin with. Our property abuts the Pollock property and on many, many occasions they host parties and gatherings with at times 1-2 dozen cars. Even though the Pollock property has a long driveway, a number of cars park on South Street. Our driveway on Colton Lane can be tricky to exit with normal traffic, but when these cars are lined up on South Street, visibility is very challenging. (This business will be located just over a crest of a hill on South Street which will be dangerous for visitors entering and exiting the single-lane driveway.) Another concern of ours is this location is mainly a residential area and we do not agree that their commercial business is compatible with our neighborhood. So! We do not agree that this latest venture in this location is sensible!

Thank you for giving us an opportunity to address our opinions pertaining to a Wellness Center at the 356 South Street Pollock residence's garage.

Mike and Candi Devine
One Colton Lane, #101
Biddeford, ME

Tansley, Greg

From: Candi Devine <cdevine47@msn.com>
Sent: Thursday, September 30, 2021 5:32 PM
To: Whitten, Nan
Subject: My Opinion Re: Permit for Scott Pollock's Wellness Center

Dear Nan,

I am a neighbor of 356 South Street, Scott Pollock, and after receiving your postcard about a request for a Wellness Center in Mr. Pollock's garage, I feel I have to let you know my opinion. I do not think this is a good idea. I totally disagree with this business plan and believe it is a safety issue for this area.

Sincerely,

Gerdine LaMarre
One Colton Lane, Unit #103
Biddeford, Maine

Tansley, Greg

From: Whitten, Nan
Sent: Thursday, October 7, 2021 8:06 AM
To: 'Candi'
Subject: RE: Wellness Center Concerns

Good Morning:

That particular project was removed from the agenda and will go to Planning Board at a later date. At that time, we will notify all abutters within 250' that the item is coming up for review.

Thank you for reaching out, please let us know if we can be of further assistance.

Nan Whitten
Office Manager
Planning & Economic Development
City of Biddeford
207-284-9115

-----Original Message-----

From: Candi <cdevine47@msn.com>
Sent: Wednesday, October 6, 2021 5:45 PM
To: Whitten, Nan <Nan.Whitten@Biddefordmaine.org>
Subject: Wellness Center Concerns

Hi Nan:

We at RiverWalk Condos on Colton Lane would like to know the status of the 10.4.21 committee meeting held regarding Scott Pollock, 356 South St. and his request for a Wellness Center in his home.

We all sent our concerns and objections to this permit given this is a residential area, high traffic area and safety hazard with added parking problems.

Thank you, Nan, for any updates you can provide concerning Mr. Pollock's request.

Sincerely,
Michael & Candice Devine
and RiverWalk neighbors of
Scott Pollock
Sent from my iPhone

Tansley, Greg

From: Sharon Farr <sdfarr1954@yahoo.com>
Sent: Thursday, September 30, 2021 9:07 PM
To: Whitten, Nan
Subject: RE; SCOTT POLLOCK MEETING 10/4

TO THE BIDDEFORD PLANNING BOARD AND ITS PARTICIPANTS:

MR. POLLOCK IS AN ABUTTING NEIGHBOR WITH 6 CHILDREN, 2 DOGS

ON AN EXCEPTIONALLY BUSY STREET, SOUTH STREET.

MY HUSBAND AND I FEEL THAT ANY ADDITIONAL TRAFFIC AND PARKING
(WHICH THERES IS NONE, OTHER THAN THE SIDE OF THE ROAD).

WOULD IMPAIR THOSE ALREADY GOING TO AND FROM WORK.

THE HIGH SPEED TRAFFIC DURING THE EVENING HOURS AND MORNING
HOURS, ARE ALREADY A HUGE CONCERN TO US.

MR POLLOCK IS A NICE MAN, HOWEVER HE HAS ENDLESS PROJECTS AT HAND
THAT HAVE NOT BEEN COMPLETED.

THIS MAY JUST BE ANOTHER PROJECT.

IF A WELLNESS CENTER IS FOUND TO BE EXCEPTABLE, WHERE WOULD THE
PATRONS PARK? WHAT ABOUT HIS KIDS RUNNING THROUGH HIS WELLNESS
CENTER?

WHAT ABOUT THE CURRENT HIGH SPEED TRAFFIC?

WHAT ABOUT A LICENSE?

WHAT ABOUT HOURS OF OPPEARATION?

WHAT ABOUT HAVING A BATHROOM FOR THE PATRONS

I'M NOT SURE HE HAS THOROUGHLY THOUGHT THIS THROUGH.

MY HUSBAND AND I FEEL THAT THIS SHOULD BE A TURNED DOWN REQUEST.

A WELL RUN, WELL MANAGED WELLNESS CENTER SHOULD BE WHERE

THERE IS AMPLE SPACE, AND NOT RUN OUT OF A GARAGE.

ALSO... A PLACE OF PEACE AND QUIET.

PERHAPS MR POLLOK SHOULD FIND A SPOT IN OUR TOWN THAT IS TRULY
COMMERCIAL, AND CONTINUE HIS DREAM IN THE CORRECT SURROUNDINGS
FOR A SUCCESSFUL BUSINESS.

THANK YOU FOR YOUR TIME,

GERRY AND SHARON FARR
1 COLTON LAND #102
BIDDEFORD, ME

904-556-4766 IF YOU WOULD LIKE TO SPEAK WITH EITHER OF US.

Tansley, Greg

From: shelley littlefield <shelleym52@hotmail.com>
Sent: Thursday, September 30, 2021 4:45 PM
To: Whitten, Nan
Subject: RE:2021.44 Conditional Use Permit

We oppose the permit for Scott Pollock to convert the one car garage at 356 South street into a wellness center in R-3 Zone.

The 356 South street residence is already congested with traffic now and we do not wish for a business in our residential zone. My fear is if we grant permission for this business others might follow. This is a home residence area not a business area that is why we buildt our home here.

Thank you.

Shelley Moore-Littlefield (shelleym52@hotmail.com)
357 South Street
Biddeford Maine 04005

Tansley, Greg

From: Wendi Gelchinsky <wendi@gelchinsky.com>
Sent: Thursday, September 30, 2021 3:00 PM
To: Whitten, Nan
Subject: Scott Pollock

Dear Ms. Whitten,

I am writing regarding my concern for the use permit for Scott Pollock to convert his garage into a wellness center.

My property is directly behind his and this endeavor can have an impact on my backyard.

Right now his property is quite messy and filled with projects he has begun but never completed.

This is a residential area and not ready for a new commercial business.

Traffic on South Street is presently quite congested and I believe unable to contend with further parking due to his projected wellness center.

Who will oversee the proper licensing and permits he will need for his business?

Thanking you in advance for reading my concerns, Wendi Gelchinsky [on behalf of Jonathan and Richard Gelchinsky]

PLANNING BOARD
REPORT

October 29, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: Windward Ridge – Ginger Hill, LLC
918 Pool Street (Tax Map 4 Lot 48)

Subdivision Preliminary Plan Review

Review Status: New preliminary plan application

Board members and Mr. Tansley,

The following application and attached information has been provided for review:

1. Application form dated 9/15 /2021.
2. Cover letter and Application Submission entitled: *Preliminary Subdivision Application for Winward Ridge Subdivision, located at 918 Pool Street, Biddeford, Maine 04005, Map 4. Lot 48. Prepared For: Ginger Hill, LLC, 18 Early Way, Arundel, Maine 04046.* Prepared by Walsh Engineering Associates, dated 9/15/2021. This includes Stormwater Report, Soil Survey prepared by Mark Hampton and Wildlife Evaluation Report prepared by Jones Associates.
3. Engineering Plan set entitled: *Winward Ridge Subdivision, 918 Pool Street, Biddeford, Maine 04005. Prepared For: Ginger Hill, LLC, 18 Early Way, Arundel, Maine 04046.* Prepared by Walsh Engineering Associates, dated 10/20/2021.
4. Response to Comments Letter: *RE: Preliminary Subdivision Application Winward Ridge Subdivision, 918 Pool Street, Biddeford, Maine, Tax Map 4, Lot 48.* Prepared by Walsh Engineering Associates, dated 10/20/2021.
5. Homeowner's Association Documents: *Windward Ridge Subdivision, Maine, Declaration of Covenants and Restrictions*
6. Letter from Jones Associates dated October 19, 2021.

With review of the above information and the Land Development Regulations and Subdivision Ordinance, I offer the following comments on compliance with the City's ordinances. See attached for remaining outstanding engineering related comments from Site Design Associates.

PROJECT DESCRIPTION

The applicant seeks to create 6 residential lots along a proposed 750-foot private road on a 11.8 AC parcel located mostly in the Rural Farm (RF) zone with approximately 80k SF in the Conservation Residential (CR) along Pool Street. The site includes two large freshwater wetlands on a forested undeveloped parcel.

COMPLETENESS REVIEW

The application is before the Planning Board as required by Chapter 66 (Subdivisions) subject to Subdivision review and approval. Per the City's Subdivision ordinance (66-26), all applications have a three-tier approval process beginning with a Sketch plan review. The Planning Board reviewed the Sketch Plan in July and the applicant has submitted a preliminary plan submission for review that appears to be complete.

COMPLIANCE WITH THE CITY'S ORDINANCES

The proposed minimum lot sizes and net density calculations appear to be in order. Required setbacks and buffers are also depicted, however, the overall development design is not as reflective a cluster development as it could be.

City Staff, including Long Meadow P&LA and Site Design Associates, have had an opportunity to share comments on an earlier submission prior to placing the application on the Board's agenda. The following are comments and recommendations that Board, and the applicant may want to consider:

AGRICULTURAL SOILS (Sec. 66-2)

In speaking with the State Soil Scientist's office and the NRCS, it appears the soils listed in the HISS prepared by Mark Hampton, Associates do not include the specific soils listed as prime agricultural or having state-wide significance. It was suggested, however, that if the project used federal aid or funding, that an application to the NRCS regarding agricultural and state-wide significant soils was required since the its medium intensity soil surveys depict these soils on the property.

OPEN SPACE DESIGN

Though this is one parcel with two zones, it shouldn't unnecessarily limit the overall cluster development for the property. The zoning ordinance provision for min. lot size for septic (20k) in Sec. 16 (Cluster developments) can be applied to both the CR and RF zones alike. As it is applied in the RF zone, 20k needs to be net developable in the CR zone too. A sketch was provided to the applicant with this suggestion and the agent's response to comments are based on that sketch. The attached revised sketch is based on the most recent plans submitted and should result in an overall site design that is more definitively a clustered development; smaller lots, less roadway and more contiguous open/conservation space. The location of the proposed lot 6 does not reflect the basic objectives of a cluster development, essentially to minimize the overall development footprint while

maximizing contiguous open space. The latter should be more than simple arithmetic, meeting a specific square foot number as to size of the open space. An appropriate design of open space should not result in land that is contiguous through slivers of land connecting larger areas.

The applicant would prefer to maximize the clearing of each proposed lot's building envelope to provide the most flexibility for siting the buildings. Considering the shape of the proposed open space, maintaining no-cut rear and some side setbacks would be an added benefit to the overall success of the open space as a natural resource habitat.

PRESERVATION IN PERPETUITY

As outlined in Sec. 16.E, Article VI of the Land Development Regulations, Open Space in a cluster development shall be preserved by means of a conservation easement held by a third party or held by the HOA by means of its declarations and covenants. The draft HOA documents does not appear to include any language related to the open space being preserved in perpetuity.

HOMEOWNERS ASSOCIATION DOCUMENTS

1. If not conveyed to a land trust the opens space (*common area*) for conservation should be more defined in terms of management, ideally a plan from plant/wildlife biologist, so it is clear to the HOA what it means *to preserve the habitat of the "Open Space" as much as possible.* (Art.3 Sec.2. The permission for the directors to remove dead and/or dying trees should be for purposes related to safety, not in general since most natural habitats benefit from dead trees.
2. Art. VI Sec. 12.d should include a reference to receiving Planning Board approval if granting easements is not reflected on the approved subdivision plan. Art VIII Sec. 2 should be subject to Board approval of an amended plan as well.
3. Encroachment of the open space by the homeowners or abutters should be addressed in terms of accountability as it relates to the open space being undeveloped and/or clearing that is contrary to the approved plan.
4. There does not appear to be any sections that address the shared maintenance of the private street, especially having the responsibility of contacting or ensuring that snow is removed in a reliable manner to aid in public safety access.

BUFFERING.

The proposed roadway from Pool Street incurs a great deal of clearing and grading (Sheet C2.3) outside of its Right-Of-Way, that will result in a significant hole in what is now is dense woodland edge. Plantings of trees and shrubs should be considered to either side of the entrance within the lot and open space land that would provide an adequate screen and soften the associated clearing.

PLAN RECOMMENDATIONS

1. A Stamped and signed final Boundary Survey should be submitted.
2. The Existing Conditions Plan references GIS topography/contour data. Is this adequate for final road and site grading design?
3. The Subdivision Plan should be prepared and certified by a Professional Land Surveyor, licensed in Maine.
4. The Subdivision Plan appears to not include typical/standard notes found on surveys and subdivision plans, e.g. deeds, ownership, plan references.... The latter is referenced to the cover sheet, however, the Subdivision Plan will be recorded and ideally should be one sheet, unless multiple sheets are recorded as well.
5. The Subdivision Plan notes should reflect any applicable requirement City zoning or subdivision requirements, e.g. 75-foot buffer in the RF zone and Open Space preserved in perpetuity.
6. The plans should include signatory blocks and recording blocks where necessary.

FIRE SAFETY

Chapter 30-87 requires underground fire suppression tanks for new (private/public) subdivisions, which are located outside the hydrant districts. The applicant should review the ordinance and coordinate with the Fire Department and demonstrate compliance prior to final approval.

WAIVER REQUESTS

None requested.

CONCLUSION

The Preliminary Plan appears to be complete for the Planning Board's consideration. The above comments reflect an opinion that there is more that can be done to further the objectives of the cluster development design for this property.

If the Board is inclined to grant preliminary approval it should consider it being conditioned on the applicant addressing all outstanding comments from board members, City Staff and peer-reviewers prior to the final plan submission.

Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245

Subject: Leeward Meadows and Windward Ridge Subdivisions

Date: Thursday, October 28, 2021 at 11:12:39 AM Eastern Daylight Time

From: Tom Saucier

To: Tansley, Greg

CC: Christopher Di Matteo

Hi Greg

Per your request we have undertaken a review of the revised plans and documentation submitted to our office. It appears the majority of our comments have been addressed for both projects.

Below are some follow-up comments, numbered per the original comments:

Windward Ridge

A.2. The response indicated that the intent was for the proposed road to remain private. Reference should be made to Section 51 for private way requirements, including required notes, plans, and maintenance agreement, and registry filings required under section 51.D.

B.2. The response indicates that the existing woods road was modeled as an impervious surface, which usually includes gravel and paved surfaces, but generally not a vegetated woods road surface.

B.4. The analysis points should be shown at the property line, not well onto the abutting property, if that abutting property is not controlled by the applicant.

B.6. Sheet flow lengths should be a maximum of 100 ft for wooded conditions.

C.1.a. The response indicated that the road right of way would be field surveyed prior to construction. Given the intent is for the road to remain private, that seems like a reasonable alternative to us, if staff agrees.

C.1.b. The response indicates the existing culvert at the site entrance will be replaced. Drawing C-2.4 shows a new 24" culvert in plan view and an 18" culvert in the profile.

C.2.d. Not addressed.

C.3.g. The applicant should refer to your 10/22/21 email in regards to fire protection addressed.

C.4.a. The proposed 24" culvert at Pool Street still lacks adequate cover.

C.4.b. A sediment barrier should be shown downgradient of portions of the road and drive to lot 6.

C.4.j. The response indicates that the cross slope is now 1%. A minimum of 2% is required.

Leeward Meadow

A.2. The response indicated that the intent was for the proposed road to remain private. Reference should be made to Section 51 for private way requirements, including required notes, plans, and maintenance agreement, and registry filings required under section 51.D.

B.8. Sheet flow lengths should be a maximum of 100 ft for wooded conditions.

C.1.a. The response indicated that the road right of way would be field surveyed prior to construction. Given the intent is for the road to remain private, that seems like a reasonable alternative to us, if staff agrees.

C.2.c. Monumentation for the road is shown as iron pipes. Section 62-87 requires granite, unless otherwise approved by the city.

C.3.e. The applicant should refer to your 10/22/21 email in regards to fire protection addressed.

C.3.f. Utilities are still shown under the paved travel way.

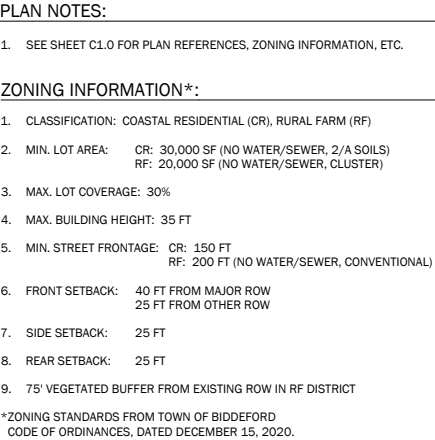
Stormwater Management

For both projects, the stormwater quantity analysis indicates that the post development peak rates of runoff will be less than the existing rates of runoff. Rather than our office spending a lot of time reviewing the model to determine how this conclusion was reached, when both projects involve the creation of new impervious area, we request that the applicant expand on these results in the stormwater management report.

We do not anticipate that these comments will alter the overall concept for the projects. From an engineering standpoint, we believe that the project is ready for preliminary approval, if staff agrees, and the planning board is so inclined.

Thanks
Tom

Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086
207-449-4275

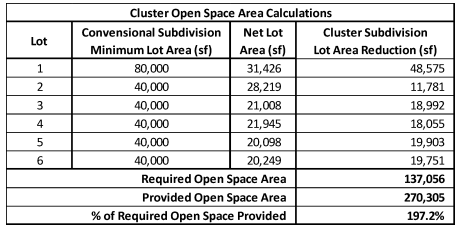


Net Residential Density Calculation (RF Zone)		Area (sf)
Gross Lot Area		381,091
Deductions (no sewer)		
100-year flood zone		0
Soil Drainage Class		
Somewhat poorly drained (50% Deduction)		65,925
Poorly/Very Poorly Drained		
Slopes > 33% (50% Deduction)		1,933
Area Subject to ROWs/easements, etc.		0
Surface Waters/Wetlands		93,774
Soils of Statewide Significance		
Land within RP zone		
Land within CR zone setback		
Unreclaimed extractive activity land		0
	Net Lot Area	219,460
	Minimum Unimproved Lot Area (RF Zone)	40,000
	Total Allowable Lots	5

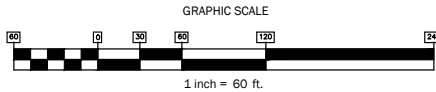
Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	28,219
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	0
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	
Surface Waters/Wetlands	0
Soils of Statewide Significance	
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	28,219
Minimum Cluster Lot Area	20,000

Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	26,598
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	4,449
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	205
Area Subject to ROWs/easements, etc.	
Surface Waters/Wetlands	0
Soils of Statewide Significance	
Land within RP zone	0
Land within CR zone setback	0
Unredeamed extractive activity land	0
Net Lot Area	21,945
Minimum Cluster Lot Area	20,000

Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	60,882
Deductions (no sewer)	
100-year flood zone	0
Soll Drainage Class	
Somewhat poorly drained (50% Deduction)	10,095
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	30,538
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unredeemed extractive activity land	0
Net Lot Area	20,249
Minimum Cluster Lot Area	20,000



Curve Segment Table				
Curve Segment	Curve Radius	Curve Length	Cord Bearing	Cord Length
C1	275.00'	152.86'	N28°17'30"W	150.90'
C2	225.00'	25.95'	N15°40'17"W	25.93'
C3	225.00'	40.21'	N24°05'44"W	40.16'
C4	5.00'	7.85'	N74°12'56"W	7.07'
C5	5.00'	7.85'	N15°47'04"E	7.07'
C6	275.00'	60.49'	S22°54'52"E	60.36'
C7	275.00'	20.38'	S14°29'25"E	20.37'
C8	225.00'	125.07'	S28°17'30"E	123.46'



Windward Ridge
918 Pond Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Acundel, Maine 04046

Sheet Title:		
Cluster Subdivision Plan		
Job No.:	742	
Sheet No.:		
Date:	June 15, 2021	
Scale:	1" = 60'	
Drawn:	CAR	
Checked:	WRW	

October 20, 2021

Biddeford Planning Board
c/o Mr. Greg Tansley, City Planner
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, ME 04005

**RE: Preliminary Subdivision Application
Windward Ridge Subdivision
918 Pool Street, Biddeford, Maine
Tax Map 4, Lot 48**

Dear Mr. Tansley,

Walsh Engineering Associates (WEA) is pleased to provide these responses to comments and questions from the City of Biddeford for the proposed residential subdivision at the subject property. The questions addressed include the engineer review conducted by Site Design Associates dated September 29, 2021; comments provided by Long Meadow Planning & Landscape Architect, LLC via an e-mail and sketch dated October 8, 2021; and feedback provided during a meeting with the City on October 6, 2021. We have included the following information for your review:

- Declaration of Covenants & Restrictions Revision 1
- Environmental Consultation Letter by Jones Associates dated October 19, 2021
- Stormwater Report Revision 1 dated October 20, 2021
- Subdivision Plan Set Revision 2 dated October 20, 2021

Site Design Associates Engineer Review

A. General

1. The open space will be owned by the homeowner's association.
2. The road will remain private and maintained by the homeowner's association.
3. The "Windward Ridge Owners Association" homeowner's association is proposed with the development. A draft of the declaration of covenants and restrictions for the homeowner's association was included in Attachment 7 of the Preliminary Subdivision Submission package dated September 15, 2021.

B. Drainage Plans and Calculations

1. The total new impervious area is 31,290 sf. The revised narrative, plans, and HydroCAD model reflect this.

2. The existing impervious areas referenced in the calculations are the woods road dividing SC-1.3, Pool Street, Oak Ridge Road, an abutter to the northeast in SC-1.4, abutters to the southeast in SC-1.5, and an abutter to the west in SC-2.
3. Contour labels in 1' intervals have been provided on the drainage plans.
4. SC-1.0 has been divided into three subcatchments with different outlet points along the northerly property line. Reaches have been added to model the stormwater runoff from each of these subcatchments converging on AP #1 at elevation 30.
5. We have field verified that the culvert beneath Pool Street drains from south to north. SC-1.5 has been added to model the area south of Pool Street. Culverts with significant ponding areas have been modeled with storage.
6. All time of concentrations have been reviewed to properly reflect site conditions. 150 feet has been utilized as the maximum sheet flow distance.
7. The time of concentration for SC-2 has been corrected.
8. The model has been revised to divide SC-1.0 into SC-1.0 and SC-1.3 by culvert C1.
9. A minimum time of concentration of 6 minutes (0.1 hour) has been utilized for all small subcatchments per Chapter 3 of TR55.
10. Subcatchment boundaries have been plotted in magenta to improve visibility.
11. Culvert sizes have been reviewed and revised for consistency across the drawings and model.

C. Drawings

1. C1.0 – Existing Conditions Plan
 - a. Field survey data will be obtained for the full width of the right of way prior to construction.
 - b. The existing culvert at the site entrance will be removed and replaced.
2. C2.1 – Cluster Subdivision Plan
 - a. Property line meets and bounds have been added to the plan.
 - b. There is no minimum street frontage requirement for cluster subdivisions.
 - c. Proposed right of way monumentation has been added to the plans.
 - d. Radii have been added to the right of way at the turnaround.
 - e. Transformers and easements have been added to the plans.
 - f. The proposed road intersection is 200 feet from the intersection of Scadlock Mill Road and Pool Street. The proposed road intersection will utilize an existing intersection apron.
 - g. All required permanent buffers on site have been shown.
3. C2.2 – Site Layout and Utility Plan
 - a. The plan is not binding relative to building footprint size, clearing limits, driveway locations and design, and lot layout. The designs shown are conceptual only and may be modified in the field based on actual building designs and locations.
 - b. A note for a sawcut and butt joint at Pool Street has been added.
 - c. The turnaround dimensions have been labeled.
 - d. The turnaround radii have been labeled.
 - e. Driveway culverts have been increased to a minimum 15" size.
 - f. Street signs have been added.
 - g. A request to review the project has been sent to the Biddeford Fire Department on multiple occasions. The Biddeford Fire Department has not provided any comments.

- h. Layout, Materials, and Utility Note 8 has been removed.
 - i. The underground utilities have been moved to the shoulder of the travel way.
 - j. A note regarding the clearing and grubbing of the right of way has been added.
4. C2.3 & C2.4 – Grading, Drainage, and Erosion Control Plan and Plan/Profiles
- a. A minimum 1 foot of cover has been provided over both culverts.
 - b. Temporary erosion control measures have been added to the plan.
 - c. The underground utility has been moved to avoid conflict with the proposed 24” culvert.
 - d. Inlet and outlet aprons have been added to the plan.
 - e. The road will remain private.
 - f. The intent of the stormwater management plan will be maintained with final layout and grading. The grading shown on these plans is conceptual for the purpose of subdivision review.
 - g. The road side ditch grading has been revised to stay within the right of way to the extent practical.
 - h. The road will remain private, and no easement will be necessary.
 - i. See detail 9 on sheet C3.1 for more information regarding the wetland crossing culvert. The driveway will not be overtopped during any modeled storm event.
 - j. The proposed grading has been revised to properly reflect a 1% slope for the extent of the road.
 - k. Spot grades have been added to the end of the road.
 - l. Additional horizontal curve data has been added.
 - m. Ditching along the easterly side of the road from Sta 5+30 has been revised.
 - n. Riprap has been added to the ditch outlets at the end of the road.
 - o. A 10’ wide level spreader has been added east of Sta 4+50±.
5. C3.1 – Site Details
- a. Details 2 and 9 have been revised to call for native material or common borrow for cross culvert bedding.
 - b. Detail 6 has been revised.
 - c. Detail 7 has been removed as it is not used.
 - d. The subbase borrow has been revised to MDOT 703.19 Granular Borrow. A note has been added calling for 95% compaction. The cross section is superelevated to direct stormwater runoff from the surface of the road to one side. Underground utilities have been shown in the road shoulder.

Long Meadow Planning & Landscape Architect Comments

1. Lot 1 has been sized per the minimum lot size requirement governed by Zoning Ordinance Section 6A. Dimensional Requirements, Table C Lot Size Requirements for Coastal Residential (CR) District, Chart 9B1 Minimum Square Feet Lot Size. A soil test pit on the lot has identified the soil profile and condition as 2A requiring a minimum lot size of 30,000 sf. Lot 1 has been reduced to a net lot area of 31,426 sf to reflect this reduction from the previous 40,000 square foot lot.
2. A total of 270,305 sf of open space has been provided by the cluster subdivision design. This amount of open space is nearly double the required open space area of 137,056 sf and achieves the cluster subdivision design requirements.

3. While a reduction to the length of the Windward Ridge road would be ideal, Section 51. Private Ways and Roads, Part D, Number 11 prohibits lot access from the end of a turnaround as suggested and therefore we would not have adequate access for Lot 5.
4. In order to preserve as much of the existing vegetation as possible, the horizontal alignment of Windward Ridge follows the existing Woods Road to the extent that it can, including utilizing an existing entrance at Pool Street. The suggested realignment near Pool Street would also require significant clearing and fill to cross a depression between ridges.
5. Due to the difficult topography of the area and minimal gross lot sizes proposed, we are proposing the building windows indicated on the lots to provide flexibility in locating the existing houses around ledge, thereby minimizing land disturbance. To be conservative, the Stormwater Management Report Revision 1 has taken the clearing of all building envelopes into account.

City Meeting Feedback

1. The building footprints included on the site plans represent the expected potential building footprint for each lot.
2. We have followed up with Wildlife Biologist Jason Tome of Jones Associates on their professional opinion regarding the driveway to Lot 6. Mr. Tome indicates that utilizing the existing woods road and improving the wetland crossing by a larger “critter” culvert would be most beneficial to minimizing impacts and improving the wildlife corridor. We have included a letter from Jason Tome with this submission.

We trust that we have adequately addressed the engineer comments provided. Please contact me if you require any additional information.

Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



William R. Walsh III, PE
Walsh Engineering Associates, Inc.

cc: Emily Ingwersen, Ginger Hill, LLC
Robert Ingwersen, Ginger Hill, LLC

enc: Declaration of Covenants & Restrictions Revision 1
Environmental Consultation Letter
Stormwater Report Revision 1
Subdivision Plan Set Revision 2

JONES
ASSOCIATES
Foresters, Surveyors and
Environmental Consultants



Emily Ingwersen
Ginger Hill Design + Build
Arundel, ME
(207) 710-0812

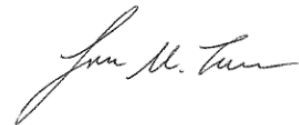
October 19, 2021

Dear Emily,

We have reviewed your questions regarding the Windward Ridge Neighborhood. In response to your question regarding the wetland crossing we believe the best option from a wildlife perspective would be to improve the existing wetland crossing to meet your needs without additional wetland impacts. Since the woods road has already been developed, using this existing road would minimize habitat impacts compared to development of a new road. Since we did not map the wetlands and look at that crossing specifically you may want to reach out to the wetland scientist who did the delineation to get their opinion from a wetland impact standpoint.

If you have any questions, please do not hesitate to reach out or contact our office.

Much appreciated,



Jason Tome

**WINDWARD RIDGE SUBDIVISION
BIDDEFORD, MAINE**

DECLARATION OF COVENANTS AND RESTRICTIONS

This Declaration is made this ____ day of _____, 2021, by Ginger Hill, LLC, with a place of business in Arundel, in the County of York and State of Maine (hereinafter called "Declarant").

W I T N E S S E T H:

WHEREAS, Declarant is the owner of real property situated on the southerly side of Route 9, also known as Pool Street, in the City of Biddeford, in the County of York and State of Maine, and desires to create a residential community thereon, pursuant to subdivision approval for such property, such approval being evidenced on "Standard Boundary Survey Showing Windward Ridge Subdivision, Pool Street, Biddeford, Maine" by _____, dated _____ and recorded in the York County Registry of Deeds in Plan Book _____, Page _____; and

WHEREAS, Declarant desires to insure the preservation of values and amenities in the community and, to this end, desires to subject the real property described in ARTICLE I to the covenants, restrictions, easements, charges and liens hereinafter set forth, each and all of which are for the benefit of said property and each owner thereof; and

WHEREAS, Declarant has deemed it desirable for the efficient preservation of the values and amenities in the community to create an agency to which will be delegated and assigned the powers of maintaining and administering the common areas and facilities and administering and enforcing the covenants and restrictions and collecting and disbursing the assessments and charges hereinafter created; and

WHEREAS, Declarant has incorporated or will incorporate under the laws of the State of Maine, as a nonprofit corporation, WINDWARD RIDGE OWNERS ASSOCIATION for the purpose of exercising the aforesaid functions.

NOW, THEREFORE, Declarant declares that the real property described in Article I is and shall be held, transferred, sold, conveyed and occupied subject to the covenants, restrictions, easements, charges and liens (sometimes referred to as "covenants and restrictions") hereinafter set forth in conveyances of lots.

ARTICLE I

PROPERTY SUBJECT TO THIS DECLARATION

The real property which is, and shall be held, transferred, sold, conveyed and occupied subject to this Declaration is located in the City of Biddeford, in the County of York and State of Maine, and is all of the land area shown on a plan entitled “Standard Boundary Survey Showing Windward Ridge Subdivision, Pool Street, Biddeford, Maine” by _____, dated _____ and recorded in the York County Registry of Deeds in Plan Book _____, Page _____, hereinafter referred to as “the Plan,” to which reference is made for a complete description thereof, all of which real property shall hereinafter be referred to as the “Property,” specifically including all of the numbered lots, roads, easements, rights of way, and such other lands or areas which may be designated by Declarant. All conditions, restrictions and limitations shown on said Plan, whether or not specifically referred to herein, are incorporated by reference into this Declaration and made a part hereof.

ARTICLE II

DEFINITIONS

Section 1: “Association” shall refer to Windward Ridge Owners Association, its successors and assigns.

Section 2: “Owner (s)” shall refer to the record owner, whether one or more persons or entities, of fee simple title to any Lot as depicted on the Plan.

Section 3: “Member” shall mean and refer to lot owners as provided in Article V.

Section 4: “Lot (s)” shall refer to those single family residential lots as depicted on said Plan.

Section 5: “Common Area” shall mean all real property owned by Declarant, or the Association after transfer, with improvements thereon, or real property in which Declarant or the Association has easement rights and which are intended for the common use and/or benefit of the Owners as depicted on said Plan, including areas shown on the Plan as “Open Space” and the subdivision road known as “Windward Ridge”.

ARTICLE III

OWNERSHIP, MAINTENANCE AND USE OF COMMON AREAS

Section 1: Every Owner shall have equal rights with respect to the common areas which shall pass with the title to every lot, subject to the right of the Association to charge reasonable fees for the maintenance and upkeep of any portion of the common area. All common areas shall be managed by the Association, which shall be establish

rules and regulations for the use thereof in accordance with the provisions of this Declaration.

Section 2: The common areas on the Plan denoted as “Open Space” shall remain in their natural state, including existing vegetation and wetlands. The Board of Directors of the Association may allow the removal of dead, dying or diseased trees. The purpose of these regulations is to preserve the habitat of the “Open Space” as much as possible. This provision may not be substantially changed without prior approval of the Biddeford Planning Board.

Section 3: Any Owner may delegate, in accordance with the Association’s Bylaws, his/her right of enjoyment to the common area and facilities to members of his/her family, his/her tenants and his/her invitees for limited periods of time.

Section 4: Unless earlier conveyed, the common areas shall be conveyed by Declarant to the Association within thirty (30) days after the sale of the last lot. The Declarant, or the Board of Directors of the Association, has the authority to grant a conservation easement over the Open Space to a conservation commission or to a recognized land trust.

ARTICLE IV

COVENANT FOR MAINTENANCE ASSESSMENTS

Section 1: The Owner of each lot hereby covenants, and by acceptance of a deed thereof, agrees to pay to the Association an annual assessment or charge. The assessment, together with interest, costs, and reasonable attorney’s fees incurred for collection of the same shall be a continuing lien on the Owner’s lot. The assessments levied by the association shall be used exclusively to maintain and/or improve the common areas.

Section 2: Both annual and special assessments shall be fixed at a uniform rate for all lots, with the exception of fees incurred pursuant to Article VI, Section 14E herein, which shall be designated the sole and exclusive obligation of such Owner in breach of these Covenants and Restrictions.

Section 3: The Directors shall fix the amount of the annual assessment and any special assessments in accordance with the procedure set forth in the Bylaws of the Association.

Section 4: The Directors shall upon demand furnish a certificate in recordable form setting forth whether the assessments on a specified lot have been paid. Such a certificate may be signed by the President, Treasurer or other designated officer.

Section 5: In addition to the annual assessments authorized above, the Association may levy, in any assessment year, a special assessment applicable to that year only for

the purpose of defraying, in whole or in part, the cost of any construction, reconstruction, repair or replacement of a capital improvement upon the common area including maintenance of the drainage easements to assure adequate runoff from the rights-of-way. Special assessments shall be determined by the Directors of the Association on an “as needed basis.”

Section 6: Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at a rate to be determined by the Directors, but in any event not less than ten percent (10%) per annum. The Directors, on behalf of the Association may bring an action at law against the Owner personally obligated to pay the same, or foreclose the lien against the property, in the manner as a mortgage on real estate or by any other means presently or hereafter provided by law or in equity. A suit to recover a money judgment for unpaid assessments, interest, penalties and cost of collection may be maintained against the lot owner personally without foreclosing or waiving the lien securing such assessment.

ARTICLE V

MEMBERSHIP AND VOTING RIGHTS

Section 1: The Association shall have one (1) class of voting Membership. The Members of the Association shall have no redemptive rights, as such Members, to acquire any Memberships of this Association that may, at any time, be issued by the Association, except as may be specifically provided in this Article.

Section 2: The Association shall elect a minimum of three (3) Directors to manage Association business. The Directors shall be chosen, and shall serve terms, as designated and set forth in the Bylaws of the Association. Directors shall elect corporate officers, which shall consist of a President, a Vice President, and a Treasurer.

Section 3: Meetings shall be called and conducted, and notices thereof sent, as provided and set forth in the Bylaws.

Section 4: Notwithstanding the foregoing or anything contained in this Declaration to the contrary, Declarant shall have the sole and exclusive right to appoint officers and directors to the Board until sixty (60) days after the sale of last lot in the subdivision or until Declarant voluntarily transfers control of the Association to the Members, whichever occurs first. During the period of control as set forth herein, Members of the Association, otherwise qualified hereunder, shall have non-voting membership, unless the provisions of this sentence are expressly waived relative to a particular issue by a writing signed by the Declarant.

ARTICLE VI

PROTECTIVE COVENANTS

Section 1: Declarant hereby declares that the following protective covenants shall apply to all lots in Windward Ridge Subdivision for the benefit of all Owners. These covenants shall become effective immediately and shall run with the land described in any deed of conveyance, and be binding upon all persons claiming under the Declarant, as developer or otherwise, until termination by operation of law, or as hereinafter provided. The covenants and restrictions set forth herein shall be referenced in any future deeds of lots in Windward Ridge Subdivision.

Section 2: Each lot shall be used for residential purposes. No lot may be subdivided. No structure shall have vinyl siding or pvc/plastic trim. In any event, no buildings or additions shall be erected, placed or allowed to stand on any lot in the subdivision unless and until the plans, specifications and locations thereof have been approved in writing by a duly authorized agent of Declarant, its successors or assigns, or the Association after assumption of control by the Association.

Section 3: No unregistered automobiles, trucks, motorcycles, motor homes or travel trailers, snowmobiles or boats or other similar motorized vehicles shall be stored on the premises for more than six (6) months without approval of the Board of Directors of the Association.

Section 4: Once construction of a building is commenced, work thereon must be prosecuted diligently and must be completed within a reasonable time, and in any event, within one (1) year from commencement of said work, provided, however, that additional time shall be allowed for exigent circumstances, including labor shortages, material shortages or delays, and pandemics. "Completion" shall include grading, loaming and seeding.

Section 5: The erection or use of any satellite dish over twenty-four inches (24") in diameter within the limits of said subdivision must be approved, in writing, by the Board of Directors of the Association.

Section 6: Any use of the property must be in strict conformity with the provisions of any applicable zoning law, ordinance or regulation. Nothing contained in this article, or elsewhere in this Declaration, shall be construed to prohibit the Declarant from the use of any lot or dwelling for promotional or display purposes, or as "model homes," a sales office, or the like.

Section 7: No temporary structures shall be built upon the land other than those necessary and used in the course of construction of permanent buildings, and all such structures shall be removed immediately upon completion of any building operation. Storage and garden sheds shall be allowed within the building envelope for each lot as shown on the Plan.

Section 8: Any fence constructed upon the property shall be made of non-pressure treated wood or made of metal, but no other material.

Section 9: The use and operation of motorized vehicles of any kind or type, including but not limited to snowmobiles and ATVs, shall be prohibited in any wooded area of the Subdivision, including the wooded area of a lot owned by the operator or user of any such motorized vehicle.

Section 10: The discharge of firearms of any kind or type, for any purpose, is prohibited anywhere within the Subdivision.

Section 11: The use of chemical pesticides and herbicides on lawns and gardens is prohibited. Owners are encouraged to follow the recommendations of the City of Biddeford's "Yard Smart" program as set forth in the pamphlet entitled "10 Simple Steps Toward a Safe & Healthy Lawn"

(<https://www.biddefordmaine.org/DocumentCenter/View/1762/Conservation-Commission-Resources---Combined-PDF>).

Section 12: The Association shall have control over the common areas and its Directors shall enforce the aforementioned and following covenants, which shall be deemed to run with the land:

A. The Association shall, until transfer to a public authority or agency, arrange and provided for the proper maintenance of Windward Ridge.

B. The Association shall prohibit any use of the property designated "Drainage Easement" on the plan for any purpose other than as a natural drainage swale, and shall arrange and provide for maintenance of said easements so that they continue to perform the function for which they are intended, but none other, including periodic cleaning, if necessary. Nothing contained herein shall allow the Association to enter upon said easement area for the purpose of cutting or removing any natural vegetation unless absolutely essential to the proper operation of said easement.

D. The Declarant, and Association, after transfer of the common areas, shall retain the sole right and power to grant any and all necessary easements over common areas to public utility authorities to carry out its obligations hereunder, either for installation or repair of same.

E. In addition to any other remedies provided for the Association herein, upon the apparent breach of Protective Covenants by any Lot Owner (s), the Directors on behalf of the Association, shall notify said Owner(s) by certified mail of such breach, and include a reasonable description of the actions necessary to correct or cure such breach. If said Owner (s) does not take corrective action within seven (7) days from receipt of said notice, or object to the proposed action to be taken within said time period, the Directors

shall, without further notice, be entitled to take such action as set forth in the Notice and to surcharge as a special assessment to said Owner (s) solely for all necessary and incidental expenses, including attorney's fees incurred in taking such corrective action. For this purpose, the Association or any agent thereof shall and by these presents, does have the right to enter upon land of any such breaching Owner to clean all drainage easements of all debris, to clean and maintain the culverts required by said Covenant, or to remove drainage water in accordance with the Plan, and to ensure compliance with any other applicable covenant, restriction or condition.

Section 13: Enforcement shall be by the Association as Plaintiff in a proper case, or by any Owner by proceeding at law or in equity against any persons violating, or attempting to violate any covenants, restrictions or conditions, either to restrain violation or to recover damages, or both, in the sole discretion of the party so proceeding. Any party successfully enforcing any of these covenants shall be entitled to recover against the party violating such covenant (s), as a monetary award, for the reasonable attorney's fees and costs incurred in such enforcement proceedings.

ARTICLE VII

RESERVATION OF RIGHTS AND EASEMENTS

Declarant reserves the following rights and easements:

Section 1: The right to install, maintain, repair and replace under, over and upon the common property and areas designated as easements or rights of way on the plan, and any ways on which said land abuts, or shall abut, such electric light, power, telephone and telegraph cables and wires, water, sewer and drainage pipes, mains and conduits, catch basins, surface drains and culverts, and such other facilities, installations, appurtenances and things as Declarant may deem necessary or convenient in connection with the provision of adequate drainage, sewerage disposal, water, electricity, telephone communications and other utilities to any portion of the property, and for the benefit of any other land owned by Declarant, its successors and assigns, including, but not limited to adjoining property, now owned or hereafter acquired by Declarant, which Declarant may choose to develop in the future; all of which rights and easements, Declarant, its successors and assigns, may assign to telephone, telegraph, power, water and other public and private utility companies and corporations as Declarant may determine;

Section 2: The right to add to or designate additional lands or areas as common areas as herein defined, or to dedicate and subject additional lands to the terms and conditions of this Declaration.

Section 3: An easement and right of way over all ways and other common spaces shown on the plan for ingress and egress by Declarant to adjoining property now owned or hereafter acquired by Declarant, its successors and assigns for all purposes

related to development of such adjoining property and for permanent egress and ingress to such adjoining property by future owners of homes therein.

Section 4: The right to enter upon the land or any sold or unsold lot for the purpose of selectively cutting trees and clearing trees and brush to improve the physical appearance of the land.

Section 5: The right to waive or modify certain of the conditions, covenants and restrictions set forth in Article VI with respect to any additional lands dedicated and subject to the terms and conditions of this Declaration.

ARTICLE VIII

GENERAL PROVISIONS

Section 1: Invalidation of any one of these covenants or restrictions by judgment or court order shall not affect any other provisions which shall remain in full force and effect.

Section 2: The Covenants and Restrictions of this Declaration, which shall be recorded at the York County Registry of Deeds, shall run with and bind the land. This Declaration may be amended by an instrument signed by not less than sixty percent (60%) of said Owners. Any amendments hereto must be recorded at the York County Registry of Deeds.

WITNESS:

GINGER HILL, LLC

By: _____
Emily Ingwersen
Its: Manager Duly Authorized

STATE OF MAINE
YORK, ss

_____, 2021

Personally appeared Emily Ingwersen, Authorized Manager of Ginger Hill, LLC, and acknowledged the foregoing Declaration to be her free act and deed in her said capacity and the free act and deed of said company.

Before me,

Ralph W. Austin /Attorney at Law
Bar #1156

Windward Ridge

Pool Street

Biddeford, Maine 04005

prepared for:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046
October 20, 2021

Design Consultants:

CIVIL ENGINEER
WALSH ENGINEERING ASSOCIATES, INC.
ONE KAREN DRIVE, SUITE 2A
WESTBROOK, MAINE 04092
207-553-9898

BOUNDARY SURVEYOR
TITCOMB ASSOCIATES, INC.
133 GRAY ROAD
FALMOUTH, MAINE 04105
207-797-9199

WETLAND & SOIL SCIENTIST
MARK HAMPTON ASSOCIATES, INC.
PO BOX 1931
PORTLAND, MAINE 04104
207-756-2900

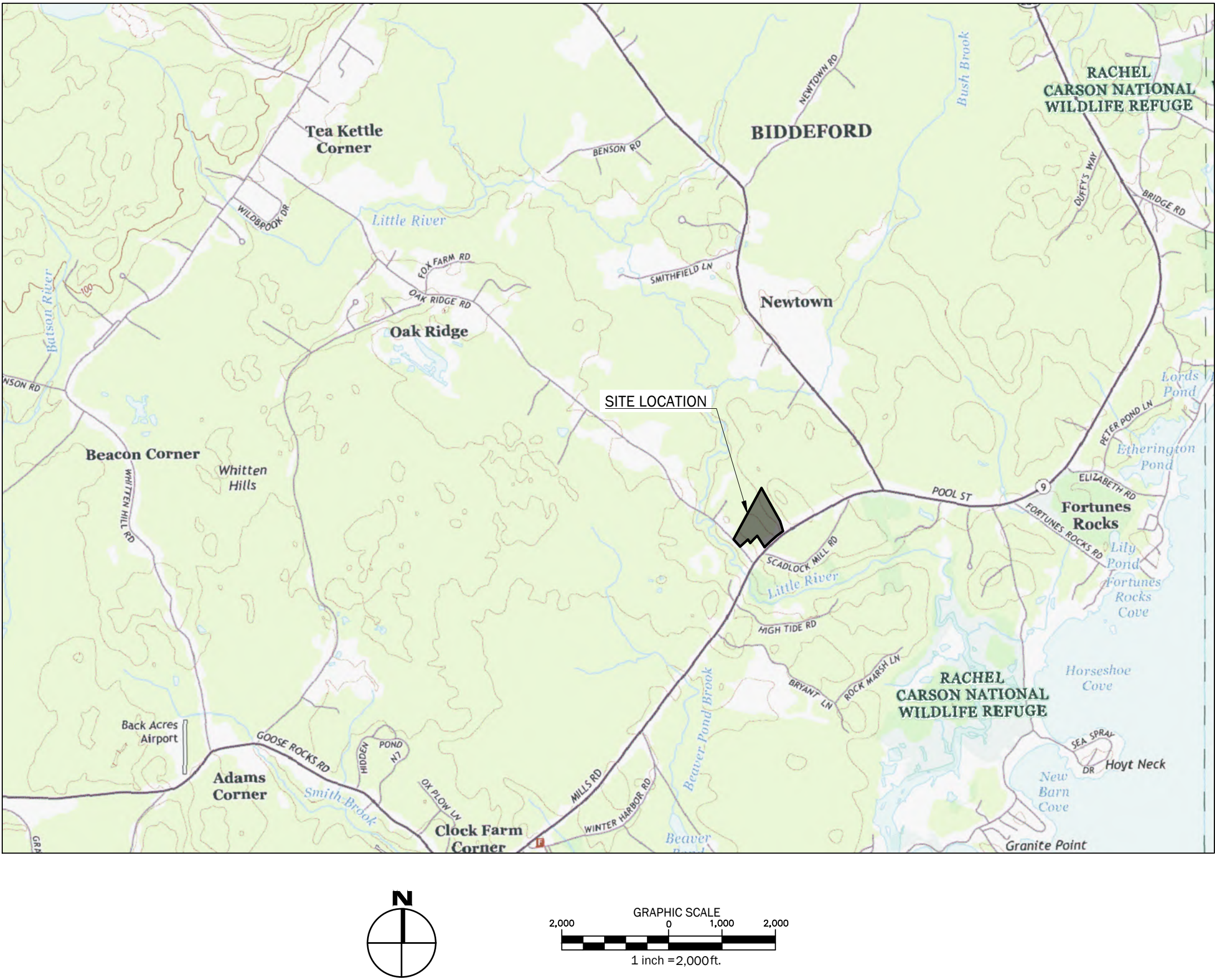
WILDLIFE BIOLOGIST
JONES ASSOCIATES, INC
280 POLAND SPRING ROAD
AUBURN, MAINE 04210
207-241-0235



One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

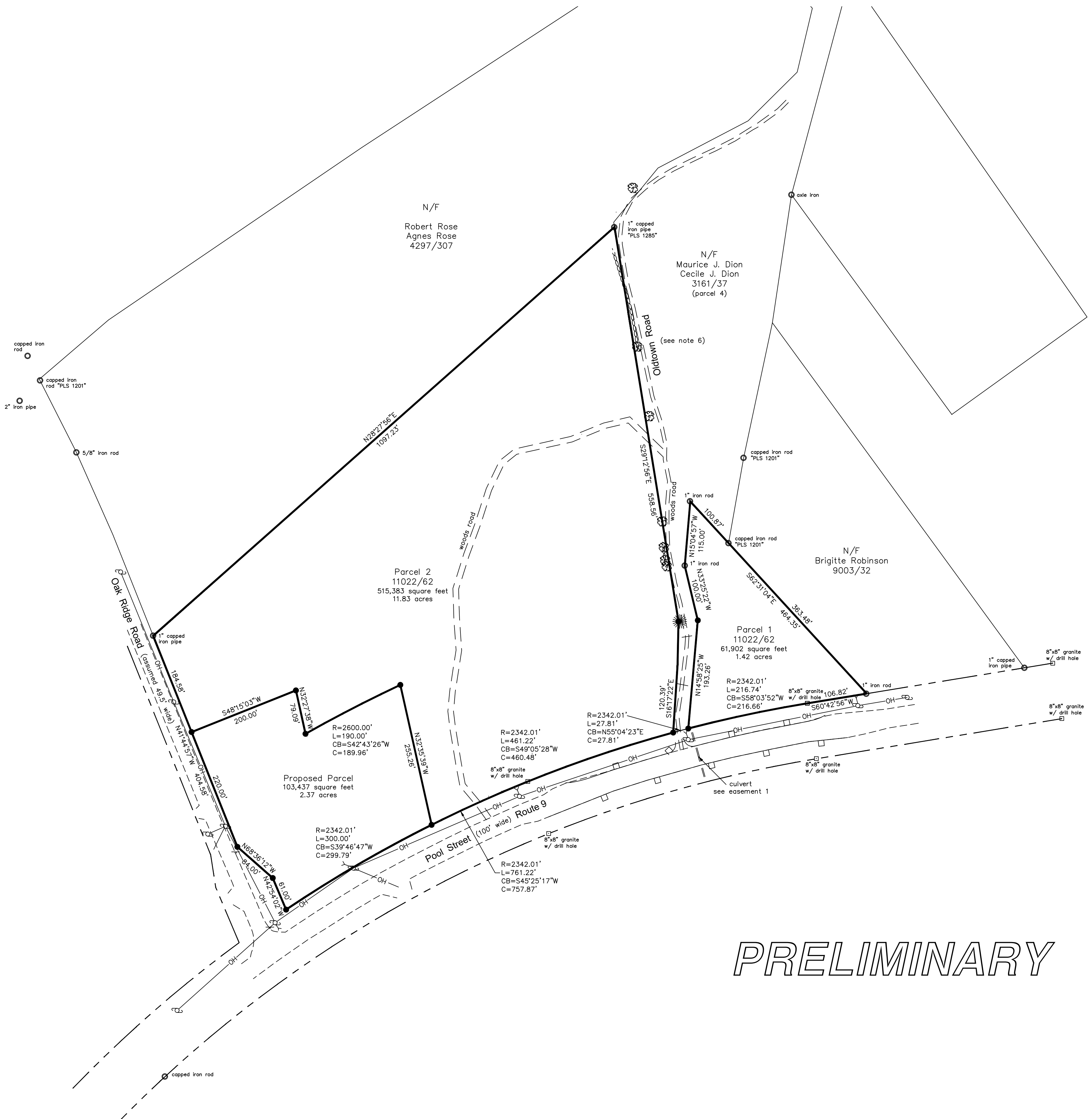
List of Drawings:

SHEET NO.	SHEET TITLE
	COVER SHEET
	BOUNDARY SURVEY 930 POOL STREET
C1.0	EXISTING CONDITIONS & REMOVALS PLAN
C1.1	NET RESIDENTIAL DENSITY PLAN
C2.0	CONVENTIONAL SUBDIVISION LAYOUT PLAN
C2.1	CLUSTER SUBDIVISION PLAN
C2.2	SITE LAYOUT & UTILITIES PLAN
C2.3	GRADING & EROSION CONTROL PLAN
C2.4	WINDWARD RIDGE PLAN & PROFILE
C3.0	SITE DETAILS
C3.1	SITE DETAILS
C3.2	SITE DETAILS
D1.0	PRE-DEVELOPMENT DRAINAGE PLAN
D2.0	POST DEVELOPMENT DRAINAGE PLAN



Record Owner:
GINGER HILL, LLC
18 EARLY WAY
ARUNDEL, MAINE 04046

Parcel ID:
MAP 4
LOT 48



PRELIMINARY

CERTIFICATION
This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

Rex J. Croteau, P.L.S. #2273

- LEGEND**
- Monument — found
 - Iron marker — found
 - Iron marker — set (#5 rebar)
 - Property line (locus)
 - Property line (buffer)
 - Right of way line
 - Guard rail
 - Sign
 - Utility pole
 - Guy wire
 - Overhead utility line
 - Now or formerly of
 - Deed reference (Book/Page)
 - Stone wall
 - Deciduous tree w/embedded wire fence
 - Coniferous tree w/embedded wire fence

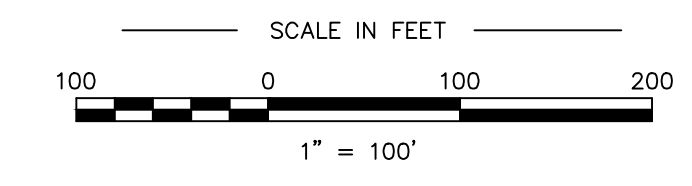
- NOTES**
- 1) Book and Page references are to the York County Registry of Deeds, unless otherwise noted.
 - 2) Bearings are referenced to grid north, Maine State Plane Coordinate System, West Zone, NAD83.
 - 3) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.
 - 4) Property lies within Zone C based on FIRM Community #230145 Panel #0010 B, effective date May 15, 1984. It does not lie within a special flood hazard area.
 - 5) Project area was covered by snow and ice at the time of the survey and some features may have been obscured and not shown on this plan.
 - 6) This portion of Oldtown Road was formerly known as Old Newtown Road. It was renamed by order of the City of Biddeford Municipal Officers on November 20, 1979. "Newtown Road" was discontinued by the City of Biddeford Municipal Officers on January 2, 1990 and described as "all of Newtown Road lying between Hills Beach Road on the northeast, and Pool Street on the southwest". The roadway has not been maintained and is presumed to be included in the "Newtown Road" discontinuance. The City of Biddeford retained a public easement over the discontinued road.

- PLAN REFERENCES**
- 1) Plan Showing a Standard Boundary Survey made for Christopher Robinson by Dow and Coulombe, Inc. dated September 22, 1989 as recorded in Plan Book 186, Page 10.
 - 2) Worksheet Sketch made for Hank Labrie by John Bruckler dated January 31, 1997.
 - 3) Revision to Alphonse & Bernadette M. Dion Subdivision Boundary Survey and Re-Subdivision of Land of Peter S. and Shirley W. Bowen and David R. and Frances V. Consalvo made by Civil Consultants dated June 13, 2003 as recorded in Plan Book 284, Page 1.
 - 4) Maine State Highway Commission Right of Way S.H.C. File No. 16-137 Sheet 5 of 5 dated December, 1961 as recorded in Plan Book 39, Page 7.
 - 5) Standard Boundary Survey made for the Saco Valley Land Trust, Inc. made by Guy Casavant PLS #1301 dated October 16, 2002 as recorded in Plan Book 290, Page 28.
 - 6) Standard Boundary Survey made for Albert A. & Isabella Chretien by BH2M dated April, 2006 and revised through April 6, 2010 as recorded in Book 343, Page 13.
 - 5) Maine State Highway Commission Right of Way S.H.C. File No. 16-122 Sheet 1 of 2 dated June, 1958 as recorded in Plan Book 29, Page 11.
 - 6) Boundary Survey made for Henry George Labrie III by Titcomb Associates dated February 24, 2021.

EASEMENTS / ENCUMBRANCES
1) Drainage rights described in a Notice of Taking by the State of Maine recorded in Book 1481, Page 11

AREA
as noted

OWNERS OF RECORD
Ginger Hill Design & Build
18 Early Way, Arundel, Maine
Book 18664, Page 128



PLAN OF Boundary Survey		
930 Pool Street Biddeford, Maine		
MADE FOR Ginger Hill Design & Build		
468 Limerick Road Arundel, Maine		
JOB #221021	DATE: July 13, 2021	SCALE: 1" = 100'
BOOK #933	 133 Gray Road, Falmouth, Maine 04105 (207)797-9199 www.titcombsurvey.com	
221021.dwg		

LEGEND

EXISTING

ROAD

N/F
"OWNERS NAME" TAX
MAP TAX LOT DEED BOOK
AND PAGE

PROPERTY LINE

RIGHT-OF-WAY LINE

ABUTTERS PROPERTY LINE

PROPERTY SETBACK

TOWN LINE

ABUTTER IDENTIFICATION

WETLANDS

NET LOT AREA DEDUCT AREAS

SOMEWHAT POORLY
DRAINED SOILS

WETLANDS

STEEP SLOPES (>33%)

PLAN NOTES:

1. SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

ZONING INFORMATION*:

1. CLASSIFICATION: COASTAL RESIDENTIAL (CR), RURAL FARM (RF)

2. MIN. LOT AREA: CR: 80,000 SF (NO WATER/SEWER, CONVENTIONAL)
CR: 30,000 SF (NO WATER/SEWER, CLUSTER)
RF: 40,000 SF (NO WATER/SEWER, CONVENTIONAL)
RF: 20,000 SF (NO WATER/SEWER, CLUSTER)

3. MAX. LOT COVERAGE: 30%

4. MAX. BUILDING HEIGHT: 35 FT

5. MIN. STREET FRONTAGE: CR: 150 FT
RF: 200 FT (NO WATER/SEWER, CONVENTIONAL)

6. FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW

7. SIDE SETBACK: 25 FT

8. REAR SETBACK: 25 FT

9. 75' VEGETATED BUFFER FROM EXISTING ROW IN RF DISTRICT

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

Net Residential Density Calculation (CR Zone)	
	Area (sf)
Gross Lot Area	128,000
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	12,632
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,953
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	28,046
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	85,370
Minimum Conventional Lot Area (CR Zone)	80,000
Total Allowable Lots	1

Net Residential Density Calculation (RF Zone)	
	Area (sf)
Gross Lot Area	381,091
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	65,925
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,933
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	93,774
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	219,460
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	5

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ENGINEERING ASSOCIATES, INC.

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STATE OF MAINE

MAURICE J. DION

CECILE J. DION

MAP 4, LOT 44

BK 3161 / PG 37

10/20/2021

Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
1	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:
Net Residential
Density Plan

Job No.: 742
Date: June 15, 2021
Scale: 1" = 60'
Drawn: CAR
Checked: WRW

Sheet No.:
C1.1

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

GRAPHIC SCALE

60

0

30

60

120

240

1 inch = 60 ft.

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66

LEGEND

EXISTING

ROAD

N/F

"OWNERS NAME" TAX

MAP TAX LOT DEED BOOK

AND PAGE

PROPERTY LINE

RIGHT-OF-WAY LINE

ABUTTERS PROPERTY LINE

PROPERTY SETBACK

TOWN LINE

ABUTTER IDENTIFICATION

WETLANDS

NET LOT AREA DEDUCT AREAS

SOMEWHAT POORLY

DRAINED SOILS

WETLANDS

STEEP SLOPES (>33%)

- PLAN NOTES:
1.

SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.
- ZONING INFORMATION*:
1.

CLASSIFICATION: COASTAL RESIDENTIAL (CR), RURAL FARM (RF)
2.

MIN. LOT AREA: CR: 80,000 SF (NO WATER/SEWER, CONVENTIONAL)
RF: 40,000 SF (NO WATER/SEWER, CONVENTIONAL)
3.

MAX. LOT COVERAGE: 30%
4.

MAX. BUILDING HEIGHT: 35 FT
5.

MIN. STREET FRONTAGE: CR: 150 FT
RF: 200 FT (NO WATER/SEWER, CONVENTIONAL)
6.

FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
7.

SIDE SETBACK: 25 FT
8.

REAR SETBACK: 25 FT
9.

75' VEGETATED BUFFER FROM EXISTING ROW IN RF DISTRICT
- *ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

Net Residential Density Calculation (CR Zone)	
	Area (sf)
Gross Lot Area	128,000
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	12,632
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,953
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	28,046
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	85,370
Minimum Conventional Lot Area (CR Zone)	80,000
Total Allowable Lots	1

Net Residential Density Calculation (RF Zone)	
	Area (sf)
Gross Lot Area	381,091
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	65,925
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,933
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	93,774
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	219,460
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	5

Net Residential Density Calculation (Lot 1)	
	Area (sf)
Gross Lot Area	122,844
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	12,632
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,953
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	28,046
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	80,214
Minimum Conventional Lot Area (CR Zone)	80,000

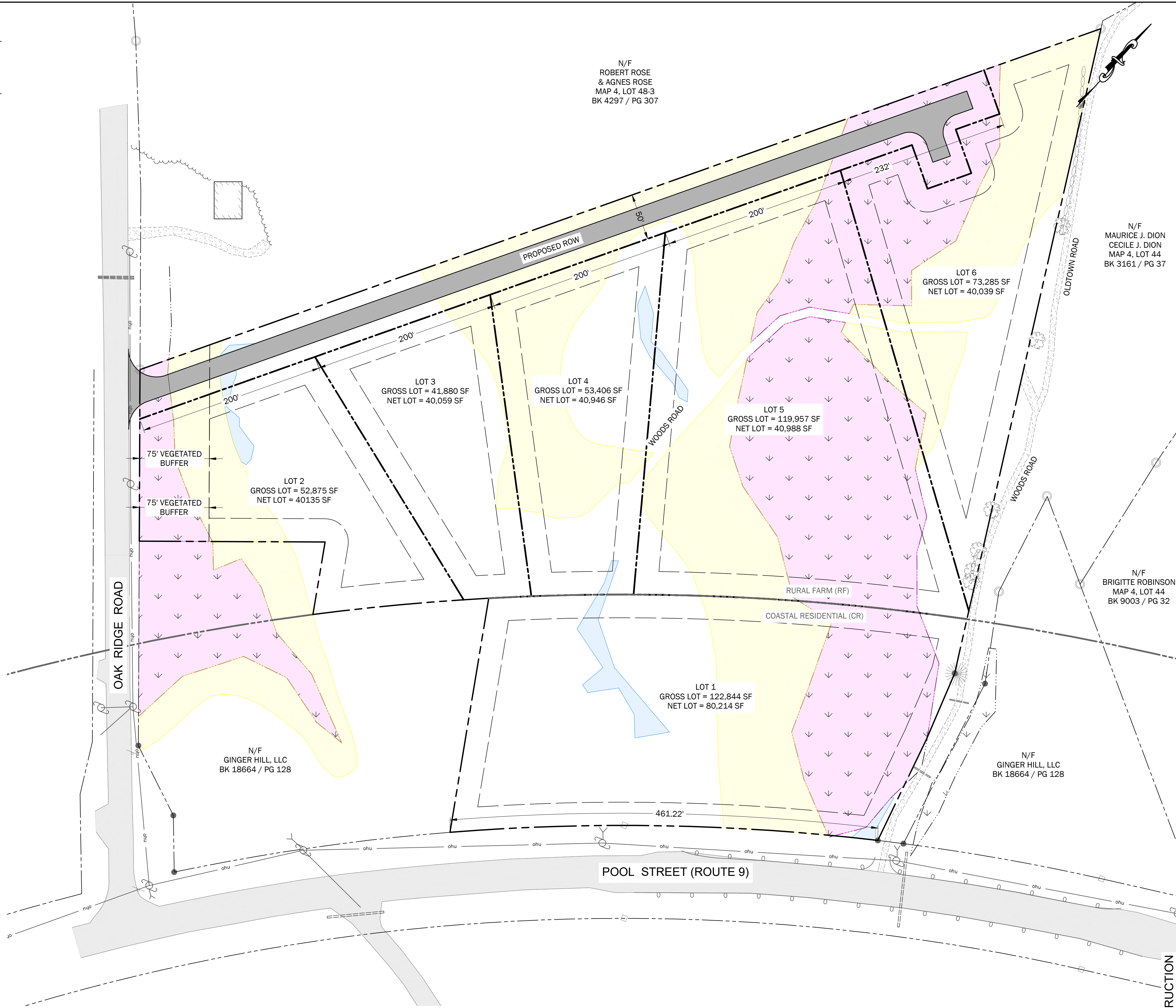
Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	52,875
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	5,397
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	483
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	6,861
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,135
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 3)	
	Area (sf)
Gross Lot Area	41,880
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	1,822
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,059
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	53,406
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	11,890
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	570
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,946
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 5)	
	Area (sf)
Gross Lot Area	119,957
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	19,103
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	325
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	59,542
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,988
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	73,285
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	16,563
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	16,683
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,039
Minimum Conventional Lot Area (RF Zone)	40,000



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MAINE

MAURICE J. DION

CHAMBERLAIN II

No. 7144

LICENSED PROFESSIONAL ENGINEER

10/20/2021

Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
1	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:
Conventional Subdivision Layout Plan

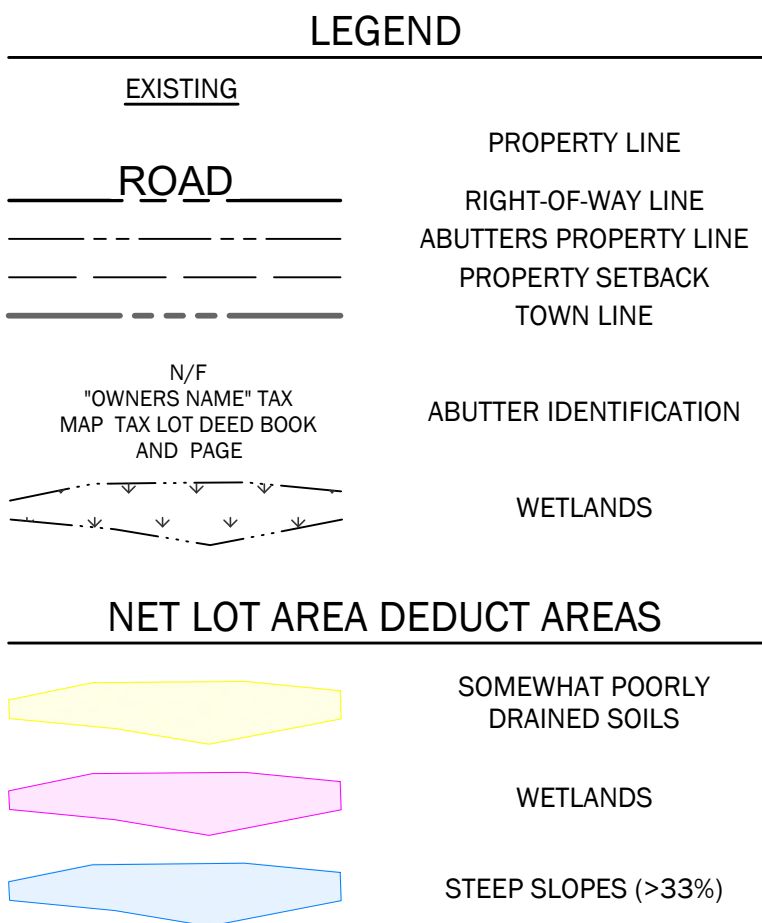
Job No.: 742
Date: June 15, 2021
Scale: 1" = 60'
Drawn: CAR
Checked: WRW

Sheet No.:
C2.0

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

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67



PLAN NOTES:

1. SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

ZONING INFORMATION*:

1. CLASSIFICATION: COASTAL RESIDENTIAL (CR), RURAL FARM (RF)
2. MIN. LOT AREA: CR: 30,000 SF (NO WATER/SEWER, 2/A SOILS)
RF: 20,000 SF (NO WATER/SEWER, CLUSTER)
3. MAX. LOT COVERAGE: 30%
4. MAX. BUILDING HEIGHT: 35 FT
5. MIN. STREET FRONTAGE: CR: 150 FT
RF: 200 FT (NO WATER/SEWER, CONVENTIONAL)
6. FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
7. SIDE SETBACK: 25 FT
8. REAR SETBACK: 25 FT
9. 75' VEGETATED BUFFER FROM EXISTING ROW IN RF DISTRICT

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

Net Residential Density Calculation (CR Zone)	
	Area (sf)
Gross Lot Area	128,000
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	12,632
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,953
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	28,046
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	85,370
Minimum Conventional Lot Area (CR Zone)	80,000
Total Allowable Lots	1

Net Residential Density Calculation (RF Zone)	
	Area (sf)
Gross Lot Area	381,091
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	65,925
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,933
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	93,774
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	219,460
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	5

Net Residential Density Calculation (Lot 1)	
	Area (sf)
Gross Lot Area	35,802
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	3,059
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	1,318
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	31,426
Minimum Cluster Lot Area	30,000

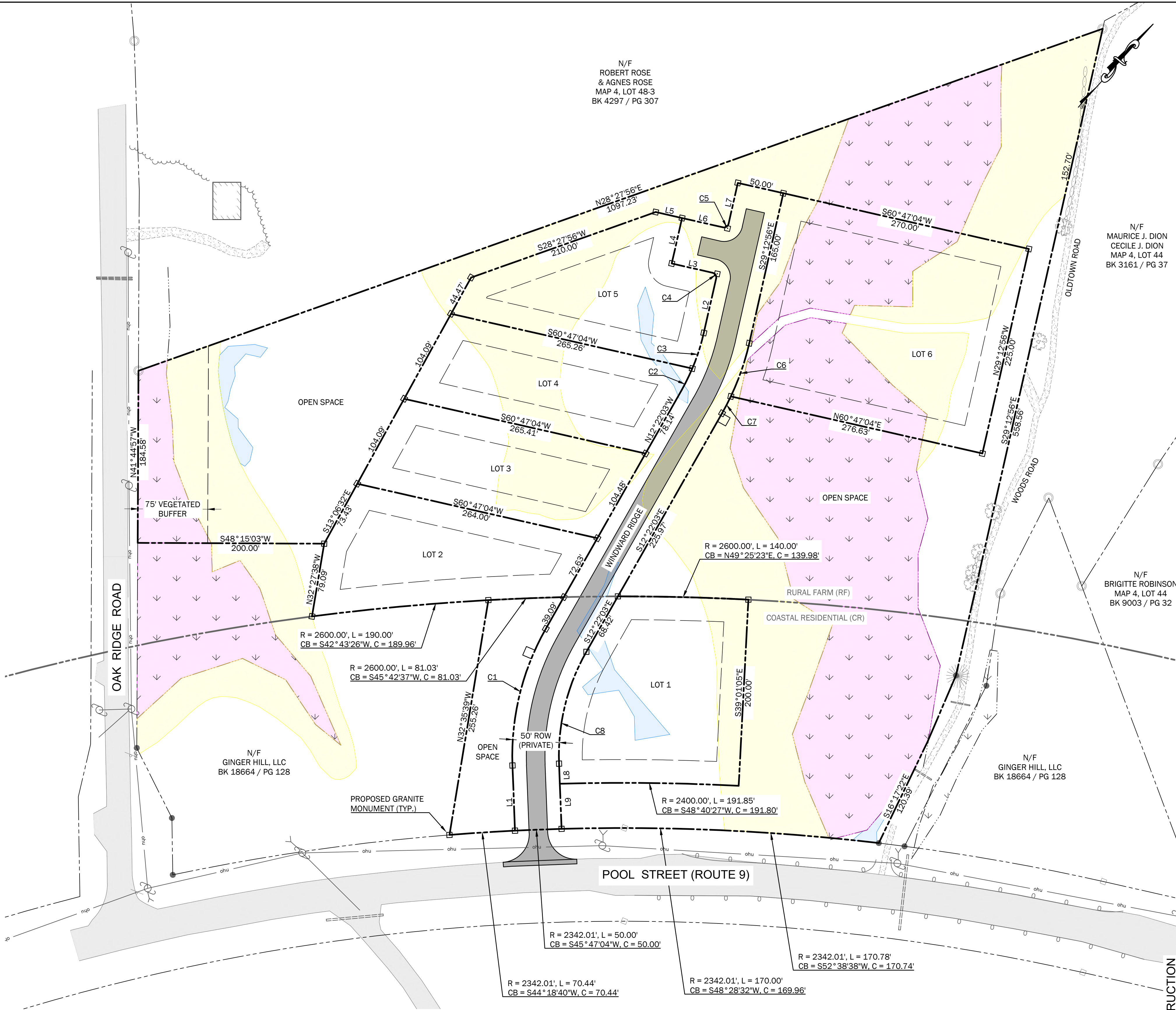
Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	28,219
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	0
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	28,219
Minimum Cluster Lot Area	20,000

Net Residential Density Calculation (Lot 3)	
	Area (sf)
Gross Lot Area	26,471
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	5,463
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	21,008
Minimum Cluster Lot Area	20,000

Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	26,598
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	4,449
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	205
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	21,945
Minimum Cluster Lot Area	20,000

Net Residential Density Calculation (Lot 5)	
	Area (sf)
Gross Lot Area	27,506
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	6,921
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	488
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,098
Minimum Cluster Lot Area	20,000

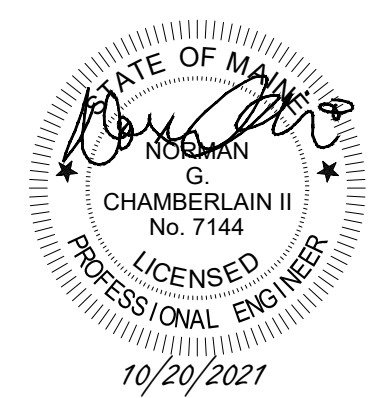
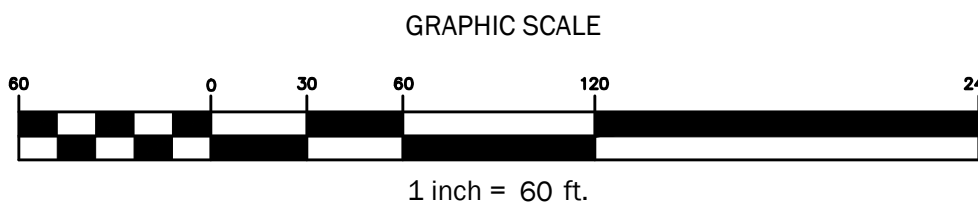
Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	60,882
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	10,095
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	30,538
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,249
Minimum Cluster Lot Area	20,000



Cluster Open Space Area Calculations			
Lot	Conventional Subdivision Minimum Lot Area (sf)	Net Lot Area (sf)	Cluster Subdivision Lot Area Reduction (sf)
1	80,000	31,426	48,575
2	40,000	28,219	11,781
3	40,000	21,008	18,992
4	40,000	21,945	18,055
5	40,000	20,098	19,903
6	40,000	20,249	19,751
Required Open Space Area			137,056
Provided Open Space Area			270,305
% of Required Open Space Provided			197.2%

Line Segment Table		
Line Segment	Bearing	Distance
L1	N44°12'56"W	70.00'
L2	N29°12'56"W	60.00'
L3	S60°47'04"W	45.00'
L4	N29°12'56"W	50.00'
L5	S60°47'04"W	29.03'
L6	N60°47'04"E	45.00'
L7	N29°12'56"W	45.00'
L8	S44°12'56"E	21.55'
L9	S44°12'56"E	48.46'

Curve Segment Table				
Curve Segment	Curve Radius	Curve Length	Cord Bearing	Cord Length
C1	275.00'	152.86'	N28°17'30"W	150.90'
C2	225.00'	25.95'	N15°40'17"W	25.93'
C3	225.00'	40.21'	N24°05'44"W	40.16'
C4	5.00'	7.85'	N74°12'56"W	7.07'
C5	5.00'	7.85'	N15°47'04"E	7.07'
C6	275.00'	60.49'	S22°54'52"E	60.36'
C7	275.00'	20.38'	S14°29'25"E	20.37'
C8	225.00'	125.07'	S28°17'30"E	123.46'



Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
1	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
2	6/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
3	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:

Cluster
Subdivision Plan

Job No.: 742
Date: June 15, 2021
Scale: 1" = 60'
Drawn: CAR
Checked: WRW

Sheet No.:

C2.1

EXISTING		PROPOSED
---	PROPERTY LINE	---
---	ABUTTERS PROPERTY LINE	---
---	EASEMENT	---
---	PROPERTY SETBACK	---
○ IRF or IPF	IRON ROD OR PIN FOUND	■ ●
■ ●	STORM DRAIN CATCH BASIN	■ ●
sd	STORM DRAIN LINE	SD
---	STORM DRAIN CULVERT	---
---	RIP RAP IN/OUT PROTECTION APRON	---
---	WATERLINE	W
---	HYDRANT	---
---	WATER LINE GATE VALVE	---
ss	SANITARY SEWER LINE	SS
---	SEWER MANHOLE	---
ohu	OVERHEAD UTILITY	OHU
---	UNDERGROUND UTILITY	UGU
---	UTILITY POLE	---
---	BUILDING	---
---	RIPRAP	---
---	LANDSCAPE/RETAINING WALL	---
---	BITUMINOUS PAVEMENT	---
---	GRAVEL	---
---	CONCRETE	---
100	INDEX CONTOUR	100
101	INTERMEDIATE CONTOUR	101
---	TREELINE	---
---	TREE	---
---	SILT FENCE	SF
---	EROSION CONTROL BERM	ECB
---	TURF REINFORCEMENT MATTING	---
---	CONSTRUCTION ENTRANCE	---

1. SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

1. CLASSIFICATION: COASTAL RESIDENTIAL (CR), RURAL FARM (RF)
2. MIN. LOT AREA: CR: 40,000 SF (NO WATER/SEWER, CLUSTER)
RF: 20,000 SF (NO WATER/SEWER, CLUSTER)

4. MAXIMUM BUILDING HEIGHT OF THE

5. MIN. STREET FRONTAGE: CR: 150 FT
RF: 200 FT (NO WATER/SEWER, CONVENTIONAL)

6. FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW

7. SIDE SETBACK: 25 F

8. REAR SETBACK: 25 F

9. 75' VEGETATED BUFFER FROM EXISTING ROW IN RF DISTRICT

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

LAYOUT, MATERIALS, AND UTILITY NOTES:

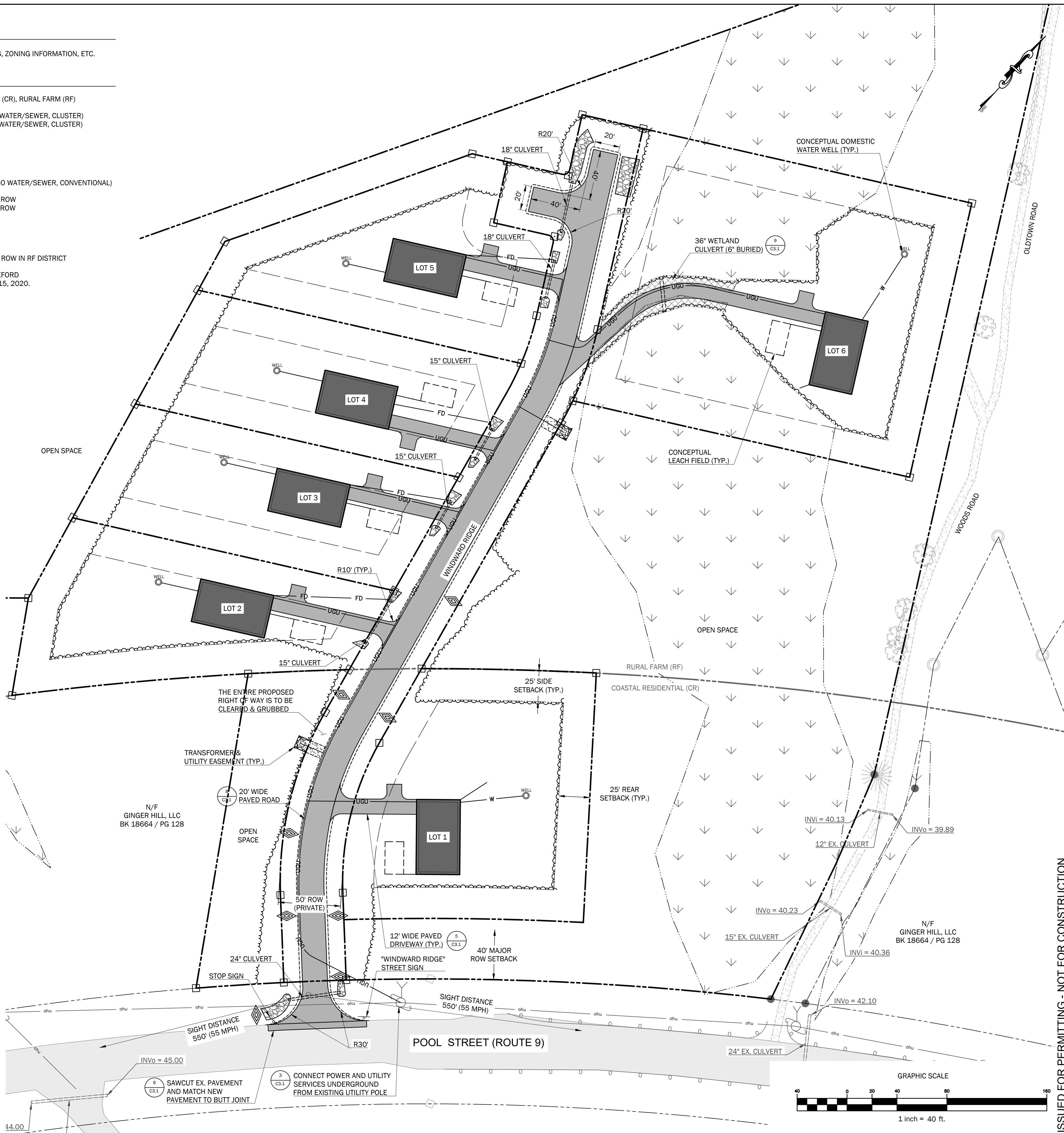
1. ALL DIMENSIONS, LOCATIONS AND CONTROLS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
2. DO NOT SCALE THE DRAWINGS FOR REQUIRED DIMENSIONS. ANY DISCREPANCIES IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.
3. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE SHOWN.
4. ALL EDGES OF PAVING SHALL BE STAKED OUT BY THE CONTRACTOR AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING.
6. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDDED.
7. CENTERLINES OF DRIVEWAY AND WALKWAY, PROPOSED PARKING LOTS AND PROPOSED UTILITY LINES SHALL BE LOCATED AND LAID OUT BY PROFESSIONALLY LICENSED SURVEYOR.
8. LOT GRADING, UTILITIES, PROPOSED UNIT LOCATIONS, AND LAWN AREAS ARE CONCEPTUAL ONLY AND MAY BE MODIFIED IN THE FIELD BASED ON ACTUAL BUILDING DESIGNS AND LOCATIONS.

GRADING, DRAINAGE AND UTILITIES NOTES:

1. REFER TO SHEET C1.0 FOR BOUNDARY AND TOPOGRAPHIC INFORMATION.
2. PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
3. ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
4. GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
5. DRAINAGE AT TERMINUS OF CURBING SHALL BE RIP-RAPPED UNLESS OTHERWISE SPECIFIED OR NOTED ON THE PLANS, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
6. OWNER AND PROJECT ENGINEER WILL BE CLOSELY MONITORING FINISH GRADING IN THE FIELD. CONTRACTOR SHALL PERFORM FINISH WORK AS DIRECTED BY THE OWNER OR PROJECT ENGINEER TO ACHIEVE THE FINISH GRADE CONDITIONS SHOWN ON THE PLANS.
7. ALL SITE IMPROVEMENTS INCLUDING UTILITIES MUST CONFORM TO THE CITY OF BIDEFORD'S TECHNICAL GUIDELINES AND STANDARDS.

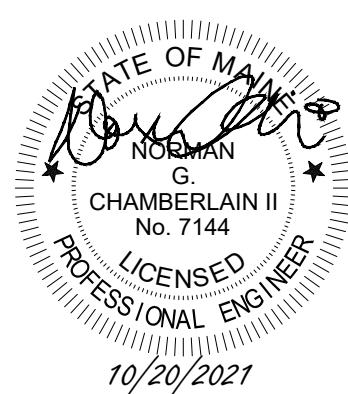
EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO CONSTRUCTION. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS.
2. THE CONTRACTOR SHALL COMPLY WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS MANUAL AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BUREAU OF LAND AND WATER QUALITY, MARCH 2003 OR LATEST EDITION.
3. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. ALL DISTURBED AREAS ON SITE NOT COVERED BY BUILDINGS OR PAVED AREAS SHALL BE STABILIZED WITH LOAM AND SEED, OR BY OTHER METHODS AS REQUIRED BY THE WRITTEN EROSION CONTROL PLAN.
4. DISTURBED AREAS SHALL BE LIMITED TO ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION. FOR DISTURBED AREAS THAT ARE NOT UNDER ACTIVE CONSTRUCTION AND THAT CAN NOT YET UNDERGO FINAL GRADING, INSTALL TEMPORARY SEEDING AND MULCHING (REFER TO WRITTEN EROSION CONTROL PLAN).
5. PERMANENT SEEDING OR STABILIZATION SHALL BE CARRIED OUT IMMEDIATELY AFTER FINAL GRADING IS COMPLETED, OR TEMPORARY MEASURES SHALL BE APPLIED SUCH AS MULCHING OR SEEDING UNTIL PERMANENT STABILIZATION MEASURES ARE IN PLACE.
6. TOPSOIL SHALL BE STOCKPILED IN AREAS AWAY FROM PROTECTED NATURAL RESOURCES AND IN AREAS WHICH HAVE A MINIMAL POTENTIAL FOR EROSION; REFER TO OWNER FOR LOCATION OF MATERIAL STOCKPILE.
7. ALL EROSION CONTROL MEASURES SHALL BE ROUTINELY INSPECTED AND REPAIRED IN ACCORDANCE WITH THE WRITTEN EROSION CONTROL PLAN FOR THE DURATION OF THE PROJECT UNTIL ALL AREAS ARE STABILIZED. REMOVE ACCUMULATED SILT AND SEDIMENT AS NEEDED AND MAINTAIN SILT FENCE IN GOOD, OPERABLE CONDITION.



One Karen Dr., Suite 2A | Westbrook, Maine 04092
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Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC

Arundel, Maine 04046

Rev.	Date	Description	Drawn	Checked
1	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title

Site Layout & Utilities Plan

Job No.:	742
Date:	June 15, 2021
Scale:	1" = 40'
Drawn:	CAR
Checked:	WRW

C2.2

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

<u>EXISTING</u>		<u>PROPOSED</u>
	PROPERTY LINE	
	ABUTTERS PROPERTY LINE	
	EASEMENT	
	PROPERTY SETBACK	
	IRON ROD OR PIN FOUND	
	STORM DRAIN CATCH BASIN	
	STORM DRAIN LINE	
	STORM DRAIN CULVERT	
	RIP RAP IN/OUT PROTECTION APRON	
	WATERLINE	
	HYDRANT	
	WATER LINE GATE VALVE	
	SANITARY SEWER LINE	
	SEWER MANHOLE	
	OVERHEAD UTILITY	
	UNDERGROUND UTILITY	
	UTILITY POLE	
	BUILDING	
	RIPRAP	
	LANDSCAPE/RETAINING WALL	
	BITUMINOUS PAVEMENT	
	GRAVEL	
	CONCRETE	
	INDEX CONTOUR	
	INTERMEDIATE CONTOUR	
	TREELINE	
	TREE	
	SILT FENCE	
	EROSION CONTROL BERM	
	TURF REINFORCEMENT MATTING	
	CONSTRUCTION ENTRANCE	

1. SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

1. CLASSIFICATION: COASTAL RESIDENTIAL (CR), RURAL FARM (RF)
2. MIN. LOT AREA: CR: 40,000 SF (NO WATER/SEWER, CLUSTER)
RF: 20,000 SF (NO WATER/SEWER, CLUSTER)

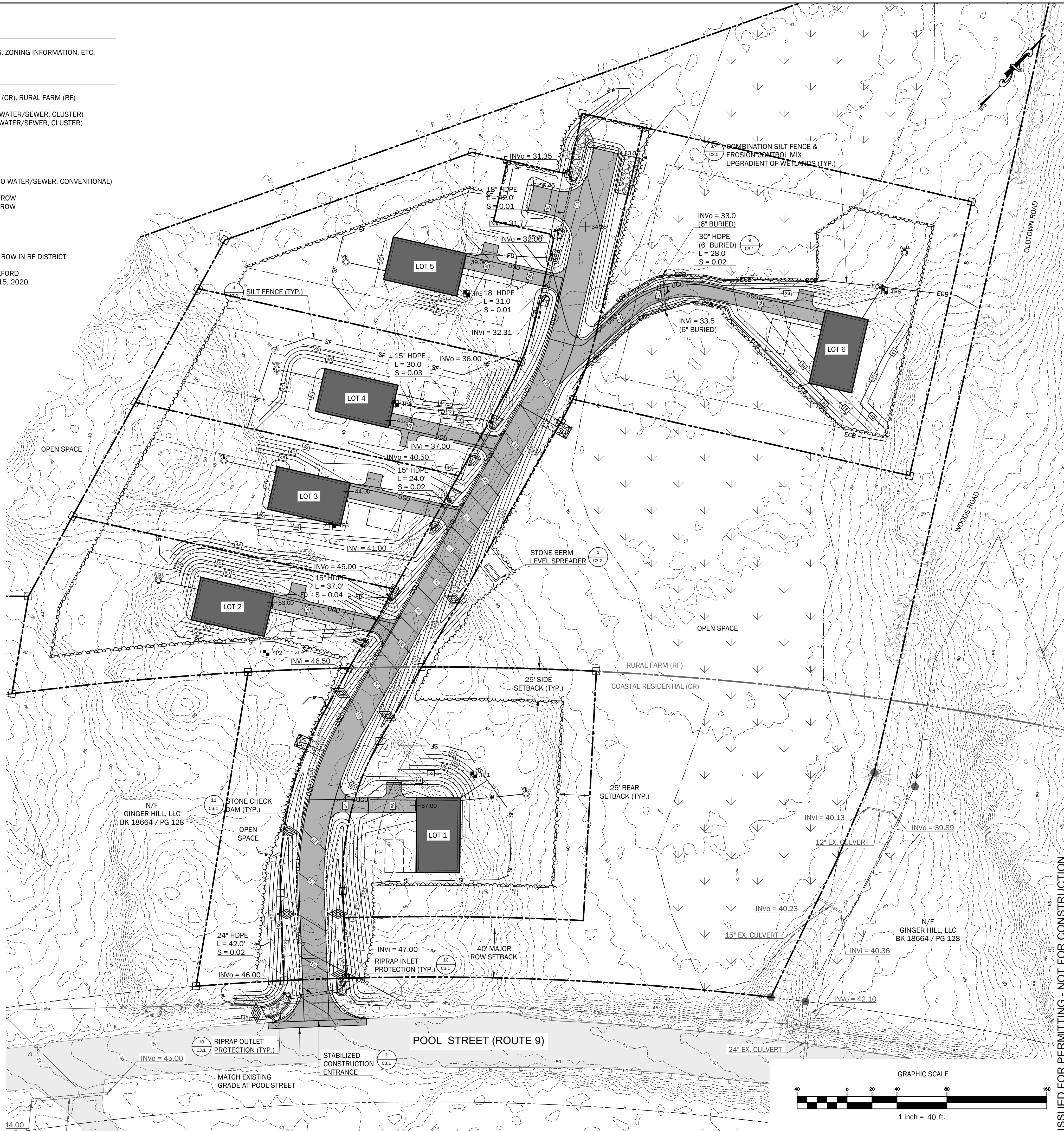
5. MIN. STREET FRONTAGE: OR: 150 FT
RF: 200 FT (NO WATER/SEWER, CONVENTIONAL)
6. FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
7. SIDE SETBACK: 25 FT
8. REAR SETBACK: 25 FT
9. 75' VEGETATED BUFFER FROM EXISTING ROW IN RF DISTRICT

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

1. ALL DIMENSIONS, LOCATIONS AND CONTROLS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
2. DO NOT SCALE THE DRAWINGS FOR REQUIRED DIMENSIONS. ANY DISCREPANCIES IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.
3. ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE SHOWN.
4. ALL EDGES OF PAVING SHALL BE STAKED OUT BY THE CONTRACTOR AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
5. PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING.
6. ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDDED.
7. CENTERLINES OF DRIVEWAY AND WALKWAY, PROPOSED PARKING LOTS AND PROPOSED UTILITY LINES SHALL BE LOCATED AND LAID OUT BY PROFESSIONALLY LICENSED SURVEYOR.
8. LOT GRADING, UTILITIES, PROPOSED UNIT LOCATIONS, AND LAWN AREAS ARE CONCEPTUAL ONLY AND MAY BE MODIFIED IN THE FIELD BASED ON ACTUAL BUILDING DESIGNS AND LOCATIONS.

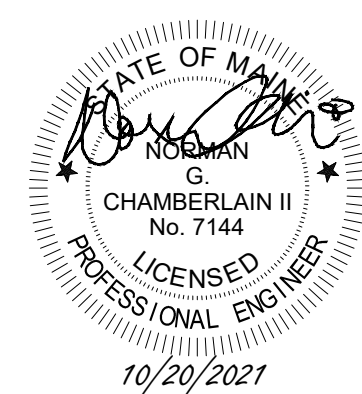
1. REFER TO SHEET C1.0 FOR BOUNDARY AND TOPOGRAPHIC INFORMATION.
2. PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
3. ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
4. GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
5. DRAINAGE AT TERMINUS OF CURBING SHALL BE RIP-RAPPED UNLESS OTHERWISE SPECIFIED OR NOTED ON THE PLANS, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
6. OWNER AND PROJECT ENGINEER WILL BE CLOSELY MONITORING FINISH GRADING IN THE FIELD. CONTRACTOR SHALL PERFORM FINISH WORK AS DIRECTED BY THE OWNER OR PROJECT ENGINEER TO ACHIEVE THE FINISH GRADE CONDITIONS SHOWN ON THE PLANS.
7. ALL SITE IMPROVEMENTS INCLUDING UTILITIES MUST CONFORM TO THE CITY OF BIDDEFORD'S TECHNICAL GUIDELINES AND STANDARDS.

1. THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO CONSTRUCTION. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS.
2. THE CONTRACTOR SHALL COMPLY WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPS MANUAL AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BUREAU OF LAND AND WATER QUALITY, MARCH 2003 OR LATEST EDITION.
3. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. ALL DISTURBED AREAS ON SITE NOT COVERED BY BUILDINGS OR PAVED AREAS SHALL BE STABILIZED WITH LOAM AND SEED, OR BY OTHER METHODS AS REQUIRED BY THE WRITTEN EROSION CONTROL PLAN.
4. DISTURBED AREAS SHALL BE LIMITED TO ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION. FOR DISTURBED AREAS THAT ARE NOT UNDER ACTIVE CONSTRUCTION AND THAT CAN NOT YET UNDERGO FINAL GRADING, INSTALL TEMPORARY SEEDING AND MULCHING (REFER TO WRITTEN EROSION CONTROL PLAN).
5. PERMANENT SEEDING OR STABILIZATION SHALL BE CARRIED OUT IMMEDIATELY AFTER FINAL GRADING IS COMPLETED, OR TEMPORARY MEASURES SHALL BE APPLIED SUCH AS MULCHING OR SEEDING UNTIL PERMANENT STABILIZATION MEASURES ARE IN PLACE.
6. TOPSOIL SHALL BE STOCKPILED IN AREAS AWAY FROM PROTECTED NATURAL RESOURCES AND IN AREAS WHICH HAVE A MINIMAL POTENTIAL FOR EROSION; REFER TO OWNER FOR LOCATION OF MATERIAL STOCKPILE.
7. ALL EROSION CONTROL MEASURES SHALL BE ROUTINELY INSPECTED AND REPAIRED IN ACCORDANCE WITH THE WRITTEN EROSION CONTROL PLAN FOR THE DURATION OF THE PROJECT UNTIL ALL AREAS ARE STABILIZED. REMOVE ACCUMULATED SILT AND SEDIMENT AS NEEDED AND MAINTAIN SILT FENCE IN GOOD, OPERABLE CONDITION.



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918 Pool Street
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Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

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2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title

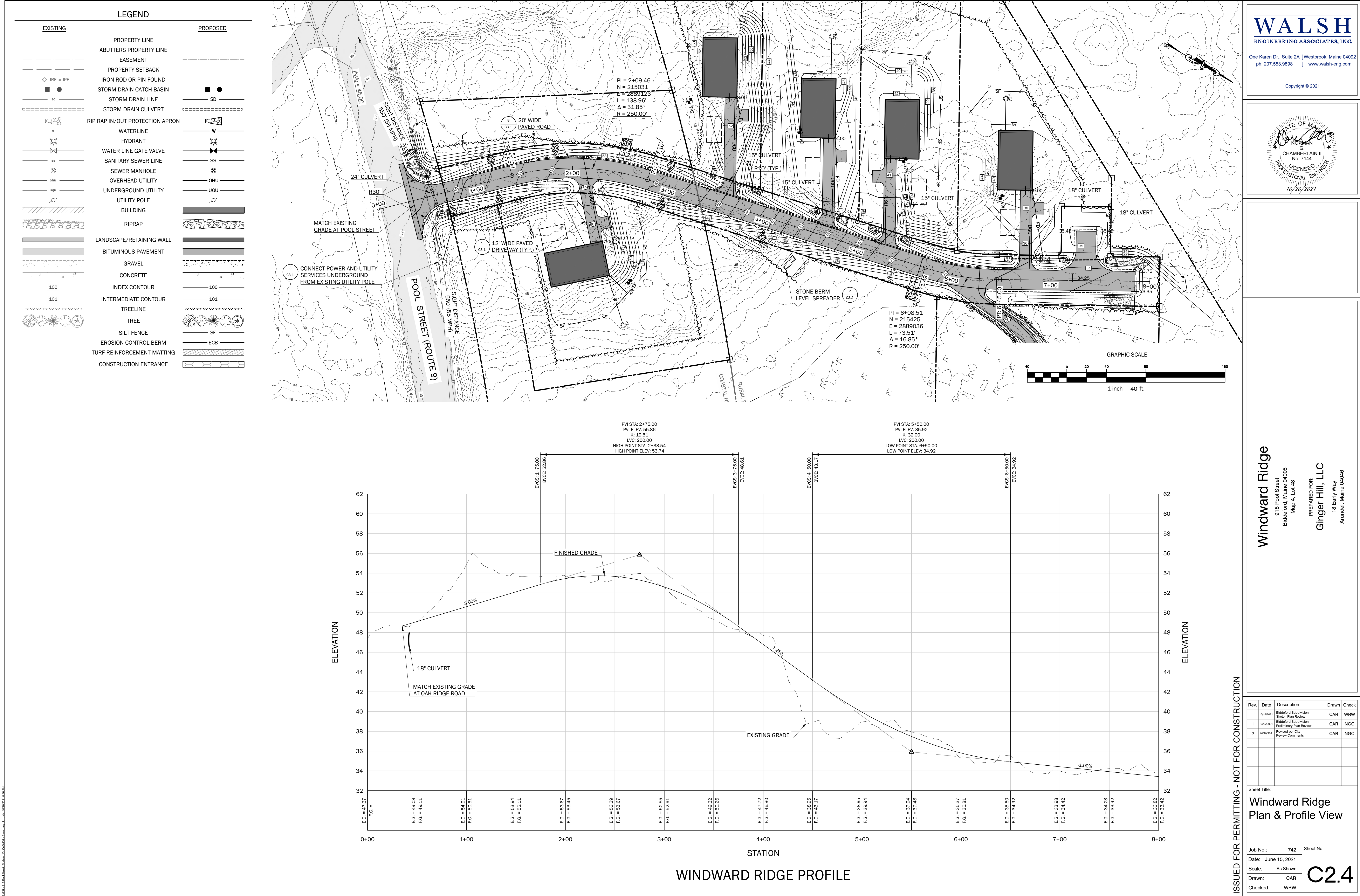
Grading & Erosion Control Plan

Job No.:	742
Date:	June 15, 2021
Scale:	1" = 40'
Drawn:	CAR
Checked:	WRW

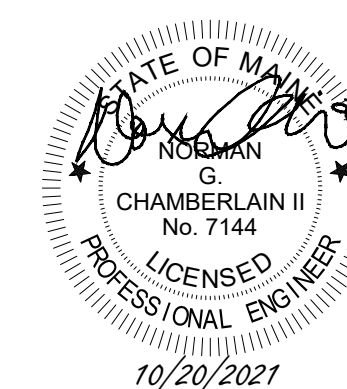
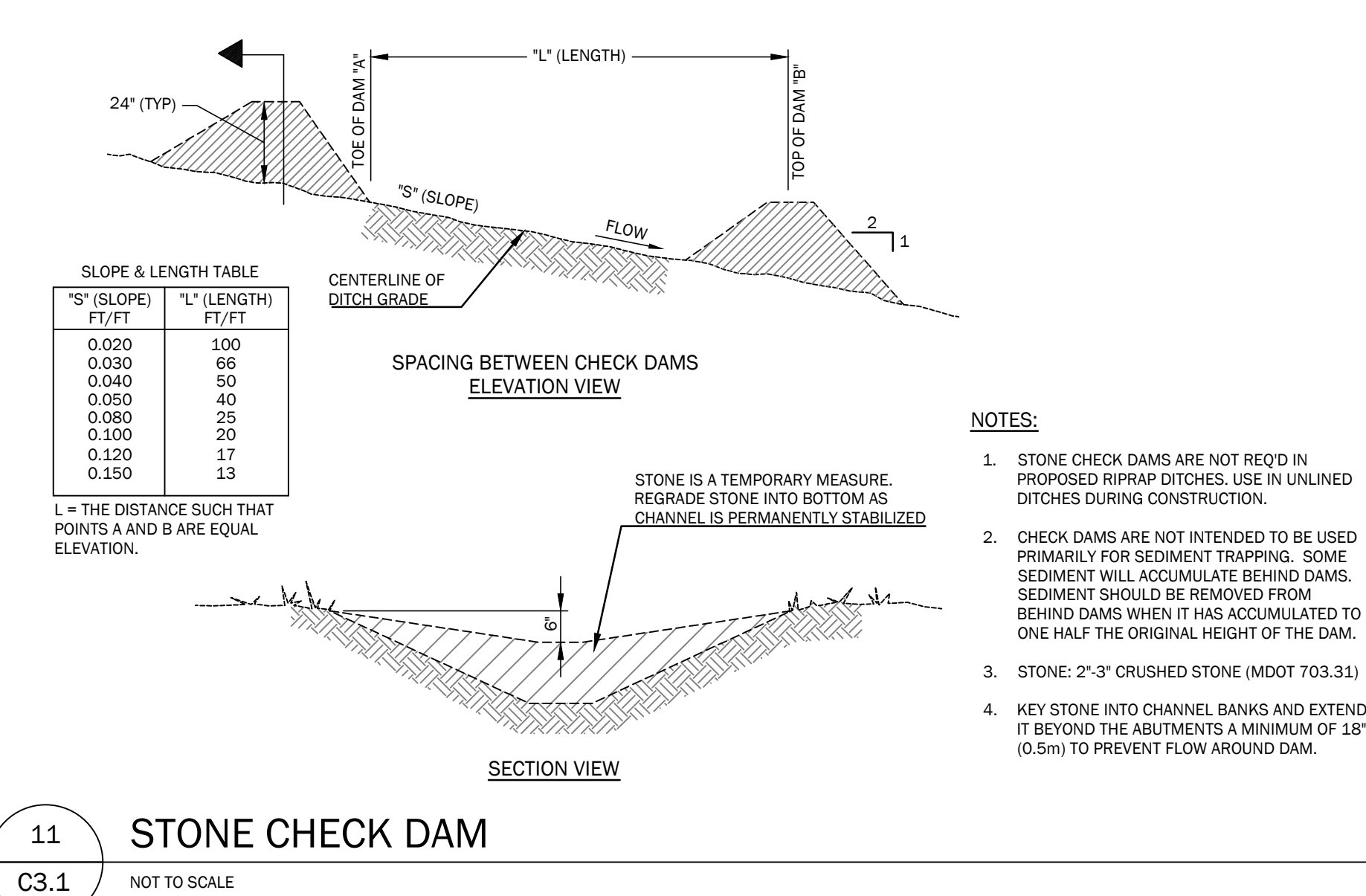
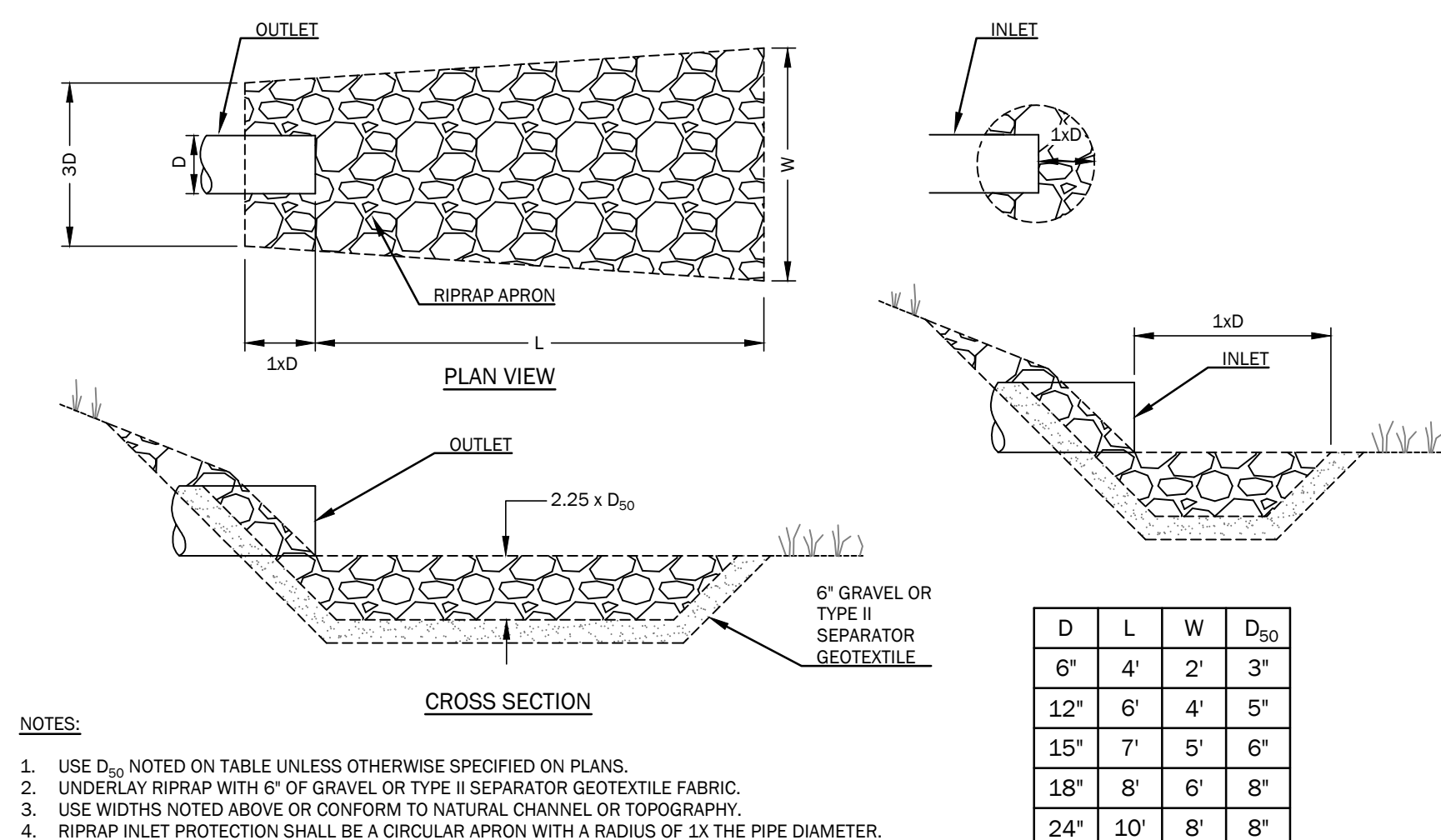
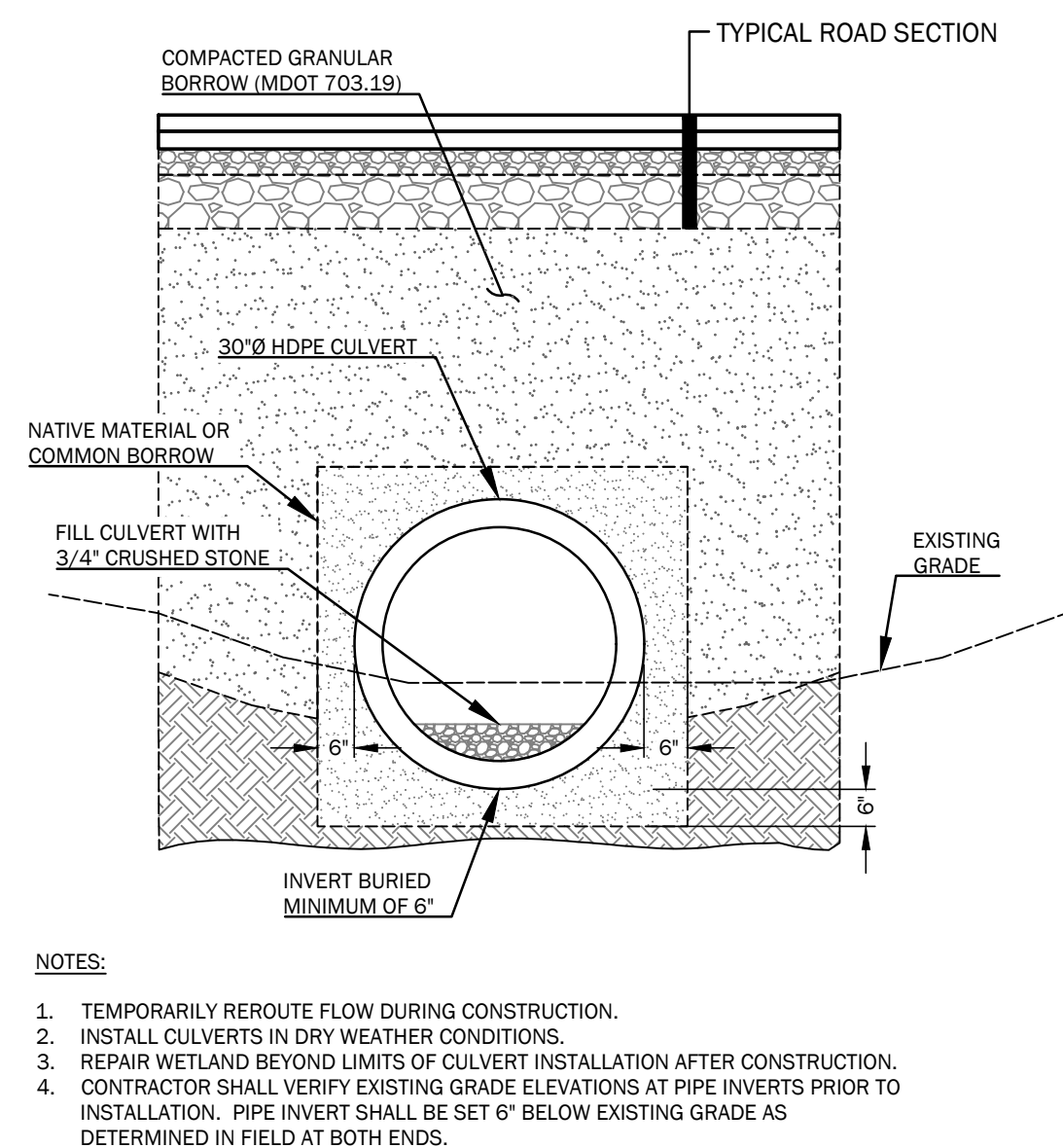
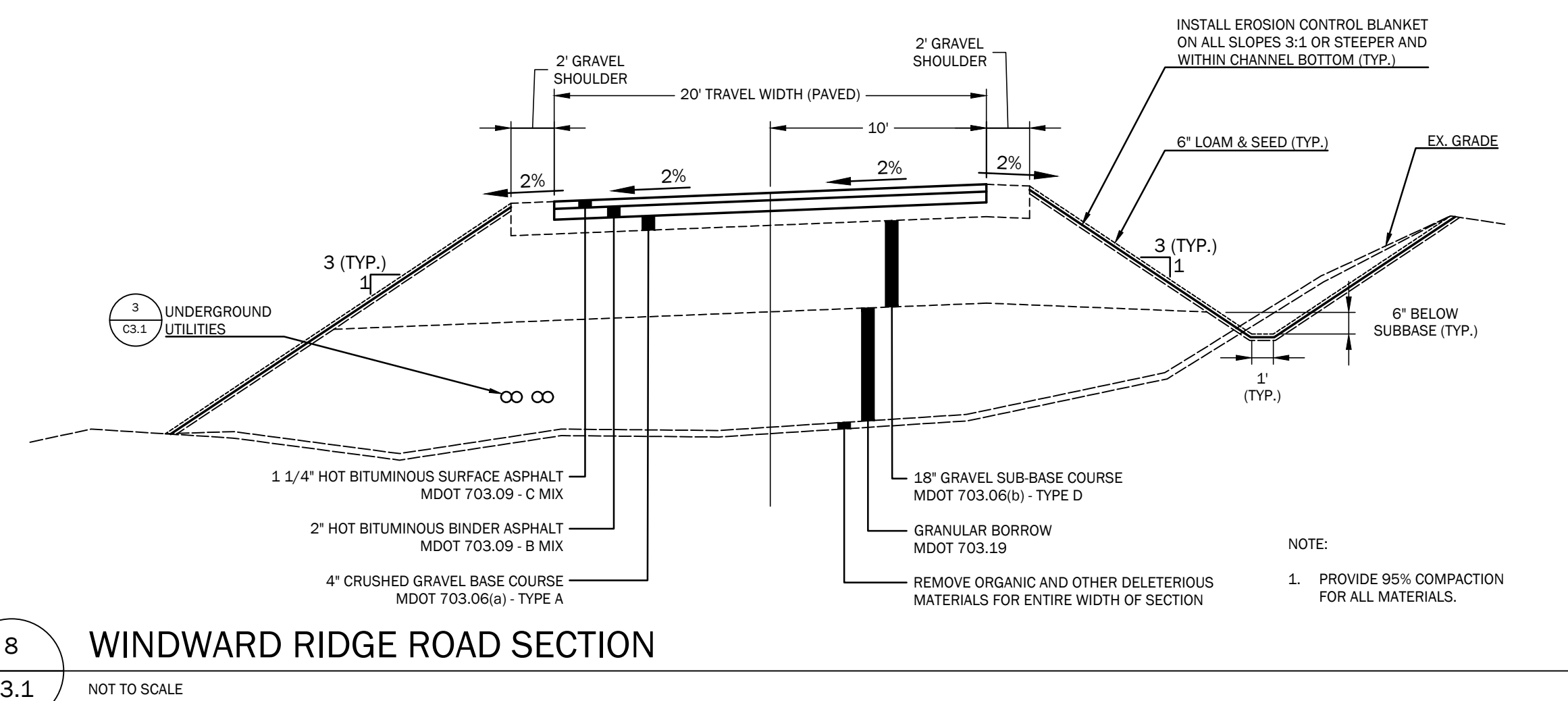
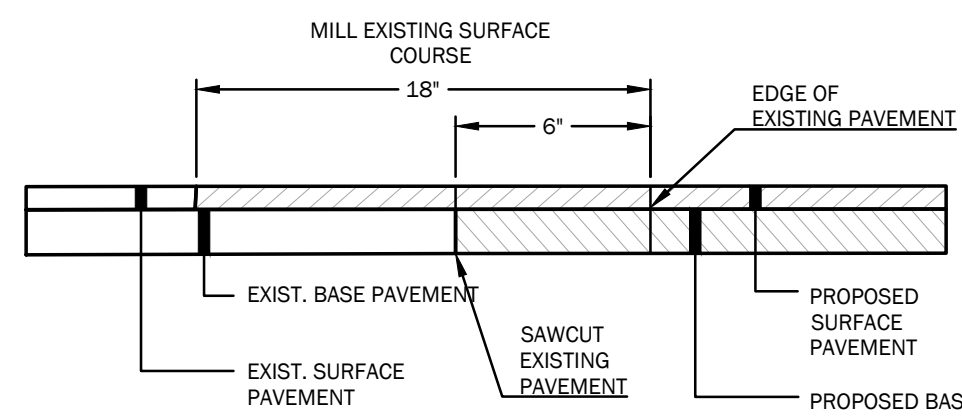
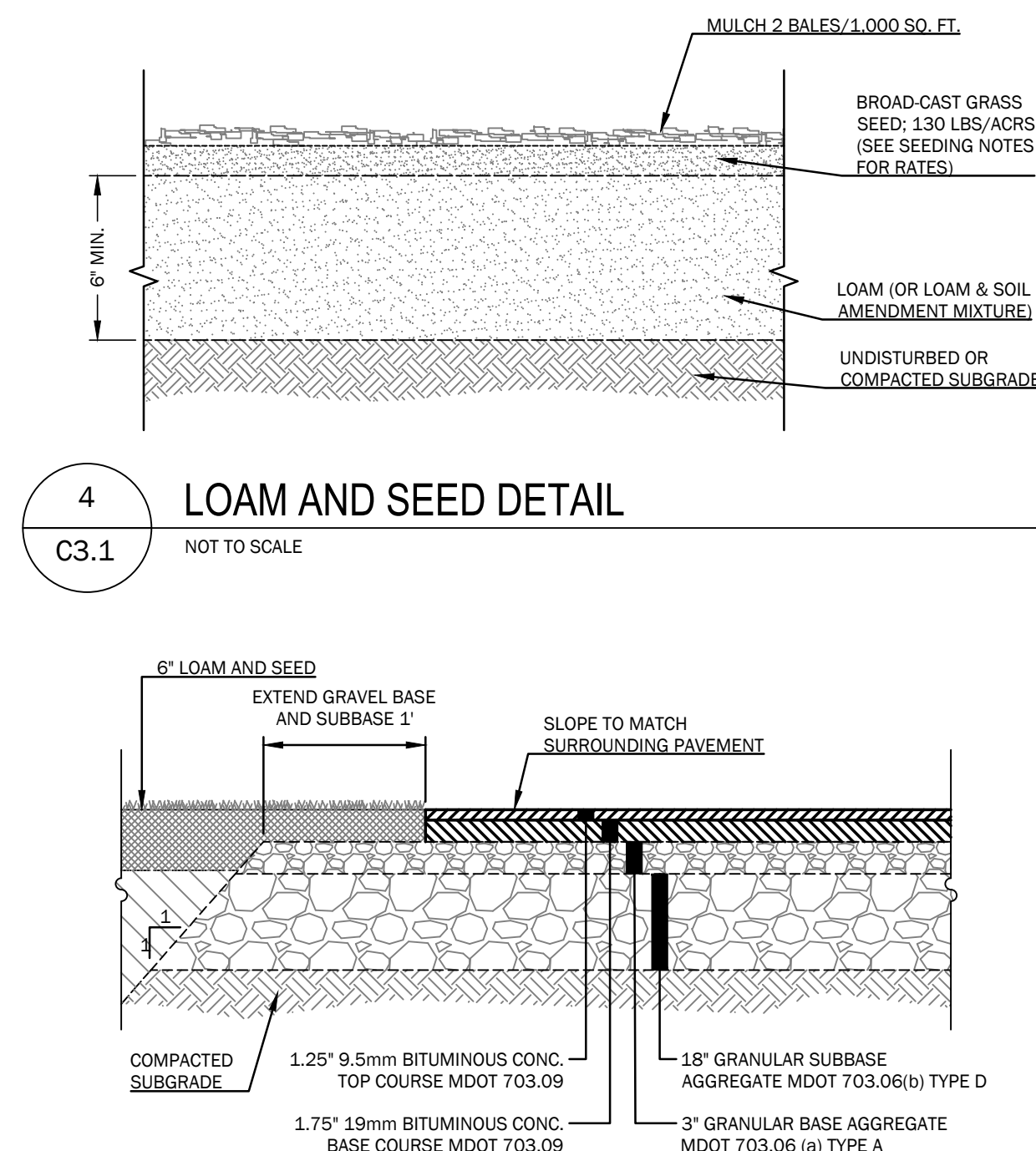
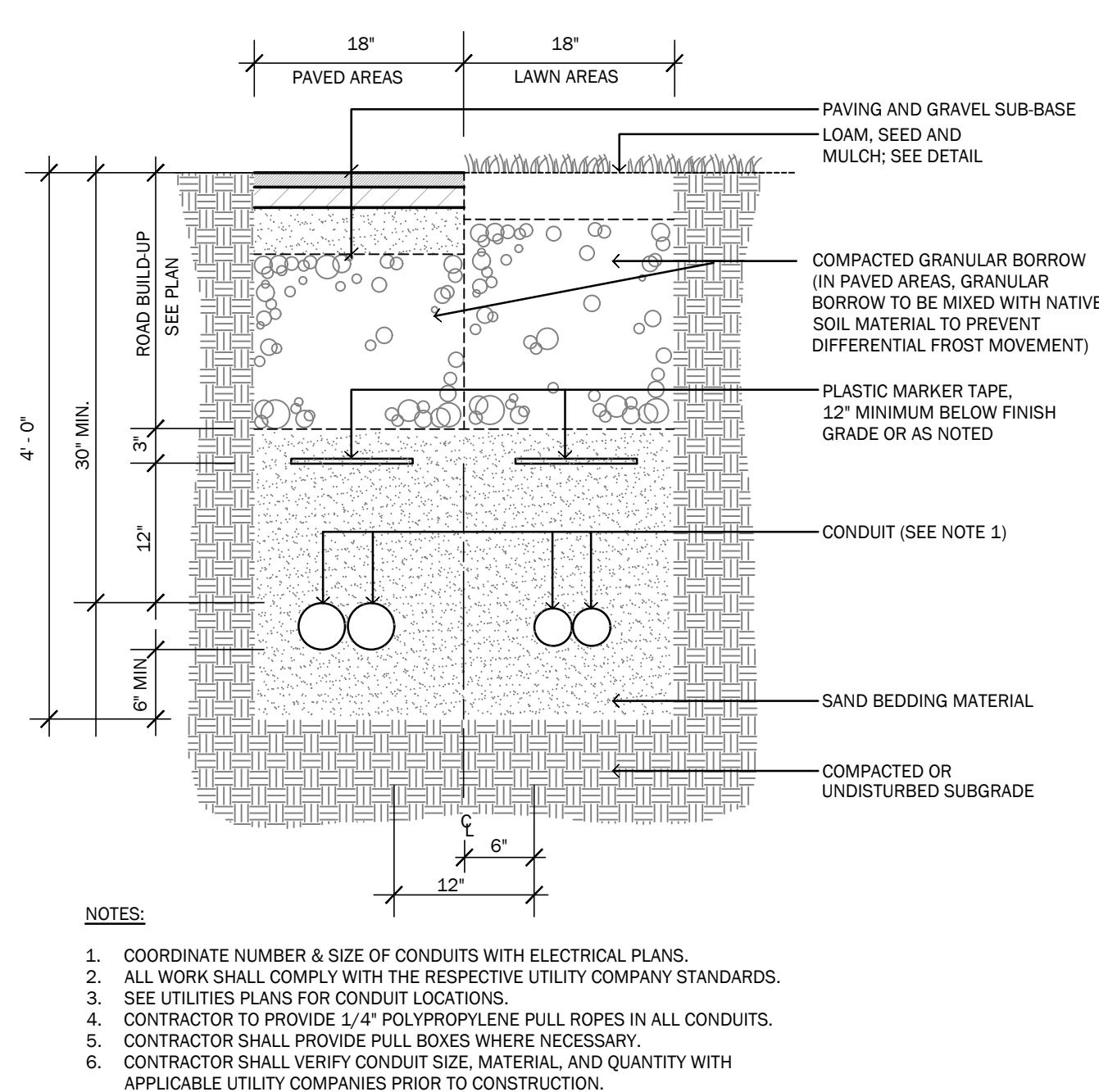
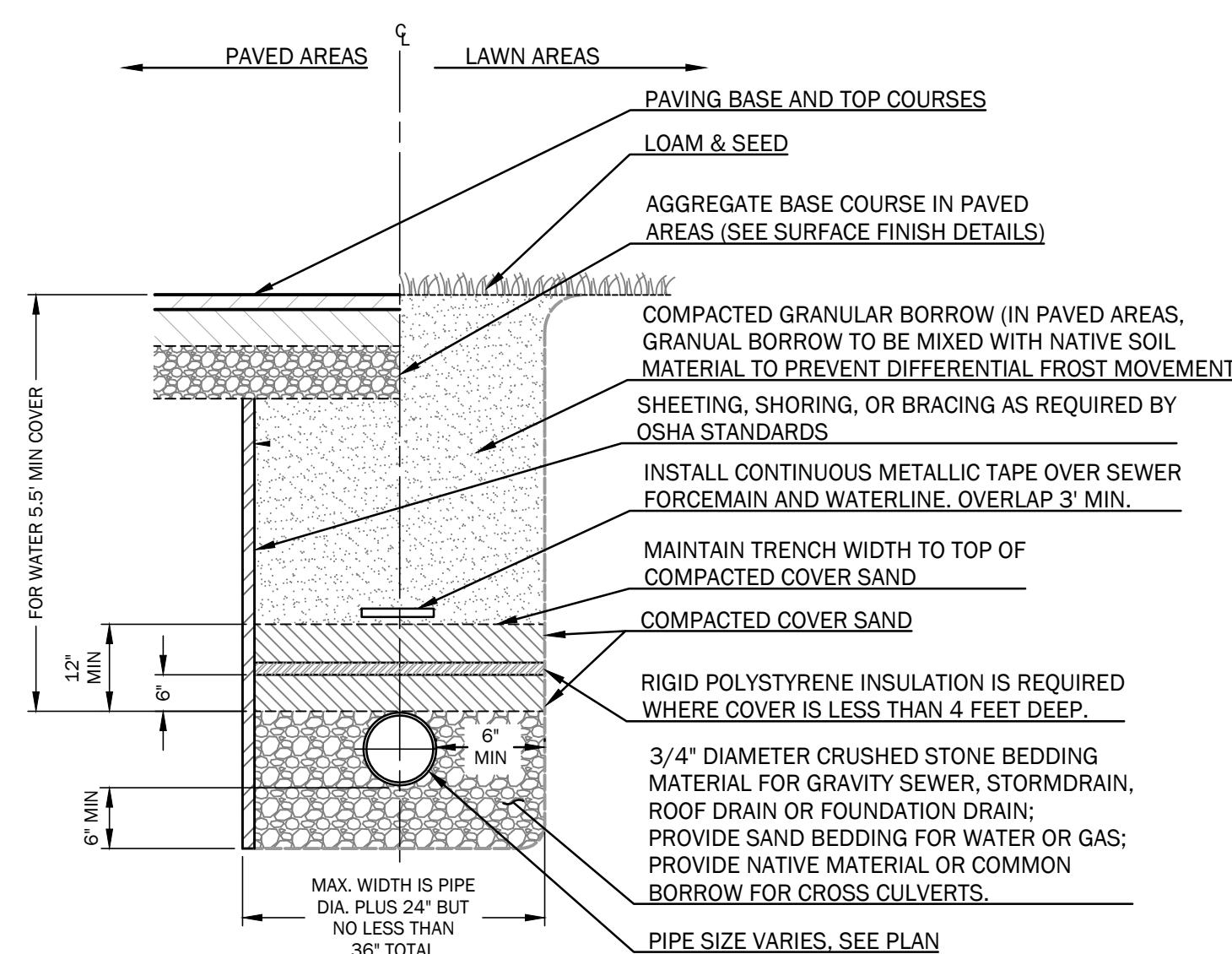
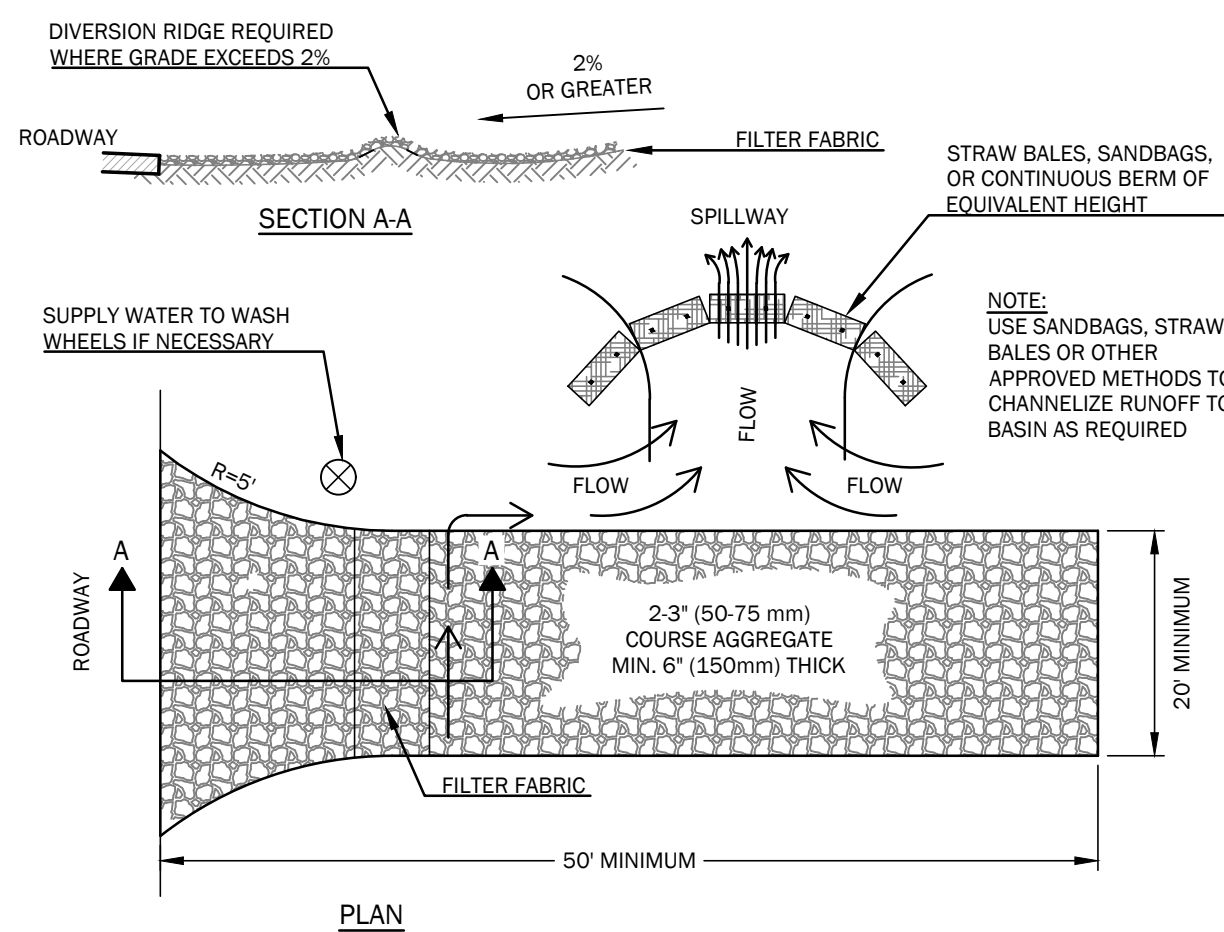
Sheet No.:

C2.3

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION



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Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

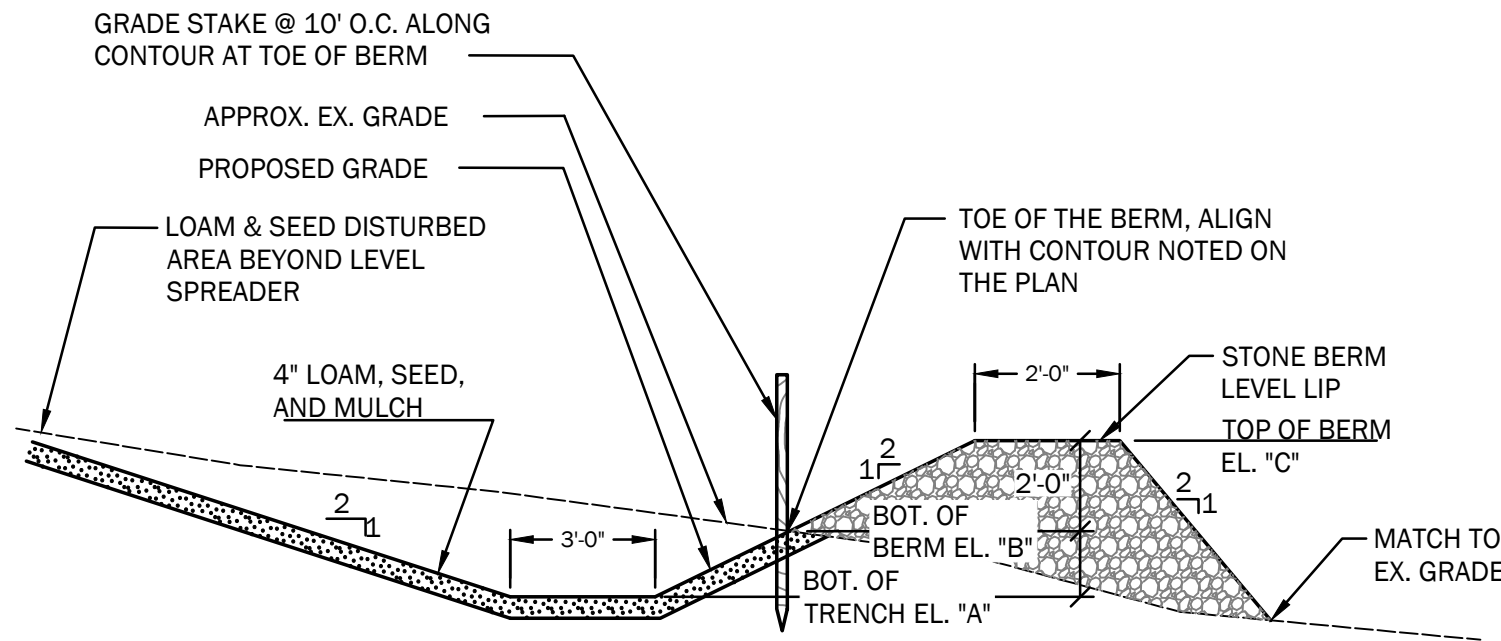
Rev.	Date	Description	Drawn	Checked
	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
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2	10/20/2021	Revised per City Review Comments	CAR	NGO

Sheet Title

Site Details

Job No.:	742
Date:	June 15, 2021
Scale:	No Scale
Drawn:	CAR
Checked:	WRW

C3.1



BERM STONE SIZE	
SIEVE	% BY WEIGHT PASSING SIEVE
12 in	100
6 in	84-100
3 in	68-83
1 in	42-55
No. 4	8-12

BERM	APPROXIMATE LOCATION	A	B	C	LENGTH
BF1	EAST OF ROAD STA 4+50±	37.5	38.0	39.0	10'

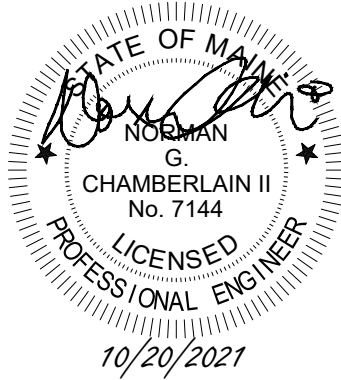
NOTES

1. CONSTRUCT LEVEL LIP AND SPREADER ON ZERO PERCENT GRADE.
2. DO NOT CONSTRUCT LEVEL SPREADER ON FILL.
3. STORM RUNOFF CONVERTED TO SHEET FLOW SHALL OUTLET ONTO STABILIZED AREA. WATER SHALL NOT BE CHANNELIZED IMMEDIATELY BELOW POINT OF DISCHARGE.
4. THE LAYOUT AND CONSTRUCTION OF THE STONE BERM LEVEL SPREADER IS CRITICAL TO IT'S SUCCESS. CLEAR THE AREA AND STAKE OUT LEVEL LIP ELEVATION WITH STAKES EVERY 10'. THE ENGINEER WILL INSPECT THE SURVEYED AND STAKED LOCATION OF EACH LEVEL SPREADER BEFORE PLACEMENT OF THE STONE BERM. WORK THE STONE BELOW THE STAKES AND THEN EXCAVATE AND GRADE THE UPHILL SECTION. REMOVE THE STAKES AFTER THE SEEDING IS COMPLETED.

1

STONE BERM LEVEL SPREADER

NOT TO SCALE



Windward Ridge

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Sheet Title:

Site Details

Job No.: 742
Date: June 15, 2021
Scale: No Scale
Drawn: CAR
Checked: WRW

Sheet No.:

C3.2

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

DRAINAGE NOTES:

1. SOILS INFORMATION WITHIN THE PROPERTY BOUNDARIES FROM A HIGH INTENSITY SOIL SURVEY AND SOIL NARRATIVE REPORT PROVIDED BY MARK HAMPTON DATED MAY 5, 2021.
2. SOILS INFORMATION FOR AREAS OUTSIDE OF THE PROPERTY BOUNDARY FROM SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE. WEB SOIL SURVEY, AVAILABLE ONLINE AT <http://websoilsurvey.nrcs.usda.gov/>, ACCESSED ON AUGUST 2, 2021.

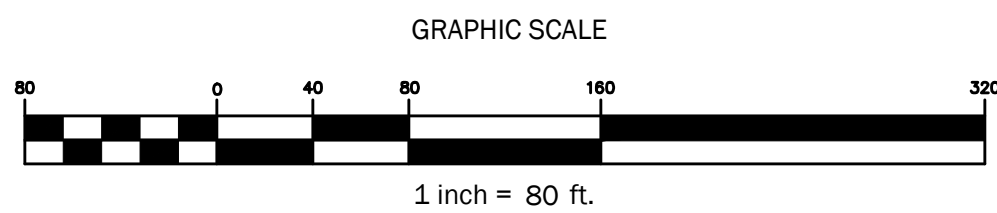
TC FLOW LINE DATA:				
SUBCATCHMENT 1.0				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	37.4	150'	0.043	SHEET FLOW
B-C	2.1	144'	0.022	SHALLOW CONCENTRATED FLOW
C-D	14.7	365'	0.027	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.1				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	12.1	72'	0.017	SHEET FLOW
B-C	13.4	305'	0.023	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	DIRECT ENTRY, MINIMUM TC
SUBCATCHMENT 1.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	1.5	40'	0.350	SHEET FLOW
B-C	41.3	110'	0.018	SHEET FLOW
C-D	36.5	448'	0.007	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	4.6	86'	0.093	SHEET FLOW
B-C	6.8	310'	0.094	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.5				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	60.0	150'	0.013	SHEET FLOW
B-C	12.4	303'	0.026	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	22.1	108'	0.083	SHEET FLOW
B-C	4.5	190'	0.079	SHALLOW CONCENTRATED FLOW
C-D	24.2	452'	0.016	SHALLOW CONCENTRATED FLOW

Topographic map showing a proposed development area outlined in purple. The map includes contour lines, spot elevations, and various labels for areas and points of interest.

Key Labels and Features:

- AP #1** and **AP #2**: Points of interest at the top of the map.
- Hexagonal Labels:** 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, and 2, indicating specific areas or points.
- Rectangular Labels:** R1, R2, R3, and R4, likely representing different types of land use or zoning.
- Area Labels:** LYMAN (HSG D), SCANTIC (HSG D), COLONEL (HSG D), LYMAN-TUNBRIDGE (HSG D), and LYMAN-ROCK (HSG D).
- North Arrow:** Located in the top right corner.
- Scale Bar:** Located in the bottom right corner.

The map shows a complex terrain with numerous contour lines and spot elevations. The proposed development area is outlined in purple and includes several sub-areas labeled with hexagonal numbers. The map also shows existing roads, trails, and other features.



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2	10/20/2021	Revised per City Review Comments	CAR	NGC
Sheet Title:				
Pre-Development Drainage Plan				
Job No.: 742		Sheet No.:		
Date: June 15, 2021		D1.0		
Scale: 1" = 80'				
Drawn: CAR				
Checked: WRW				

LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE
	ABUTTERS PROPERTY LINE
	EASEMENT
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	STORM DRAIN CULVERT
	RIP RAP IN/OUT PROTECTION APRON
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DRAINAGE NOTES:

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Tc FLOW LINE DATA:

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C-D	14.7	365'	0.027	SHALLOW CONCENTRATED FLOW	

SUBCATCHMENT 1.1					
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE	
A-B	5.0	114'	0.014	SHEET FLOW	
B-C	2.5	111'	0.011	SHALLOW CONCENTRATED FLOW	
C-D	3.3	50'	0.010	SHALLOW CONCENTRATED FLOW	

SUBCATCHMENT 1.2	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

SUBCATCHMENT 1.3					
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE	
A-B	1.5	40'	0.350	SHEET FLOW	
B-C	41.3	110'	0.018	SHEET FLOW	
C-D	36.5	448'	0.007	SHALLOW CONCENTRATED FLOW	

SUBCATCHMENT 1.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
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SUBCATCHMENT 1.5				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	60.0	150'	0.013	SHEET FLOW
B-C	12.4	303'	0.026	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.6	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

SUBCATCHMENT 1.7	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

SUBCATCHMENT 1.8	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

SUBCATCHMENT 1.9	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

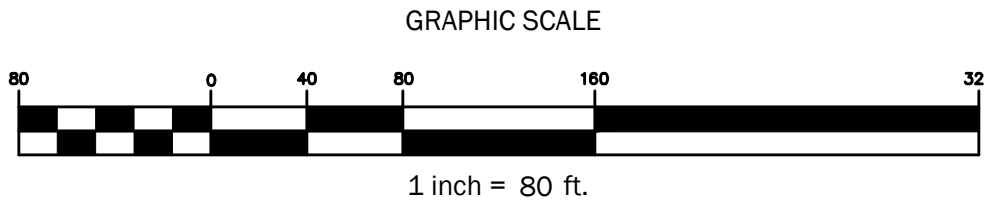
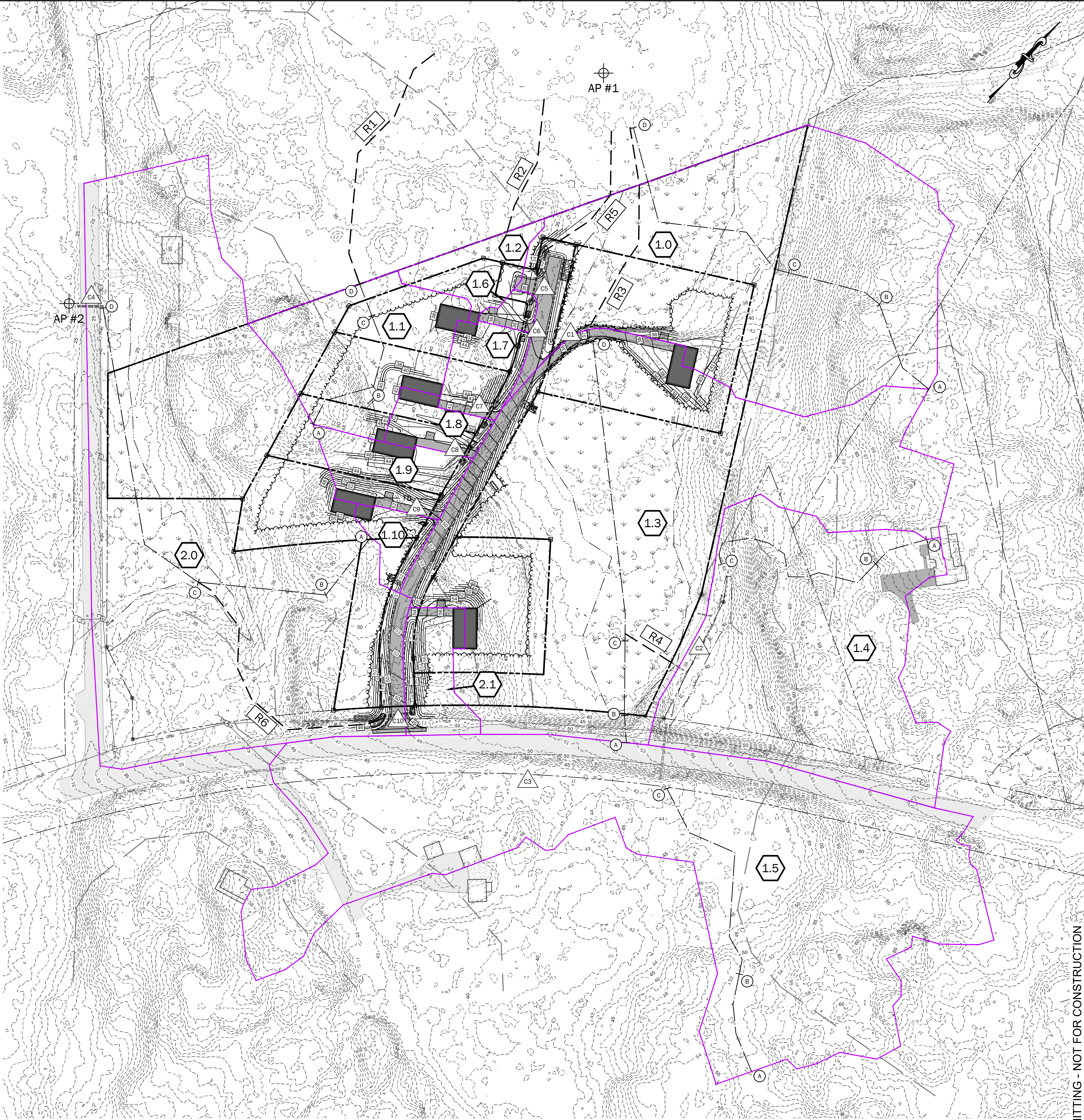
SUBCATCHMENT 1.10	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

SUBCATCHMENT 2					
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE	
A-B	22.1	108'	0.083	SHEET FLOW	
B-C	4.5	190'	0.079	SHALLOW CONCENTRATED FLOW	
C-D	24.2	452'	0.016	SHALLOW CONCENTRATED FLOW	

SUBCATCHMENT 2.1	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
N/A	6.0	N/A	N/A	N/A	DIRECT ENTRY, MINIMUM TC

DRAINAGE

SUBCATCHMENT BOUNDARY	
SUBCATCHMENT DESIGNATION	
TIME OF CONCENTRATION FLOW	
ANALYSIS POINT	
POND / CATCH BASIN	
SOILS BOUNDARY	
SOILS DESIGNATION	



WALSH

ENGINEERING ASSOCIATES, INC.

One Karen Dr., Suite 2A | Westbrook, Maine 04092

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STATE OF MAINE

RODMAN G. CHAMBERLAIN II

No. 7144

LICENSED PROFESSIONAL ENGINEER

10/20/2021

Windward Ridge

918 Pool Street
Biddeford, Maine 04005
Map 4, Lot 48

PREPARED FOR:
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18 Early Way
Arundel, Maine 04046

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Sheet Title:
Post-Development
Drainage Plan

Job No.: 742
Date: June 15, 2021
Scale: 1" = 80'
Drawn: CAR
Checked: WRW

Sheet No.:
D2.0

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

10/20/2021 10:00 AM: W:\04005 BIDDEFORD SUBDIVISION\04005-0001.DWG: 10/20/2021 10:00 AM

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STORMWATER MANAGEMENT REPORT REVISION 1

for

Windward Ridge
Pool Street
Biddeford, Maine 04005

September 15, 2021
Revision 1: October 20, 2021

Submitted to:
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, Maine 04005

Submitted by:
Walsh Engineering Associates, Inc.
One Karen Drive, Suite 2A
Westbrook, Maine 04092

STORMWATER MANAGEMENT REPORT REVISION 1

**WINDWARD RIDGE
Pool Street
Biddeford, Maine 04005**

Introduction

Walsh Engineering Associates, Inc. (WEA) was retained by Emily and Robert Ingwersen, dba Ginger Hill Design + Build (Applicant) to provide site design and stormwater management design services for the development of a six-lot subdivision and open space parcel on Pool Street in Biddeford. The proposed development includes six single-family dwellings, associated driveways, and a minor, nonurban residential street. The development will create a net increase of approximately 31,290± square feet (0.72± acres) of impervious surfaces.

This Stormwater Management Report assesses both pre-development and post development peak runoff rates of stormwater runoff from the developed site. The analysis provided herein was completed in accordance with the City of Biddeford stormwater standards.

The original Stormwater Management Report was submitted to the City of Biddeford as part of a preliminary subdivision application submission on September 15, 2021. This Revision 1 of the Stormwater Management Report reflects revisions made in response to comments provided via an engineer review conducted by Site Design Associates dated September 29, 2021.

Methodology

Stormwater runoff analysis has been performed to comply with the City of Biddeford Subdivision Regulations. The HydroCAD Stormwater Modeling System software (Version 10.0) developed by the Applied Microcomputer Systems of Chocorua, New Hampshire was used for the analysis. The program is based upon the TR-20 computer program and the TR-55 tabular method, both of which are based upon techniques developed by the USDA Soil Conservation Service. The analysis was performed for the 2-, 10-, and 25-year frequencies (3.3, 4.9, and 6.2 inches respectively) for York County. The 24-hour storm event with a Type III distribution were the basis for the analysis.

Pre-Development Conditions

The property is located within the watershed of the Little River. The parcel was previously undeveloped consisting of wooded land, wetlands, and a woods road running through the middle of the property.

The pre-development condition was considered to be wooded area, lawn area, and impervious surfaces, as taken from the USDA NRCS online Web Soil Survey. The soil types onsite are Lyman-Tunbridge, Colonel, and Scantic listed as Hydrologic Soil Group (HSG) D. See the High Intensity Soil Survey and Web Soil Survey in Appendix C. The property drains through a large wetland across the northerly property line (AP1) and southwest to a set of two 15" culverts that cross Oak Ridge Road (AP2).

Site topography, soil boundaries, pre-development drainage areas, and analysis points AP1 and AP2 are shown on drawing D1.0 – Pre-Development Drainage Plan. Pre-development HydroCAD calculations can be found in Appendix A. Pre-development peak flow rates at the analysis points are summarized in Table 1 for the 2-, 10-, and 25-year storm events.

Post-Development Conditions

The proposed project will include six single-family dwellings, associated driveways, and a minor, nonurban residential street. The street will have one connection onto Pool Street and all driveways will have access via the proposed street. The project will contain approximately 29,685± square feet of impervious area.

Post-development stormwater runoff from the site was analyzed by routing stormwater flows from the various developed subcatchments through proposed conveyance. Post-development HydroCAD calculations can be found in Appendix B and sheet D2.0 – Post Development Drainage Plan can be found in Appendix E. Post development peak flow rates at each of the analysis points are summarized in Table 1 for the 2-, 10-, and 25-year storm events.

Stormwater Quantity

The City of Biddeford stormwater standards require that peak flow rates discharging from the site are not increased as a result of the development.

Table 1 – Peak Flow Rates (cfs)			
Analysis Point	2-Year Storm	10-Year Storm	25-Year Storm
AP1 Pre-Development	5.1	10.4	14.7
Post Development	4.8	9.5	13.5
AP2 Pre-Development	3.8	7.5	9.9
Post Development	3.8	7.5	9.9

As shown in Table 1, the peak runoff rates at analysis points AP1 and AP2 under the post development conditions will be equal to or less than the peak pre-development runoff rates for every storm event. Based on this analysis, we do not anticipate any adverse impacts on downgradient drainage systems due to the proposed development. Pre- and Post-Development HydroCAD calculations can be found in Appendices A and B.

Stormwater Quality

The project is not in the watershed of a lake or Urban Impaired Stream and will not create over one acre of impervious surface or 5 acres of developed area and therefore does not require a Maine DEP Stormwater Permit.

Erosion Control

BMPs such as silt fence and/or filter berms of erosion control mix, erosion control blanket, mulch, and permanent seeding will be used to prevent erosion and downstream migration of sediment during construction. The locations of temporary and permanent erosion control measures are shown on the Site Plans in Appendix E on sheet C2.3. Erosion and sedimentation control notes and details can be found on sheets C3.0-C3.1.

Inspection & Maintenance

Ginger Hill Design + Build will be responsible for maintaining the stormwater facilities for the project until such time as the Homeowners Association will take over the system and maintenance of it. An Inspection and Maintenance Plan is included in Appendix D.

Conclusions

Calculations show that the peak rate of runoff from the 2-, 10-, and 25-year storm events will not exceed the pre-development rate as required by the City of Biddeford.

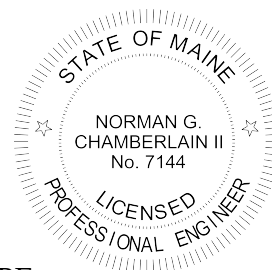
Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



Norman G. Chamberlain II, PE
Walsh Engineering Associates, Inc.

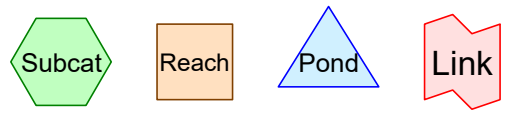
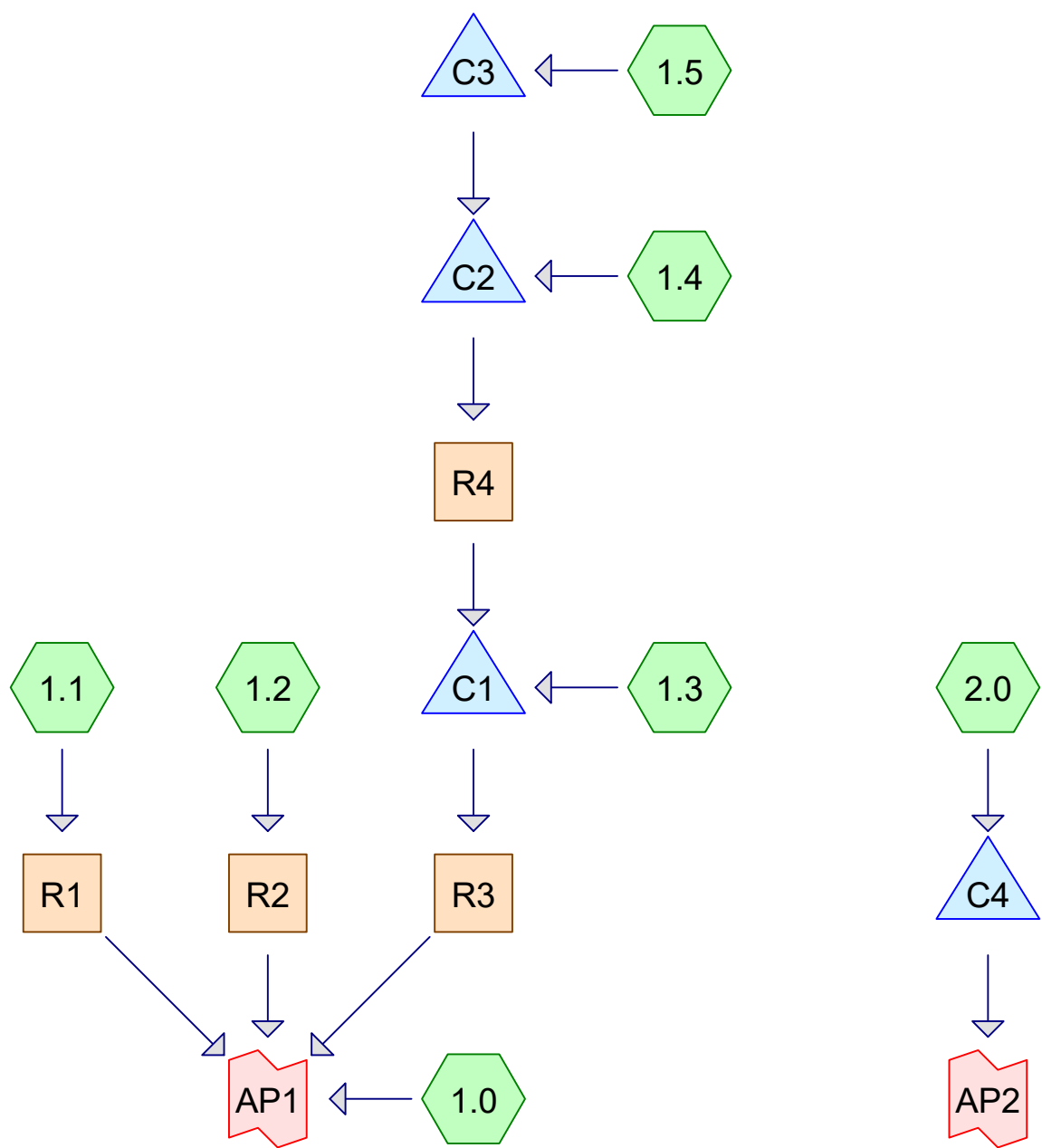


Supporting Data and Calculations

The following material presents calculations and copies of source material used during the analysis for this study.

- Appendix A: Pre-Development HydroCAD Report
- Appendix B: Post-Development HydroCAD Report
- Appendix C: High Intensity Soil Survey
Web Soil Survey Map
- Appendix D: Inspection & Maintenance Plan
- Appendix E: Drainage Plans
 - D1.0 – Pre-Development Drainage Plan
 - D2.0 – Post-Development Drainage Plan

Appendix A
Pre-Development HydroCAD Report



Routing Diagram for Pre-Dev - REV1
 Prepared by Walsh Engineering Associates, Inc., Printed 10/13/2021
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Pre-Dev - REV1

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
15,280	80	>75% Grass cover, Good, HSG D (1.3, 1.4, 1.5, 2.0)
84,520	98	Paved parking, HSG D (1.0, 1.3, 1.4, 1.5, 2.0)
1,173,045	77	Woods, Good, HSG D (1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 2.0)
1,272,845	78	TOTAL AREA

Pre-Dev - REV1*Type III 24-hr 2-Year Rainfall=3.30"*

Prepared by Walsh Engineering Associates, Inc.

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0: Runoff Area=220,710 sf 1.41% Impervious Runoff Depth=1.28"
 Flow Length=659' Tc=54.2 min CN=77 Runoff=3.1 cfs 23,611 cf

Subcatchment 1.1: Runoff Area=60,695 sf 0.00% Impervious Runoff Depth=1.28"
 Flow Length=377' Tc=25.5 min CN=77 Runoff=1.2 cfs 6,493 cf

Subcatchment 1.2: Runoff Area=11,820 sf 0.00% Impervious Runoff Depth=1.28"
 Tc=6.0 min CN=77 Runoff=0.4 cfs 1,264 cf

Subcatchment 1.3: Runoff Area=270,295 sf 4.90% Impervious Runoff Depth=1.35"
 Flow Length=598' Tc=79.3 min CN=78 Runoff=3.2 cfs 30,343 cf

Subcatchment 1.4: Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=1.35"
 Flow Length=396' Tc=11.4 min CN=78 Runoff=3.8 cfs 14,598 cf

Subcatchment 1.5: Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=1.48"
 Flow Length=453' Tc=72.4 min CN=80 Runoff=3.7 cfs 33,424 cf

Subcatchment 2.0: Runoff Area=308,150 sf 7.55% Impervious Runoff Depth=1.41"
 Flow Length=750' Tc=50.8 min CN=79 Runoff=5.0 cfs 36,266 cf

Reach R1: Avg. Flow Depth=0.15' Max Vel=0.42 fps Inflow=1.2 cfs 6,493 cf
 n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=1.0 cfs 6,493 cf

Reach R2: Avg. Flow Depth=0.09' Max Vel=0.35 fps Inflow=0.4 cfs 1,264 cf
 n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=0.3 cfs 1,264 cf

Reach R3: Avg. Flow Depth=0.19' Max Vel=0.35 fps Inflow=2.7 cfs 39,571 cf
 n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=2.7 cfs 39,548 cf

Reach R4: Avg. Flow Depth=0.06' Max Vel=0.20 fps Inflow=0.4 cfs 9,256 cf
 n=0.100 L=480.0' S=0.0145 '/' Capacity=71.1 cfs Outflow=0.4 cfs 9,228 cf

Pond C1: Peak Elev=34.15' Storage=1,406 cf Inflow=3.2 cfs 39,571 cf
 18.0" Round Culvert n=0.013 L=26.0' S=0.0100 '/' Outflow=2.7 cfs 39,571 cf

Pond C2: Peak Elev=40.46' Storage=7,794 cf Inflow=3.8 cfs 14,598 cf
 Outflow=0.4 cfs 9,256 cf

Pond C3: Peak Elev=42.66' Storage=9,936 cf Inflow=3.7 cfs 33,424 cf
 Discarded=2.0 cfs 33,397 cf Primary=0.0 cfs 0 cf Outflow=2.0 cfs 33,397 cf

Pond C4: Peak Elev=26.01' Storage=6,842 cf Inflow=5.0 cfs 36,266 cf
 Outflow=3.8 cfs 35,920 cf

Link AP1: Inflow=5.1 cfs 70,917 cf
 Primary=5.1 cfs 70,917 cf

Pre-Dev - REV1

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Type III 24-hr 2-Year Rainfall=3.30"

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Link AP2:

Inflow=3.8 cfs 35,920 cf

Primary=3.8 cfs 35,920 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 145,999 cf Average Runoff Depth = 1.38"
93.36% Pervious = 1,188,325 sf 6.64% Impervious = 84,520 sf

Summary for Subcatchment 1.0:

Runoff = 3.1 cfs @ 12.77 hrs, Volume= 23,611 cf, Depth= 1.28"

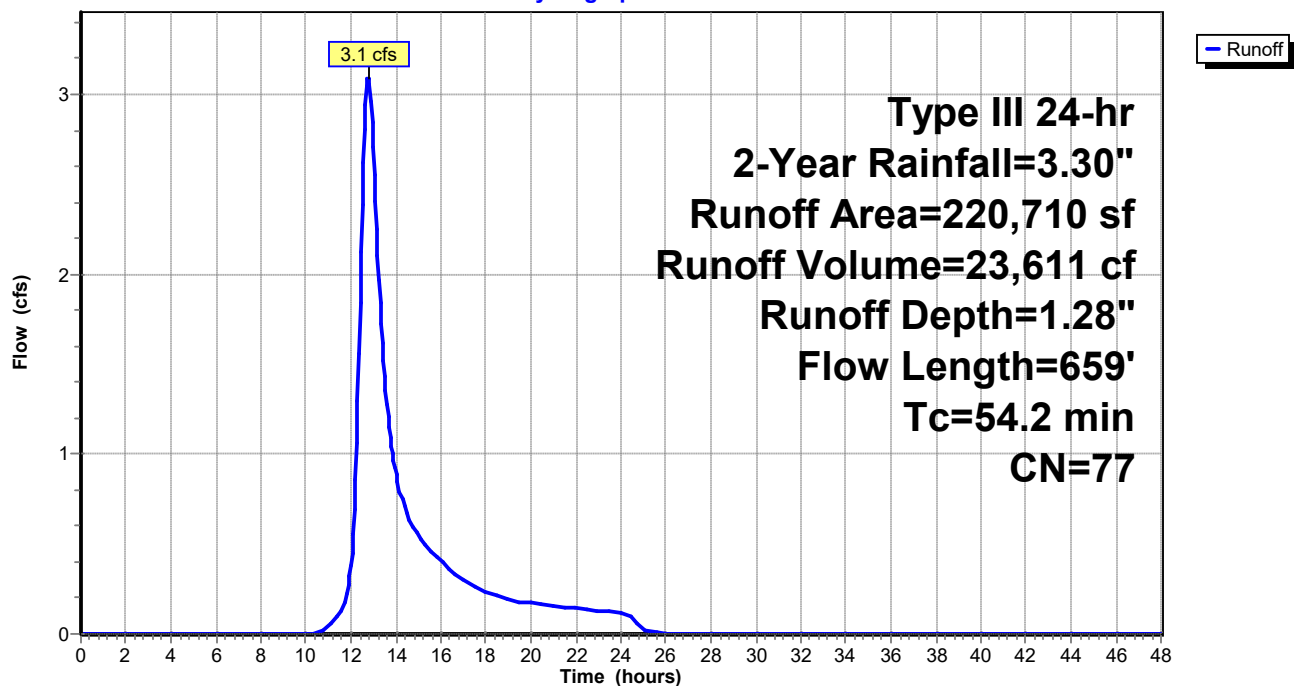
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
217,605	77	Woods, Good, HSG D
3,105	98	Paved parking, HSG D
220,710	77	Weighted Average
217,605		98.59% Pervious Area
3,105		1.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:

Hydrograph



Summary for Subcatchment 1.1:

Runoff = 1.2 cfs @ 12.37 hrs, Volume= 6,493 cf, Depth= 1.28"

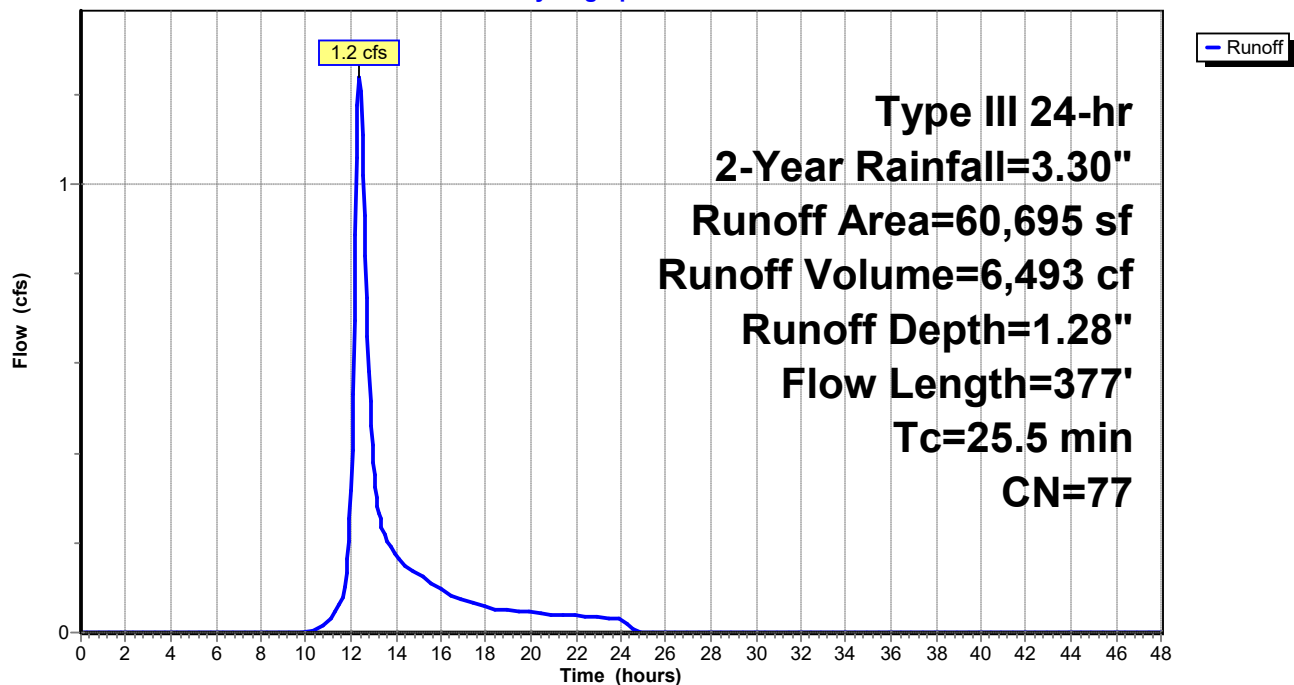
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
60,695	77	Woods, Good, HSG D
60,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	72	0.1667	0.10		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
13.4	305	0.0230	0.38		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
25.5	377	Total			

Subcatchment 1.1:

Hydrograph



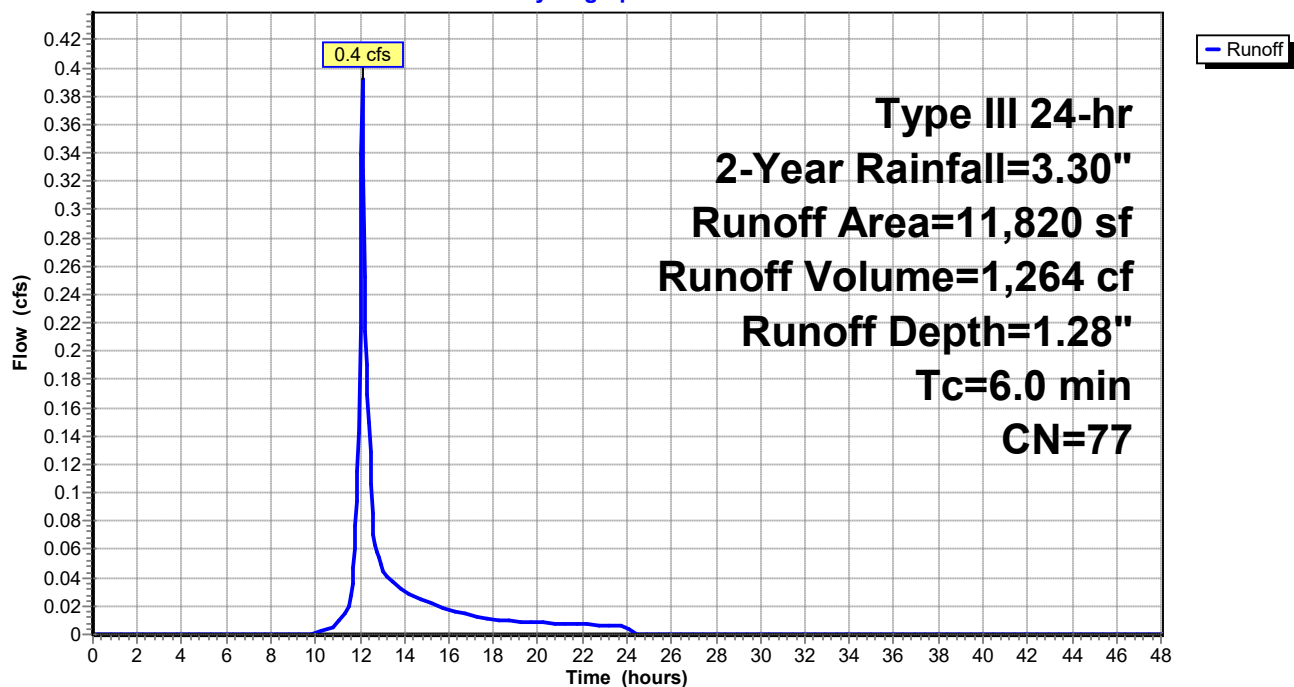
Summary for Subcatchment 1.2:

Runoff = 0.4 cfs @ 12.10 hrs, Volume= 1,264 cf, Depth= 1.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
11,820	77	Woods, Good, HSG D
11,820		100.00% Pervious Area

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

Subcatchment 1.2:**Hydrograph**

Summary for Subcatchment 1.3:

Runoff = 3.2 cfs @ 13.11 hrs, Volume= 30,343 cf, Depth= 1.35"

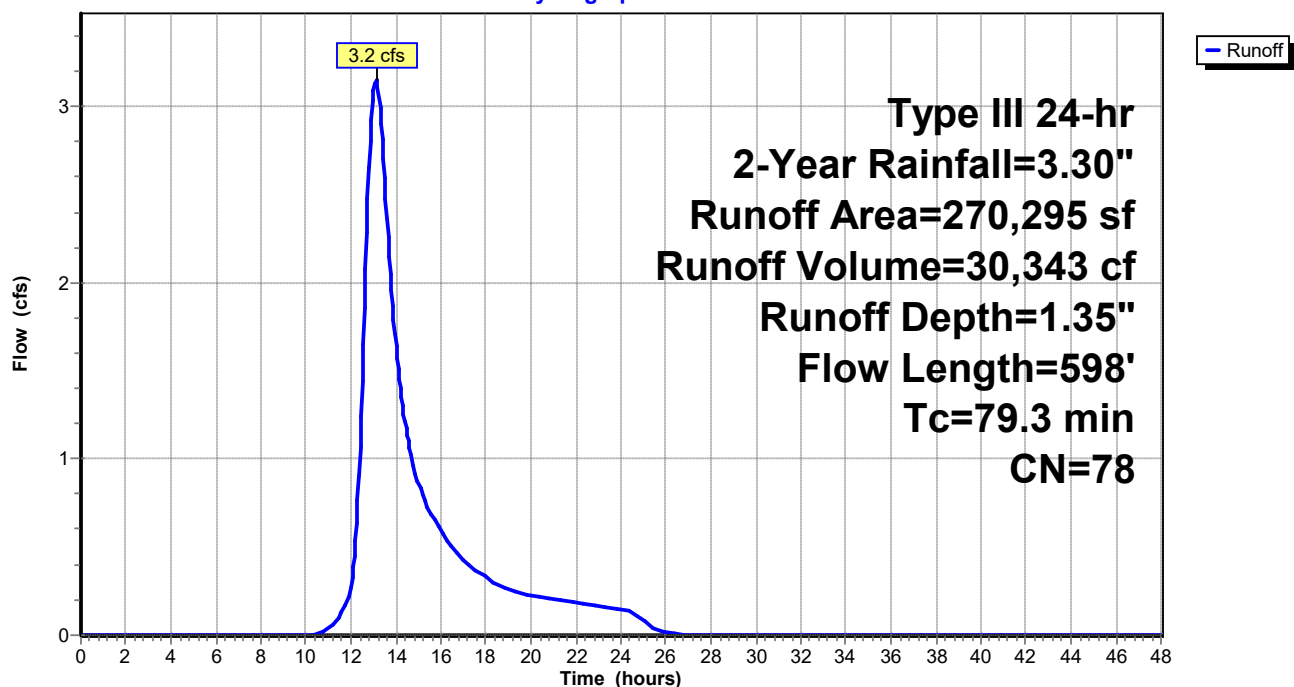
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
255,765	77	Woods, Good, HSG D
1,275	80	>75% Grass cover, Good, HSG D
13,255	98	Paved parking, HSG D
270,295	78	Weighted Average
257,040		95.10% Pervious Area
13,255		4.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C
					Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:

Hydrograph



Summary for Subcatchment 1.4:

Runoff = 3.8 cfs @ 12.17 hrs, Volume= 14,598 cf, Depth= 1.35"

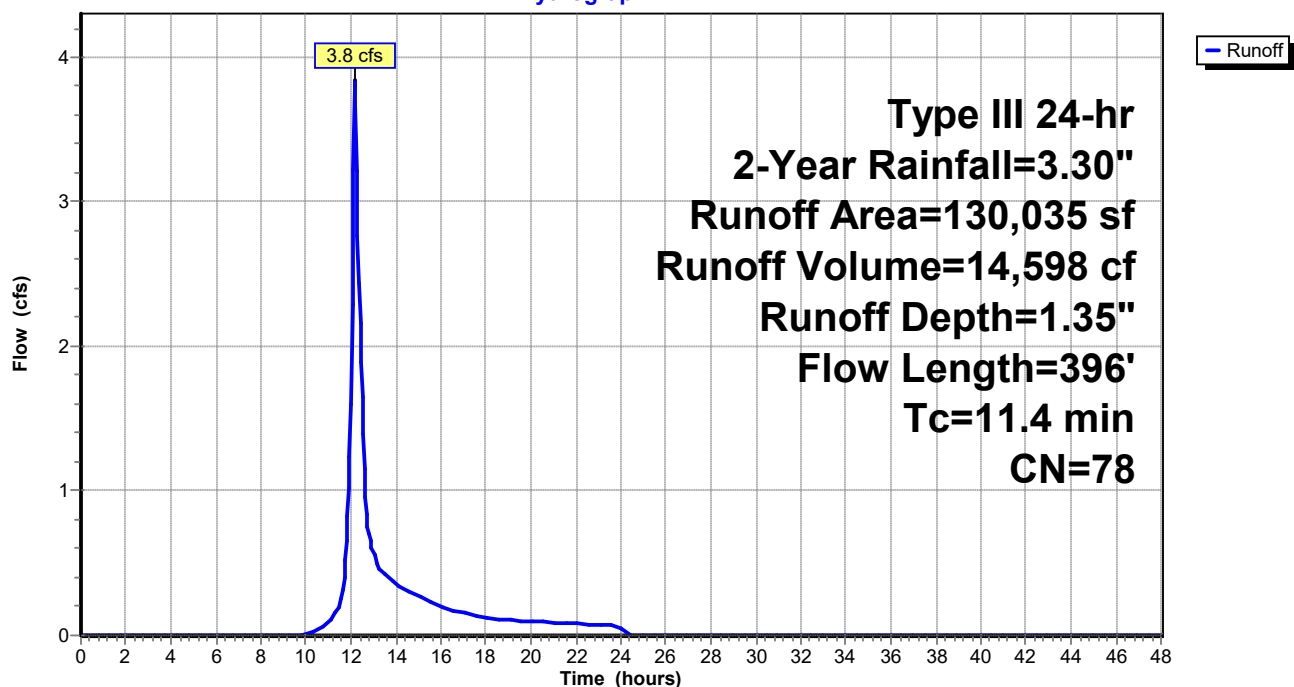
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



Summary for Subcatchment 1.5:

Runoff = 3.7 cfs @ 12.98 hrs, Volume= 33,424 cf, Depth= 1.48"

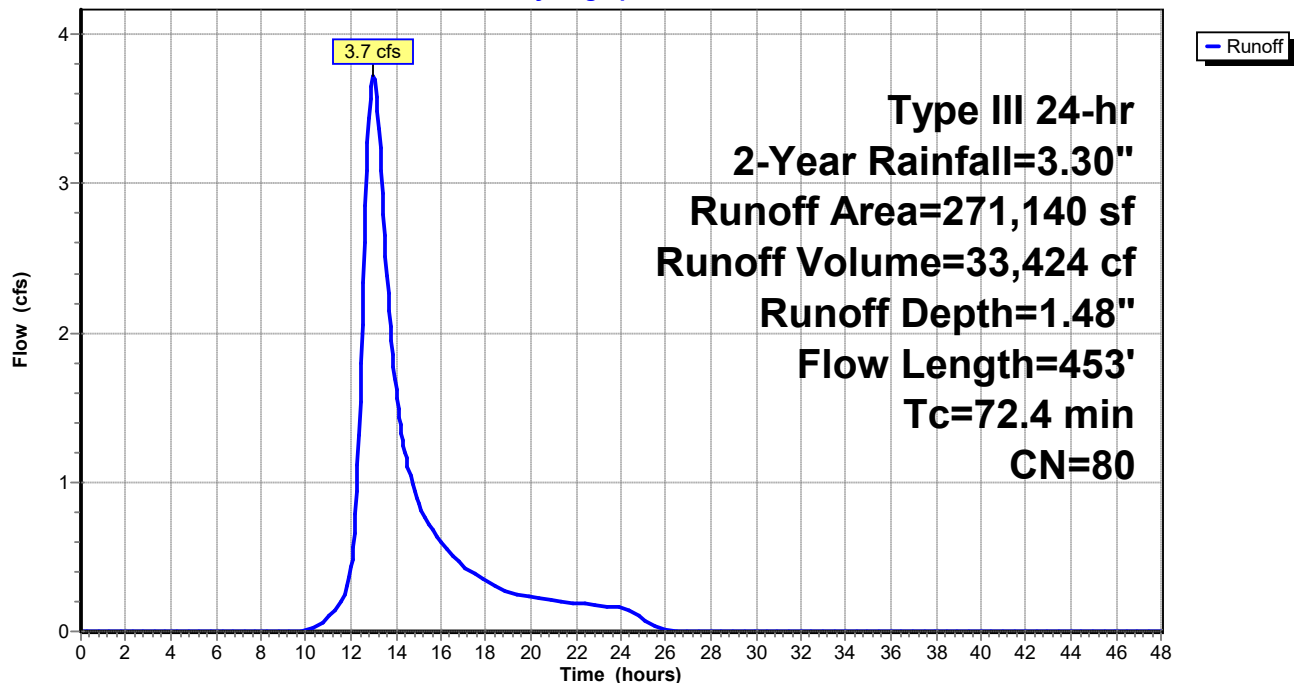
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



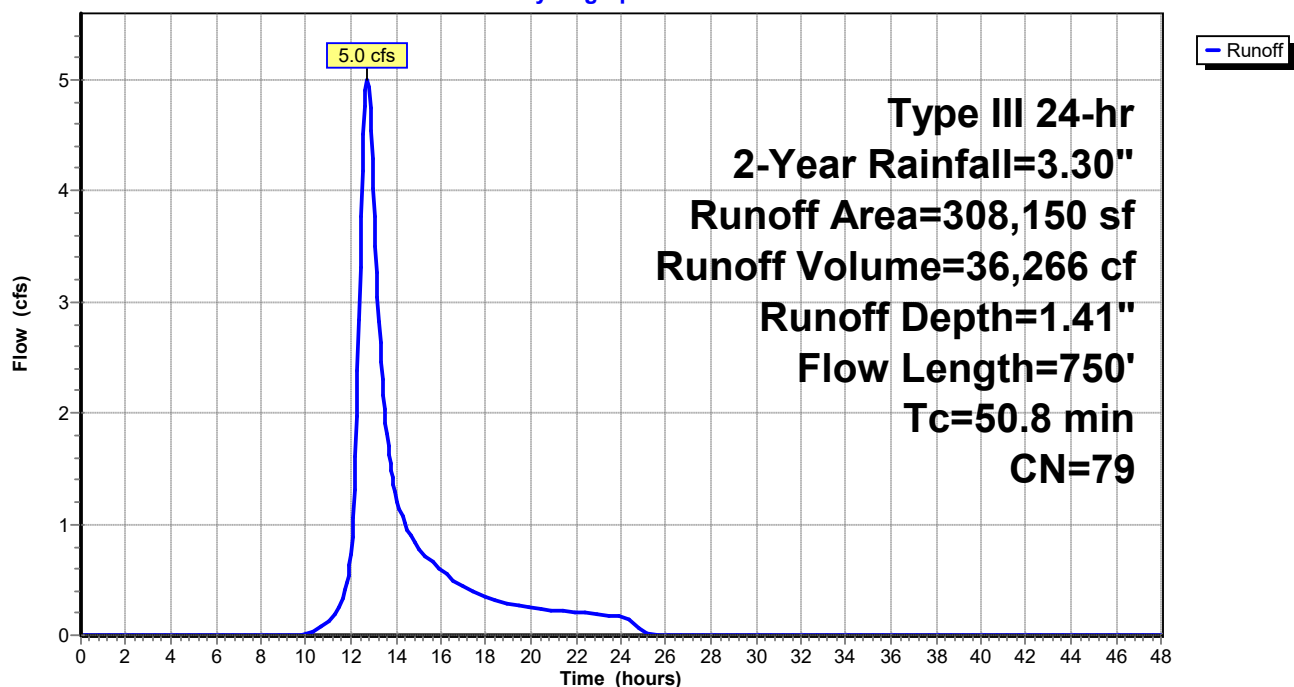
Summary for Subcatchment 2.0:

Runoff = 5.0 cfs @ 12.72 hrs, Volume= 36,266 cf, Depth= 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
275,925	77	Woods, Good, HSG D
8,960	80	>75% Grass cover, Good, HSG D
23,265	98	Paved parking, HSG D
308,150	79	Weighted Average
284,885		92.45% Pervious Area
23,265		7.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:**Hydrograph**

Summary for Reach R1:

Inflow Area = 60,695 sf, 0.00% Impervious, Inflow Depth = 1.28" for 2-Year event
 Inflow = 1.2 cfs @ 12.37 hrs, Volume= 6,493 cf
 Outflow = 1.0 cfs @ 12.81 hrs, Volume= 6,493 cf, Atten= 18%, Lag= 26.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.42 fps, Min. Travel Time= 15.3 min

Avg. Velocity = 0.15 fps, Avg. Travel Time= 43.3 min

Peak Storage= 929 cf @ 12.56 hrs

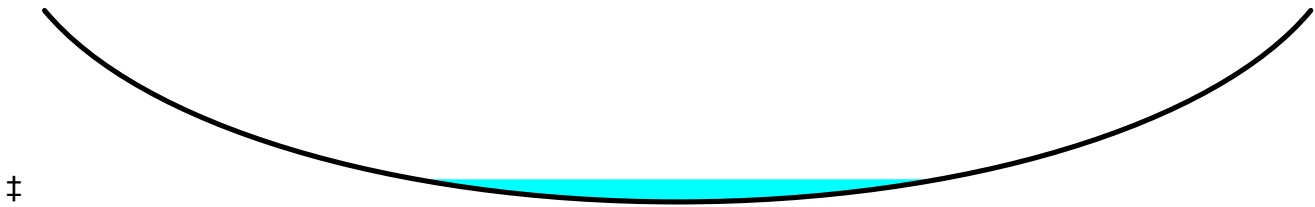
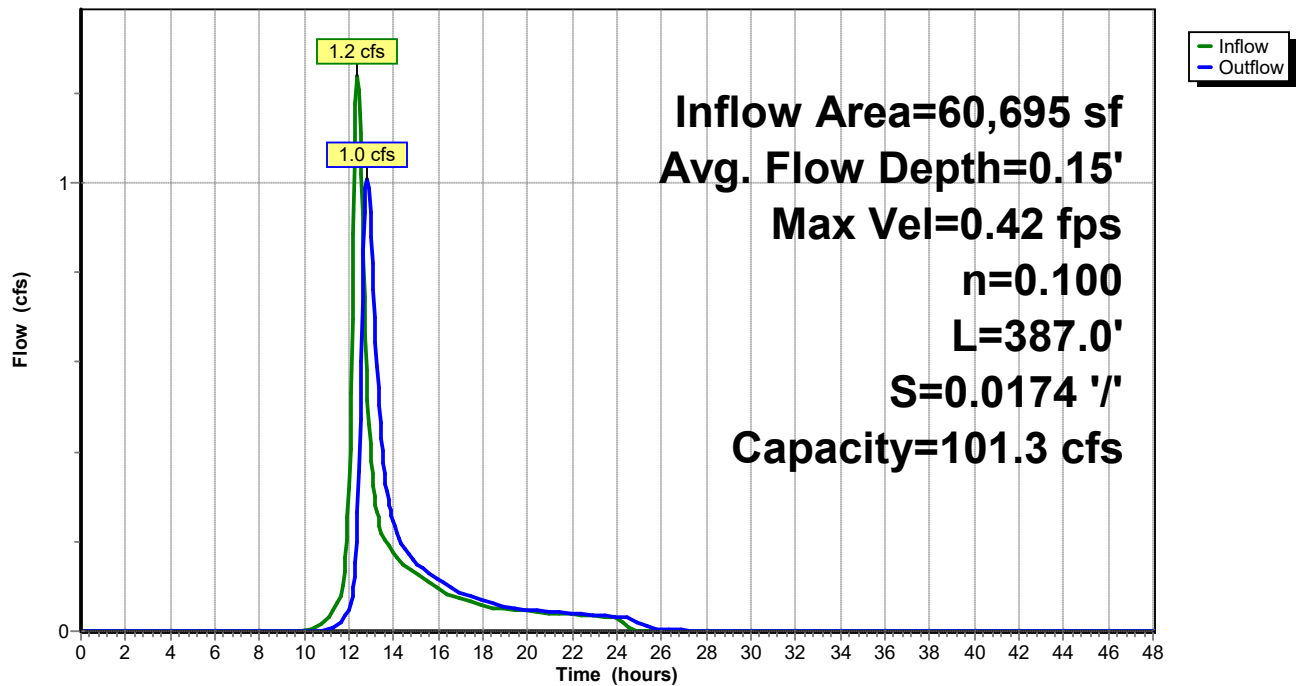
Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 387.0' Slope= 0.0174 '/'

Inlet Invert= 36.75', Outlet Invert= 30.00'

**Reach R1:****Hydrograph**

Summary for Reach R2:

Inflow Area = 11,820 sf, 0.00% Impervious, Inflow Depth = 1.28" for 2-Year event
 Inflow = 0.4 cfs @ 12.10 hrs, Volume= 1,264 cf
 Outflow = 0.3 cfs @ 12.36 hrs, Volume= 1,264 cf, Atten= 29%, Lag= 15.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.35 fps, Min. Travel Time= 9.9 min

Avg. Velocity = 0.14 fps, Avg. Travel Time= 24.7 min

Peak Storage= 165 cf @ 12.19 hrs

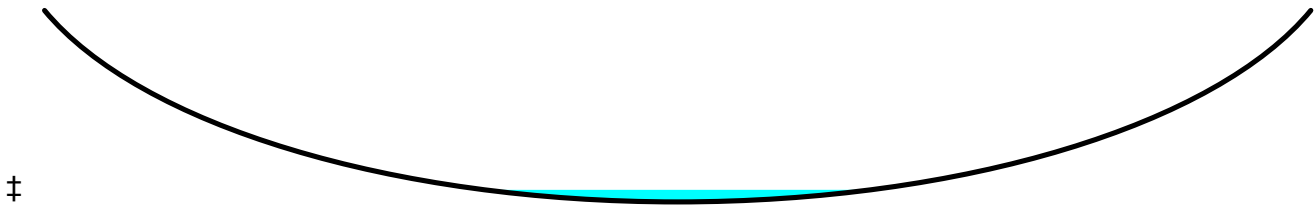
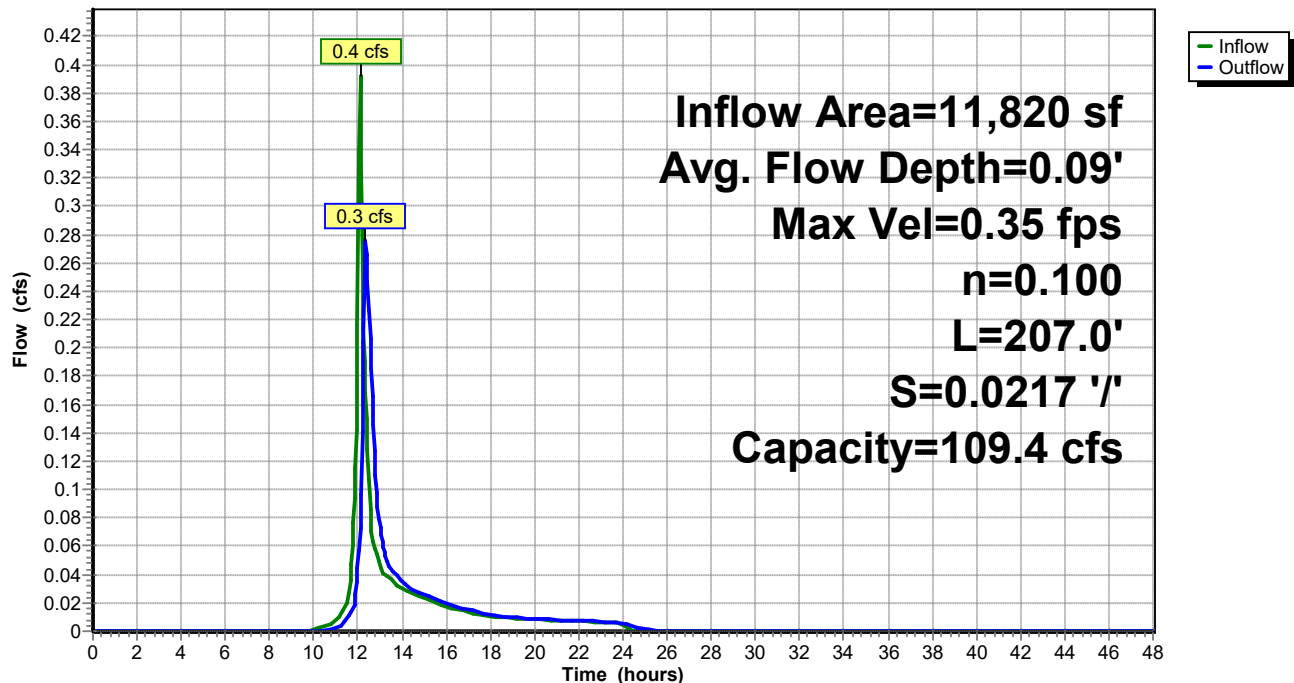
Average Depth at Peak Storage= 0.09'

Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 207.0' Slope= 0.0217 '/'

Inlet Invert= 34.50', Outlet Invert= 30.00'

**Reach R2:****Hydrograph**

Summary for Reach R3:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 0.71" for 2-Year event
 Inflow = 2.7 cfs @ 13.46 hrs, Volume= 39,571 cf
 Outflow = 2.7 cfs @ 13.91 hrs, Volume= 39,548 cf, Atten= 2%, Lag= 26.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.35 fps, Min. Travel Time= 15.6 min

Avg. Velocity = 0.12 fps, Avg. Travel Time= 44.7 min

Peak Storage= 2,503 cf @ 13.65 hrs

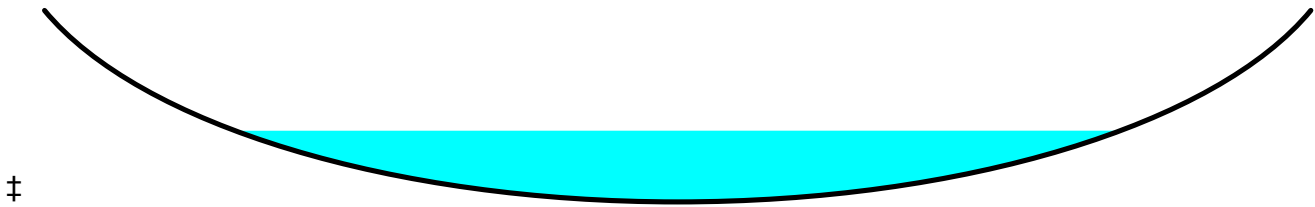
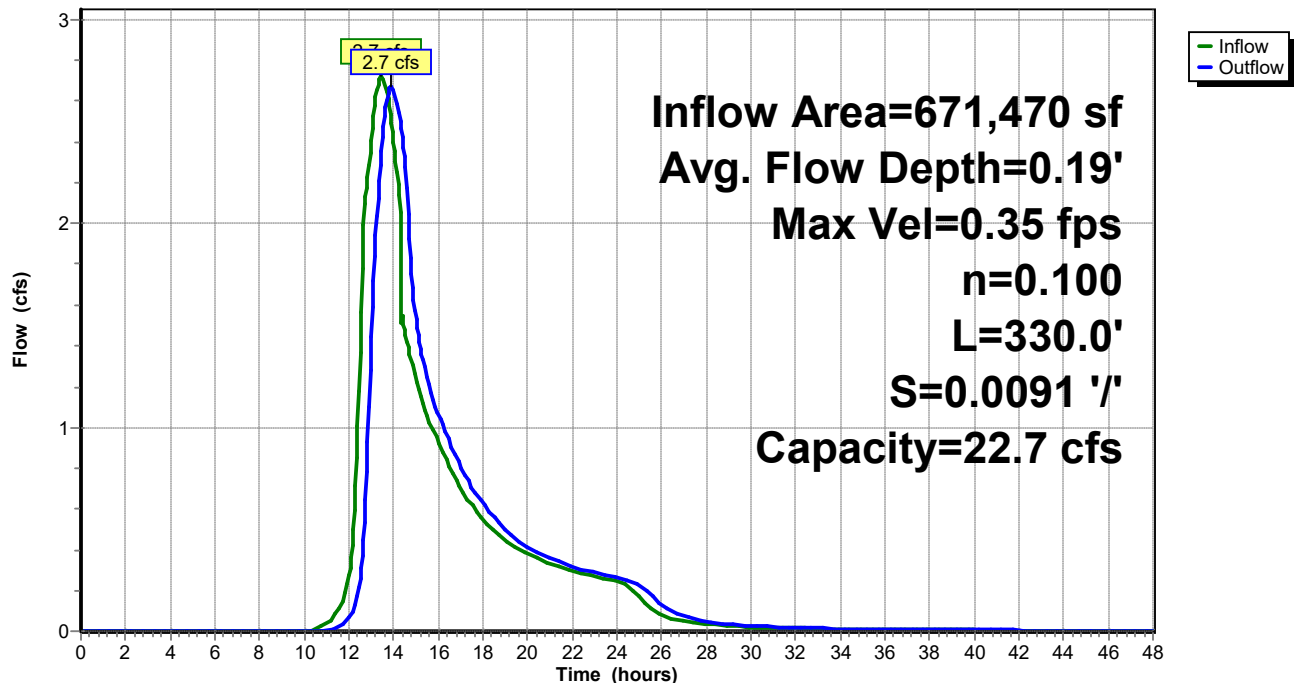
Average Depth at Peak Storage= 0.19'

Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 330.0' Slope= 0.0091 '/'

Inlet Invert= 33.00', Outlet Invert= 30.00'

**Reach R3:****Hydrograph**

Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 0.28" for 2-Year event
 Inflow = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf
 Outflow = 0.4 cfs @ 15.10 hrs, Volume= 9,228 cf, Atten= 8%, Lag= 82.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.20 fps, Min. Travel Time= 39.5 min

Avg. Velocity = 0.10 fps, Avg. Travel Time= 81.0 min

Peak Storage= 862 cf @ 14.44 hrs

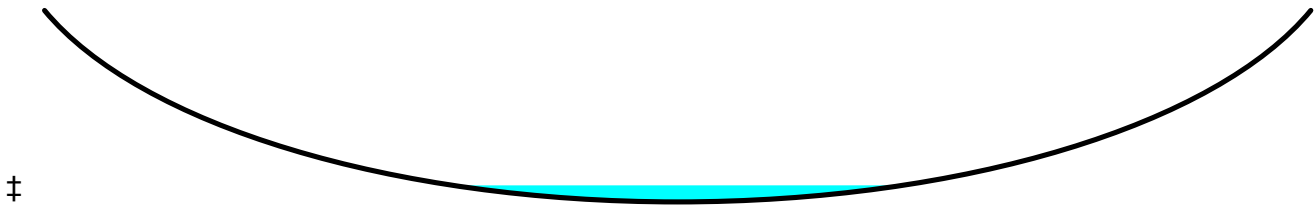
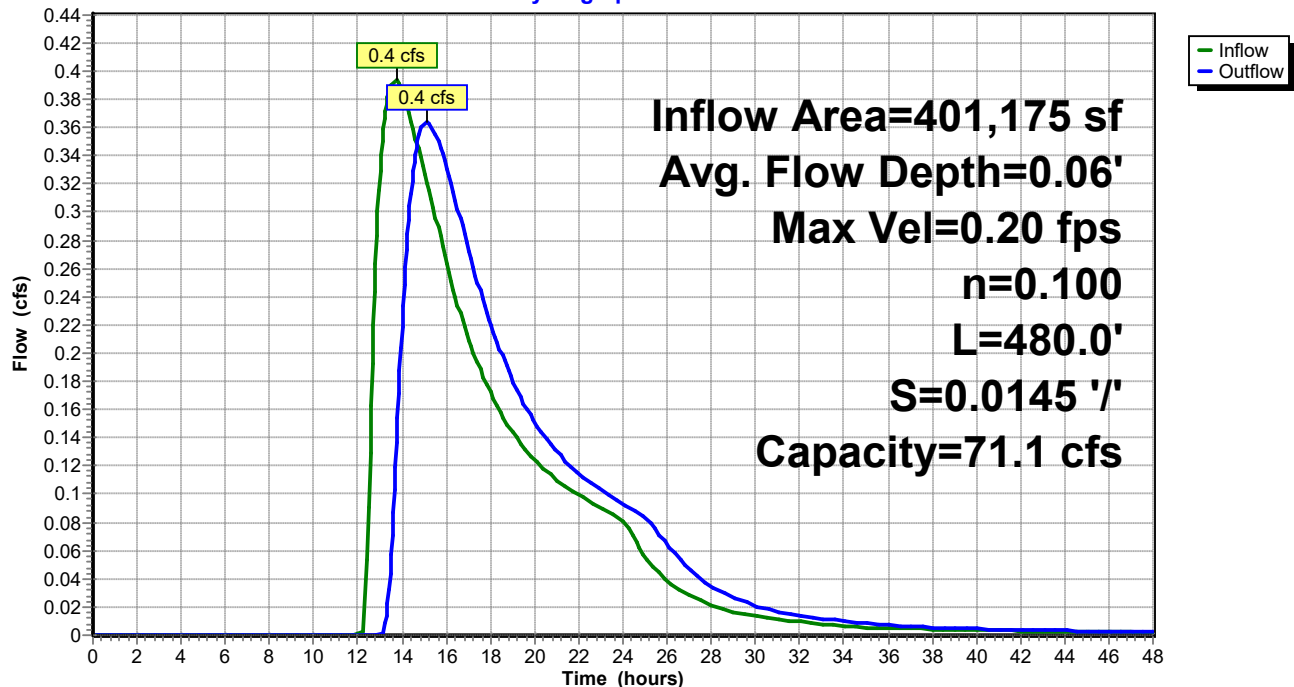
Average Depth at Peak Storage= 0.06'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'

**Reach R4:****Hydrograph**

Summary for Pond C1:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 0.71" for 2-Year event
 Inflow = 3.2 cfs @ 13.12 hrs, Volume= 39,571 cf
 Outflow = 2.7 cfs @ 13.46 hrs, Volume= 39,571 cf, Atten= 14%, Lag= 20.9 min
 Primary = 2.7 cfs @ 13.46 hrs, Volume= 39,571 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.15' @ 13.46 hrs Surf.Area= 11,719 sf Storage= 1,406 cf
 Flood Elev= 34.76' Surf.Area= 31,144 sf Storage= 14,457 cf

Plug-Flow detention time= 2.9 min calculated for 39,529 cf (100% of inflow)
 Center-of-Mass det. time= 2.9 min (978.5 - 975.7)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)

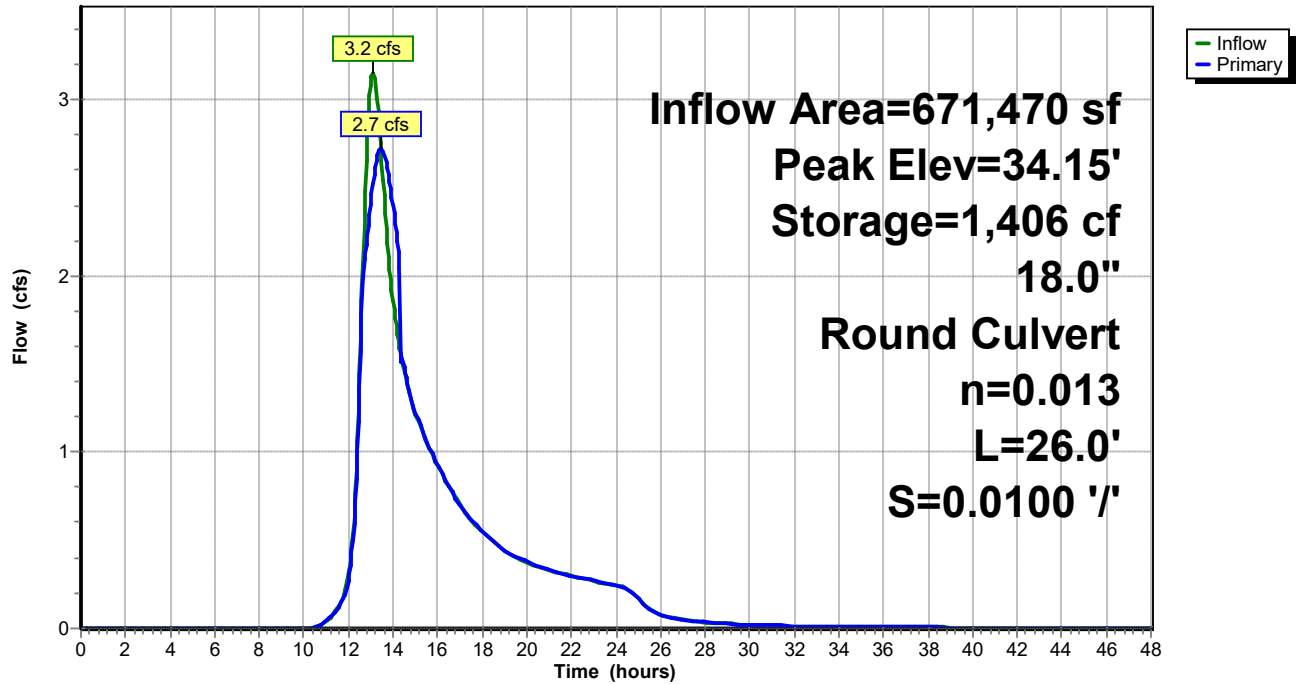
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	33.26'	18.0" Round Culvert L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.26' / 33.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.7 cfs @ 13.46 hrs HW=34.15' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 2.7 cfs @ 3.58 fps)

Pond C1:

Hydrograph



Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 0.44" for 2-Year event
 Inflow = 3.8 cfs @ 12.17 hrs, Volume= 14,598 cf
 Outflow = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf, Atten= 90%, Lag= 93.4 min
 Primary = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 40.46' @ 13.72 hrs Surf.Area= 8,283 sf Storage= 7,794 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 344.9 min calculated for 9,256 cf (63% of inflow)
 Center-of-Mass det. time= 233.9 min (1,086.4 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

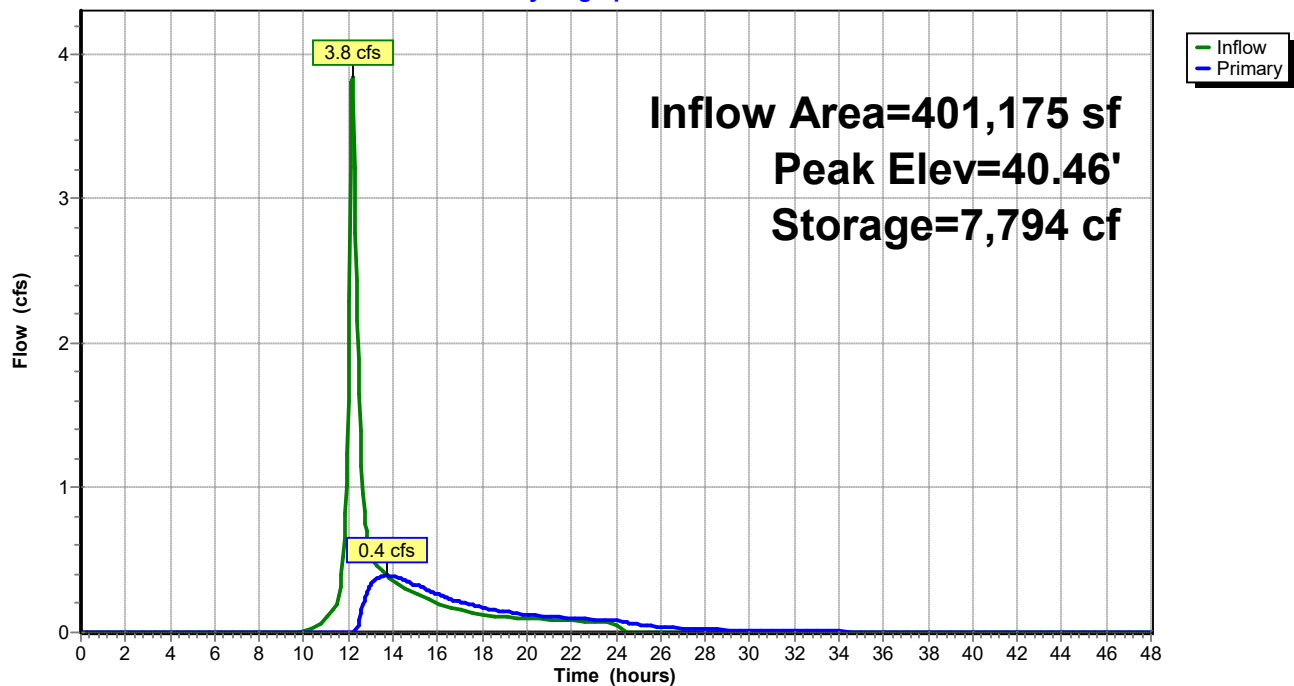
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 ' S= 0.0065 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 ' S= -0.0117 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.4 cfs @ 13.72 hrs HW=40.46' (Free Discharge)

1=Culvert (Barrel Controls 0.0 cfs @ 1.18 fps)

2=Culvert (Inlet Controls 0.4 cfs @ 1.55 fps)

Pond C2:**Hydrograph**

Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 1.48" for 2-Year event
 Inflow = 3.7 cfs @ 12.98 hrs, Volume= 33,424 cf
 Outflow = 2.0 cfs @ 13.79 hrs, Volume= 33,397 cf, Atten= 47%, Lag= 48.3 min
 Discarded = 2.0 cfs @ 13.79 hrs, Volume= 33,397 cf
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.66' @ 13.79 hrs Surf.Area= 26,344 sf Storage= 9,936 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 97.4 min calculated for 33,397 cf (100% of inflow)
 Center-of-Mass det. time= 96.9 min (999.6 - 902.7)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Discarded OutFlow Max=2.0 cfs @ 13.79 hrs HW=42.66' (Free Discharge)

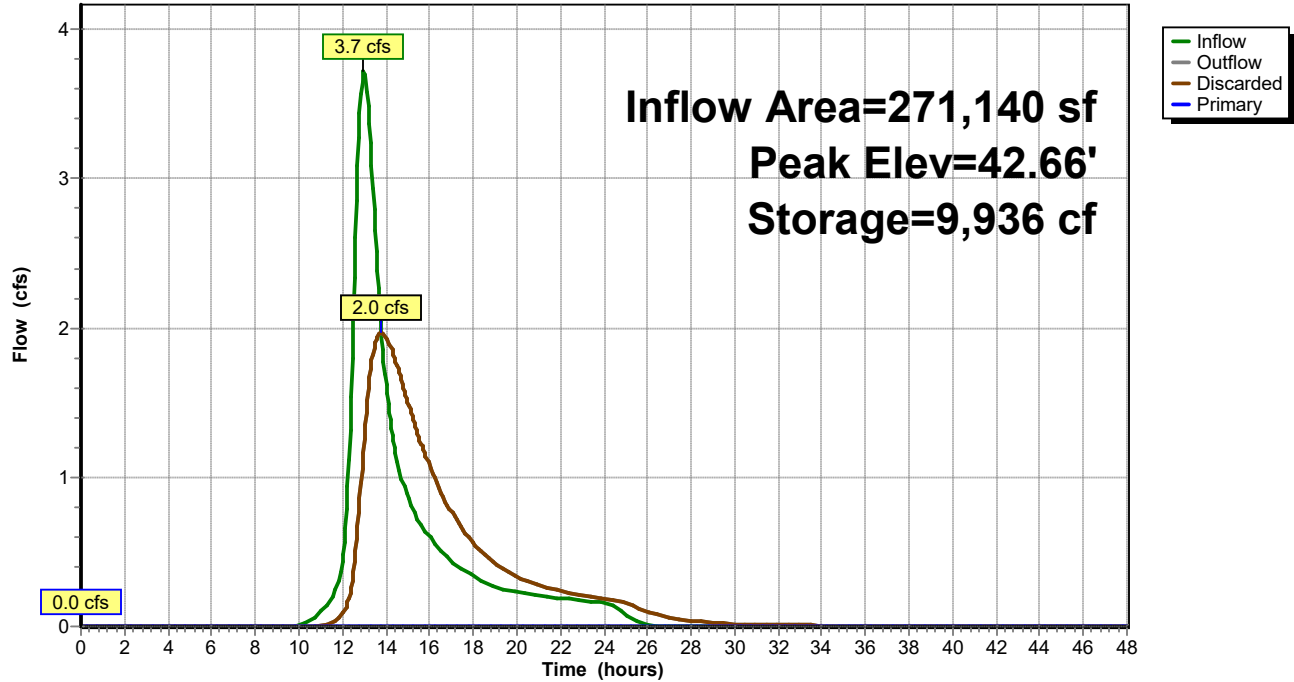
↑ **2=Culvert** (Inlet Controls 2.0 cfs @ 2.18 fps)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=42.00' (Free Discharge)

↑ **1=Culvert** (Controls 0.0 cfs)

Pond C3:

Hydrograph



Summary for Pond C4:

Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth = 1.41" for 2-Year event
 Inflow = 5.0 cfs @ 12.72 hrs, Volume= 36,266 cf
 Outflow = 3.8 cfs @ 13.04 hrs, Volume= 35,920 cf, Atten= 23%, Lag= 19.4 min
 Primary = 3.8 cfs @ 13.04 hrs, Volume= 35,920 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.01' @ 13.04 hrs Surf.Area= 11,017 sf Storage= 6,842 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 54.7 min calculated for 35,920 cf (99% of inflow)
 Center-of-Mass det. time= 49.0 min (934.9 - 885.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)

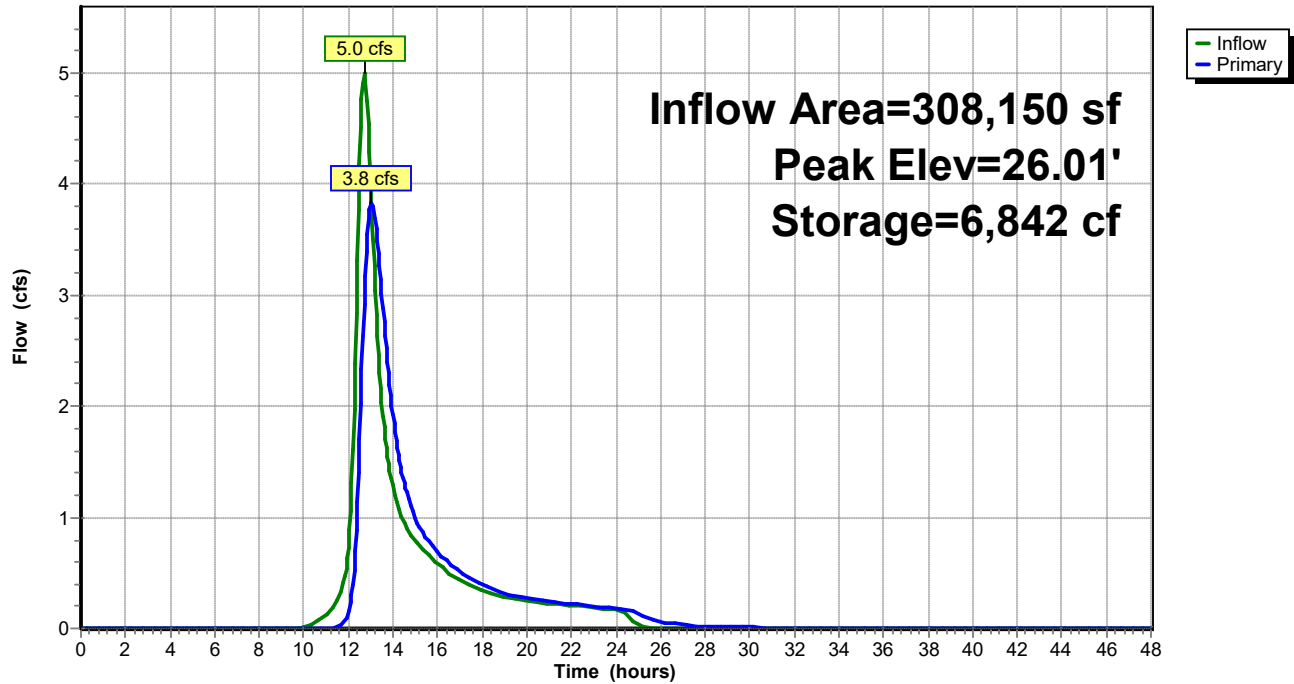
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.8 cfs @ 13.04 hrs HW=26.01' (Free Discharge)

1=Culvert (Inlet Controls 1.8 cfs @ 2.32 fps)

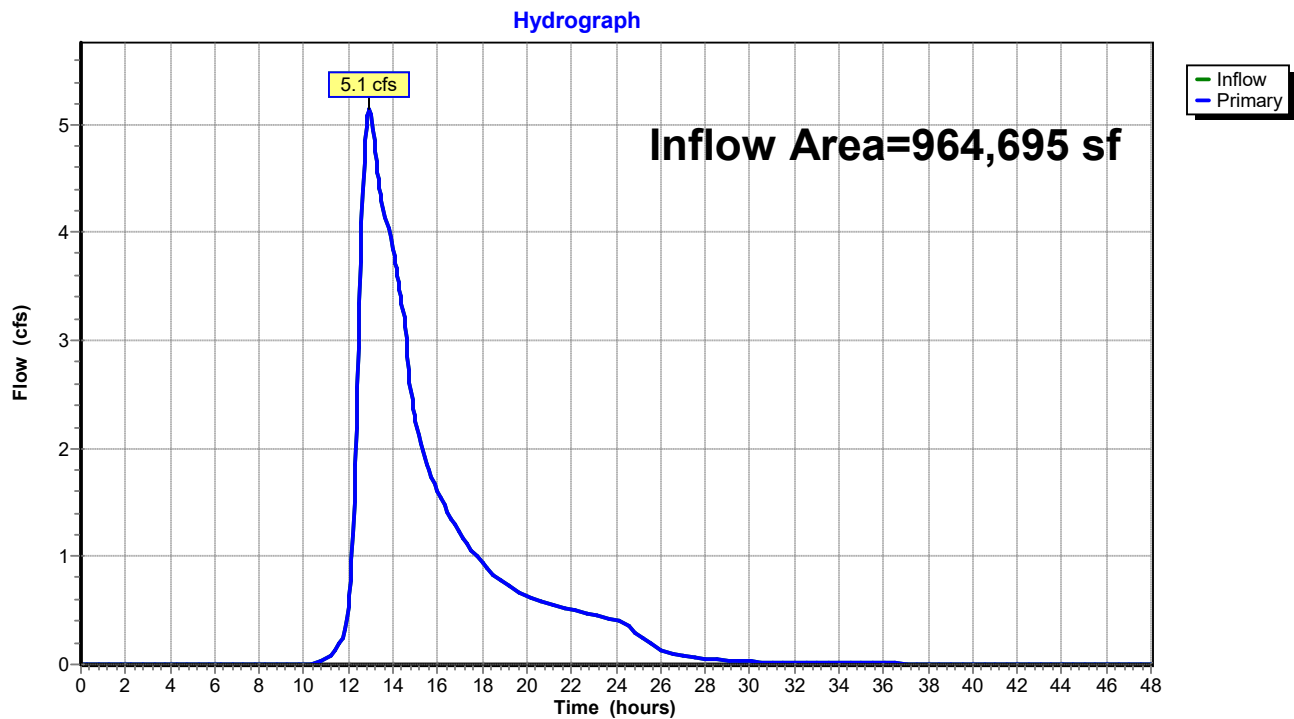
2=Culvert (Barrel Controls 2.0 cfs @ 2.98 fps)

Pond C4:**Hydrograph**

Summary for Link AP1:

Inflow Area = 964,695 sf, 6.35% Impervious, Inflow Depth > 0.88" for 2-Year event
Inflow = 5.1 cfs @ 12.94 hrs, Volume= 70,917 cf
Primary = 5.1 cfs @ 12.94 hrs, Volume= 70,917 cf, Atten= 0%, Lag= 0.0 min

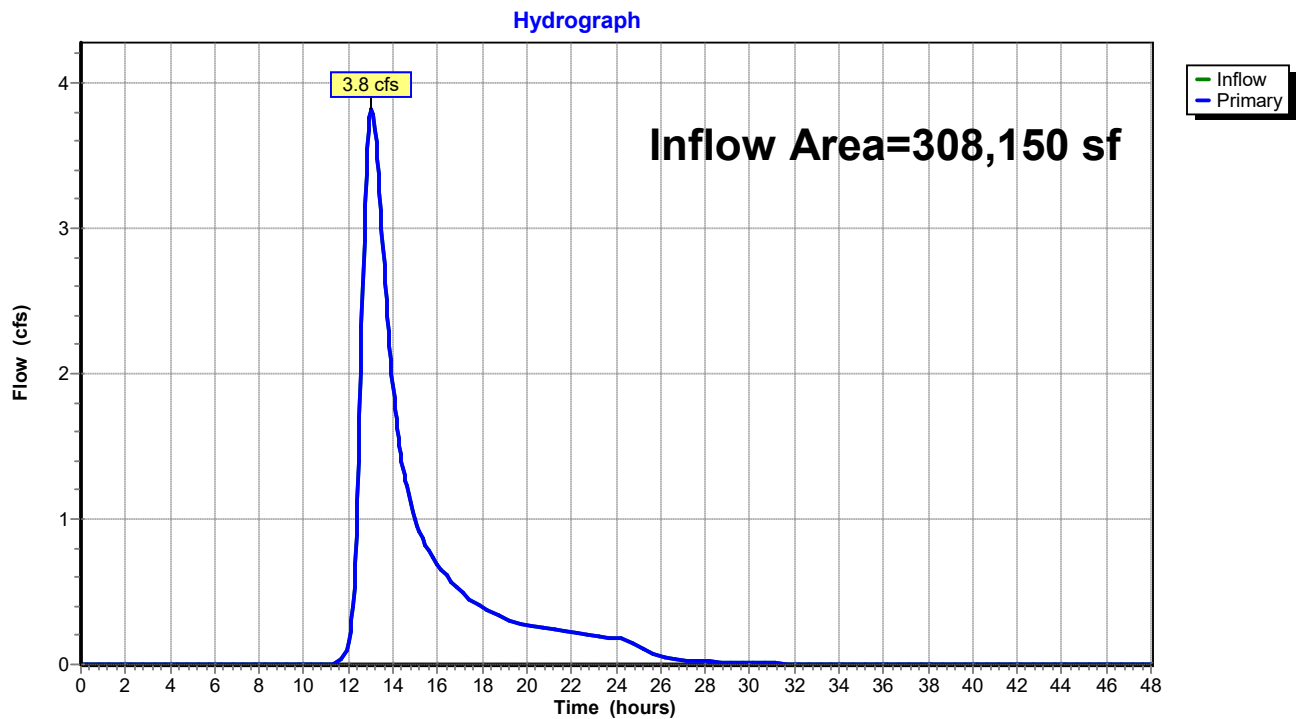
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

Summary for Link AP2:

Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth > 1.40" for 2-Year event
Inflow = 3.8 cfs @ 13.04 hrs, Volume= 35,920 cf
Primary = 3.8 cfs @ 13.04 hrs, Volume= 35,920 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:

Pre-Dev - REV1

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Type III 24-hr 10-Year Rainfall=4.90"

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0:	Runoff Area=220,710 sf 1.41% Impervious Runoff Depth=2.54" Flow Length=659' Tc=54.2 min CN=77 Runoff=6.3 cfs 46,709 cf
Subcatchment 1.1:	Runoff Area=60,695 sf 0.00% Impervious Runoff Depth=2.54" Flow Length=377' Tc=25.5 min CN=77 Runoff=2.5 cfs 12,845 cf
Subcatchment 1.2:	Runoff Area=11,820 sf 0.00% Impervious Runoff Depth=2.54" Tc=6.0 min CN=77 Runoff=0.8 cfs 2,501 cf
Subcatchment 1.3:	Runoff Area=270,295 sf 4.90% Impervious Runoff Depth=2.63" Flow Length=598' Tc=79.3 min CN=78 Runoff=6.3 cfs 59,172 cf
Subcatchment 1.4:	Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=2.63" Flow Length=396' Tc=11.4 min CN=78 Runoff=7.6 cfs 28,467 cf
Subcatchment 1.5:	Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=2.81" Flow Length=453' Tc=72.4 min CN=80 Runoff=7.2 cfs 63,397 cf
Subcatchment 2.0:	Runoff Area=308,150 sf 7.55% Impervious Runoff Depth=2.72" Flow Length=750' Tc=50.8 min CN=79 Runoff=9.8 cfs 69,738 cf
Reach R1:	Avg. Flow Depth=0.21' Max Vel=0.53 fps Inflow=2.5 cfs 12,845 cf n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=2.2 cfs 12,845 cf
Reach R2:	Avg. Flow Depth=0.14' Max Vel=0.44 fps Inflow=0.8 cfs 2,501 cf n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=0.6 cfs 2,501 cf
Reach R3:	Avg. Flow Depth=0.26' Max Vel=0.44 fps Inflow=5.4 cfs 83,785 cf n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=5.4 cfs 83,762 cf
Reach R4:	Avg. Flow Depth=0.12' Max Vel=0.34 fps Inflow=2.6 cfs 24,640 cf n=0.100 L=480.0' S=0.0145 '/' Capacity=71.1 cfs Outflow=2.0 cfs 24,612 cf
Pond C1:	Peak Elev=34.65' Storage=11,232 cf Inflow=8.1 cfs 83,785 cf 18.0" Round Culvert n=0.013 L=26.0' S=0.0100 '/' Outflow=5.4 cfs 83,785 cf
Pond C2:	Peak Elev=40.93' Storage=11,993 cf Inflow=7.6 cfs 29,988 cf Outflow=2.6 cfs 24,640 cf
Pond C3:	Peak Elev=42.94' Storage=18,595 cf Inflow=7.2 cfs 63,397 cf Discarded=3.8 cfs 61,847 cf Primary=0.3 cfs 1,521 cf Outflow=4.1 cfs 63,368 cf
Pond C4:	Peak Elev=26.49' Storage=12,322 cf Inflow=9.8 cfs 69,738 cf Outflow=7.5 cfs 69,392 cf
Link AP1:	Inflow=10.4 cfs 145,817 cf Primary=10.4 cfs 145,817 cf

Pre-Dev - REV1

Type III 24-hr 10-Year Rainfall=4.90"

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Link AP2:

Inflow=7.5 cfs 69,392 cf

Primary=7.5 cfs 69,392 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 282,830 cf Average Runoff Depth = 2.67"
93.36% Pervious = 1,188,325 sf 6.64% Impervious = 84,520 sf

Summary for Subcatchment 1.0:

Runoff = 6.3 cfs @ 12.74 hrs, Volume= 46,709 cf, Depth= 2.54"

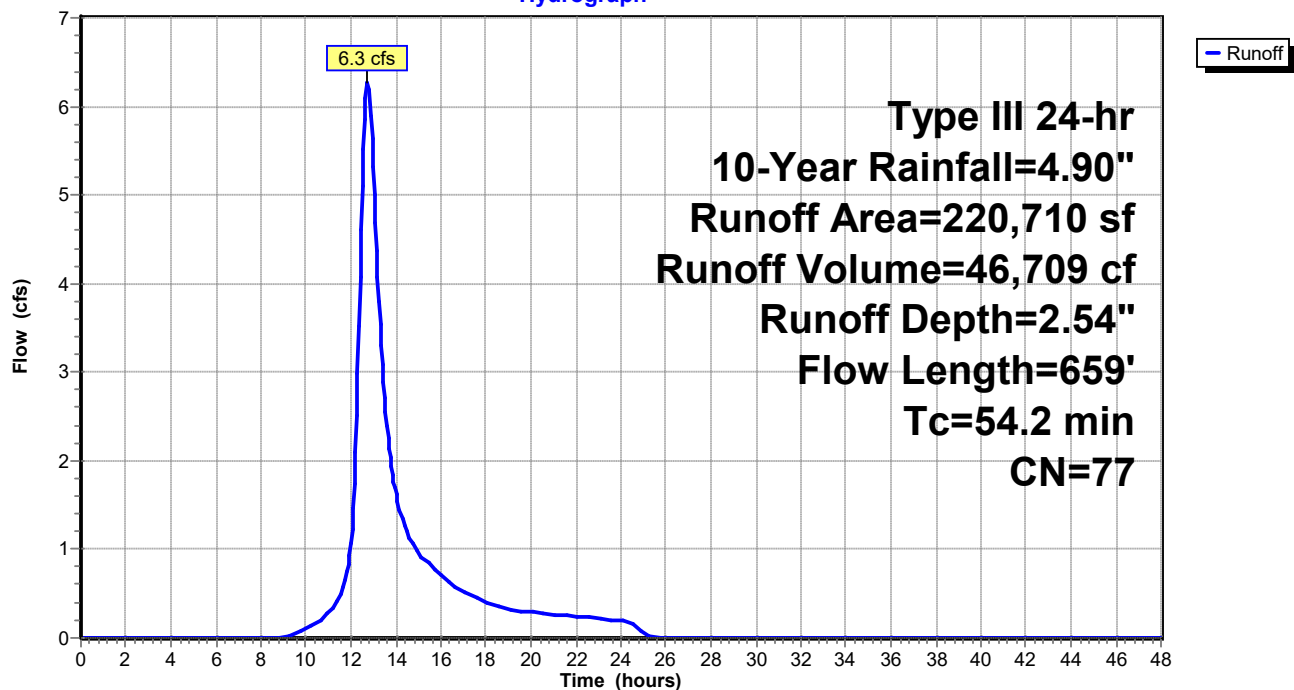
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
217,605	77	Woods, Good, HSG D
3,105	98	Paved parking, HSG D
220,710	77	Weighted Average
217,605		98.59% Pervious Area
3,105		1.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:

Hydrograph



Summary for Subcatchment 1.1:

Runoff = 2.5 cfs @ 12.36 hrs, Volume= 12,845 cf, Depth= 2.54"

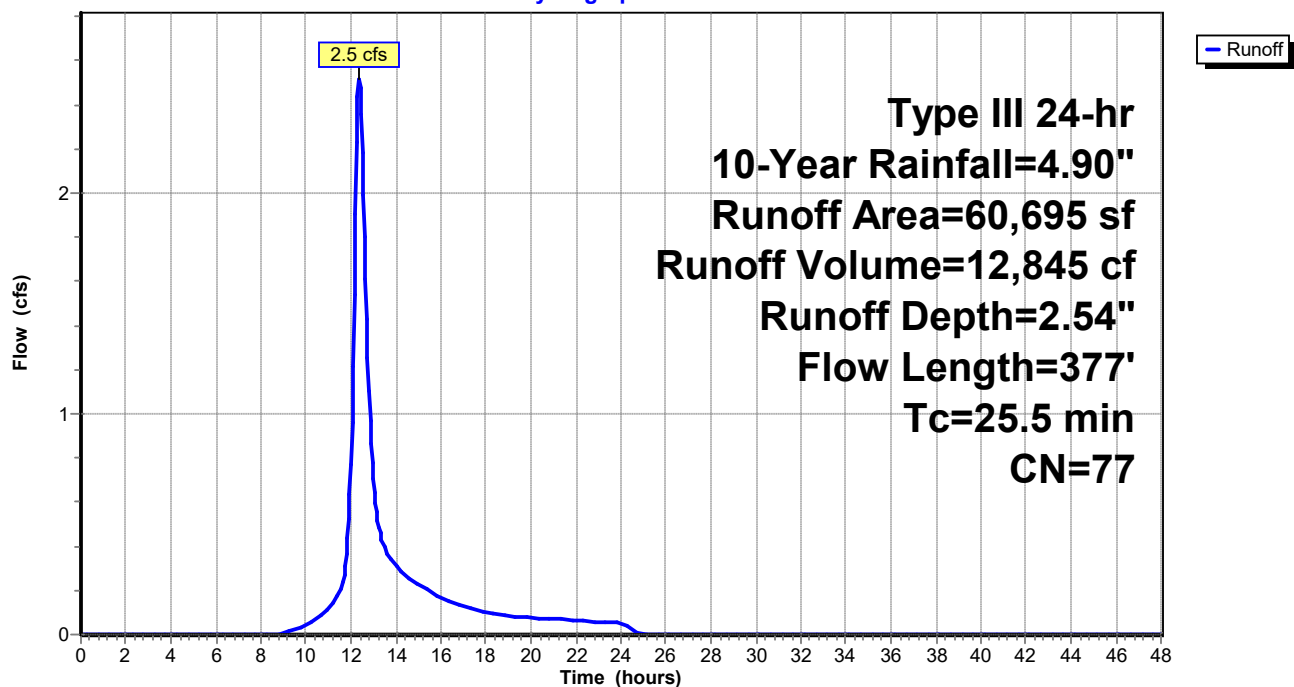
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
60,695	77	Woods, Good, HSG D
60,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	72	0.1667	0.10		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
13.4	305	0.0230	0.38		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
25.5	377	Total			

Subcatchment 1.1:

Hydrograph



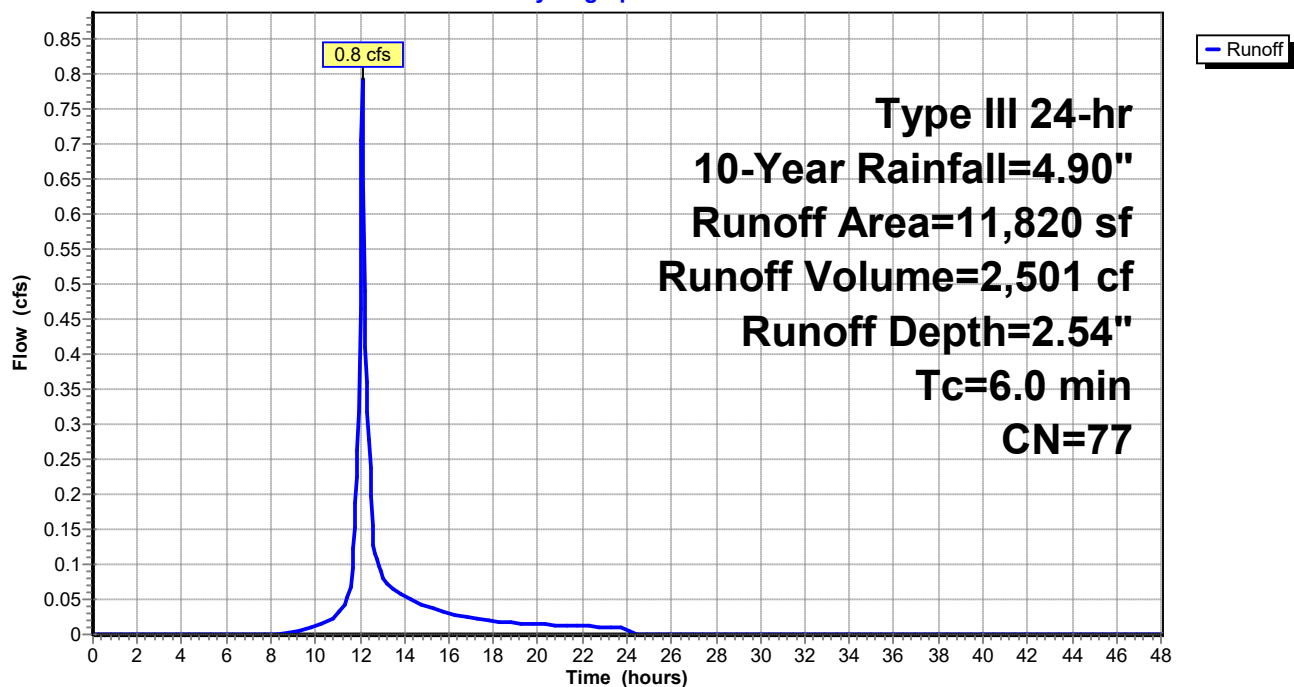
Summary for Subcatchment 1.2:

Runoff = 0.8 cfs @ 12.09 hrs, Volume= 2,501 cf, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
11,820	77	Woods, Good, HSG D
11,820		100.00% Pervious Area

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

Subcatchment 1.2:**Hydrograph**

Summary for Subcatchment 1.3:

Runoff = 6.3 cfs @ 13.08 hrs, Volume= 59,172 cf, Depth= 2.63"

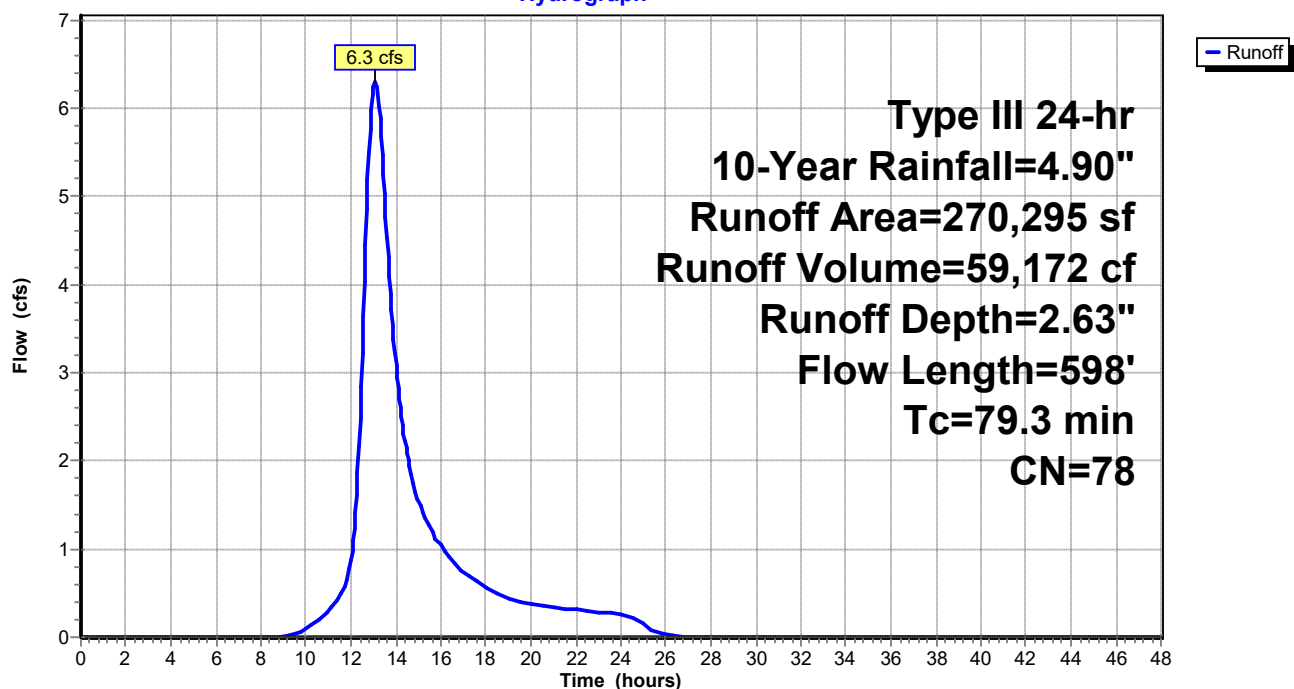
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
255,765	77	Woods, Good, HSG D
1,275	80	>75% Grass cover, Good, HSG D
13,255	98	Paved parking, HSG D
270,295	78	Weighted Average
257,040		95.10% Pervious Area
13,255		4.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C
					Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:

Hydrograph



Summary for Subcatchment 1.4:

Runoff = 7.6 cfs @ 12.16 hrs, Volume= 28,467 cf, Depth= 2.63"

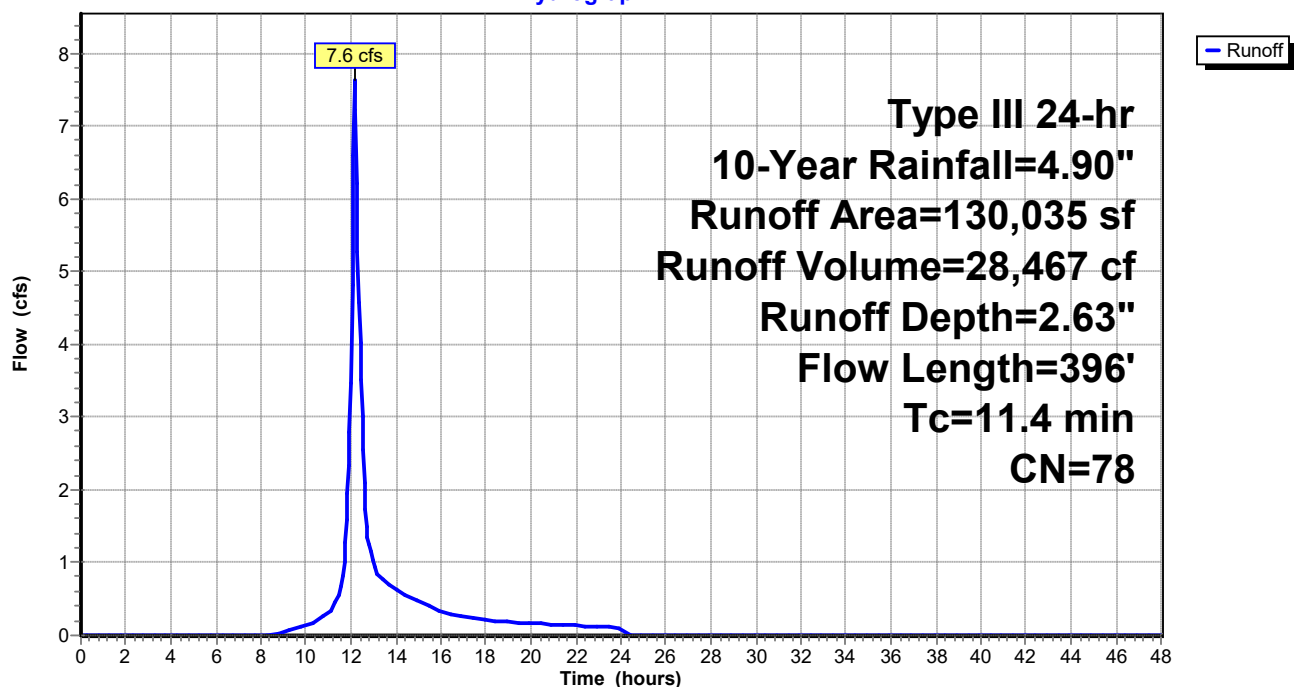
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



Summary for Subcatchment 1.5:

Runoff = 7.2 cfs @ 12.96 hrs, Volume= 63,397 cf, Depth= 2.81"

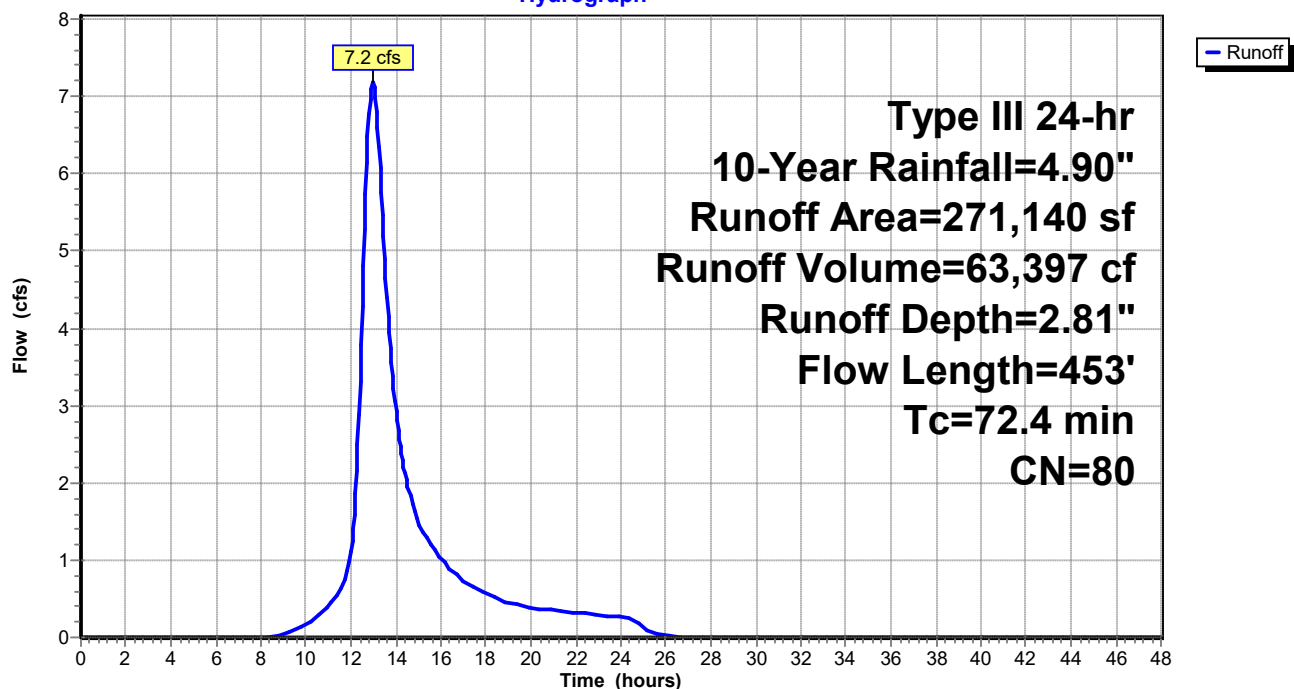
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



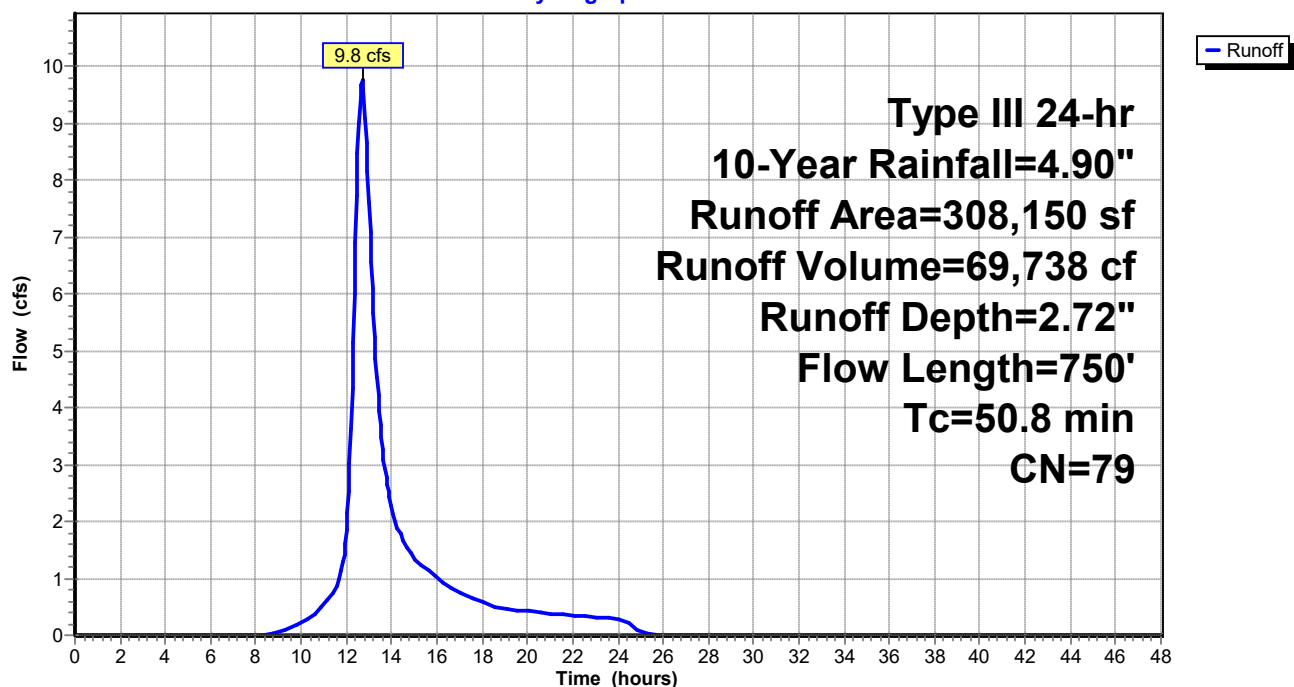
Summary for Subcatchment 2.0:

Runoff = 9.8 cfs @ 12.70 hrs, Volume= 69,738 cf, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
275,925	77	Woods, Good, HSG D
8,960	80	>75% Grass cover, Good, HSG D
23,265	98	Paved parking, HSG D
308,150	79	Weighted Average
284,885		92.45% Pervious Area
23,265		7.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:**Hydrograph**

Summary for Reach R1:

Inflow Area = 60,695 sf, 0.00% Impervious, Inflow Depth = 2.54" for 10-Year event
 Inflow = 2.5 cfs @ 12.36 hrs, Volume= 12,845 cf
 Outflow = 2.2 cfs @ 12.71 hrs, Volume= 12,845 cf, Atten= 13%, Lag= 20.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.53 fps, Min. Travel Time= 12.1 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 37.7 min

Peak Storage= 1,581 cf @ 12.50 hrs

Average Depth at Peak Storage= 0.21'

Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

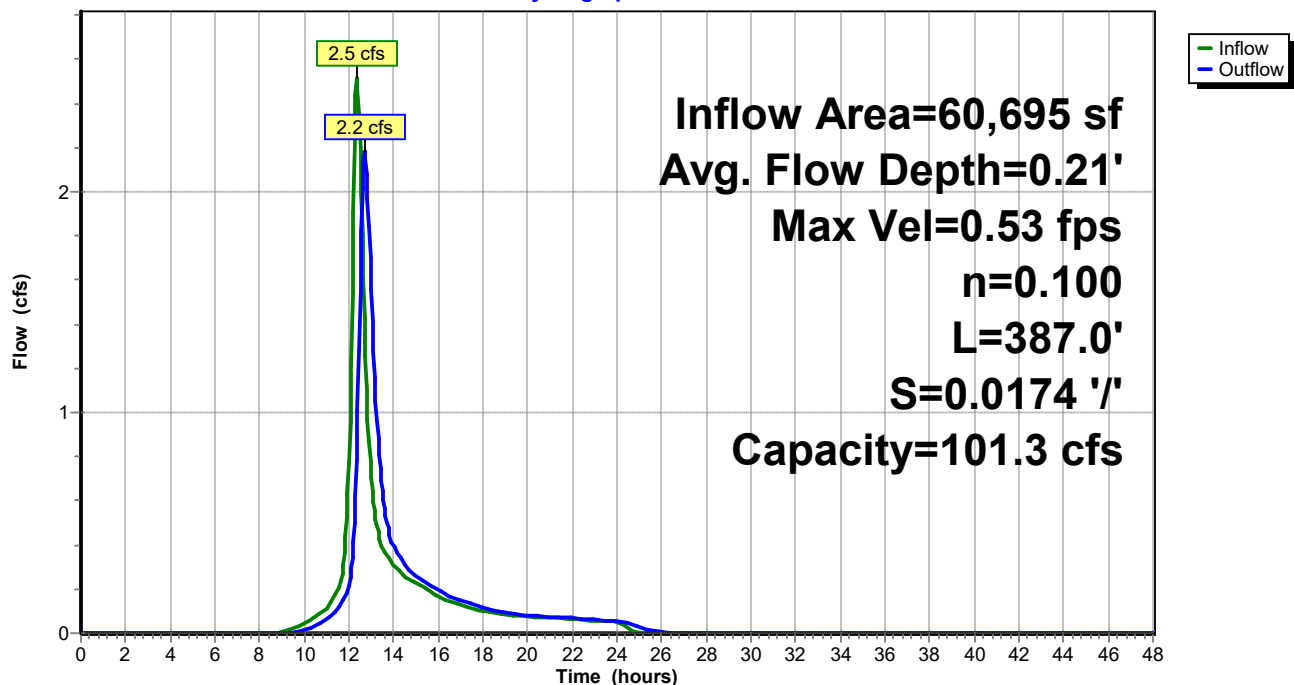
70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 387.0' Slope= 0.0174 '/'

Inlet Invert= 36.75', Outlet Invert= 30.00'

**Reach R1:**

Hydrograph



Summary for Reach R2:

Inflow Area = 11,820 sf, 0.00% Impervious, Inflow Depth = 2.54" for 10-Year event
 Inflow = 0.8 cfs @ 12.09 hrs, Volume= 2,501 cf
 Outflow = 0.6 cfs @ 12.30 hrs, Volume= 2,501 cf, Atten= 24%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.44 fps, Min. Travel Time= 7.8 min

Avg. Velocity = 0.16 fps, Avg. Travel Time= 21.6 min

Peak Storage= 287 cf @ 12.17 hrs

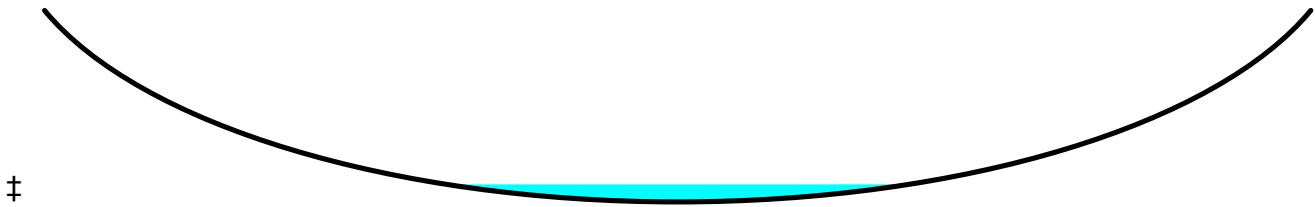
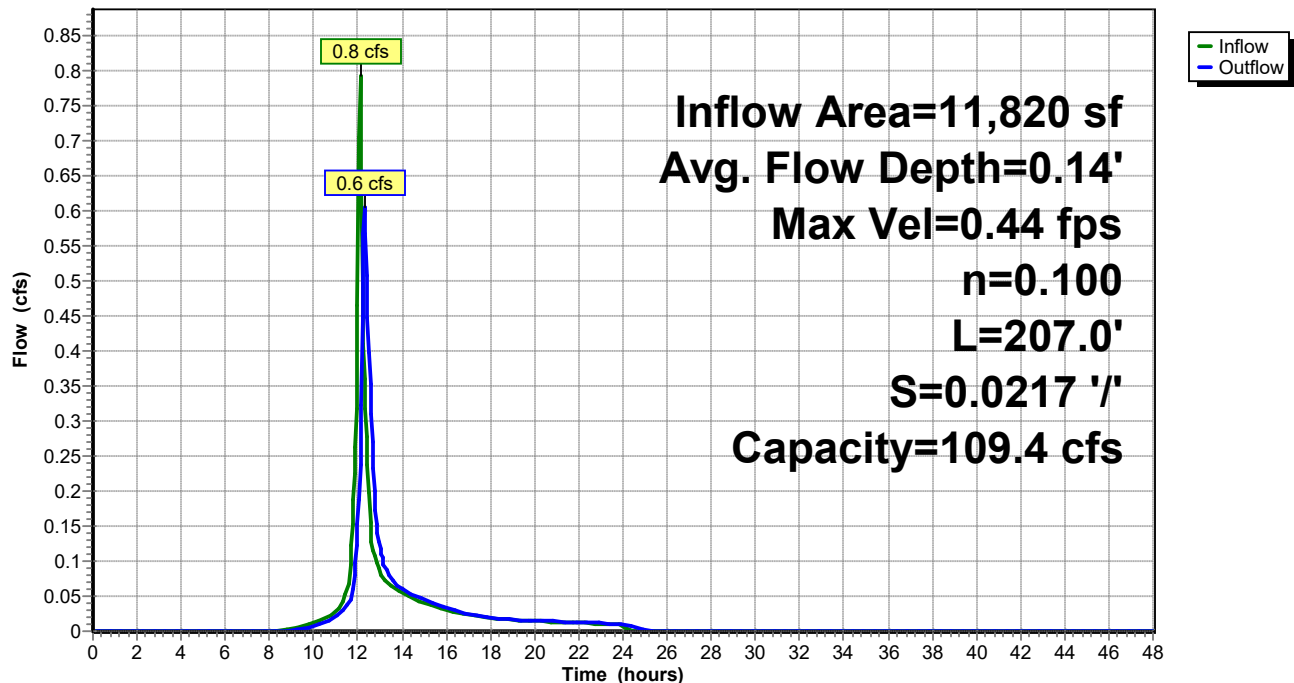
Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 207.0' Slope= 0.0217 '/'

Inlet Invert= 34.50', Outlet Invert= 30.00'

**Reach R2:****Hydrograph**

Summary for Reach R3:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 1.50" for 10-Year event
 Inflow = 5.4 cfs @ 13.78 hrs, Volume= 83,785 cf
 Outflow = 5.4 cfs @ 14.17 hrs, Volume= 83,762 cf, Atten= 1%, Lag= 23.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.44 fps, Min. Travel Time= 12.6 min

Avg. Velocity = 0.14 fps, Avg. Travel Time= 38.2 min

Peak Storage= 4,059 cf @ 13.96 hrs

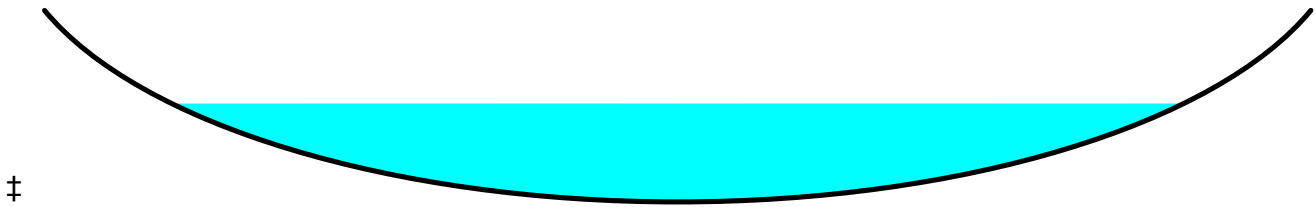
Average Depth at Peak Storage= 0.26'

Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

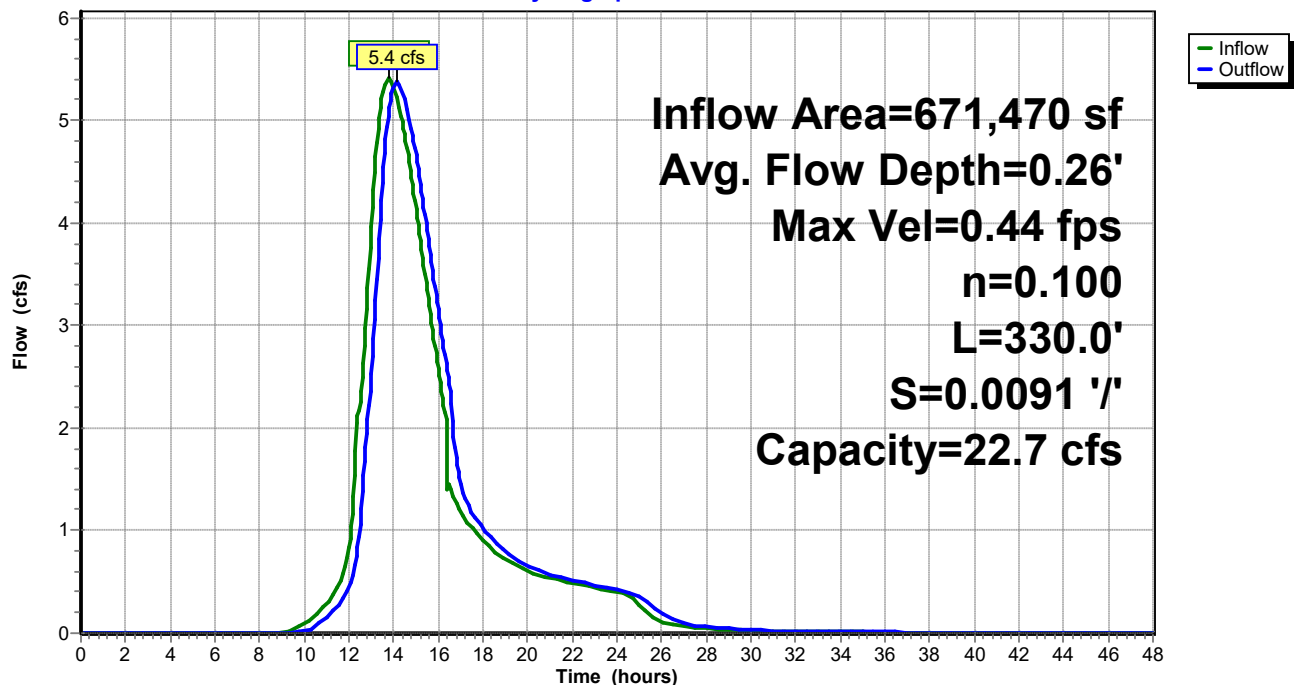
100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 330.0' Slope= 0.0091 '/'

Inlet Invert= 33.00', Outlet Invert= 30.00'

**Reach R3:**

Hydrograph



Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 0.74" for 10-Year event
 Inflow = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf
 Outflow = 2.0 cfs @ 13.31 hrs, Volume= 24,612 cf, Atten= 23%, Lag= 45.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.34 fps, Min. Travel Time= 23.5 min

Avg. Velocity = 0.12 fps, Avg. Travel Time= 67.6 min

Peak Storage= 2,784 cf @ 12.92 hrs

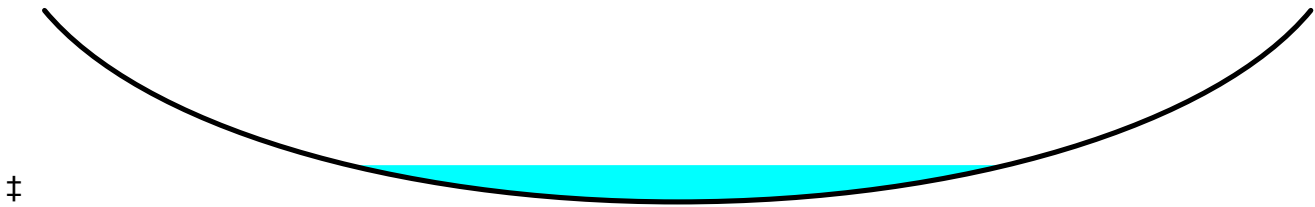
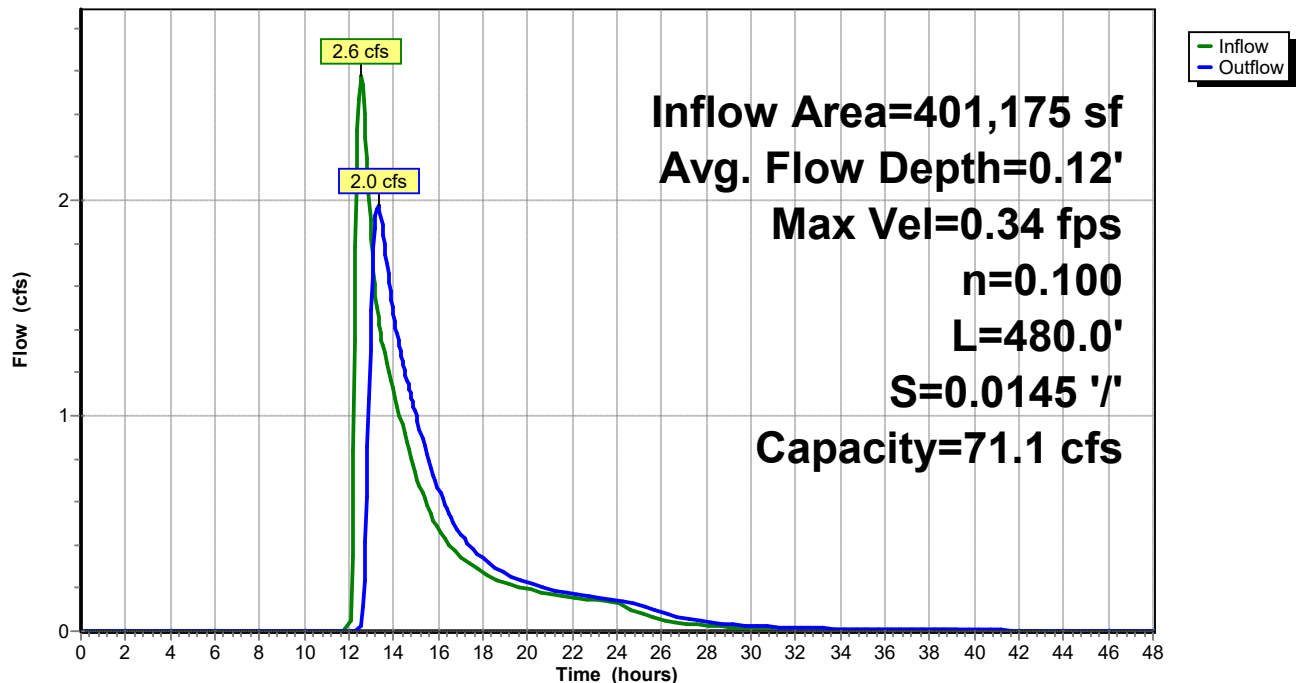
Average Depth at Peak Storage= 0.12'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'

**Reach R4:****Hydrograph**

Summary for Pond C1:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 1.50" for 10-Year event
 Inflow = 8.1 cfs @ 13.15 hrs, Volume= 83,785 cf
 Outflow = 5.4 cfs @ 13.78 hrs, Volume= 83,785 cf, Atten= 33%, Lag= 37.8 min
 Primary = 5.4 cfs @ 13.78 hrs, Volume= 83,785 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.65' @ 13.78 hrs Surf.Area= 27,644 sf Storage= 11,232 cf
 Flood Elev= 34.76' Surf.Area= 31,144 sf Storage= 14,457 cf

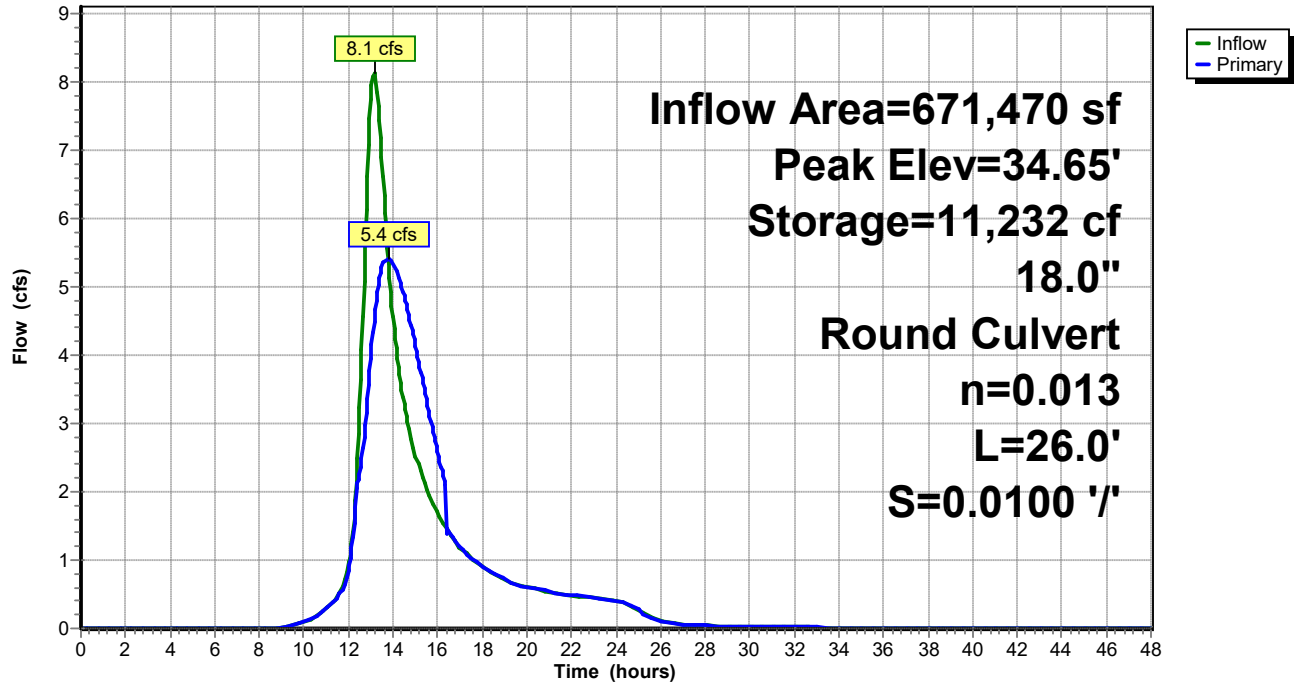
Plug-Flow detention time= 16.5 min calculated for 83,785 cf (100% of inflow)
 Center-of-Mass det. time= 16.5 min (946.8 - 930.3)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	33.26'	18.0" Round Culvert L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.26' / 33.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.4 cfs @ 13.78 hrs HW=34.65' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 5.4 cfs @ 3.17 fps)

Pond C1:**Hydrograph**

Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 0.90" for 10-Year event
 Inflow = 7.6 cfs @ 12.16 hrs, Volume= 29,988 cf
 Outflow = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf, Atten= 66%, Lag= 23.2 min
 Primary = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 40.93' @ 12.55 hrs Surf.Area= 9,771 sf Storage= 11,993 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 190.9 min calculated for 24,615 cf (82% of inflow)
 Center-of-Mass det. time= 122.1 min (955.2 - 833.1)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 ' S= 0.0065 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 ' S= -0.0117 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

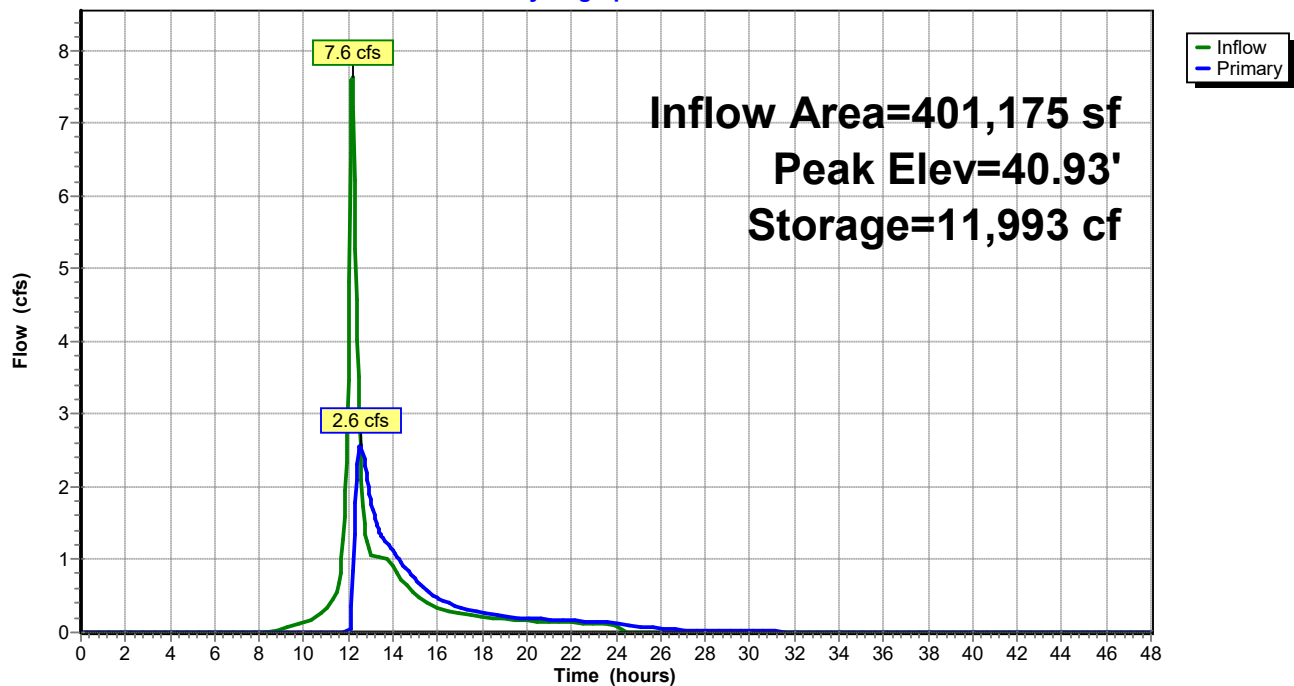
Primary OutFlow Max=2.6 cfs @ 12.55 hrs HW=40.93' (Free Discharge)

1=Culvert (Barrel Controls 1.0 cfs @ 2.61 fps)

2=Culvert (Inlet Controls 1.6 cfs @ 2.40 fps)

Pond C2:

Hydrograph



Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 2.81" for 10-Year event
 Inflow = 7.2 cfs @ 12.96 hrs, Volume= 63,397 cf
 Outflow = 4.1 cfs @ 13.67 hrs, Volume= 63,368 cf, Atten= 43%, Lag= 42.3 min
 Discarded = 3.8 cfs @ 13.67 hrs, Volume= 61,847 cf
 Primary = 0.3 cfs @ 13.67 hrs, Volume= 1,521 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.94' @ 13.67 hrs Surf.Area= 35,865 sf Storage= 18,595 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 88.4 min calculated for 63,368 cf (100% of inflow)
 Center-of-Mass det. time= 88.0 min (972.2 - 884.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

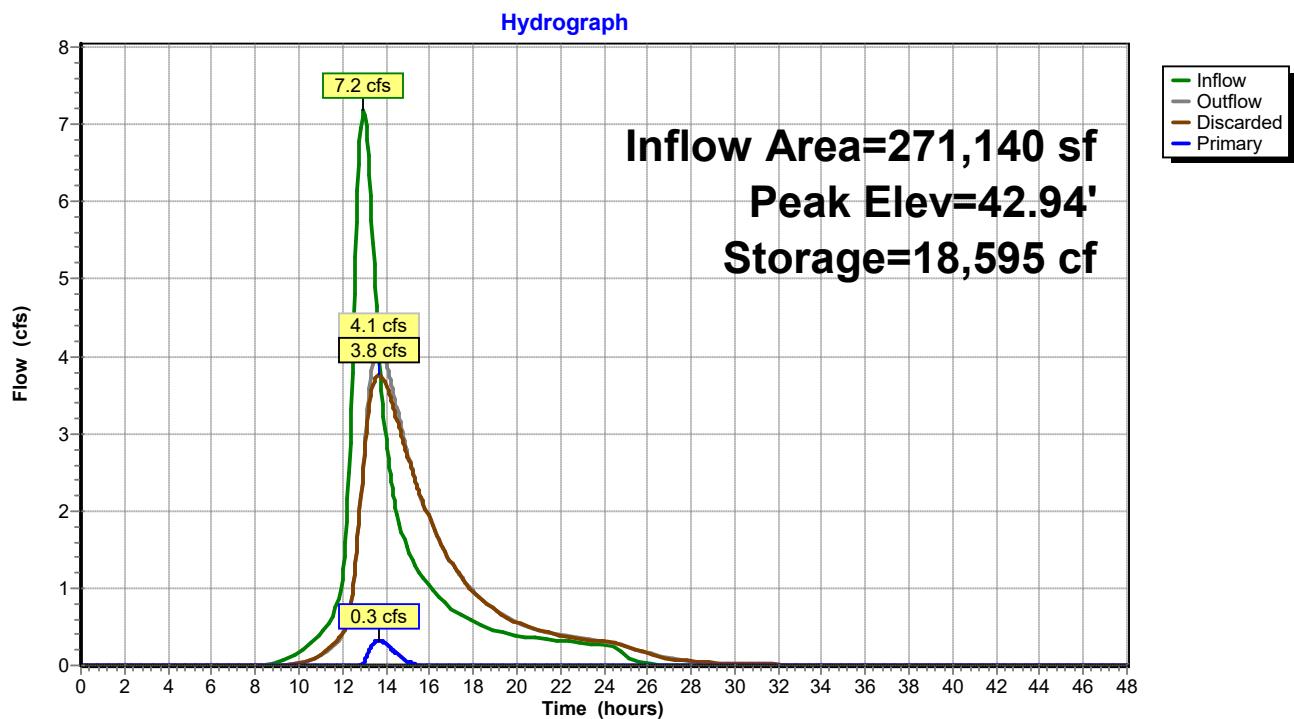
Discarded OutFlow Max=3.8 cfs @ 13.67 hrs HW=42.94' (Free Discharge)

↑ **2=Culvert** (Inlet Controls 3.8 cfs @ 2.60 fps)

Primary OutFlow Max=0.3 cfs @ 13.67 hrs HW=42.94' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.3 cfs @ 1.36 fps)

Pond C3:



Summary for Pond C4:

Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth = 2.72" for 10-Year event
 Inflow = 9.8 cfs @ 12.70 hrs, Volume= 69,738 cf
 Outflow = 7.5 cfs @ 13.01 hrs, Volume= 69,392 cf, Atten= 24%, Lag= 19.0 min
 Primary = 7.5 cfs @ 13.01 hrs, Volume= 69,392 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.49' @ 13.01 hrs Surf.Area= 11,970 sf Storage= 12,322 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 41.6 min calculated for 69,320 cf (99% of inflow)
 Center-of-Mass det. time= 39.5 min (906.4 - 866.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

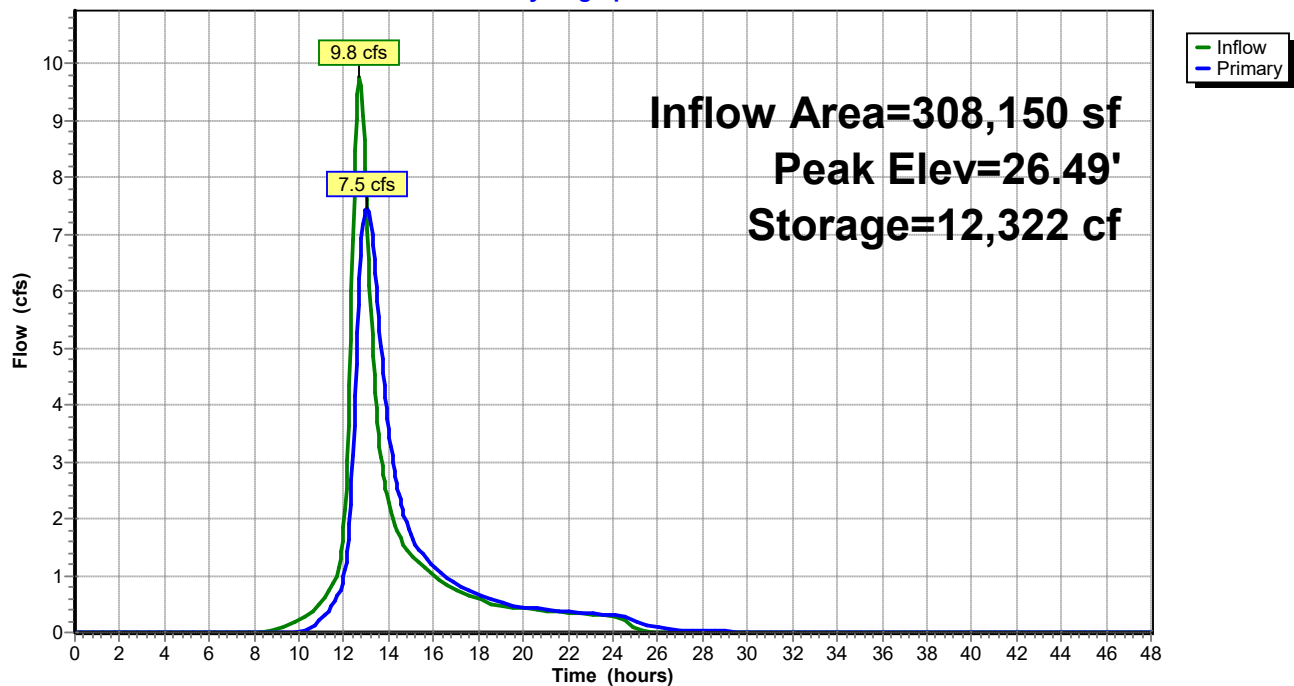
Primary OutFlow Max=7.5 cfs @ 13.01 hrs HW=26.48' (Free Discharge)

1=Culvert (Inlet Controls 3.6 cfs @ 2.97 fps)

2=Culvert (Barrel Controls 3.8 cfs @ 3.52 fps)

Pond C4:

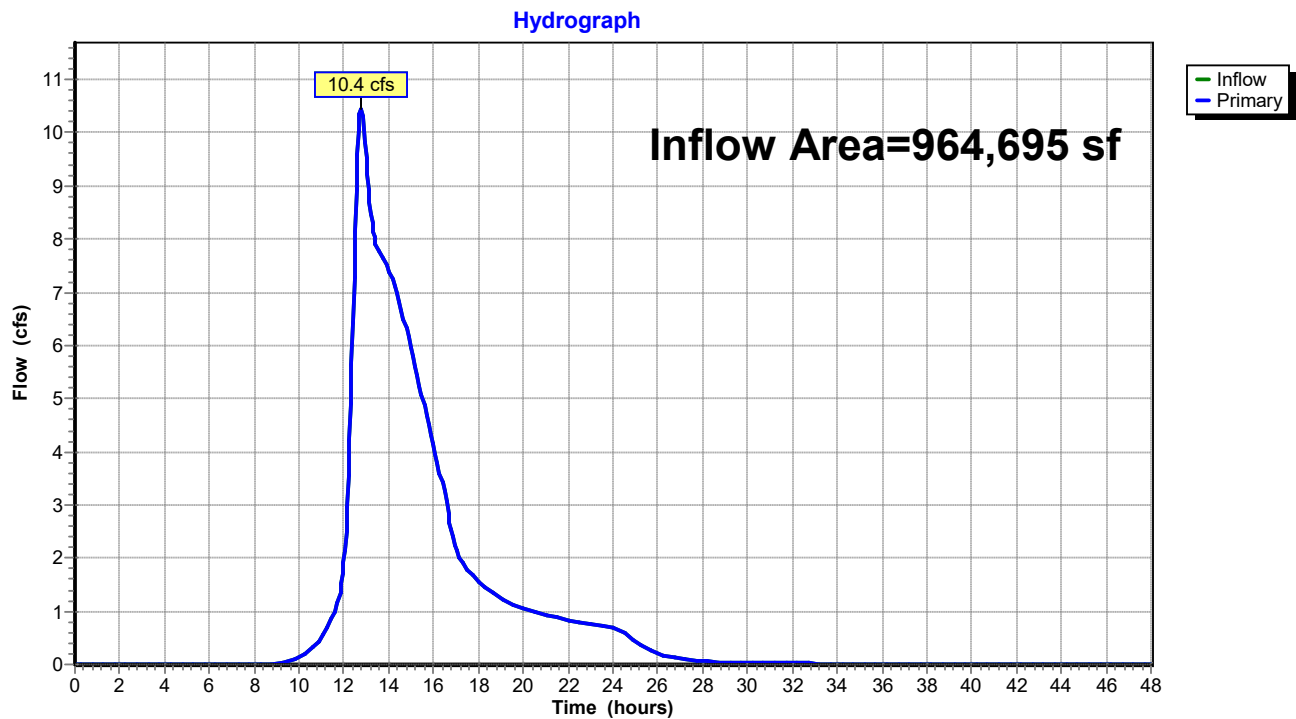
Hydrograph



Summary for Link AP1:

Inflow Area = 964,695 sf, 6.35% Impervious, Inflow Depth > 1.81" for 10-Year event
Inflow = 10.4 cfs @ 12.77 hrs, Volume= 145,817 cf
Primary = 10.4 cfs @ 12.77 hrs, Volume= 145,817 cf, Atten= 0%, Lag= 0.0 min

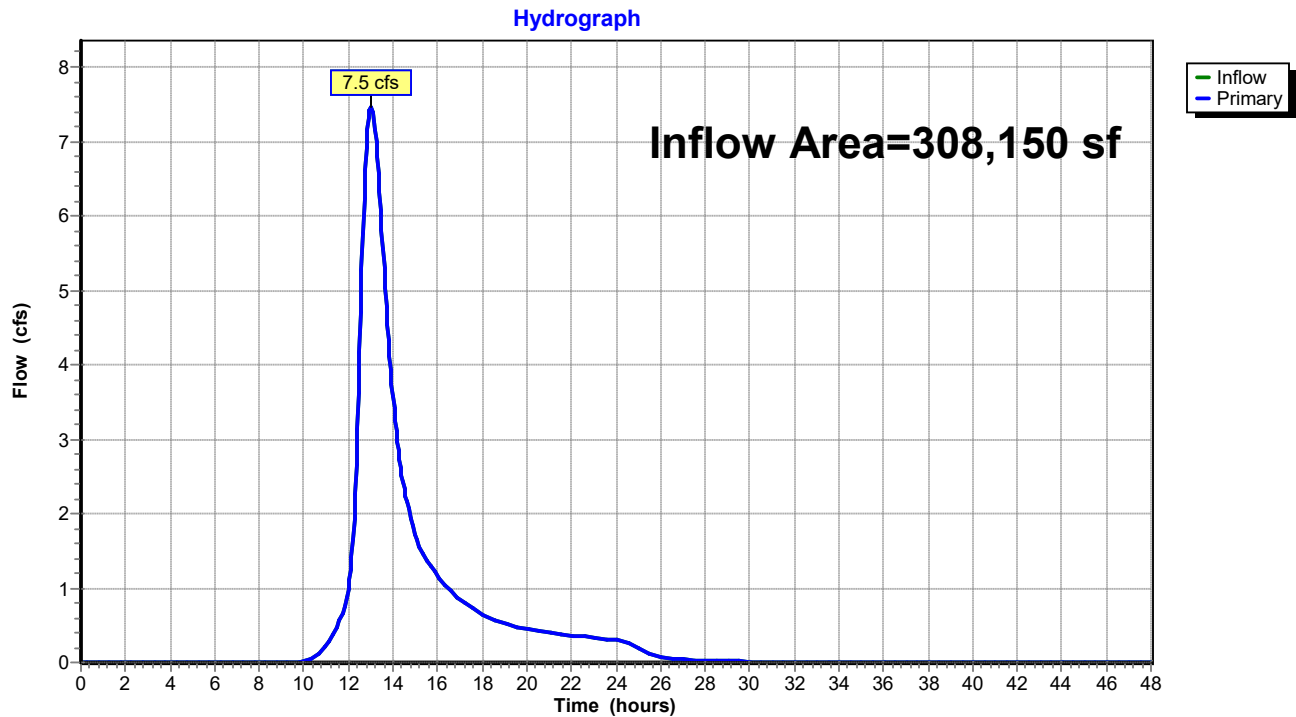
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

Summary for Link AP2:

Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth = 2.70" for 10-Year event
Inflow = 7.5 cfs @ 13.01 hrs, Volume= 69,392 cf
Primary = 7.5 cfs @ 13.01 hrs, Volume= 69,392 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:

Pre-Dev - REV1*Type III 24-hr 25-Year Rainfall=6.20"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0: Runoff Area=220,710 sf 1.41% Impervious Runoff Depth=3.65"
 Flow Length=659' Tc=54.2 min CN=77 Runoff=9.1 cfs 67,212 cf

Subcatchment 1.1: Runoff Area=60,695 sf 0.00% Impervious Runoff Depth=3.65"
 Flow Length=377' Tc=25.5 min CN=77 Runoff=3.6 cfs 18,483 cf

Subcatchment 1.2: Runoff Area=11,820 sf 0.00% Impervious Runoff Depth=3.65"
 Tc=6.0 min CN=77 Runoff=1.1 cfs 3,599 cf

Subcatchment 1.3: Runoff Area=270,295 sf 4.90% Impervious Runoff Depth=3.76"
 Flow Length=598' Tc=79.3 min CN=78 Runoff=9.0 cfs 84,605 cf

Subcatchment 1.4: Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=3.76"
 Flow Length=396' Tc=11.4 min CN=78 Runoff=10.9 cfs 40,702 cf

Subcatchment 1.5: Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=3.96"
 Flow Length=453' Tc=72.4 min CN=80 Runoff=10.1 cfs 89,526 cf

Subcatchment 2.0: Runoff Area=308,150 sf 7.55% Impervious Runoff Depth=3.86"
 Flow Length=750' Tc=50.8 min CN=79 Runoff=13.9 cfs 99,090 cf

Reach R1: Avg. Flow Depth=0.25' Max Vel=0.60 fps Inflow=3.6 cfs 18,483 cf
 n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=3.2 cfs 18,483 cf

Reach R2: Avg. Flow Depth=0.17' Max Vel=0.50 fps Inflow=1.1 cfs 3,599 cf
 n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=0.9 cfs 3,599 cf

Reach R3: Avg. Flow Depth=0.29' Max Vel=0.47 fps Inflow=6.8 cfs 125,101 cf
 n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=6.8 cfs 125,078 cf

Reach R4: Avg. Flow Depth=0.17' Max Vel=0.42 fps Inflow=4.6 cfs 40,524 cf
 n=0.100 L=480.0' S=0.0145 '/' Capacity=71.1 cfs Outflow=3.8 cfs 40,496 cf

Pond C1: Peak Elev=35.05' Storage=24,724 cf Inflow=12.9 cfs 125,101 cf
 18.0" Round Culvert n=0.013 L=26.0' S=0.0100 '/' Outflow=6.8 cfs 125,101 cf

Pond C2: Peak Elev=41.29' Storage=15,674 cf Inflow=10.9 cfs 45,875 cf
 Outflow=4.6 cfs 40,524 cf

Pond C3: Peak Elev=43.12' Storage=25,508 cf Inflow=10.1 cfs 89,526 cf
 Discarded=5.2 cfs 84,323 cf Primary=0.9 cfs 5,173 cf Outflow=6.1 cfs 89,496 cf

Pond C4: Peak Elev=26.95' Storage=18,092 cf Inflow=13.9 cfs 99,090 cf
 Outflow=9.9 cfs 98,743 cf

Link AP1: Inflow=14.7 cfs 214,372 cf
 Primary=14.7 cfs 214,372 cf

Pre-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

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Link AP2:

Inflow=9.9 cfs 98,743 cf

Primary=9.9 cfs 98,743 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 403,217 cf Average Runoff Depth = 3.80"
93.36% Pervious = 1,188,325 sf 6.64% Impervious = 84,520 sf

Summary for Subcatchment 1.0:

Runoff = 9.1 cfs @ 12.73 hrs, Volume= 67,212 cf, Depth= 3.65"

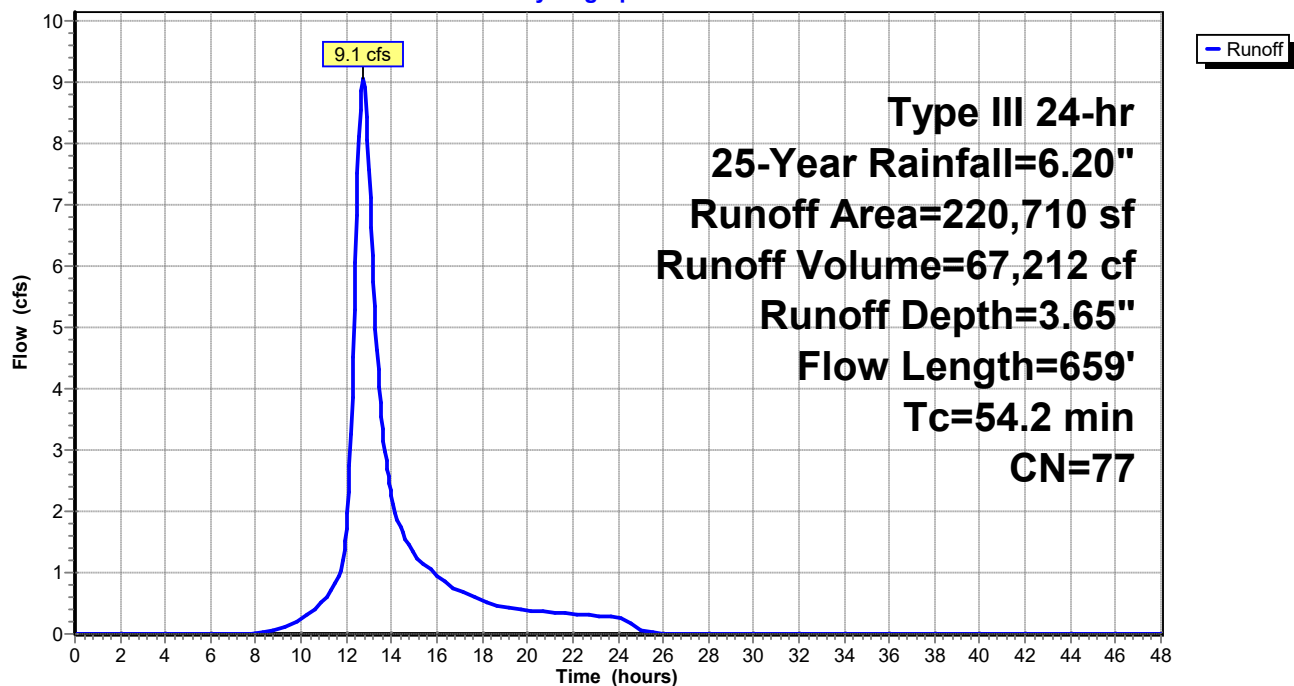
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
217,605	77	Woods, Good, HSG D
3,105	98	Paved parking, HSG D
220,710	77	Weighted Average
217,605		98.59% Pervious Area
3,105		1.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:

Hydrograph



Summary for Subcatchment 1.1:

Runoff = 3.6 cfs @ 12.35 hrs, Volume= 18,483 cf, Depth= 3.65"

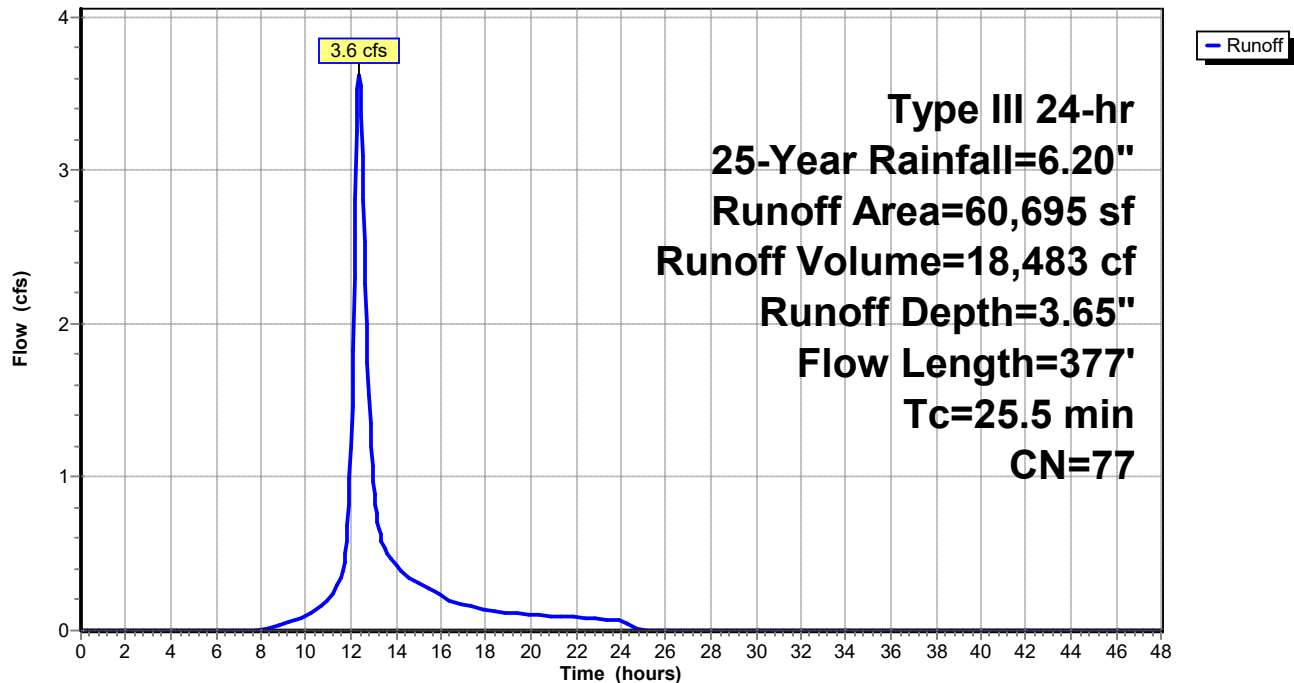
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
60,695	77	Woods, Good, HSG D
60,695		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	72	0.1667	0.10		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
13.4	305	0.0230	0.38		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
25.5	377	Total			

Subcatchment 1.1:

Hydrograph



Summary for Subcatchment 1.2:

Runoff = 1.1 cfs @ 12.09 hrs, Volume= 3,599 cf, Depth= 3.65"

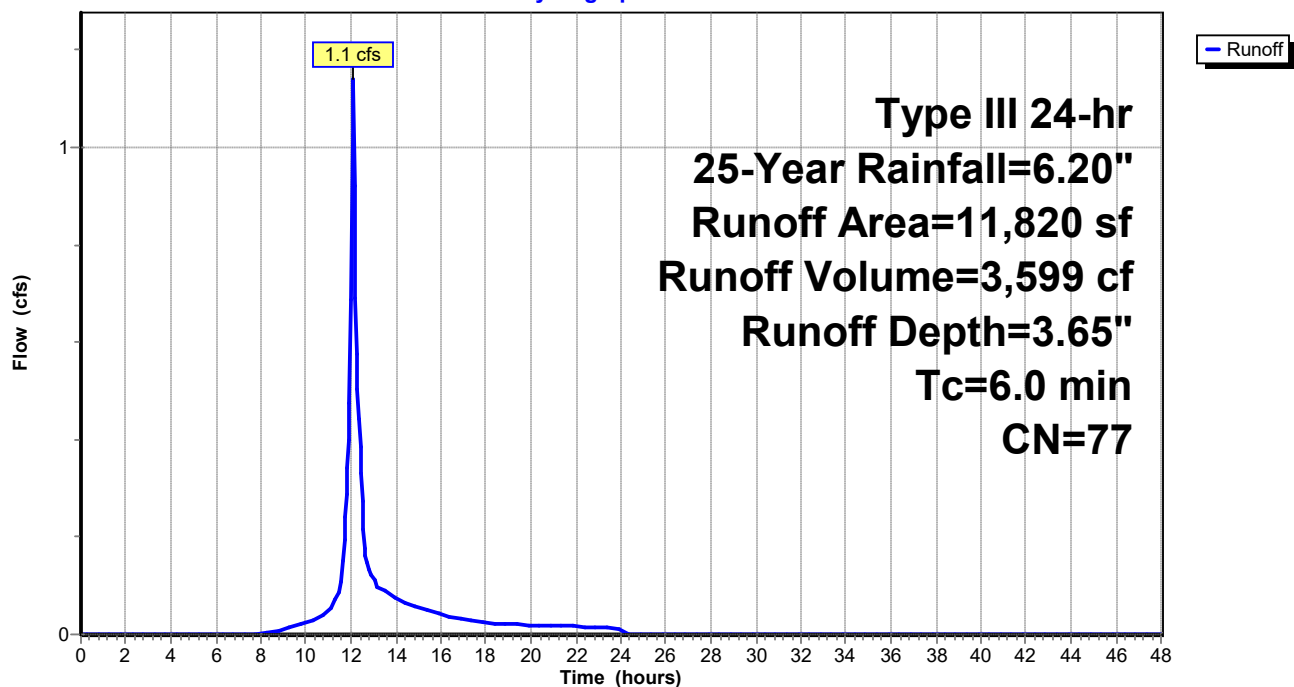
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
11,820	77	Woods, Good, HSG D
11,820		100.00% Pervious Area

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

Subcatchment 1.2:

Hydrograph



Summary for Subcatchment 1.3:

Runoff = 9.0 cfs @ 13.07 hrs, Volume= 84,605 cf, Depth= 3.76"

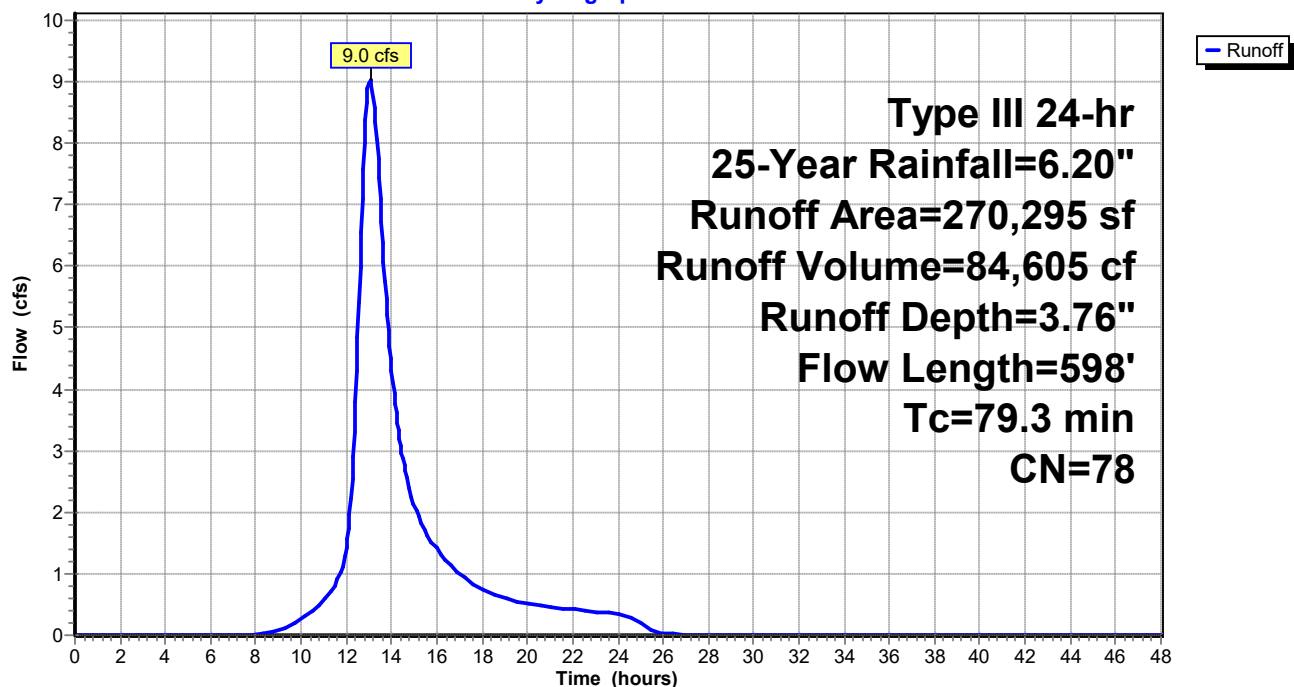
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
255,765	77	Woods, Good, HSG D
1,275	80	>75% Grass cover, Good, HSG D
13,255	98	Paved parking, HSG D
270,295	78	Weighted Average
257,040		95.10% Pervious Area
13,255		4.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C
					Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:

Hydrograph



Summary for Subcatchment 1.4:

Runoff = 10.9 cfs @ 12.16 hrs, Volume= 40,702 cf, Depth= 3.76"

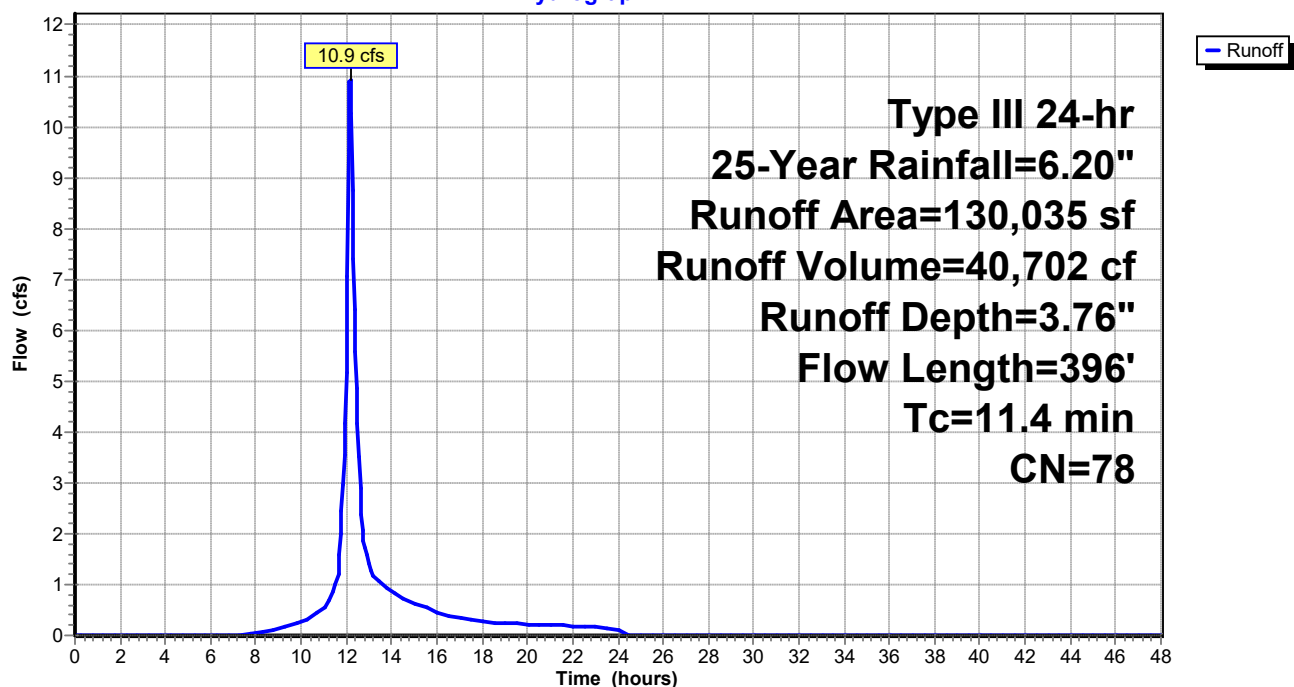
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



Summary for Subcatchment 1.5:

Runoff = 10.1 cfs @ 12.96 hrs, Volume= 89,526 cf, Depth= 3.96"

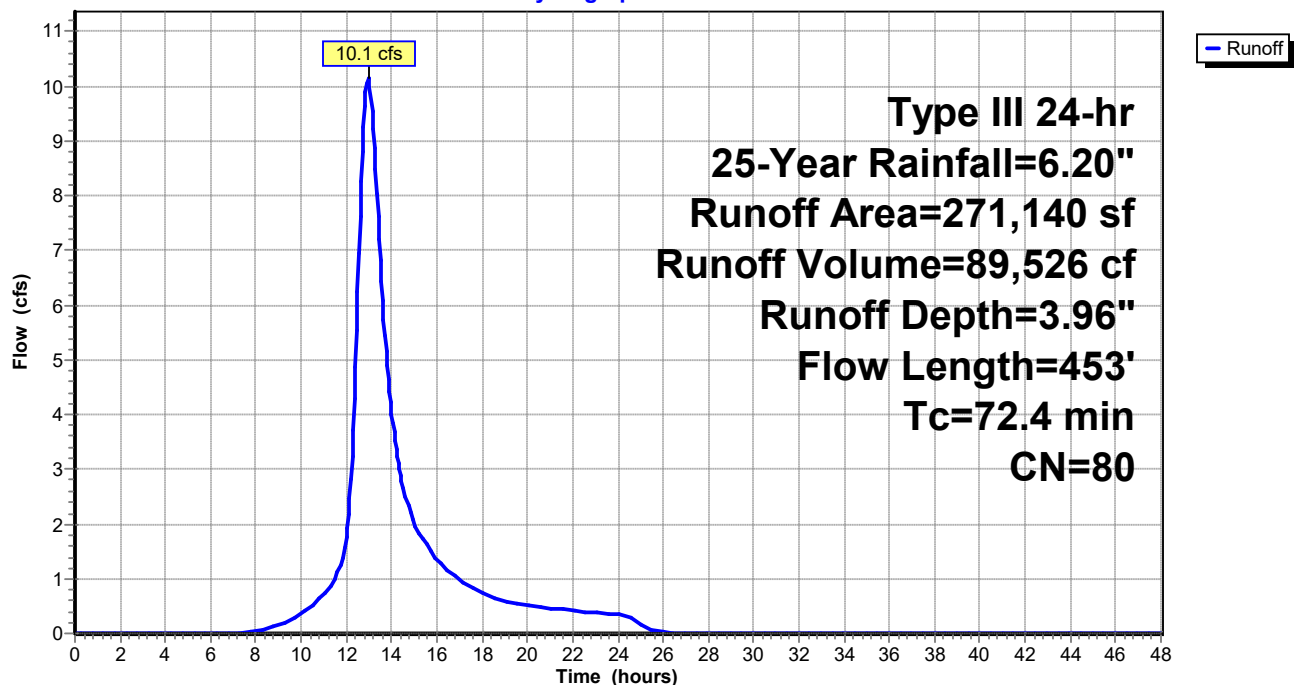
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



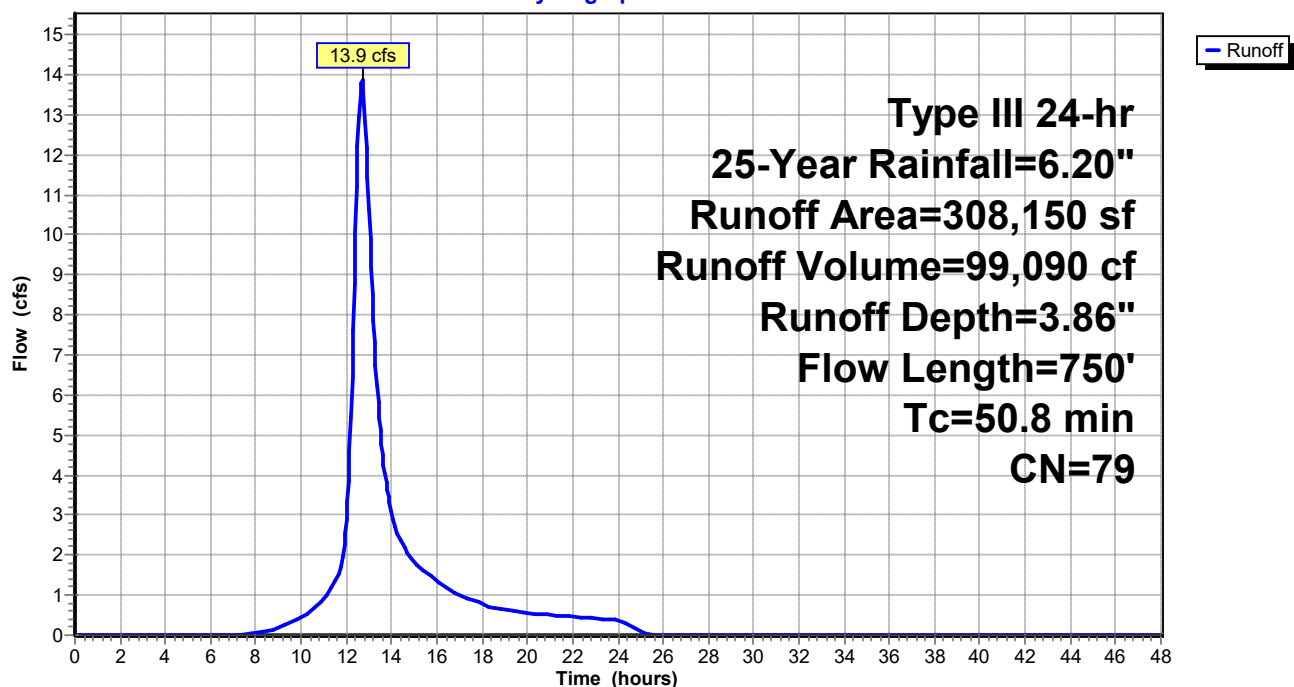
Summary for Subcatchment 2.0:

Runoff = 13.9 cfs @ 12.69 hrs, Volume= 99,090 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
275,925	77	Woods, Good, HSG D
8,960	80	>75% Grass cover, Good, HSG D
23,265	98	Paved parking, HSG D
308,150	79	Weighted Average
284,885		92.45% Pervious Area
23,265		7.55% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:**Hydrograph**

Summary for Reach R1:

Inflow Area = 60,695 sf, 0.00% Impervious, Inflow Depth = 3.65" for 25-Year event
 Inflow = 3.6 cfs @ 12.35 hrs, Volume= 18,483 cf
 Outflow = 3.2 cfs @ 12.66 hrs, Volume= 18,483 cf, Atten= 11%, Lag= 18.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.60 fps, Min. Travel Time= 10.7 min

Avg. Velocity = 0.19 fps, Avg. Travel Time= 34.8 min

Peak Storage= 2,070 cf @ 12.48 hrs

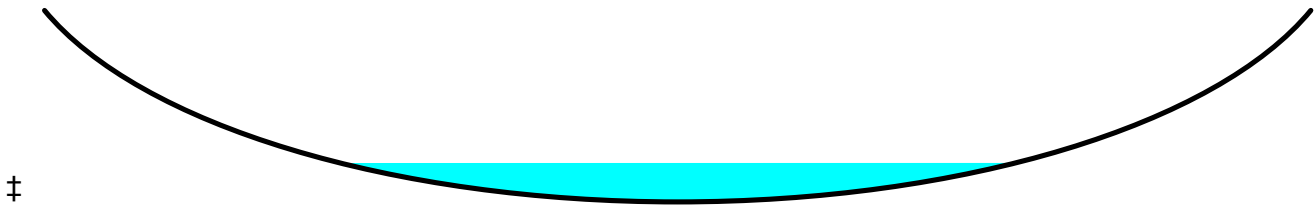
Average Depth at Peak Storage= 0.25'

Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

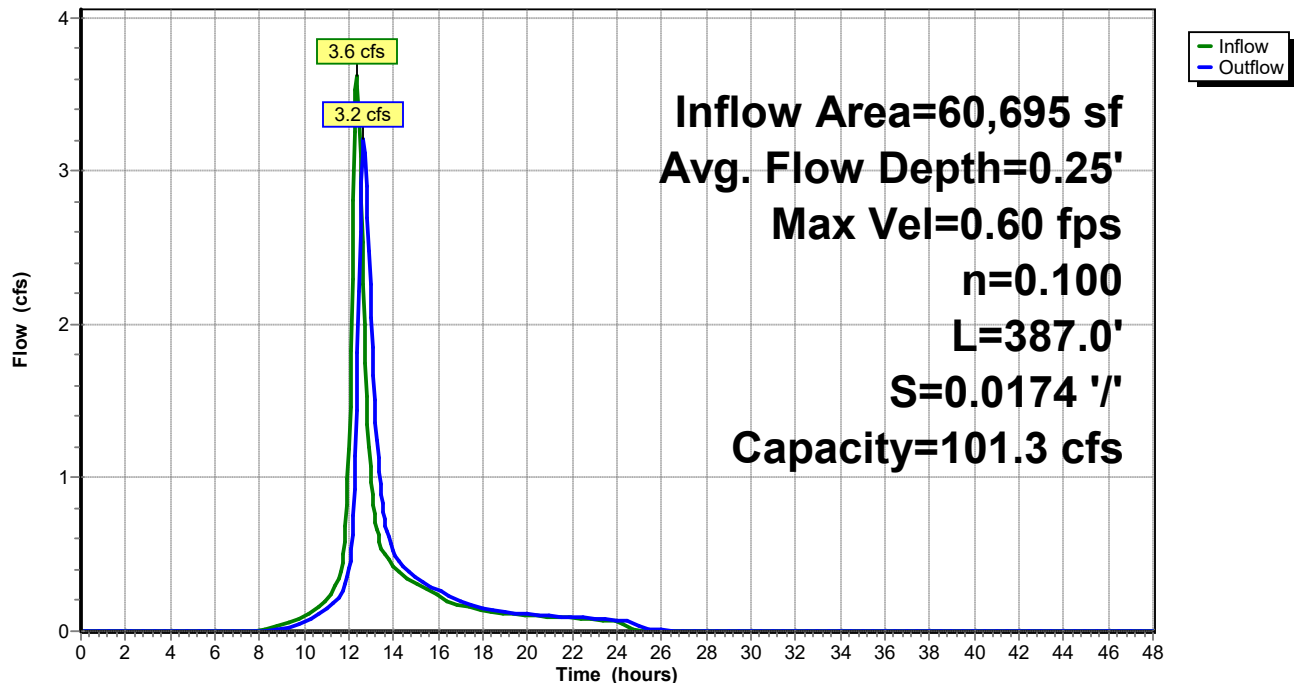
70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 387.0' Slope= 0.0174 '/'

Inlet Invert= 36.75', Outlet Invert= 30.00'

**Reach R1:**

Hydrograph



Summary for Reach R2:

Inflow Area = 11,820 sf, 0.00% Impervious, Inflow Depth = 3.65" for 25-Year event
 Inflow = 1.1 cfs @ 12.09 hrs, Volume= 3,599 cf
 Outflow = 0.9 cfs @ 12.27 hrs, Volume= 3,599 cf, Atten= 21%, Lag= 10.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.50 fps, Min. Travel Time= 6.9 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 20.1 min

Peak Storage= 378 cf @ 12.16 hrs

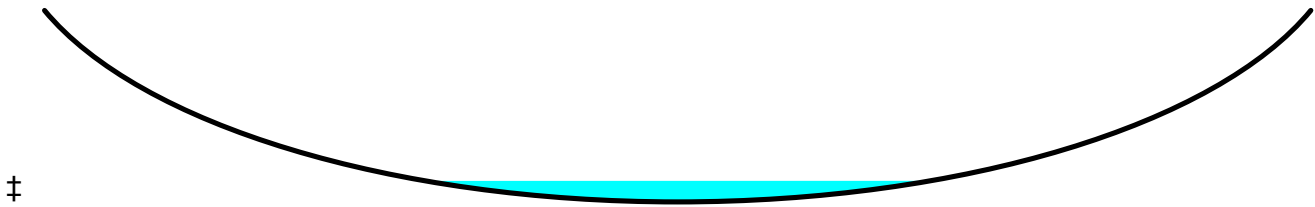
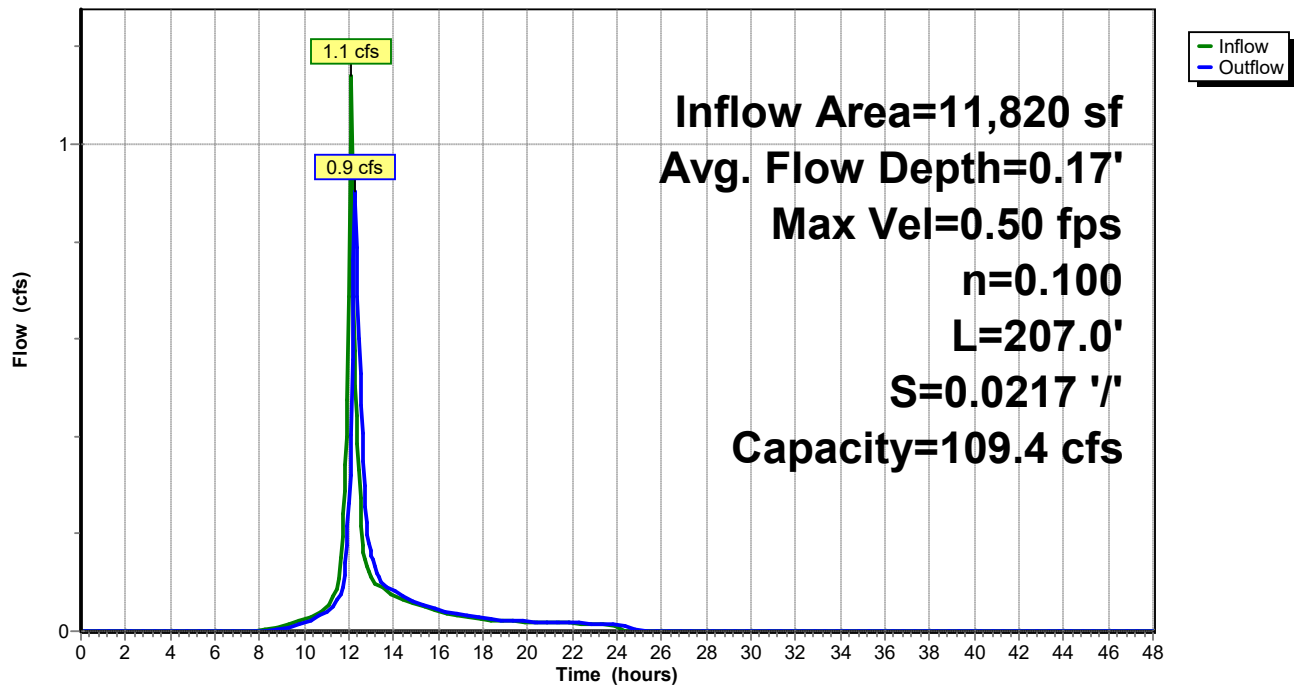
Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 207.0' Slope= 0.0217 '/'

Inlet Invert= 34.50', Outlet Invert= 30.00'

**Reach R2:****Hydrograph**

Summary for Reach R3:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 2.24" for 25-Year event
 Inflow = 6.8 cfs @ 13.97 hrs, Volume= 125,101 cf
 Outflow = 6.8 cfs @ 14.32 hrs, Volume= 125,078 cf, Atten= 0%, Lag= 21.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.47 fps, Min. Travel Time= 11.7 min

Avg. Velocity = 0.16 fps, Avg. Travel Time= 34.8 min

Peak Storage= 4,786 cf @ 14.12 hrs

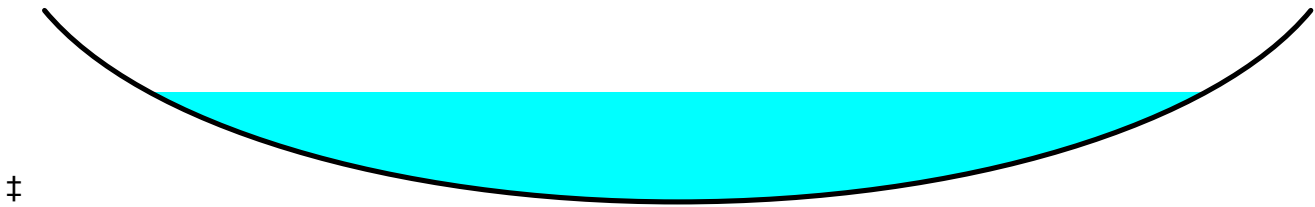
Average Depth at Peak Storage= 0.29'

Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

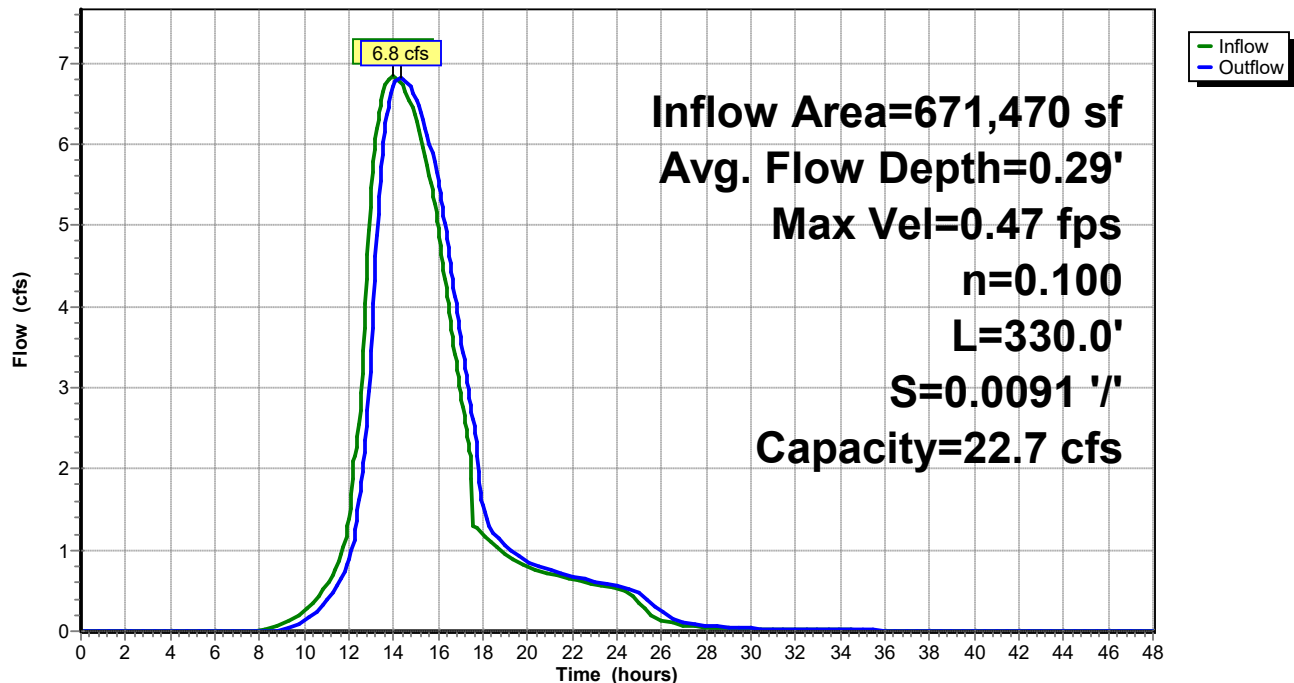
100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 330.0' Slope= 0.0091 '/'

Inlet Invert= 33.00', Outlet Invert= 30.00'

**Reach R3:**

Hydrograph



Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 1.21" for 25-Year event
 Inflow = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf
 Outflow = 3.8 cfs @ 13.08 hrs, Volume= 40,496 cf, Atten= 17%, Lag= 36.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.42 fps, Min. Travel Time= 19.2 min

Avg. Velocity = 0.13 fps, Avg. Travel Time= 61.7 min

Peak Storage= 4,414 cf @ 12.76 hrs

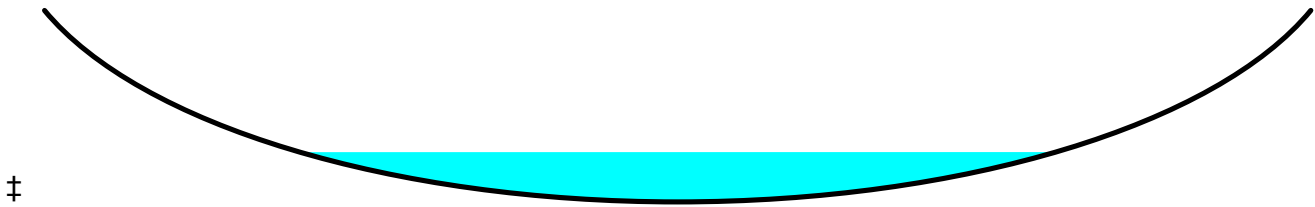
Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

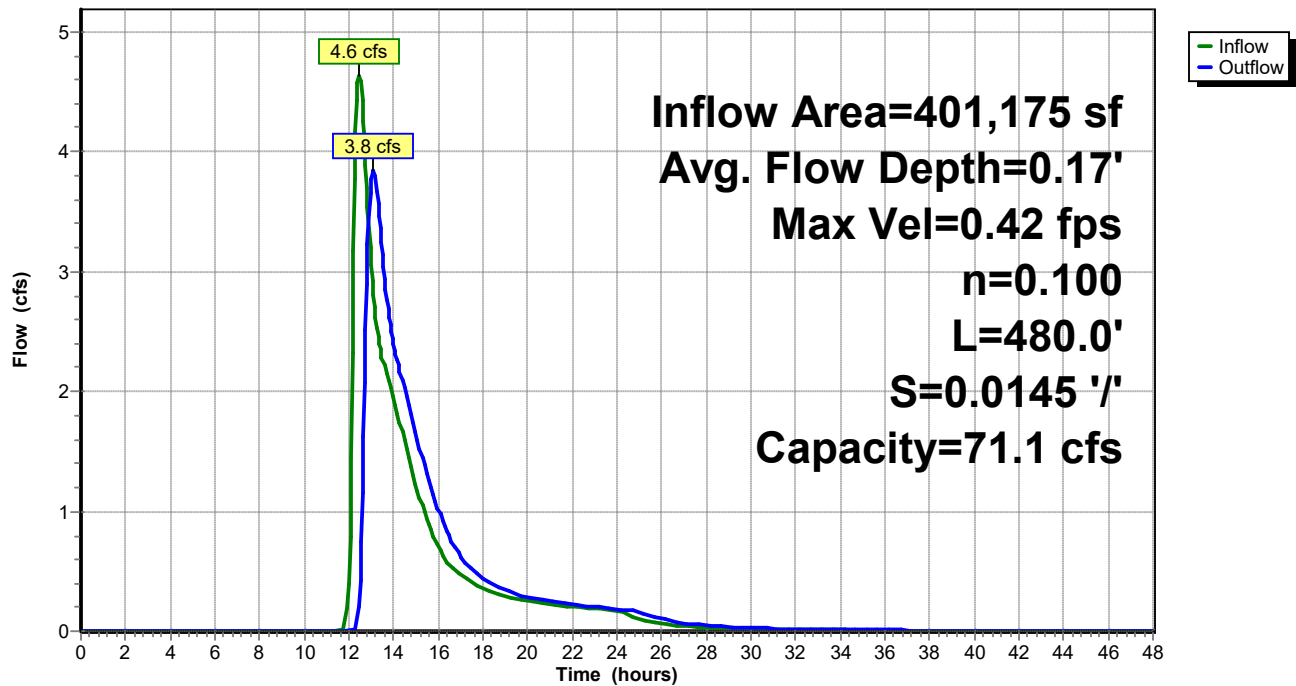
160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'

**Reach R4:**

Hydrograph



Summary for Pond C1:

Inflow Area = 671,470 sf, 8.66% Impervious, Inflow Depth > 2.24" for 25-Year event
 Inflow = 12.9 cfs @ 13.07 hrs, Volume= 125,101 cf
 Outflow = 6.8 cfs @ 13.97 hrs, Volume= 125,101 cf, Atten= 47%, Lag= 53.7 min
 Primary = 6.8 cfs @ 13.97 hrs, Volume= 125,101 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 35.05' @ 13.97 hrs Surf.Area= 40,064 sf Storage= 24,724 cf
 Flood Elev= 34.76' Surf.Area= 31,144 sf Storage= 14,457 cf

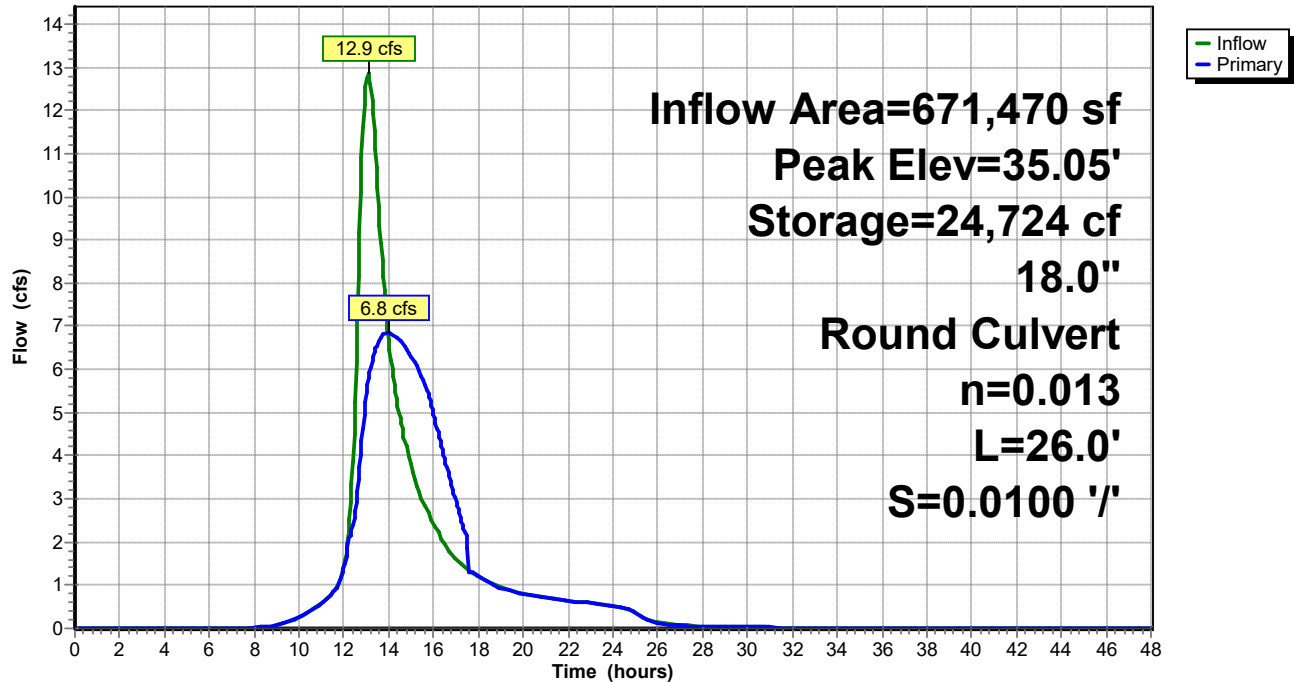
Plug-Flow detention time= 31.7 min calculated for 125,101 cf (100% of inflow)
 Center-of-Mass det. time= 31.7 min (942.9 - 911.2)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	33.26'	18.0" Round Culvert L= 26.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.26' / 33.00' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.8 cfs @ 13.97 hrs HW=35.05' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 6.8 cfs @ 3.87 fps)

Pond C1:**Hydrograph**

Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 1.37" for 25-Year event
 Inflow = 10.9 cfs @ 12.16 hrs, Volume= 45,875 cf
 Outflow = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf, Atten= 58%, Lag= 18.5 min
 Primary = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 41.29' @ 12.47 hrs Surf.Area= 10,855 sf Storage= 15,674 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 142.3 min calculated for 40,482 cf (88% of inflow)
 Center-of-Mass det. time= 92.7 min (917.1 - 824.4)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

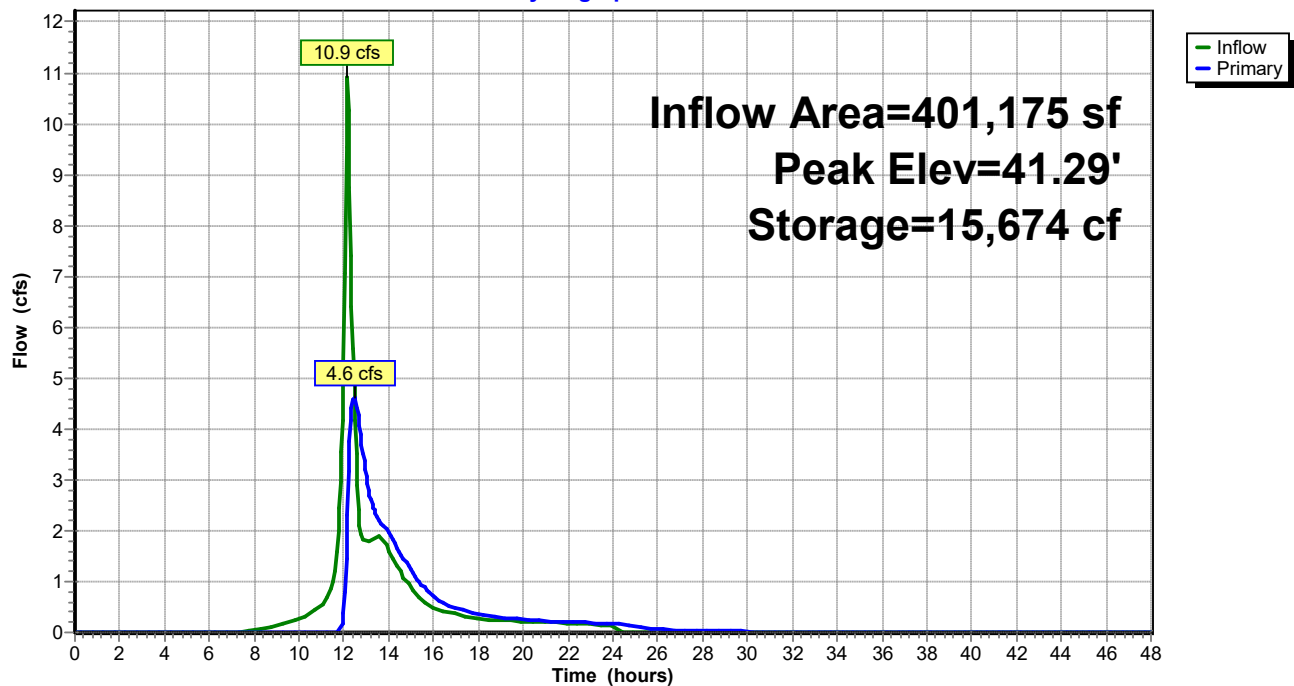
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 ' S= 0.0065 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 ' S= -0.0117 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=4.6 cfs @ 12.47 hrs HW=41.28' (Free Discharge)

1=Culvert (Barrel Controls 2.2 cfs @ 3.16 fps)

2=Culvert (Inlet Controls 2.4 cfs @ 3.07 fps)

Pond C2:**Hydrograph**

Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 3.96" for 25-Year event
 Inflow = 10.1 cfs @ 12.96 hrs, Volume= 89,526 cf
 Outflow = 6.1 cfs @ 13.60 hrs, Volume= 89,496 cf, Atten= 40%, Lag= 38.8 min
 Discarded = 5.2 cfs @ 13.60 hrs, Volume= 84,323 cf
 Primary = 0.9 cfs @ 13.60 hrs, Volume= 5,173 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.12' @ 13.60 hrs Surf.Area= 38,482 sf Storage= 25,508 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 82.5 min calculated for 89,403 cf (100% of inflow)
 Center-of-Mass det. time= 83.1 min (957.5 - 874.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Discarded OutFlow Max=5.2 cfs @ 13.60 hrs HW=43.12' (Free Discharge)

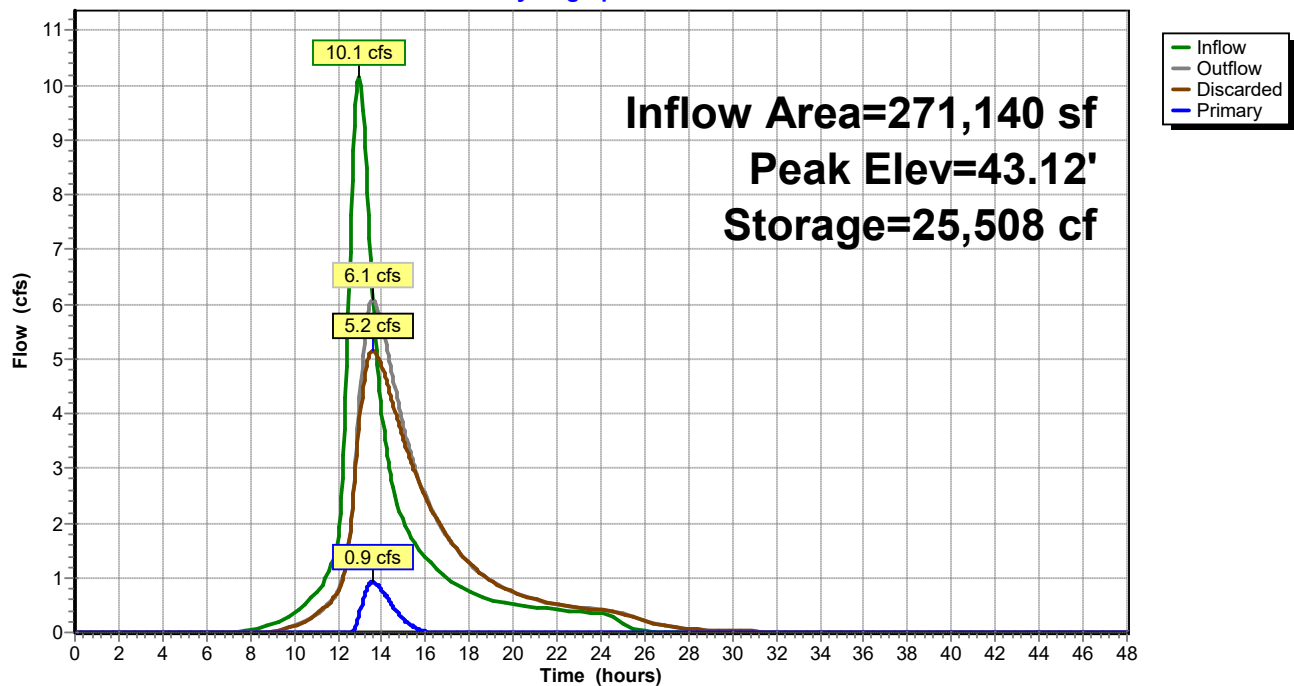
↑ **2=Culvert** (Inlet Controls 5.2 cfs @ 2.85 fps)

Primary OutFlow Max=0.9 cfs @ 13.60 hrs HW=43.12' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.9 cfs @ 1.78 fps)

Pond C3:

Hydrograph



Summary for Pond C4:

Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth = 3.86" for 25-Year event
 Inflow = 13.9 cfs @ 12.69 hrs, Volume= 99,090 cf
 Outflow = 9.9 cfs @ 13.05 hrs, Volume= 98,743 cf, Atten= 28%, Lag= 21.5 min
 Primary = 9.9 cfs @ 13.05 hrs, Volume= 98,743 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.95' @ 13.05 hrs Surf.Area= 12,898 sf Storage= 18,092 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 39.3 min calculated for 98,743 cf (100% of inflow)
 Center-of-Mass det. time= 37.0 min (893.8 - 856.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

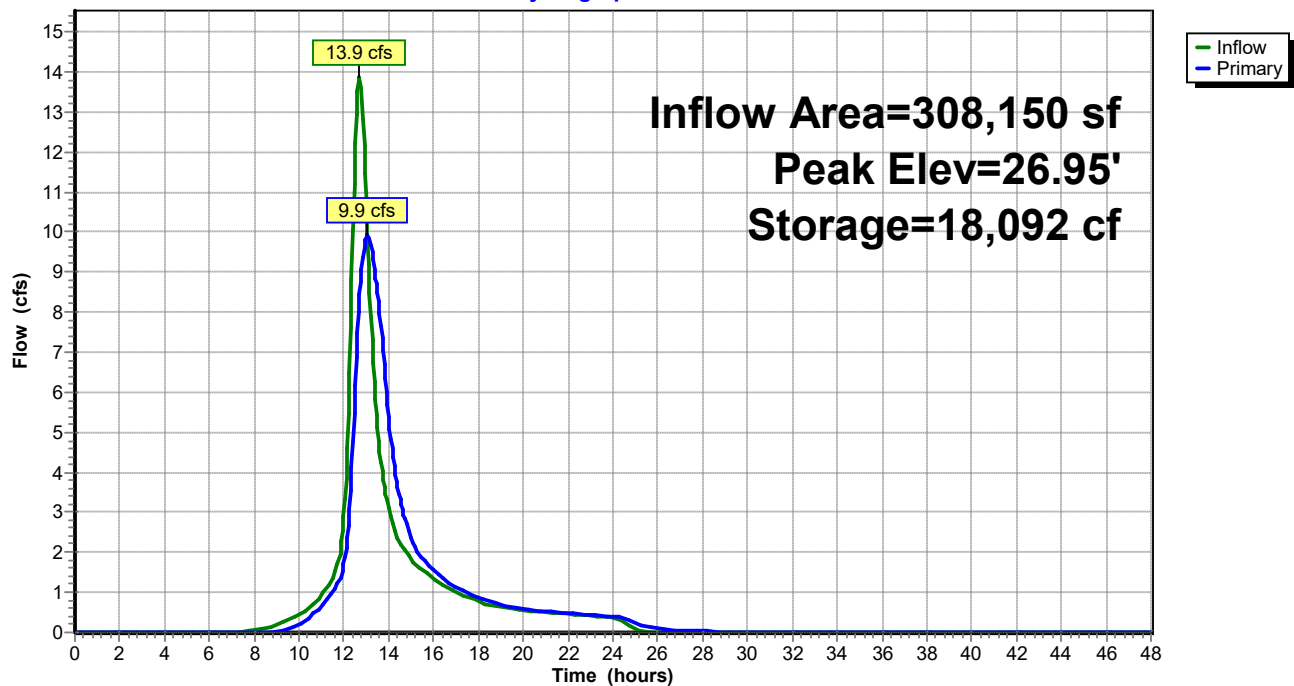
Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.9 cfs @ 13.05 hrs HW=26.95' (Free Discharge)

1=Culvert (Inlet Controls 4.8 cfs @ 3.92 fps)
 2=Culvert (Barrel Controls 5.1 cfs @ 4.16 fps)

Pond C4:

Hydrograph



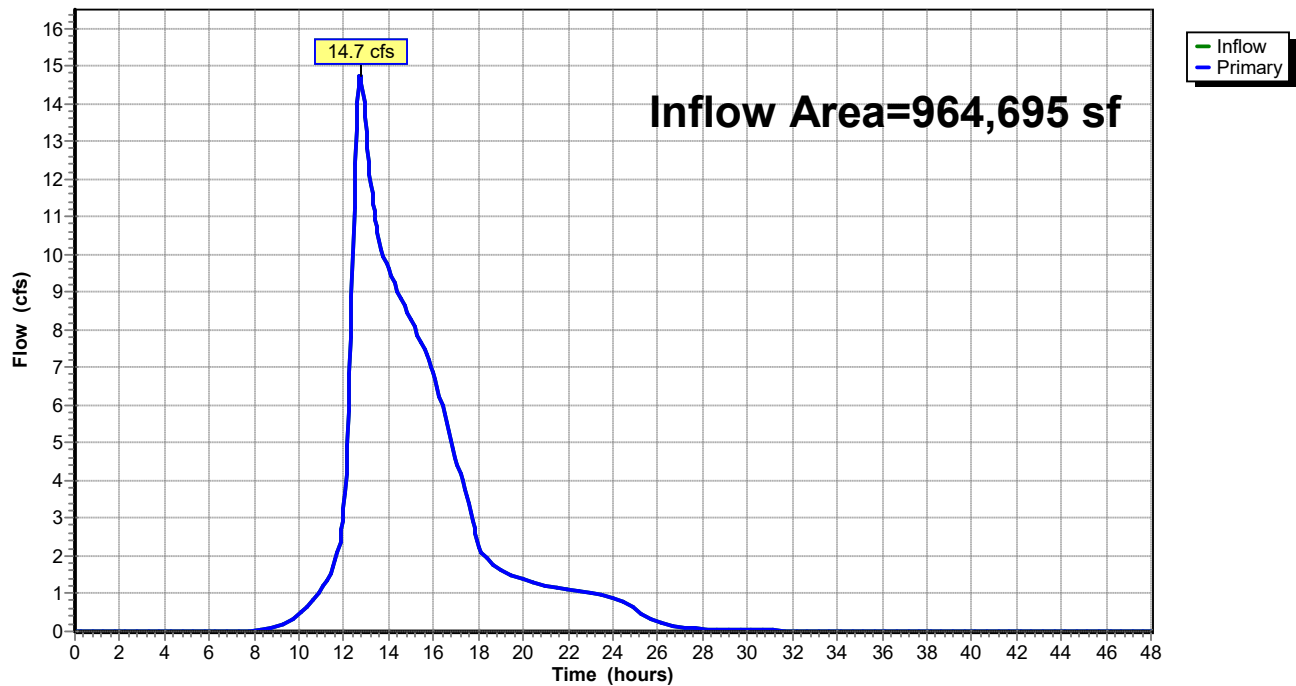
Summary for Link AP1:

Inflow Area = 964,695 sf, 6.35% Impervious, Inflow Depth > 2.67" for 25-Year event
Inflow = 14.7 cfs @ 12.73 hrs, Volume= 214,372 cf
Primary = 14.7 cfs @ 12.73 hrs, Volume= 214,372 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

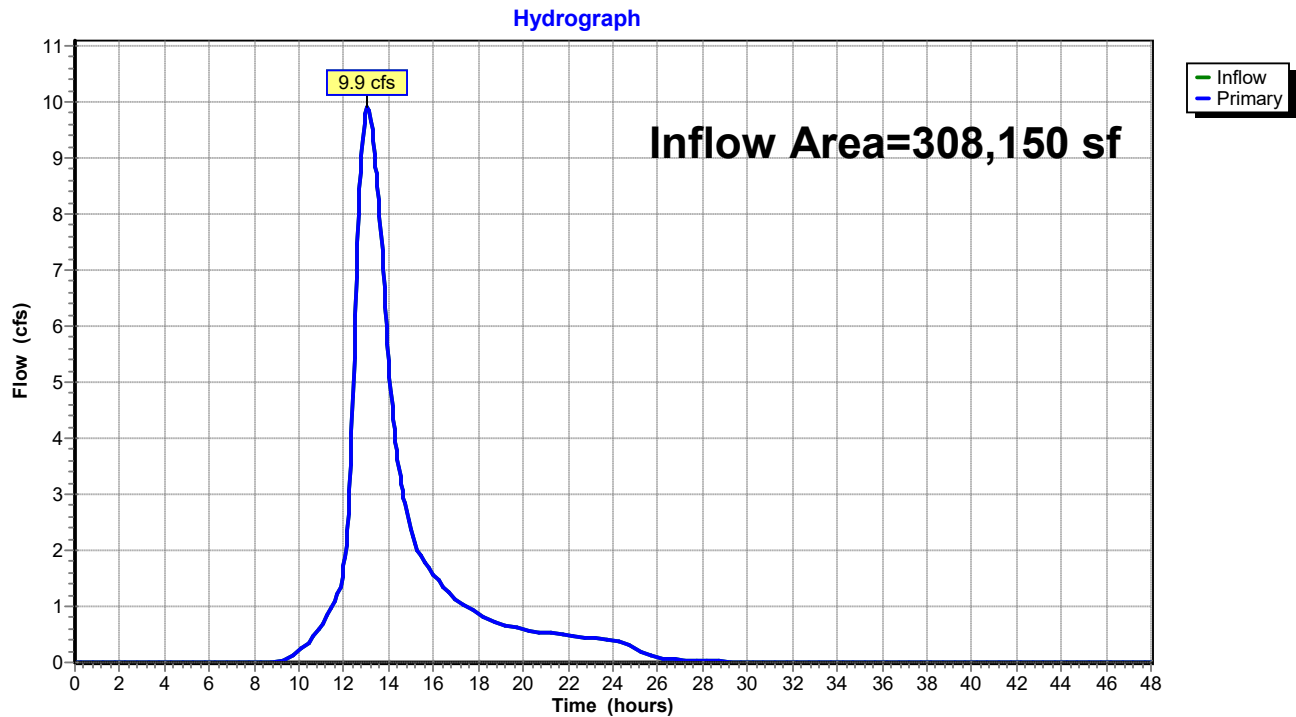
Hydrograph



Summary for Link AP2:

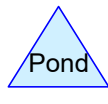
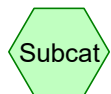
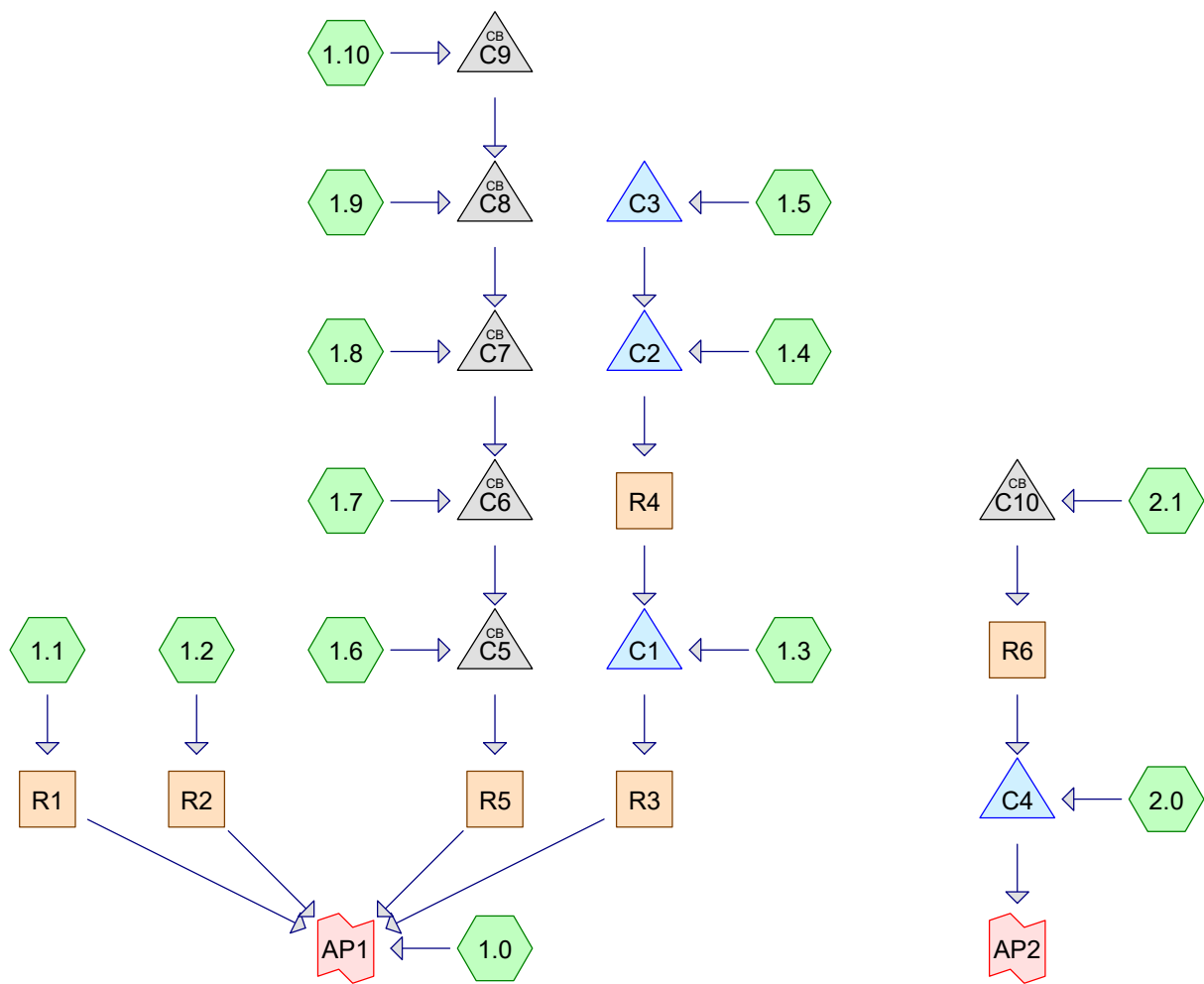
Inflow Area = 308,150 sf, 7.55% Impervious, Inflow Depth = 3.85" for 25-Year event
Inflow = 9.9 cfs @ 13.05 hrs, Volume= 98,743 cf
Primary = 9.9 cfs @ 13.05 hrs, Volume= 98,743 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:

Appendix B

Post Development HydroCAD Report



Routing Diagram for Post-Dev - REV1
 Prepared by Walsh Engineering Associates, Inc., Printed 10/14/2021
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Post-Dev - REV1

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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
148,720	80	>75% Grass cover, Good, HSG D (1.0, 1.1, 1.10, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1)
115,810	98	Paved parking, HSG D (1.0, 1.1, 1.10, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1)
1,008,315	77	Woods, Good, HSG D (1.0, 1.1, 1.10, 1.2, 1.3, 1.4, 1.5, 2.0, 2.1)
1,272,845	79	TOTAL AREA

Post-Dev - REV1*Type III 24-hr 2-Year Rainfall=3.30"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0:	Runoff Area=186,335 sf 4.80% Impervious Runoff Depth=1.35" Flow Length=659' Tc=54.2 min CN=78 Runoff=2.8 cfs 20,918 cf
Subcatchment 1.1:	Runoff Area=47,710 sf 5.47% Impervious Runoff Depth=1.48" Flow Length=275' Tc=10.8 min CN=80 Runoff=1.6 cfs 5,881 cf
Subcatchment 1.10:	Runoff Area=8,210 sf 9.38% Impervious Runoff Depth=1.48" Tc=6.0 min CN=80 Runoff=0.3 cfs 1,012 cf
Subcatchment 1.2:	Runoff Area=14,055 sf 2.95% Impervious Runoff Depth=1.35" Tc=6.0 min CN=78 Runoff=0.5 cfs 1,578 cf
Subcatchment 1.3:	Runoff Area=259,875 sf 7.40% Impervious Runoff Depth=1.41" Flow Length=598' Tc=79.3 min CN=79 Runoff=3.2 cfs 30,584 cf
Subcatchment 1.4:	Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=1.35" Flow Length=396' Tc=11.4 min CN=78 Runoff=3.8 cfs 14,598 cf
Subcatchment 1.5:	Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=1.48" Flow Length=453' Tc=72.4 min CN=80 Runoff=3.7 cfs 33,424 cf
Subcatchment 1.6:	Runoff Area=3,370 sf 37.98% Impervious Runoff Depth=2.00" Tc=6.0 min CN=87 Runoff=0.2 cfs 563 cf
Subcatchment 1.7:	Runoff Area=14,085 sf 13.17% Impervious Runoff Depth=1.62" Tc=6.0 min CN=82 Runoff=0.6 cfs 1,900 cf
Subcatchment 1.8:	Runoff Area=10,070 sf 33.52% Impervious Runoff Depth=1.92" Tc=6.0 min CN=86 Runoff=0.5 cfs 1,613 cf
Subcatchment 1.9:	Runoff Area=19,190 sf 18.26% Impervious Runoff Depth=1.69" Tc=6.0 min CN=83 Runoff=0.9 cfs 2,705 cf
Subcatchment 2.0:	Runoff Area=292,465 sf 8.66% Impervious Runoff Depth=1.41" Flow Length=750' Tc=50.8 min CN=79 Runoff=4.7 cfs 34,420 cf
Subcatchment 2.1:	Runoff Area=16,305 sf 22.05% Impervious Runoff Depth=1.69" Tc=6.0 min CN=83 Runoff=0.7 cfs 2,298 cf
Reach R1:	Avg. Flow Depth=0.15' Max Vel=0.43 fps Inflow=1.6 cfs 5,881 cf n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=1.1 cfs 5,881 cf
Reach R2:	Avg. Flow Depth=0.11' Max Vel=0.38 fps Inflow=0.5 cfs 1,578 cf n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=0.4 cfs 1,578 cf
Reach R3:	Avg. Flow Depth=0.16' Max Vel=0.32 fps Inflow=2.0 cfs 39,787 cf n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=2.0 cfs 39,760 cf

Post-Dev - REV1*Type III 24-hr 2-Year Rainfall=3.30"*

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Reach R4: Avg. Flow Depth=0.06' Max Vel=0.20 fps Inflow=0.4 cfs 9,256 cf
 n=0.100 L=480.0' S=0.0145 ' ' Capacity=71.1 cfs Outflow=0.4 cfs 9,228 cf

Reach R5: Avg. Flow Depth=0.52' Max Vel=0.65 fps Inflow=2.5 cfs 7,793 cf
 n=0.100 L=257.0' S=0.0078 ' ' Capacity=19.3 cfs Outflow=2.0 cfs 7,793 cf

Reach R6: Avg. Flow Depth=0.06' Max Vel=1.71 fps Inflow=0.7 cfs 2,298 cf
 n=0.018 L=860.0' S=0.0313 ' ' Capacity=582.6 cfs Outflow=0.5 cfs 2,298 cf

Pond C1: Peak Elev=34.51' Storage=7,591 cf Inflow=3.2 cfs 39,812 cf
 30.0" Round Culvert w/ 6.0" inside fill n=0.013 L=25.0' S=0.0200 ' ' Outflow=2.0 cfs 39,787 cf

Pond C10: Peak Elev=47.39' Inflow=0.7 cfs 2,298 cf
 24.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=0.7 cfs 2,298 cf

Pond C2: Peak Elev=40.46' Storage=7,794 cf Inflow=3.8 cfs 14,598 cf
 Outflow=0.4 cfs 9,256 cf

Pond C3: Peak Elev=42.66' Storage=9,936 cf Inflow=3.7 cfs 33,424 cf
 Discarded=2.0 cfs 33,397 cf Primary=0.0 cfs 0 cf Outflow=2.0 cfs 33,397 cf

Pond C4: Peak Elev=26.01' Storage=6,874 cf Inflow=5.0 cfs 36,718 cf
 Outflow=3.8 cfs 36,373 cf

Pond C5: Peak Elev=32.53' Inflow=2.5 cfs 7,793 cf
 18.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=2.5 cfs 7,793 cf

Pond C6: Peak Elev=33.10' Inflow=2.3 cfs 7,231 cf
 18.0" Round Culvert n=0.013 L=28.0' S=0.0107 ' ' Outflow=2.3 cfs 7,231 cf

Pond C7: Peak Elev=37.72' Inflow=1.7 cfs 5,330 cf
 15.0" Round Culvert n=0.013 L=30.0' S=0.0333 ' ' Outflow=1.7 cfs 5,330 cf

Pond C8: Peak Elev=41.59' Inflow=1.2 cfs 3,717 cf
 15.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' ' Outflow=1.2 cfs 3,717 cf

Pond C9: Peak Elev=46.79' Inflow=0.3 cfs 1,012 cf
 15.0" Round Culvert n=0.013 L=37.0' S=0.0405 ' ' Outflow=0.3 cfs 1,012 cf

Link AP1: Inflow=4.8 cfs 75,931 cf
 Primary=4.8 cfs 75,931 cf

Link AP2: Inflow=3.8 cfs 36,373 cf
 Primary=3.8 cfs 36,373 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 151,494 cf Average Runoff Depth = 1.43"
90.90% Pervious = 1,157,035 sf 9.10% Impervious = 115,810 sf

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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.0:

Runoff = 2.8 cfs @ 12.77 hrs, Volume= 20,918 cf, Depth= 1.35"

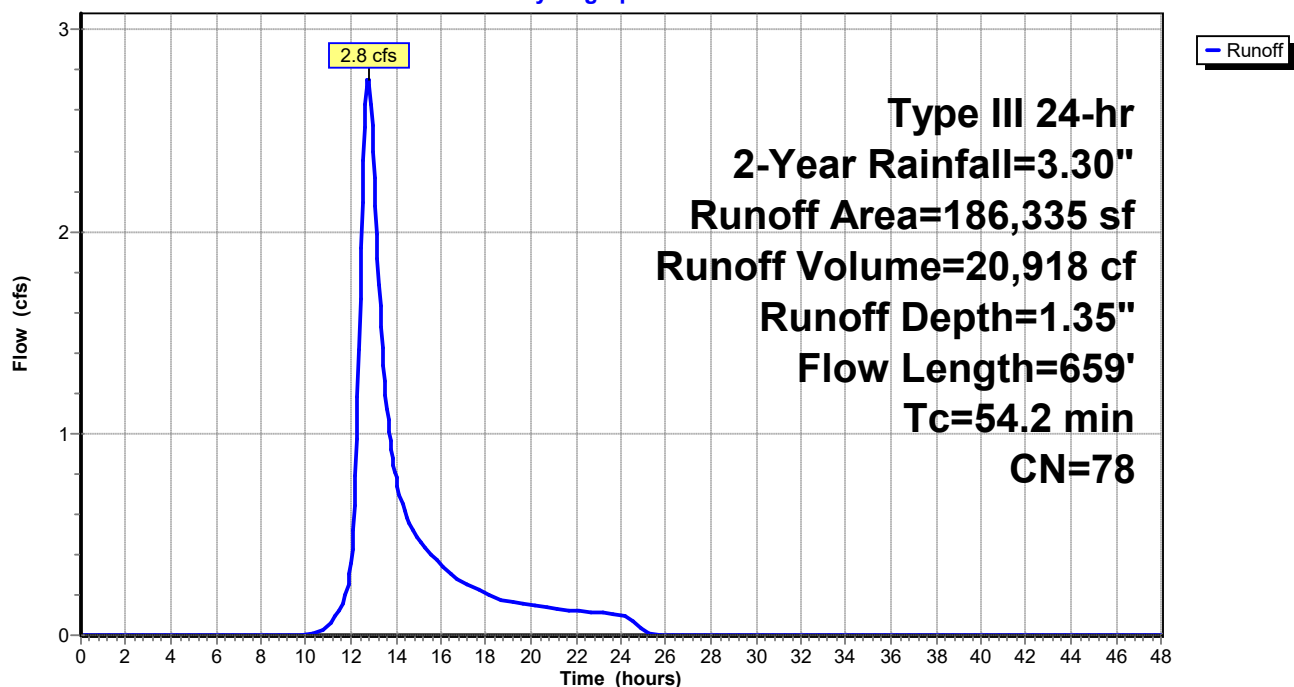
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
162,540	77	Woods, Good, HSG D
14,845	80	>75% Grass cover, Good, HSG D
8,950	98	Paved parking, HSG D
186,335	78	Weighted Average
177,385		95.20% Pervious Area
8,950		4.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.1:

Runoff = 1.6 cfs @ 12.16 hrs, Volume= 5,881 cf, Depth= 1.48"

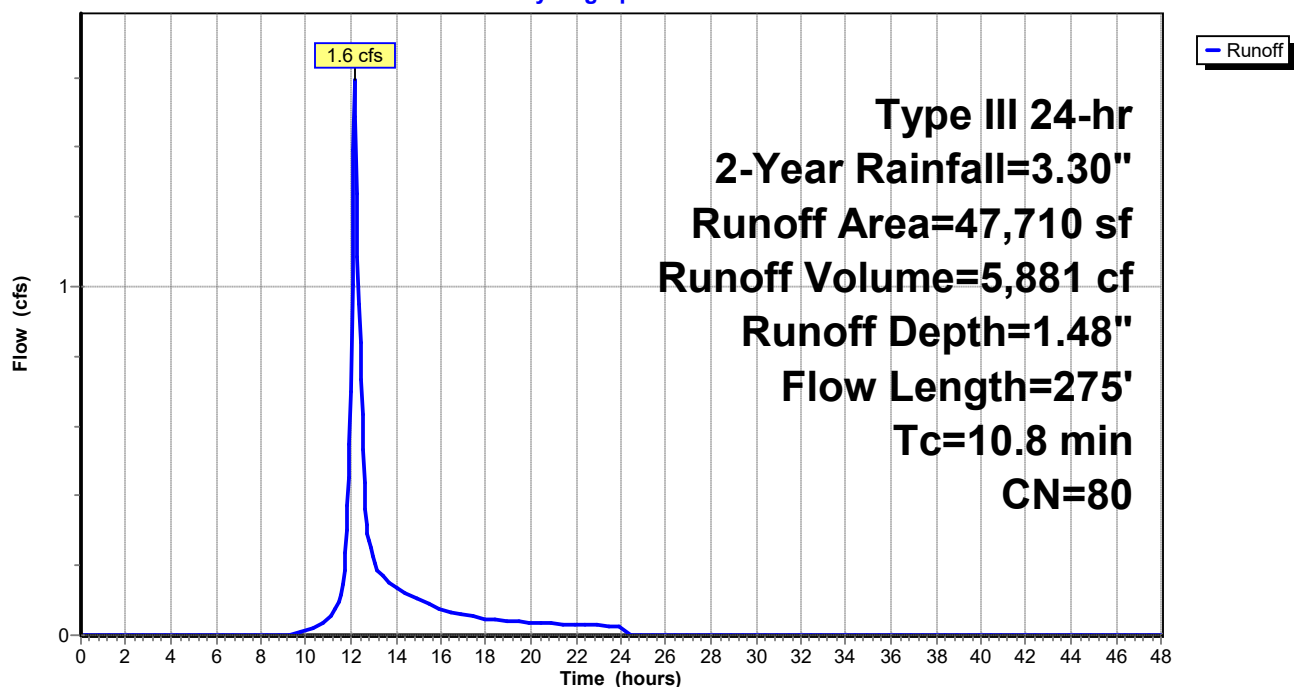
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
19,405	77	Woods, Good, HSG D
25,695	80	>75% Grass cover, Good, HSG D
2,610	98	Paved parking, HSG D
47,710	80	Weighted Average
45,100		94.53% Pervious Area
2,610		5.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	114	0.1360	0.38		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
2.5	111	0.0110	0.73		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
3.3	50	0.0100	0.25		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
10.8	275	Total			

Subcatchment 1.1:

Hydrograph



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Summary for Subcatchment 1.10:

Runoff = 0.3 cfs @ 12.10 hrs, Volume= 1,012 cf, Depth= 1.48"

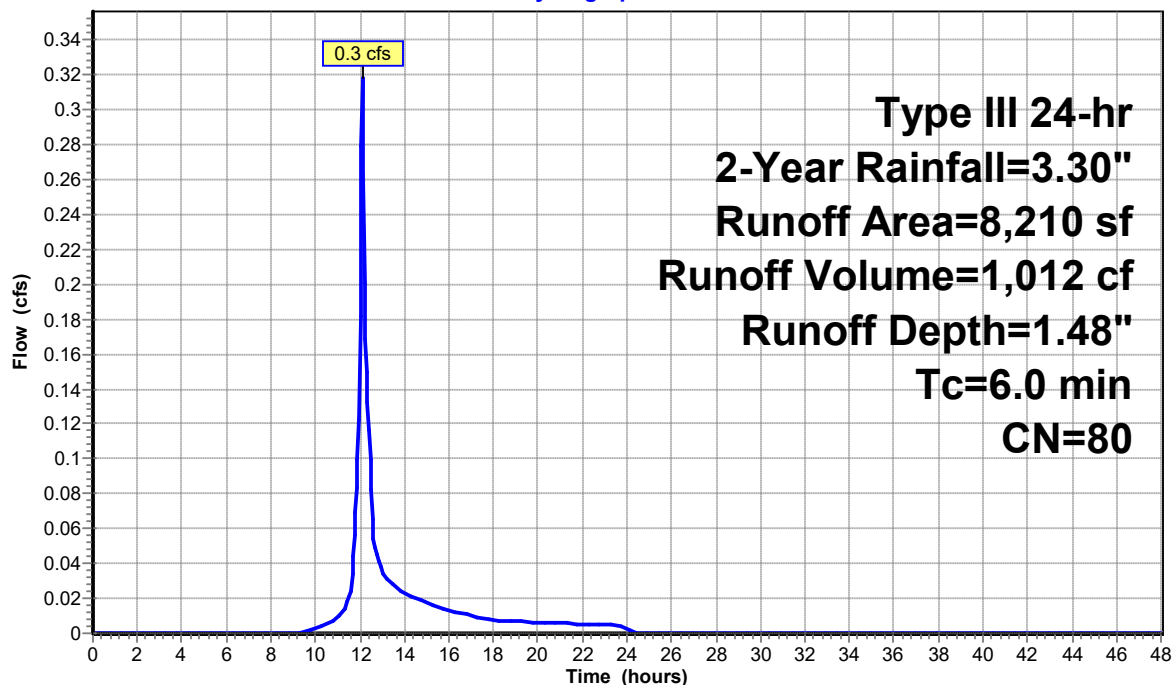
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
3,915	77	Woods, Good, HSG D
3,525	80	>75% Grass cover, Good, HSG D
770	98	Paved parking, HSG D
8,210	80	Weighted Average
7,440		90.62% Pervious Area
770		9.38% Impervious Area

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

Subcatchment 1.10:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.2:

Runoff = 0.5 cfs @ 12.10 hrs, Volume= 1,578 cf, Depth= 1.35"

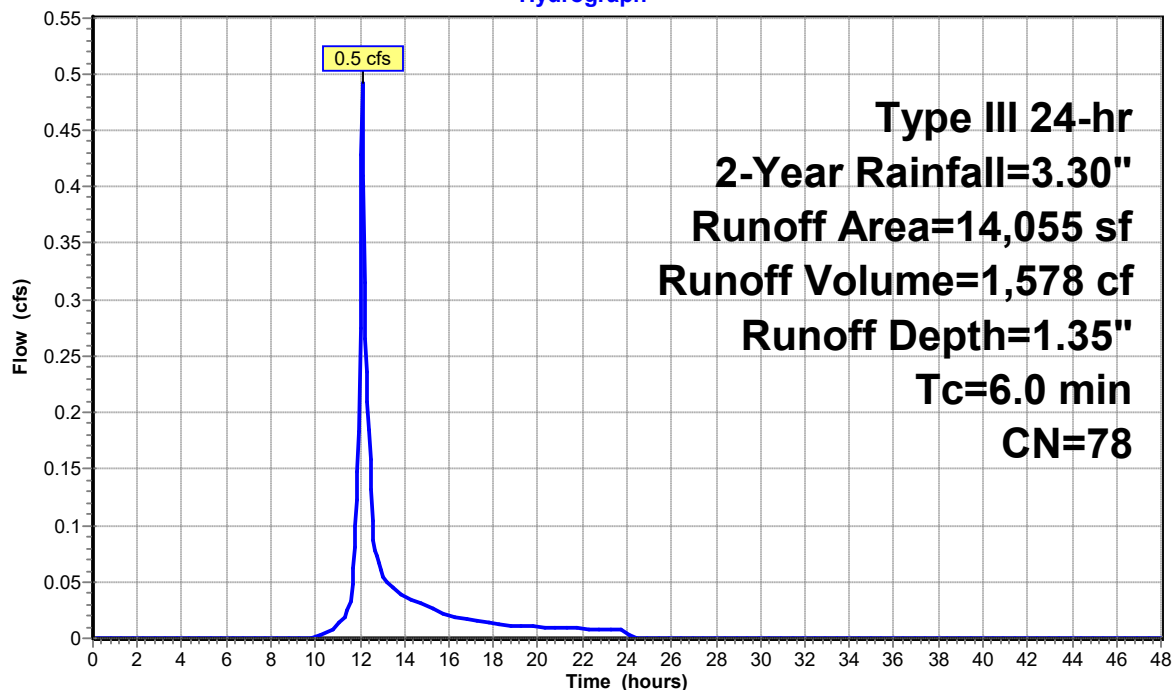
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
9,765	77	Woods, Good, HSG D
3,875	80	>75% Grass cover, Good, HSG D
415	98	Paved parking, HSG D
14,055	78	Weighted Average
13,640		97.05% Pervious Area
415		2.95% Impervious Area

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

Subcatchment 1.2:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.3:

Runoff = 3.2 cfs @ 13.11 hrs, Volume= 30,584 cf, Depth= 1.41"

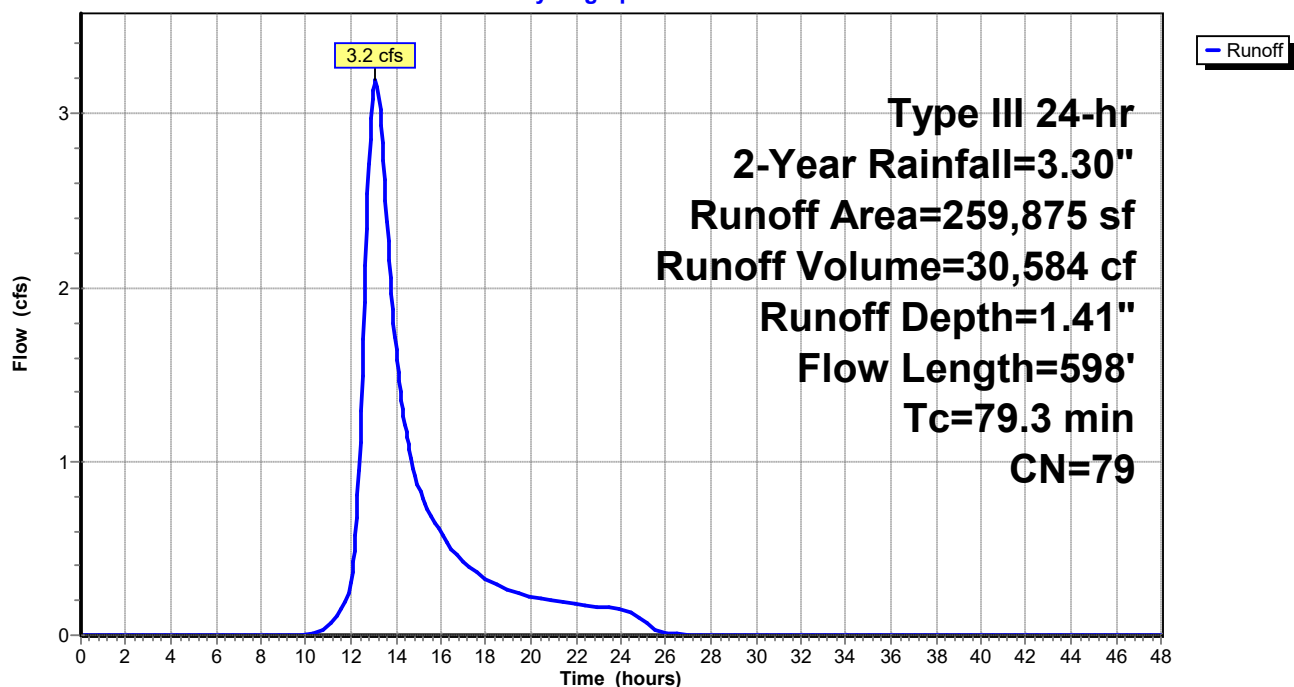
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
214,510	77	Woods, Good, HSG D
26,145	80	>75% Grass cover, Good, HSG D
19,220	98	Paved parking, HSG D
259,875	79	Weighted Average
240,655		92.60% Pervious Area
19,220		7.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.4:

Runoff = 3.8 cfs @ 12.17 hrs, Volume= 14,598 cf, Depth= 1.35"

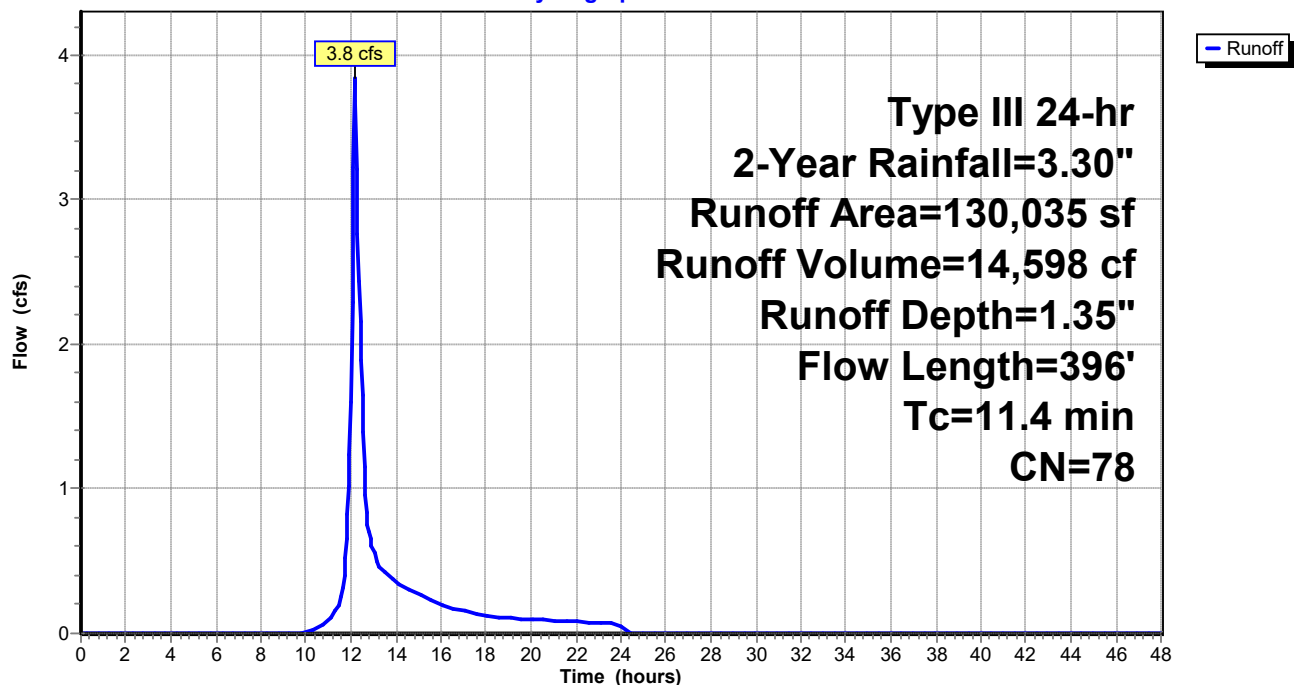
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.5:

Runoff = 3.7 cfs @ 12.98 hrs, Volume= 33,424 cf, Depth= 1.48"

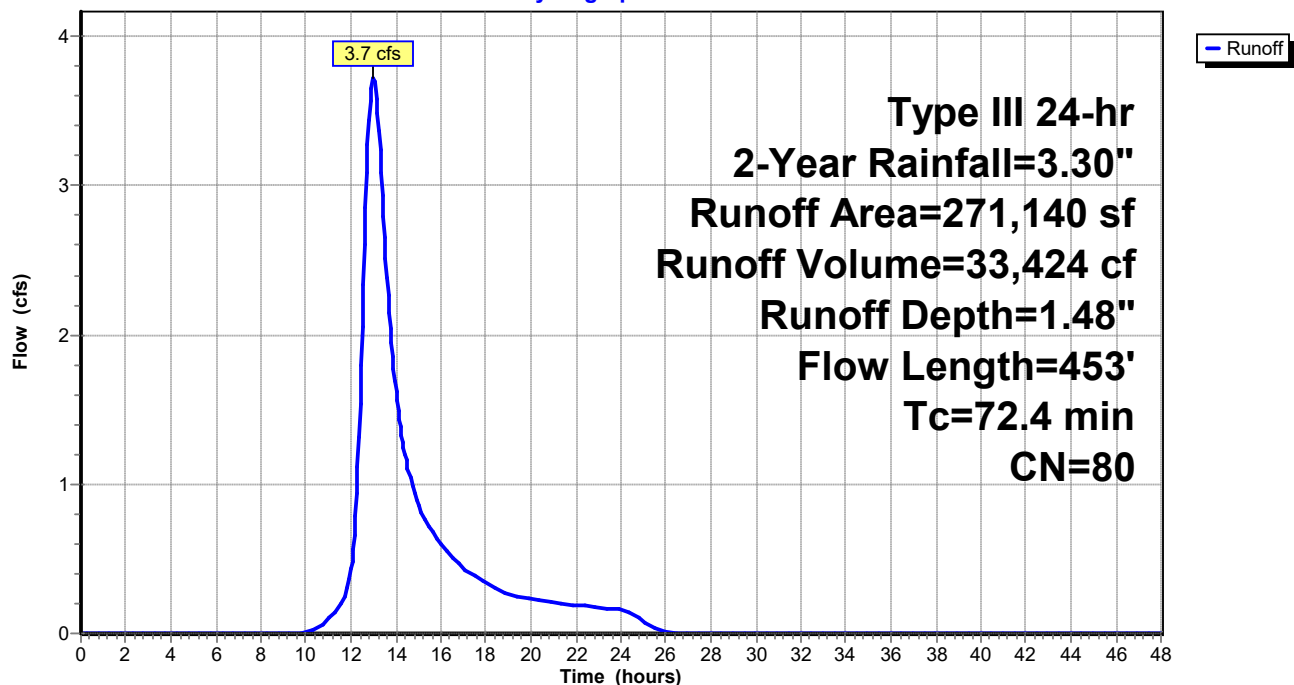
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.6:

Runoff = 0.2 cfs @ 12.09 hrs, Volume= 563 cf, Depth= 2.00"

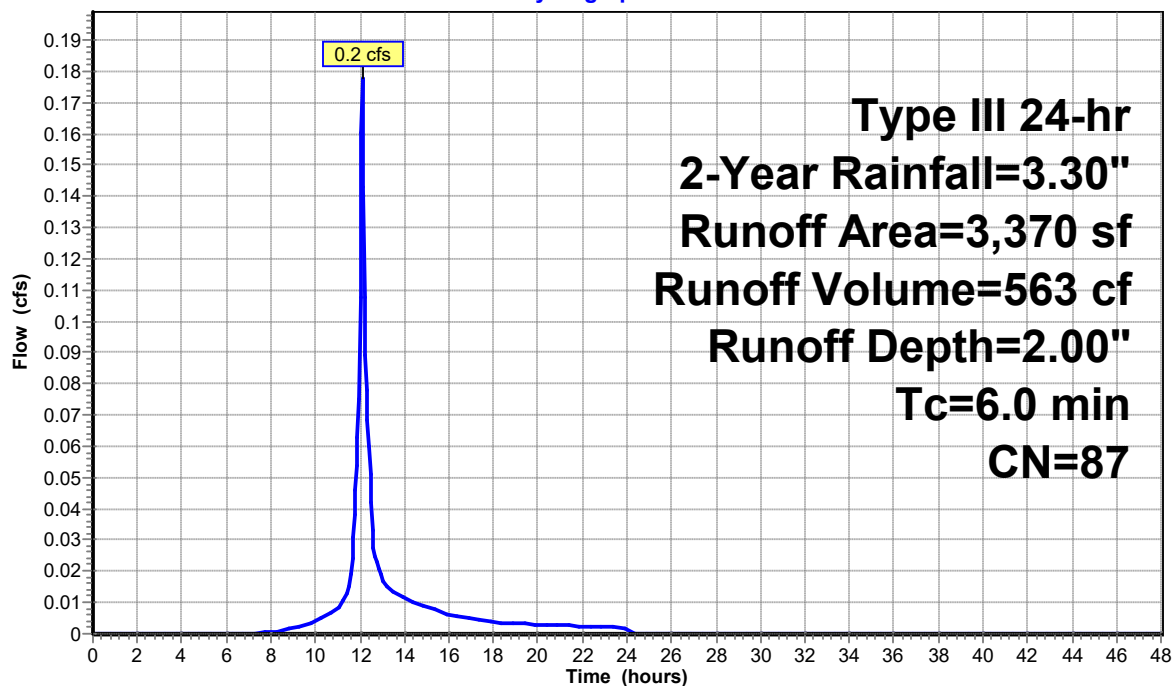
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
2,090	80	>75% Grass cover, Good, HSG D
1,280	98	Paved parking, HSG D
3,370	87	Weighted Average
2,090		62.02% Pervious Area
1,280		37.98% Impervious Area

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

Subcatchment 1.6:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.7:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,900 cf, Depth= 1.62"

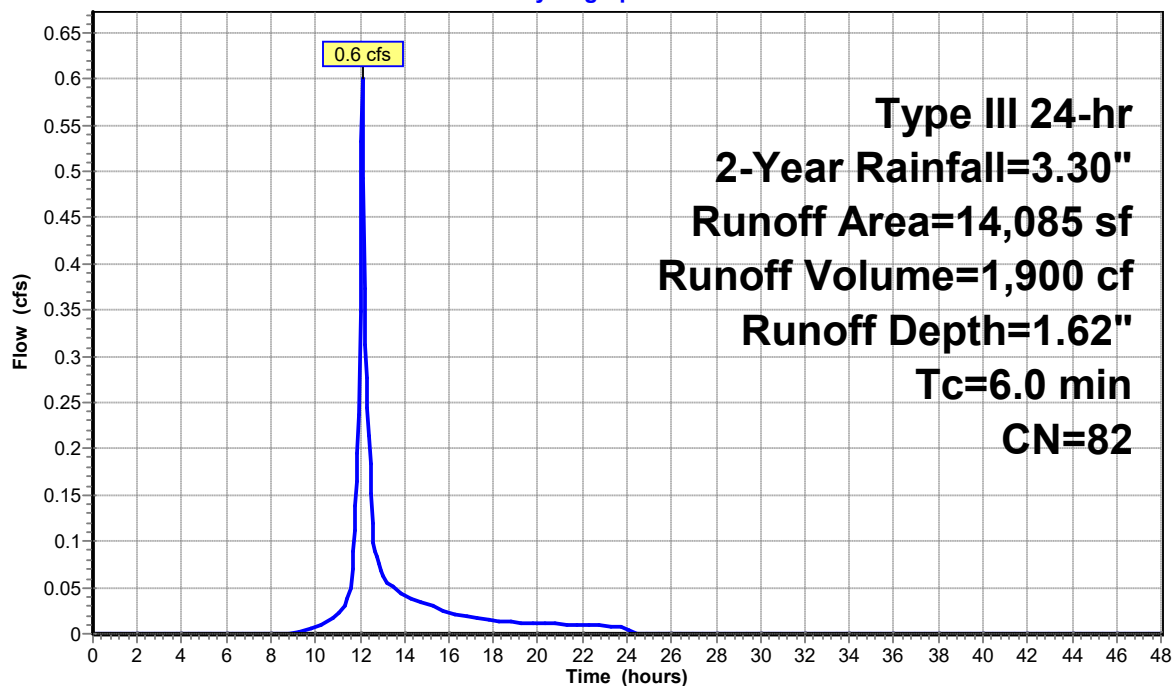
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
12,230	80	>75% Grass cover, Good, HSG D
1,855	98	Paved parking, HSG D
14,085	82	Weighted Average
12,230		86.83% Pervious Area
1,855		13.17% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.8:

Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,613 cf, Depth= 1.92"

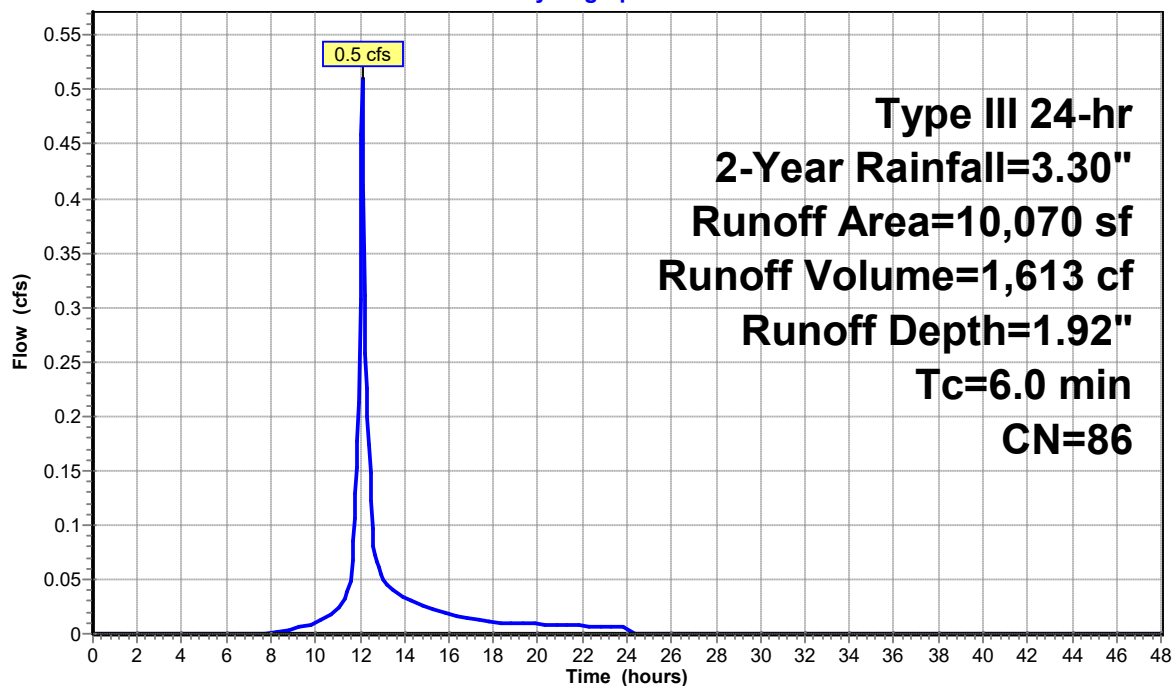
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
6,695	80	>75% Grass cover, Good, HSG D
3,375	98	Paved parking, HSG D
10,070	86	Weighted Average
6,695		66.48% Pervious Area
3,375		33.52% Impervious Area

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

Subcatchment 1.8:

Hydrograph



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Summary for Subcatchment 1.9:

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,705 cf, Depth= 1.69"

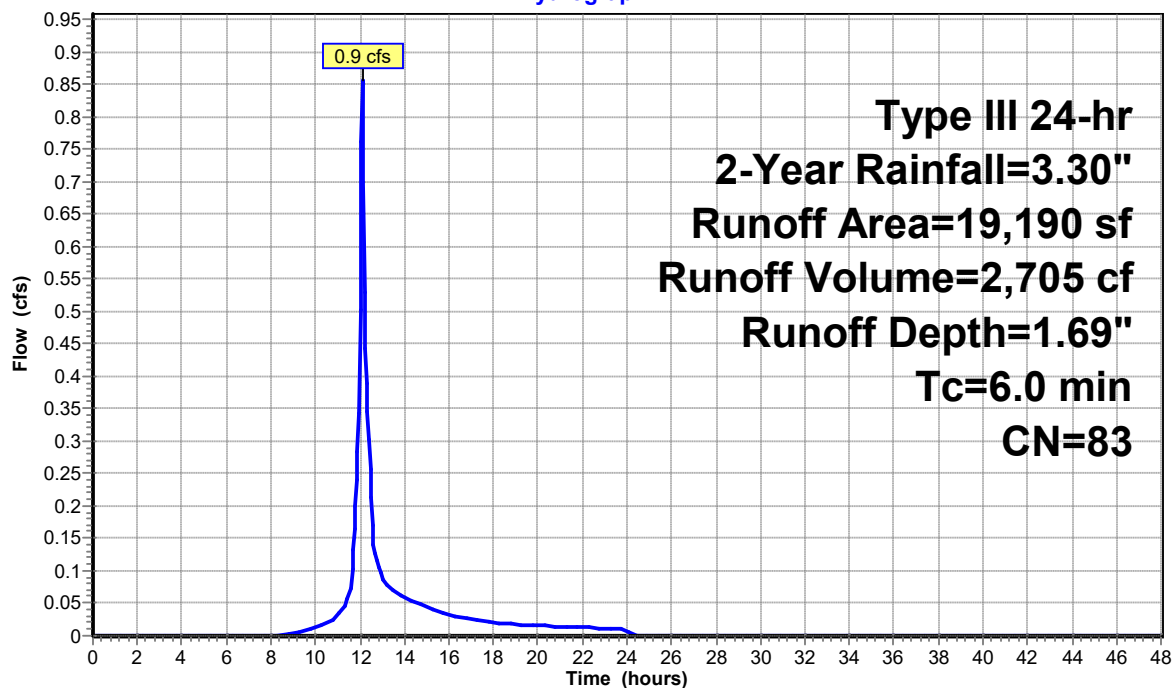
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
15,685	80	>75% Grass cover, Good, HSG D
3,505	98	Paved parking, HSG D
19,190	83	Weighted Average
15,685		81.74% Pervious Area
3,505		18.26% Impervious Area

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

Subcatchment 1.9:

Hydrograph



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Summary for Subcatchment 2.0:

Runoff = 4.7 cfs @ 12.72 hrs, Volume= 34,420 cf, Depth= 1.41"

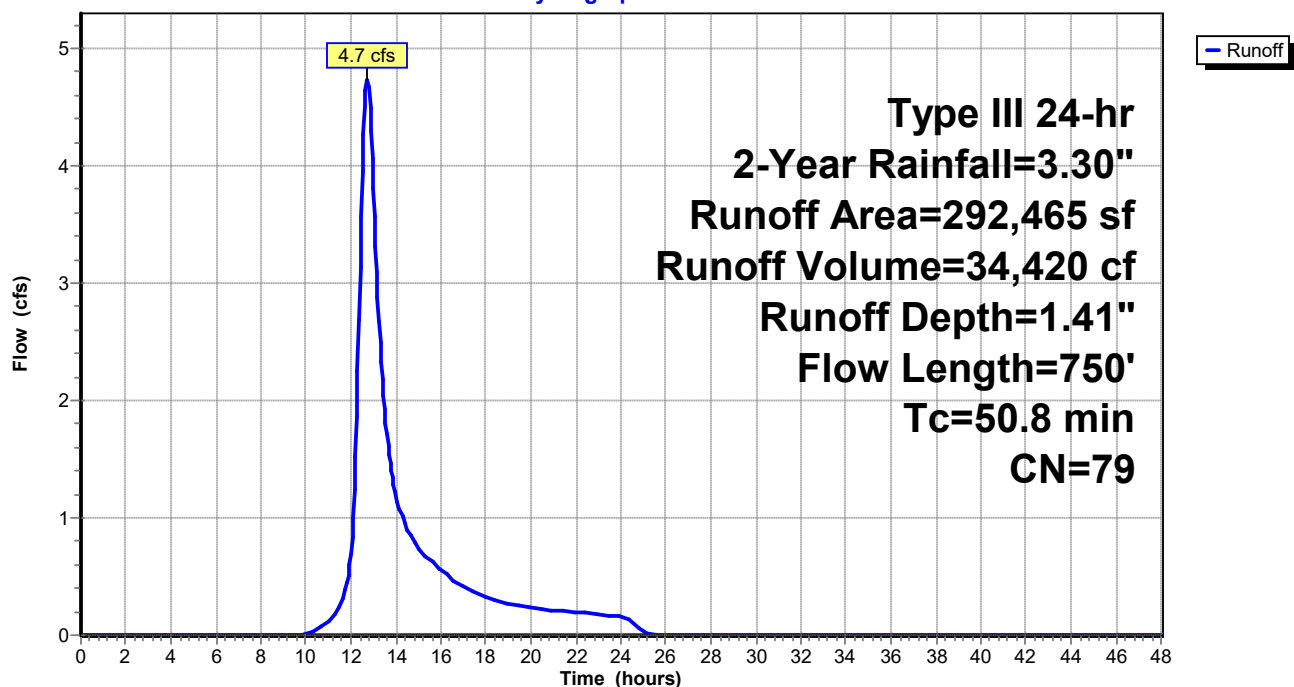
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
243,170	77	Woods, Good, HSG D
23,955	80	>75% Grass cover, Good, HSG D
25,340	98	Paved parking, HSG D
292,465	79	Weighted Average
267,125		91.34% Pervious Area
25,340		8.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:

Hydrograph



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Summary for Subcatchment 2.1:

Runoff = 0.7 cfs @ 12.09 hrs, Volume= 2,298 cf, Depth= 1.69"

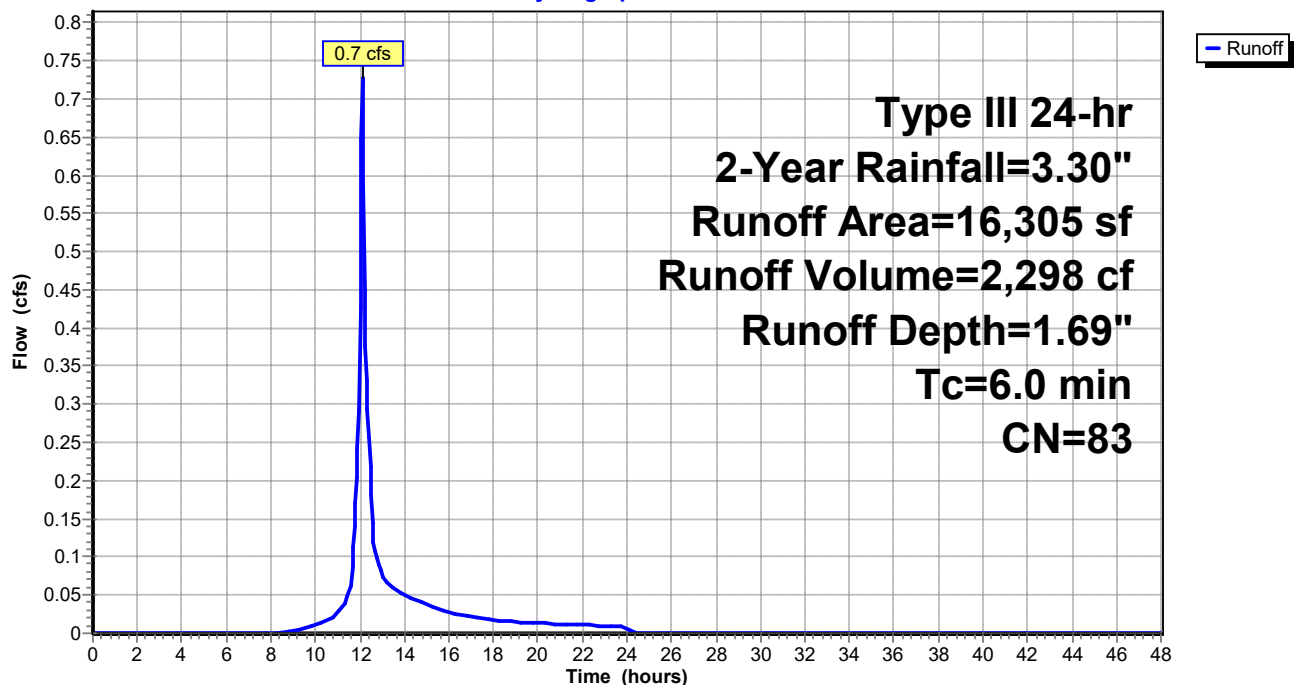
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
3,775	77	Woods, Good, HSG D
8,935	80	>75% Grass cover, Good, HSG D
3,595	98	Paved parking, HSG D
16,305	83	Weighted Average
12,710		77.95% Pervious Area
3,595		22.05% Impervious Area

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

Subcatchment 2.1:

Hydrograph



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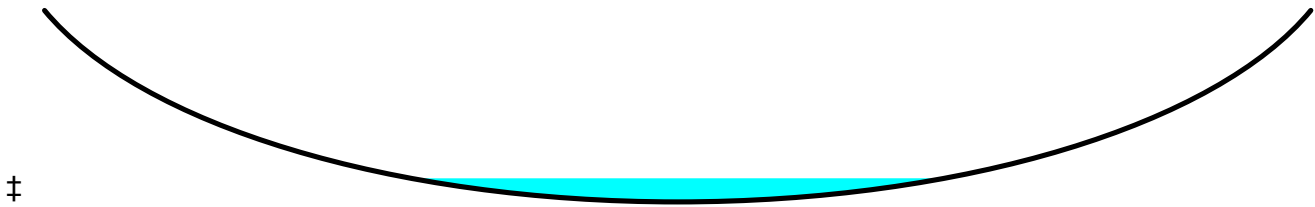
Summary for Reach R1:

Inflow Area = 47,710 sf, 5.47% Impervious, Inflow Depth = 1.48" for 2-Year event
Inflow = 1.6 cfs @ 12.16 hrs, Volume= 5,881 cf
Outflow = 1.1 cfs @ 12.56 hrs, Volume= 5,881 cf, Atten= 32%, Lag= 23.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.43 fps, Min. Travel Time= 15.0 min
Avg. Velocity = 0.14 fps, Avg. Travel Time= 44.7 min

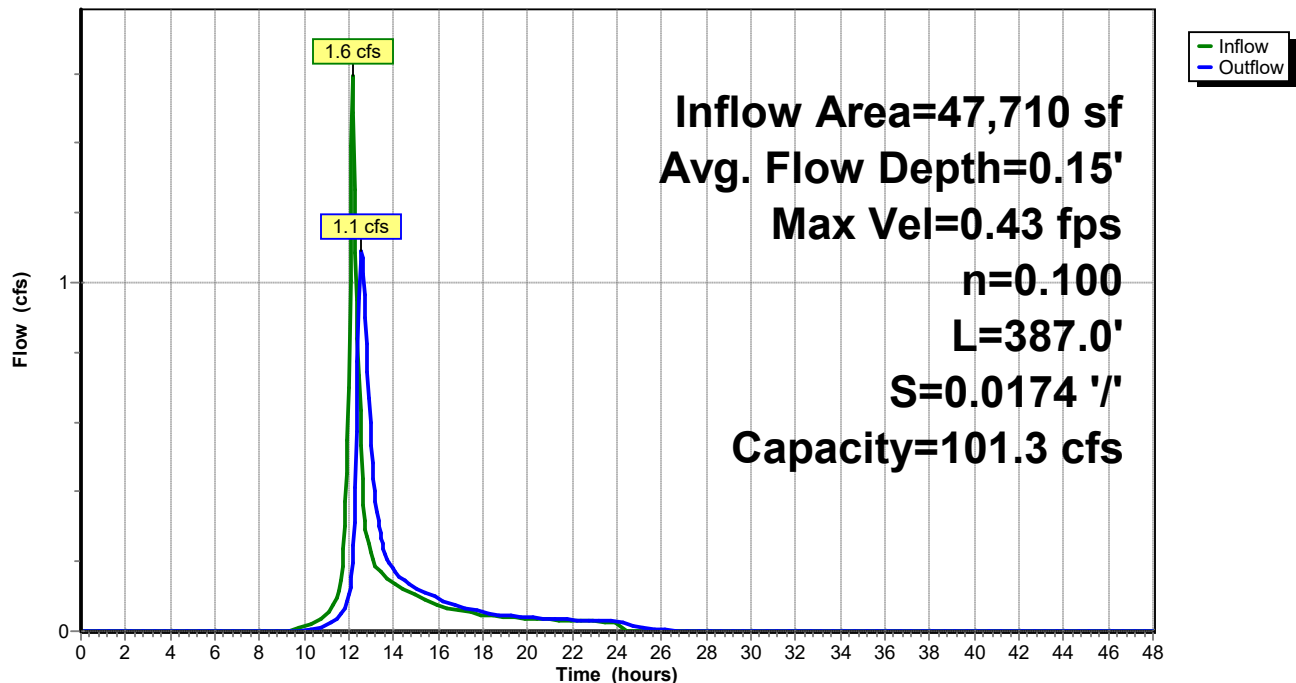
Peak Storage= 976 cf @ 12.31 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 387.0' Slope= 0.0174 '/'
Inlet Invert= 36.75', Outlet Invert= 30.00'



Reach R1:

Hydrograph



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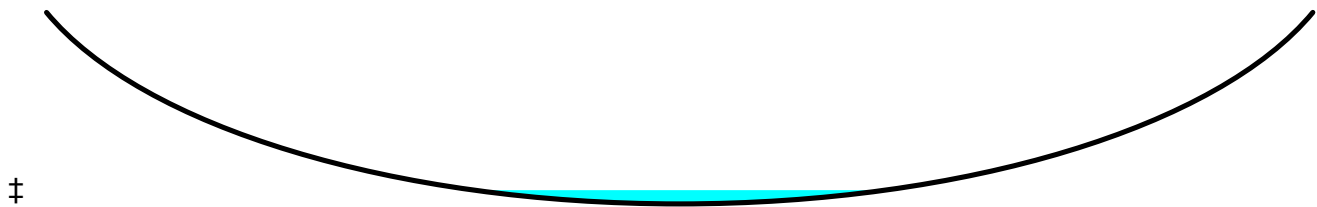
Summary for Reach R2:

Inflow Area = 14,055 sf, 2.95% Impervious, Inflow Depth = 1.35" for 2-Year event
Inflow = 0.5 cfs @ 12.10 hrs, Volume= 1,578 cf
Outflow = 0.4 cfs @ 12.34 hrs, Volume= 1,578 cf, Atten= 27%, Lag= 14.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.38 fps, Min. Travel Time= 9.2 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 23.5 min

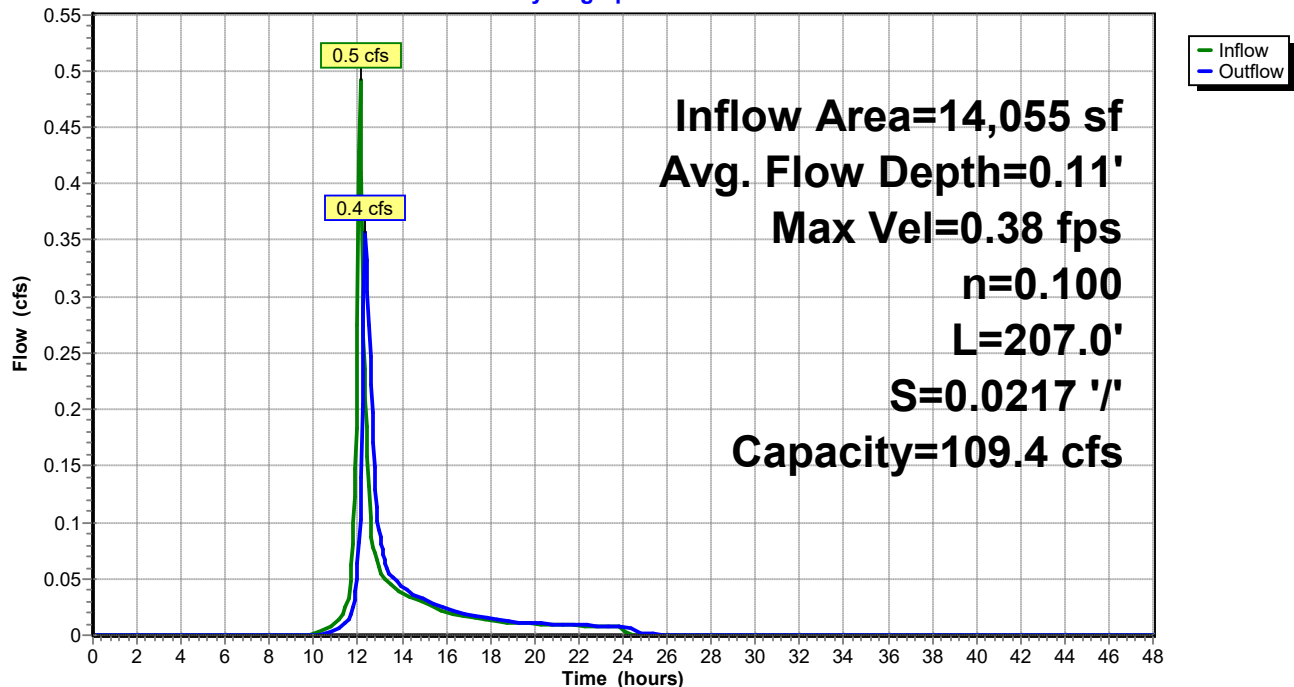
Peak Storage= 197 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 207.0' Slope= 0.0217 '/'
Inlet Invert= 34.50', Outlet Invert= 30.00'



Reach R2:

Hydrograph



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Summary for Reach R3:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 0.72" for 2-Year event
Inflow = 2.0 cfs @ 13.86 hrs, Volume= 39,787 cf
Outflow = 2.0 cfs @ 14.40 hrs, Volume= 39,760 cf, Atten= 2%, Lag= 32.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.32 fps, Min. Travel Time= 17.0 min
Avg. Velocity = 0.13 fps, Avg. Travel Time= 42.9 min

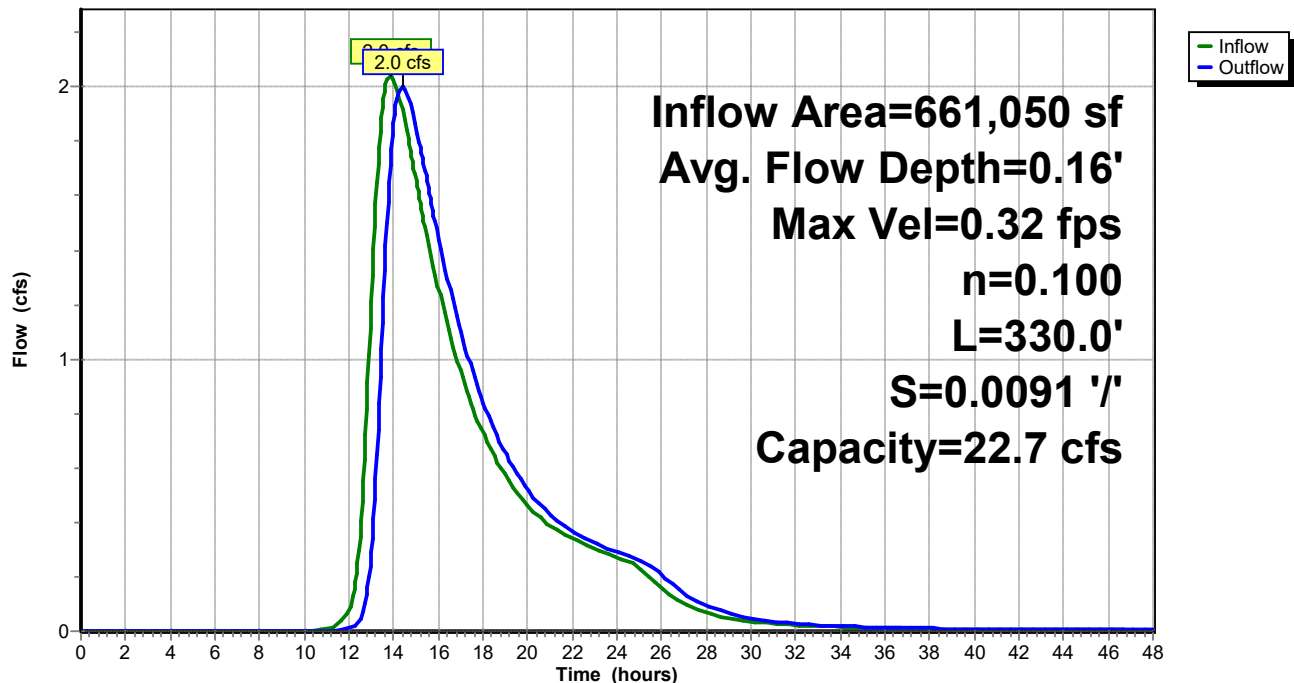
Peak Storage= 2,048 cf @ 14.12 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 330.0' Slope= 0.0091 '/
Inlet Invert= 33.00', Outlet Invert= 30.00'



Reach R3:

Hydrograph



Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 0.28" for 2-Year event
 Inflow = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf
 Outflow = 0.4 cfs @ 15.10 hrs, Volume= 9,228 cf, Atten= 8%, Lag= 82.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.20 fps, Min. Travel Time= 39.5 min

Avg. Velocity = 0.10 fps, Avg. Travel Time= 81.0 min

Peak Storage= 862 cf @ 14.44 hrs

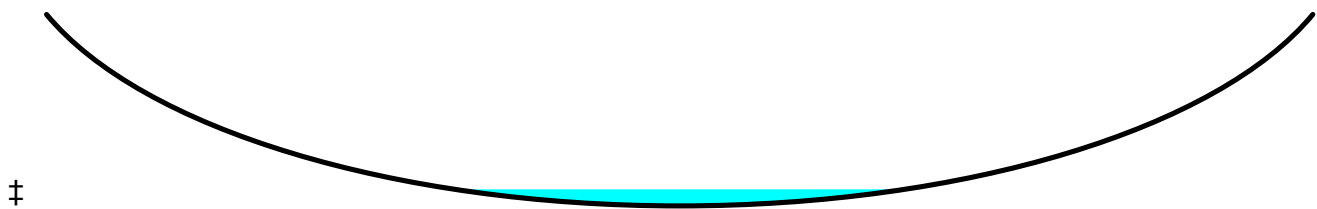
Average Depth at Peak Storage= 0.06'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

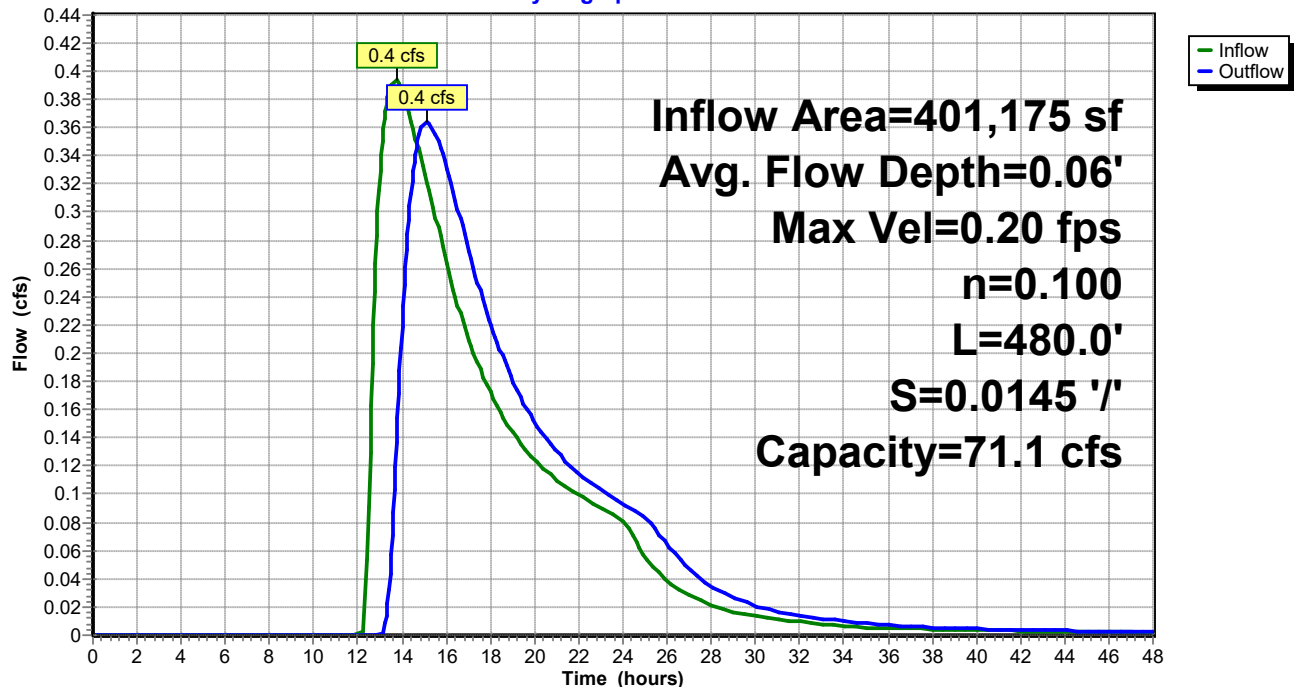
Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'



Reach R4:

Hydrograph



Post-Dev - REV1

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Summary for Reach R5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 1.70" for 2-Year event
Inflow = 2.5 cfs @ 12.09 hrs, Volume= 7,793 cf
Outflow = 2.0 cfs @ 12.27 hrs, Volume= 7,793 cf, Atten= 20%, Lag= 10.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.65 fps, Min. Travel Time= 6.6 min

Avg. Velocity = 0.18 fps, Avg. Travel Time= 23.9 min

Peak Storage= 795 cf @ 12.16 hrs

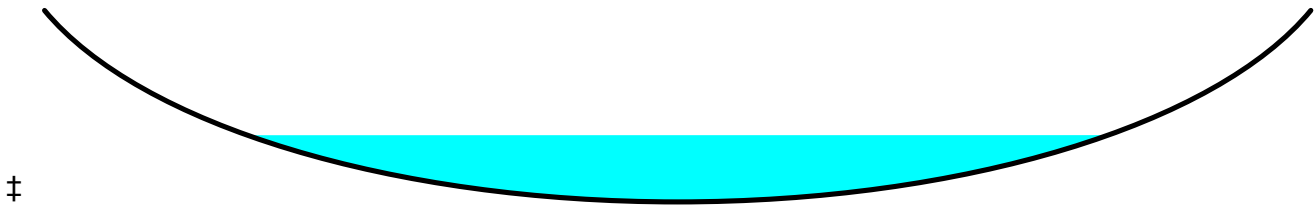
Average Depth at Peak Storage= 0.52'

Bank-Full Depth= 1.50' Flow Area= 15.0 sf, Capacity= 19.3 cfs

15.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

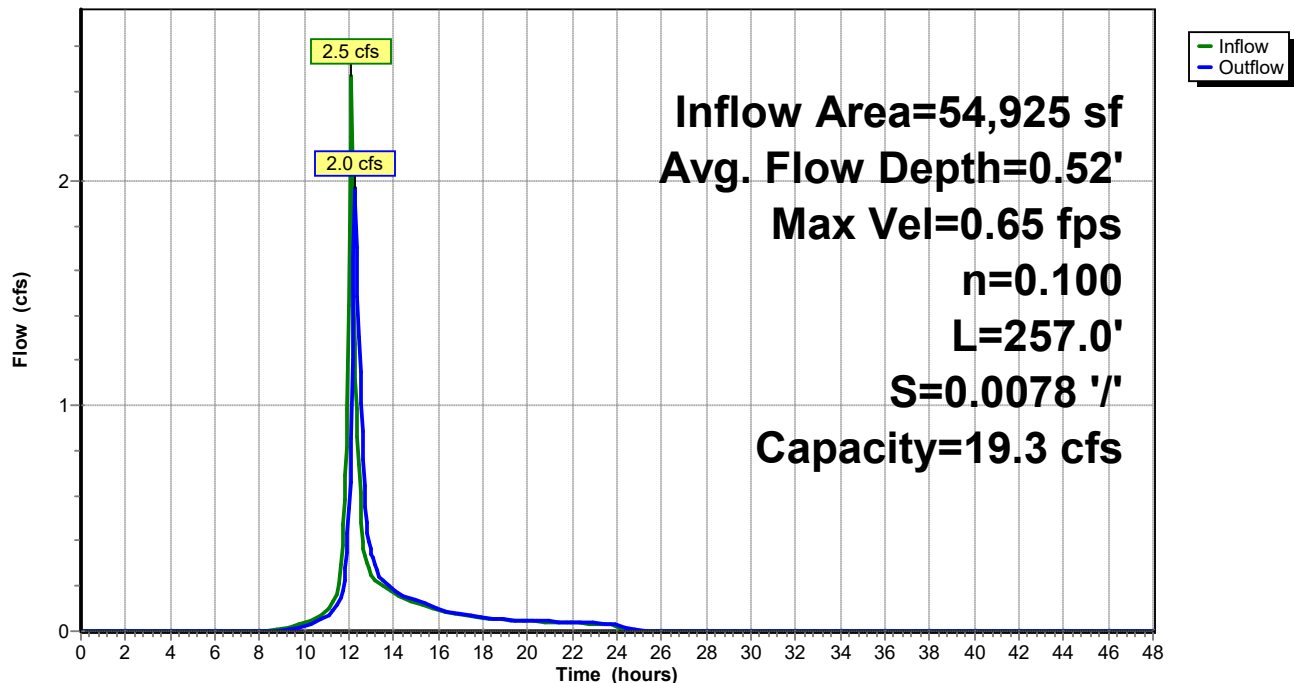
Length= 257.0' Slope= 0.0078 '/'

Inlet Invert= 32.00', Outlet Invert= 30.00'



Reach R5:

Hydrograph



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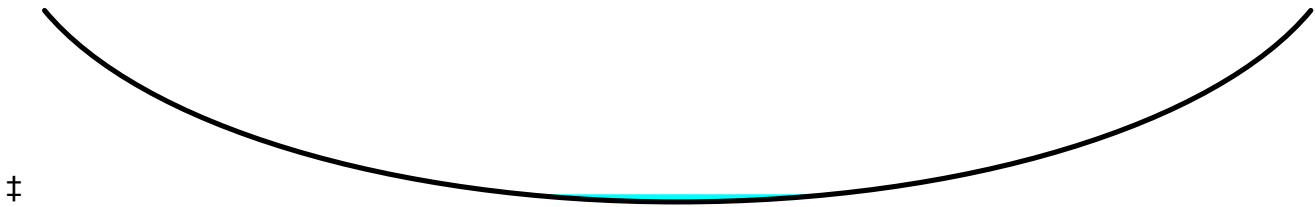
Summary for Reach R6:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 1.69" for 2-Year event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,298 cf
Outflow = 0.5 cfs @ 12.31 hrs, Volume= 2,298 cf, Atten= 25%, Lag= 13.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.71 fps, Min. Travel Time= 8.4 min
Avg. Velocity = 0.76 fps, Avg. Travel Time= 18.9 min

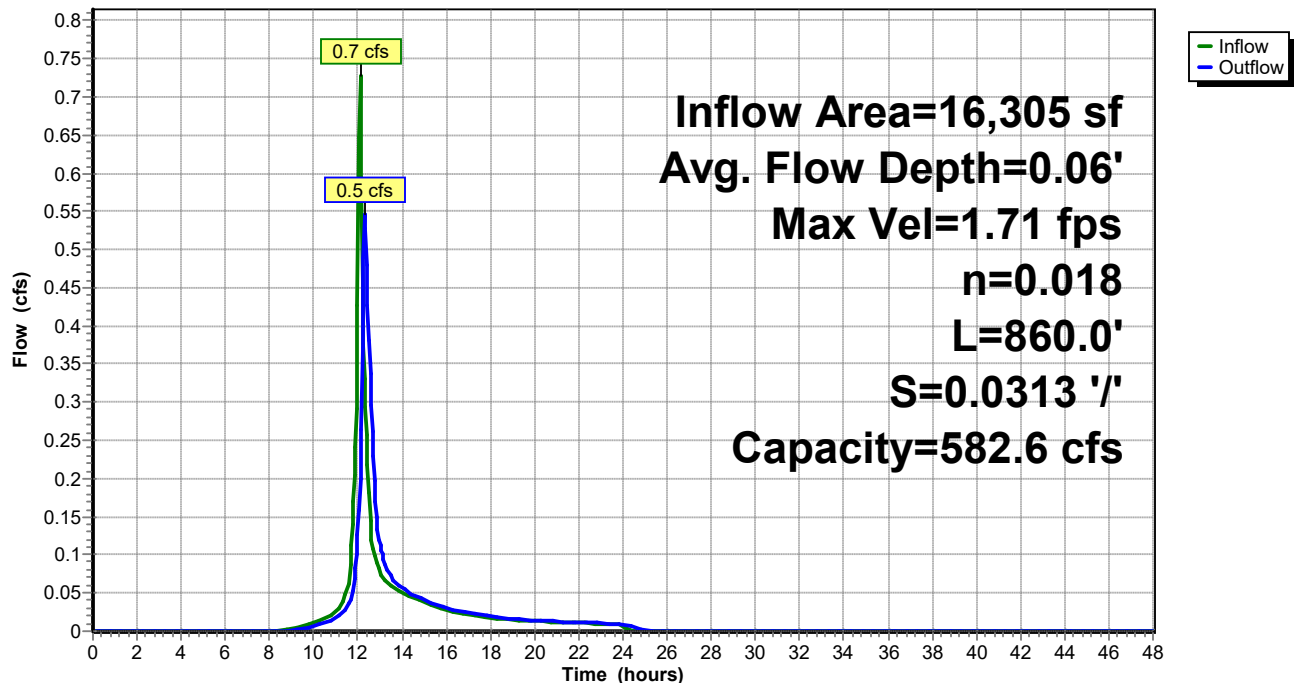
Peak Storage= 277 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 1.50' Flow Area= 40.0 sf, Capacity= 582.6 cfs

40.00' x 1.50' deep Parabolic Channel, n= 0.018 Earth, clean & straight
Length= 860.0' Slope= 0.0313 '/'
Inlet Invert= 52.00', Outlet Invert= 25.10'



Reach R6:

Hydrograph



Post-Dev - REV1

Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C1:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 0.72" for 2-Year event
 Inflow = 3.2 cfs @ 13.11 hrs, Volume= 39,812 cf
 Outflow = 2.0 cfs @ 13.86 hrs, Volume= 39,787 cf, Atten= 36%, Lag= 44.9 min
 Primary = 2.0 cfs @ 13.86 hrs, Volume= 39,787 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 34.51' @ 13.86 hrs Surf.Area= 23,063 sf Storage= 7,591 cf

Flood Elev= 36.00' Surf.Area= 65,400 sf Storage= 74,950 cf

Plug-Flow detention time= 68.2 min calculated for 39,746 cf (100% of inflow)

Center-of-Mass det. time= 67.2 min (1,040.1 - 972.9)

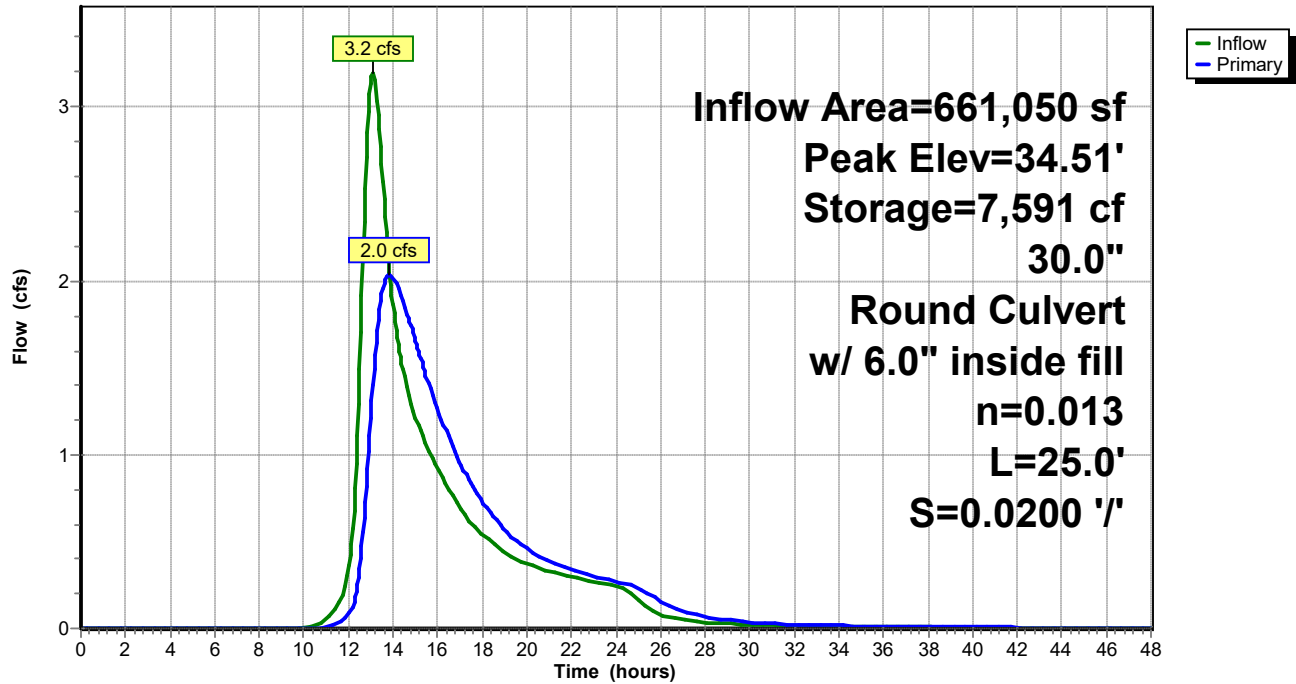
Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	30.0" Round Culvert w/ 6.0" inside fill L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0200 ' S= 0.0200 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.21 sf

Primary OutFlow Max=2.0 cfs @ 13.86 hrs HW=34.51' (Free Discharge)↑ **1=Culvert** (Inlet Controls 2.0 cfs @ 1.77 fps)

Pond C1:

Hydrograph



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Summary for Pond C10:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 1.69" for 2-Year event
Inflow = 0.7 cfs @ 12.09 hrs, Volume= 2,298 cf
Outflow = 0.7 cfs @ 12.09 hrs, Volume= 2,298 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.7 cfs @ 12.09 hrs, Volume= 2,298 cf

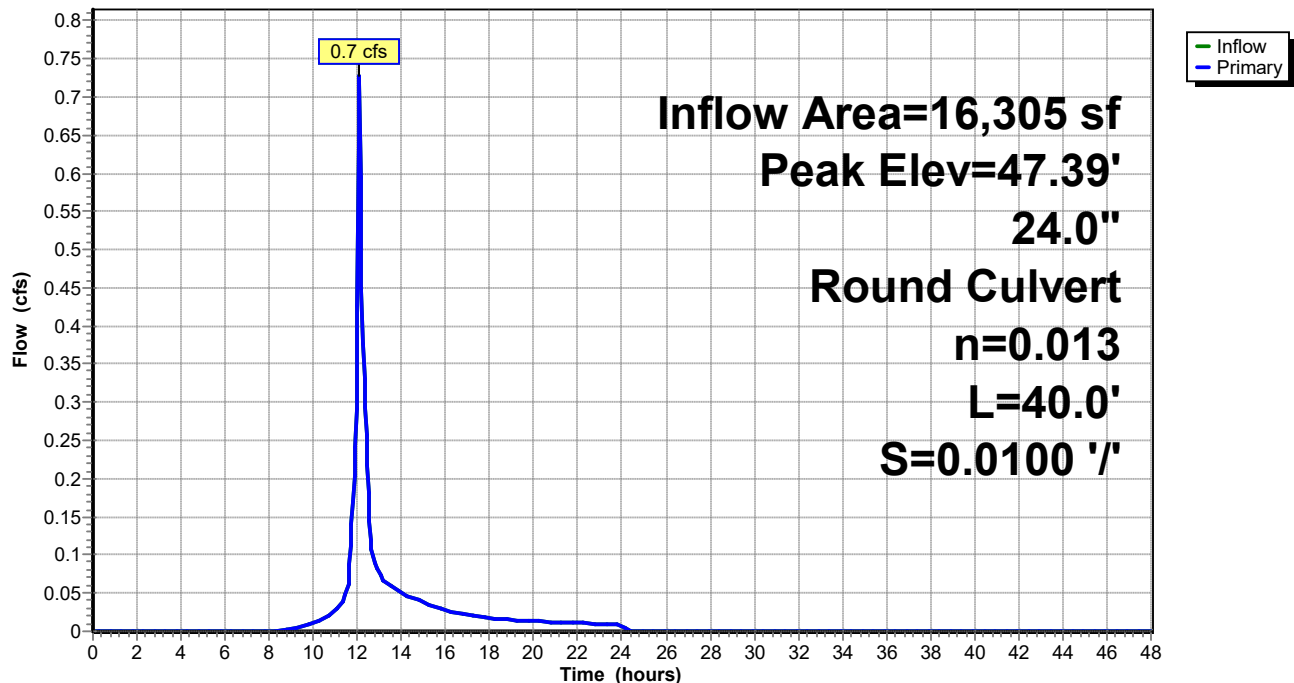
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 47.39' @ 12.09 hrs
Flood Elev= 49.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	47.00'	24.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.00' / 46.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=0.7 cfs @ 12.09 hrs HW=47.39' (Free Discharge)
↑1=Culvert (Inlet Controls 0.7 cfs @ 1.67 fps)

Pond C10:

Hydrograph



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Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 0.44" for 2-Year event
 Inflow = 3.8 cfs @ 12.17 hrs, Volume= 14,598 cf
 Outflow = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf, Atten= 90%, Lag= 93.4 min
 Primary = 0.4 cfs @ 13.72 hrs, Volume= 9,256 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 40.46' @ 13.72 hrs Surf.Area= 8,283 sf Storage= 7,794 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 344.9 min calculated for 9,256 cf (63% of inflow)
 Center-of-Mass det. time= 233.9 min (1,086.4 - 852.5)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 ' S= 0.0065 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 ' S= -0.0117 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

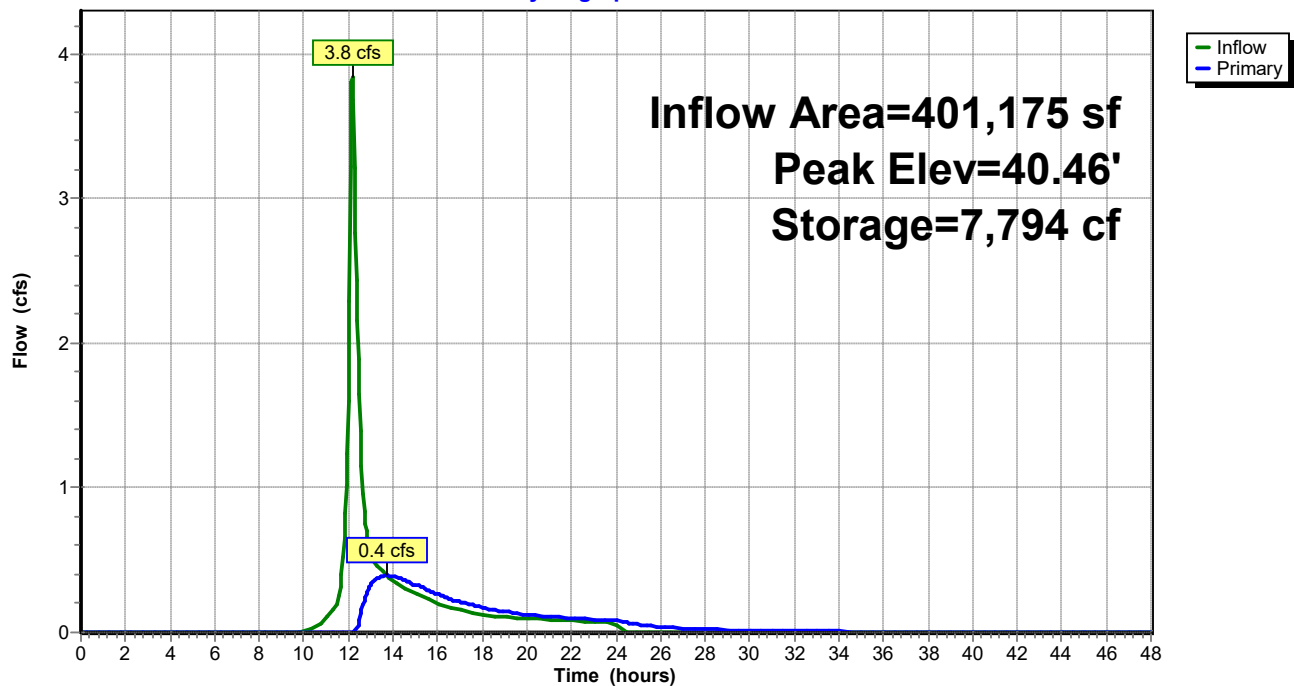
Primary OutFlow Max=0.4 cfs @ 13.72 hrs HW=40.46' (Free Discharge)

1=Culvert (Barrel Controls 0.0 cfs @ 1.18 fps)

2=Culvert (Inlet Controls 0.4 cfs @ 1.55 fps)

Pond C2:

Hydrograph



Post-Dev - REV1

Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 1.48" for 2-Year event
 Inflow = 3.7 cfs @ 12.98 hrs, Volume= 33,424 cf
 Outflow = 2.0 cfs @ 13.79 hrs, Volume= 33,397 cf, Atten= 47%, Lag= 48.3 min
 Discarded = 2.0 cfs @ 13.79 hrs, Volume= 33,397 cf
 Primary = 0.0 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.66' @ 13.79 hrs Surf.Area= 26,344 sf Storage= 9,936 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 97.4 min calculated for 33,397 cf (100% of inflow)
 Center-of-Mass det. time= 96.9 min (999.6 - 902.7)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Discarded OutFlow Max=2.0 cfs @ 13.79 hrs HW=42.66' (Free Discharge)

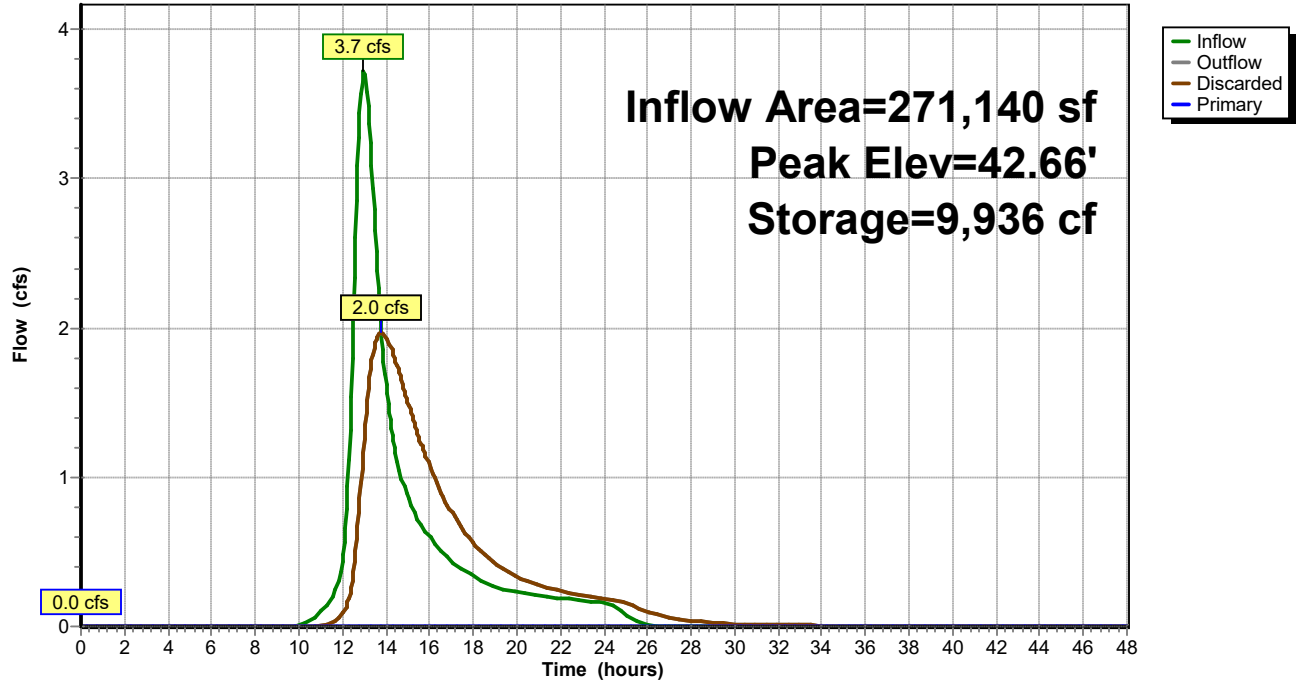
↑**2=Culvert** (Inlet Controls 2.0 cfs @ 2.18 fps)

Primary OutFlow Max=0.0 cfs @ 0.00 hrs HW=42.00' (Free Discharge)

↑**1=Culvert** (Controls 0.0 cfs)

Pond C3:

Hydrograph



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Summary for Pond C4:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth = 1.43" for 2-Year event
 Inflow = 5.0 cfs @ 12.70 hrs, Volume= 36,718 cf
 Outflow = 3.8 cfs @ 13.02 hrs, Volume= 36,373 cf, Atten= 22%, Lag= 19.1 min
 Primary = 3.8 cfs @ 13.02 hrs, Volume= 36,373 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.01' @ 13.02 hrs Surf.Area= 11,023 sf Storage= 6,874 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 53.4 min calculated for 36,335 cf (99% of inflow)
 Center-of-Mass det. time= 48.8 min (932.8 - 883.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

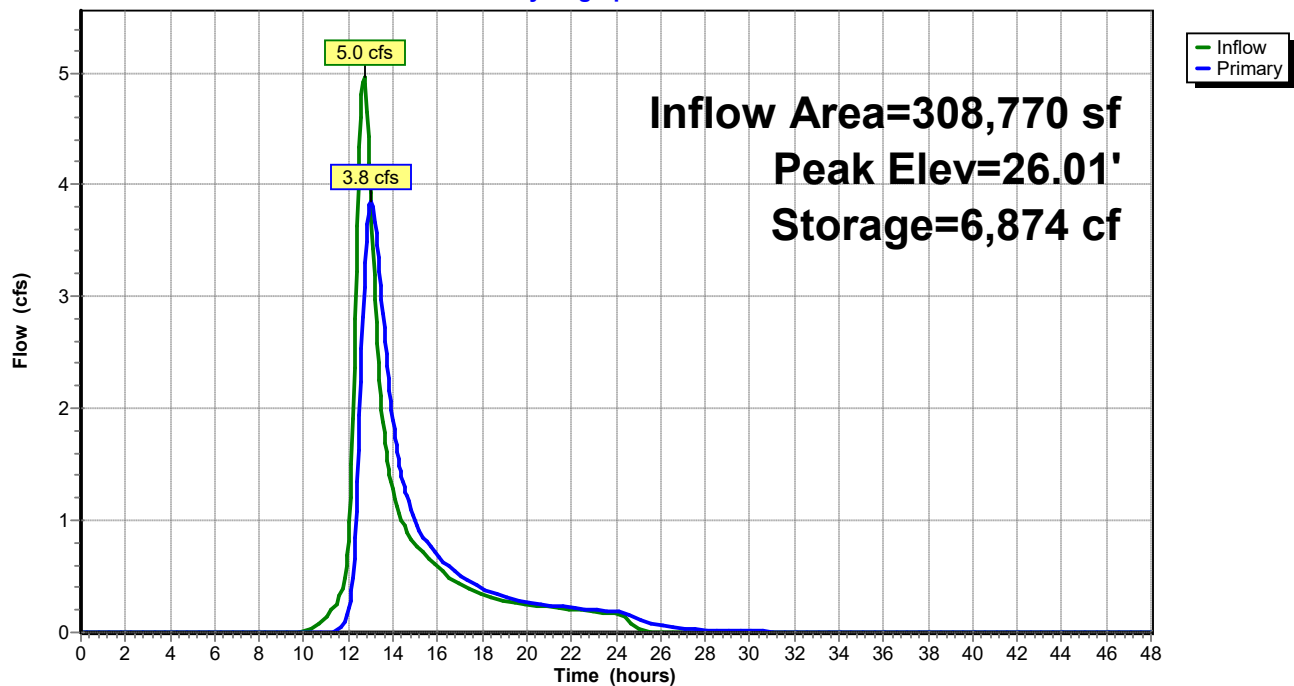
Primary OutFlow Max=3.8 cfs @ 13.02 hrs HW=26.01' (Free Discharge)

1=Culvert (Inlet Controls 1.8 cfs @ 2.33 fps)

2=Culvert (Barrel Controls 2.0 cfs @ 2.99 fps)

Pond C4:

Hydrograph



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Summary for Pond C5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 1.70" for 2-Year event
 Inflow = 2.5 cfs @ 12.09 hrs, Volume= 7,793 cf
 Outflow = 2.5 cfs @ 12.09 hrs, Volume= 7,793 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.5 cfs @ 12.09 hrs, Volume= 7,793 cf

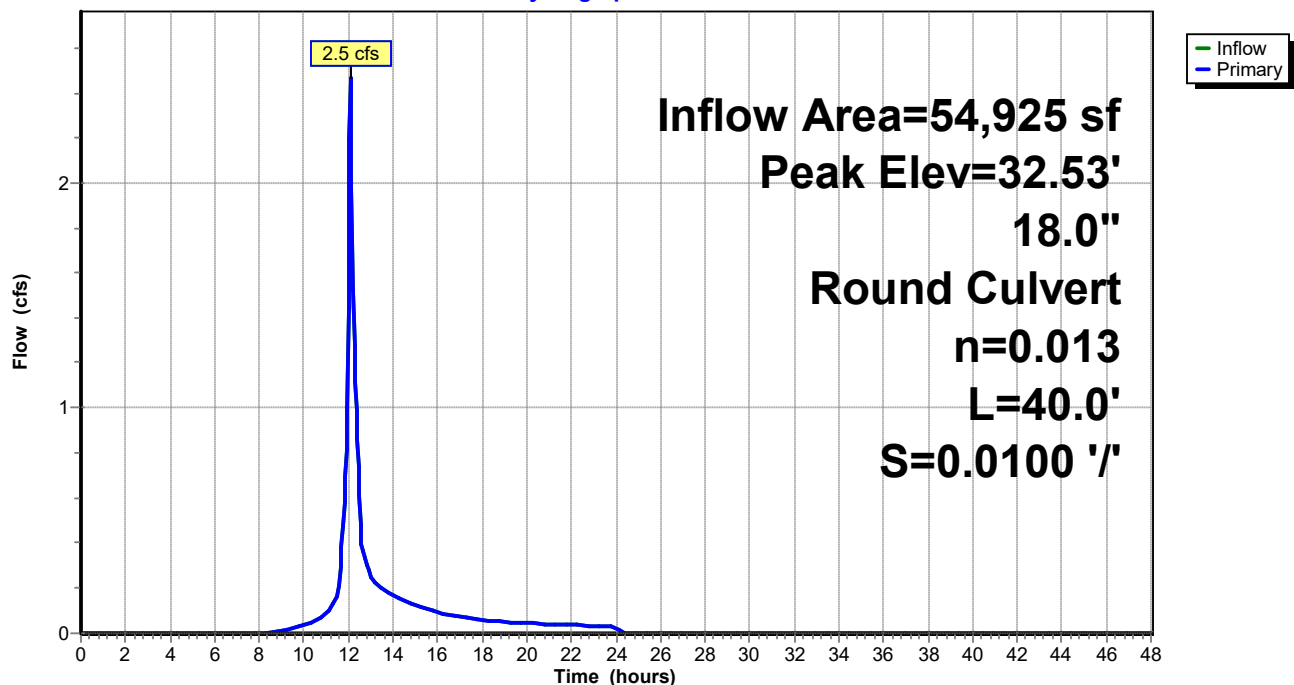
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 32.53' @ 12.09 hrs
 Flood Elev= 33.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	31.70'	18.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.70' / 31.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.4 cfs @ 12.09 hrs HW=32.52' (Free Discharge)
 ↑1=Culvert (Inlet Controls 2.4 cfs @ 2.44 fps)

Pond C5:

Hydrograph



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Summary for Pond C6:

Inflow Area = 51,555 sf, 18.44% Impervious, Inflow Depth = 1.68" for 2-Year event
 Inflow = 2.3 cfs @ 12.09 hrs, Volume= 7,231 cf
 Outflow = 2.3 cfs @ 12.09 hrs, Volume= 7,231 cf, Atten= 0%, Lag= 0.0 min
 Primary = 2.3 cfs @ 12.09 hrs, Volume= 7,231 cf

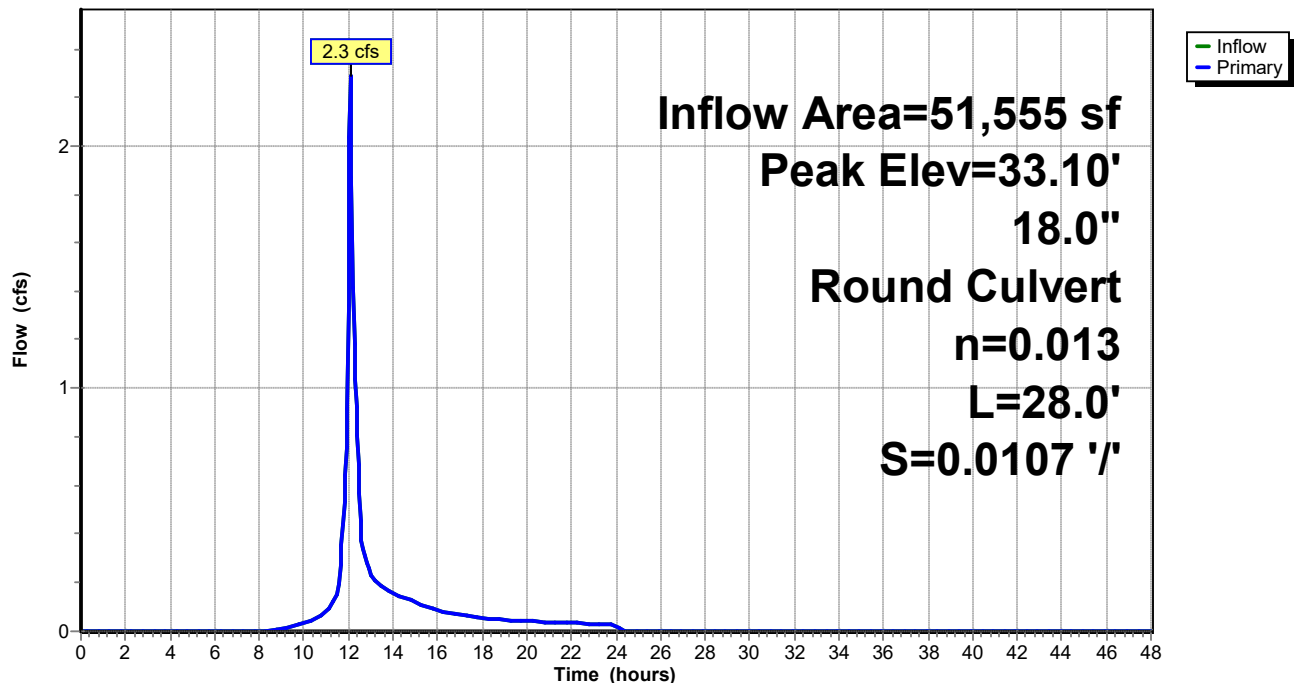
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 33.10' @ 12.09 hrs
 Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	18.0" Round Culvert L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=2.2 cfs @ 12.09 hrs HW=33.09' (Free Discharge)
 ↑1=Culvert (Inlet Controls 2.2 cfs @ 2.39 fps)

Pond C6:

Hydrograph



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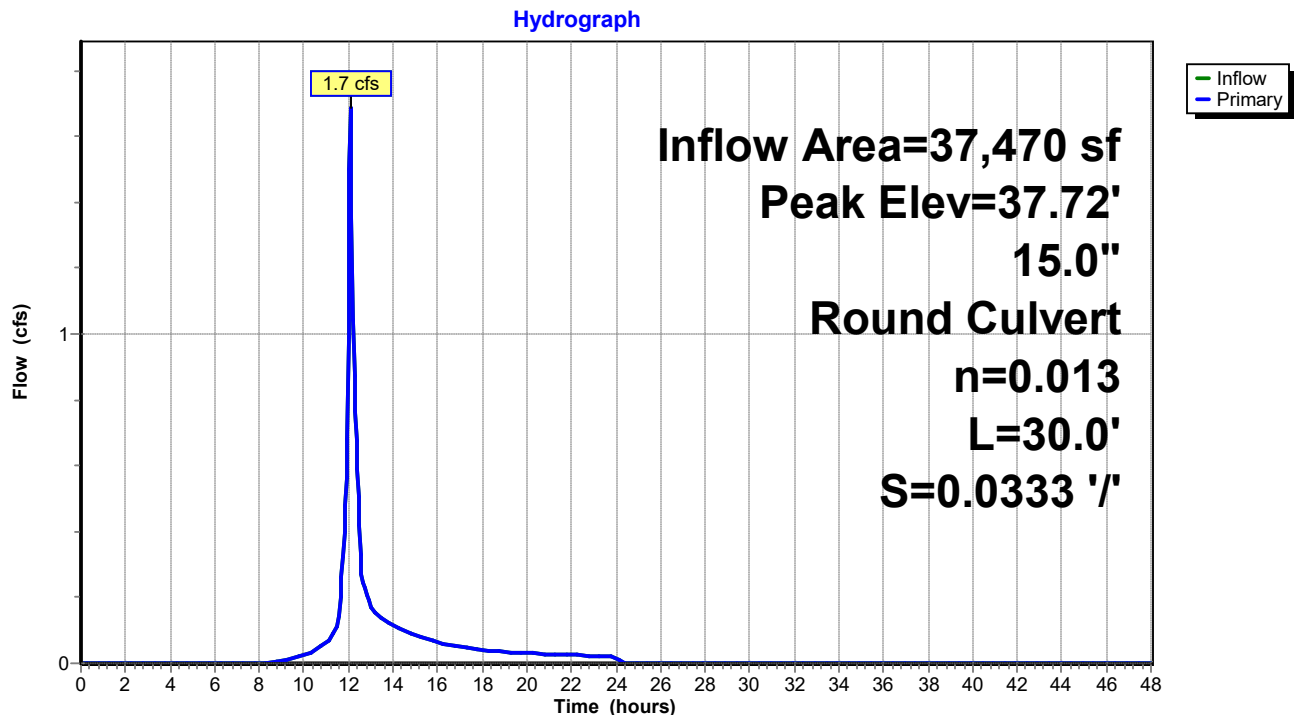
Summary for Pond C7:

Inflow Area = 37,470 sf, 20.42% Impervious, Inflow Depth = 1.71" for 2-Year event
 Inflow = 1.7 cfs @ 12.09 hrs, Volume= 5,330 cf
 Outflow = 1.7 cfs @ 12.09 hrs, Volume= 5,330 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.7 cfs @ 12.09 hrs, Volume= 5,330 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 37.72' @ 12.09 hrs
 Flood Elev= 38.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.7 cfs @ 12.09 hrs HW=37.72' (Free Discharge)
 ↑1=Culvert (Inlet Controls 1.7 cfs @ 2.28 fps)

Pond C7:

Post-Dev - REV1

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Summary for Pond C8:

Inflow Area = 27,400 sf, 15.60% Impervious, Inflow Depth = 1.63" for 2-Year event
 Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,717 cf
 Outflow = 1.2 cfs @ 12.09 hrs, Volume= 3,717 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.2 cfs @ 12.09 hrs, Volume= 3,717 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 41.59' @ 12.09 hrs

Flood Elev= 42.25'

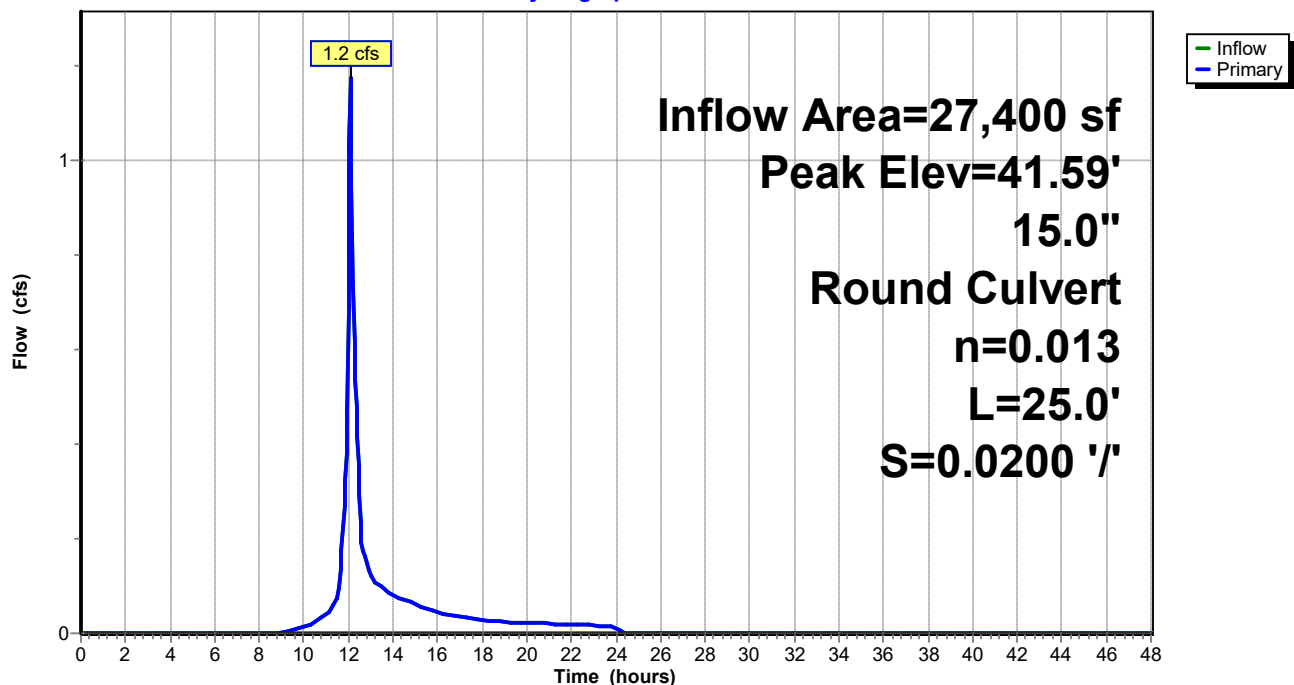
Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	15.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.00' / 40.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.09 hrs HW=41.58' (Free Discharge)

↑1=Culvert (Inlet Controls 1.2 cfs @ 2.05 fps)

Pond C8:

Hydrograph



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Summary for Pond C9:

Inflow Area = 8,210 sf, 9.38% Impervious, Inflow Depth = 1.48" for 2-Year event
 Inflow = 0.3 cfs @ 12.10 hrs, Volume= 1,012 cf
 Outflow = 0.3 cfs @ 12.10 hrs, Volume= 1,012 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.3 cfs @ 12.10 hrs, Volume= 1,012 cf

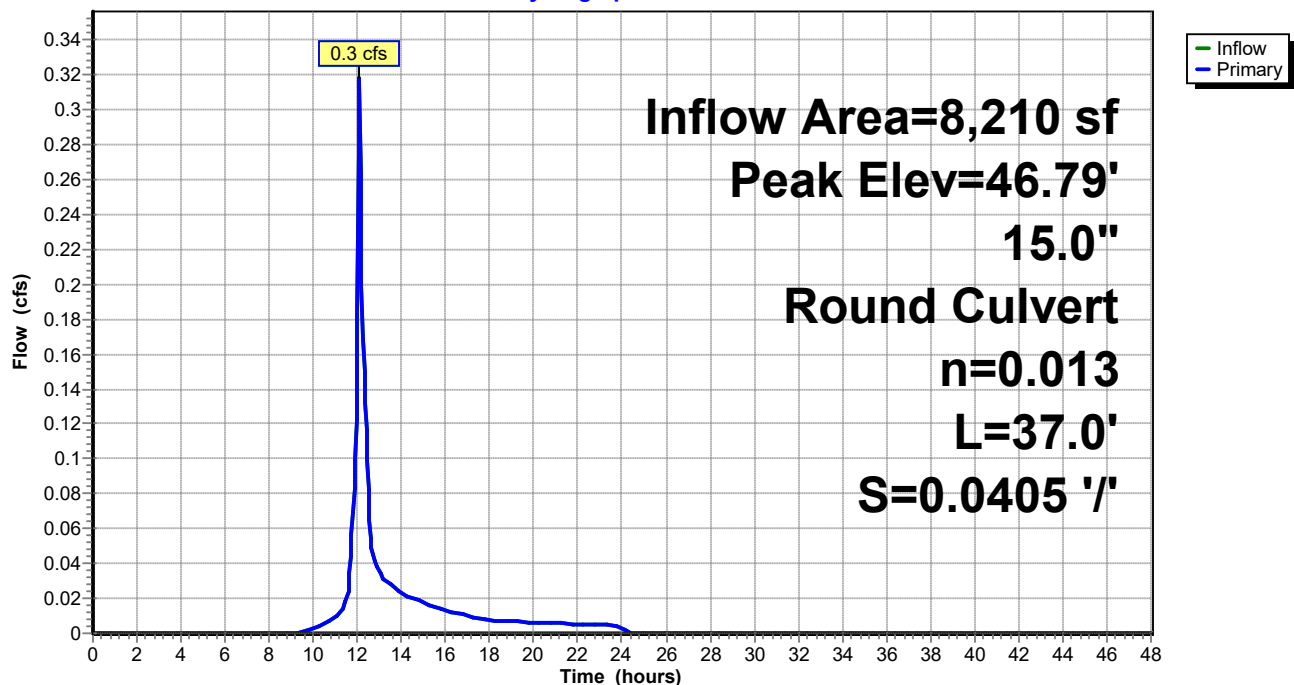
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 46.79' @ 12.10 hrs
 Flood Elev= 47.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.50'	15.0" Round Culvert L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.50' / 45.00' S= 0.0405 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.3 cfs @ 12.10 hrs HW=46.79' (Free Discharge)
 ↑1=Culvert (Inlet Controls 0.3 cfs @ 1.45 fps)

Pond C9:

Hydrograph

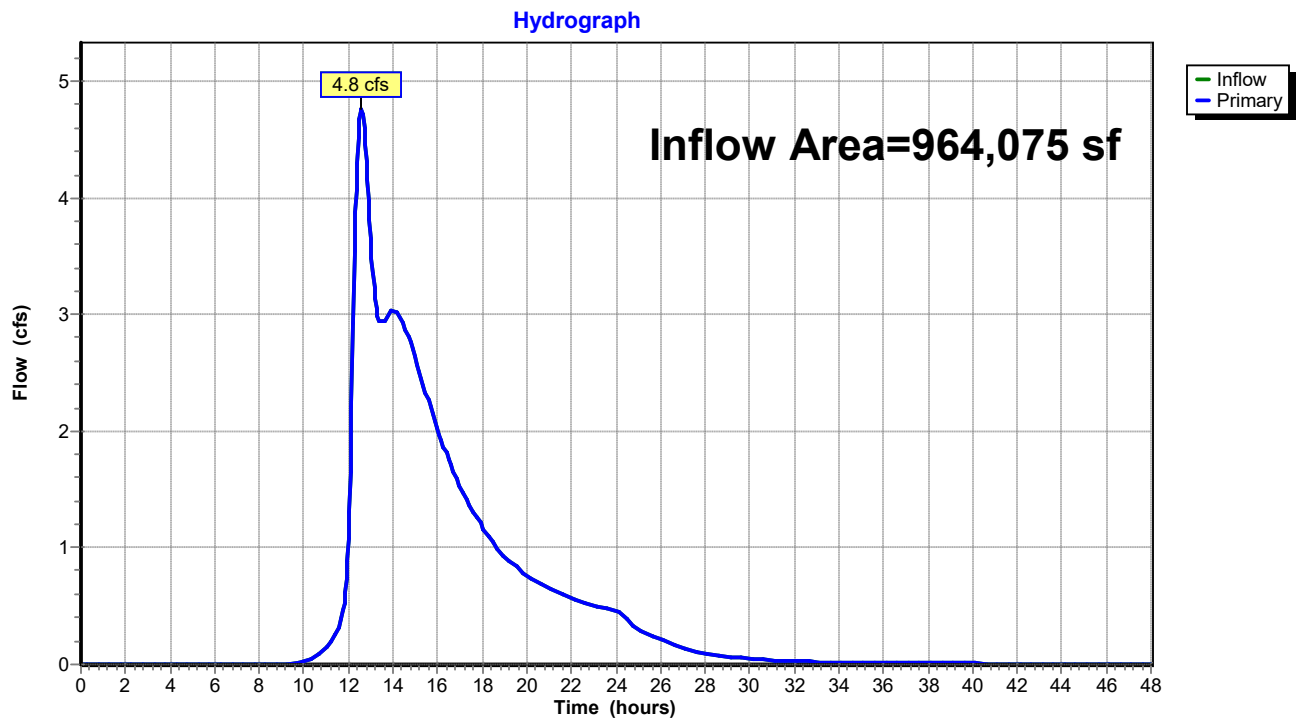


Summary for Link AP1:

Inflow Area = 964,075 sf, 9.01% Impervious, Inflow Depth > 0.95" for 2-Year event
 Inflow = 4.8 cfs @ 12.58 hrs, Volume= 75,931 cf
 Primary = 4.8 cfs @ 12.58 hrs, Volume= 75,931 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

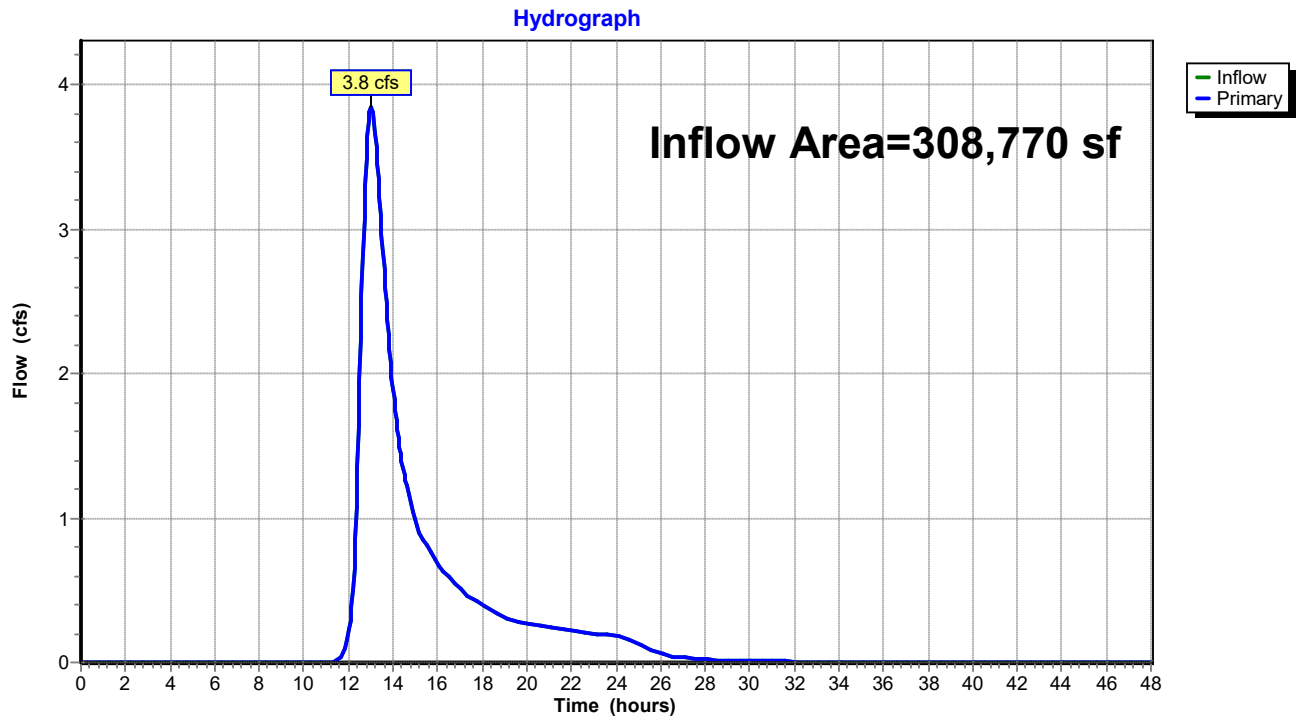


Summary for Link AP2:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth > 1.41" for 2-Year event
 Inflow = 3.8 cfs @ 13.02 hrs, Volume= 36,373 cf
 Primary = 3.8 cfs @ 13.02 hrs, Volume= 36,373 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:



Post-Dev - REV1*Type III 24-hr 10-Year Rainfall=4.90"*

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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0:	Runoff Area=186,335 sf 4.80% Impervious Runoff Depth=2.63" Flow Length=659' Tc=54.2 min CN=78 Runoff=5.5 cfs 40,792 cf
Subcatchment 1.1:	Runoff Area=47,710 sf 5.47% Impervious Runoff Depth=2.81" Flow Length=275' Tc=10.8 min CN=80 Runoff=3.0 cfs 11,155 cf
Subcatchment 1.10:	Runoff Area=8,210 sf 9.38% Impervious Runoff Depth=2.81" Tc=6.0 min CN=80 Runoff=0.6 cfs 1,920 cf
Subcatchment 1.2:	Runoff Area=14,055 sf 2.95% Impervious Runoff Depth=2.63" Tc=6.0 min CN=78 Runoff=1.0 cfs 3,077 cf
Subcatchment 1.3:	Runoff Area=259,875 sf 7.40% Impervious Runoff Depth=2.72" Flow Length=598' Tc=79.3 min CN=79 Runoff=6.3 cfs 58,813 cf
Subcatchment 1.4:	Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=2.63" Flow Length=396' Tc=11.4 min CN=78 Runoff=7.6 cfs 28,467 cf
Subcatchment 1.5:	Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=2.81" Flow Length=453' Tc=72.4 min CN=80 Runoff=7.2 cfs 63,397 cf
Subcatchment 1.6:	Runoff Area=3,370 sf 37.98% Impervious Runoff Depth=3.47" Tc=6.0 min CN=87 Runoff=0.3 cfs 975 cf
Subcatchment 1.7:	Runoff Area=14,085 sf 13.17% Impervious Runoff Depth=2.99" Tc=6.0 min CN=82 Runoff=1.1 cfs 3,509 cf
Subcatchment 1.8:	Runoff Area=10,070 sf 33.52% Impervious Runoff Depth=3.37" Tc=6.0 min CN=86 Runoff=0.9 cfs 2,831 cf
Subcatchment 1.9:	Runoff Area=19,190 sf 18.26% Impervious Runoff Depth=3.08" Tc=6.0 min CN=83 Runoff=1.6 cfs 4,931 cf
Subcatchment 2.0:	Runoff Area=292,465 sf 8.66% Impervious Runoff Depth=2.72" Flow Length=750' Tc=50.8 min CN=79 Runoff=9.3 cfs 66,189 cf
Subcatchment 2.1:	Runoff Area=16,305 sf 22.05% Impervious Runoff Depth=3.08" Tc=6.0 min CN=83 Runoff=1.3 cfs 4,190 cf
Reach R1:	Avg. Flow Depth=0.22' Max Vel=0.54 fps Inflow=3.0 cfs 11,155 cf n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=2.3 cfs 11,155 cf
Reach R2:	Avg. Flow Depth=0.15' Max Vel=0.48 fps Inflow=1.0 cfs 3,077 cf n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=0.8 cfs 3,077 cf
Reach R3:	Avg. Flow Depth=0.25' Max Vel=0.43 fps Inflow=5.0 cfs 83,399 cf n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=4.9 cfs 83,372 cf

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Reach R4: Avg. Flow Depth=0.12' Max Vel=0.34 fps Inflow=2.6 cfs 24,640 cf
 n=0.100 L=480.0' S=0.0145 ' ' Capacity=71.1 cfs Outflow=2.0 cfs 24,612 cf

Reach R5: Avg. Flow Depth=0.70' Max Vel=0.78 fps Inflow=4.5 cfs 14,167 cf
 n=0.100 L=257.0' S=0.0078 ' ' Capacity=19.3 cfs Outflow=3.7 cfs 14,167 cf

Reach R6: Avg. Flow Depth=0.08' Max Vel=2.11 fps Inflow=1.3 cfs 4,190 cf
 n=0.018 L=860.0' S=0.0313 ' ' Capacity=582.6 cfs Outflow=1.1 cfs 4,190 cf

Pond C1: Peak Elev=34.89' Storage=18,889 cf Inflow=8.1 cfs 83,425 cf
 30.0" Round Culvert w/ 6.0" inside fill n=0.013 L=25.0' S=0.0200 ' ' Outflow=5.0 cfs 83,399 cf

Pond C10: Peak Elev=47.53' Inflow=1.3 cfs 4,190 cf
 24.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=1.3 cfs 4,190 cf

Pond C2: Peak Elev=40.93' Storage=11,993 cf Inflow=7.6 cfs 29,988 cf
 Outflow=2.6 cfs 24,640 cf

Pond C3: Peak Elev=42.94' Storage=18,595 cf Inflow=7.2 cfs 63,397 cf
 Discarded=3.8 cfs 61,847 cf Primary=0.3 cfs 1,521 cf Outflow=4.1 cfs 63,368 cf

Pond C4: Peak Elev=26.48' Storage=12,304 cf Inflow=9.6 cfs 70,379 cf
 Outflow=7.5 cfs 70,032 cf

Pond C5: Peak Elev=32.90' Inflow=4.5 cfs 14,167 cf
 18.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=4.5 cfs 14,167 cf

Pond C6: Peak Elev=33.44' Inflow=4.2 cfs 13,192 cf
 18.0" Round Culvert n=0.013 L=28.0' S=0.0107 ' ' Outflow=4.2 cfs 13,192 cf

Pond C7: Peak Elev=38.05' Inflow=3.0 cfs 9,682 cf
 15.0" Round Culvert n=0.013 L=30.0' S=0.0333 ' ' Outflow=3.0 cfs 9,682 cf

Pond C8: Peak Elev=41.84' Inflow=2.2 cfs 6,851 cf
 15.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' ' Outflow=2.2 cfs 6,851 cf

Pond C9: Peak Elev=46.91' Inflow=0.6 cfs 1,920 cf
 15.0" Round Culvert n=0.013 L=37.0' S=0.0405 ' ' Outflow=0.6 cfs 1,920 cf

Link AP1: Inflow=9.4 cfs 152,564 cf
 Primary=9.4 cfs 152,564 cf

Link AP2: Inflow=7.5 cfs 70,032 cf
 Primary=7.5 cfs 70,032 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 290,247 cf Average Runoff Depth = 2.74"
90.90% Pervious = 1,157,035 sf 9.10% Impervious = 115,810 sf

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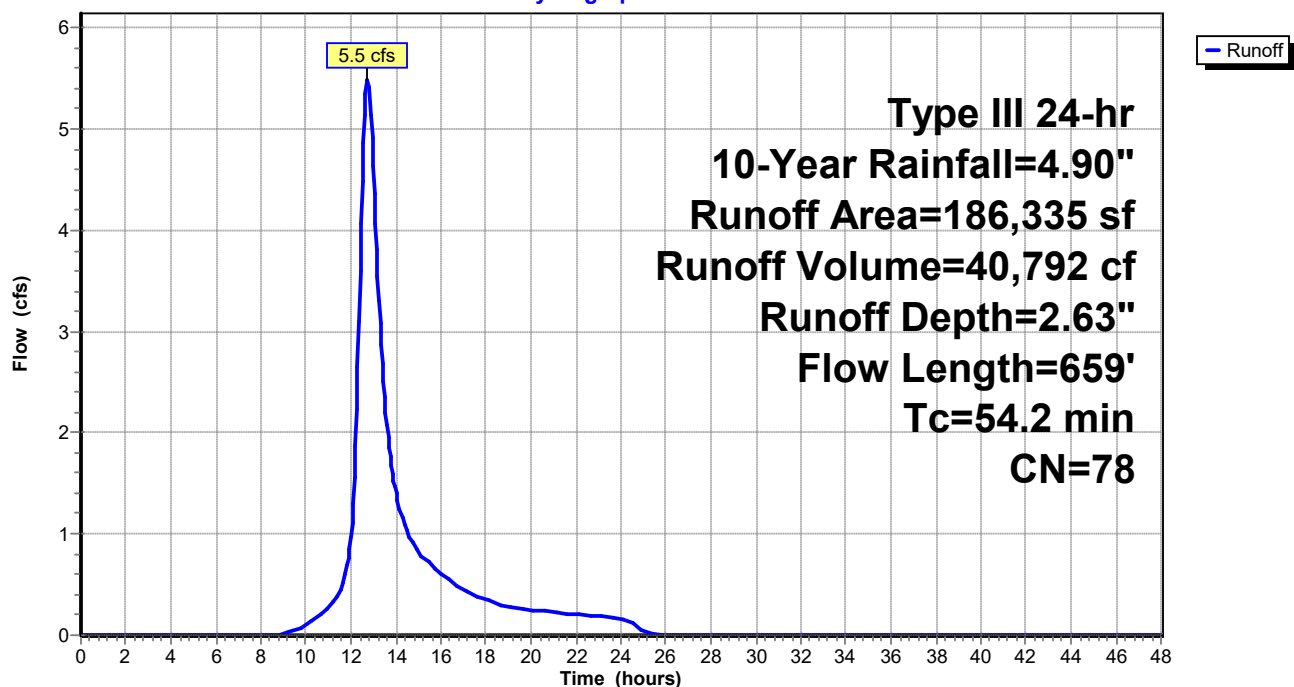
Summary for Subcatchment 1.0:

Runoff = 5.5 cfs @ 12.74 hrs, Volume= 40,792 cf, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
162,540	77	Woods, Good, HSG D
14,845	80	>75% Grass cover, Good, HSG D
8,950	98	Paved parking, HSG D
186,335	78	Weighted Average
177,385		95.20% Pervious Area
8,950		4.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:**Hydrograph**

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Summary for Subcatchment 1.1:

Runoff = 3.0 cfs @ 12.15 hrs, Volume= 11,155 cf, Depth= 2.81"

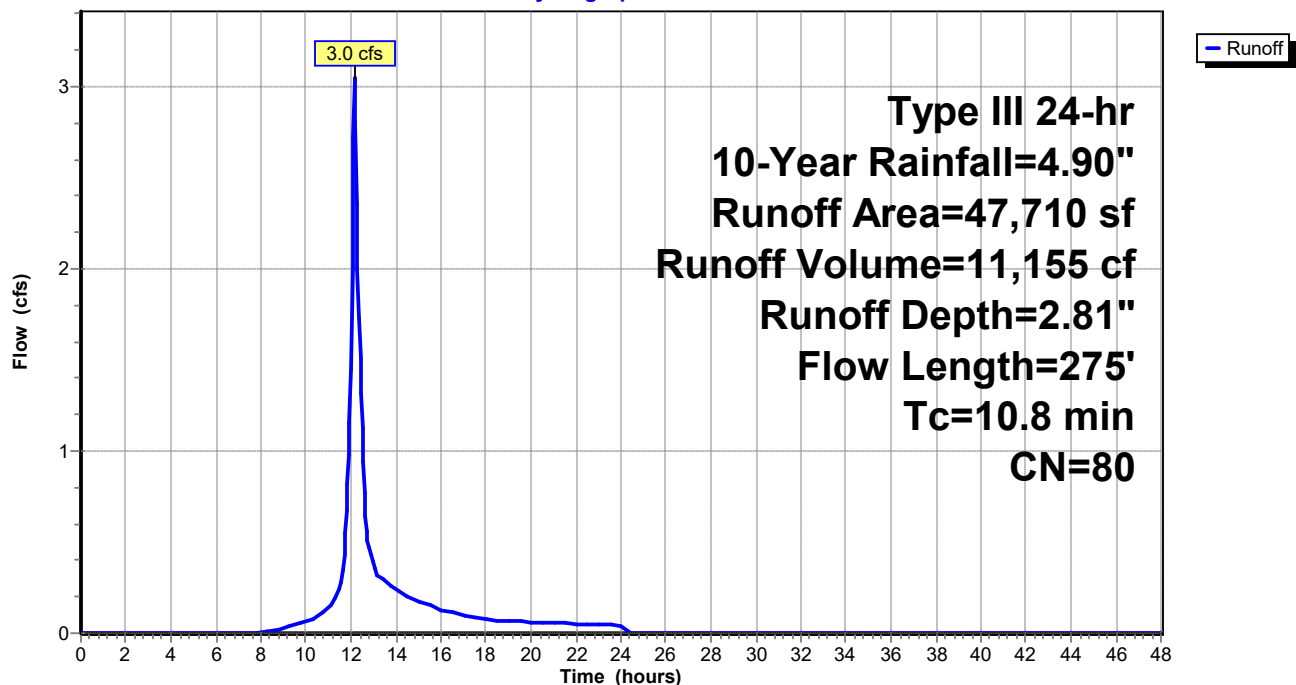
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
19,405	77	Woods, Good, HSG D
25,695	80	>75% Grass cover, Good, HSG D
2,610	98	Paved parking, HSG D
47,710	80	Weighted Average
45,100		94.53% Pervious Area
2,610		5.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	114	0.1360	0.38		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
2.5	111	0.0110	0.73		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
3.3	50	0.0100	0.25		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
10.8	275	Total			

Subcatchment 1.1:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.10:

Runoff = 0.6 cfs @ 12.09 hrs, Volume= 1,920 cf, Depth= 2.81"

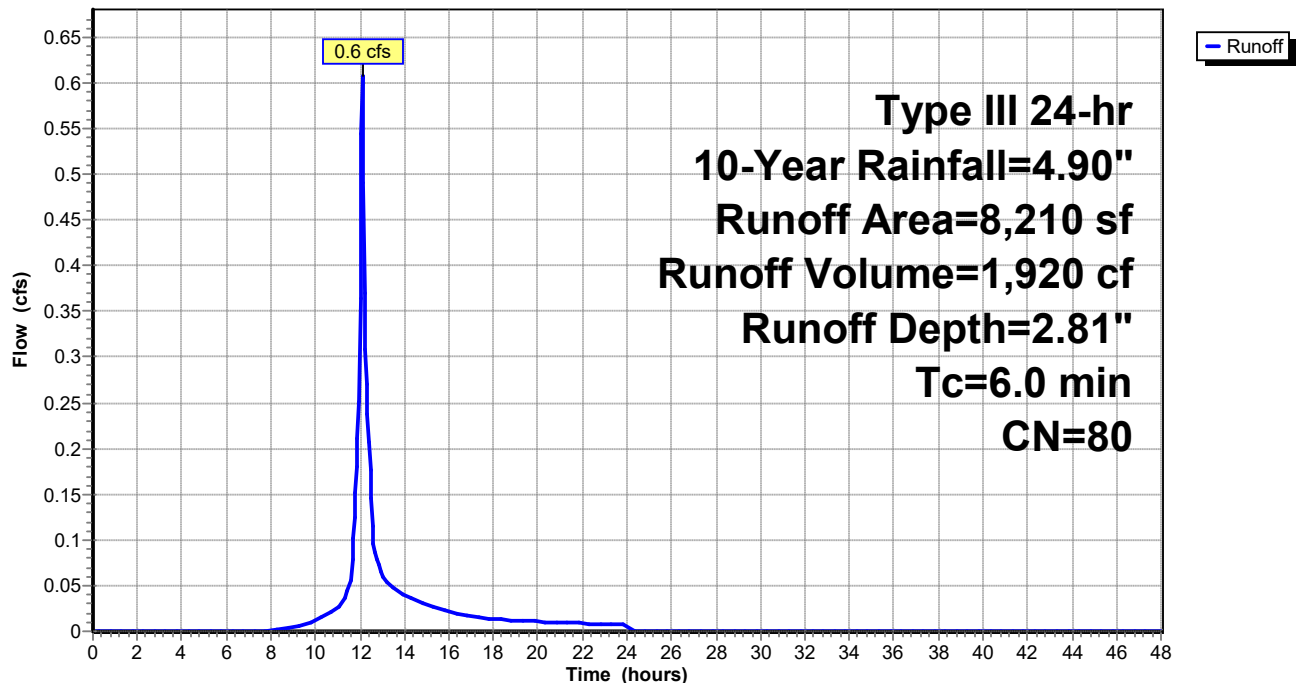
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
3,915	77	Woods, Good, HSG D
3,525	80	>75% Grass cover, Good, HSG D
770	98	Paved parking, HSG D
8,210	80	Weighted Average
7,440		90.62% Pervious Area
770		9.38% Impervious Area

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

Subcatchment 1.10:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.2:

Runoff = 1.0 cfs @ 12.09 hrs, Volume= 3,077 cf, Depth= 2.63"

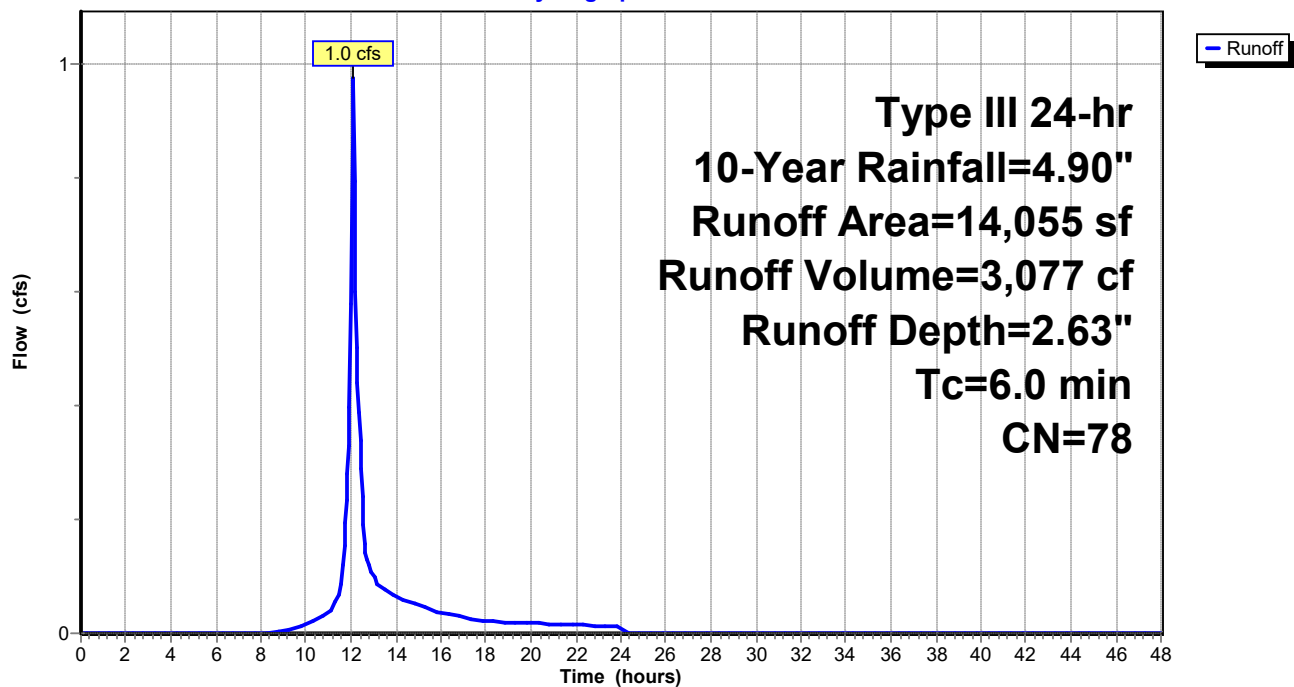
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
9,765	77	Woods, Good, HSG D
3,875	80	>75% Grass cover, Good, HSG D
415	98	Paved parking, HSG D
14,055	78	Weighted Average
13,640		97.05% Pervious Area
415		2.95% Impervious Area

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

Subcatchment 1.2:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.3:

Runoff = 6.3 cfs @ 13.08 hrs, Volume= 58,813 cf, Depth= 2.72"

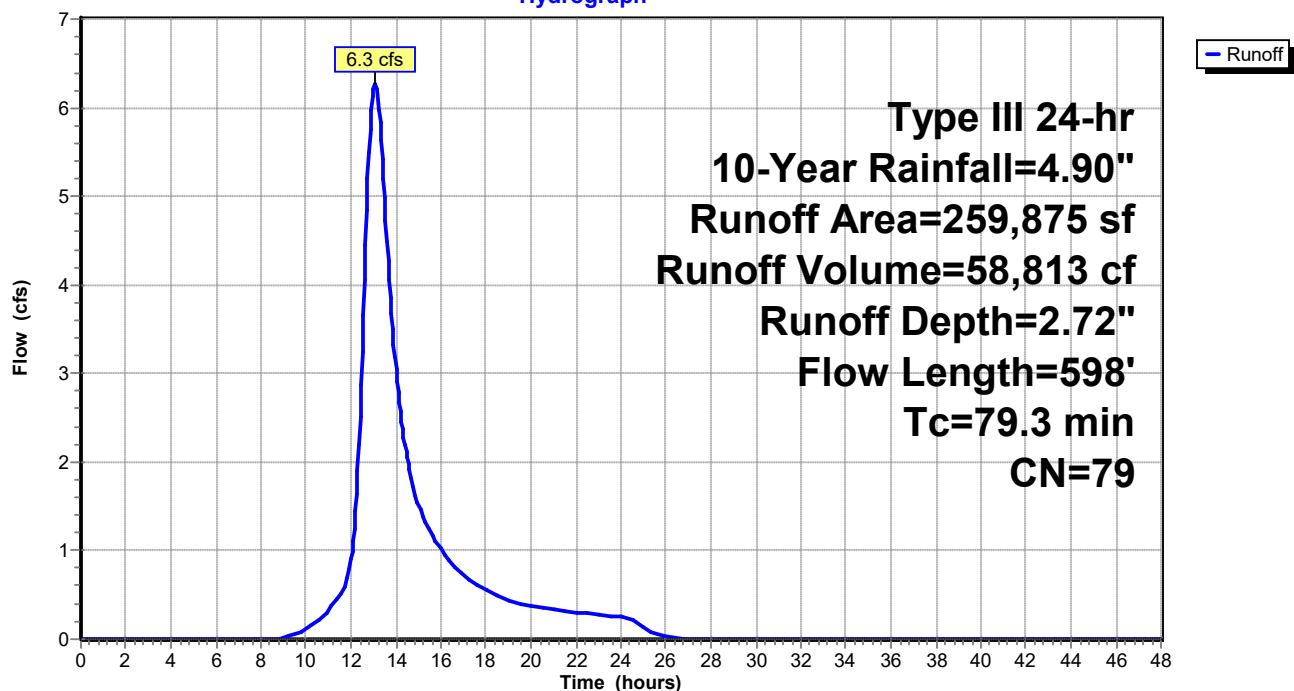
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
214,510	77	Woods, Good, HSG D
26,145	80	>75% Grass cover, Good, HSG D
19,220	98	Paved parking, HSG D
259,875	79	Weighted Average
240,655		92.60% Pervious Area
19,220		7.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C
					Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.4:

Runoff = 7.6 cfs @ 12.16 hrs, Volume= 28,467 cf, Depth= 2.63"

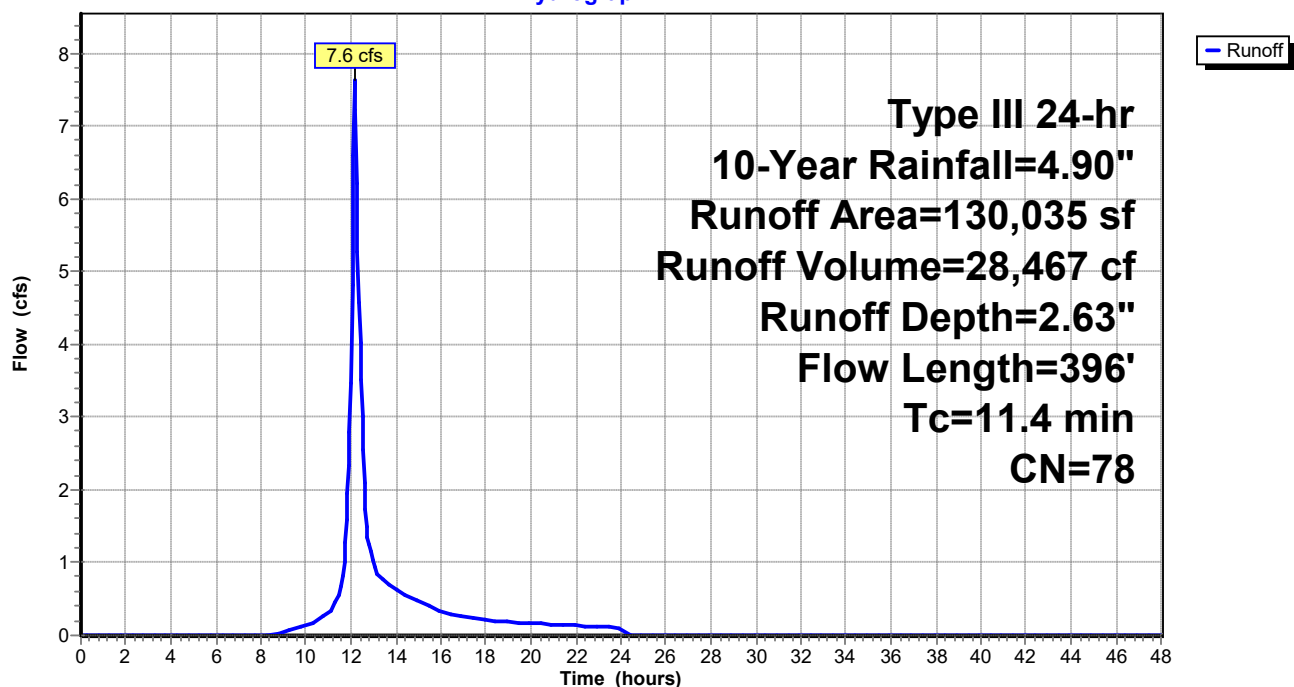
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.5:

Runoff = 7.2 cfs @ 12.96 hrs, Volume= 63,397 cf, Depth= 2.81"

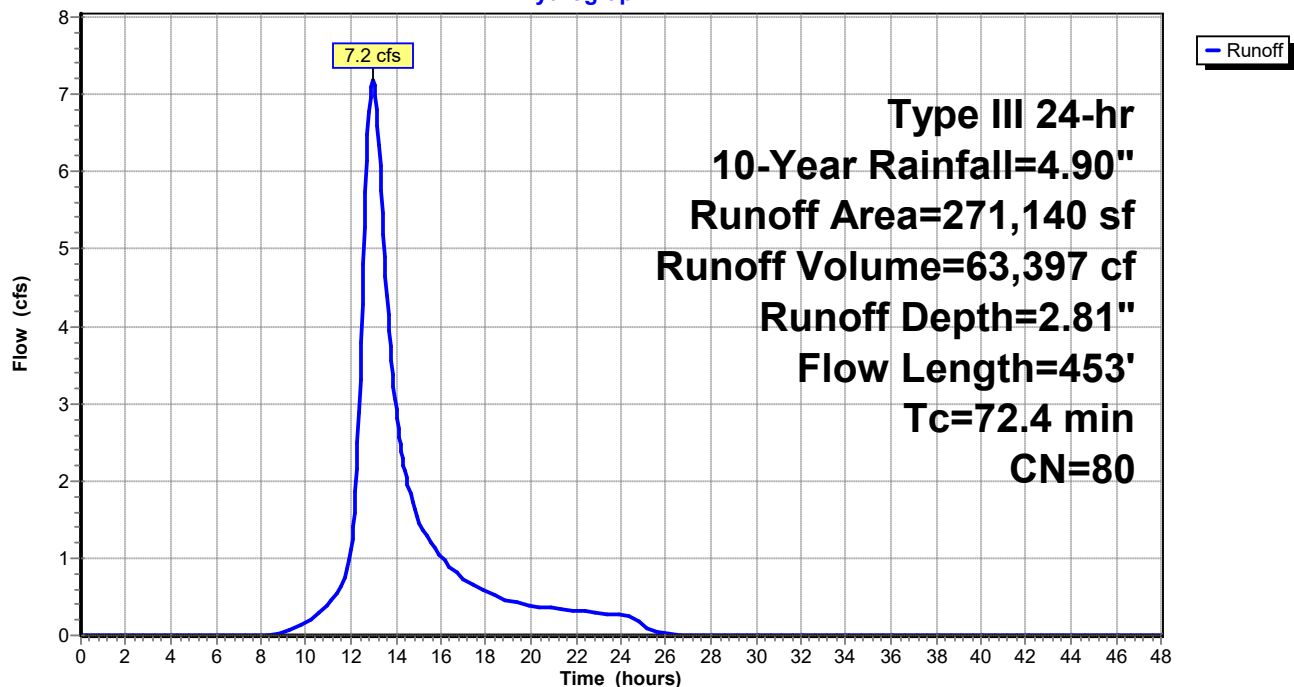
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.6:

Runoff = 0.3 cfs @ 12.09 hrs, Volume= 975 cf, Depth= 3.47"

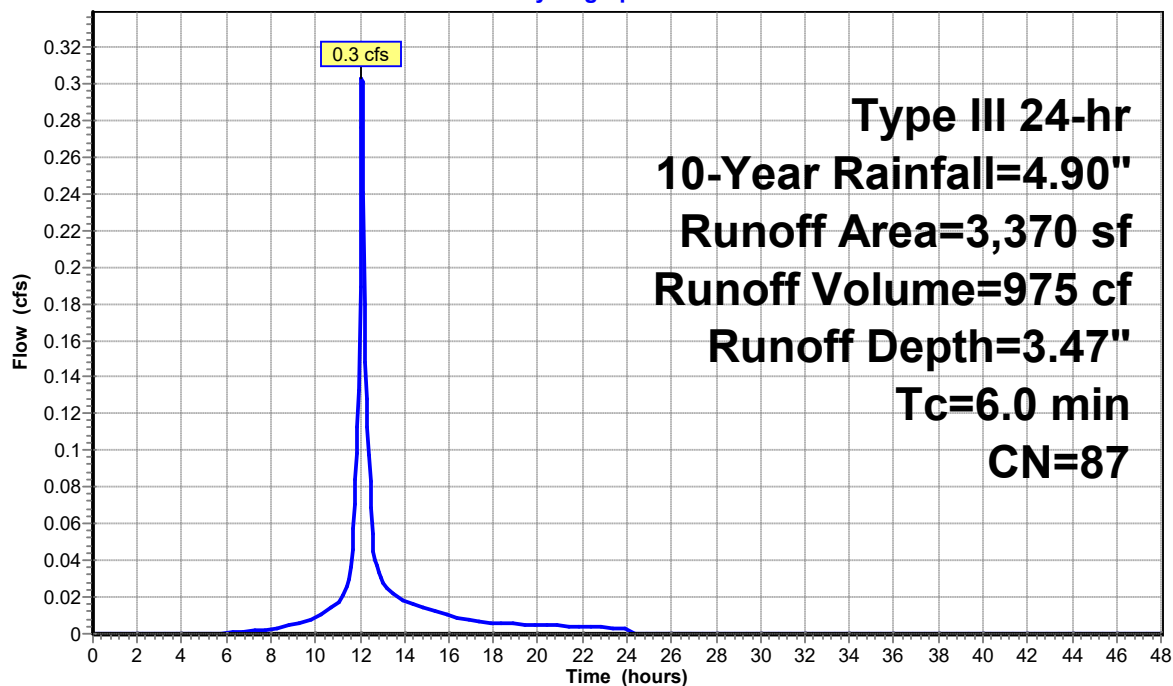
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
2,090	80	>75% Grass cover, Good, HSG D
1,280	98	Paved parking, HSG D
3,370	87	Weighted Average
2,090		62.02% Pervious Area
1,280		37.98% Impervious Area

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

Subcatchment 1.6:

Hydrograph



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Summary for Subcatchment 1.7:

Runoff = 1.1 cfs @ 12.09 hrs, Volume= 3,509 cf, Depth= 2.99"

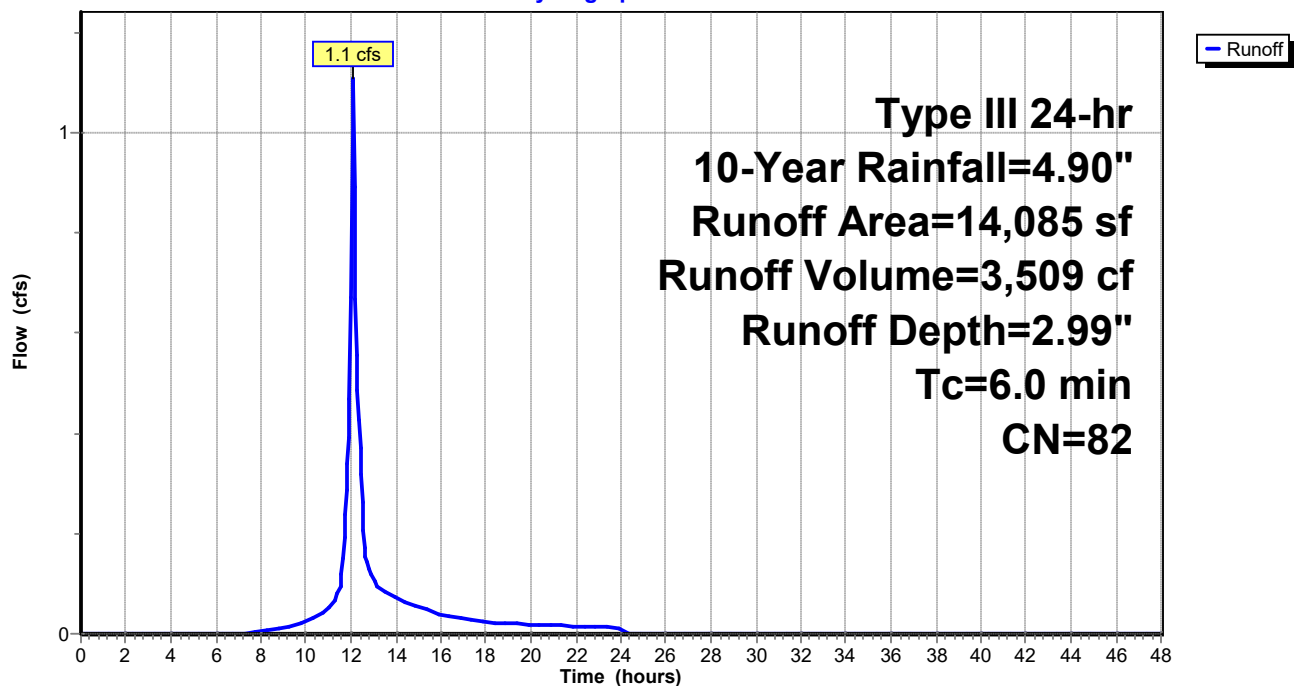
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
12,230	80	>75% Grass cover, Good, HSG D
1,855	98	Paved parking, HSG D
14,085	82	Weighted Average
12,230		86.83% Pervious Area
1,855		13.17% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Summary for Subcatchment 1.8:

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,831 cf, Depth= 3.37"

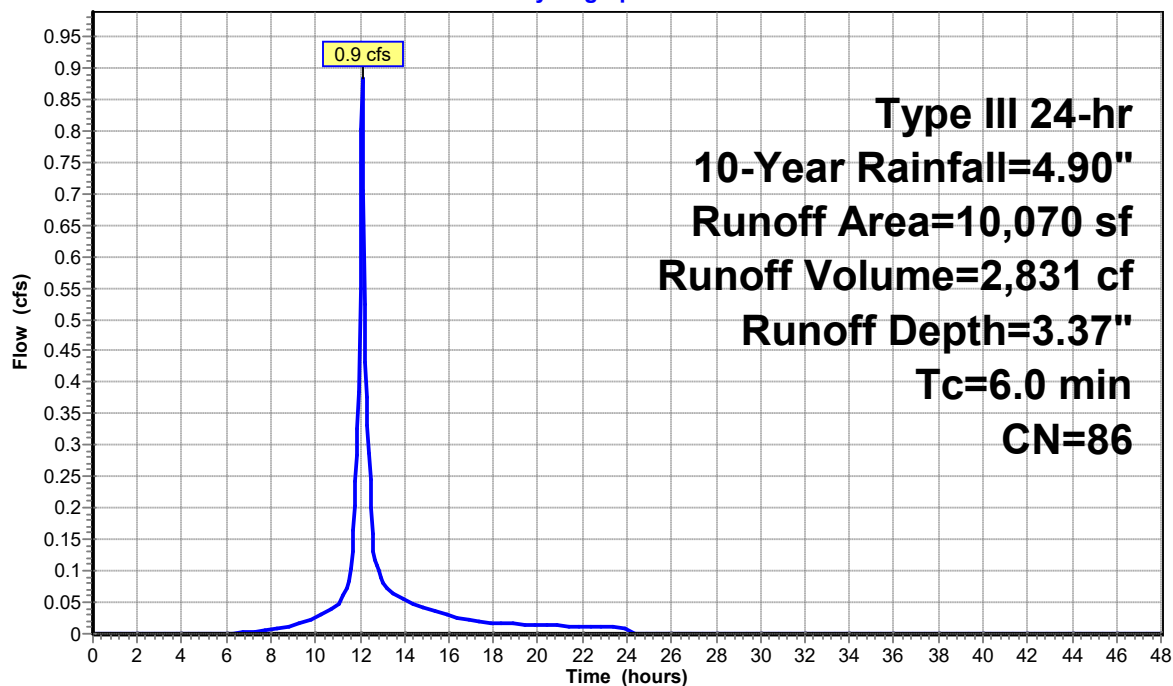
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
6,695	80	>75% Grass cover, Good, HSG D
3,375	98	Paved parking, HSG D
10,070	86	Weighted Average
6,695		66.48% Pervious Area
3,375		33.52% Impervious Area

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

Subcatchment 1.8:

Hydrograph



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Summary for Subcatchment 1.9:

Runoff = 1.6 cfs @ 12.09 hrs, Volume= 4,931 cf, Depth= 3.08"

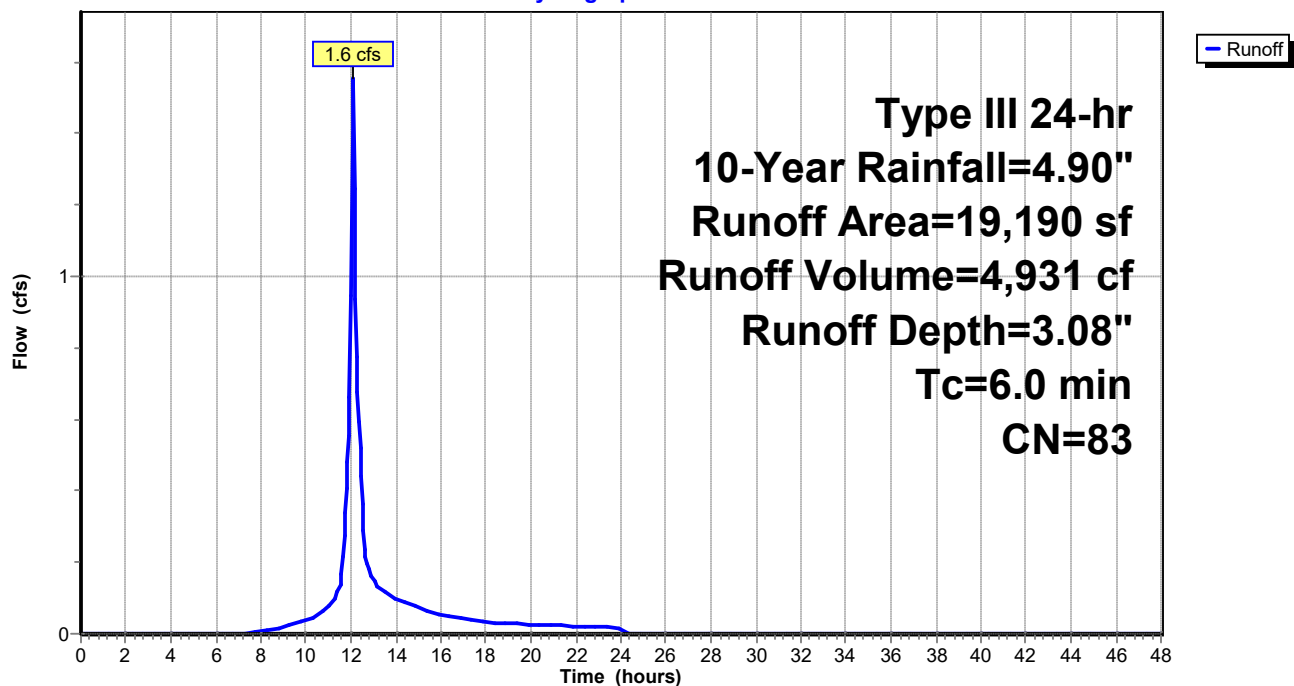
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
15,685	80	>75% Grass cover, Good, HSG D
3,505	98	Paved parking, HSG D
19,190	83	Weighted Average
15,685		81.74% Pervious Area
3,505		18.26% Impervious Area

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

Subcatchment 1.9:

Hydrograph



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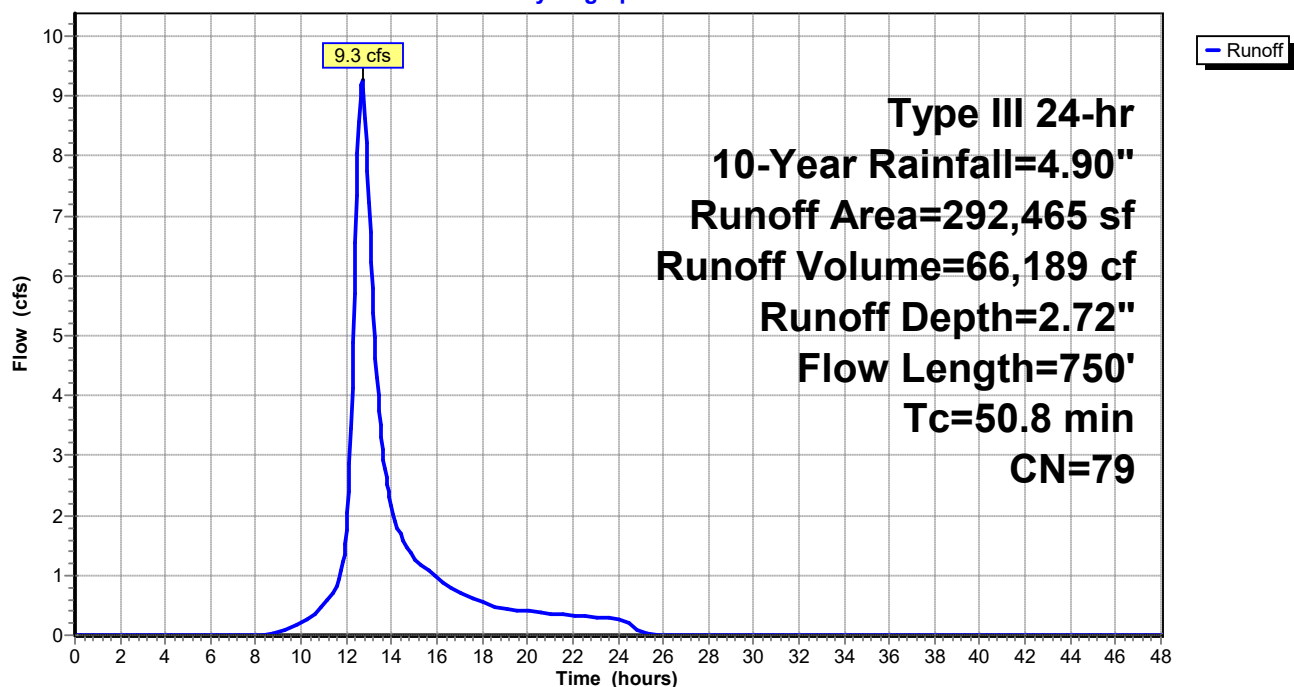
Summary for Subcatchment 2.0:

Runoff = 9.3 cfs @ 12.70 hrs, Volume= 66,189 cf, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
243,170	77	Woods, Good, HSG D
23,955	80	>75% Grass cover, Good, HSG D
25,340	98	Paved parking, HSG D
292,465	79	Weighted Average
267,125		91.34% Pervious Area
25,340		8.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:**Hydrograph**

Post-Dev - REV1

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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 2.1:

Runoff = 1.3 cfs @ 12.09 hrs, Volume= 4,190 cf, Depth= 3.08"

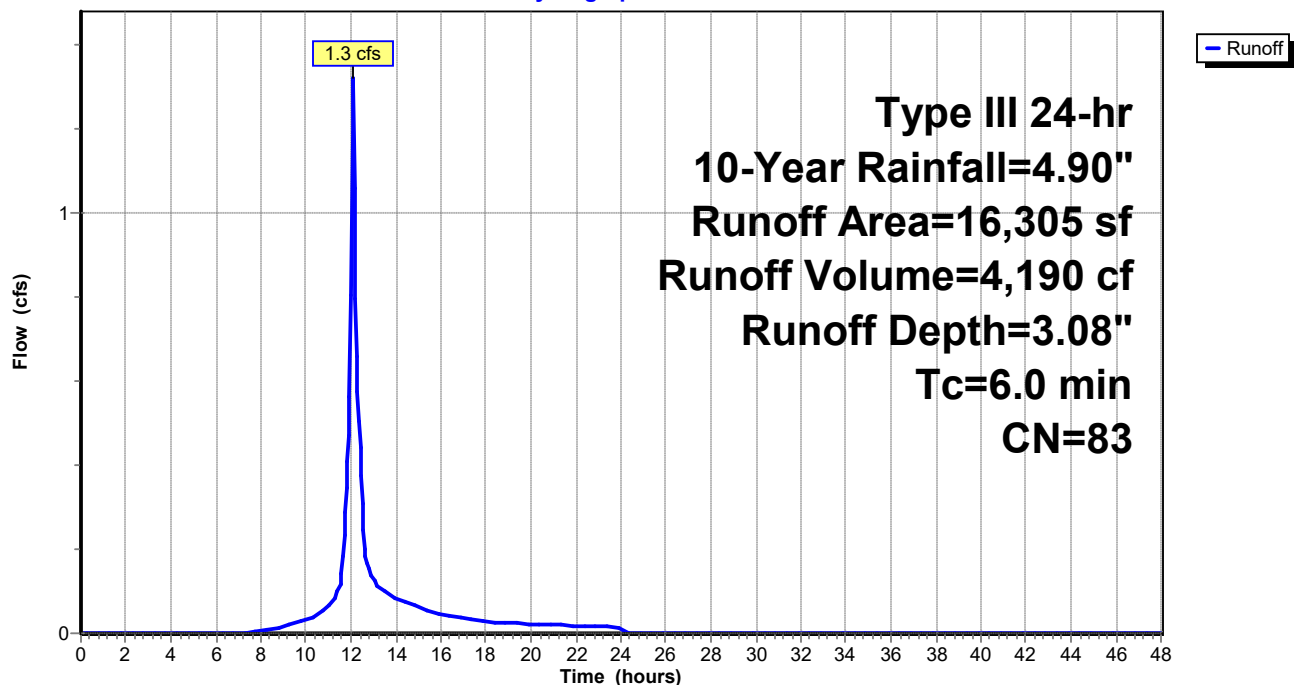
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
3,775	77	Woods, Good, HSG D
8,935	80	>75% Grass cover, Good, HSG D
3,595	98	Paved parking, HSG D
16,305	83	Weighted Average
12,710		77.95% Pervious Area
3,595		22.05% Impervious Area

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

Subcatchment 2.1:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Reach R1:

Inflow Area = 47,710 sf, 5.47% Impervious, Inflow Depth = 2.81" for 10-Year event
Inflow = 3.0 cfs @ 12.15 hrs, Volume= 11,155 cf
Outflow = 2.3 cfs @ 12.47 hrs, Volume= 11,155 cf, Atten= 25%, Lag= 18.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 12.0 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 39.3 min

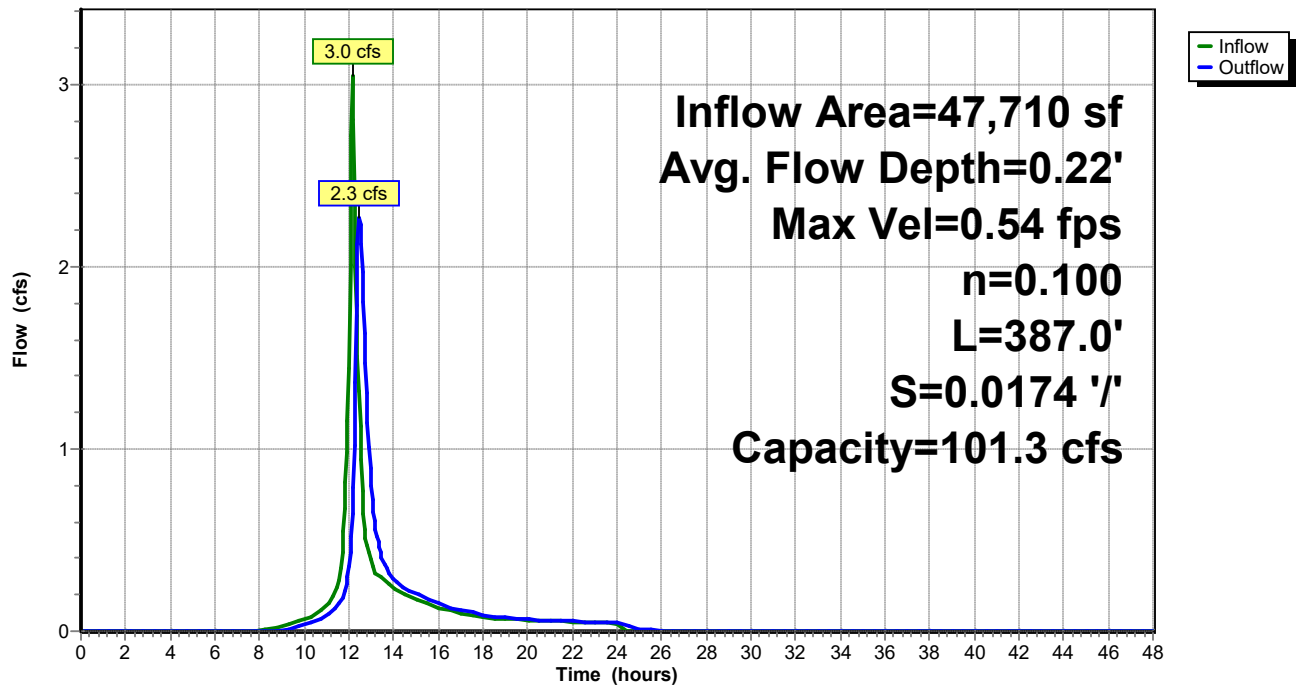
Peak Storage= 1,627 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 387.0' Slope= 0.0174 '/'
Inlet Invert= 36.75', Outlet Invert= 30.00'



Reach R1:

Hydrograph



Post-Dev - REV1

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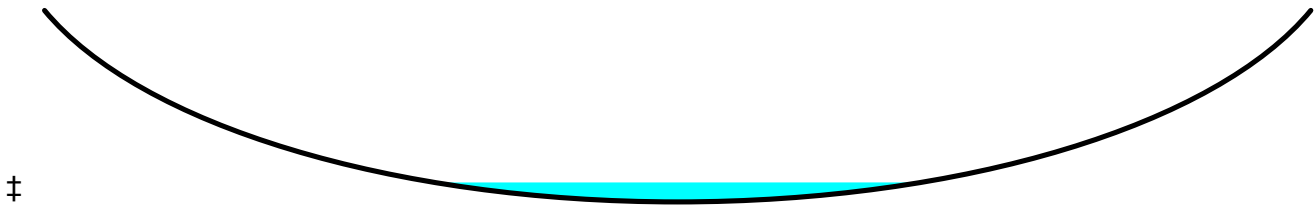
Summary for Reach R2:

Inflow Area = 14,055 sf, 2.95% Impervious, Inflow Depth = 2.63" for 10-Year event
Inflow = 1.0 cfs @ 12.09 hrs, Volume= 3,077 cf
Outflow = 0.8 cfs @ 12.29 hrs, Volume= 3,077 cf, Atten= 23%, Lag= 11.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.48 fps, Min. Travel Time= 7.2 min
Avg. Velocity = 0.17 fps, Avg. Travel Time= 20.6 min

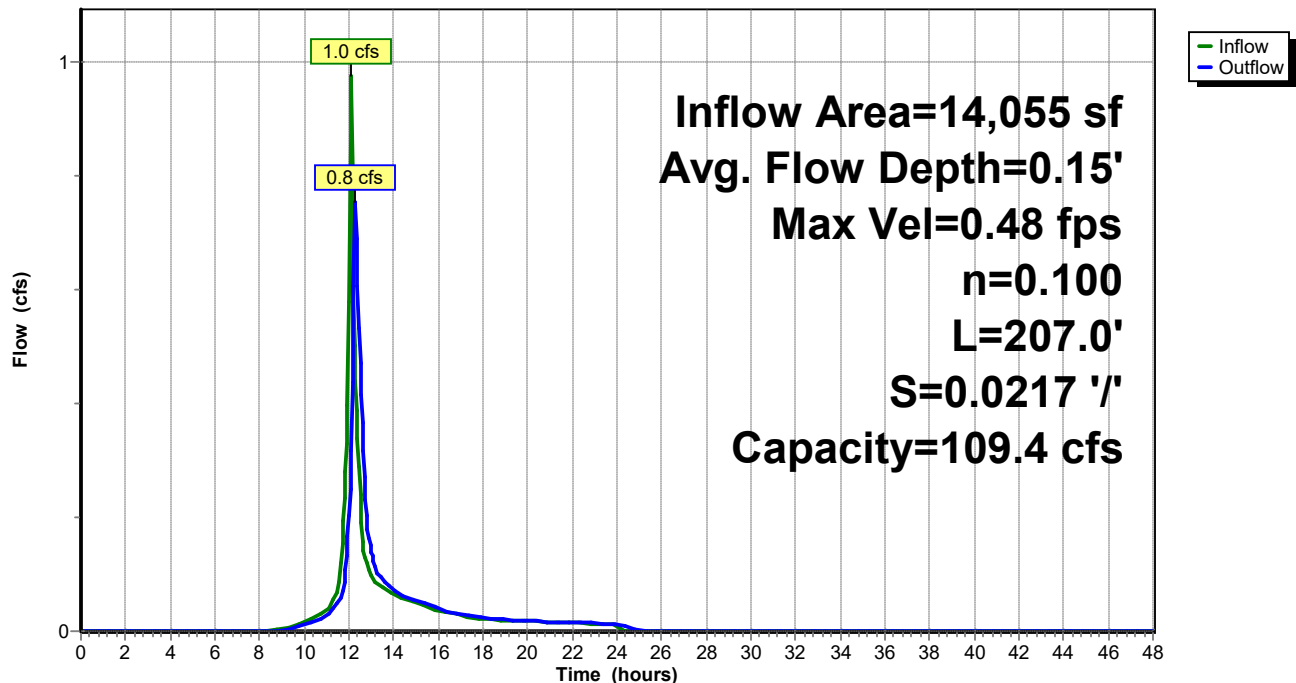
Peak Storage= 336 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 207.0' Slope= 0.0217 '/'
Inlet Invert= 34.50', Outlet Invert= 30.00'



Reach R2:

Hydrograph



Post-Dev - REV1

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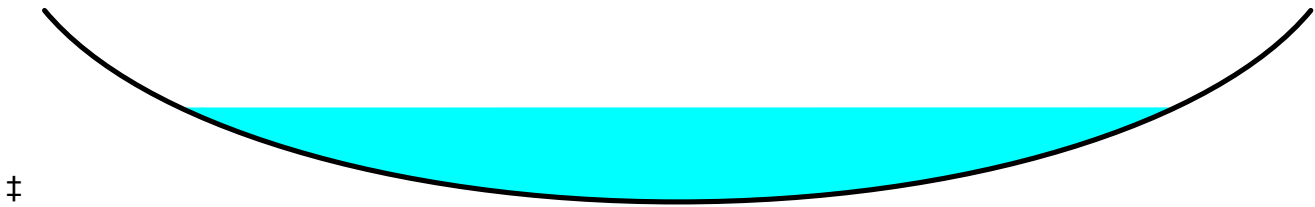
Summary for Reach R3:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 1.51" for 10-Year event
Inflow = 5.0 cfs @ 13.88 hrs, Volume= 83,399 cf
Outflow = 4.9 cfs @ 14.27 hrs, Volume= 83,372 cf, Atten= 1%, Lag= 23.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.43 fps, Min. Travel Time= 12.9 min
Avg. Velocity = 0.15 fps, Avg. Travel Time= 36.9 min

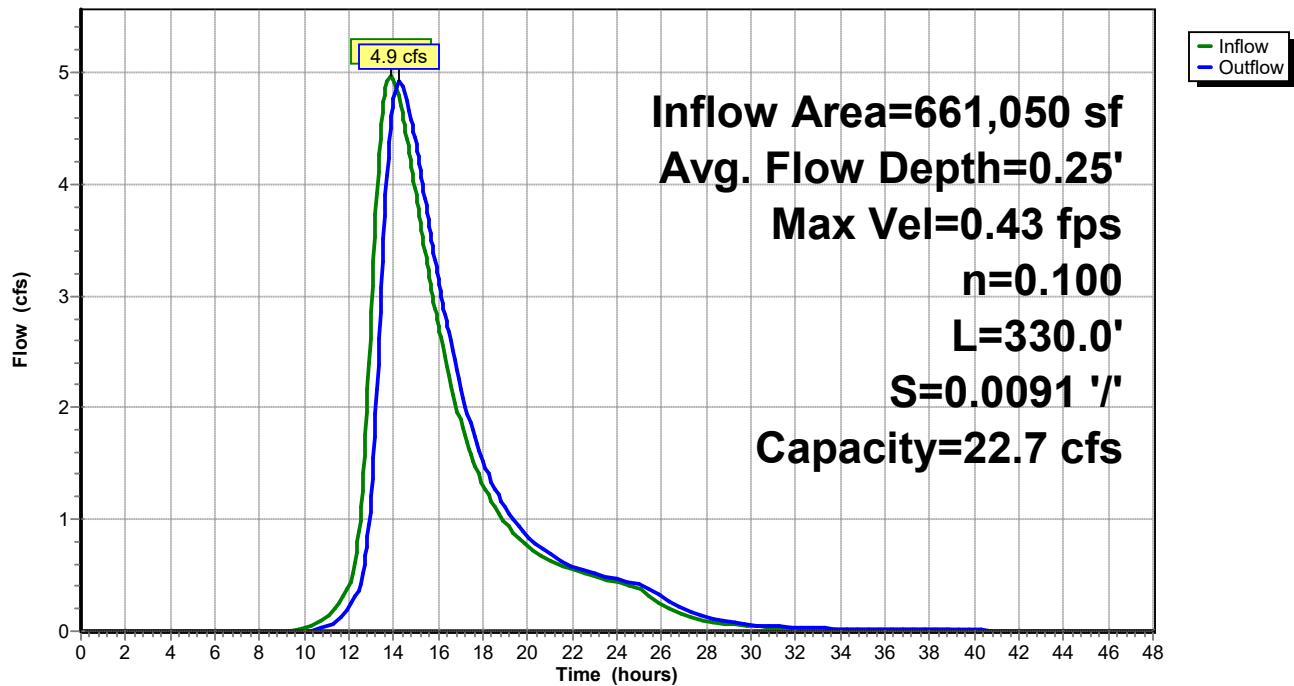
Peak Storage= 3,816 cf @ 14.06 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 330.0' Slope= 0.0091 '/
Inlet Invert= 33.00', Outlet Invert= 30.00'



Reach R3:

Hydrograph



Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 0.74" for 10-Year event
 Inflow = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf
 Outflow = 2.0 cfs @ 13.31 hrs, Volume= 24,612 cf, Atten= 23%, Lag= 45.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.34 fps, Min. Travel Time= 23.5 min

Avg. Velocity = 0.12 fps, Avg. Travel Time= 67.6 min

Peak Storage= 2,784 cf @ 12.92 hrs

Average Depth at Peak Storage= 0.12'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

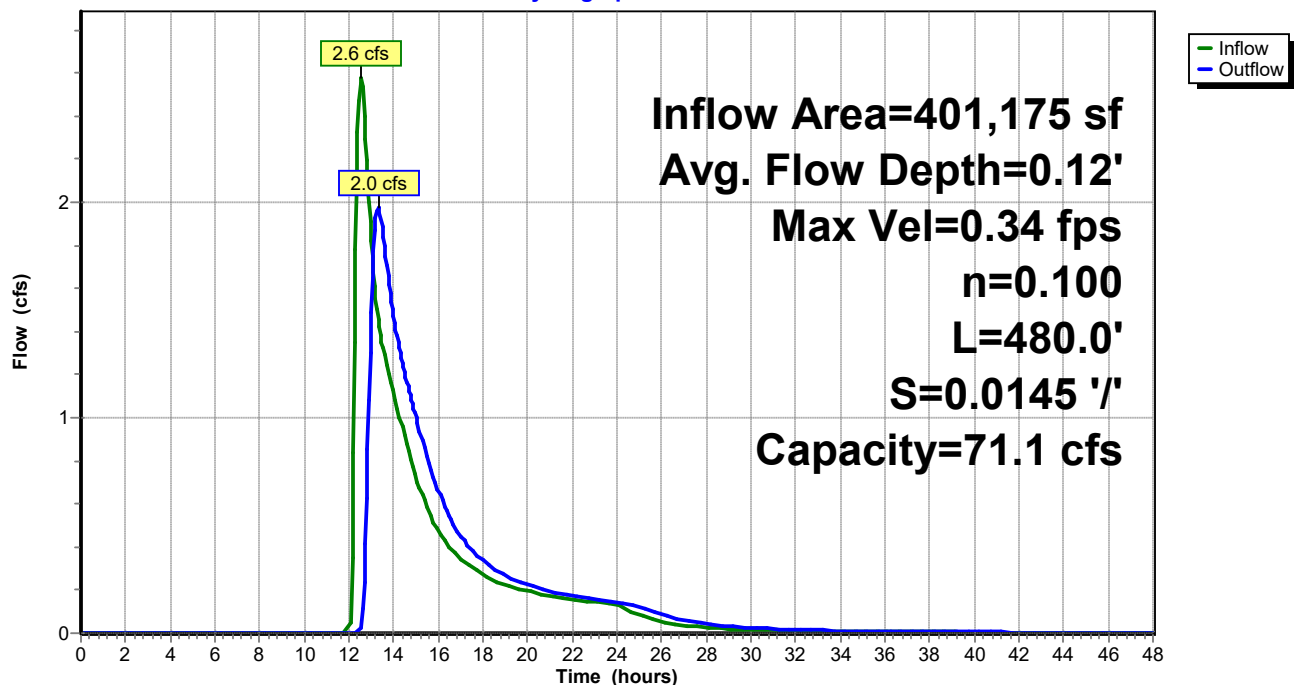
Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'



Reach R4:

Hydrograph



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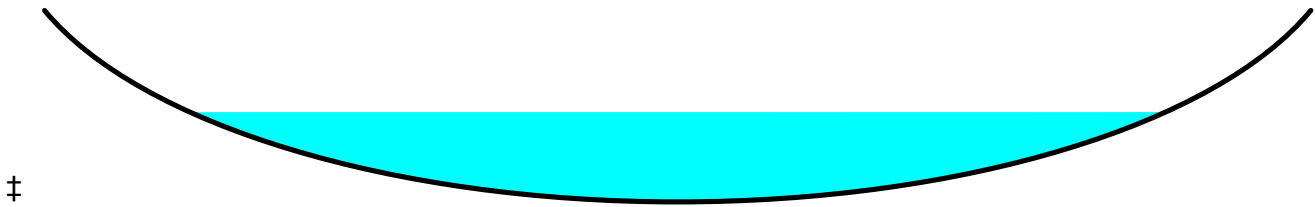
Summary for Reach R5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 3.10" for 10-Year event
Inflow = 4.5 cfs @ 12.09 hrs, Volume= 14,167 cf
Outflow = 3.7 cfs @ 12.24 hrs, Volume= 14,167 cf, Atten= 16%, Lag= 8.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.78 fps, Min. Travel Time= 5.5 min
Avg. Velocity = 0.21 fps, Avg. Travel Time= 20.7 min

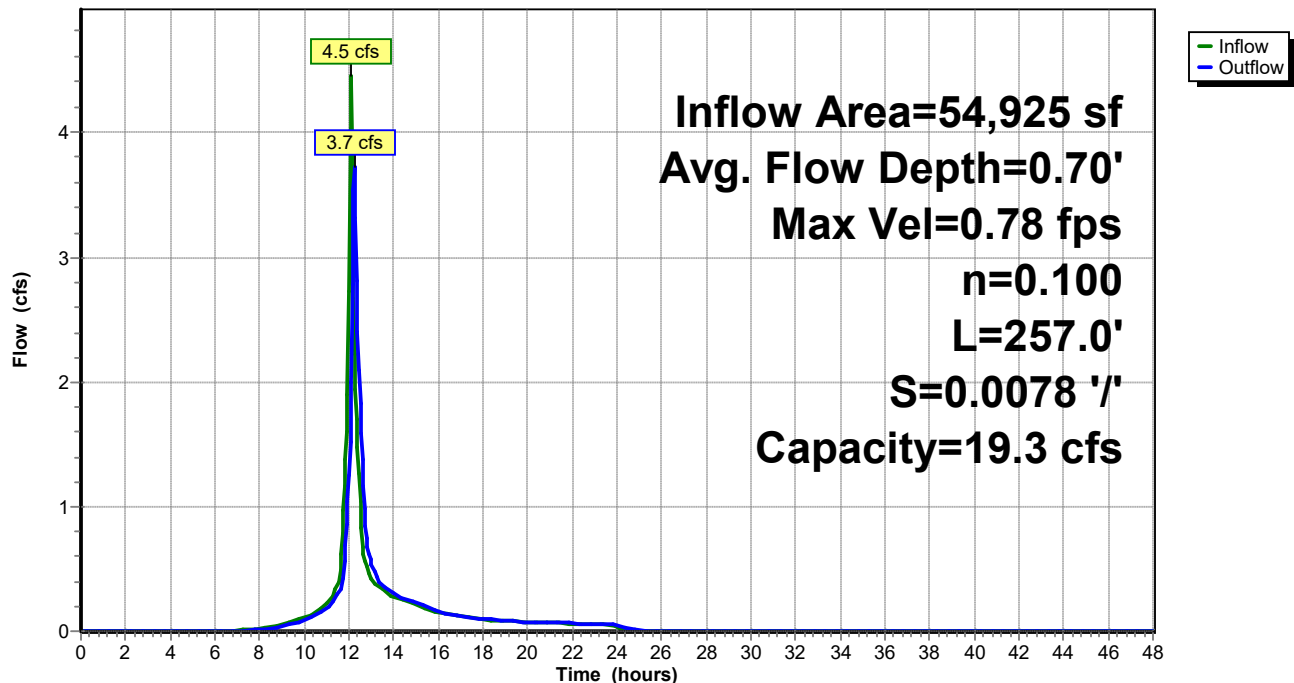
Peak Storage= 1,238 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.70'
Bank-Full Depth= 1.50' Flow Area= 15.0 sf, Capacity= 19.3 cfs

15.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 257.0' Slope= 0.0078 '/'
Inlet Invert= 32.00', Outlet Invert= 30.00'



Reach R5:

Hydrograph



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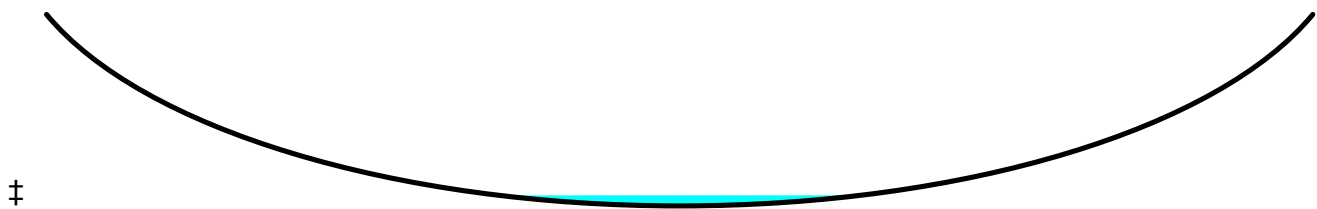
Summary for Reach R6:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 3.08" for 10-Year event
Inflow = 1.3 cfs @ 12.09 hrs, Volume= 4,190 cf
Outflow = 1.1 cfs @ 12.27 hrs, Volume= 4,190 cf, Atten= 20%, Lag= 10.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.11 fps, Min. Travel Time= 6.8 min
Avg. Velocity = 0.81 fps, Avg. Travel Time= 17.6 min

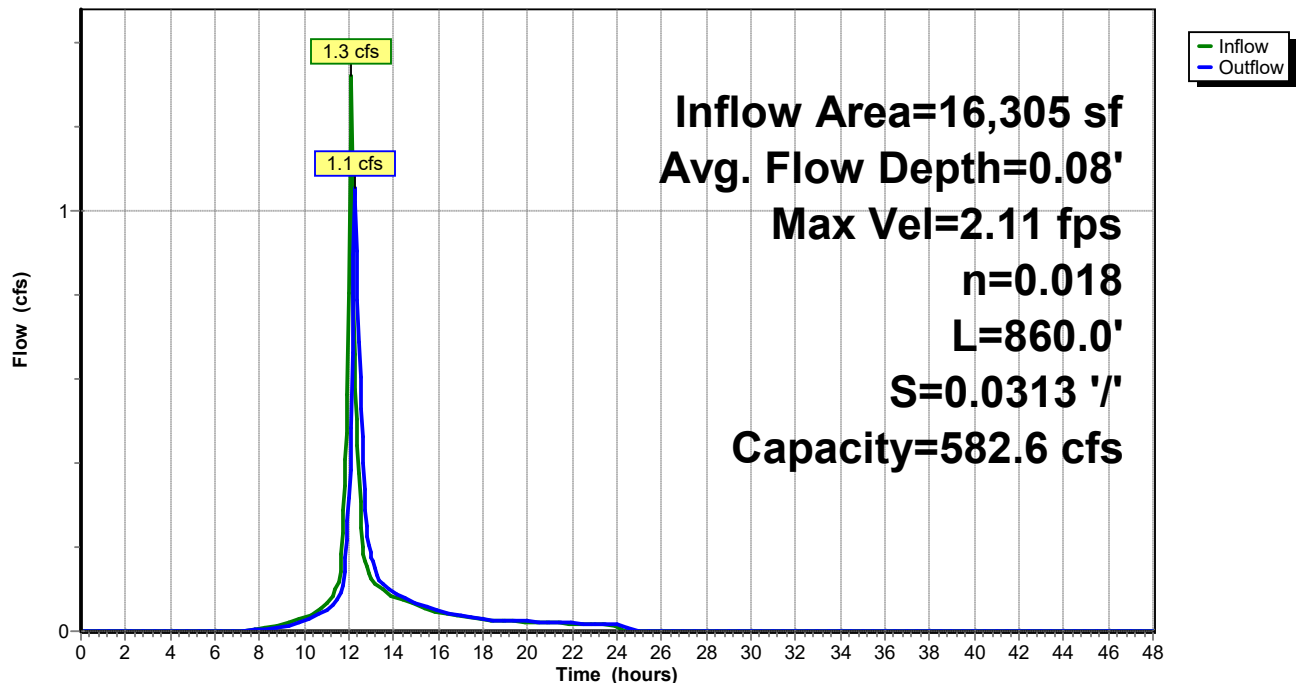
Peak Storage= 437 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 1.50' Flow Area= 40.0 sf, Capacity= 582.6 cfs

40.00' x 1.50' deep Parabolic Channel, n= 0.018 Earth, clean & straight
Length= 860.0' Slope= 0.0313 '/'
Inlet Invert= 52.00', Outlet Invert= 25.10'



Reach R6:

Hydrograph



Post-Dev - REV1

Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C1:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 1.51" for 10-Year event
 Inflow = 8.1 cfs @ 13.15 hrs, Volume= 83,425 cf
 Outflow = 5.0 cfs @ 13.88 hrs, Volume= 83,399 cf, Atten= 39%, Lag= 43.5 min
 Primary = 5.0 cfs @ 13.88 hrs, Volume= 83,399 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.89' @ 13.88 hrs Surf.Area= 35,394 sf Storage= 18,889 cf
 Flood Elev= 36.00' Surf.Area= 65,400 sf Storage= 74,950 cf

Plug-Flow detention time= 65.1 min calculated for 83,313 cf (100% of inflow)
 Center-of-Mass det. time= 64.7 min (993.2 - 928.5)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)

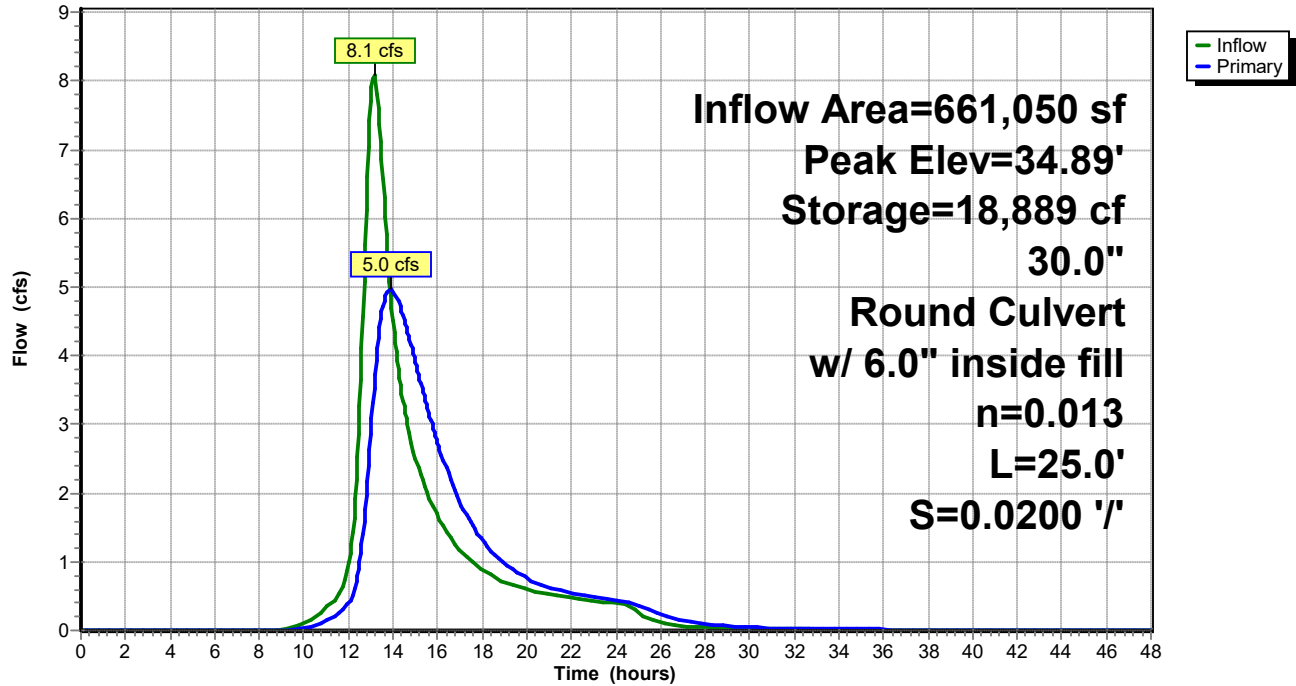
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	30.0" Round Culvert w/ 6.0" inside fill L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0200 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.21 sf

Primary OutFlow Max=5.0 cfs @ 13.88 hrs HW=34.89' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 5.0 cfs @ 2.35 fps)

Pond C1:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C10:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 3.08" for 10-Year event
 Inflow = 1.3 cfs @ 12.09 hrs, Volume= 4,190 cf
 Outflow = 1.3 cfs @ 12.09 hrs, Volume= 4,190 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.3 cfs @ 12.09 hrs, Volume= 4,190 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 47.53' @ 12.09 hrs

Flood Elev= 49.00'

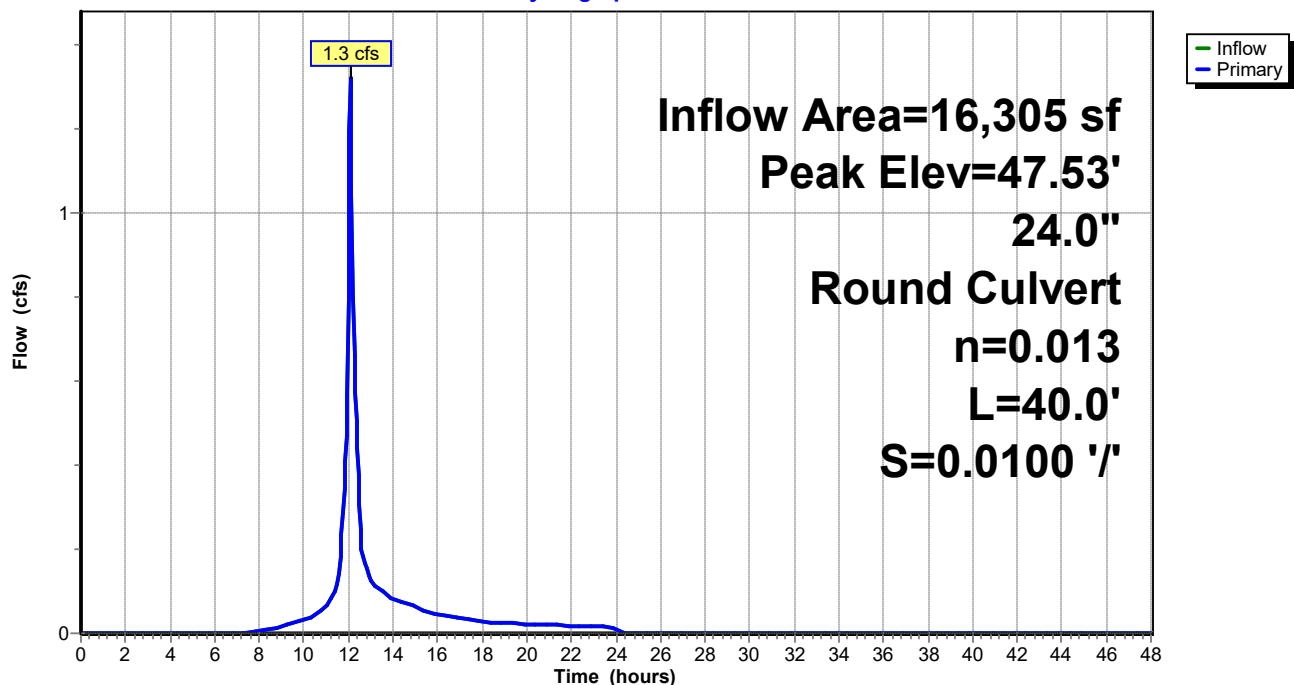
Device	Routing	Invert	Outlet Devices
#1	Primary	47.00'	24.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.00' / 46.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.3 cfs @ 12.09 hrs HW=47.53' (Free Discharge)

↑1=Culvert (Inlet Controls 1.3 cfs @ 1.95 fps)

Pond C10:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 0.90" for 10-Year event
 Inflow = 7.6 cfs @ 12.16 hrs, Volume= 29,988 cf
 Outflow = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf, Atten= 66%, Lag= 23.2 min
 Primary = 2.6 cfs @ 12.55 hrs, Volume= 24,640 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 40.93' @ 12.55 hrs Surf.Area= 9,771 sf Storage= 11,993 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 190.9 min calculated for 24,615 cf (82% of inflow)
 Center-of-Mass det. time= 122.1 min (955.2 - 833.1)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

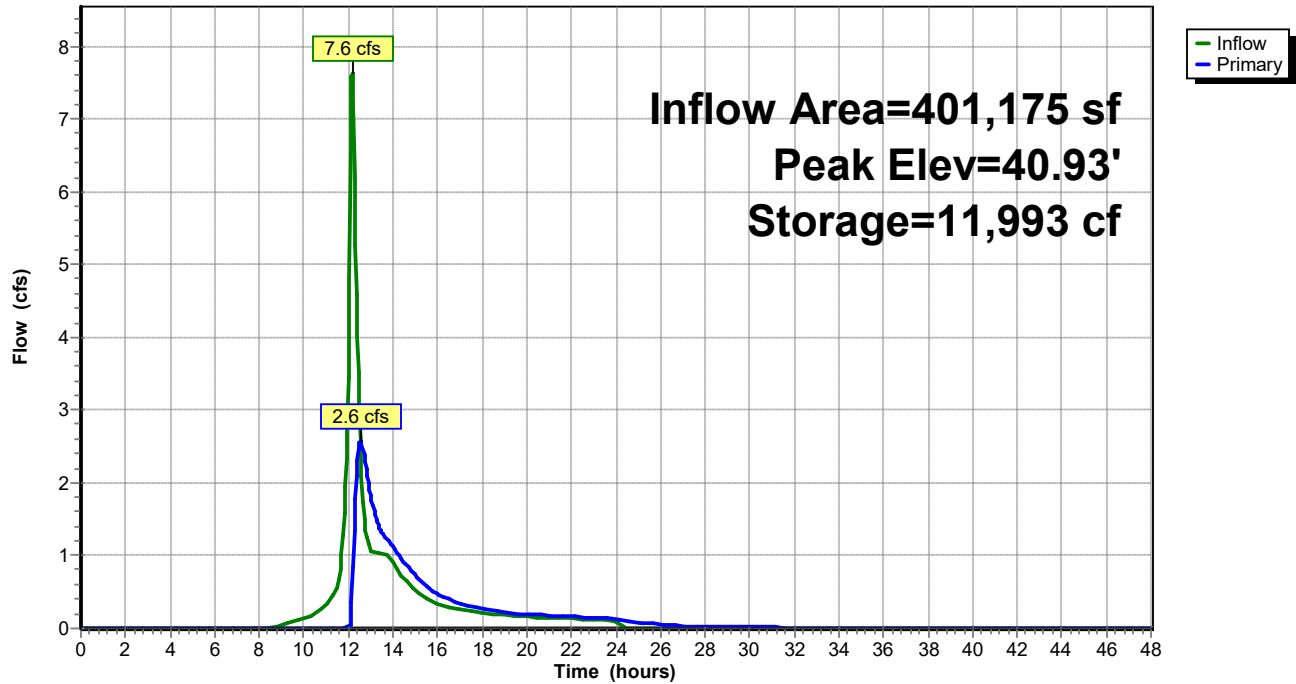
Primary OutFlow Max=2.6 cfs @ 12.55 hrs HW=40.93' (Free Discharge)

1=Culvert (Barrel Controls 1.0 cfs @ 2.61 fps)

2=Culvert (Inlet Controls 1.6 cfs @ 2.40 fps)

Pond C2:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 2.81" for 10-Year event
 Inflow = 7.2 cfs @ 12.96 hrs, Volume= 63,397 cf
 Outflow = 4.1 cfs @ 13.67 hrs, Volume= 63,368 cf, Atten= 43%, Lag= 42.3 min
 Discarded = 3.8 cfs @ 13.67 hrs, Volume= 61,847 cf
 Primary = 0.3 cfs @ 13.67 hrs, Volume= 1,521 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.94' @ 13.67 hrs Surf.Area= 35,865 sf Storage= 18,595 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 88.4 min calculated for 63,368 cf (100% of inflow)
 Center-of-Mass det. time= 88.0 min (972.2 - 884.2)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Discarded OutFlow Max=3.8 cfs @ 13.67 hrs HW=42.94' (Free Discharge)

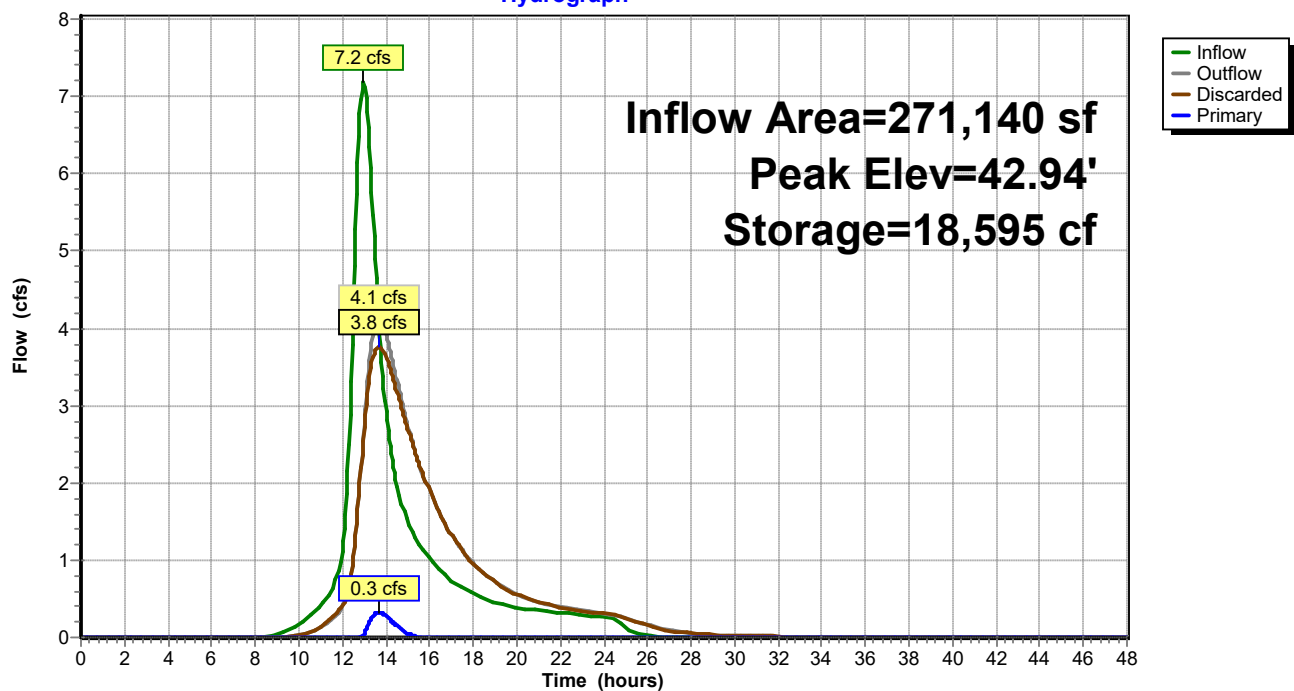
↑ **2=Culvert** (Inlet Controls 3.8 cfs @ 2.60 fps)

Primary OutFlow Max=0.3 cfs @ 13.67 hrs HW=42.94' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.3 cfs @ 1.36 fps)

Pond C3:

Hydrograph



Post-Dev - REV1

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Summary for Pond C4:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth = 2.74" for 10-Year event
 Inflow = 9.6 cfs @ 12.68 hrs, Volume= 70,379 cf
 Outflow = 7.5 cfs @ 13.00 hrs, Volume= 70,032 cf, Atten= 22%, Lag= 18.8 min
 Primary = 7.5 cfs @ 13.00 hrs, Volume= 70,032 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.48' @ 13.00 hrs Surf.Area= 11,967 sf Storage= 12,304 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 41.6 min calculated for 69,959 cf (99% of inflow)
 Center-of-Mass det. time= 39.4 min (904.3 - 864.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

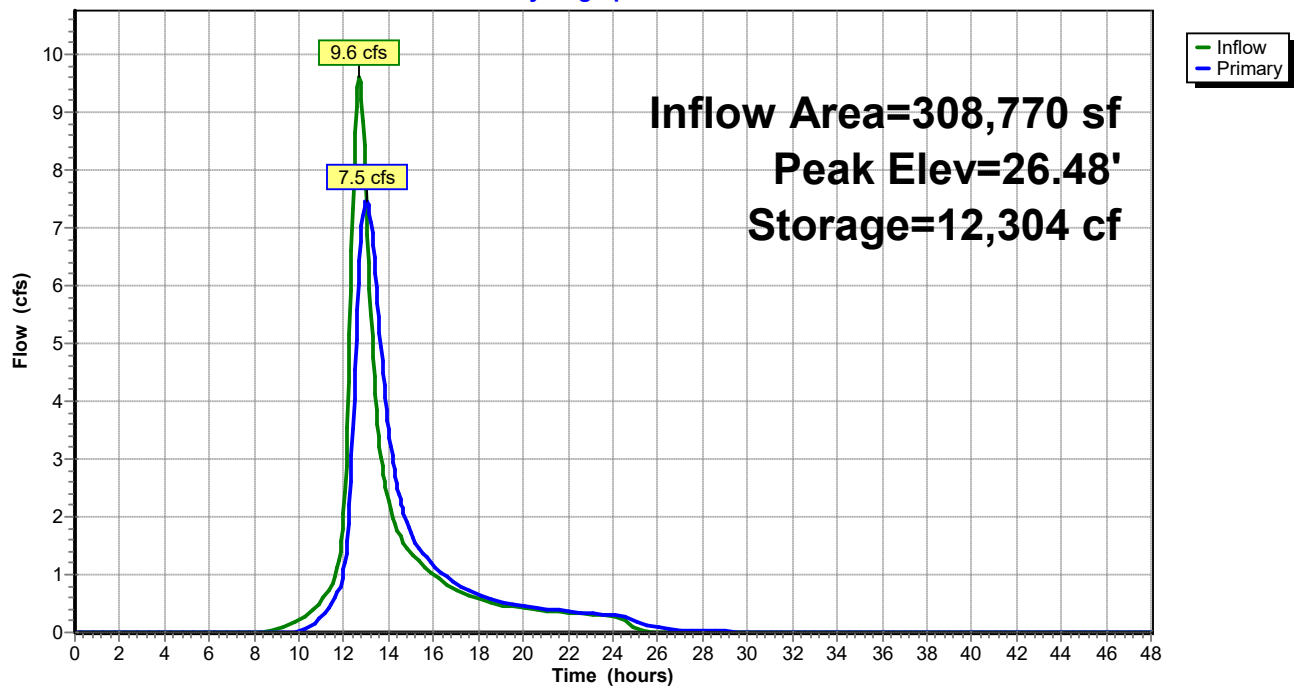
Primary OutFlow Max=7.5 cfs @ 13.00 hrs HW=26.48' (Free Discharge)

1=Culvert (Inlet Controls 3.6 cfs @ 2.97 fps)

2=Culvert (Barrel Controls 3.8 cfs @ 3.52 fps)

Pond C4:

Hydrograph



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Summary for Pond C5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 3.10" for 10-Year event
 Inflow = 4.5 cfs @ 12.09 hrs, Volume= 14,167 cf
 Outflow = 4.5 cfs @ 12.09 hrs, Volume= 14,167 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.5 cfs @ 12.09 hrs, Volume= 14,167 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 32.90' @ 12.09 hrs

Flood Elev= 33.20'

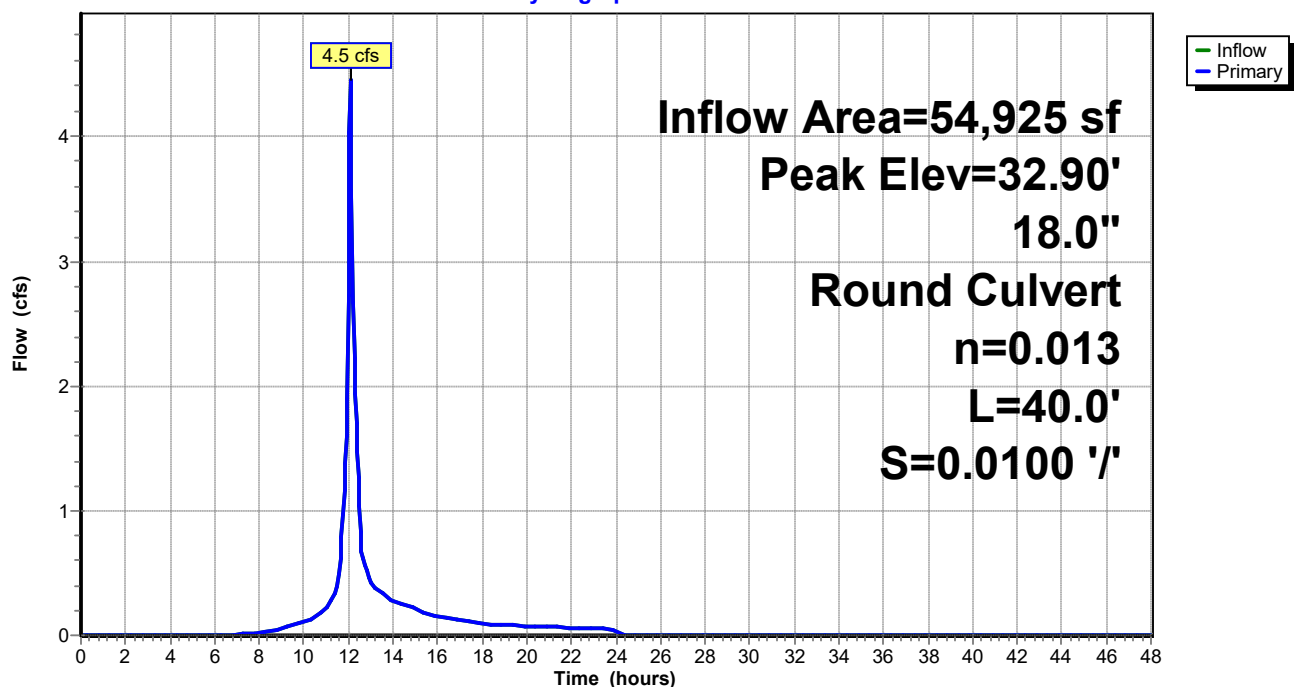
Device	Routing	Invert	Outlet Devices
#1	Primary	31.70'	18.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.70' / 31.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.4 cfs @ 12.09 hrs HW=32.88' (Free Discharge)

↑1=Culvert (Inlet Controls 4.4 cfs @ 2.92 fps)

Pond C5:

Hydrograph



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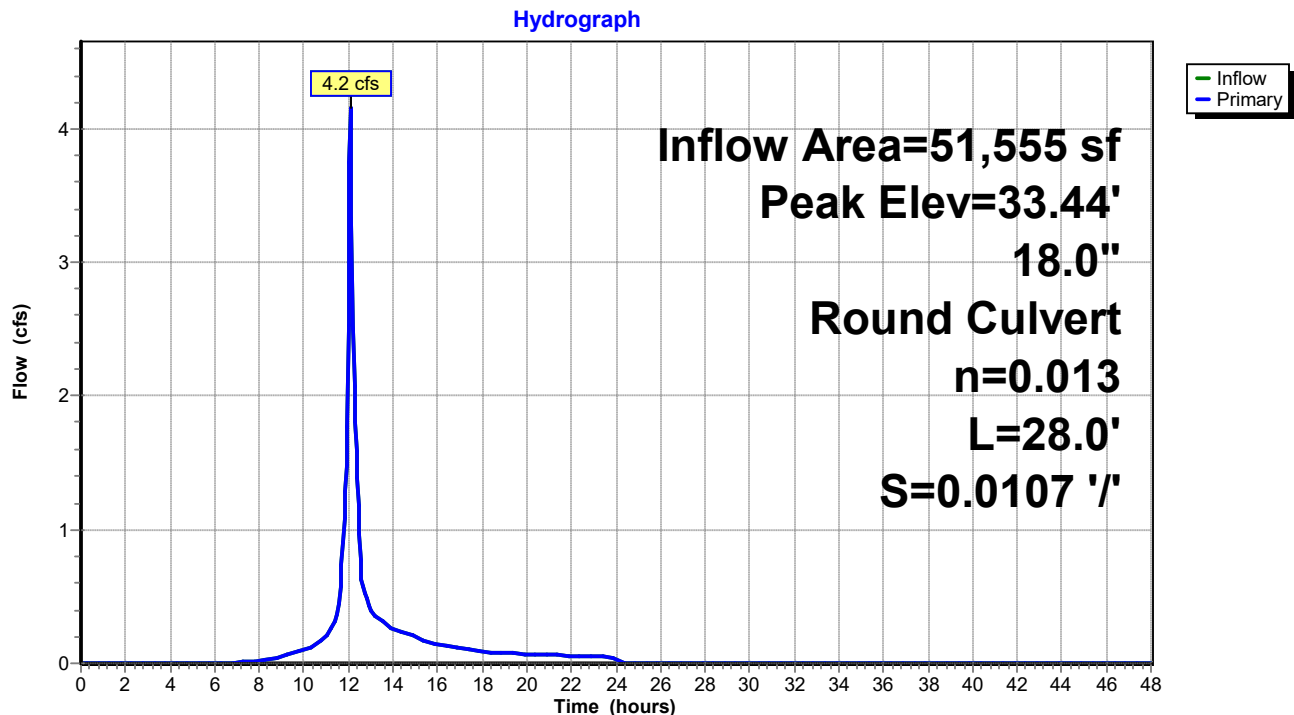
Summary for Pond C6:

Inflow Area = 51,555 sf, 18.44% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 4.2 cfs @ 12.09 hrs, Volume= 13,192 cf
Outflow = 4.2 cfs @ 12.09 hrs, Volume= 13,192 cf, Atten= 0%, Lag= 0.0 min
Primary = 4.2 cfs @ 12.09 hrs, Volume= 13,192 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 33.44' @ 12.09 hrs
Flood Elev= 33.80'

Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	18.0" Round Culvert L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=4.1 cfs @ 12.09 hrs HW=33.43' (Free Discharge)
↑1=Culvert (Inlet Controls 4.1 cfs @ 2.85 fps)

Pond C6:

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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C7:

Inflow Area = 37,470 sf, 20.42% Impervious, Inflow Depth = 3.10" for 10-Year event
 Inflow = 3.0 cfs @ 12.09 hrs, Volume= 9,682 cf
 Outflow = 3.0 cfs @ 12.09 hrs, Volume= 9,682 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.0 cfs @ 12.09 hrs, Volume= 9,682 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 38.05' @ 12.09 hrs

Flood Elev= 38.25'

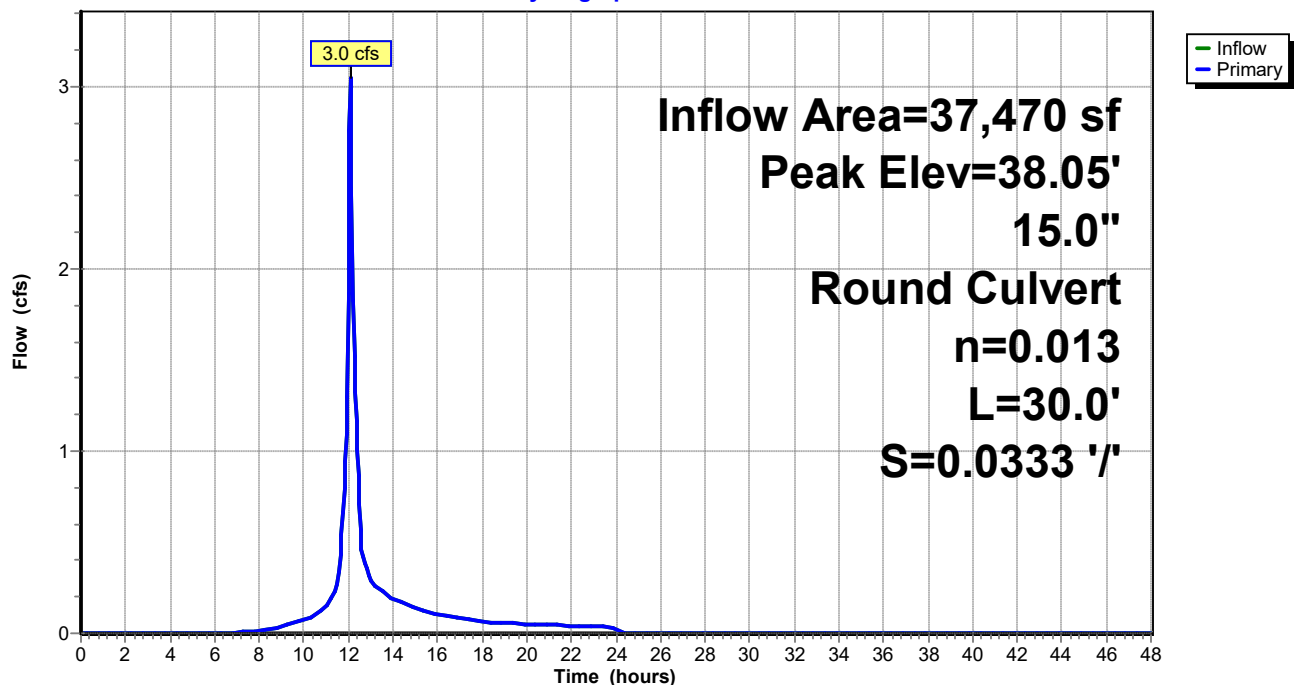
Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.0 cfs @ 12.09 hrs HW=38.04' (Free Discharge)

↑1=Culvert (Inlet Controls 3.0 cfs @ 2.74 fps)

Pond C7:

Hydrograph



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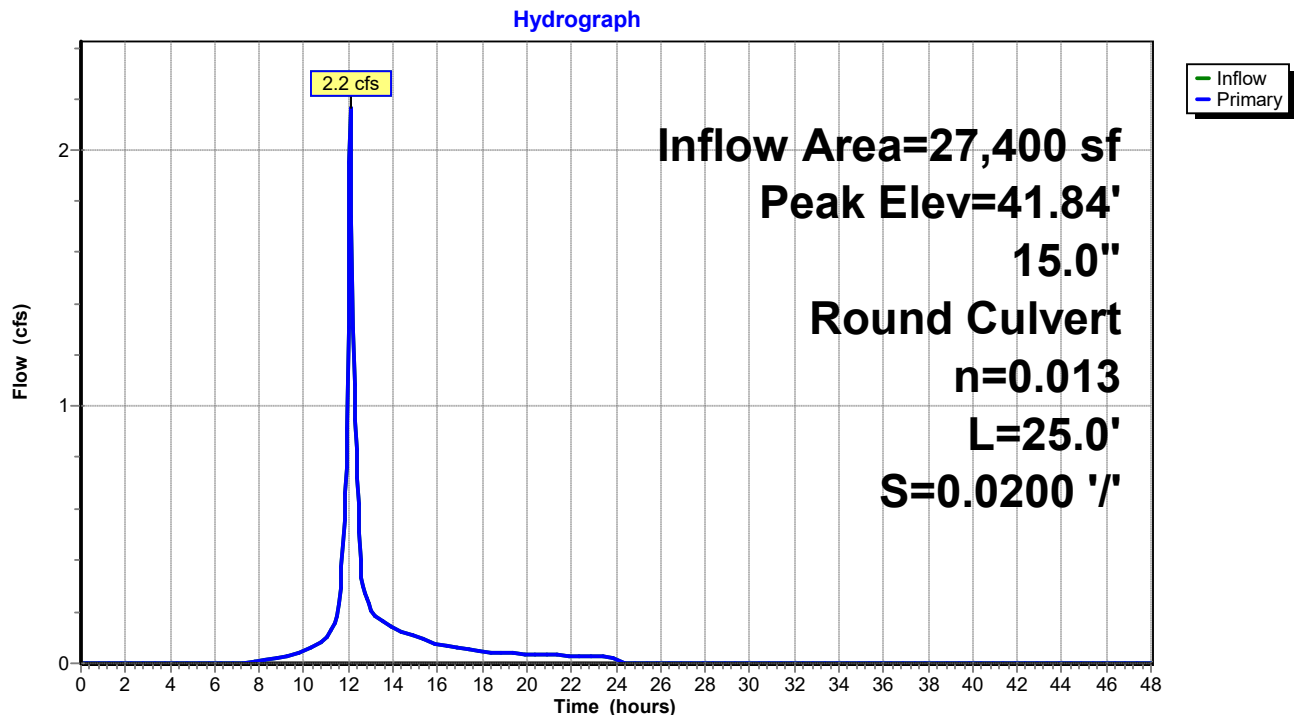
Summary for Pond C8:

Inflow Area = 27,400 sf, 15.60% Impervious, Inflow Depth = 3.00" for 10-Year event
Inflow = 2.2 cfs @ 12.09 hrs, Volume= 6,851 cf
Outflow = 2.2 cfs @ 12.09 hrs, Volume= 6,851 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.2 cfs @ 12.09 hrs, Volume= 6,851 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 41.84' @ 12.09 hrs
Flood Elev= 42.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	15.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.00' / 40.50' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.1 cfs @ 12.09 hrs HW=41.83' (Free Discharge)
↑1=Culvert (Inlet Controls 2.1 cfs @ 2.45 fps)

Pond C8:

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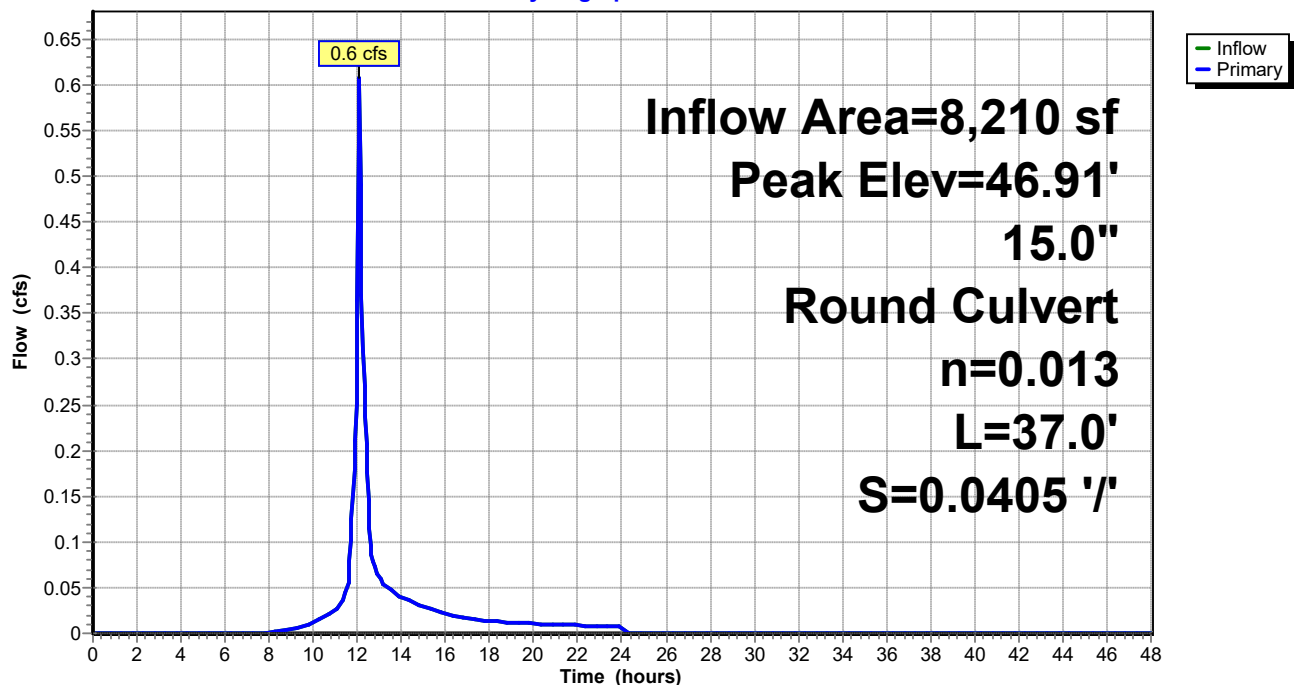
Summary for Pond C9:

Inflow Area = 8,210 sf, 9.38% Impervious, Inflow Depth = 2.81" for 10-Year event
 Inflow = 0.6 cfs @ 12.09 hrs, Volume= 1,920 cf
 Outflow = 0.6 cfs @ 12.09 hrs, Volume= 1,920 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.6 cfs @ 12.09 hrs, Volume= 1,920 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 46.91' @ 12.09 hrs
 Flood Elev= 47.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	46.50'	15.0" Round Culvert L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.50' / 45.00' S= 0.0405 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.6 cfs @ 12.09 hrs HW=46.91' (Free Discharge)
 ↑1=Culvert (Inlet Controls 0.6 cfs @ 1.72 fps)

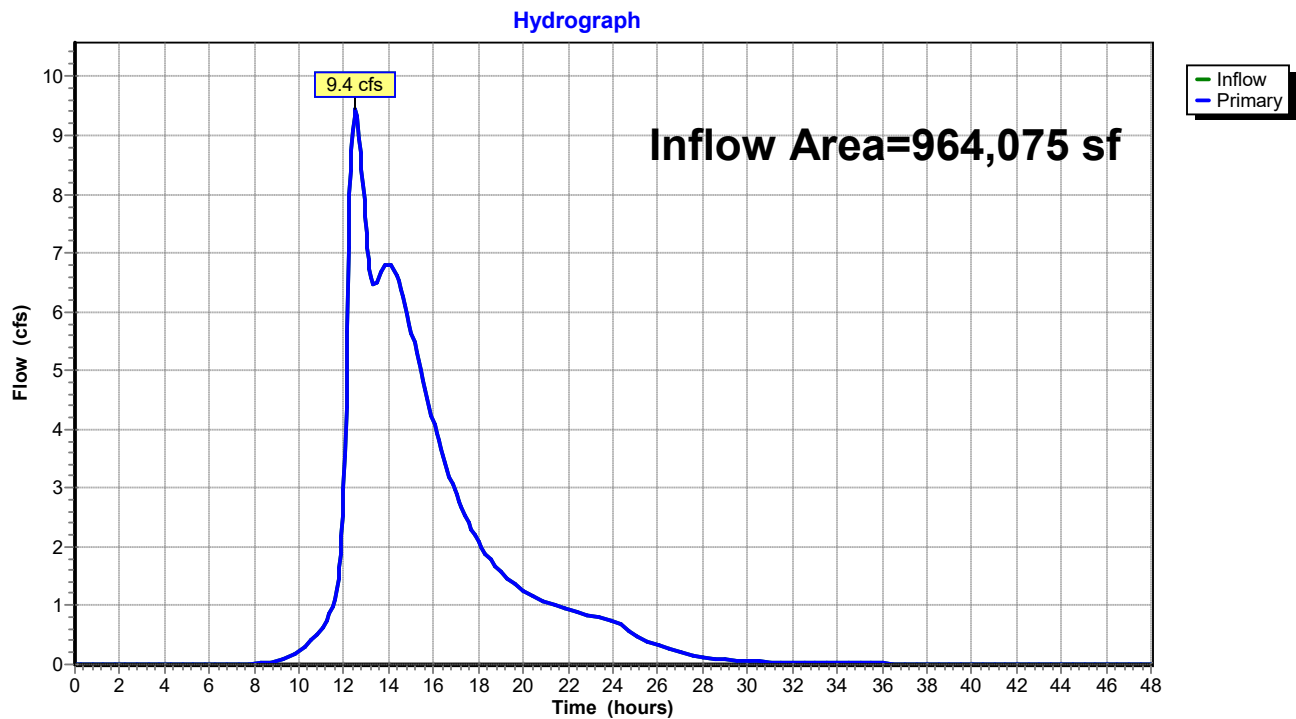
Pond C9:**Hydrograph**

Summary for Link AP1:

Inflow Area = 964,075 sf, 9.01% Impervious, Inflow Depth > 1.90" for 10-Year event
 Inflow = 9.4 cfs @ 12.52 hrs, Volume= 152,564 cf
 Primary = 9.4 cfs @ 12.52 hrs, Volume= 152,564 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

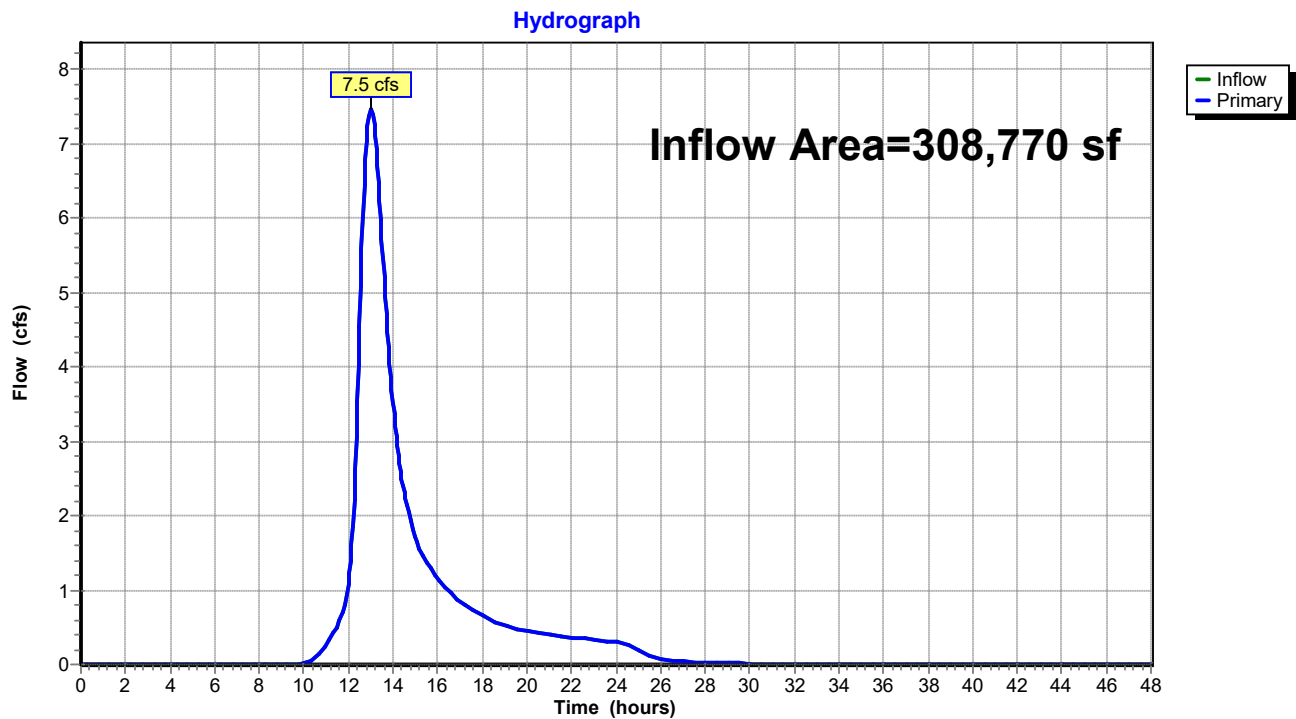


Summary for Link AP2:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth = 2.72" for 10-Year event
 Inflow = 7.5 cfs @ 13.00 hrs, Volume= 70,032 cf
 Primary = 7.5 cfs @ 13.00 hrs, Volume= 70,032 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:



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Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1.0:	Runoff Area=186,335 sf 4.80% Impervious Runoff Depth=3.76" Flow Length=659' Tc=54.2 min CN=78 Runoff=7.9 cfs 58,325 cf
Subcatchment 1.1:	Runoff Area=47,710 sf 5.47% Impervious Runoff Depth=3.96" Flow Length=275' Tc=10.8 min CN=80 Runoff=4.3 cfs 15,753 cf
Subcatchment 1.10:	Runoff Area=8,210 sf 9.38% Impervious Runoff Depth=3.96" Tc=6.0 min CN=80 Runoff=0.9 cfs 2,711 cf
Subcatchment 1.2:	Runoff Area=14,055 sf 2.95% Impervious Runoff Depth=3.76" Tc=6.0 min CN=78 Runoff=1.4 cfs 4,399 cf
Subcatchment 1.3:	Runoff Area=259,875 sf 7.40% Impervious Runoff Depth=3.86" Flow Length=598' Tc=79.3 min CN=79 Runoff=8.9 cfs 83,566 cf
Subcatchment 1.4:	Runoff Area=130,035 sf 6.37% Impervious Runoff Depth=3.76" Flow Length=396' Tc=11.4 min CN=78 Runoff=10.9 cfs 40,702 cf
Subcatchment 1.5:	Runoff Area=271,140 sf 13.50% Impervious Runoff Depth=3.96" Flow Length=453' Tc=72.4 min CN=80 Runoff=10.1 cfs 89,526 cf
Subcatchment 1.6:	Runoff Area=3,370 sf 37.98% Impervious Runoff Depth=4.71" Tc=6.0 min CN=87 Runoff=0.4 cfs 1,322 cf
Subcatchment 1.7:	Runoff Area=14,085 sf 13.17% Impervious Runoff Depth=4.17" Tc=6.0 min CN=82 Runoff=1.5 cfs 4,896 cf
Subcatchment 1.8:	Runoff Area=10,070 sf 33.52% Impervious Runoff Depth=4.60" Tc=6.0 min CN=86 Runoff=1.2 cfs 3,860 cf
Subcatchment 1.9:	Runoff Area=19,190 sf 18.26% Impervious Runoff Depth=4.28" Tc=6.0 min CN=83 Runoff=2.1 cfs 6,840 cf
Subcatchment 2.0:	Runoff Area=292,465 sf 8.66% Impervious Runoff Depth=3.86" Flow Length=750' Tc=50.8 min CN=79 Runoff=13.2 cfs 94,046 cf
Subcatchment 2.1:	Runoff Area=16,305 sf 22.05% Impervious Runoff Depth=4.28" Tc=6.0 min CN=83 Runoff=1.8 cfs 5,812 cf
Reach R1:	Avg. Flow Depth=0.26' Max Vel=0.61 fps Inflow=4.3 cfs 15,753 cf n=0.100 L=387.0' S=0.0174 '/' Capacity=101.3 cfs Outflow=3.3 cfs 15,753 cf
Reach R2:	Avg. Flow Depth=0.18' Max Vel=0.54 fps Inflow=1.4 cfs 4,399 cf n=0.100 L=207.0' S=0.0217 '/' Capacity=109.4 cfs Outflow=1.1 cfs 4,399 cf
Reach R3:	Avg. Flow Depth=0.30' Max Vel=0.48 fps Inflow=7.5 cfs 124,035 cf n=0.100 L=330.0' S=0.0091 '/' Capacity=22.7 cfs Outflow=7.5 cfs 124,008 cf

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Reach R4: Avg. Flow Depth=0.17' Max Vel=0.42 fps Inflow=4.6 cfs 40,524 cf
n=0.100 L=480.0' S=0.0145 ' ' Capacity=71.1 cfs Outflow=3.8 cfs 40,496 cf

Reach R5: Avg. Flow Depth=0.82' Max Vel=0.87 fps Inflow=6.1 cfs 19,630 cf
n=0.100 L=257.0' S=0.0078 ' ' Capacity=19.3 cfs Outflow=5.2 cfs 19,630 cf

Reach R6: Avg. Flow Depth=0.10' Max Vel=2.34 fps Inflow=1.8 cfs 5,812 cf
n=0.018 L=860.0' S=0.0313 ' ' Capacity=582.6 cfs Outflow=1.5 cfs 5,812 cf

Pond C1: Peak Elev=35.17' Storage=29,776 cf Inflow=12.7 cfs 124,062 cf
30.0" Round Culvert w/ 6.0" inside fill n=0.013 L=25.0' S=0.0200 ' ' Outflow=7.5 cfs 124,035 cf

Pond C10: Peak Elev=47.63' Inflow=1.8 cfs 5,812 cf
24.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=1.8 cfs 5,812 cf

Pond C2: Peak Elev=41.29' Storage=15,674 cf Inflow=10.9 cfs 45,875 cf
Outflow=4.6 cfs 40,524 cf

Pond C3: Peak Elev=43.12' Storage=25,508 cf Inflow=10.1 cfs 89,526 cf
Discarded=5.2 cfs 84,323 cf Primary=0.9 cfs 5,173 cf Outflow=6.1 cfs 89,496 cf

Pond C4: Peak Elev=26.94' Storage=18,031 cf Inflow=13.6 cfs 99,858 cf
Outflow=9.9 cfs 99,511 cf

Pond C5: Peak Elev=33.27' Inflow=6.1 cfs 19,630 cf
18.0" Round Culvert n=0.013 L=40.0' S=0.0100 ' ' Outflow=6.1 cfs 19,630 cf

Pond C6: Peak Elev=33.76' Inflow=5.7 cfs 18,307 cf
18.0" Round Culvert n=0.013 L=28.0' S=0.0107 ' ' Outflow=5.7 cfs 18,307 cf

Pond C7: Peak Elev=38.42' Inflow=4.2 cfs 13,411 cf
15.0" Round Culvert n=0.013 L=30.0' S=0.0333 ' ' Outflow=4.2 cfs 13,411 cf

Pond C8: Peak Elev=42.04' Inflow=3.0 cfs 9,551 cf
15.0" Round Culvert n=0.013 L=25.0' S=0.0200 ' ' Outflow=3.0 cfs 9,551 cf

Pond C9: Peak Elev=46.99' Inflow=0.9 cfs 2,711 cf
15.0" Round Culvert n=0.013 L=37.0' S=0.0405 ' ' Outflow=0.9 cfs 2,711 cf

Link AP1: Inflow=13.5 cfs 222,115 cf
Primary=13.5 cfs 222,115 cf

Link AP2: Inflow=9.9 cfs 99,511 cf
Primary=9.9 cfs 99,511 cf

Total Runoff Area = 1,272,845 sf Runoff Volume = 411,759 cf Average Runoff Depth = 3.88"
90.90% Pervious = 1,157,035 sf 9.10% Impervious = 115,810 sf

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Type III 24-hr 25-Year Rainfall=6.20"

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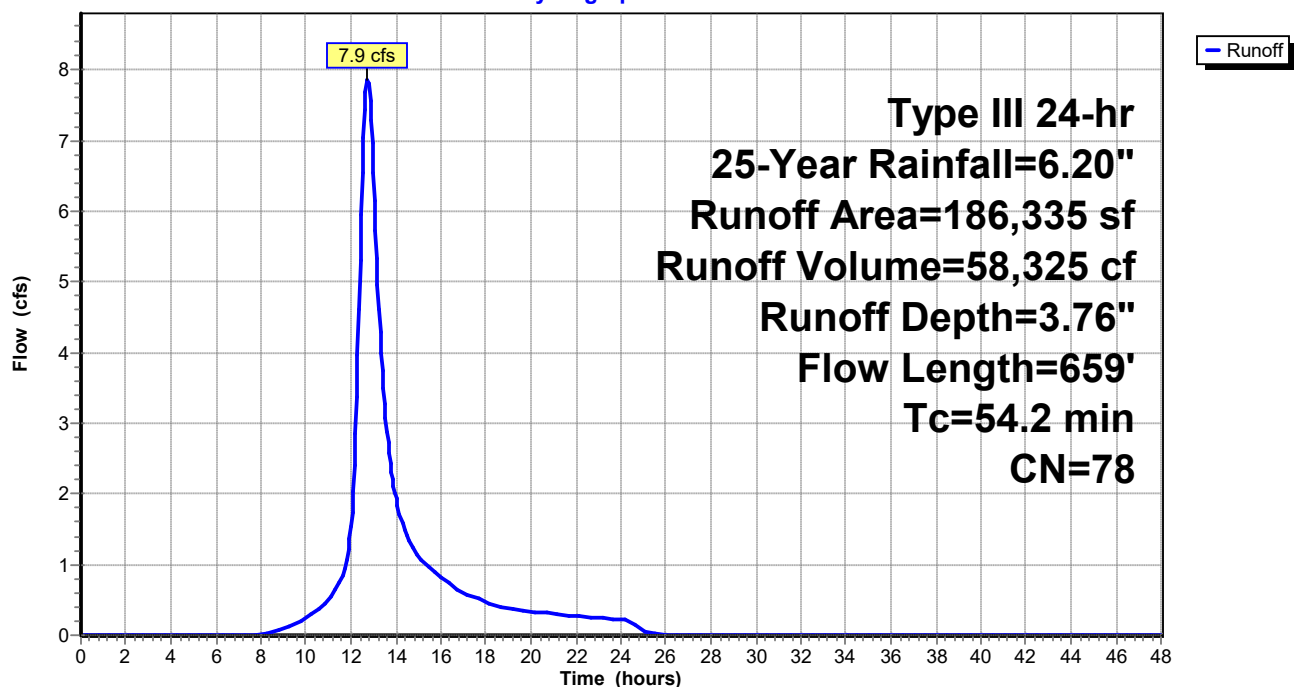
Summary for Subcatchment 1.0:

Runoff = 7.9 cfs @ 12.73 hrs, Volume= 58,325 cf, Depth= 3.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
162,540	77	Woods, Good, HSG D
14,845	80	>75% Grass cover, Good, HSG D
8,950	98	Paved parking, HSG D
186,335	78	Weighted Average
177,385		95.20% Pervious Area
8,950		4.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
37.4	150	0.0433	0.07		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
2.1	144	0.2150	1.16		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.7	365	0.0274	0.41		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
54.2	659	Total			

Subcatchment 1.0:**Hydrograph**

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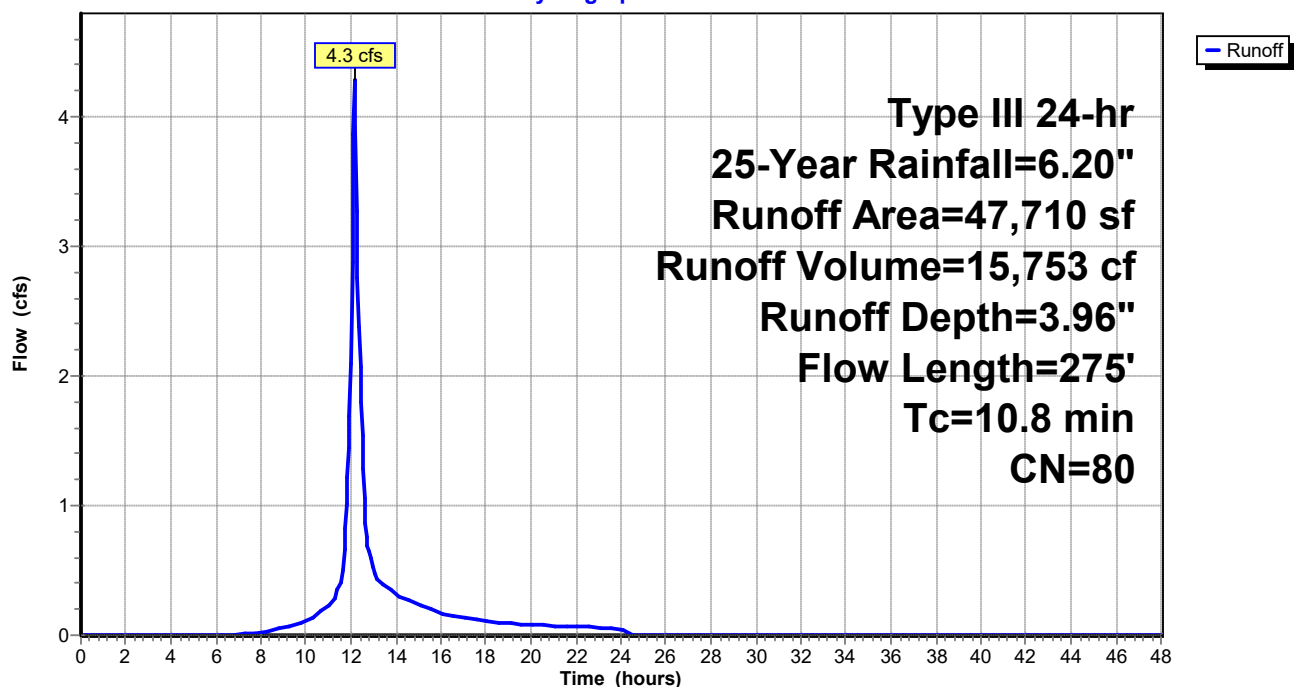
Summary for Subcatchment 1.1:

Runoff = 4.3 cfs @ 12.15 hrs, Volume= 15,753 cf, Depth= 3.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
19,405	77	Woods, Good, HSG D
25,695	80	>75% Grass cover, Good, HSG D
2,610	98	Paved parking, HSG D
47,710	80	Weighted Average
45,100		94.53% Pervious Area
2,610		5.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	114	0.1360	0.38		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
2.5	111	0.0110	0.73		Shallow Concentrated Flow, B-C
					Short Grass Pasture Kv= 7.0 fps
3.3	50	0.0100	0.25		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
10.8	275	Total			

Subcatchment 1.1:**Hydrograph**

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Summary for Subcatchment 1.10:

Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,711 cf, Depth= 3.96"

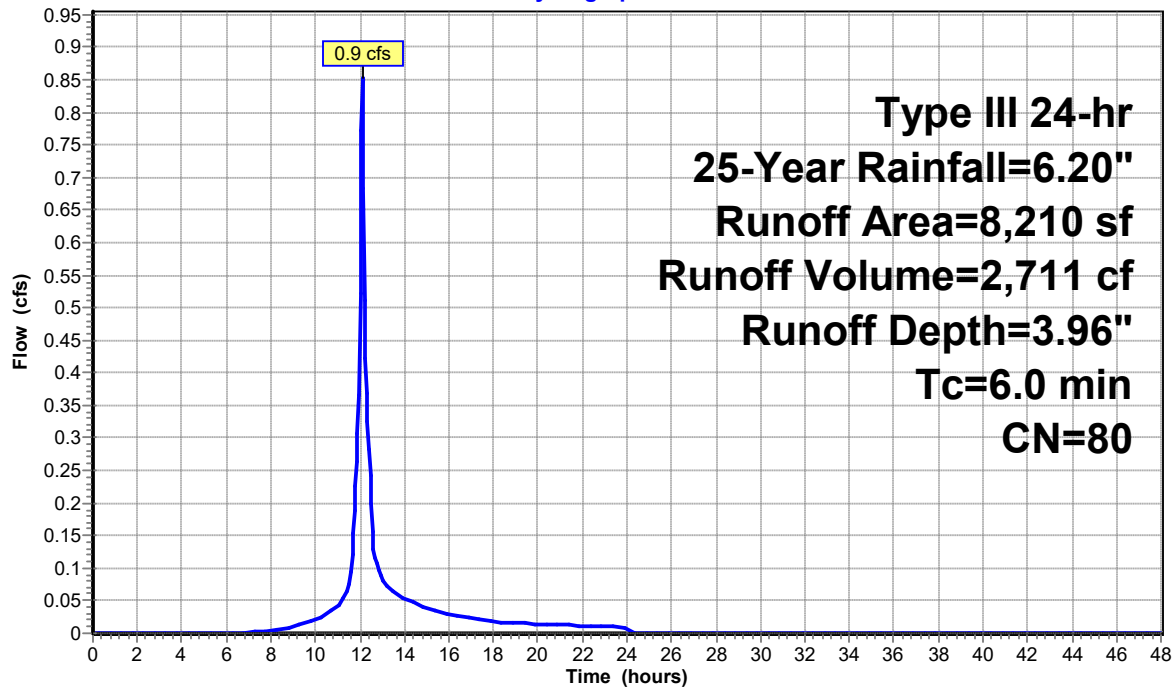
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
3,915	77	Woods, Good, HSG D
3,525	80	>75% Grass cover, Good, HSG D
770	98	Paved parking, HSG D
8,210	80	Weighted Average
7,440		90.62% Pervious Area
770		9.38% Impervious Area

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

Subcatchment 1.10:

Hydrograph



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Summary for Subcatchment 1.2:

Runoff = 1.4 cfs @ 12.09 hrs, Volume= 4,399 cf, Depth= 3.76"

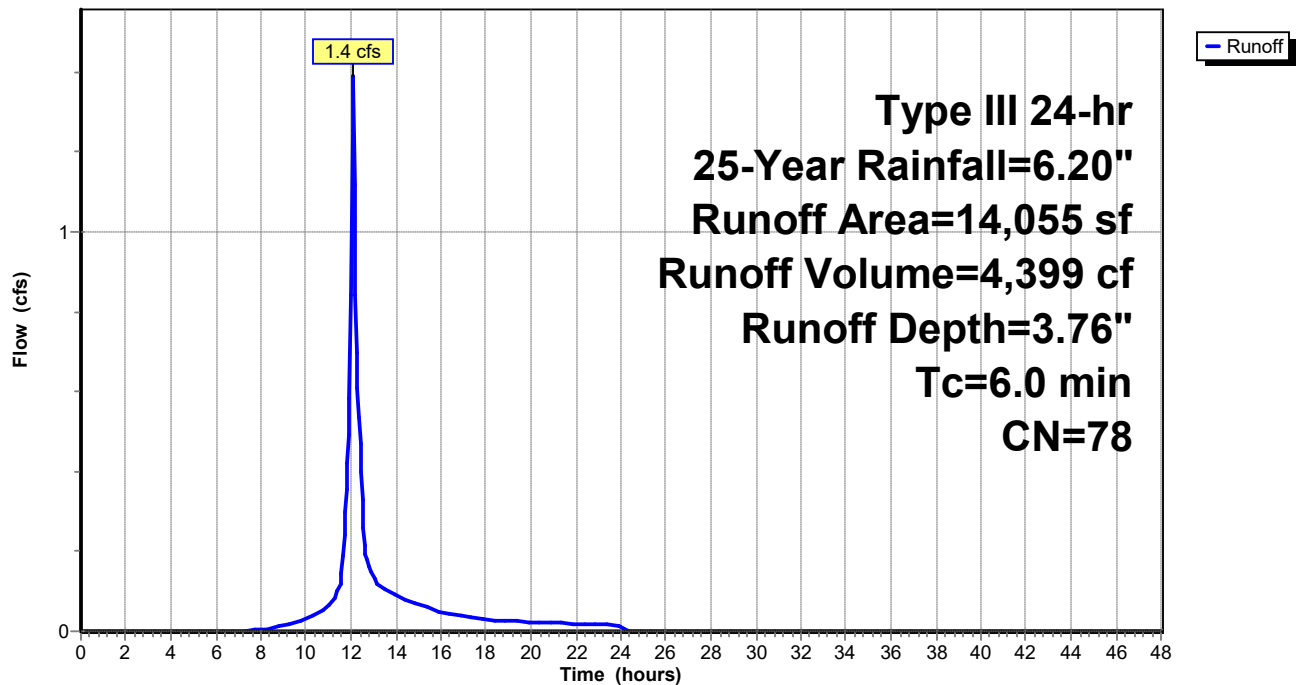
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
9,765	77	Woods, Good, HSG D
3,875	80	>75% Grass cover, Good, HSG D
415	98	Paved parking, HSG D
14,055	78	Weighted Average
13,640		97.05% Pervious Area
415		2.95% Impervious Area

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

Subcatchment 1.2:

Hydrograph



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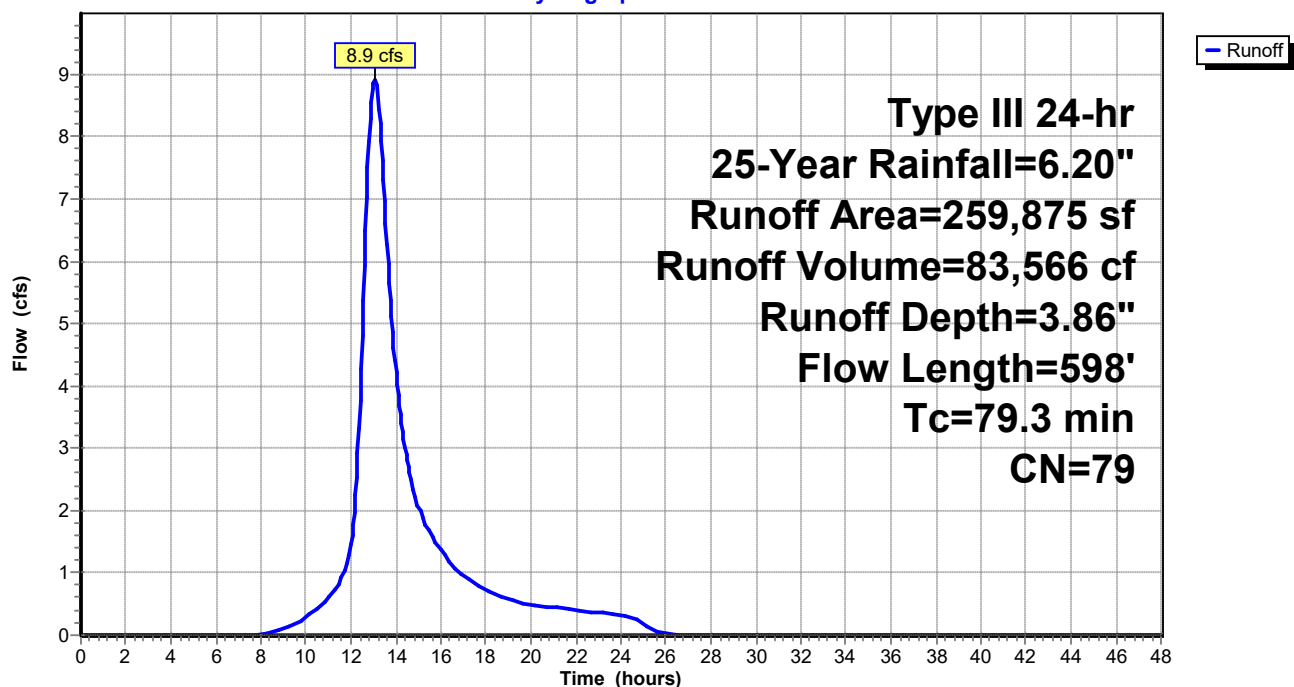
Summary for Subcatchment 1.3:

Runoff = 8.9 cfs @ 13.06 hrs, Volume= 83,566 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
214,510	77	Woods, Good, HSG D
26,145	80	>75% Grass cover, Good, HSG D
19,220	98	Paved parking, HSG D
259,875	79	Weighted Average
240,655		92.60% Pervious Area
19,220		7.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.5	40	0.3500	0.45		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
41.3	110	0.0182	0.04		Sheet Flow, B-C
					Woods: Dense underbrush n= 0.800 P2= 3.30"
36.5	448	0.0067	0.20		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
79.3	598	Total			

Subcatchment 1.3:**Hydrograph**

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Summary for Subcatchment 1.4:

Runoff = 10.9 cfs @ 12.16 hrs, Volume= 40,702 cf, Depth= 3.76"

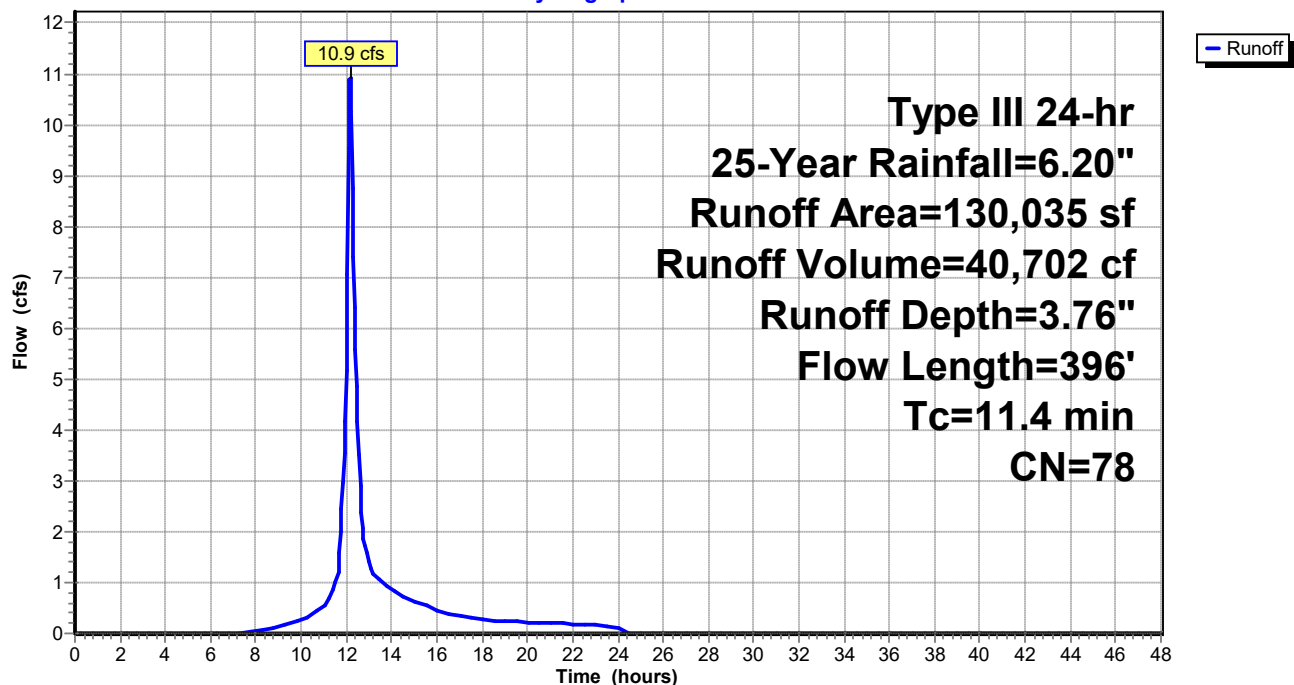
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
116,790	77	Woods, Good, HSG D
4,965	80	>75% Grass cover, Good, HSG D
8,280	98	Paved parking, HSG D
130,035	78	Weighted Average
121,755		93.63% Pervious Area
8,280		6.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	86	0.0930	0.31		Sheet Flow, A-B
					Grass: Short n= 0.150 P2= 3.30"
6.8	310	0.0935	0.76		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
11.4	396	Total			

Subcatchment 1.4:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.5:

Runoff = 10.1 cfs @ 12.96 hrs, Volume= 89,526 cf, Depth= 3.96"

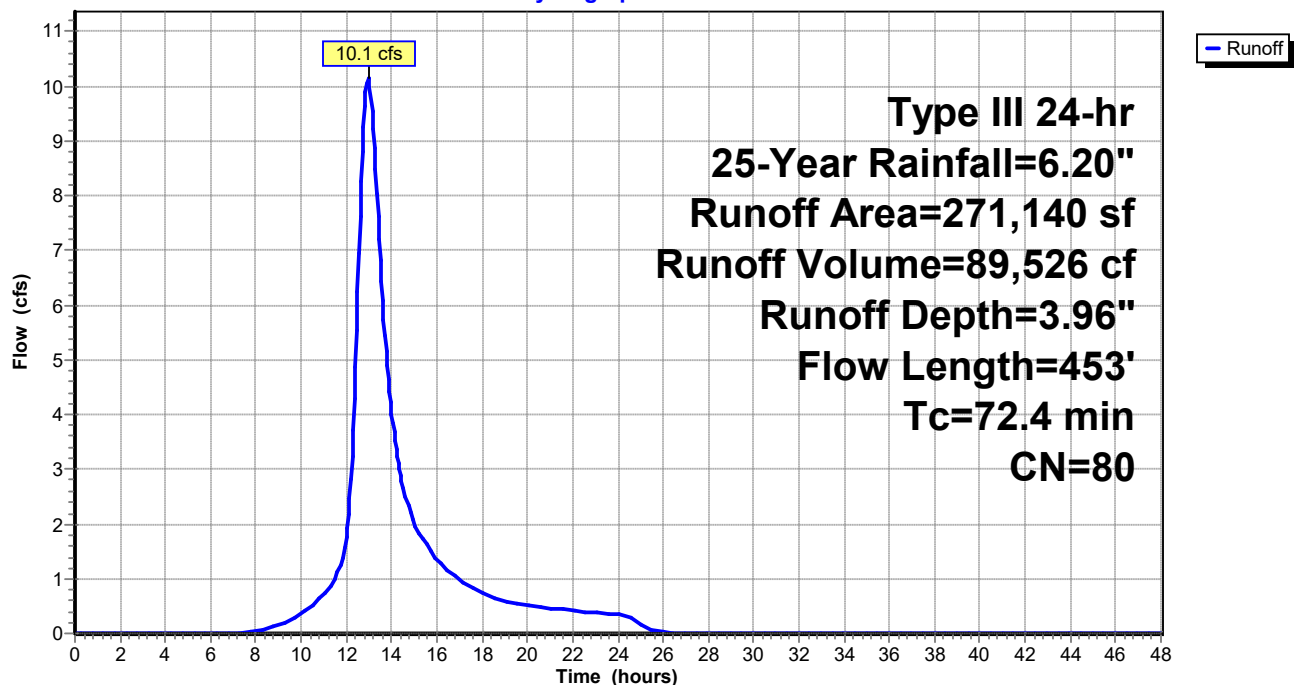
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
234,445	77	Woods, Good, HSG D
80	80	>75% Grass cover, Good, HSG D
36,615	98	Paved parking, HSG D
271,140	80	Weighted Average
234,525		86.50% Pervious Area
36,615		13.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
60.0	150	0.0133	0.04		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
12.4	303	0.0264	0.41		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
72.4	453	Total			

Subcatchment 1.5:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.6:

Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,322 cf, Depth= 4.71"

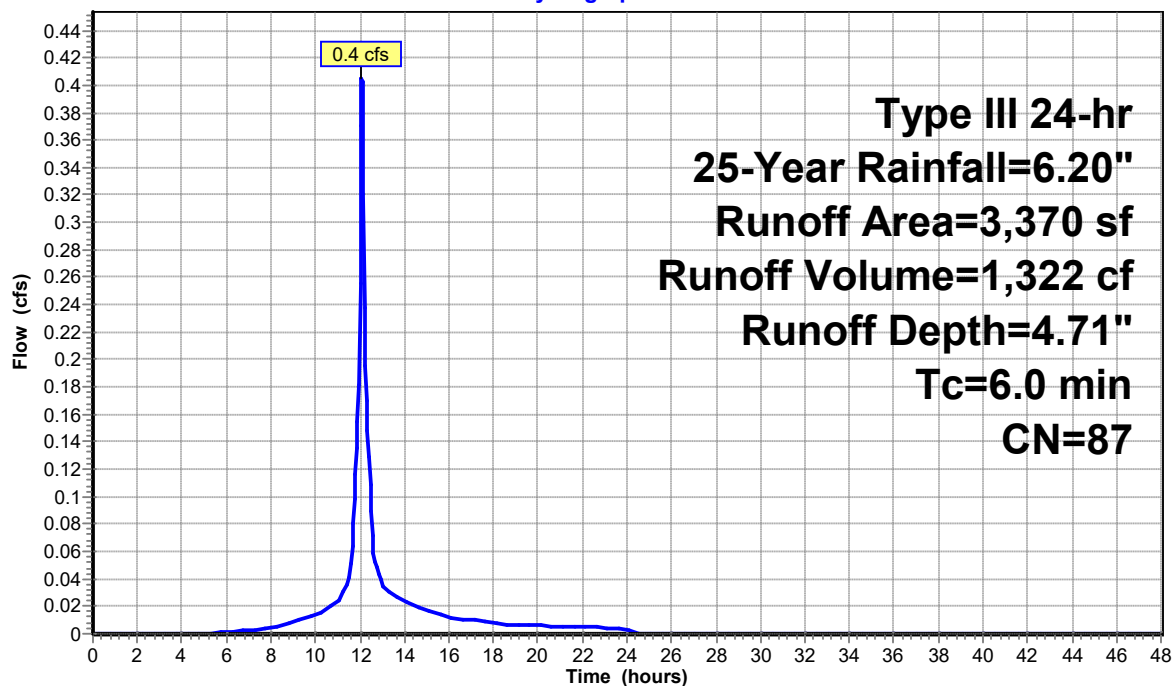
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
2,090	80	>75% Grass cover, Good, HSG D
1,280	98	Paved parking, HSG D
3,370	87	Weighted Average
2,090		62.02% Pervious Area
1,280		37.98% Impervious Area

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

Subcatchment 1.6:

Hydrograph



Runoff

Post-Dev - REV1

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Summary for Subcatchment 1.7:

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 4,896 cf, Depth= 4.17"

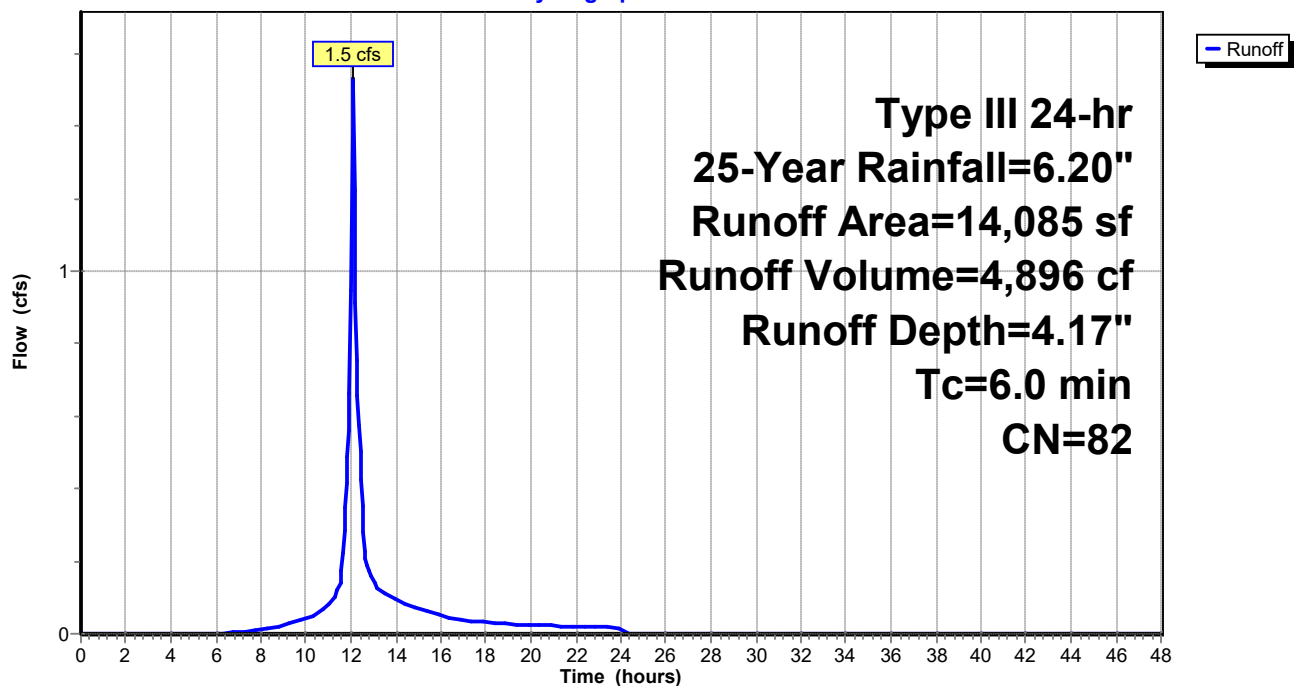
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
12,230	80	>75% Grass cover, Good, HSG D
1,855	98	Paved parking, HSG D
14,085	82	Weighted Average
12,230		86.83% Pervious Area
1,855		13.17% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Summary for Subcatchment 1.8:

Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,860 cf, Depth= 4.60"

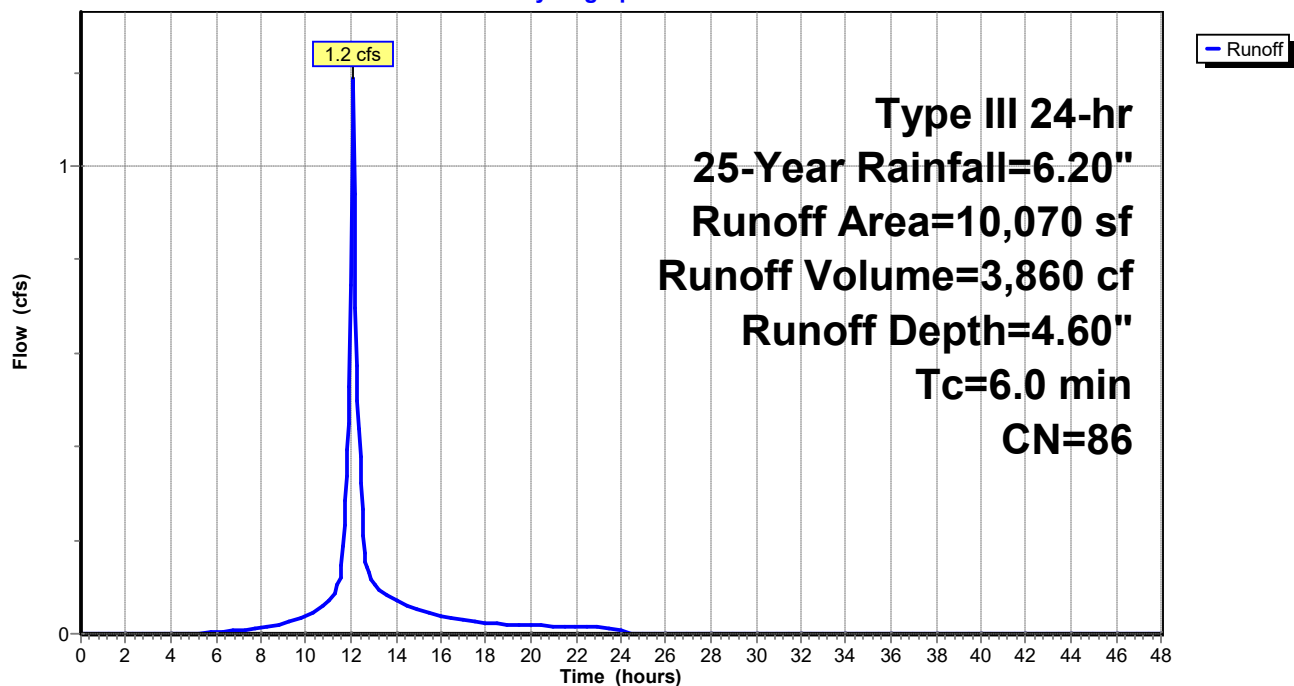
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
6,695	80	>75% Grass cover, Good, HSG D
3,375	98	Paved parking, HSG D
10,070	86	Weighted Average
6,695		66.48% Pervious Area
3,375		33.52% Impervious Area

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

Subcatchment 1.8:

Hydrograph



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Summary for Subcatchment 1.9:

Runoff = 2.1 cfs @ 12.09 hrs, Volume= 6,840 cf, Depth= 4.28"

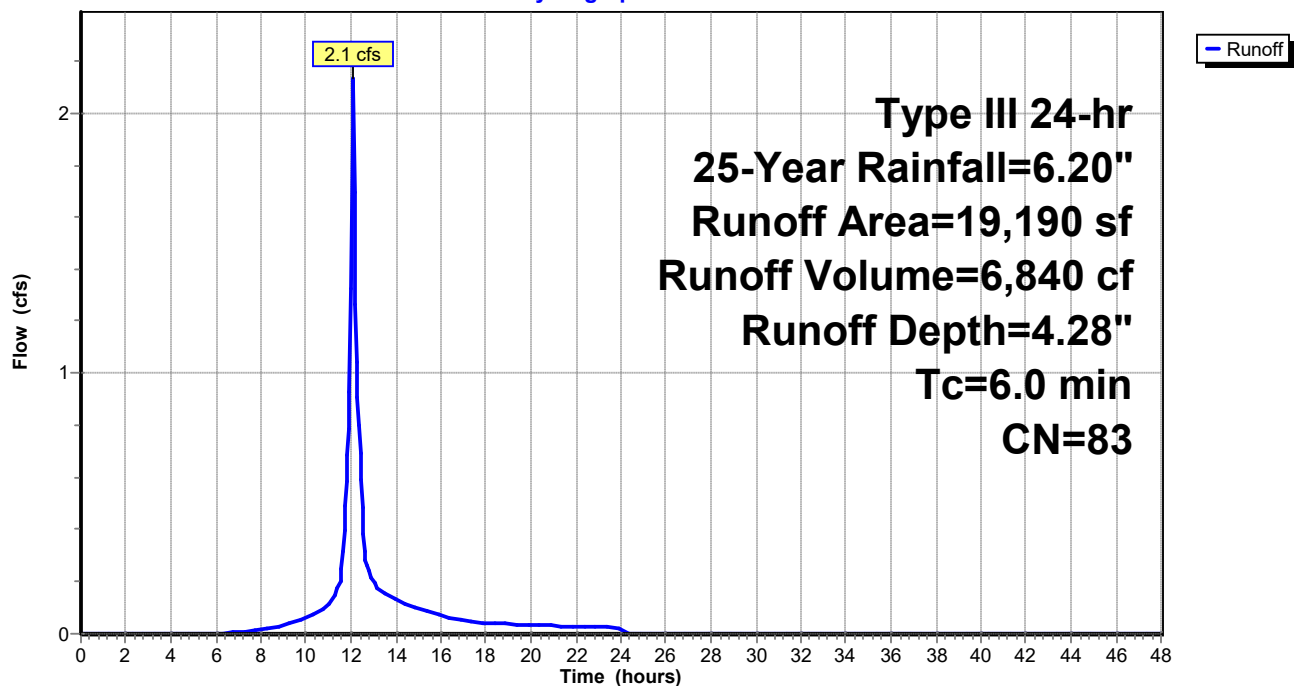
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
15,685	80	>75% Grass cover, Good, HSG D
3,505	98	Paved parking, HSG D
19,190	83	Weighted Average
15,685		81.74% Pervious Area
3,505		18.26% Impervious Area

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

Subcatchment 1.9:

Hydrograph



Post-Dev - REV1

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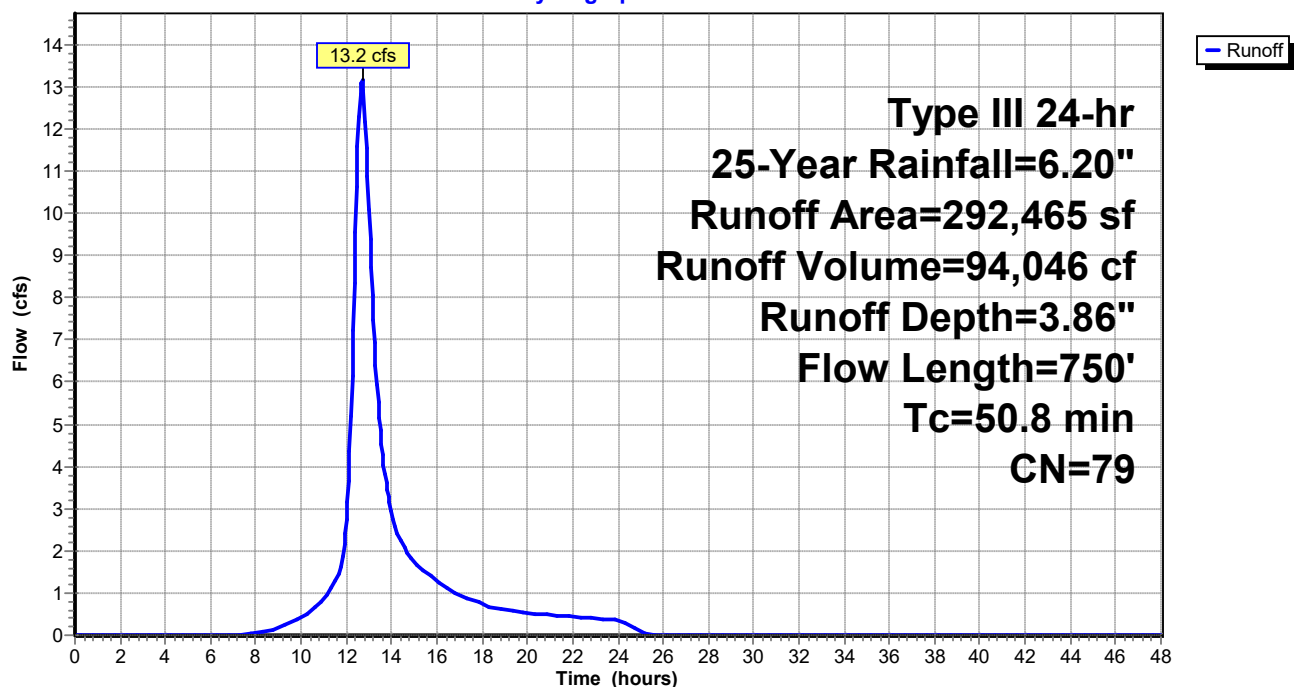
Summary for Subcatchment 2.0:

Runoff = 13.2 cfs @ 12.69 hrs, Volume= 94,046 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
243,170	77	Woods, Good, HSG D
23,955	80	>75% Grass cover, Good, HSG D
25,340	98	Paved parking, HSG D
292,465	79	Weighted Average
267,125		91.34% Pervious Area
25,340		8.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.1	108	0.0833	0.08		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
4.5	190	0.0790	0.70		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
24.2	452	0.0155	0.31		Shallow Concentrated Flow, C-D
					Forest w/Heavy Litter Kv= 2.5 fps
50.8	750	Total			

Subcatchment 2.0:**Hydrograph**

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Summary for Subcatchment 2.1:

Runoff = 1.8 cfs @ 12.09 hrs, Volume= 5,812 cf, Depth= 4.28"

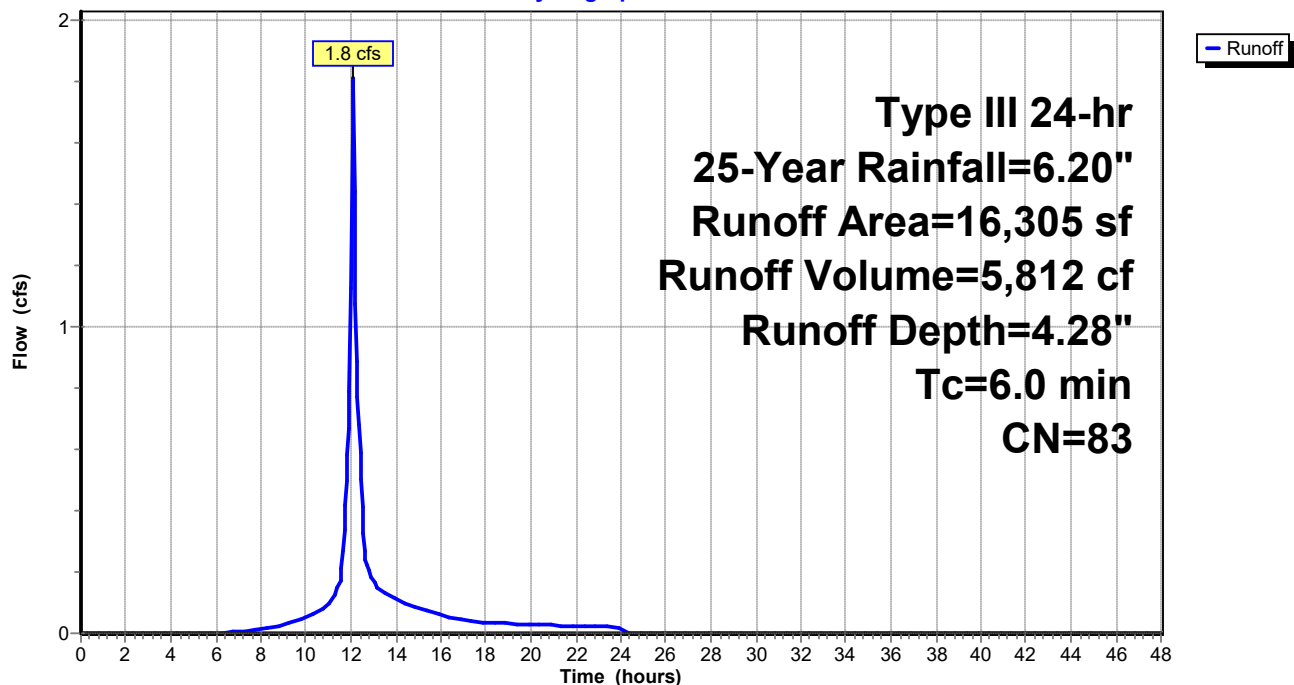
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
3,775	77	Woods, Good, HSG D
8,935	80	>75% Grass cover, Good, HSG D
3,595	98	Paved parking, HSG D
16,305	83	Weighted Average
12,710		77.95% Pervious Area
3,595		22.05% Impervious Area

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

Subcatchment 2.1:

Hydrograph



Post-Dev - REV1

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Summary for Reach R1:

Inflow Area = 47,710 sf, 5.47% Impervious, Inflow Depth = 3.96" for 25-Year event
Inflow = 4.3 cfs @ 12.15 hrs, Volume= 15,753 cf
Outflow = 3.3 cfs @ 12.43 hrs, Volume= 15,753 cf, Atten= 24%, Lag= 16.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 10.6 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 36.5 min

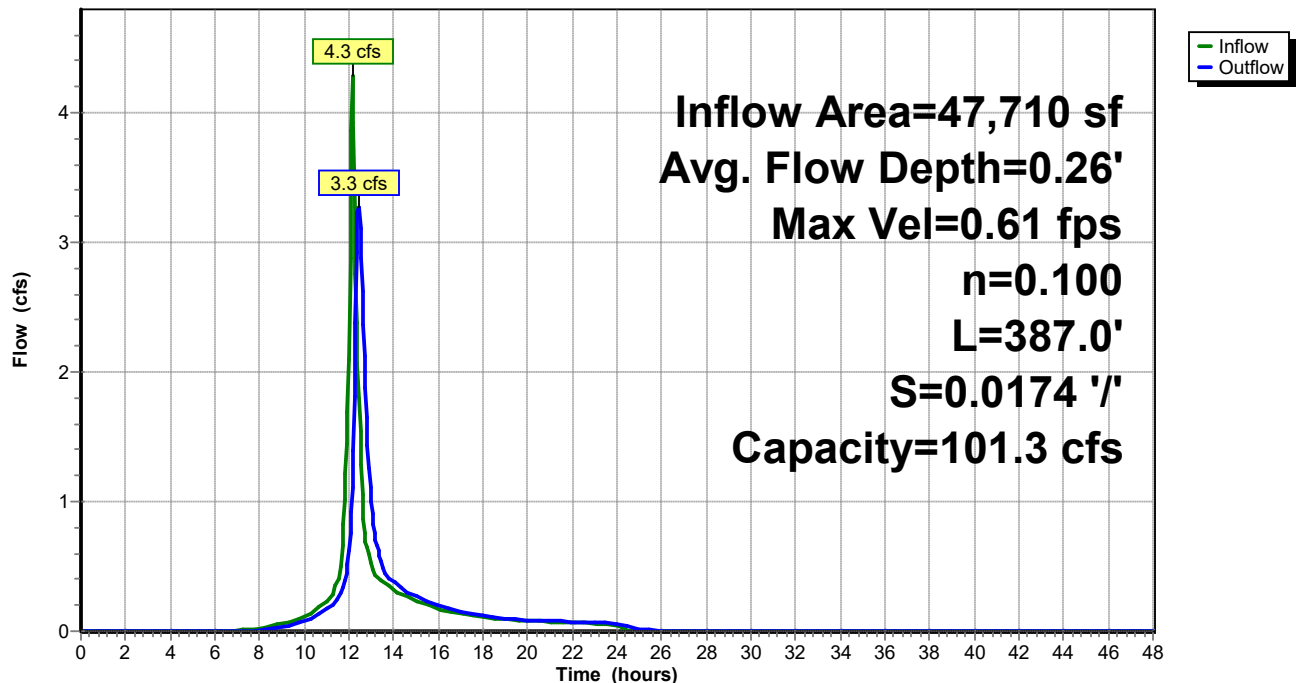
Peak Storage= 2,113 cf @ 12.25 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 1.25' Flow Area= 58.3 sf, Capacity= 101.3 cfs

70.00' x 1.25' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 387.0' Slope= 0.0174 '/'
Inlet Invert= 36.75', Outlet Invert= 30.00'



Reach R1:

Hydrograph



Post-Dev - REV1

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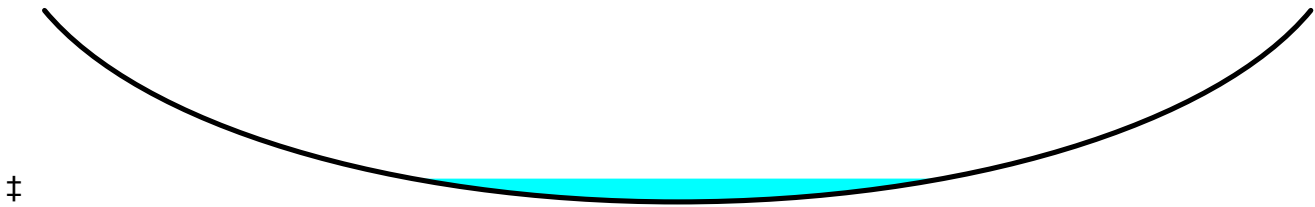
Summary for Reach R2:

Inflow Area = 14,055 sf, 2.95% Impervious, Inflow Depth = 3.76" for 25-Year event
Inflow = 1.4 cfs @ 12.09 hrs, Volume= 4,399 cf
Outflow = 1.1 cfs @ 12.26 hrs, Volume= 4,399 cf, Atten= 19%, Lag= 10.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.54 fps, Min. Travel Time= 6.4 min
Avg. Velocity = 0.18 fps, Avg. Travel Time= 19.3 min

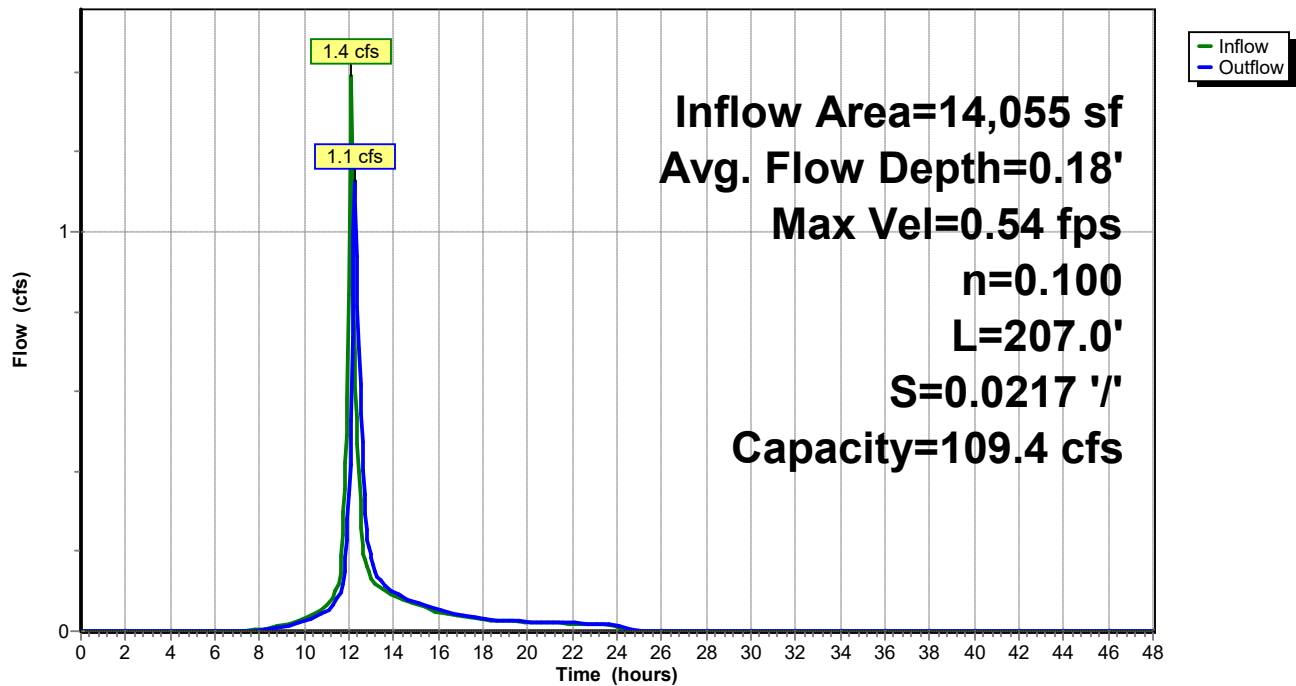
Peak Storage= 439 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.18'
Bank-Full Depth= 1.50' Flow Area= 50.0 sf, Capacity= 109.4 cfs

50.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 207.0' Slope= 0.0217 '/'
Inlet Invert= 34.50', Outlet Invert= 30.00'



Reach R2:

Hydrograph



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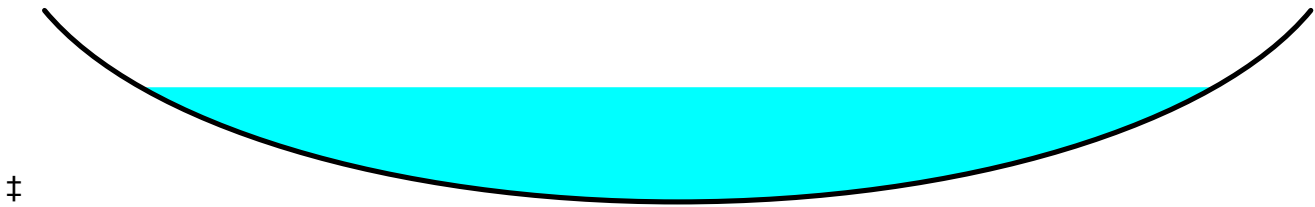
Summary for Reach R3:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 2.25" for 25-Year event
Inflow = 7.5 cfs @ 13.83 hrs, Volume= 124,035 cf
Outflow = 7.5 cfs @ 14.17 hrs, Volume= 124,008 cf, Atten= 1%, Lag= 20.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.48 fps, Min. Travel Time= 11.4 min
Avg. Velocity = 0.16 fps, Avg. Travel Time= 33.9 min

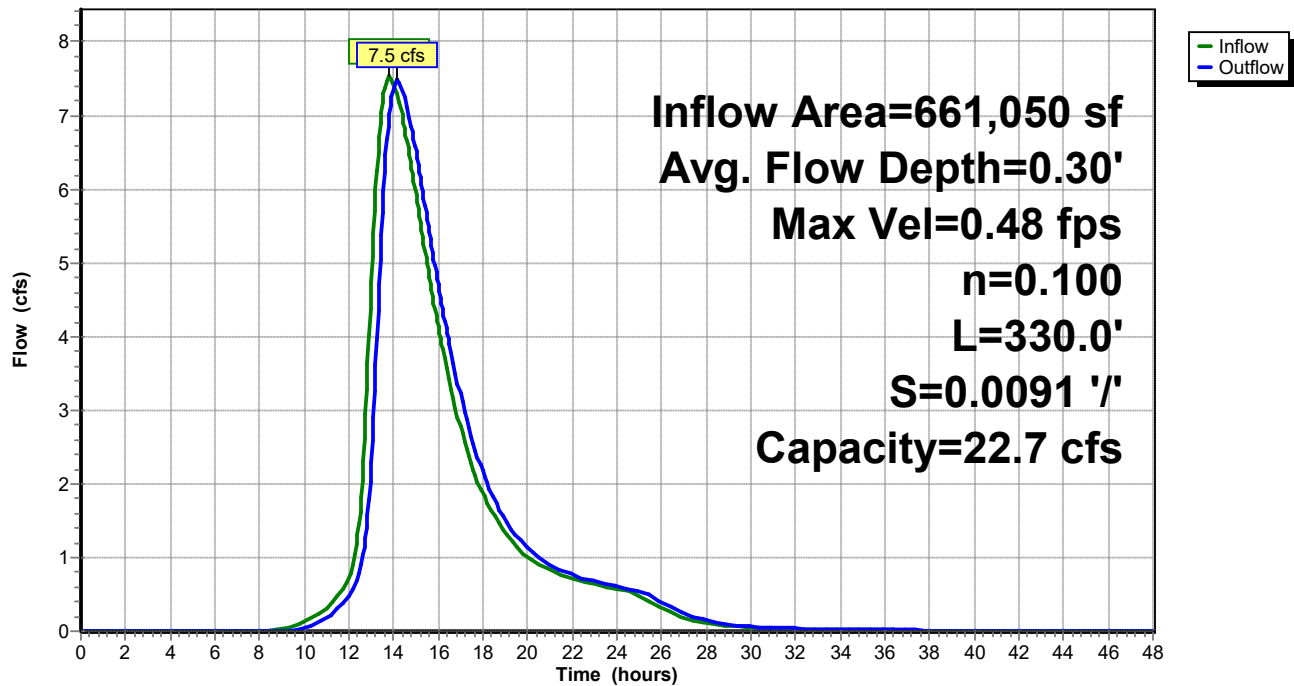
Peak Storage= 5,100 cf @ 13.99 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 0.50' Flow Area= 33.3 sf, Capacity= 22.7 cfs

100.00' x 0.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 330.0' Slope= 0.0091 '/
Inlet Invert= 33.00', Outlet Invert= 30.00'



Reach R3:

Hydrograph



Summary for Reach R4:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth > 1.21" for 25-Year event
 Inflow = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf
 Outflow = 3.8 cfs @ 13.08 hrs, Volume= 40,496 cf, Atten= 17%, Lag= 36.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Max. Velocity= 0.42 fps, Min. Travel Time= 19.2 min

Avg. Velocity = 0.13 fps, Avg. Travel Time= 61.7 min

Peak Storage= 4,414 cf @ 12.76 hrs

Average Depth at Peak Storage= 0.17'

Bank-Full Depth= 0.65' Flow Area= 69.3 sf, Capacity= 71.1 cfs

160.00' x 0.65' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage

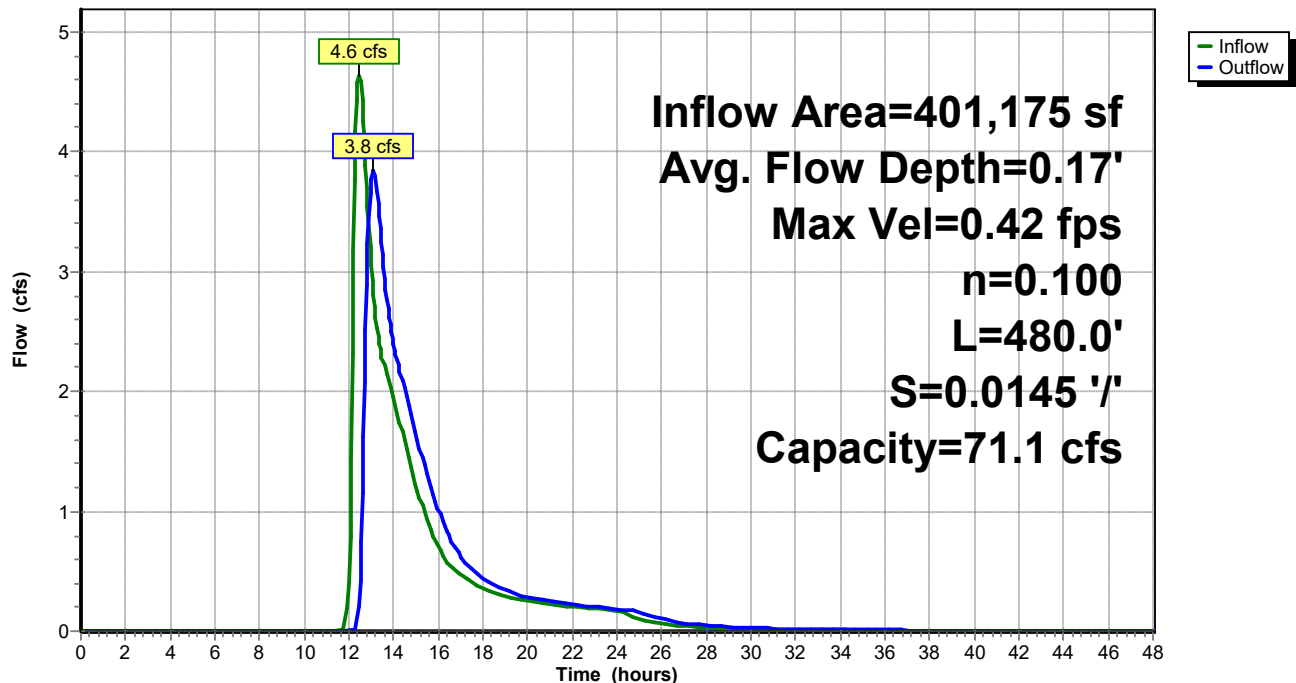
Length= 480.0' Slope= 0.0145 '/'

Inlet Invert= 40.23', Outlet Invert= 33.26'



Reach R4:

Hydrograph



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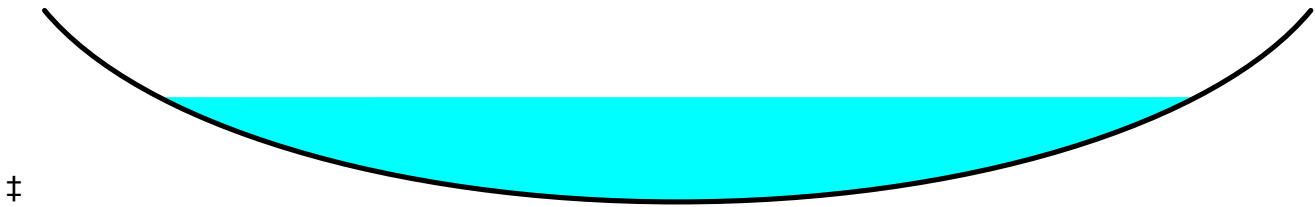
Summary for Reach R5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 4.29" for 25-Year event
Inflow = 6.1 cfs @ 12.09 hrs, Volume= 19,630 cf
Outflow = 5.2 cfs @ 12.22 hrs, Volume= 19,630 cf, Atten= 15%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.87 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 0.22 fps, Avg. Travel Time= 19.1 min

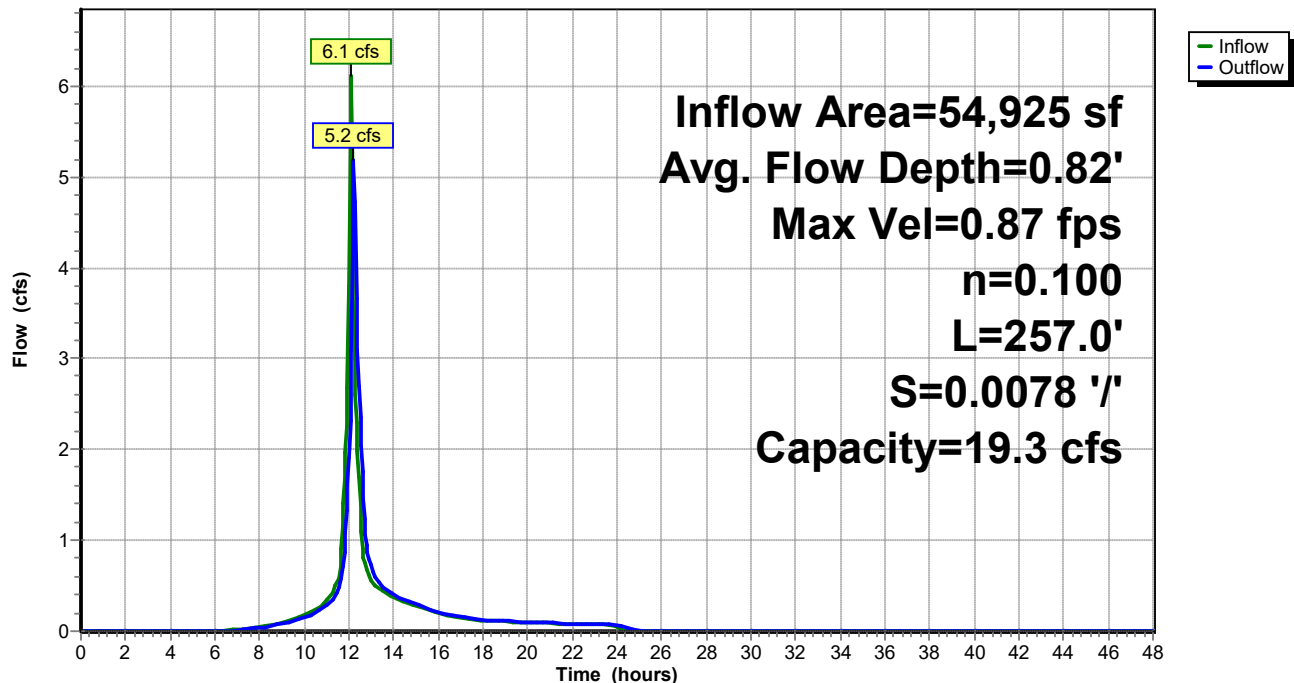
Peak Storage= 1,563 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 1.50' Flow Area= 15.0 sf, Capacity= 19.3 cfs

15.00' x 1.50' deep Parabolic Channel, n= 0.100 Earth, dense brush, high stage
Length= 257.0' Slope= 0.0078 '/'
Inlet Invert= 32.00', Outlet Invert= 30.00'



Reach R5:

Hydrograph



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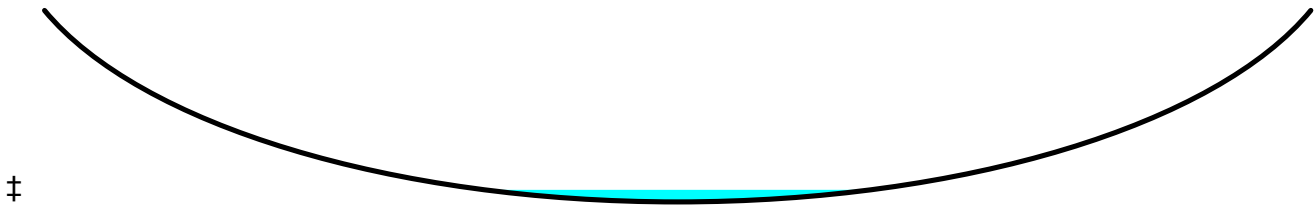
Summary for Reach R6:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 4.28" for 25-Year event
Inflow = 1.8 cfs @ 12.09 hrs, Volume= 5,812 cf
Outflow = 1.5 cfs @ 12.25 hrs, Volume= 5,812 cf, Atten= 17%, Lag= 9.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.34 fps, Min. Travel Time= 6.1 min
Avg. Velocity = 0.85 fps, Avg. Travel Time= 16.8 min

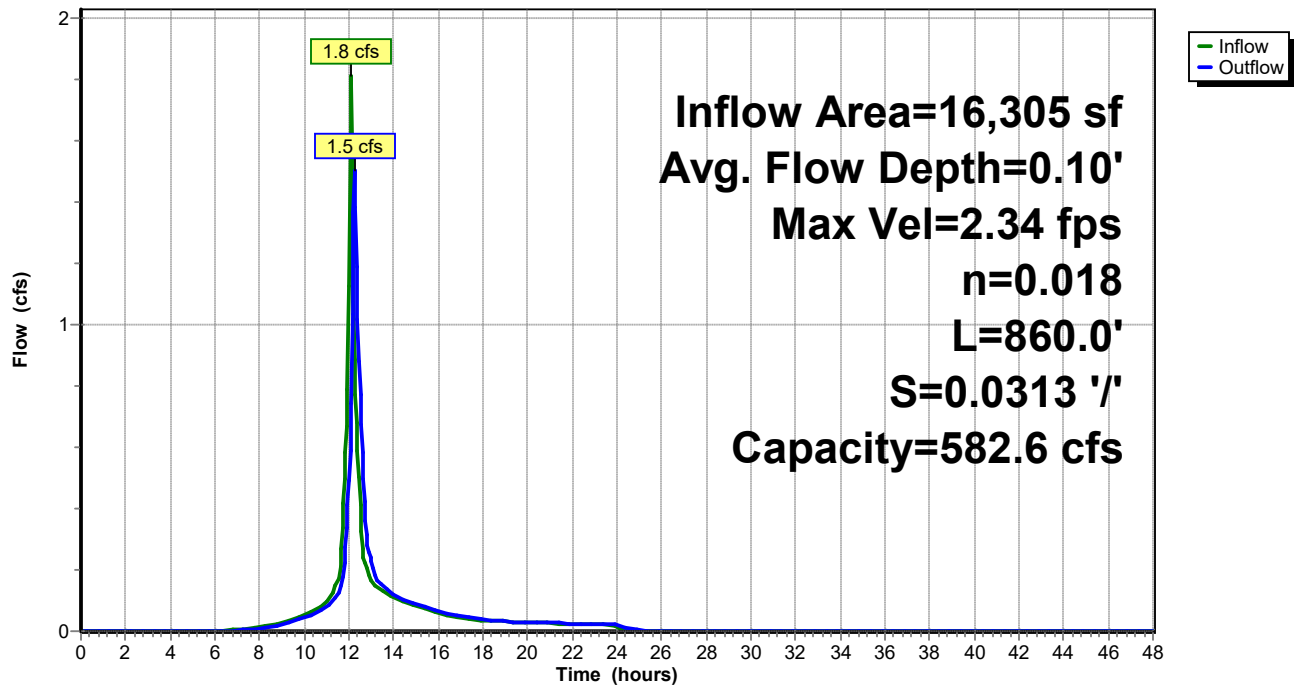
Peak Storage= 554 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 1.50' Flow Area= 40.0 sf, Capacity= 582.6 cfs

40.00' x 1.50' deep Parabolic Channel, n= 0.018 Earth, clean & straight
Length= 860.0' Slope= 0.0313 '/'
Inlet Invert= 52.00', Outlet Invert= 25.10'



Reach R6:

Hydrograph



Post-Dev - REV1

Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C1:

Inflow Area = 661,050 sf, 9.70% Impervious, Inflow Depth > 2.25" for 25-Year event
 Inflow = 12.7 cfs @ 13.07 hrs, Volume= 124,062 cf
 Outflow = 7.5 cfs @ 13.83 hrs, Volume= 124,035 cf, Atten= 41%, Lag= 45.5 min
 Primary = 7.5 cfs @ 13.83 hrs, Volume= 124,035 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 35.17' @ 13.83 hrs Surf.Area= 43,288 sf Storage= 29,776 cf
 Flood Elev= 36.00' Surf.Area= 65,400 sf Storage= 74,950 cf

Plug-Flow detention time= 65.3 min calculated for 123,906 cf (100% of inflow)
 Center-of-Mass det. time= 65.0 min (974.8 - 909.8)

Volume	Invert	Avail.Storage	Storage Description
#1	34.00'	74,950 cf	STORAGE (Prismatic) Listed below (Recalc)

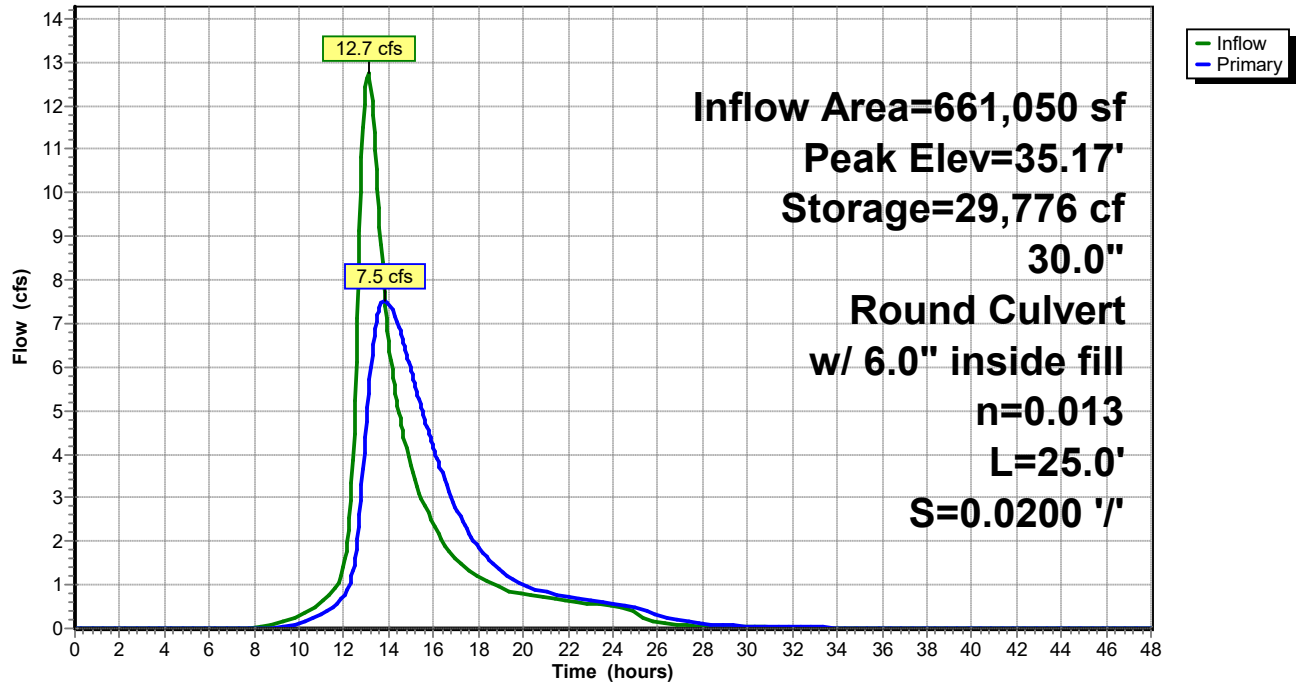
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.00	6,900	0	0
35.00	38,800	22,850	22,850
36.00	65,400	52,100	74,950

Device	Routing	Invert	Outlet Devices
#1	Primary	34.00'	30.0" Round Culvert w/ 6.0" inside fill L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.50' / 33.00' S= 0.0200 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.21 sf

Primary OutFlow Max=7.5 cfs @ 13.83 hrs HW=35.17' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 7.5 cfs @ 2.71 fps)

Pond C1:

Hydrograph



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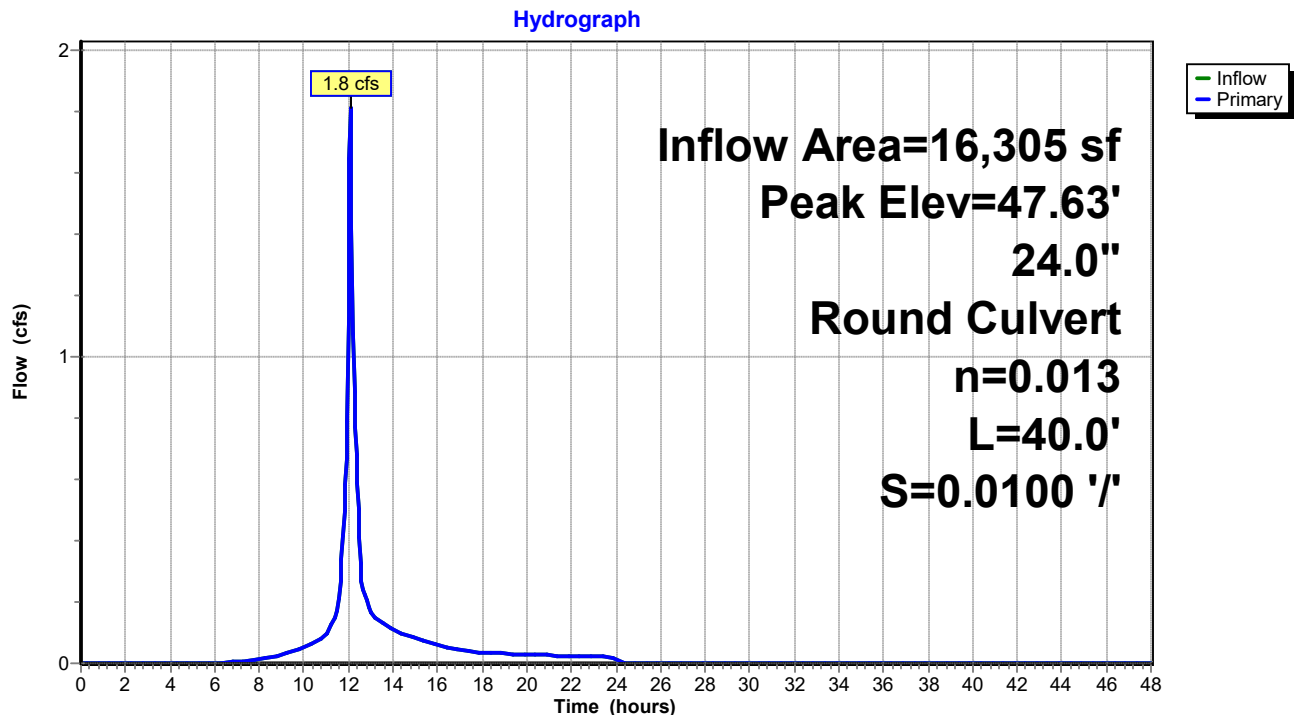
Summary for Pond C10:

Inflow Area = 16,305 sf, 22.05% Impervious, Inflow Depth = 4.28" for 25-Year event
 Inflow = 1.8 cfs @ 12.09 hrs, Volume= 5,812 cf
 Outflow = 1.8 cfs @ 12.09 hrs, Volume= 5,812 cf, Atten= 0%, Lag= 0.0 min
 Primary = 1.8 cfs @ 12.09 hrs, Volume= 5,812 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 47.63' @ 12.09 hrs
 Flood Elev= 49.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	47.00'	24.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 47.00' / 46.60' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=1.8 cfs @ 12.09 hrs HW=47.62' (Free Discharge)
 ↑1=Culvert (Inlet Controls 1.8 cfs @ 2.12 fps)

Pond C10:

Post-Dev - REV1

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Summary for Pond C2:

Inflow Area = 401,175 sf, 11.19% Impervious, Inflow Depth = 1.37" for 25-Year event
 Inflow = 10.9 cfs @ 12.16 hrs, Volume= 45,875 cf
 Outflow = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf, Atten= 58%, Lag= 18.5 min
 Primary = 4.6 cfs @ 12.47 hrs, Volume= 40,524 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 41.29' @ 12.47 hrs Surf.Area= 10,855 sf Storage= 15,674 cf
 Flood Elev= 41.61' Surf.Area= 11,830 sf Storage= 19,358 cf

Plug-Flow detention time= 142.3 min calculated for 40,482 cf (88% of inflow)
 Center-of-Mass det. time= 92.7 min (917.1 - 824.4)

Volume	Invert	Avail.Storage	Storage Description
#1	39.00'	24,200 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
39.00	1,800	0	0
40.00	6,800	4,300	4,300
41.00	10,000	8,400	12,700
42.00	13,000	11,500	24,200

Device	Routing	Invert	Outlet Devices
#1	Primary	40.36'	15.0" Round Culvert L= 20.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 40.36' / 40.23' S= 0.0065 ' S= 0.0065 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	40.13'	12.0" Round Culvert L= 20.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 39.89' / 40.13' S= -0.0117 ' S= -0.0117 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

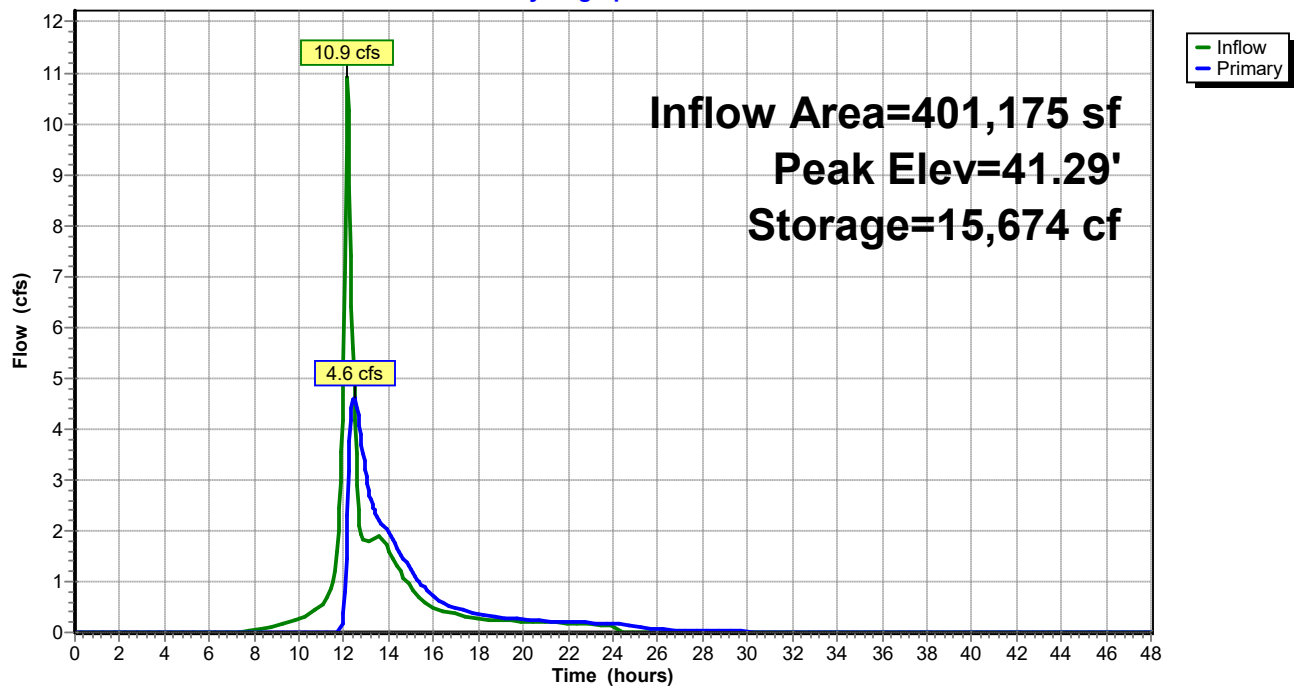
Primary OutFlow Max=4.6 cfs @ 12.47 hrs HW=41.28' (Free Discharge)

1=Culvert (Barrel Controls 2.2 cfs @ 3.16 fps)

2=Culvert (Inlet Controls 2.4 cfs @ 3.07 fps)

Pond C2:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C3:

Inflow Area = 271,140 sf, 13.50% Impervious, Inflow Depth = 3.96" for 25-Year event
 Inflow = 10.1 cfs @ 12.96 hrs, Volume= 89,526 cf
 Outflow = 6.1 cfs @ 13.60 hrs, Volume= 89,496 cf, Atten= 40%, Lag= 38.8 min
 Discarded = 5.2 cfs @ 13.60 hrs, Volume= 84,323 cf
 Primary = 0.9 cfs @ 13.60 hrs, Volume= 5,173 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 43.12' @ 13.60 hrs Surf.Area= 38,482 sf Storage= 25,508 cf
 Flood Elev= 44.68' Surf.Area= 42,000 sf Storage= 60,900 cf

Plug-Flow detention time= 82.5 min calculated for 89,403 cf (100% of inflow)
 Center-of-Mass det. time= 83.1 min (957.5 - 874.4)

Volume	Invert	Avail.Storage	Storage Description
#1	42.00'	60,900 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
42.00	3,800	0	0
43.00	38,000	20,900	20,900
44.00	42,000	40,000	60,900

Device	Routing	Invert	Outlet Devices
#1	Primary	42.68'	24.0" Round Culvert L= 81.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.68' / 42.10' S= 0.0072 ' S= 0.0072 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Discarded	42.00'	24.0" Round Culvert L= 61.5' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 42.00' / 41.00' S= 0.0163 ' S= 0.0163 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Discarded OutFlow Max=5.2 cfs @ 13.60 hrs HW=43.12' (Free Discharge)

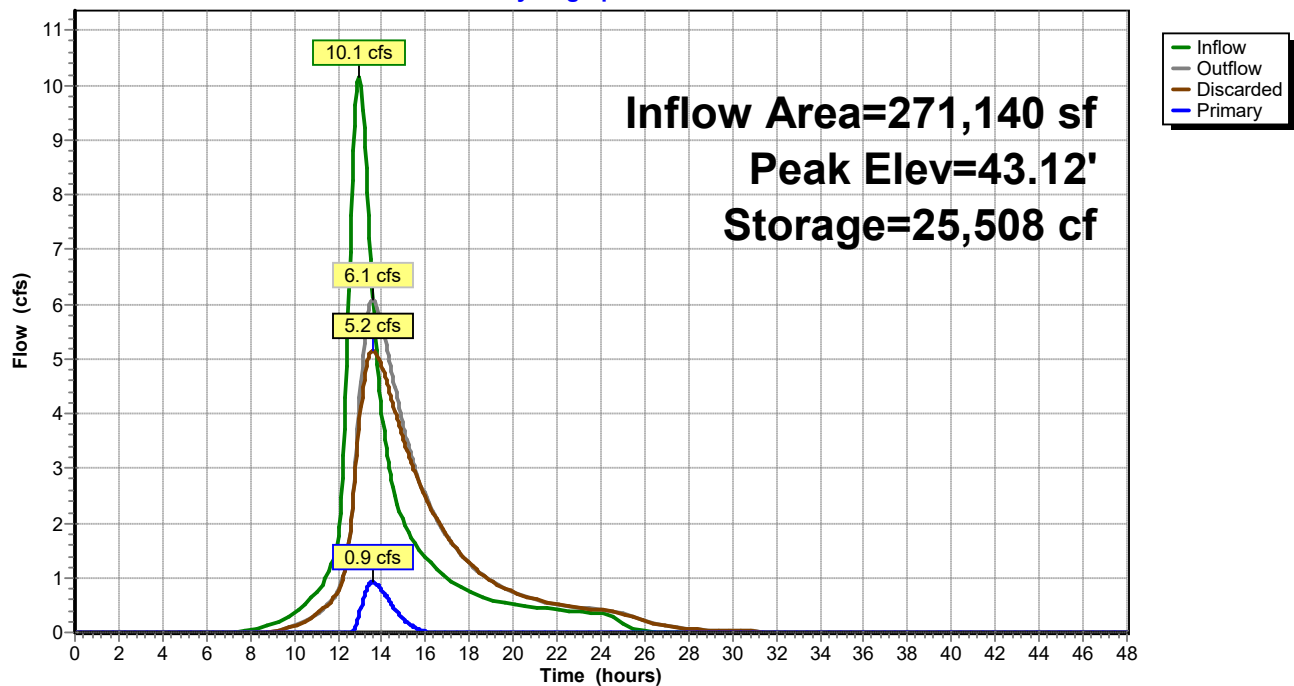
↑ **2=Culvert** (Inlet Controls 5.2 cfs @ 2.85 fps)

Primary OutFlow Max=0.9 cfs @ 13.60 hrs HW=43.12' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.9 cfs @ 1.78 fps)

Pond C3:

Hydrograph



Post-Dev - REV1

Type III 24-hr 25-Year Rainfall=6.20"

Prepared by Walsh Engineering Associates, Inc.

Printed 10/14/2021

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Summary for Pond C4:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth = 3.88" for 25-Year event
 Inflow = 13.6 cfs @ 12.68 hrs, Volume= 99,858 cf
 Outflow = 9.9 cfs @ 13.03 hrs, Volume= 99,511 cf, Atten= 27%, Lag= 21.3 min
 Primary = 9.9 cfs @ 13.03 hrs, Volume= 99,511 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 26.94' @ 13.03 hrs Surf.Area= 12,889 sf Storage= 18,031 cf
 Flood Elev= 26.51' Surf.Area= 12,020 sf Storage= 12,620 cf

Plug-Flow detention time= 38.3 min calculated for 99,407 cf (100% of inflow)
 Center-of-Mass det. time= 36.9 min (891.8 - 854.9)

Volume	Invert	Avail.Storage	Storage Description
#1	25.00'	18,750 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
25.00	2,500	0	0
26.00	11,000	6,750	6,750
27.00	13,000	12,000	18,750

Device	Routing	Invert	Outlet Devices
#1	Primary	25.26'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.26' / 24.89' S= 0.0097 ' S= 0.0097 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	25.10'	15.0" Round Culvert L= 38.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 25.10' / 24.95' S= 0.0039 ' S= 0.0039 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

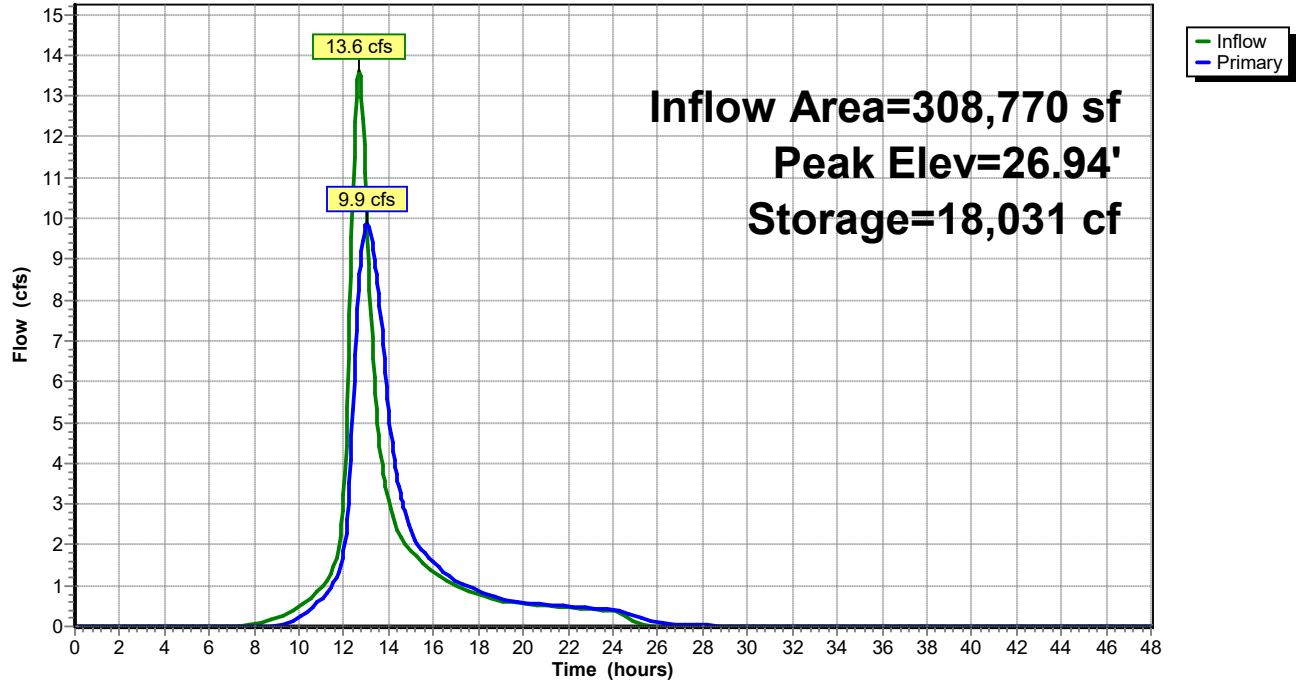
Primary OutFlow Max=9.9 cfs @ 13.03 hrs HW=26.94' (Free Discharge)

1=Culvert (Inlet Controls 4.8 cfs @ 3.91 fps)

2=Culvert (Barrel Controls 5.1 cfs @ 4.14 fps)

Pond C4:

Hydrograph



Post-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

Printed 10/14/2021

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Summary for Pond C5:

Inflow Area = 54,925 sf, 19.64% Impervious, Inflow Depth = 4.29" for 25-Year event
 Inflow = 6.1 cfs @ 12.09 hrs, Volume= 19,630 cf
 Outflow = 6.1 cfs @ 12.09 hrs, Volume= 19,630 cf, Atten= 0%, Lag= 0.0 min
 Primary = 6.1 cfs @ 12.09 hrs, Volume= 19,630 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 33.27' @ 12.09 hrs

Flood Elev= 33.20'

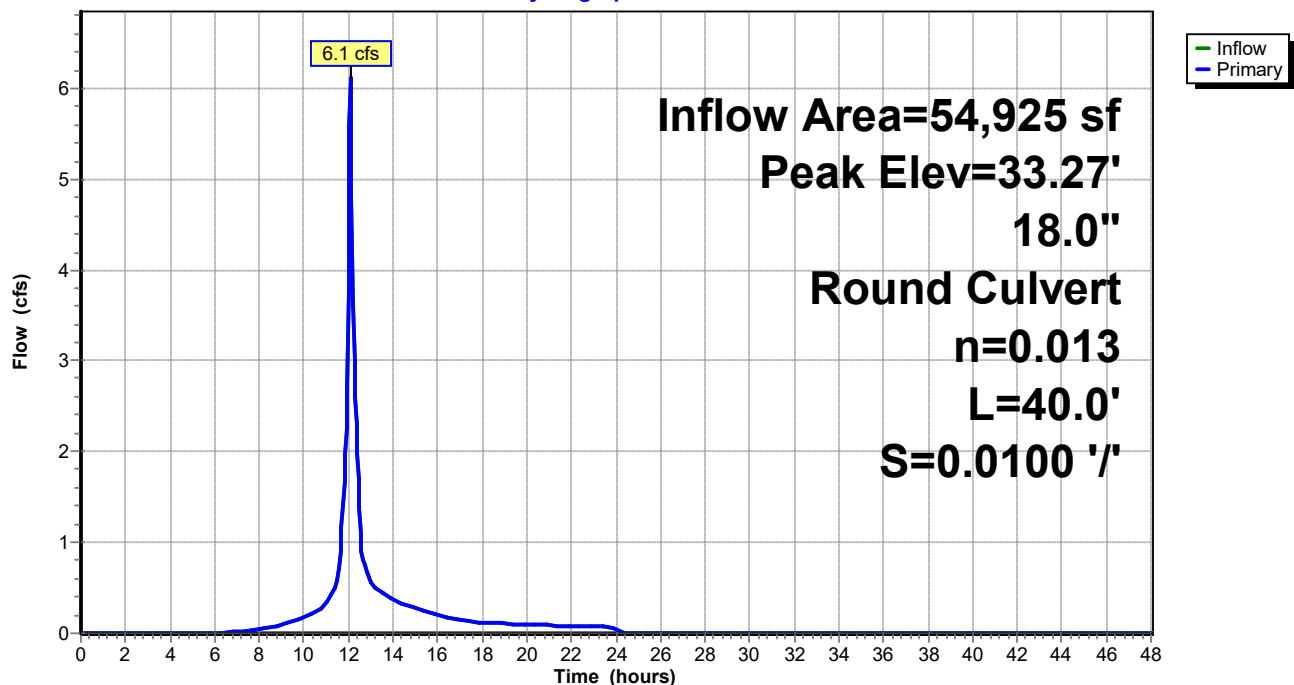
Device	Routing	Invert	Outlet Devices
#1	Primary	31.70'	18.0" Round Culvert L= 40.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.70' / 31.30' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=6.0 cfs @ 12.09 hrs HW=33.24' (Free Discharge)

↑1=Culvert (Inlet Controls 6.0 cfs @ 3.38 fps)

Pond C5:

Hydrograph



Post-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C6:

Inflow Area = 51,555 sf, 18.44% Impervious, Inflow Depth = 4.26" for 25-Year event
 Inflow = 5.7 cfs @ 12.09 hrs, Volume= 18,307 cf
 Outflow = 5.7 cfs @ 12.09 hrs, Volume= 18,307 cf, Atten= 0%, Lag= 0.0 min
 Primary = 5.7 cfs @ 12.09 hrs, Volume= 18,307 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 33.76' @ 12.09 hrs

Flood Elev= 33.80'

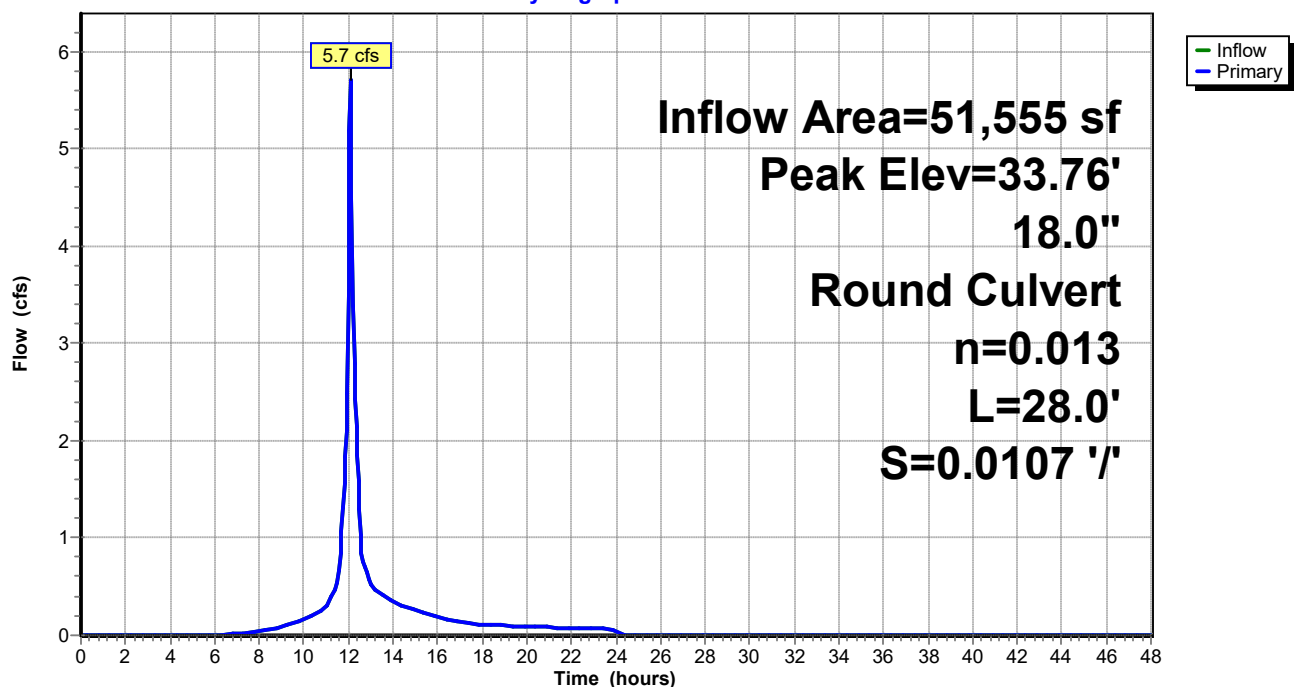
Device	Routing	Invert	Outlet Devices
#1	Primary	32.30'	18.0" Round Culvert L= 28.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.30' / 32.00' S= 0.0107 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

Primary OutFlow Max=5.6 cfs @ 12.09 hrs HW=33.73' (Free Discharge)

↑1=Culvert (Inlet Controls 5.6 cfs @ 3.22 fps)

Pond C6:

Hydrograph



Post-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

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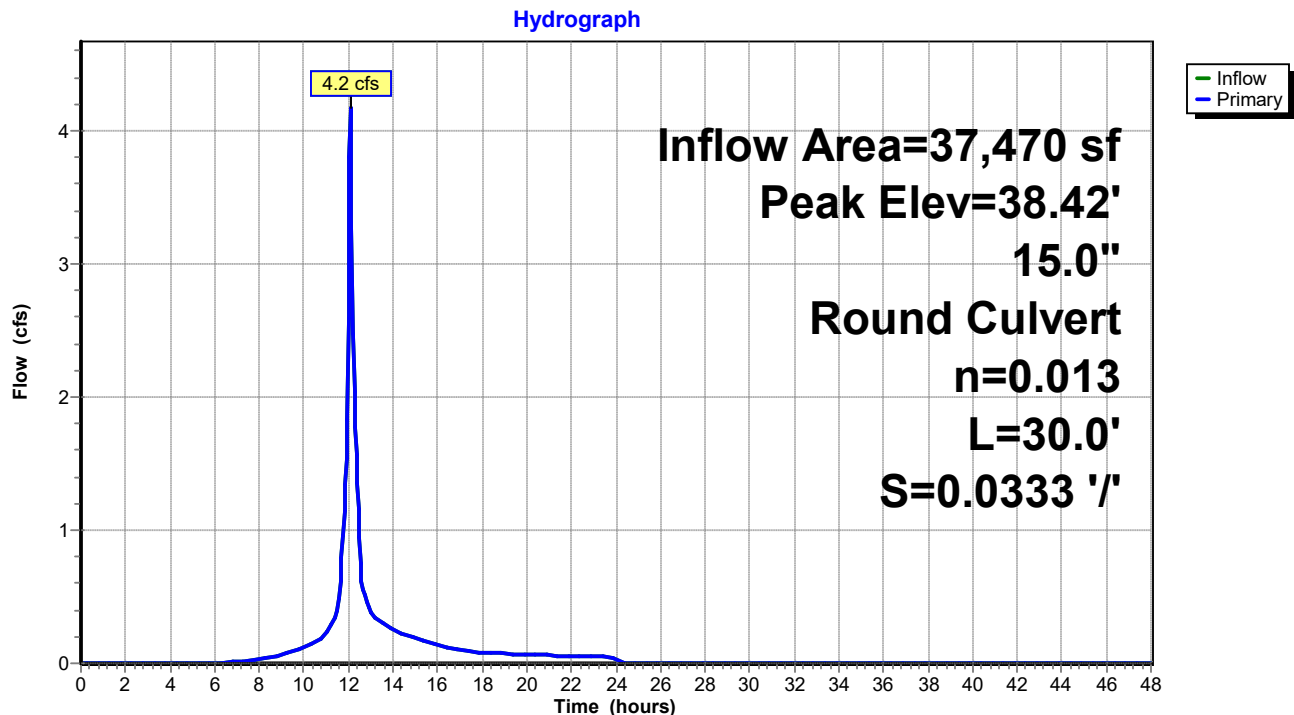
Summary for Pond C7:

Inflow Area = 37,470 sf, 20.42% Impervious, Inflow Depth = 4.29" for 25-Year event
 Inflow = 4.2 cfs @ 12.09 hrs, Volume= 13,411 cf
 Outflow = 4.2 cfs @ 12.09 hrs, Volume= 13,411 cf, Atten= 0%, Lag= 0.0 min
 Primary = 4.2 cfs @ 12.09 hrs, Volume= 13,411 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 38.42' @ 12.09 hrs
 Flood Elev= 38.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	37.00'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 37.00' / 36.00' S= 0.0333 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=4.1 cfs @ 12.09 hrs HW=38.39' (Free Discharge)
 ↑1=Culvert (Inlet Controls 4.1 cfs @ 3.33 fps)

Pond C7:

Post-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

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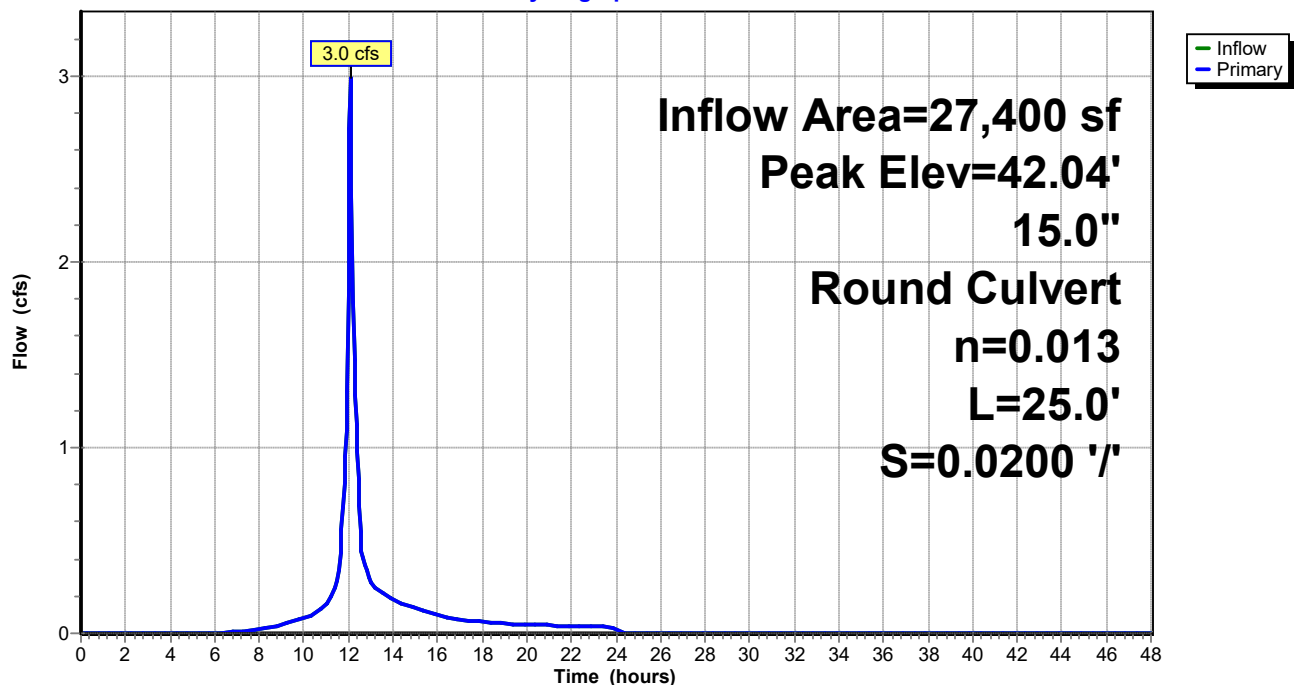
Summary for Pond C8:

Inflow Area = 27,400 sf, 15.60% Impervious, Inflow Depth = 4.18" for 25-Year event
 Inflow = 3.0 cfs @ 12.09 hrs, Volume= 9,551 cf
 Outflow = 3.0 cfs @ 12.09 hrs, Volume= 9,551 cf, Atten= 0%, Lag= 0.0 min
 Primary = 3.0 cfs @ 12.09 hrs, Volume= 9,551 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
 Peak Elev= 42.04' @ 12.09 hrs
 Flood Elev= 42.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	41.00'	15.0" Round Culvert L= 25.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 41.00' / 40.50' S= 0.0200 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.9 cfs @ 12.09 hrs HW=42.02' (Free Discharge)
 ↑1=Culvert (Inlet Controls 2.9 cfs @ 2.72 fps)

Pond C8:**Hydrograph**

Post-Dev - REV1

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C9:

Inflow Area = 8,210 sf, 9.38% Impervious, Inflow Depth = 3.96" for 25-Year event
 Inflow = 0.9 cfs @ 12.09 hrs, Volume= 2,711 cf
 Outflow = 0.9 cfs @ 12.09 hrs, Volume= 2,711 cf, Atten= 0%, Lag= 0.0 min
 Primary = 0.9 cfs @ 12.09 hrs, Volume= 2,711 cf

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Peak Elev= 46.99' @ 12.09 hrs

Flood Elev= 47.75'

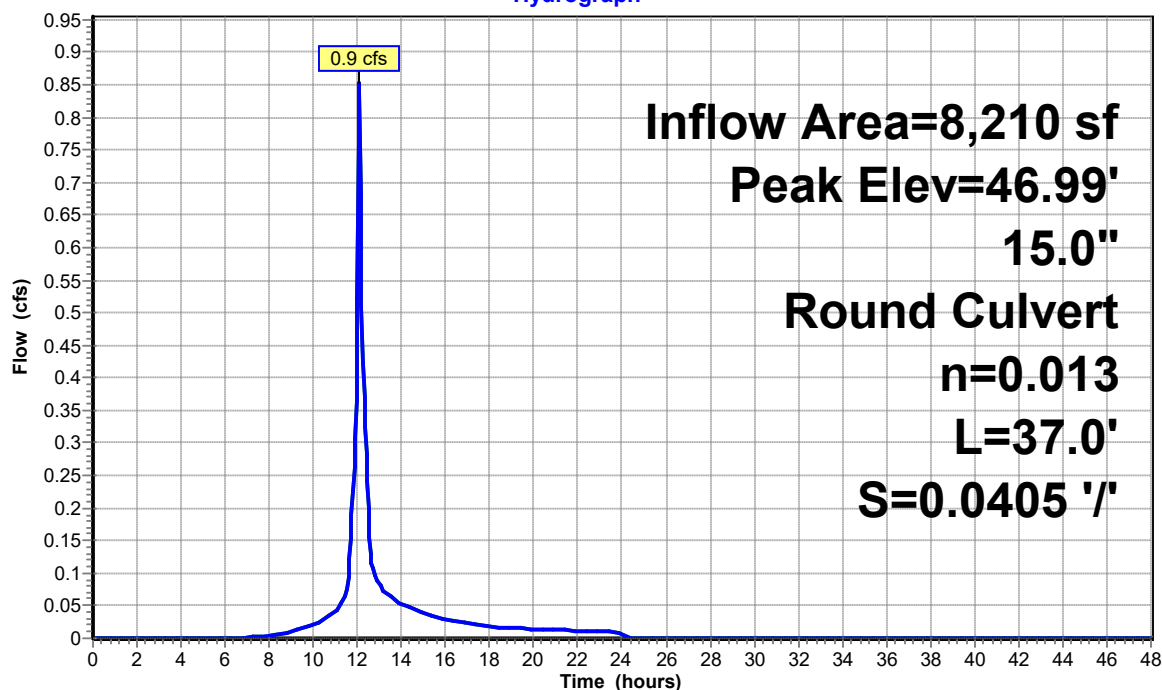
Device	Routing	Invert	Outlet Devices
#1	Primary	46.50'	15.0" Round Culvert L= 37.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 46.50' / 45.00' S= 0.0405 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.8 cfs @ 12.09 hrs HW=46.99' (Free Discharge)

↑1=Culvert (Inlet Controls 0.8 cfs @ 1.88 fps)

Pond C9:

Hydrograph

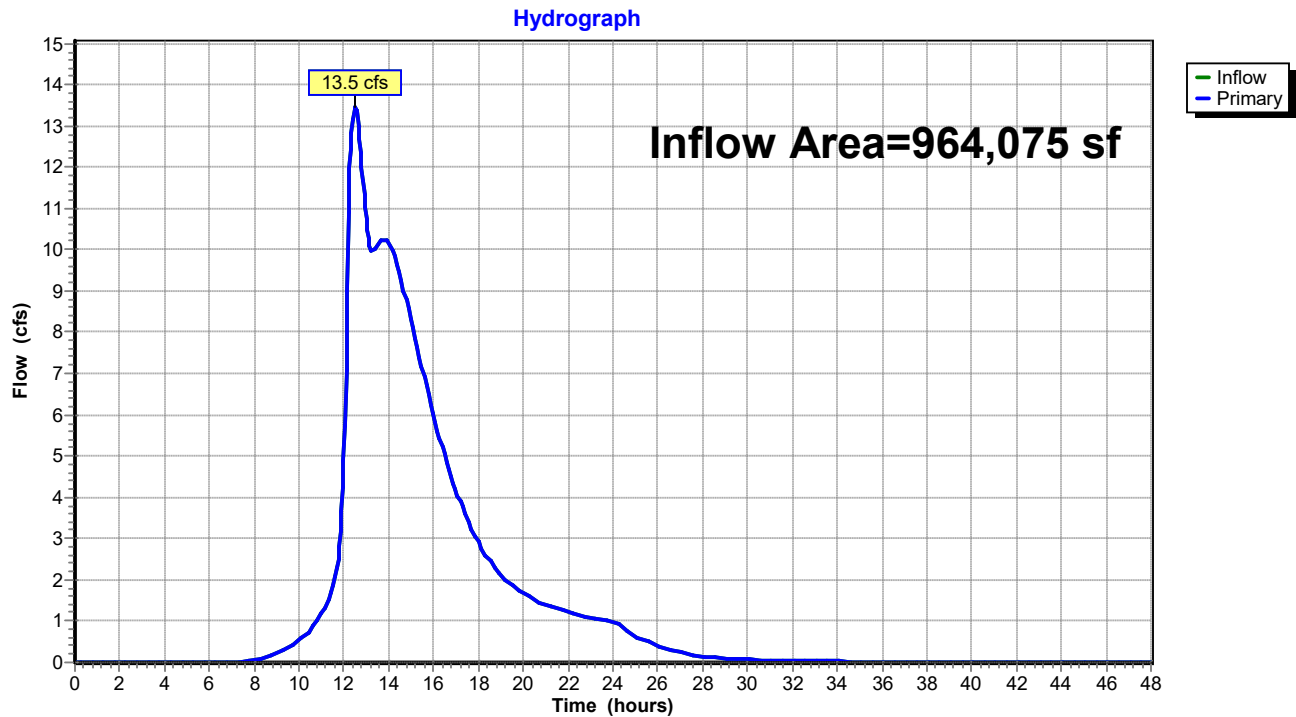


Summary for Link AP1:

Inflow Area = 964,075 sf, 9.01% Impervious, Inflow Depth > 2.76" for 25-Year event
 Inflow = 13.5 cfs @ 12.50 hrs, Volume= 222,115 cf
 Primary = 13.5 cfs @ 12.50 hrs, Volume= 222,115 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP1:

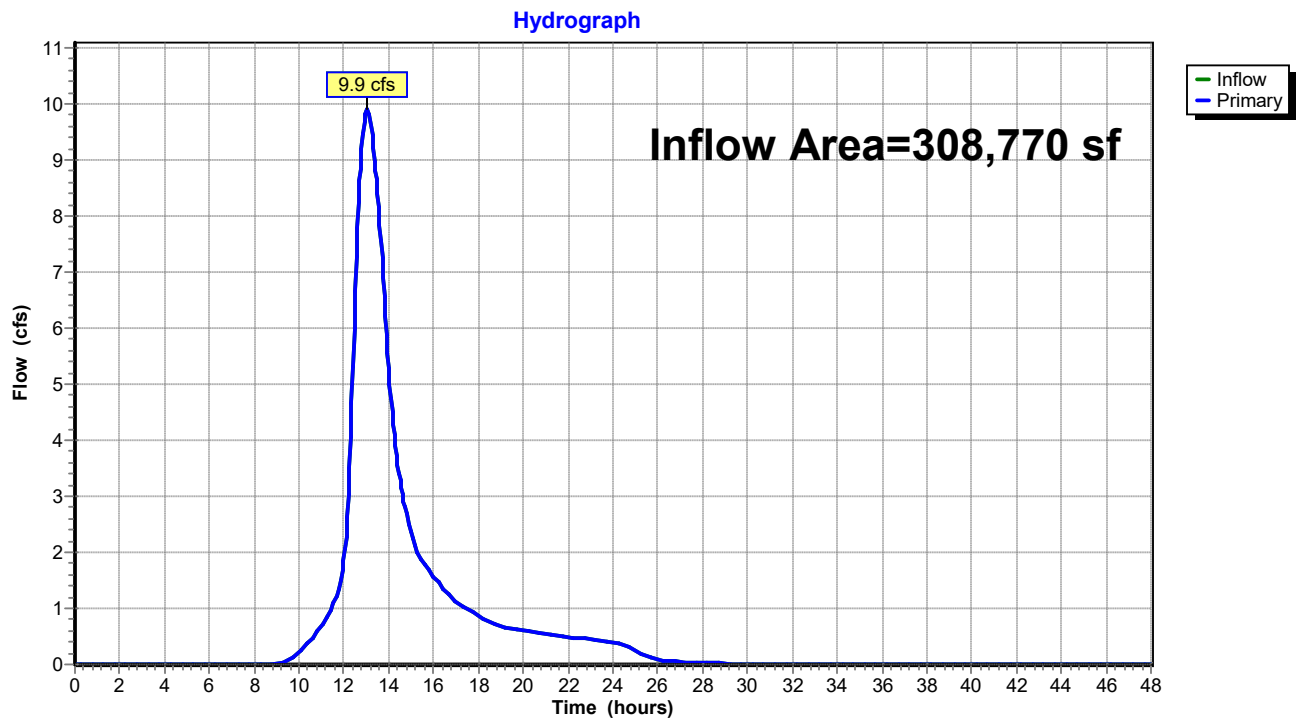


Summary for Link AP2:

Inflow Area = 308,770 sf, 9.37% Impervious, Inflow Depth = 3.87" for 25-Year event
 Inflow = 9.9 cfs @ 13.03 hrs, Volume= 99,511 cf
 Primary = 9.9 cfs @ 13.03 hrs, Volume= 99,511 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link AP2:



Appendix C

High Intensity Soil Survey
Web Soil Survey Map



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on May 5, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map – 2 foot contour intervals

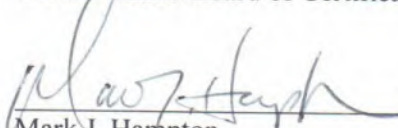
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

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The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263

July 17, 2017
Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

LYMAN-TUNBRIDGE COMPLEX

SETTING

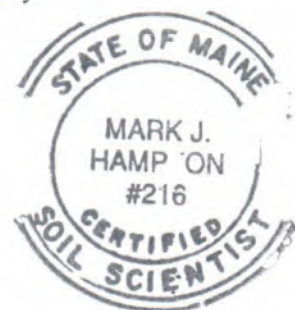
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING:	Buxton, Lamoine, Scantic
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USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.



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6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from dense, loamy glacial till
LANDFORM:	Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE:	Mid-positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dk gray brown, stony sandy loam 0-3"
	<u>Subsurface Layer:</u>	Dark Brown, stony sandy loam, 3-12"
	<u>Subsoil Layer:</u>	Olive Brown, stony sandy loam, 12-18"
	<u>Substratum:</u>	Olive, stony, sandy loam, 18-65"
HYDROLOGIC GROUP:	Group C	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Moderate and moderately slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

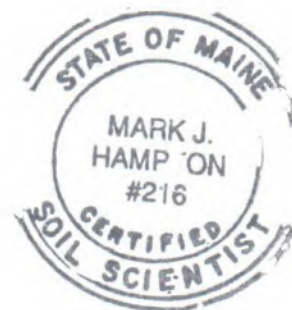
INCLUSIONS

(Within Mapping Unit)

CONTRASTING:	Scantic, Lyman-Tunbridge
--------------	--------------------------

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





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SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL:	Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM:	Coastal lowlands and river valleys
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
	<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
	<u>Substratum:</u>	Gray silty clay loam, 16"+
HYDROLOGIC GROUP:	Group D	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Slow to very slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-1 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. "

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
Sandy Loam	Firm	Olive	Common and Distinct

Soil Classification 3 D	Slope 2	Limiting Factor 14	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
Profile Condition	Percent	Depth	
Soil series/phase name: Colonel SPD		☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. "

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Fine Sandy Loam	Friable	Black	
Silty Clay Loam	Firm	Gray	Common and Distinct

Soil Classification 8 E	Slope 2	Limiting Factor 6	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
Profile Condition	Percent	Depth	
Soil series/phase name: Scantic PD		☒ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. "

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
Sandy Loam	Firm	Olive	

Soil Classification 3 D	Slope 2	Limiting Factor 12	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
Profile Condition	Percent	Depth	
Soil series/phase name: Colonel SPD		☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring

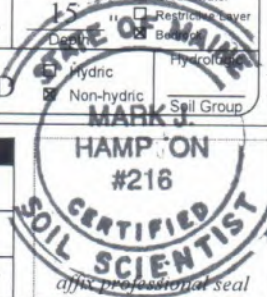
" Organic horizon thickness Ground surface elev. "

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Soil Classification 2 AIII	Slope 4	Limiting Factor 15	☐ Groundwater ☒ Restrictive Layer ☐ Bedrock
Profile Condition	Percent	Depth	
Soil series/phase name: Lyman-Tunbridge WD		☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature Mark Hampton
Name Printed/typed Mark HamptonDate 4/8/21
Cert/Lic/Reg. # 263/216Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-5 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Black
6	Loam		
12	Silty Clay	Firm	Gray
18	Loam		Common and
24			Distinct
30			
36			
42			
48			
54			
60			

Soil Classification	Slope	Limiting Factor	☒ Groundwater
8	2	6	☒ Restrictive Layer
Profile	Condition	Depth	☐ Bedrock
Soil series/phase name: Scantic PD			
		☒ Hydric	Hydrologic
		☐ Non-hydric	Soil Group

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Classification	Slope	Limiting Factor	☐ Groundwater
2	4	16	☐ Restrictive Layer
Profile	Condition	Depth	☒ Bedrock
Soil series/phase name: Lyman-Tunbridge WD			
		☒ Hydric	Hydrologic
		☐ Non-hydric	Soil Group

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Classification	Slope	Limiting Factor	☐ Groundwater
2	18	14	☐ Restrictive Layer
Profile	Condition	Depth	☒ Bedrock
Soil series/phase name: Lyman-Tunbridge WD			
		☐ Hydric	Hydrologic
		☒ Non-hydric	Soil Group

Exploration Symbol # SS-8 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Classification	Slope	Limiting Factor	☐ Groundwater
2	6	16	☐ Restrictive Layer
Profile	Condition	Depth	☒ Bedrock
Soil series/phase name: Lyman-Tunbridge WD			
		☐ Hydric	Hydrologic
		☒ Non-hydric	Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Location (municipality):
Biddeford

Exploration Symbol # SS-10 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Classification Slope Limiting Factor

2 AIII 8 15 " ☐ Groundwater

Profile Condition Percent Depth ☐ Restrictive Layer

☒ Bedrock

Soil series/phase name: ☒ Hydric Hydrologic

☐ Non-hydric Soil Group

Lyman-Tunbridge WD

Exploration Symbol # <u>SS-11</u>		☒ Test Pit ☐ Boring	
_____ " Organic horizon thickness		_____ Ground surface elev.	
_____ " Depth of exploration or to refusal			
Depth below mineral soil surface (inches)	Texture	Consistency	Color Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

S.E.	Soil Classification		Slope	Limiting Factor	☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
	2	AIII	4	16	
	Profile	Condition	Percent	Depth	
	Soil series/phase name:				
S.S.	Lyman-Tunbridge WD				Hydrologic Soil Group
	☐ Hydric ☒ Non-hydric				

Exploration Symbol # SS-12 ☒ Test Pit □ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Depth below mineral soil surface (inches)

S.E. S.S.

Soil Classification Slope Limiting Factor

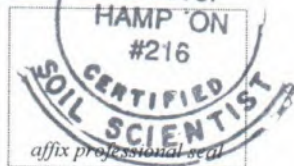
2 AIII 3 15 ☐ Groundwater

Profile Condition Percent Depth ☐ Restrictive Layer Below

Soil series/phase name: ☐ Hydric Hydrologic

Lyman-Tunbridge WD ☒ Non-hydric Soil Group

Signature		Date	4/8/21
Name Printed/typed Mark Hampton		Cert/Lic/Reg. #	263/216
Title	☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer		



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-13 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 15
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric
☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Hydrologic Soil Group

Exploration Symbol # SS-14 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 6 Limiting Factor: 16
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric
☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Hydrologic Soil Group

Exploration Symbol # SS-15 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AII Slope: 12 Limiting Factor: 12
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric
☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Hydrologic Soil Group

Exploration Symbol # SS-16 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 15
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric
☐ Groundwater ☐ Restrictive Layer ☒ Bedrock
 Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-17 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Fine Sandy Loam	Friable	Black	
6 Silty Clay Loam	Firm	Gray	Common and Distinct
12			
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. S.S.	Soil Classification Profile <u>8</u> Condition <u>E</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>6</u> "	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
	Soil series/phase name: <u>Scantic PD</u>			
			☒ Hydric ☐ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-18 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. S.S.	Soil Classification Profile <u>3</u> Condition <u>D</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>13</u> "	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
	Soil series/phase name: <u>Colonel SPD</u>			
			☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-19 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. S.S.	Soil Classification Profile <u>3</u> Condition <u>D</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>13</u> "	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
	Soil series/phase name: <u>Colonel SPD</u>			
			☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

Exploration Symbol # SS-20 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. S.S.	Soil Classification Profile <u>3</u> Condition <u>D</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>12</u> "	☒ Groundwater ☒ Restrictive Layer ☐ Bedrock
	Soil series/phase name: <u>Colonel SPD</u>			
			☐ Hydric ☒ Non-hydric	Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Name Printed/typed

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

Date

4/8/21

Cert/Lic/Reg. #

263/216



SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-21 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0	Fine Sandy		
6	Loam	Friable	Black
12	Silty Clay	Firm	Gray
18	Loam		Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. ☒ Groundwater
☒ Restrictive Layer
☐ Bedrock
 S.S. Soil series/phase name: Scantic PD
☒ Hydric ☐ Non-hydric
 Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. ☐ Groundwater
☐ Restrictive Layer
☐ Bedrock
 S.S. Soil series/phase name: _____
☐ Hydric ☐ Non-hydric
 Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. ☐ Groundwater
☐ Restrictive Layer
☐ Bedrock
 S.S. Soil series/phase name: _____
☐ Hydric ☐ Non-hydric
 Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by S.E. ☐ Groundwater
☐ Restrictive Layer
☐ Bedrock
 S.S. Soil series/phase name: _____
☐ Hydric ☐ Non-hydric
 Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

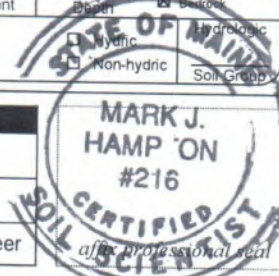
Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

SOIL SURVEY GENERAL NOTES

1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.

2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED MAY 5, 2021.

3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.

4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

SOIL LEGEND

DRAINAGE CLASS	
EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

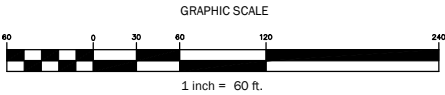
SLOPE DESIGNATION

0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



MARK HAMPTON ASSOCIATES, INC.
P.O. BOX 1931
PORTLAND, MAINE 04104



DATE: AUGUST 20, 2021

GINGER HILL, LLC
18 EARLY WAY, ARUNDEL, MAINE, 04046

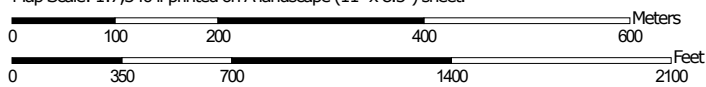
HIGH INTENSITY SOIL SURVEY
918 POOL ST, BIDDEFORD, MAINE, 04005, MAP 4, LOT 57

Hydrologic Soil Group—York County, Maine



Soil Map may not be valid at this scale.

Map Scale: 1:7,340 if printed on A landscape (11" x 8.5") sheet.



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



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

8/17/2021
Page 1 of 4

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: York County, Maine
 Survey Area Data: Version 19, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LnB	Lyman loam, 3 to 8 percent slopes, rocky	D	19.4	19.4%
LnC	Lyman loam, 8 to 15 percent slopes, rocky	D	3.1	3.1%
LnD	Lyman loam, 15 to 25 percent slopes, rocky	D	0.0	0.0%
LyB	Lyman-Rock outcrop complex, 3 to 8 percent slopes	D	24.5	24.5%
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	D	33.8	33.8%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	19.2	19.2%
Totals for Area of Interest			100.0	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

Appendix D

Inspection and Maintenance Plan

INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES PLAN

**WINDWARD RIDGE
Pool Street
Biddeford, Maine 04005**

Stormwater Management Facilities include swales, paved areas, gravel areas, culverts, riprapped aprons, and level spreaders. Periodic inspection and maintenance of these site features and devices is necessary to prevent erosion, protect roadways and other gravel areas, and remove pollutants from stormwater runoff. Ginger Hill Design + Build will be responsible for the inspection and maintenance of the stormwater facilities associated with this project until all units are sold. At that time, inspection and maintenance will be transferred to the Homeowners Association.

SIGNIFICANT RAINFALL:

For the purposes of this Inspection and Maintenance Plan, a significant rainfall event shall be defined as a storm of 0.5 inches or more in a 24-hour period, heavy, intense rainfall, such as thunder showers or during periods of significant snowmelt.

SWALES, DITCHES, PAVED AREAS, AND GRAVEL AREAS:

Swales, ditches, paved areas, and gravel areas are easily inspected during a site walk or even a ride-by. Since visual inspection is easy, their condition should be assessed during and/or after significant rainfall events. Any damage or unusual condition such as sedimentation of a ditch, erosion, damaged curb or dying vegetation should be recorded, dated and initialed by the inspector when observed. Even if there is no damage, the inspector should make record of these inspections at least twice annually.

Paved and gravel areas should be visually inspected monthly during the winter. The inspector should pay particular attention for evidence of erosion. The date and initials of the inspector should be recorded on the forms provided as well as a notation of any cleanup effort that was made and repairs to eroded areas.

Open swales and ditches shall be inspected twice per year (in spring and fall) to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris and sediments shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the ditches and slopes proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal of vegetation in the ditches and slopes as required in order to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.

Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.

CULVERT PIPES:

Inspect culvert pipes when inspecting other stormwater maintenance facilities. At least annually make a visual inspection of the pipe. During the daylight you should be able to see light through most pipes as they have been laid to a straight line and grade.

Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the stormwater filter or wetland areas.

Riprap aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

Record inspections on the forms provided noting condition of pipe and any maintenance procedures implemented.

LEVEL SPREADERS:

Level Spreaders are shallow basins or ditches constructed at the ends of ditches or pipe outlets to disperse or "spread" concentrated flow thinly over a receiving area. Level Spreaders are constructed along the natural contour of the land to create a level "lip" on the outlet side. The integrity of the level lip is critical to the proper performance of this device.

There is one (1) Level Spreader on the site. Detail for the level spreaders can be found on Sheet C3.2. The level spreader can be found east of Winward Ridge Sta 4+50.

Inspect the Level Spreader at least once each season and following significant rainfall events (1 inch or more of rain in 12 hours). Record inspections on the forms provided noting your observations and any corrective action taken. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation and stability of stone berms for the stability of the level spreader for proper function. Minor regrading, releveling of the stone "lip," and reseeding of the level lip on an annual basis should be anticipated. Mow level lips at least twice during the growing season. Maintenance may also include removal of sediment buildup especially on the inlet end.

SEDIMENT DISPOSAL:

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

[illegible]

WINDWARD RIDGE BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
CULVERT PIPES			
I: INSPECTED - C: CLEANED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
4/19/18	JKL	I, C	EXAMPLE: Called ACME to clean debris from culvert inlets along Main Road and Loop Road.

WINDWARD RIDGE BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
LEVEL SPREADERS			
I: INSPECTED - C: CLEANED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
4/19/18	JKL	I, C	EXAMPLE: Inspected level spreaders on site, found minimal sediment build up, stone lips appeared consistently level and functional. Mowed level lips.

**STORMWATER MANAGEMENT SYSTEM
MAINTENANCE PROGRAM
SUMMARY CHECKLIST**

Item	Commentary	Frequency			
		Month	Semi-Annual	Annual	Long-Term
Open Swale, Ditches & Inlet Structures	Inspect for debris accumulation, erosion, and excessive vegetation. Mow monthly, remove debris, repair, and revegetate any area of erosion	X Mow		X	
Pavement & Gravel Surfaces	Review for damage and buildup of debris and sand.	X	X Sweep		
Culverts	Inspect for sediment build-up in pipe. Flush and remove as required.			X	
Level Spreader	Review level lip for stability and grass growth, remove sediment and debris		X		
Riprap	Inspect for erosion, sediment, and vegetation. Clean and rebuild as required.			X	

Appendix E

Drainage Plans

D1.0 – Pre-Development Drainage Plan

D2.0 – Post Development Drainage Plan
(See Attachment 10 for Drainage Plans)

Preliminary Subdivision Application City of Biddeford, Maine

for

Windward Ridge Subdivision

**Located At:
918 Pool Street
Biddeford, Maine 04005**

September 15, 2021

Applicant
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Prepared By
Walsh Engineering Associates, Inc.
1 Karen Drive, Suite 2A
Westbrook, Maine 04092



September 15, 2021

Biddeford Planning Board
c/o Mr. Greg Tansley, City Planner
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, ME 04005

**RE: Preliminary Subdivision Application
Windward Ridge Subdivision
918 Pool Street, Biddeford, Maine
Tax Map 4, Lot 48**

Dear Mr. Tansley,

On behalf of Ginger Hill LLC, (applicant), Walsh Engineering Associates, Inc. (WEA) is pleased to submit this Preliminary Subdivision Application. The applicant is proposing to construct a six-lot residential subdivision with a public road and open space at 918 Pool Street in Biddeford.

Existing Conditions

The project is located on the 11.8± acre parcel identified by the City of Biddeford's Tax Assessors Tax Map 4, Lot 48 in the Coastal Residential (CR) and Rural Farm (RF) Districts. The majority of the site is currently undeveloped consisting of forested area with frontage on Pool Street and Oak Ridge Road. A gravel drive from Pool Street runs north across the property, connecting to another drive on the eastern abutting property. Wetlands and soils have been identified on site by Mark Hampton Associates, Inc. on March 5, 2021. Soils on the site have drainage conditions ranging from well drained to poorly drained. Stormwater drains across the site northwest towards the wetland on site and the abutting property. The project is not located within an Essential or Significant Habitat as evaluated by Jones Associates in May of 2021. There is not public sewer or water service available for the property.

Proposed Development

The applicant is proposing to subdivide the property into six residential lots, a large open space area, and a proposed public road for access. Each residential lot will include a single-family house and driveway as conceptually shown on the site plans. Access to the site will be provided off of Pool Street by a 750± foot long road with a turn around. The road has been designed to meet the City of Biddeford's roadway construction standards for a nonurban, minor residential street. A request to turn over the road to the City of Biddeford as a public street will be filed in the future. An MDOT Entrance permit has been granted for the road and is included in submission. A sidewalk is not proposed with the street due the absence of sidewalks within proximity of the project and to maintain the rural characteristics of the area. The development will be serviced by private water and private septic systems. Electric and telecommunication utilities will be run

underground from an existing utility pole to service the lots. The development of the project will not have adverse effects to stormwater runoff and all drainage systems have been adequately designed. Applicable permits with the Maine Department of Environmental Protection (DEP) and the Army Corps of Engineers (ACOE) will be obtained prior to any wetland impact. Review requests sent out to the required departments are included with this submission.

The subdivision will utilize cluster development standards in order to preserve open space and natural resources on the property. A conventional subdivision layout plan, cluster subdivision layout plan, and net residential area calculations for each layout are included per cluster development requirements. The size of residential lots has been minimized to the extent practical in order to maximize the open space area. The open space is intended to preserve natural resources on the property and will be managed by the homeowner's association for the development.

We trust that we have provided the appropriate information to be placed on the next available planning board meeting. We look forward to working with the city to make this project a success. Please let me know if you have any questions or require any additional information.

Respectfully,

A handwritten signature in cursive script, appearing to read "William R. Walsh, III".

William R. Walsh, III, P.E.
Walsh Engineering Associates, Inc.

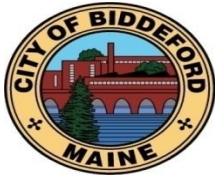
cc. Emily Ingwersen, Ginger Hill, LLC
Robert Ingwersen, Ginger Hill, LLC

Enc. Preliminary Subdivision Application Materials
Preliminary Subdivision Plan Set, dated 9/15/21
Preliminary Subdivision Application Fee: (\$700.00)

TABLE OF CONTENTS

Application, Agent Authorization, & Certificate of Good Standing

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City of Biddeford Planning Board Application

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☐ Shoreland Zoning Permit ☐ Site Plan Review ☐ Extraction
☐ Conditional Use Permit ☒ Subdivision ☐ Private Way
☐ Other: _____

Applicant Information:

Name: Ginger Hill, LLC
Mailing Address: 18 Early Way, Arundel, ME 04046
Telephone: (207) 710-0812
Email: emily@gingerhilldesignbuild.com

What is your legal interest in the property?

☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Information:

Name: Ginger Hill, LLC
Mailing Address: 18 Early Way, Arundel, ME 04046
Telephone: (207) 710-0812
Email: emily@gingerhilldesignbuild.com

Agent's Information:

Name: William R. Walsh III, PE, Walsh Engineering Associates, Inc.
Mailing Address: 1 Karen Drive, Suite 2A, Westbrook, Maine 04092
Telephone: (207) 553-9898
Email: bill@walsh-eng.com

Engineer/Surveyor's Information:

Name: William R. Walsh III, PE, Walsh Engineering Associates, Inc.
Mailing Address: 1 Karen Drive, Suite 2A, Westbrook, Maine 04092
Telephone: (207) 553-9898
Email: bill@walsh-eng.com

Project Location and Lot Information:

Street Address: 918 Pool Street
Tax Map: 4 Lot: 48
Current Zoning: Coastal Residential & Rural Farm Shoreland Zoning: N/A
Size of Lot: 11.8 (x) acres () s.f. Lot Frontage: 461 ft
Existing use of Property: The existing lot is currently undeveloped

Property currently serviced by:

☒ City Road ☐ Public Sewer ☐ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3% slope) ☒ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☒ (Yes) ☐ (No) if yes attach information

Do you plan to bring fill onto the lot? ☐ (Yes) ☒ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use:

The lot will be used for the construction of a 6-lot residential subdivision.

Property to be Serviced by:

☐ City Road ☐ Public Sewer ☐ Public Water ☒ Public Trash
☒ Private Road ☒ Septic System ☒ Private Well ☐ Private Hauler

Is this project part of a larger project? ☐ (Yes) ☒ (No)

If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): _____

Percent of structure expansion (Max 30%): _____

If Subdivision Review, number of lots proposed: 6

If a Private Way is proposed, number of lots served: 6

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

☒ Fire Department-Contact Chief or Deputy Chief – 282-9986

☒ Ability to Serve for Water Service – Maine Water – 282-1543

☒ Ability to Serve for Sewer Service – Engineering Dept – Tom Milligan 284-9118

☒ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

- B. Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, ect.
- C. Photographs of Site.
- D. Architectural renderings/drawings of proposed buildings, as required.
- E. Engineering Plans, as required.

Fees (Due at time of Submission):

- \$40 Nonrefundable Administration Fee is required for every application.
- Refer to “Attachment A Fees and Charges” of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it’s attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

X Project proposed to have 1 acre or more of Site disturbance:

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant:	<i>William J. Webb</i> (agent)	Date 9/15/21
Signature of Property Owner:	<i>William J. Webb</i> (agent)	Date 9/15/21

**IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE)
CHECKWITH PLANNING STAFF FOR CLARIFICATION.**

To Whom It May Concern,

By this letter, the undersigned authorizes Walsh Engineering Associates, Inc. to act as the agent for the undersigned in the preparation and submission of all Federal, State, and Local City permit applications and relevant documents and correspondence for all necessary permits for the construction on the property at 918 Pool Street, Biddeford, Maine 04005 (Tax Map 04, Lot 48) to attend meetings and site visits; to appear before all boards, commissions, and committees, and to provide such other services as are necessary and appropriate in furtherance of the aforementioned project.

Sincerely,

Ginger Hill, LLC

Company

Emily Ingwersen

Signature

Emily Ingwersen, Manager

Printed Name and Title

6/14/2021

Date



MAINE

Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Mon Aug 02 2021 10:54:51. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
GINGER HILL, LLC	20150386DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
07/30/2014	N/A	MAINE

Other Names (A=Assumed ; F=Former)

GINGER HILL DESIGN & BUILD	A
----------------------------	---

Clerk/Registered Agent

RALPH W. AUSTIN
P.O. BOX 468
BIDDEFORD, ME 04005

[Back to previous screen](#)

[New Search](#)

Click on a link to obtain additional information.

List of Filings

[View list of filings](#)

Obtain additional information:

Additional Addresses

[Plain Copy](#)

[Certified copy](#)

Certificate of Existence [\(more info\)](#)

[Short Form without
amendments
\(\\$30.00\)](#)

[Long Form with
amendments
\(\\$30.00\)](#)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the [troubleshooting page](#).



ATTACHMENT 1
APPLICATION REQUIREMENTS CHECKLIST

SUBDIVISIONS

66 Attachment 2

City of Biddeford

Appendix B Required Information Checklist [Ord. of 6-20-1995]

In order for any application to be considered complete the following information must be provided at least two weeks prior to the Planning Board meeting. All plans for subdivisions shall contain the following information:

	Yes	No	N/A	Remarks
(1) Name of subdivision, owner and engineer or surveyor	X			
(2) Graphic scale, date, drawn, North point and its date, and whether it is true or magnetic	X			
(3) Boundaries of the tract	X			
(4) Existing zoning	X			
(5) Ownership and location of abutting properties	X			
(6) Name, location, width, profile, cross-section, radius of curves, angles of change in direction and center line length of all angles of change in direction and center line length of all proposed streets; other public ways, building lines and easements in the subdivision; intersection of existing streets	X			
(7) Type, location, profile and cross-section of all existing and/or proposed surface water drainage	X			
(8) Location of all existing and/or proposed utilities	X			
(9) Location of all existing and/or proposed sanitary sewers showing size, profile, and cross-section, or description, plan, location of other means of sewage disposal with evidence of successful soil evaluation	X			
(10) Topography at two-foot contour intervals, unless otherwise prescribed by the Board. In addition the location of existing natural or man-made features influencing the layout of the proposed subdivision shall be shown.	X			

BIDDEFORD CODE

	Yes	No	N/A	Remarks
(11) Lot lines and approximate dimensions	X			
(12) Proposed uses of property	X			
(13) Proposed public areas, if any	X			
(14) Copy of deed, or option for purchase, for land being subdivided	X			
(15) Reserved fire lane areas	X			
(16) Location of soil evaluation test pits for each lot on plan	X			
(17) Location of well or water supply for each lot	X			
(18) Aesthetics; trees, berms, shrubs, green strips, parks, etc.	X			
(19) Location and details for sedimentation and erosion control measures	X			
The preliminary of a subdivision shall be drawn at a scale no smaller than 100 feet (1 cm = 12 m) to the inch	X			
A preliminary plan shall include a location map insert, showing the relationship of the proposed subdivision to adjacent properties and public access, and drawn at no smaller scale than 2,000 feet (1 cm = 240 m) to the inch. It is suggested that reduced sections of City maps be used for this purpose.	X			

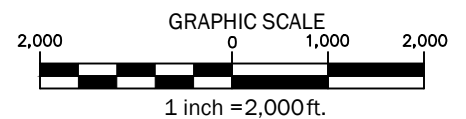
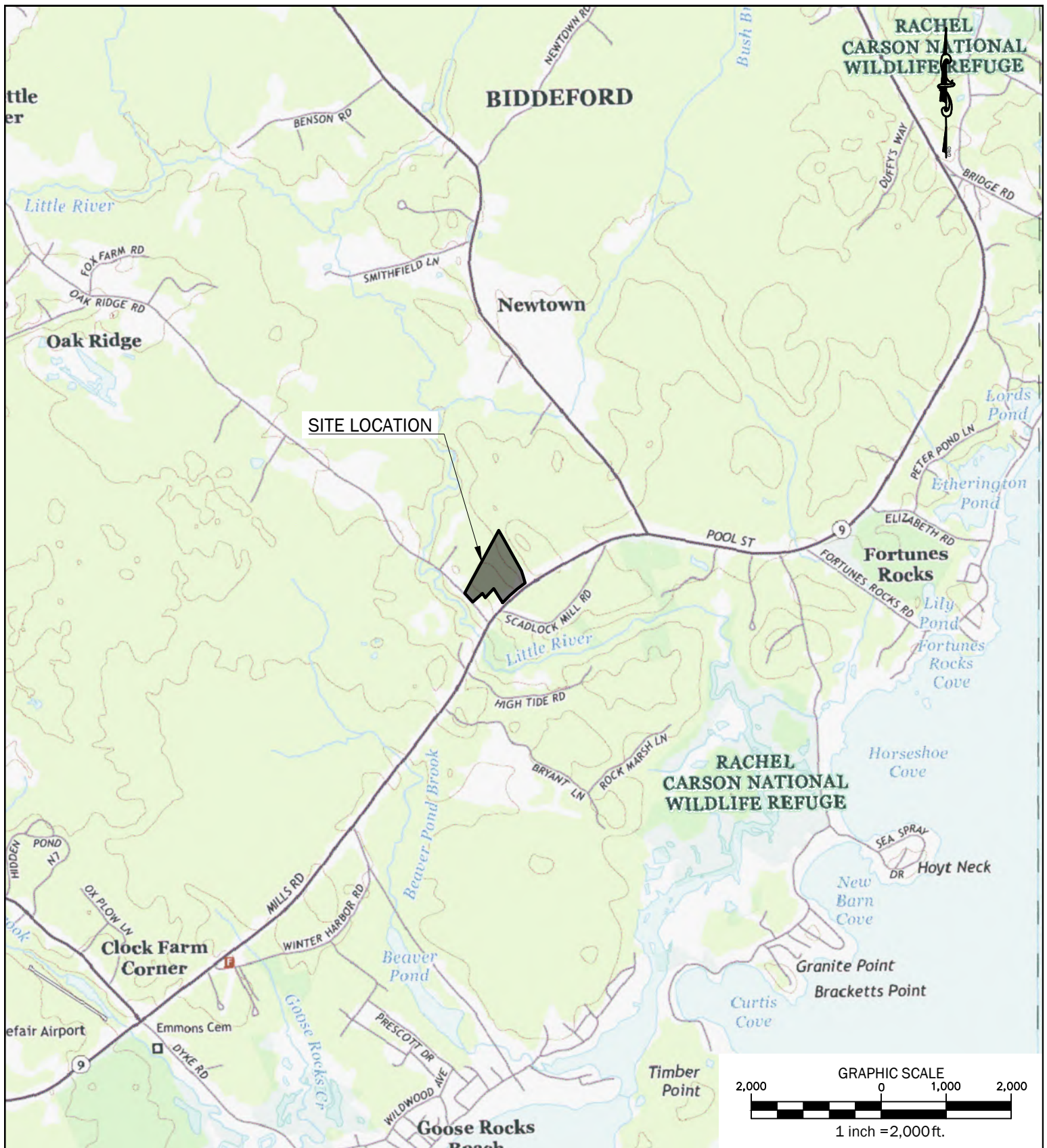
In addition to the above plat information, the Subdivider shall provide the following documents:

	Yes	No	N/A	Remarks
Valid deed or option indicating an interest held by the subdivider in the parcel of land	X			
Completed application form	X			
Narrative of the proposed project briefly describing the general nature of the project i.e., type of project; residential or commercial; number of lots intended to create	X			
Draft covenants and deeds for each lot proposed	X			
Easement documents for proposed rights-of-way for utilities, drainage ways, roadways and other	X			

SUBDIVISIONS

	Yes	No	N/A	Remarks
travelways or public amenities	X			
Statement of financial capability of subdivider to undertake the proposed project	X			
Statement identifying principals involved in the project	X			
Statement demonstrating that the subdividers have the technical capability to complete the proposed project as presented	X			
Copies of such covenants or deed restrictions as are intended to all or part of the tracts	X			
Review by water company, power company and City Engineering, Police and Fire Departments	X			

**ATTACHMENT 2
LOCATION MAP**



WALSH
ENGINEERING ASSOCIATES, INC.

One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

Copyright © 2021

Residential Subdivision

Ginger Hill Design + Build
918 Pool Street
Biddeford, Maine 04005

Sheet Title:

Site Location

Job No.: 737

Date: June 15, 2021

Scale: 1" = 2,000'

Drawn: CAR

Checked: WRW

ATTACHMENT 3
TITLE, RIGHT OR INTEREST

- Warranty Deed Bk 18664, Pg 128

DLN: 1002140143806

Space above for recording information

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS that **HENRY GEORGE LABRIE, III** of Kennebunkport, County of York, and State of Maine, in consideration of One Dollar and other valuable consideration, grants to **GINGER HILL, LLC d/b/a GINGER HILL DESIGN & BUILD** of Arundel, County of York and State of Maine, with a mailing address of 18 Early Way, Arundel, Maine 04046, **with warranty covenants**, the following described property:

A certain lot or parcel of land situated in the City of Biddeford, County of York and State of Maine, more particularly bounded and described as follows:

BEGINNING on the northerly side of Route 9 at the easterly sideline of the Old Newtown Road or land now or formerly of Vicki G. LaBrie, et al. (which point of beginning is further identified as being North 16° 10' 57" East a distance of 124.57 feet from an iron pipe in the ground on the southerly side of said Route 9 at the northwesterly corner of other land now or formerly of Van Veen situated on said southerly side of said Route 9); thence by said Old Road or land the following three courses: North 0° 06' 57" East, 193.26 feet; thence North 18° 20' West, 100 feet; thence North 0° 00' 25" East, 115 feet to land now or formerly of Robinson; thence South 47° 25' 42" East by said Robinson land, 464.37 feet to said Route 9; thence South 75° 48' West by said Route 9, 106.67 feet to a granite right-of-way marker; thence southwesterly by said Route 9 and by a very slight curve, an arc distance of 216.90 feet to the point of beginning. Reference is made to deed from Jane A. Robinson to Julia F. Van Veen dated July 12, 1982 and recorded in the York County Registry of Deeds in Book 2958, Page 87, establishing the location of the northeasterly boundary of said property.

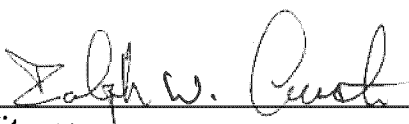
Maine R.E. Transfer Tax Paid

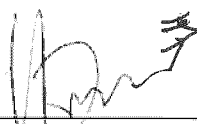
ALSO another certain lot or parcel of land situated on the northeasterly side of the Oak Ridge Road, so-called, in Biddeford, County of York and State of Maine, and being more particularly bounded and described as follows:

BEGINNING at a point located on the northwesterly sideline of said Oak Ridge Road, said point also marking the southerly corner of land now or formerly of Spang; thence running South 21° 22' 14" East by and along the sideline of said Oak Ridge Road, a distance of 546.06 feet to a point, said point marking the intersection of said Oak Ridge Road and Route #9; thence running in a generally northeasterly direction along said Route #9, by a curve to the right with a radius of 2341.83 feet and an arc length of 801.30 feet, more or less, to a point; thence running North 4° 05' 21" East, a distance of 119.20 feet to a point; thence running North 1° 33' 01" East, a distance of 77.63 feet to a point; thence running North 8° 50' 13" West, a distance of 558.56 feet to a point; thence North 8° 50' 13" West, a distance of 152.70 feet to a point and land of said Spang; thence running South 48° 50' 39" West by land of said Spang, a distance of 1097.23 feet to the point of beginning.

Being the same premises conveyed to the within Grantor by deed from Vicki G. LaBrie dated October 5, 2001 and recorded in the York County Registry of Deeds in Book 11022, Page 62.

IN WITNESS WHEREOF the said HENRY GEORGE LABRIE, III has set his hand and seal this 13th day of May, 2021.

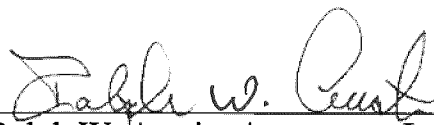

Witness


HENRY GEORGE LABRIE, III

STATE OF MAINE
YORK, ss.

May 13, 2021

Then personally appeared the above named Henry George LaBrie, III, and acknowledged the foregoing instrument to be his free act and deed, before me.


Ralph W. Austin, Attorney at Law
Bar No. 1146

**ATTACHMENT 4
ABUTTER'S LIST**

P

Abutters Report

PID 616 MBLU 4-45	CARPENTER, MARCELLE M T &	885 POOL ST	BIDDEFORD, ME 04005	
PID 110565 MBLU 4-50-4	US FISH AND WILDLIFE DEPARTMENT SERVICES	300 WESTGATE CENTER DR	HADLEY, MA 01035-9589	
PID 636 MBLU 4-56-1	CLOVER, LEAF INVESTMENT	930 POOL ST	BIDDEFORD, ME 04005-9731	
PID 100883 MBLU 4-46-4	DAME, NORMAN & SUSAN	12 SCADLOCK MILL RD	BIDDEFORD, ME 04005	
PID 611 MBLU 4-40	SACO LAND TRUST INC	PO BOX 778	SCARBOROUGH, ME 04074-0778	
PID 631 MBLU 4-53	MCCARTHY, MARY BETH	908 SUMTER LANDING CT	EVANS , GA 30809	
PID 605 MBLU 4-38	RADFORD, JASON L & DANIELLE M	498 WEST ST	BIDDEFORD, ME 04005	
PID 622 MBLU 4-48	LABRIE, HENRY GEORGE III	930 POOL ST	BIDDEFORD, ME 04005-9731	
PID 632 MBLU 4-53-1	WEISSER, URSULA G & BURKE, PHILIP S	168 OAK RIDGE RD	BIDDEFORD, ME 04005	
PID 626 MBLU 4-49	POIRIER, JAMES C	38 SCADLOCK MILL RD	BIDDEFORD, ME 04005	
PID 629 MBLU 4-50-2	CONSALVO, DAVID R & FRANCES V	39 SCADLOCK MILL RD	BIDDEFORD, ME 04005-9246	
PID 604 MBLU 4-37	SPANG, DANIEL L	8 CRANBERRY LN	KENNEBUNKPORT, ME 04046	
PID 630 MBLU 4-52	DELAGE, RICHARD A & NANCY R	180 OAK RIDGE RD	BIDDEFORD, ME 04005-9104	
PID 615 MBLU 4-44	ROBINSON, BRIGITTE	900 POOL ST	BIDDEFORD, ME 04005-9215	
PID 624 MBLU 4-48-2	ROSE, AGNES G	55 CAMERON ST	NORWOOD, MA 02062-3904	

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September 1, 2021

To Whom it May Concern:

Re: Ginger Hill Design & Build/Rob & Emily Ingwersen

Biddeford Savings (the "Bank") has completed a preliminary review of Ginger Hill's proposed subdivision called Windward Ridge on Pool Street, Biddeford. Based on the Bank's analysis and past experience with Ginger Hill, we believe that the business and its principals possess the financial capacity to successfully complete the proposed project.

This letter is not an approval for financing.

Please feel free to give me a call if you have any questions.

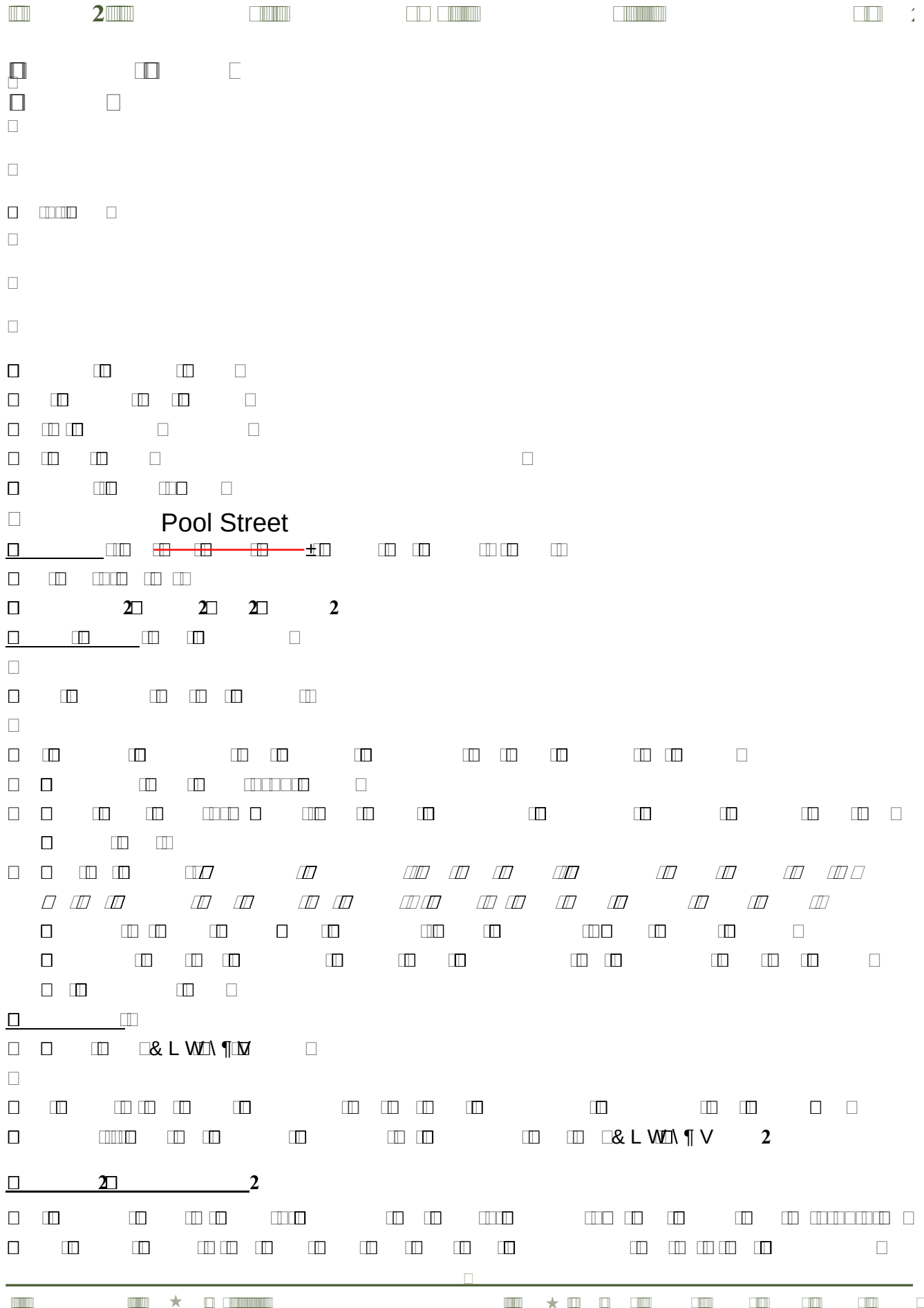
Sincerely,

Cynthia E. Convery
Vice President
Biddeford Savings
(207) 571-5675
cconvery@biddefordsavings.com



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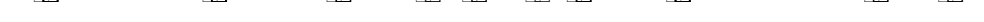


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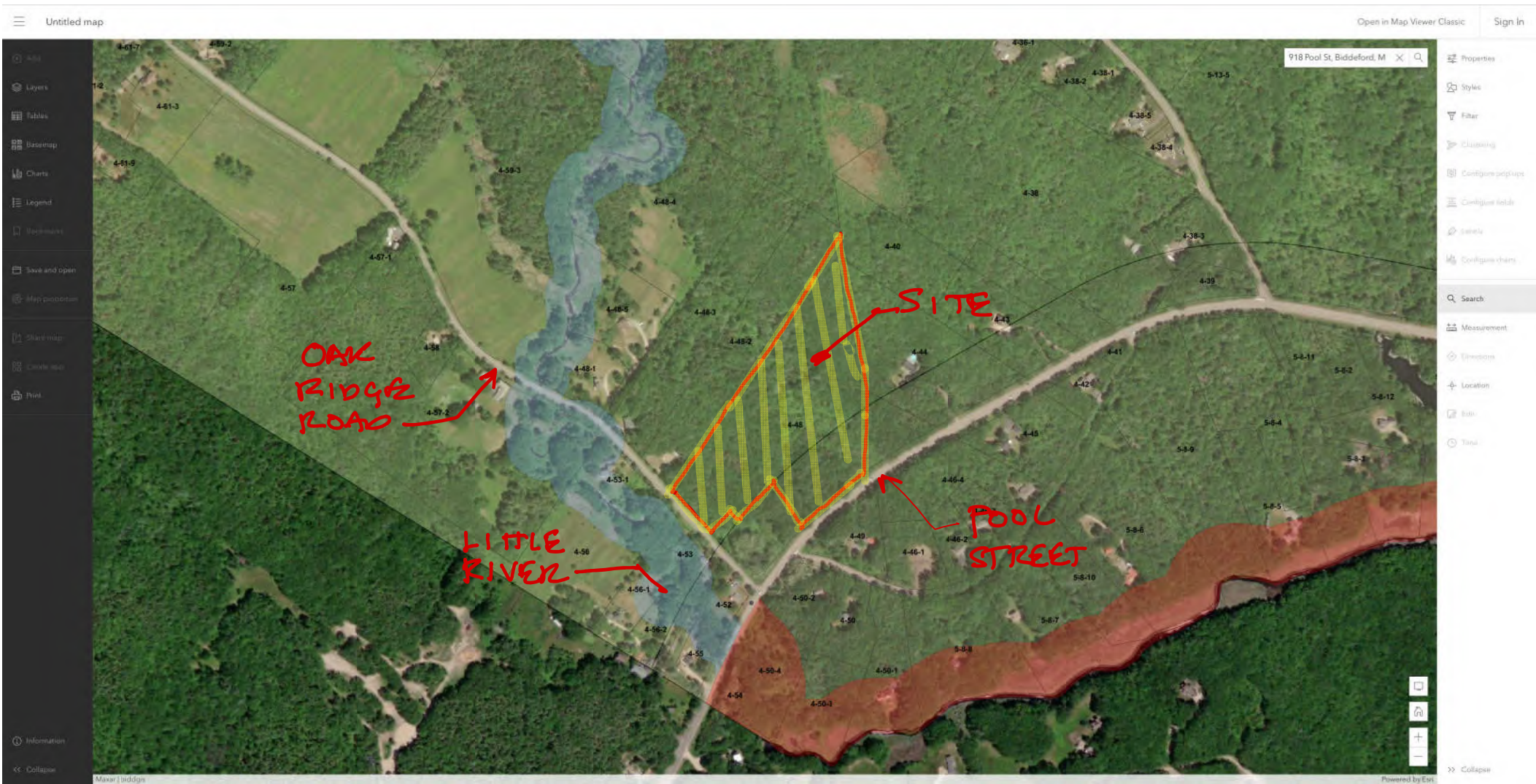
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JOANNE W. FISK
Deputy Chief

Communications and Records
joanne.fisk@biddefordmaine.org



Nationally Accredited

39 Alfred Street
Biddeford, Maine 04005



(207) 282-5127
biddefordmaine.org/police

!



August 11, 2021

City of Biddeford Fire Department
c/o Kevin Duross, Deputy Fire Chief
152 Alfred Street
Biddeford, Maine 04005

**RE: Preliminary Subdivision Review Request
Windward Ridge Subdivision
918 Pool Street**

Dear Kevin,

In accordance with the City of Biddeford's Preliminary Subdivision Application requirements, Walsh Engineering Associates, Inc. (WEA) is required to obtain approval from various departments (Fire Department included) regarding the proposed development and include those approvals with our preliminary submission. This letter seeks to respectfully request that the Fire Department reviews the attached site plans in regards to the planned "Windward Ridge" subdivision and either presents any questions or concerns with the development or extends its approval.

Should you have any questions or request further information, please don't hesitate to contact me at Isaiah@Walsh-eng.com or (207) 553-9898.

Respectfully,

Isaiah Bates

Isaiah Bates
Walsh Engineering Associates, Inc.

Enc: Site Location Plan
C1.0 Existing Conditions Plan
C2.1 Cluster Subdivision Plan
C2.2 Site Layout & Utilities Plan



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JANET T. MILLS
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

KIRK F. MOHNEY
DIRECTOR

August 30, 2021

Mr. Isaiah Bates
Walsh Engineering
One Karen Drive
Suite 2A
Westbrook, ME 04092

Project: MHPC# 1436-21 Windward Ridge Subdivision; 918 Pool Street
Proposed Subdivision
Town: Biddeford, ME

Dear Mr. Bates:

In response to your recent request, I have reviewed the information received August 20, 2021 to initiate consultation on the above referenced project.

Based on the information provided, I have concluded that there are no National Register eligible properties on or adjacent to the parcels. In addition, the project area is not considered sensitive for archaeological resources.

Please contact Megan M. Rideout of our staff, at megan.m.rideout@maine.gov or 207-287-2992, if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer



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Janet T. Mills
Governor

Maine Department of Transportation

Driveway/Entrance Permit

Bruce A. Van Note
Commissioner

Permit Number: 30124 - Entrance ID: 1

OWNER
Name: **Ginger Hill, LLC. dba Ginger Hill Design + Build**
Address: **18 Early Way**
Arundel, ME 04046
Telephone: **(207)710-0812**

Date Printed: **September 07, 2021**

LOCATION

Route: **0009X, Pool Street**
Municipality: **Biddeford**
County: **York**
Tax Map: **4 Lot Number: 48**
Culvert Size: **15 inches**
Culvert Type: **plastic**
Culvert Length: **30 feet**
Date of Permit: **September 07, 2021**
Approved Entrance Width: **20 feet**

In accordance with rules promulgated under 23 M.R.S.A., Chapter 13, Subchapter I, Section 704, the Maine Department of Transportation (MaineDOT) approves a permit and grants permission to perform the necessary grading to construct, in accordance with sketch or attached plan, **an Entrance to Subdivision/Development** at a point **459 feet North** from **Oak Ridge Road**, subject to the Chapter 299 Highway Driveway and Entrance Rules, standard conditions and special conditions (if any) listed below.

Conditions of Approval:

This Permittee acknowledges and agrees to comply with the Standard Conditions and Approval attached hereto and to any Specific Conditions of Approval shown here.

(G = GPS Location; W = Waiver; S = Special Condition)

G - THE ENTRANCE SHALL BE LOCATED AT GPS COORDINATES: 43.422746N, -70.405884W.

S - In the town of Biddeford on the northerly side of Route 9, the centerline being approximately 459 feet northeasterly of the centerline of Oak Ridge Road and approximately 64 feet southerly of utility pole 217 1/2.

S - The culvert shall be HDPE smoothbore plastic pipe. The property owner must contact MaineDOT at (207) 883-5180 prior to culvert and entrance installation to review procedures and arrange an inspection.

Approved by: _____

Date: _____

9-7-2021

STANDARD CONDITIONS AND APPROVAL

1. Provide, erect and maintain all necessary barricades, lights, warning signs and other devices as directed by MaineDOT to properly safeguard traffic while the construction is in progress.
2. At no time cause the highway to be closed to traffic
3. Where the driveway is located within a curb, curb and gutter, and/or sidewalk section, completely remove the existing curb, curb and gutter, and/or sidewalk as may be required to create the driveway and restore drainage. All driveways abutting sidewalk sections shall meet the requirements set forth in the Americans with Disabilities Act of 1990, 42 U.S.C. Sec. 12131 et seq.
4. Obtain, have delivered to the site, and install any culverts and/or drainage structures which may be necessary for drainage, the size, type and length as called for in the permit pursuant to 23 M.R.S.A. Sec. 705. All culverts and/or drainage structures shall be new.
5. Start construction of the proposed driveway within twenty-four (24) months of the date of permit issuance and substantially complete construction of the proposed driveway within twelve months of commencement of construction.
6. Comply with all applicable federal, state and municipal regulations and ordinances.
7. Do not alter, without the express written consent of the MaineDOT, any culverts or drainage swales within the MaineDOT right of way.
8. File a copy of the approved driveway permit with the affected municipality or LURC, as appropriate within 5 business days of receiving the MaineDOT approval.
9. Construct and maintain the driveway side slopes to be no steeper than the adjacent roadway side slopes, but in no case to be steeper than 3 horizontal to 1 vertical, unless the side slope is behind existing roadway guardrail, in which case it shall be no steeper than 2 horizontal to 1 vertical.
10. Notify the MaineDOT of a proposed change of use served by the driveway when increase in traffic flow is expected to occur. This does not exempt the need for obtaining a Traffic Movement Permit (TMP) if trip generation meets or exceeds 100 passenger car equivalents (PCE) during the peak hour of the day.
11. Construct or implement and maintain erosion and sedimentation measures sufficient to protect MaineDOT facilities.
12. Driveways shall be designed such that all maneuvering and parking of any vehicles will take place outside the highway right-of-way and where vehicles will exit the premises without backing onto the highway traveled way or shoulders. All driveways will have a turnaround area to accommodate vehicles using the premises.
13. Closing any portion of a highway or roadway including lanes, shoulders, sidewalks, bike lanes, or ATV access routes is not permitted without MaineDOT approval.

FURTHER CONDITION OF THE PERMIT

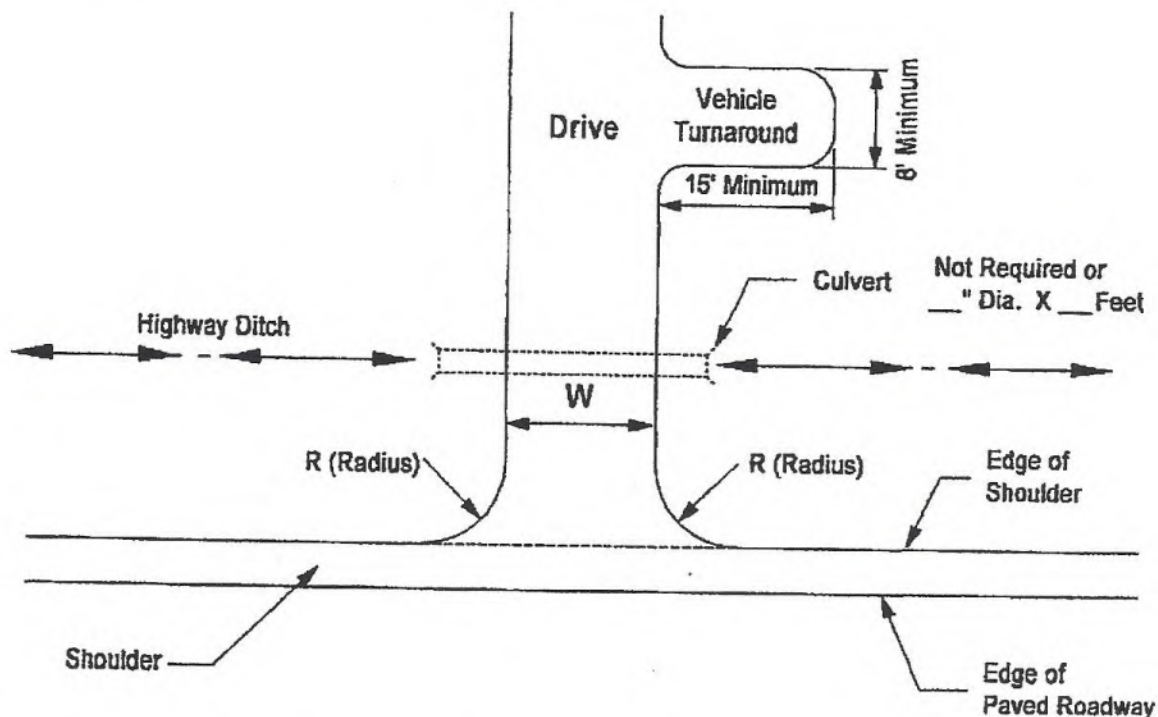
The owner shall assume, the defense of, and pay all damages, fines, and penalties for which he/she shall become liable, and shall indemnify and safe harmless said Department, its representatives, agents and employees from liability, actions against all suits, claims, damages for wrongful death, personal injuries or property damage suffered by any person or association which results from the willful or negligent action or inaction of the owner/applicant (agent) and in proceedings of every kind arising out of the construction and maintenance of said entrance(s), including snow removal.

Nothing herein shall, nor is intended to, waive any defense, immunity or limitation of liability which may be available to the MaineDOT, their officers, agents or employees under the Maine Tort Claims Act or any other privileges and/or immunities provided by law. It is a further condition that the owner will agree to keep the right of way inviolate for public highway purposes and no signs (other than traffic signs and signals), posters, billboards, roadside stands, culvert end walls or private installations shall be permitted within Right of Way limits.



State of Maine
Department of Transportation
Entrance / Driveway Details

PLAN



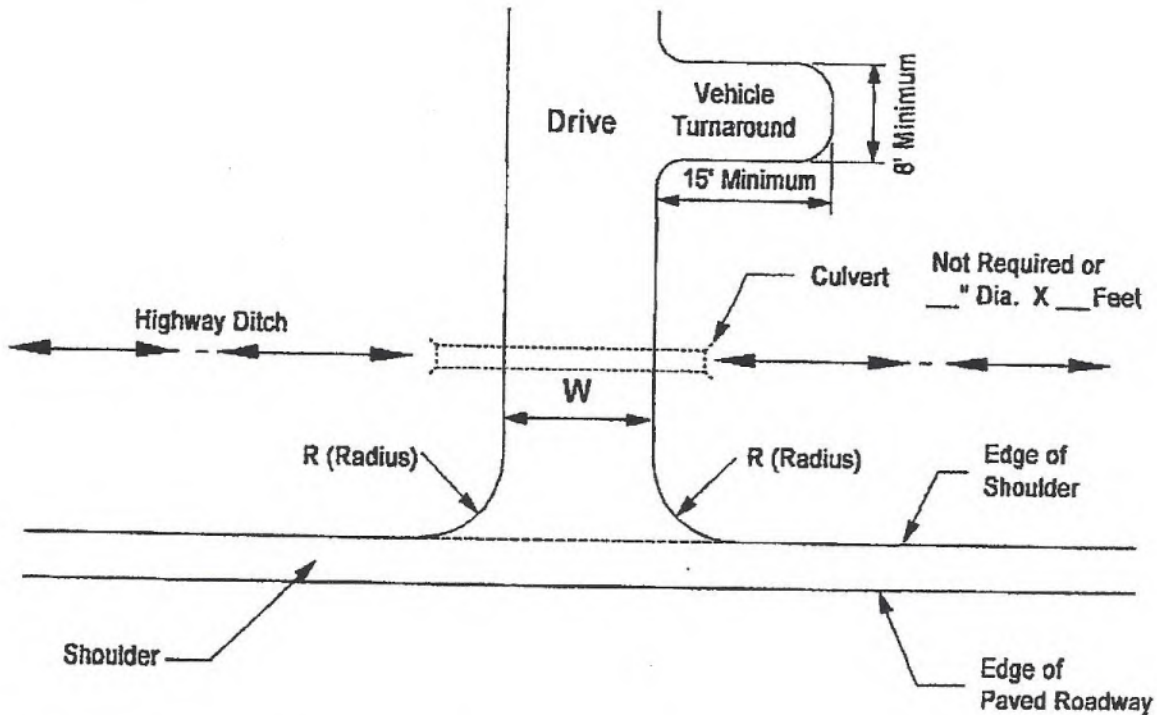
GENERAL NOTES -

1. ALL RESIDENTAL OR COMMERCIAL DRIVES WITH 10% GRADE OR MORE SLOPING DOWN TOWARDS THE HIGHWAY SHALL BE PAVED TO THE RIGHT OF WAY LINE, AS A MINIMUM, INCLUDING SHOULDER, IF GRAVEL AND HAVE DITCHES TO CONTROL RUNOFF.
2. DRIVES SLOPING TO THE HIGHWAY SHALL BE CROWNED (1/2" PER FT. MINIMUM).
3. TO THE MAXIMUM EXTENT PRACTICAL, THE ENTRANCE MUST BE CONSTRUCTED PERPENDICULAR TO THE HIGHWAY AT THE POINT OF ACCESS. EXCEPT WHERE CURBING EXISTS OR IS PROPOSED, THE MINIMUM RADIUS ON THE EDGES OF THE ENTRANCE MUST BE 10 FEET OR AS OTHERWISE REQUIRED AS SHOWN.
4. ENTRANCES/DRIVEWAYS WILL BE BUILT WITH AN ADEQUATE TURN-AROUND AREA ON SITE TO ALLOW ALL VEHICLES TO MANUEVER AND PARK WITHOUT BACKING ONTO THE HIGHWAY. THIS TURN-AROUND SHALL BE AT LEAST 8 FEET WIDE BY 15 FEET LONG.
5. ENTRANCES/DRIVEWAYS AND OTHER ASSOCIATED SITE WORK WHICH DIRECTS WATER (RUNOFF) TOWARD THE HIGHWAY MUST BE CONSTRUCTED, CROWNED STABILIZED AND MAINTAINED WITH MATERIALS AND APPROPRIATE TEMPORARY/PERMANENT EROSION CONTROL MATERIALS IN ACCORDANCE WITH MDOT BEST MANAGEMENT PRACTICES.
6. THE PROFILE OF THE ENTRANCES MUST COMPLY WITH THE DETAILS SHOWN ON PAGE 2.



State of Maine
Department of Transportation
Entrance / Driveway Details

PLAN



GENERAL NOTES -

1. ALL RESIDENTIAL OR COMMERCIAL DRIVES WITH 10% GRADE OR MORE SLOPING DOWN TOWARDS THE HIGHWAY SHALL BE PAVED TO THE RIGHT OF WAY LINE, AS A MINIMUM, INCLUDING SHOULDER, IF GRAVEL AND HAVE DITCHES TO CONTROL RUNOFF.
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6. THE PROFILE OF THE ENTRANCES MUST COMPLY WITH THE DETAILS SHOWN ON PAGE 2.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on May 5, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map – 2 foot contour intervals

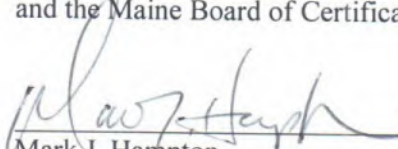
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

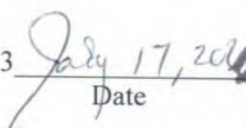
P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263


Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

LYMAN-TUNBRIDGE COMPLEX

SETTING

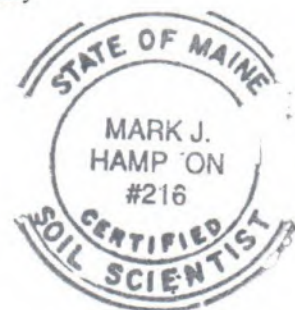
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING:	Buxton, Lamoine, Scantic
--------------	--------------------------



USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.



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SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL: Derived from dense, loamy glacial till
LANDFORM: Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE: Mid-positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dk gray brown, stony sandy loam 0-3"
<u>Subsurface Layer:</u>	Dark Brown, stony sandy loam, 3-12"
<u>Subsoil Layer:</u>	Olive Brown, stony sandy loam, 12-18"
<u>Substratum:</u>	Olive, stony, sandy loam, 18-65"

HYDROLOGIC GROUP: Group C
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Moderate and moderately slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS

(Within Mapping Unit)

CONTRASTING: Scantic, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



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6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL:	Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM:	Coastal lowlands and river valleys
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
	<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
	<u>Substratum:</u>	Gray silty clay loam, 16"+
HYDROLOGIC GROUP:	Group D	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Slow to very slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-1 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24	Sandy Loam	Firm	Olive	Common and Distinct
30				
36				
42				
48				
54				
60				

Soil Details by S.E. 3 D 2 14 " ☒ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Colonel SPD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy Loam	Friable	Black	
6				
12	Silty Clay Loam	Firm	Gray	Common and Distinct
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. 8 E 2 6 " ☒ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Scantic PD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24	Sandy Loam	Firm	Olive	
30				
36				
42				
48				
54				
60				

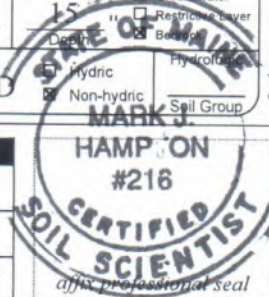
Soil Details by S.E. 3 D 2 12 " ☒ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Colonel SPD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. 2 AIII 4 15 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature Mark Hampton
Name Printed/typed Mark HamptonDate 4/8/21
Cert/Lic/Reg. # 263/216Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-5 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Black
6	Loam		
12	Silty Clay	Firm	Gray
18	Loam		Common and
24			Distinct
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 8 Soil Classification E Slope 2 Limiting Factor 6 ☐ Groundwater
 Profile Condition Percent Depth " ☒ Restrictive Layer
 S.S. Soil series/phase name: Scantic PD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AIII Slope 4 Limiting Factor 16 ☐ Groundwater
 Profile Condition Percent Depth " ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AII Slope 18 Limiting Factor 14 ☐ Groundwater
 Profile Condition Percent Depth " ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-8 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AIII Slope 6 Limiting Factor 16 ☐ Groundwater
 Profile Condition Percent Depth " ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-9 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6	Sandy Loam	Friable	Red Brown	
12				
18	Sandy Loam	Firm	Olive	Common and Distinct
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 3 D Slope: 2 Limiting Factor: 13 " ☒ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer ☐ Bedrock
 S.S. Soil series/phase name: Colonel SPD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-10 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 8 Limiting Factor: 15 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-11 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6	Sandy Loam	Friable	Red Brown	
12				
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 16 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-12 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6	Sandy Loam	Friable	Red Brown	
12				
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 3 Limiting Factor: 15 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark Hampton Date: 4/8/21
 Name Printed/typed: Mark Hampton Cert/Lic/Reg. #: 263/216
 Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer



DETAILED DESCRIPTION OF SUBSURFACE CONDITIONS AT PROJECT SITES

Project Location (municipality):
Biddeford

Exploration Symbol # SS-16 ☒ Test Pit ☐ Boring

_____ " Organic horizon thickness Ground surface elev. _____

_____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Classification Slope Limiting Factor

2 AIII 15

Profile Condition Percent Depth

Soil series/phase name: Lyman-Tunbridge WD

☐ Hydric ☐ Hydrotic

☒ Non-hydric ☐ Soil Group

☐ Groundwater ☐ Restrictive Layer ☐ Bedrock

Signature		Date	4/8/21
Name Printed/typed Mark Hampton		Cert/Lic/Reg. #	263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer			

MARK J.
HAMPTON
#216
CERTIFIED
SOIL SCIENTIST
applied professional seal

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-17 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Fine Sandy Loam	Friable	Black	
6 Silty Clay Loam	Firm	Gray	Common and Distinct
12			
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	8	E	2	6	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Scantic PD				
	☒ Hydric ☐ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-18 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	13	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-19 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	13	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-20 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0 Sandy Loam	Friable	Dark Brown	
6 Sandy Loam	Friable	Red Brown	
12 Sandy Loam	Firm	Olive	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	12	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

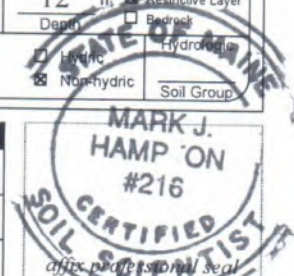
Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-21 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0	Fine Sandy		
6	Loam	Friable	Black
12	Silty Clay	Firm	Gray
18	Loam		Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 8 Condition E Slope 2 Limiting Factor 6 ☒ Restrictive Layer
 Percent Depth 6 ☐ Bedrock
 S.S. Soil series/phase name: Scantic PD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth _____ ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth _____ ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth _____ ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date

4/8/21

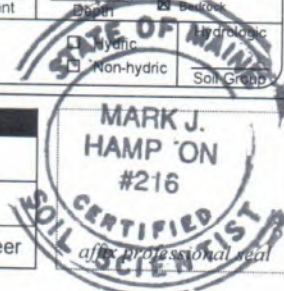
Name Printed/typed

Mark Hampton

Cert/Lic/Reg. #

263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

- SOIL SURVEY GENERAL NOTES**
1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.
 2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED MAY 5, 2021.
 3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
 4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

SOIL LEGEND

DRAINAGE CLASS	
EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

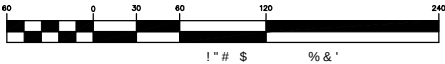
SLOPE DESIGNATION

0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



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MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

June 29, 2021

Mr. Bill Walsh
Walsh Engineering Associates, Inc.
One Karen Drive Suite 2A
Westbrook, ME 04092

Re: Prime Agricultural Soils, 918 Pool Street, Ginger Hill Design & Build, Biddeford, ME

Dear Bill,

I am writing this letter to certify that all of the soils I mapped on this 15.6+ acre parcel of land located at 918 Pool Street and noted as lot 48 on tax map 4 for the City of Biddeford do not meet the criteria of prime agricultural soils or soils of Statewide Importance as defined in Article VI, Section 44, Net Density Calculations, A.5 of the City of Biddeford Zoning Ordinance. Section 44.A.5 states that soils in the rural farm zone identified by the US Soil Conservation Service, now known as the Natural Resources Conservation Service, as being soils of statewide importance, prime agricultural soils and/or unique soils are to be deducted in the density calculations. Section 44.A.5 then lists the soils identified on a map prepared by the Southern Maine Regional Planning Commission. The list identifies the following soils:

Adams loamy sands (0-3%), Allagash very fine sandy loam (3-8%), Allagash very fine sandy loam (8-15%), Becket fine sandy loam (3-8%), Buxton (3-8%), Buxton (8-15%), Colton gravelly loamy coarse sand (0-8%), Croghan loamy sand (0-8%), Elmwood fine sandy loam (0-8%), Elmwood sand loam (8-15%), Lyman fine sandy loam (3-8%), Madawaska fine sandy loam (0-8%), Naumburg sand, Ondawa fine sandy loam, Podunk and Winooski soils, Raynham silt loam, Rumney loam, Scio silt loam (3-8%), and Skerry fine sandy loam (0-8%).

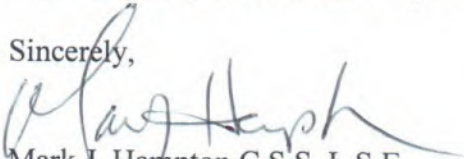
I have prepared and submitted a recently completed high intensity soil survey of the property. The soil map unit I mapped on the property included Colonel loamy sandy loam (0-3%), Scantic silt loam (0-3%), Lyman-Tunbridge sandy loam (0-3%), Lyman-Tunbridge (3-8%), Lyman-Tunbridge (8-15%), Lyman-Tunbridge (15-25%). None of

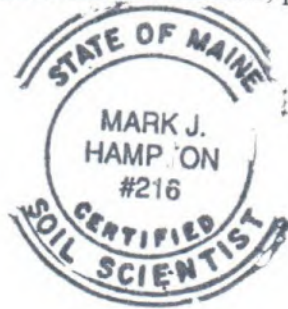
the soil map units I mapped on the property are included in the list of soils mapping unit found in Article VI, Section 44.A.5 as noted above.

Therefore, in my professional capacity as a certified soil scientist, can certify that the soils which occur on lot 48 tax map 4 at 918 Pool Street are not prime agricultural soils, soils of statewide importance and/or unique soils as noted in Article VI, Section 44.A.5 of the City of Biddeford Zoning Ordinance.

If you have any questions or require additional information, please contact me.

Sincerely,


Mark J. Hampton C.S.S, L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263



SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6495

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Windward Ridge	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 1	Local Plumbing Inspector Signature	L.P.I. #
OWNER/APPLICANT INFORMATION		Fee: \$ state min fee \$ Locally adopted fee Copy: [] Owner [] Town [] State	
Name (last, first MI)	Ginger Hill Design & Build	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	Municipal Tax Map # Lot #	
Daytime Tel. #	229-0280	CAUTION: INSPECTION REQUIRED I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
OWNER OR APPLICANT STATEMENT I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		(1st) date approved (2nd) date approved	
Signature of Owner or Applicant		Local Plumbing Inspector Signature	
Date		Date	
PERMIT INFORMATION			
TYPE OF APPLICATION 1. First Time System 2. Replacement System Type replaced: _____ Year installed: _____ 3. Expanded System a. <25% Expansion b. >25% Expansion 4. Experimental System 5. Seasonal Conversion	THIS APPLICATION REQUIRES 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	DISPOSAL SYSTEM COMPONENTS 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: _____ 4. Non-engineered Treatment Tank (only) 5. Holding Tank, _____ gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: _____ 12. Miscellaneous Components	
SIZE OF PROPERTY 1 SQ. FT. ACRES	DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling, No. of Bedrooms: 3 2. Multiple Family Dwelling, No. of Units: _____ 3. Other: _____ (specify) Current Use Seasonal Year Round Undeveloped	TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other	
SHORELAND ZONING Yes No			
DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)			
TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: _____ CAPACITY: 1000 GAL.	DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array b. regular load c. Linear d. H-20 load 4. Other: _____ SIZE: 960 sq. ft. lin. ft.	GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. _____ tanks in series c. increase in tank capacity d. Filter on Tank Outlet	DESIGN FLOW 270 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS PROFILE CONDITION 2 / AIII at Observation Hole # TP1 Depth 15 " of Most Limiting Soil Factor	DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: _____ gallons	3. Section 4G (meter readings) ATTACH WATER METER DATA LATITUDE AND LONGITUDE at center of disposal area Lat. 43 d 25 m 23 s Lon. 70 d 24 m 20 s if g.p.s, state margin of error: 15
SITE EVALUATOR STATEMENT			
I certify that on 8/26/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature Mark J Hampton		263 SE # 207-756-2900	8/26/21 Date
Site Evaluator Name Printed		Telephone Number	E-mail Address
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.			

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Windward Ridge

Lot 1

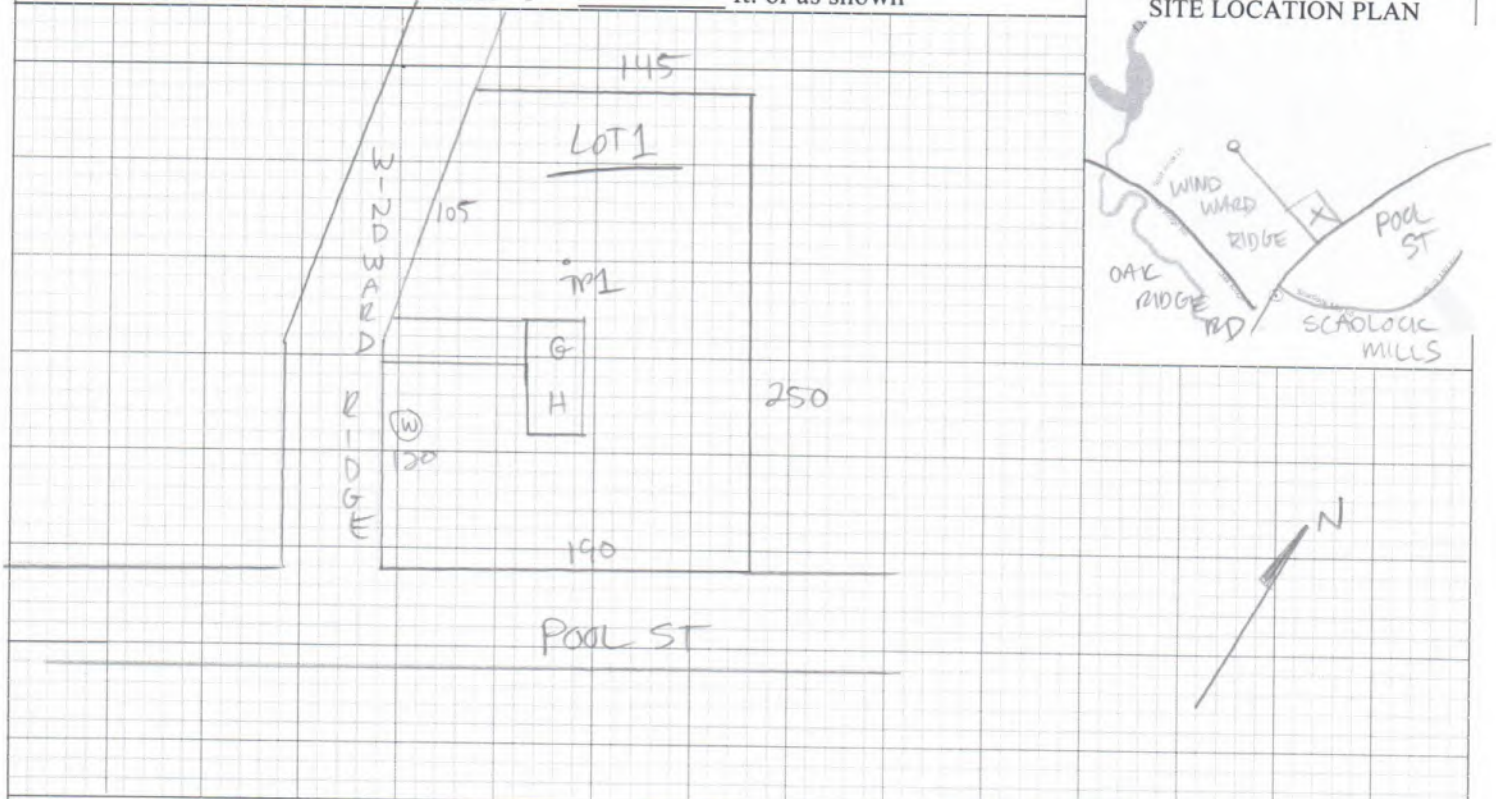
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = _____ ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20		Ledge		
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
<u>2</u> <u>AIII</u>	<u>4</u> %	<u>15</u> "	☐ Restrictive Layer
Profile Condition			☒ Bedrock
			☐ Pit Depth

Observation Hole _____ ☐ Test Pit ☐ Boring ☐
_____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	_____ %	_____ "	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

Matthew Huph

Site Evaluator Signature

263

SE #

8/26/21

Date

Page 2 of 3
HHE-200 Rev. 02/11

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

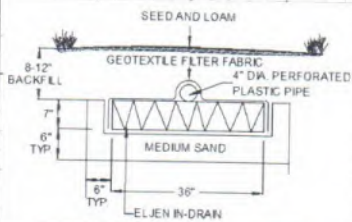
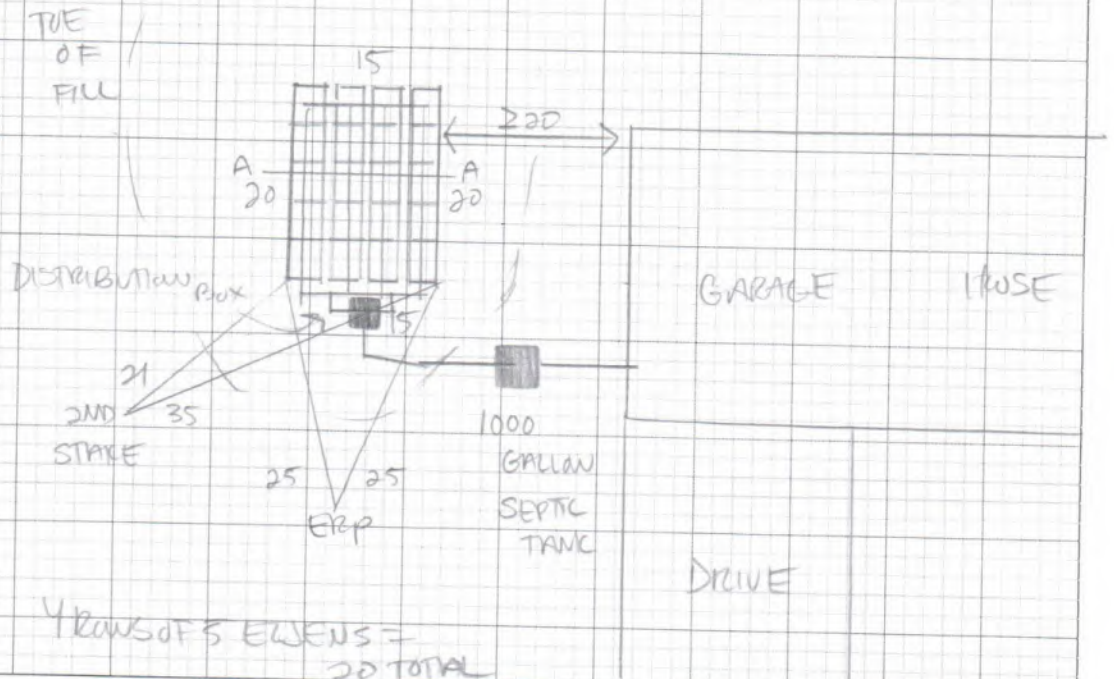
Street, Road, Subdivision
Windward Ridge

Lot 1

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) **30**
Depth of Fill (Downslope) **37**

CONSTRUCTION ELEVATIONS

Finished Grade Elevation **-12**
Top of Distribution Pipe or Proprietary Device **-22**
Bottom of Disposal Area **-33**

ELEVATION REFERENCE POINT
Location & Description: **Top of grade stake, 40" above grade**
Reference Elevation: **0**

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

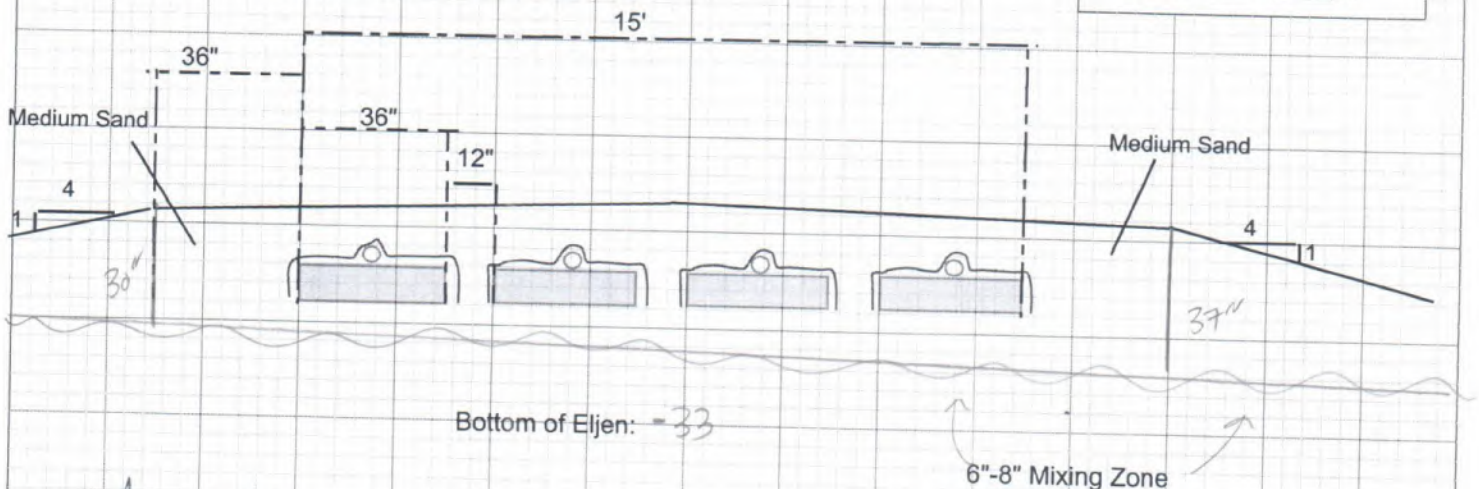
DISPOSAL AREA CROSS SECTION

A-A

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature

263

8/26/21

SE #

Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6495

PROPERTY LOCATION

City, Town, or Plantation **Biddeford**
Street or Road **Windward Ridge**
Subdivision, Lot # **Lot 2**

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____
Date Permit Issued ____/____/____ Fee: \$ _____ Double Fee Charged []
Local Plumbing Inspector Signature _____ L.P.I. # _____
Fee: \$ _____ state min fee \$ _____ Locally adopted fee
Copy: [] Owner [] Town [] State

OWNER/APPLICANT INFORMATION

Name (last, first, MI) **Ginger Hill Design & Build** Owner ☒
Applicant ☐
Mailing Address of Owner/Applicant **18 Ginger Hill Lane**
Arundel 04046
Daytime Tel. # **229-0280**

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant _____ Date _____

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.
(1st) date approved _____

Local Plumbing Inspector Signature _____ (2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. >25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES

1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY

0.75

sq. ft.
ACRES

SHORELAND ZONING

Yes

No

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit No. of Bedrooms: **3**
2. Multiple Family Dwelling, No. of Units: _____
3. Other: _____
(specify) _____
Current Use Seasonal Year Round **Undeveloped**

TYPE OF WATER SUPPLY

1. Drilled Well
2. Dug Well
3. Private
4. Public
5. Other

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. Concrete
a. Regular
b. Low Profile
 2. Plastic
 3. Other: _____
- CAPACITY: **1000** GAL.

DISPOSAL FIELD TYPE & SIZE

1. Stone Bed
 2. Stone Trench
 3. Proprietary Device
a. cluster array
b. regular load
c. Linear
d. H-20 load
 4. Other: _____
- SIZE: **960** sq. ft. lin. ft.

GARBAGE DISPOSAL UNIT

1. No
 2. Yes
 3. Maybe
- If Yes or Maybe, specify one below:
- a. multi-compartment tank
 - b. _____ tanks in series
 - c. increase in tank capacity
 - d. Filter on Tank Outlet

DESIGN FLOW

270 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C (other facilities)
SHOW CALCULATIONS for other facilities

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
2 / All
at Observation Hole # **TP1**
Depth **12** "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. ft. / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

1. Not Required
 2. May Be Required
 3. Required
- Specify only for engineered systems:
DOSE: _____ gallons

3. Section 4G (meter readings)
ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. **43** d **25** m **23** s
Lon. **70** d **24** m **23** s
if g.p.s, state margin of error: **15**

SITE EVALUATOR STATEMENT

I certify that on **8/26/21** (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature
Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/26/21

Date

E-mail Address

Note : Changes to or deviations from the _____ should be confirmed with the Site Evaluator.

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

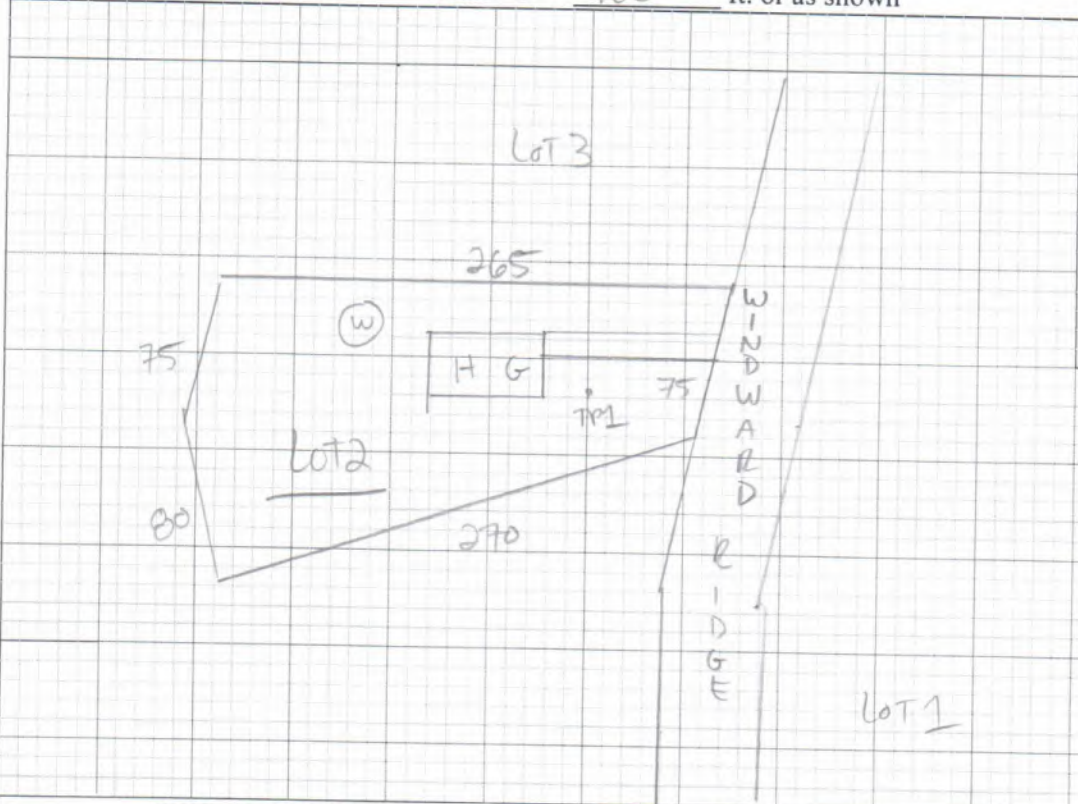
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation Biddeford
Street, Road, Subdivision Windward Ridge Lot 2

Owner's Name
Ginger Hill Design & Build

SITE PLAN Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Observation Hole ☐ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10	Sandy Loam	Friable	Brown	
20		Ledge		
30				
40				
50				

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
<u>2</u> <u>All</u>	<u>4</u> %	<u>12</u> "	☐ Restrictive Layer
Profile Condition			☒ Bedrock
			☐ Pit Depth

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

Handwritten Signature
Site Evaluator Signature

263

SE #

8/26/21

Date

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Windward Ridge

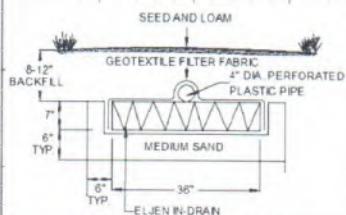
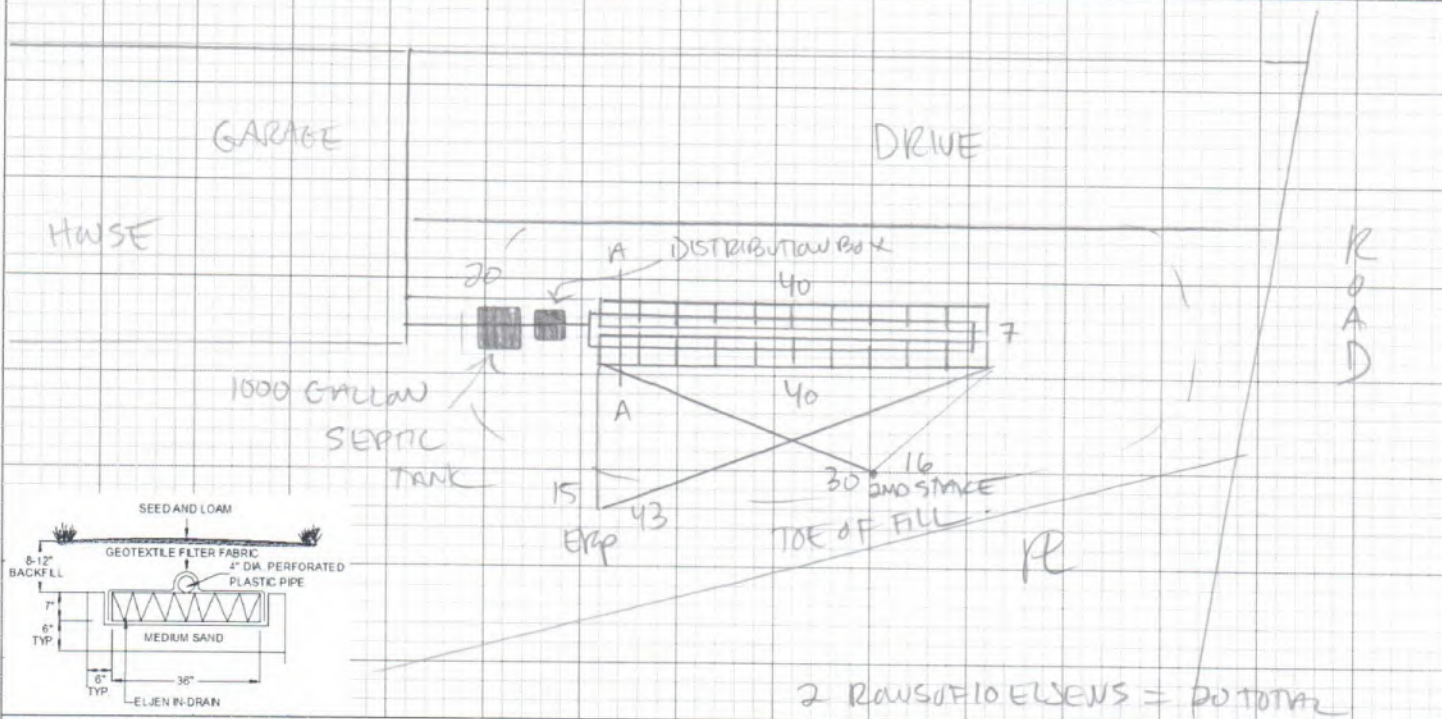
Lot 2

Owner's Name

Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) 33

Depth of Fill (Downslope) 40

CONSTRUCTION ELEVATIONS

Finished Grade Elevation

-10

Top of Distribution Pipe or Proprietary Device

-20

Bottom of Disposal Area

-31

ELEVATION REFERENCE POINT

Location & Description: Top of grade stake, 40' above grade

Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

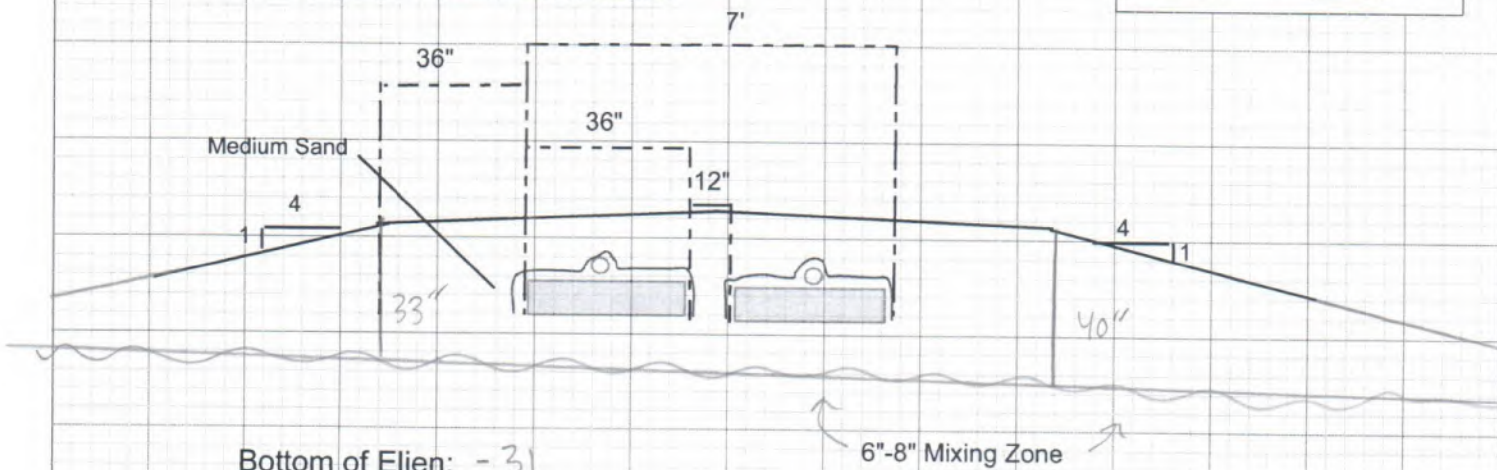
DISPOSAL AREA CROSS SECTION

Scale

Horizontal 1" = 4 ft.

Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Bottom of Eljen: -31

6"-8" Mixing Zone

Mary Hough

Site Evaluator Signature

263

SE #

8/26/21

Date

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SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6495

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Windward Ridge	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 3	Local Plumbing Inspector Signature	L.P.I. #
OWNER/APPLICANT INFORMATION		Locally adopted fee	
Name (last, first, MI)	Ginger Hill Design & Build	Fee: \$	state min fee \$
Mailing Address of	18 Ginger Hill Lane	Copy: [] Owner [] Town [] State	
Owner/Applicant	Arundel 04046	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Daytime Tel. #	229-0280	Municipal Tax Map #	Lot #
OWNER OR APPLICANT STATEMENT		CAUTION: INSPECTION REQUIRED	
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant		(1st) date approved	
Date		Local Plumbing Inspector Signature	
		(2nd) date approved	

PERMIT INFORMATION	
TYPE OF APPLICATION	THIS APPLICATION REQUIRES
1. First Time System	1. No Rule Variance
2. Replacement System	2. First Time System Variance
Type replaced:	a. Local Plumbing Inspector Approval
Year installed:	b. State & Local Plumbing Inspector Approval
3. Expanded System	3. Replacement System Variance
a. <25% Expansion	a. Local Plumbing Inspector Approval
b. >25% Expansion	b. State & Local Plumbing Inspector Approval
4. Experimental System	4. Minimum Lot Size Variance
5. Seasonal Conversion	5. Seasonal Conversion Permit
SIZE OF PROPERTY	DISPOSAL SYSTEM TO SERVE
0.65 SQ. FT. ACRES	1. Single Family Dwelling Unit No. of Bedrooms: 3
SHORELAND ZONING	2. Multiple Family Dwelling, No. of Units:
Yes No	3. Other: (specify)
	Current Use Seasonal Year Round Undeveloped
DISPOSAL SYSTEM COMPONENTS	
1. Complete Non-engineered System	
2. Primitive System (graywater & alt. toilet)	
3. Alternative Toilet, specify:	
4. Non-engineered Treatment Tank (only)	
5. Holding Tank, gallons	
6. Non-engineered Disposal Field (only)	
7. Separated Laundry System	
8. Complete Engineered System (2000 gpd or more)	
9. Engineered Treatment Tank (only)	
10. Engineered Disposal Field (only)	
11. Pre-treatment, specify:	
12. Miscellaneous Components	
TYPE OF WATER SUPPLY	
1. Drilled Well 2. Dug Well 3. Private	
4. Public 5. Other	

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)			
TREATMENT TANK	DISPOSAL FIELD TYPE & SIZE	GARBAGE DISPOSAL UNIT	DESIGN FLOW
1. Concrete Regular	1. Stone Bed 2. Stone Trench	1. No 2. Yes 3. Maybe	270 gallons per day
b. Low Profile	3. Proprietary Device	If Yes or Maybe, specify one below:	BASED ON:
2. Plastic	a. cluster array c. Linear	a. multi-compartment tank	1. Table 4A (dwelling unit(s))
3. Other: 1000 GAL.	b. regular load d. H-20 load	b. tanks in series	2. Table 4C (other facilities)
	4. Other: SIZE: 960 sq. ft. in. ft.	c. increase in tank capacity	SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS	DISPOSAL FIELD SIZING	EFFLUENT/EJECTOR PUMP	3. Section 4G (meter readings)
PROFILE CONDITION 2 / All	1. Medium---2.6 sq. ft. / gpd	1. Not Required	ATTACH WATER METER DATA
at Observation Hole # TP1	2. Medium---Large 3.3 sq. ft. / gpd	2. May Be Required	LATITUDE AND LONGITUDE
Depth 10 "	3. Large---4.1 sq. ft. / gpd	3. Required	at center of disposal area
of Most Limiting Soil Factor	4. Extra Large---5.0 sq. ft. / gpd	Specify only for engineered systems:	Lat. 43 d 25 m 25 s
		DOSE: gallons	Lon. 70 d 24 m 24 s
			if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT			
I certify that on 8/26/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature		263	8/26/21
Mark J Hampton		SE #	Date
Site Evaluator Name Printed		207-756-2900	
		Telephone Number	E-mail Address

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Owner's Name

Biddeford

Windward Ridge

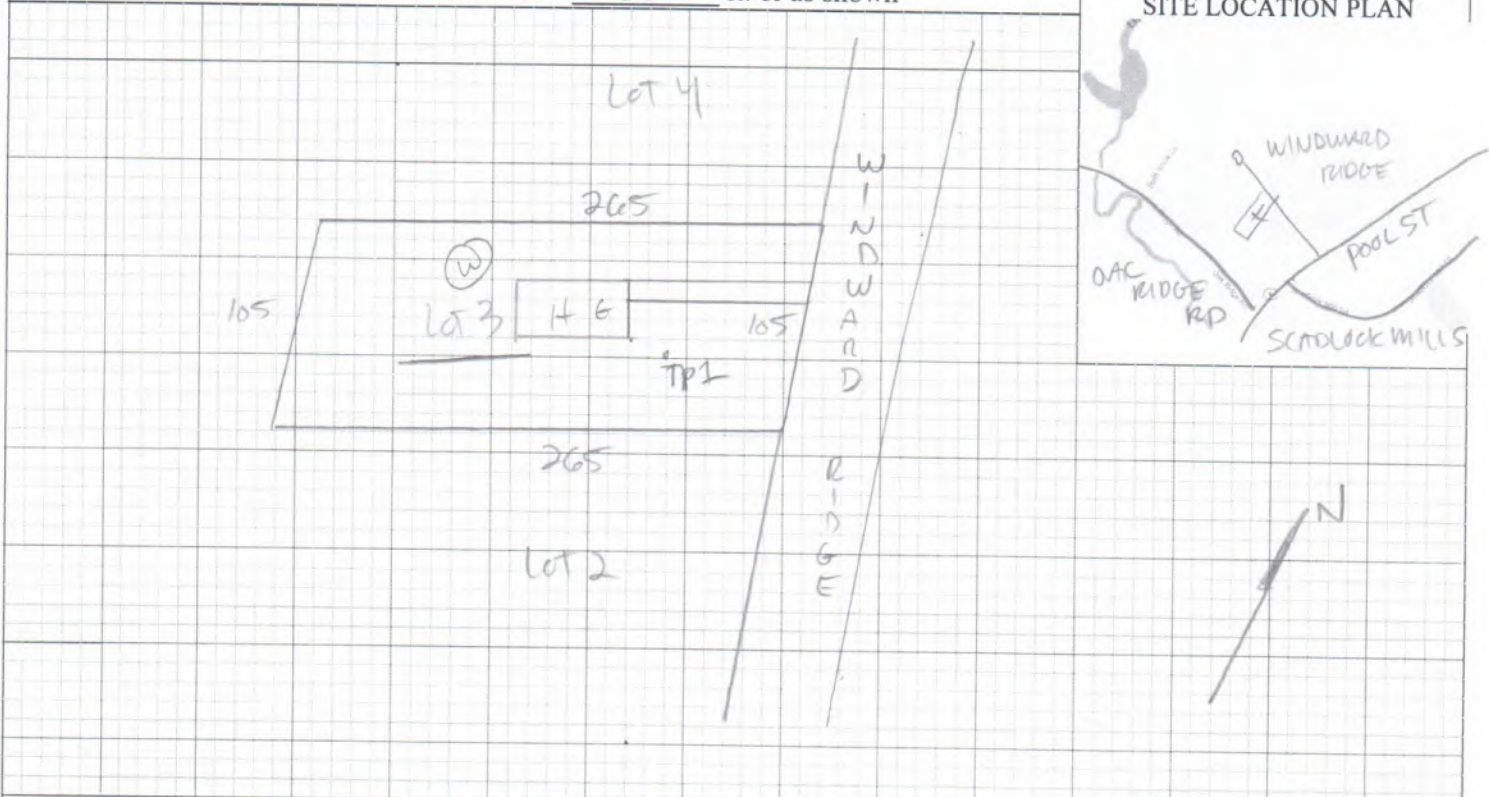
Lot 3

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring
 _____ " Depth of Organic Horizon Above Mineral Soil

Observation Hole ☐ Test Pit ☐ Boring
 _____ " Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10			Brown	
20	Ledge			
30				
40				
50				

Figure 1 is a blank soil profile chart. The vertical axis is labeled "Depth Below Mineral Soil Surface (inches)" and ranges from 0 to 50 in increments of 10. The horizontal axis has four columns: "Texture", "Consistency", "Color", and "Mottling". Each column has horizontal lines for recording data at 10-inch intervals.

Soil Classification <u>2</u> All Profile Condition	Slope <u>0</u> %	Limiting Factor <u>10</u> "	☐ Ground Water ☐ Restrictive Layer ☒ Bedrock ☐ Pit Depth
--	---------------------	--------------------------------	--

Soil Classification		Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile	Condition	_____ %	_____ "	

Site Evaluator Signature

263

8/26/21

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HHE-200 Rev. 02/11

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

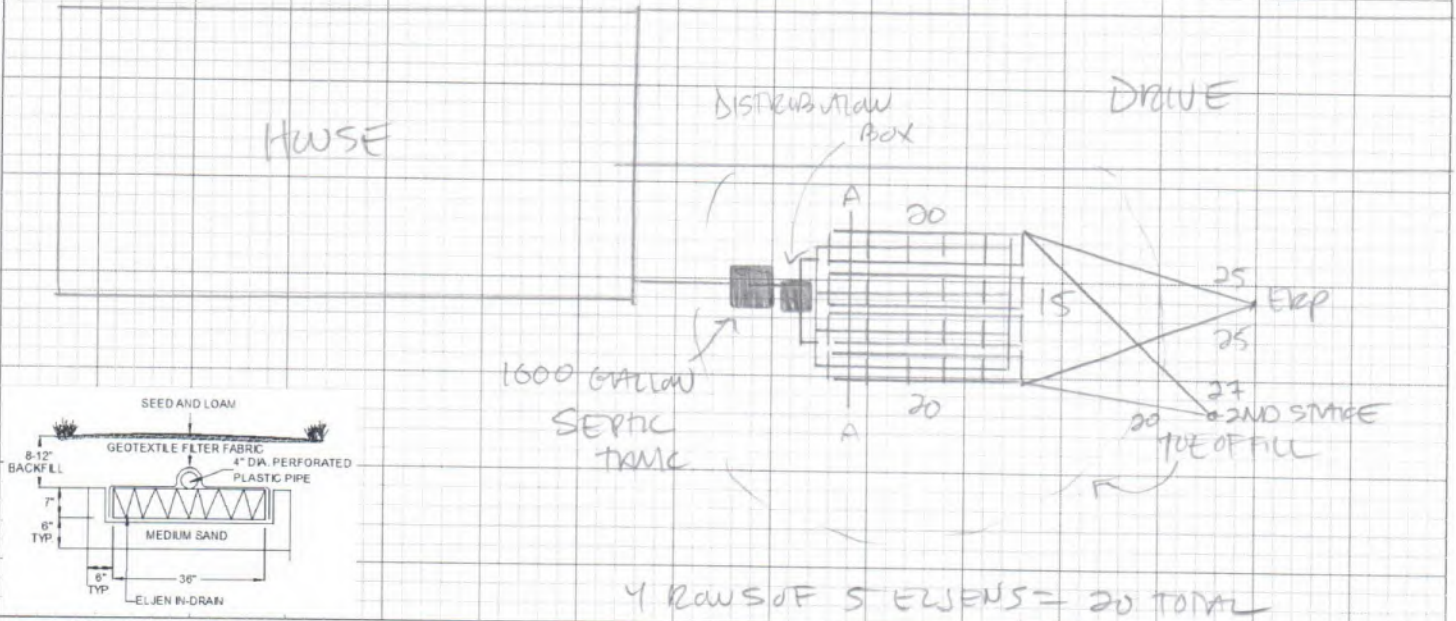
Street, Road, Subdivision
Windward Ridge

Lot 3

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) 36
Depth of Fill (Downslope) 36

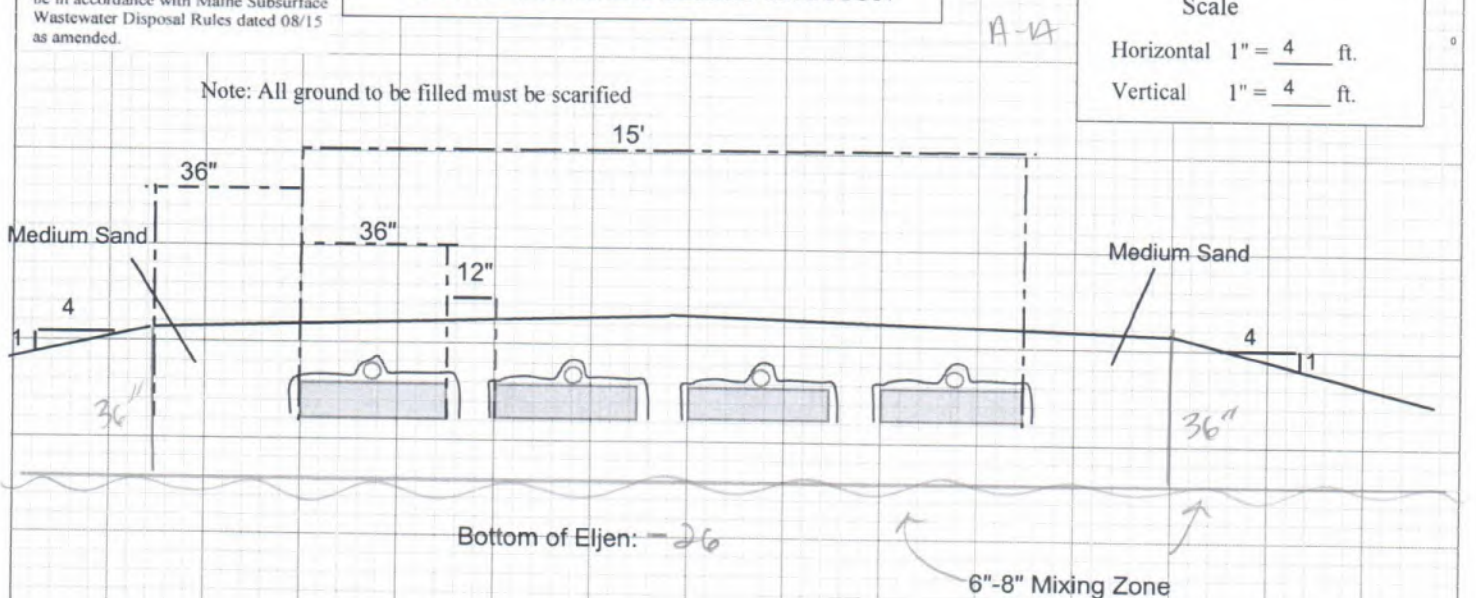
CONSTRUCTION ELEVATIONS

Finished Grade Elevation -05
Top of Distribution Pipe or Proprietary Device -15
Bottom of Disposal Area -26

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40\"/>

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION



Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Site Evaluator Signature

263

SE #

8/26/21

Date

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HHE-200 Rev. 02/11

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Windward Ridge	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 4	Local Plumbing Inspector Signature	L.P.I. #
OWNER/APPLICANT INFORMATION		The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Name (last, first MI)	Ginger Hill Design & Build	Fee: \$ state min fee \$ Locally adopted fee	Copy: [] Owner [] Town [] State
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	Municipal Tax Map # Lot #	
Daytime Tel. #	229-0280	CAUTION: INSPECTION REQUIRED I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application. (1st) date approved	
OWNER OR APPLICANT STATEMENT I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit. Signature of Owner or Applicant Date		Local Plumbing Inspector Signature (2nd) date approved	

PERMIT INFORMATION

TYPE OF APPLICATION	THIS APPLICATION REQUIRES	DISPOSAL SYSTEM COMPONENTS
1. First Time System 2. Replacement System Type replaced: Year installed:	1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: 4. Non-engineered Treatment Tank (only) 5. Holding Tank, gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: 12. Miscellaneous Components
SIZE OF PROPERTY 0.65 SQ. FT. ACRES	DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling Unit No. of Bedrooms: 3 2. Multiple Family Dwelling, No. of Units: 3. Other: (specify) Current Use Seasonal Year Round Undeveloped	TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other
SHORELAND ZONING Yes No		

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: CAPACITY: 1000 GAL.	DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array b. Linear c. regular load d. H-20 load 4. Other: SIZE: 960 sq. ft. in. ft.	GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. tanks in series c. increase in tank capacity d. Filter on Tank Outlet	DESIGN FLOW 270 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS PROFILE CONDITION 2 / All at Observation Hole # TP1 Depth 12" of Most Limiting Soil Factor	DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: gallons	LATITUDE AND LONGITUDE at center of disposal area Lat. 43 d 25 m 25 s Lon. 70 d 24 m 24 s if g.p.s. state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 8/26/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature

Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/26/21

Date

E-mail Address

Note: Changes to or deviations from the n should be confirmed with the Site Evaluator.

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

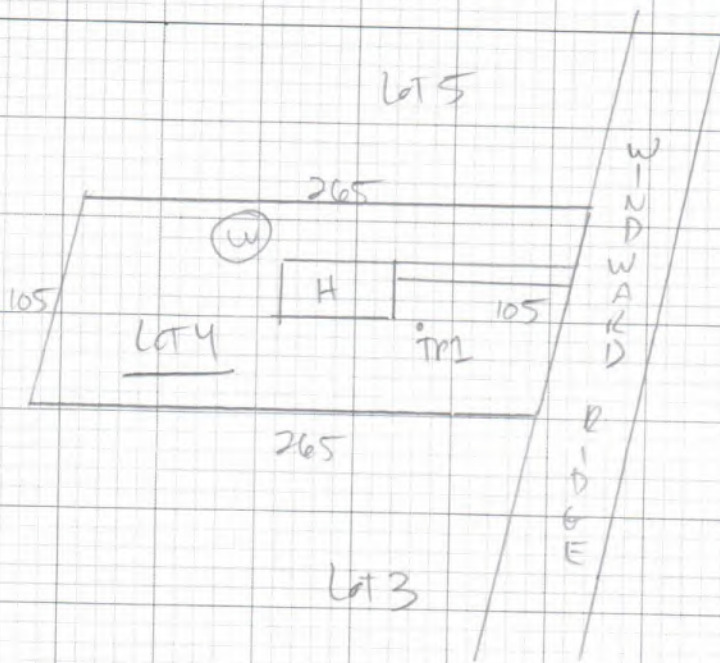
Town, City, Plantation Biddeford
Street, Road, Subdivision Windward Ridge Lot 4

Owner's Name
Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown
10	Loam		Brown
20	Ledge		
30			
40			
50			

Texture	Consistency	Color	Mottling
0			
10			
20			
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
2 All	2 %	12 "	☐ Restrictive Layer
Profile Condition			☒ Bedrock
			☐ Pit Depth

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

[Signature]
Site Evaluator Signature

263

SE #

8/26/21

Date

Page 2 of 3
HHE-200 Rev. 02/11

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

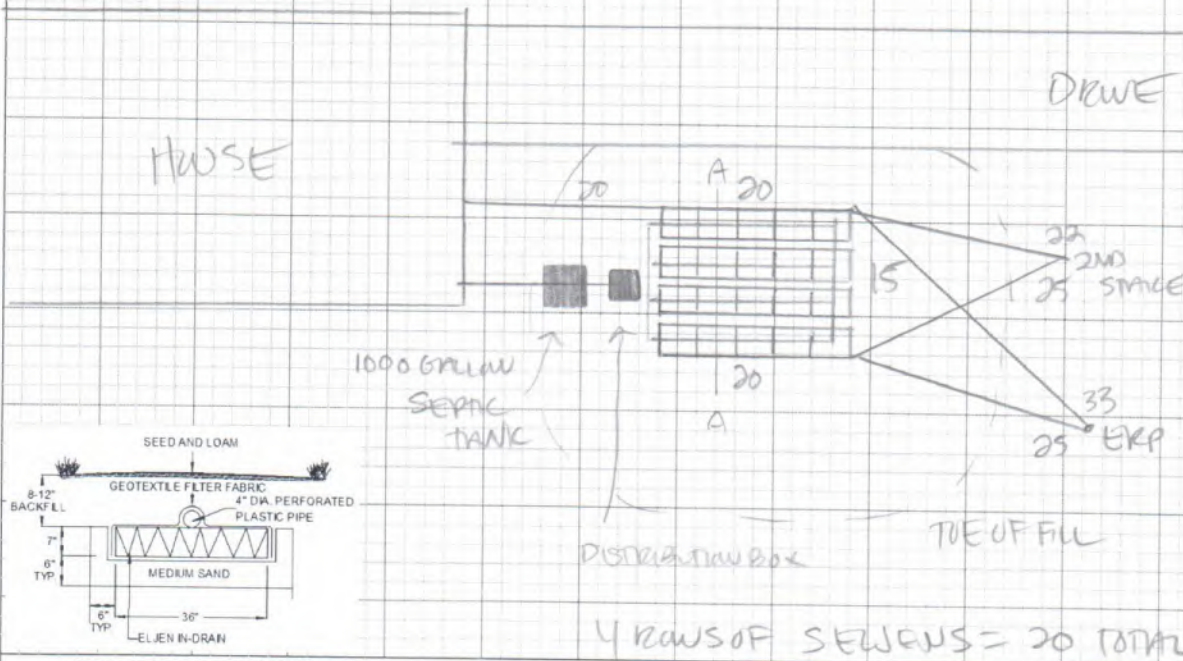
Street, Road, Subdivision
Windward Ridge

Lot 4

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) **33**
Depth of Fill (Downslope) **37**

CONSTRUCTION ELEVATIONS

Finished Grade Elevation **-07**
Top of Distribution Pipe or Proprietary Device **-17**
Bottom of Disposal Area **-28**

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40" above grade
Reference Elevation: **0**

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

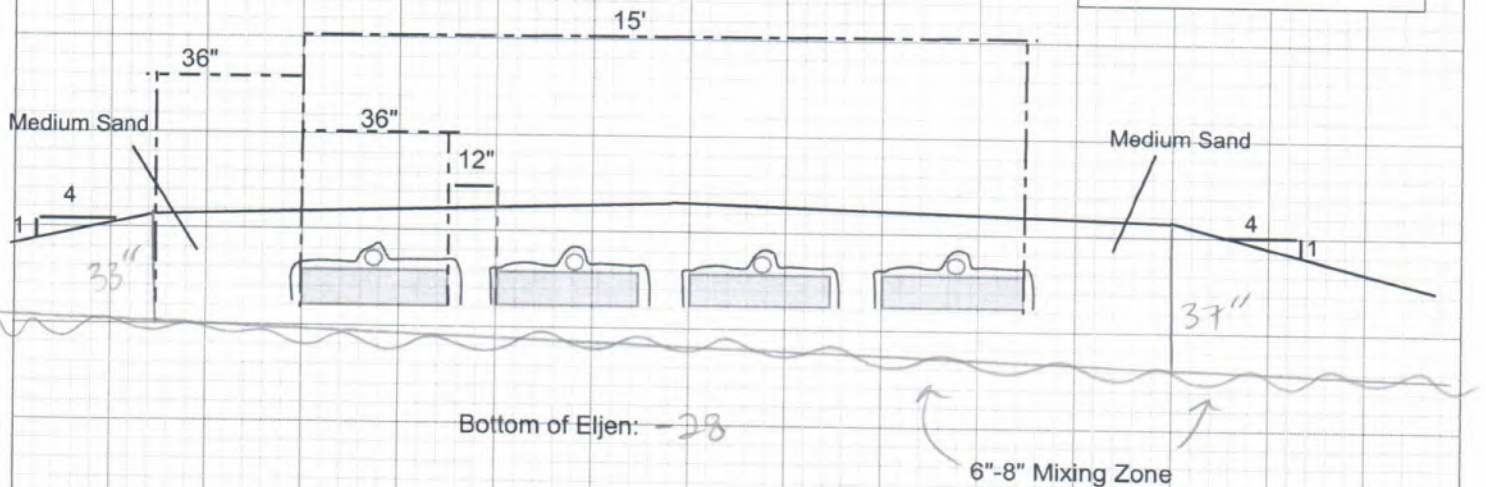
DISPOSAL AREA CROSS SECTION

A-A

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Plant Hypn
Site Evaluator Signature

263

SE #

8/26/21

Date

Page 3 of 3
HHE-200 Rev. 02/11

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6495

PROPERTY LOCATION

City, Town, or Plantation **Biddeford**
Street or Road **Windward Ridge**
Subdivision, Lot # **Lot 5**

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____
Date Permit Issued ____/____/____ Fee: \$ _____ Double Fee Charged []

Local Plumbing Inspector Signature _____ L.P.I. # _____

Fee: \$ _____ state min fee \$ _____ Locally adopted fee
Copy: [] Owner [] Town [] State

OWNER/APPLICANT INFORMATION

Name (last, first, MI) **Ginger Hill Design & Build** Owner ☒ Applicant ☐

Mailing Address of Owner/Applicant **18 Ginger Hill Lane**
Arundel 04046

Daytime Tel. # **229-0280**

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

Signature of Owner or Applicant _____ Date _____

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

(1st) date approved _____

Local Plumbing Inspector Signature _____

(2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. >25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES

1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY

0.75 SQ. FT. ACRES

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit No. of Bedrooms: **3**
2. Multiple Family Dwelling, No. of Units: _____
3. Other: _____ (specify) _____
Current Use Seasonal Year Round **Undeveloped**

TYPE OF WATER SUPPLY

1. Drilled Well
2. Dug Well
3. Private
4. Public
5. Other

SHORELAND ZONING

Yes ☐ No ☒

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. Concrete **Regular**
- b. Low Profile
2. Plastic
3. Other: _____

CAPACITY: **1000** GAL.

DISPOSAL FIELD TYPE & SIZE

1. Stone Bed
2. Stone Trench
3. Proprietary Device
a. cluster array **Linear**
- b. regular load **regular load**
- d. H-20 load
4. Other: _____

SIZE: **960** sq. ft. in. ft.

GARBAGE DISPOSAL UNIT

1. No
 2. Yes
 3. Maybe
- If Yes or Maybe, specify one below:
- a. multi-compartment tank
 - b. _____ tanks in series
 - c. increase in tank capacity
 - d. Filter on Tank Outlet

DESIGN FLOW

270 gallons per day

BASED ON:

1. Table 4A (dwelling unit(s))
2. Table 4C (other facilities)

SHOW CALCULATIONS for other facilities

SOIL DATA & DESIGN CLASS

PROFILE CONDITION **2 / All**
at Observation Hole # **TP1**
Depth **10** "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Medium---2.6 sq. ft. / gpd
2. Medium---Large **3.3 sq. ft. / gpd**
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

1. Not Required
 2. May Be Required
 3. Required
- Specify only for engineered systems:
DOSE: _____ gallons

3. Section 4G (meter readings)
ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. **43** d **25** m **27** s
Lon. **70** d **24** m **24** s
if g.p.s, state margin of error: **15**

SITE EVALUATOR STATEMENT

I certify that on **8/26/21** (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature

Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/26/21

Date

E-mail Address

Note: Changes to or deviations from the _____ should be confirmed with the Site Evaluator.

Q495

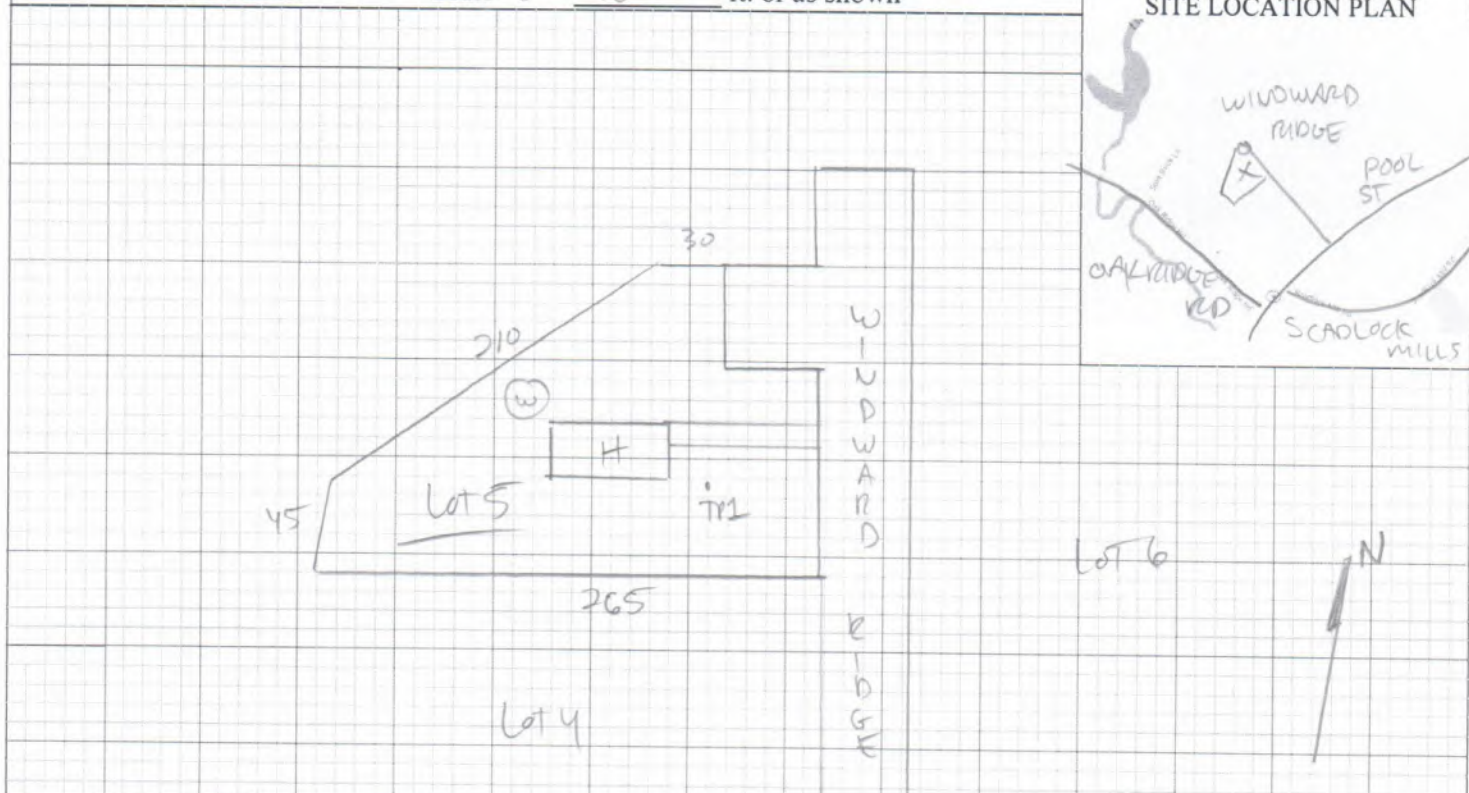
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation Biddeford	Street, Road, Subdivision Windward Ridge Lot 5	Owner's Name Ginger Hill Design & Build
--	--	---

SITE PLAN Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
10			Brown	
20	Wavy	Ledge	Wavy	
30				
40				
50				

Soil Classification <u>2</u> <u>All</u> Profile Condition	Slope <u>2</u> %	Limiting Factor <u>10</u> "	☐ Ground Water ☐ Restrictive Layer ☒ Bedrock ☐ Pit Depth
---	---------------------	--------------------------------	--

Observation Hole ☐ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification Profile Condition	Slope %	Limiting Factor "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
--	------------	----------------------	---

Mary Lynch
Site Evaluator Signature

263

SE #

8/26/21

Date

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

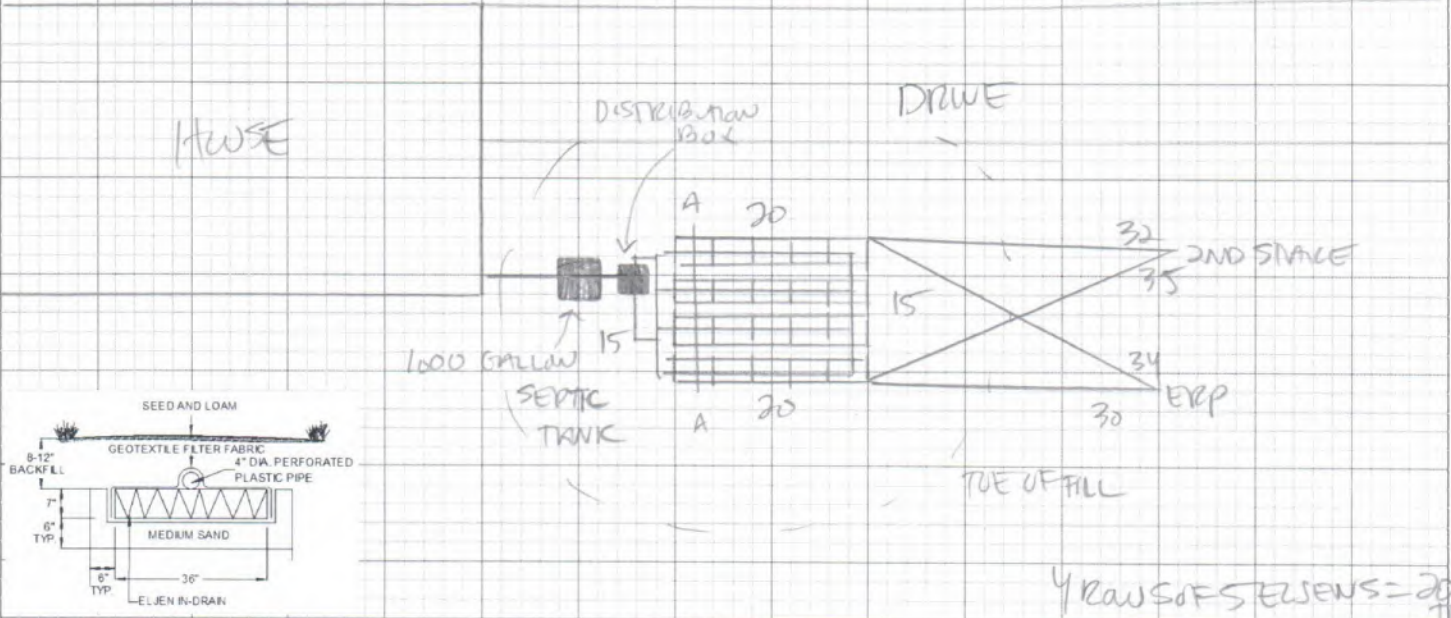
Street, Road, Subdivision
Windward Ridge

Lot 5

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) **35**
Depth of Fill (Downslope) **39**

CONSTRUCTION ELEVATIONS

Finished Grade Elevation **-05**
Top of Distribution Pipe or Proprietary Device **-15**
Bottom of Disposal Area **-26**

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40" above grade
Reference Elevation: **0**

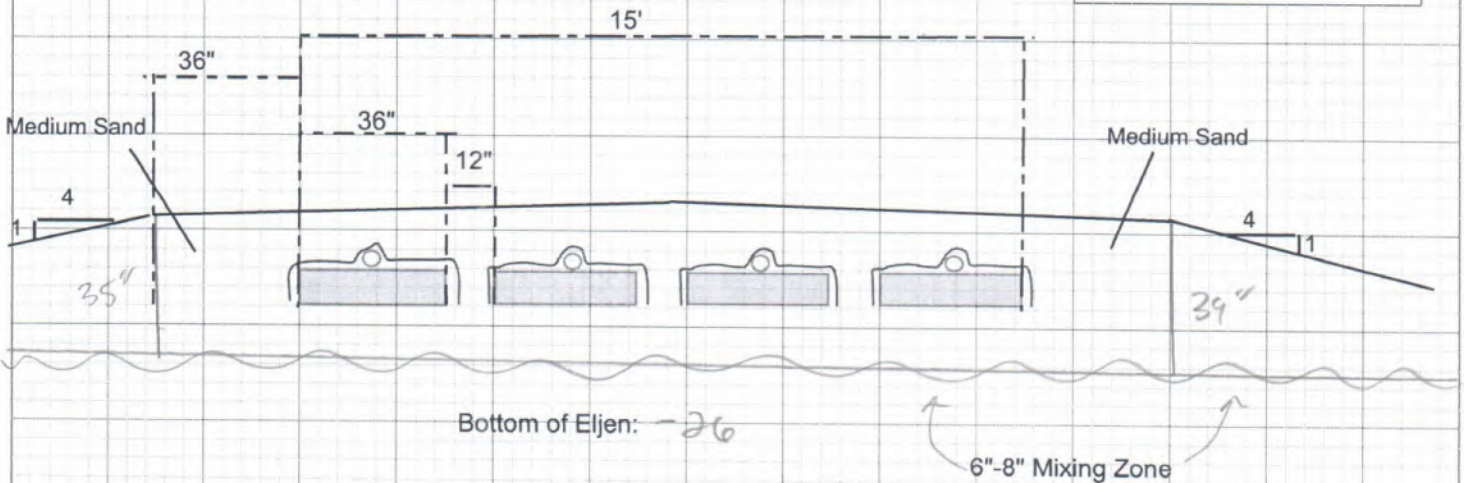
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



New Hampshire
Site Evaluator Signature

263

SE #

8/26/21

Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Windward Ridge	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 6	Local Plumbing Inspector Signature L.P.I. #	
OWNER/APPLICANT INFORMATION		Fee: \$ state min fee \$ Locally adopted fee	
Name (last, first, MI)	Ginger Hill Design & Build	Copy: [] Owner [] Town [] State	
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Daytime Tel. #	229-0280	Municipal Tax Map # Lot #	
OWNER OR APPLICANT STATEMENT		CAUTION: INSPECTION REQUIRED	
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant Date		(1st) date approved	
		Local Plumbing Inspector Signature (2nd) date approved	
PERMIT INFORMATION			
TYPE OF APPLICATION 1. First Time System 2. Replacement System Type replaced: _____ Year installed: _____ 3. Expanded System a. <25% Expansion b. ≥25% Expansion 4. Experimental System 5. Seasonal Conversion	THIS APPLICATION REQUIRES 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	DISPOSAL SYSTEM COMPONENTS 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: _____ 4. Non-engineered Treatment Tank (only) 5. Holding Tank, _____ gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: _____ 12. Miscellaneous Components	
SIZE OF PROPERTY 1.5 SQ. FT. ACRES	DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling Unit No. of Bedrooms: 3 2. Multiple Family Dwelling, No. of Units: _____ 3. Other: _____ (specify) Current Use Seasonal Year Round Undeveloped	TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other	
SHORELAND ZONING Yes No	DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)		
TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: _____ CAPACITY: 1000 GAL.	DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array c. Linear b. regular load d. H-20 load 4. Other: _____ SIZE: 1152 sq. ft. lin. ft.	GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. _____ tanks in series c. increase in tank capacity d. Filter on Tank Outlet	DESIGN FLOW 270 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS PROFILE CONDITION 8 / D/AIII at Observation Hole # TP1 Depth 18" of Most Limiting Soil Factor	DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: _____ gallons	3. Section 4G (meter readings) ATTACH WATER METER DATA LATITUDE AND LONGITUDE at center of disposal area Lat. 43 d 25 m 27 s Lon. 70 d 24 m 24 s if g.p.s. state margin of error: 15
SITE EVALUATOR STATEMENT			
I certify that on 8/26/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature Mark J Hampton		263 SE # 207-756-2900	8/26/21 Date
Site Evaluator Name Printed		Telephone Number	E-mail Address
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.			

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Windward Ridge

Lot 6

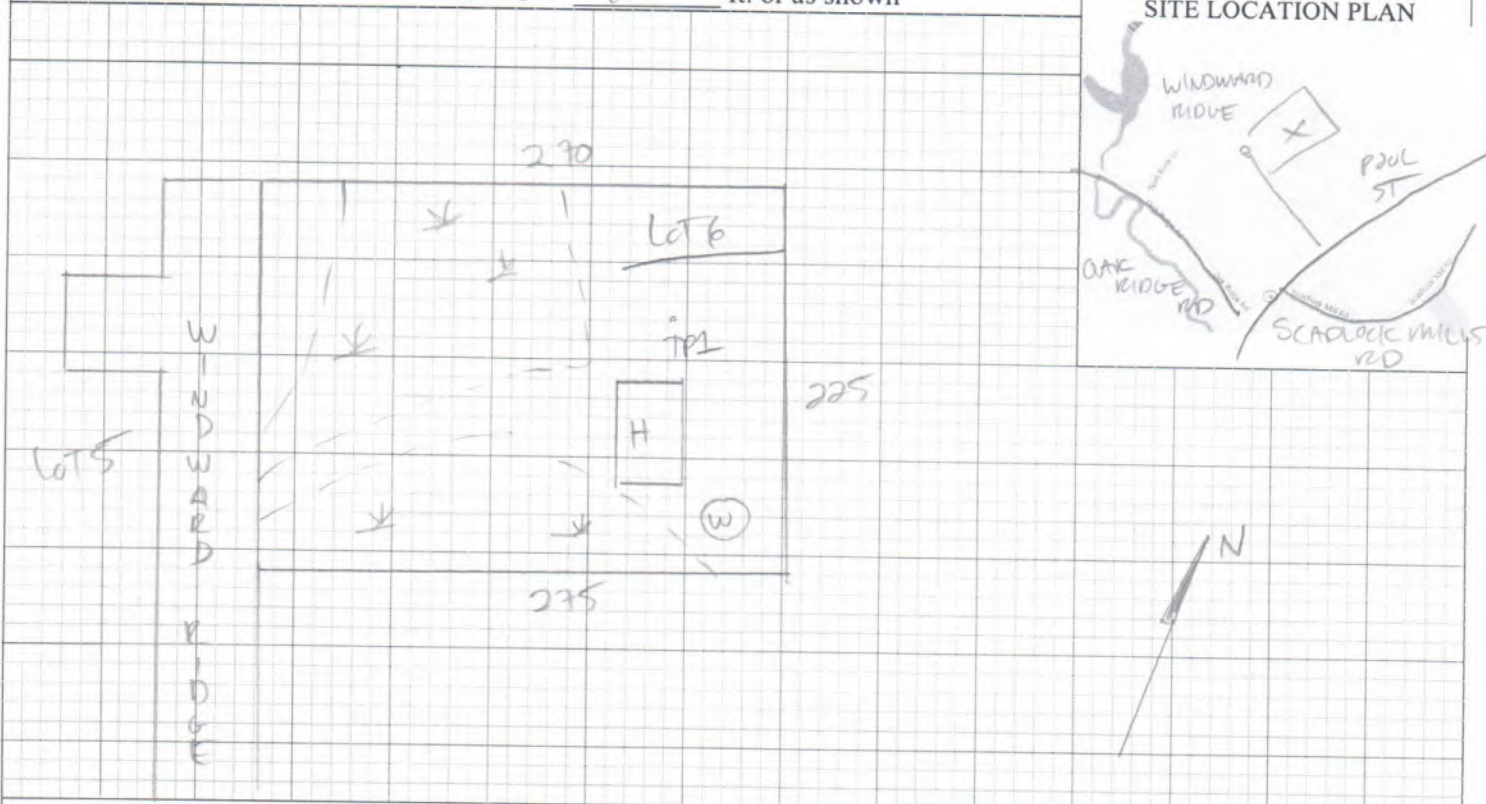
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0		Dark Brown	
Fine Sandy Loam	Friable	Brown	
10			
Silty Clay Loam	Firm	Gray	
20	Ledge		
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
8 D/AIII	4 %	18 "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
10			
20			
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

Alaw Hough

263

8/26/21

Site Evaluator Signature

SE #

Date

Page 2 of 3
HHE-200 Rev. 02/11

6495

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Windward Ridge

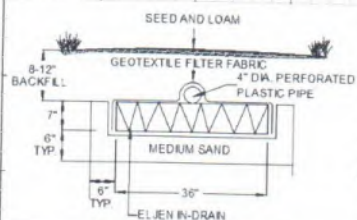
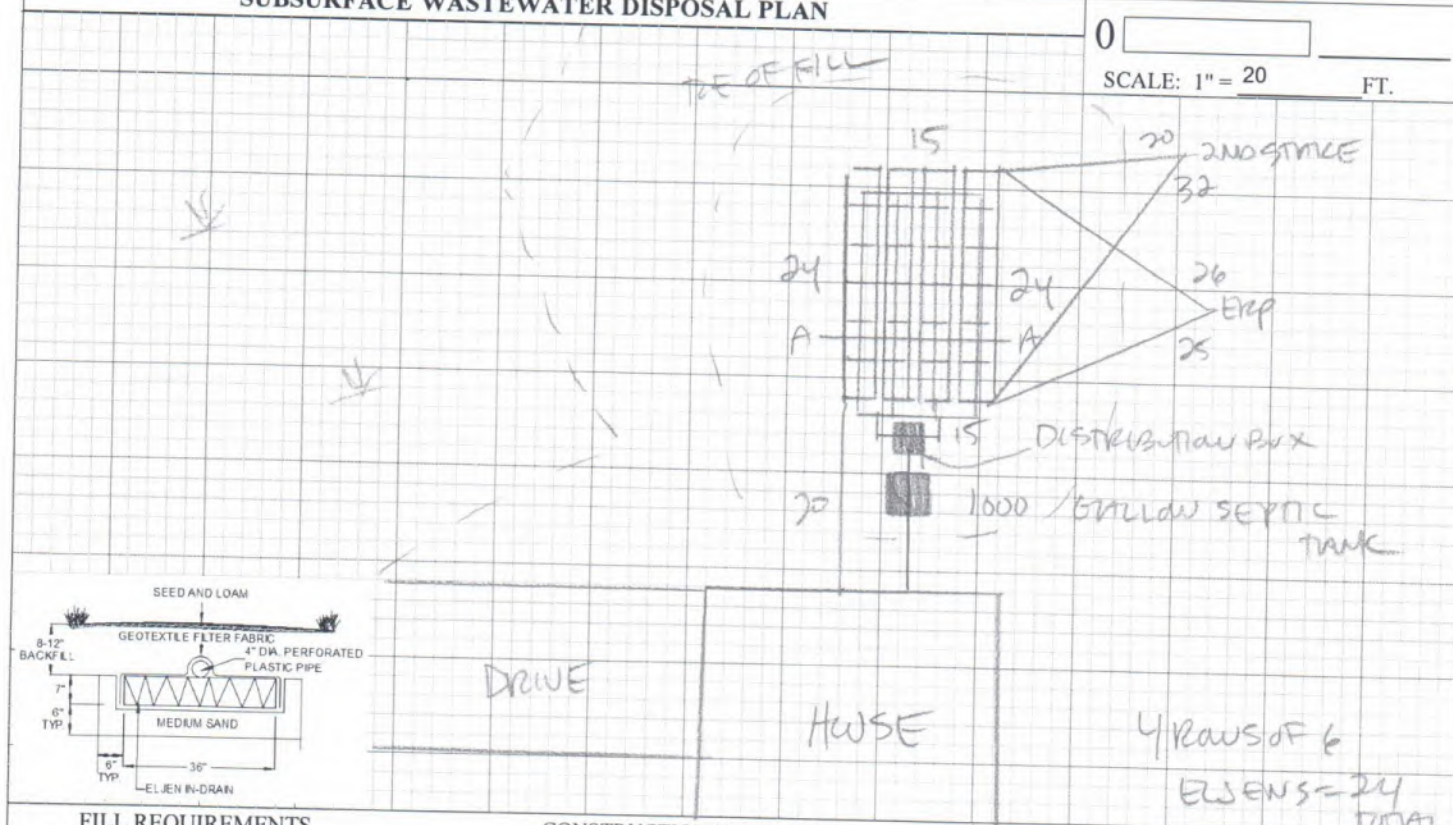
Lot 6

Owner's Name

Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 FT.
SCALE: 1" = 20



FILL REQUIREMENTS

Depth of Fill (Upslope) 30

Depth of Fill (Downslope) 37

CONSTRUCTION ELEVATIONS

Finished Grade Elevation

-10

Top of Distribution Pipe or Proprietary Device

-20

Bottom of Disposal Area

-31

ELEVATION REFERENCE POINT

Location & Description: Top of grade stake, 40" above grade

Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

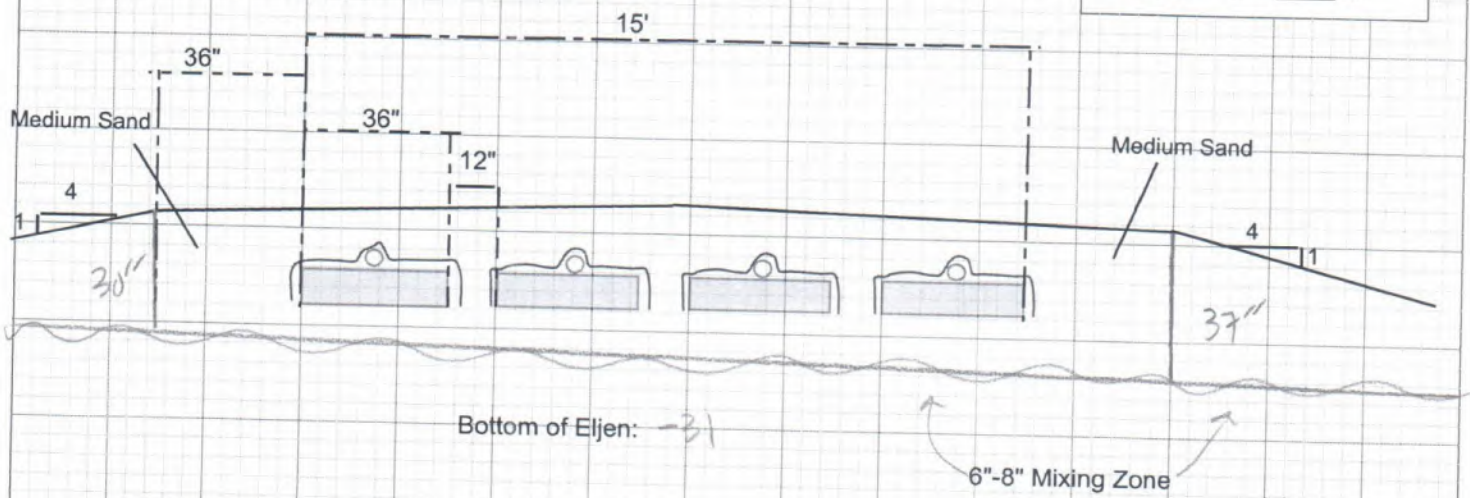
A-A

Scale

Horizontal 1" = 4 ft.

Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



[Signature]
Site Evaluator Signature

263

SE #

8/26/21

Date

JONES ASSOCIATES

Foresters, Surveyors and
Environmental Consultants



WILDLIFE EVALUATION REPORT

918 POOL STREET

BIDDEFORD, MAINE 04005

<u>Prepared for:</u> Emily Ingwersen Ginger Hill Design + Build Arundel, Maine	<u>Prepared by:</u> Jason Tome Wildlife Biologist Jones Associates, Inc. 280 Poland Spring Road Auburn, Maine 04210
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JA Job #21035BI
May 2021

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INTRODUCTION

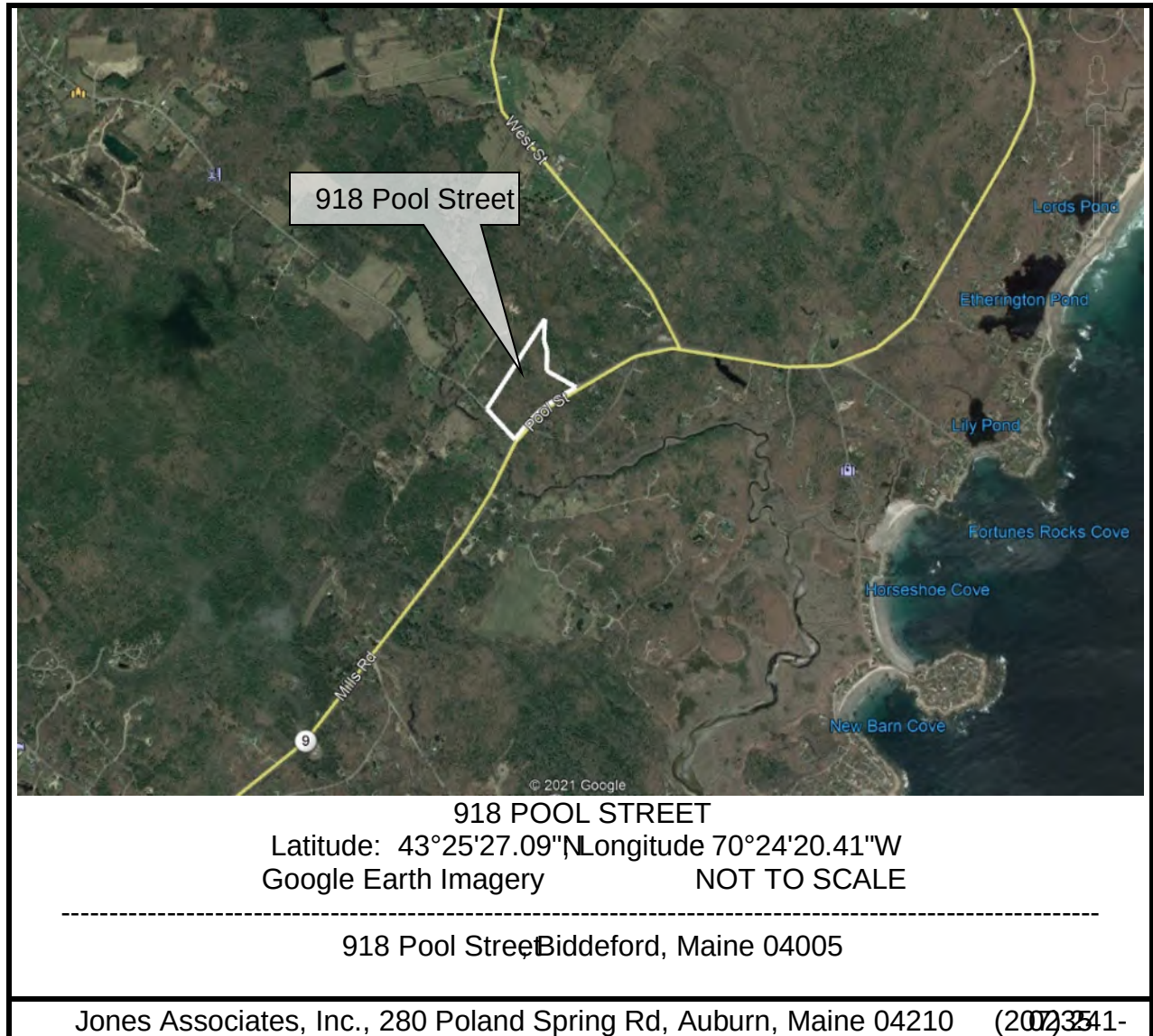
Jones Associates Inc. (JAI) was contracted to provide a habitat evaluation report for Ginger Hill Design + Build on a +/- 20-acre property located at 918 Pool Street (Tax Map 4, Lot 48) in Biddeford, Maine

The purpose of wildlife habitat assessments is to determine how a property functions ecologically within its boundaries and at the landscape level. Understanding the ecology and sensitive areas at these different levels helps during the planning phase of development to minimize and avoid impacts to the fullest extent possible.

Wildlife habitat assessments are accomplished by utilizing online databases from Inland Fisheries and Wildlife (IFW), Maine Natural Areas Program (MNAP), Information for Planning and Consultation (IPAC), and Beginning with Habitat (BwH) as preliminary research.

A site visit was also conducted to determine the accuracy of the information on the databases shown within the property boundaries and to field identify other important wildlife and habitat features that may have not been mapped by these databases. The following report summarizes findings obtained from these databases and an on-site analysis by a Wildlife Biologist/Wetland Scientist which occurred in early May of 2021.

LOCATION MAP



PRELIMINARY DATA REVIEW

JAI reviewed available databases, aerial imagery, and topographic maps to focus efforts during the site visit. Databases are not always correct; they are sometimes not field confirmed. Database boundaries are often mapped on a computer or just assumed to be present based on topography, aerial imagery, or other metrics. Also, over time habitats can change as a result of forest management activities, development, or natural succession. Wildlife habitat that existed a number of years ago may not be present anymore or habitats may have established that did not previously exist.

Although databases do not always accurately represent what is occurring, they are a valuable tool for determining what to focus on while in the field. It is important to look for these mapped habitats in the field to confirm whether they are occurring or not. Described below is the preliminary analysis of the sites using a variety of databases.

GOOGLE EARTH REVIEW

Property Level Review

Prior to the site visit aerial photography was analyzed. This is a preliminary step to gather information on property level habitat composition. Imagery taken during absent foliage indicates that the site is a mix of primarily scrubshrub and hardwoods with little vegetation. Evidence of wetland areas such as saturation, stunted vegetation, and drainage patterns and scrubshrub wetlands can be identified on aerial imagery.

Topographic maps were used to gauge the slope of the site. This information indicated that the site is gently sloping to the south with increasing slopes to the north. It was expected that wetlands would occur at the bottom of the larger slopes, because this is also where the scrub-wetlands were occurring. This further indicated that wetlands were likely to be occurring onsite. In these areas hydrology is able to pool long enough to create hydric soils and thus wetland vegetation.

Landscape Level Review

Using the same methods as the property level review, a broader look at the landscape review is conducted. This is helpful for understanding how the property functions as a subset of the larger surrounding environment.

At the landscape level the site is located in a rural area of Biddeford. There are residential homes along Oak Ridge Road and Pool Street but there is limited development away from the roads allowing for open areas which is beneficial for wildlife passage.

From aerial imagery it is clear that the majority of habitat is a mix of about equal parts forested and scrubshrub vegetation. The majority of the forest is softwood to the west and hardwoods to the east. Topographic maps indicated that at the landscape level topography is moderately flat to gently rolling. Within the forested/scrubshrub vegetation there are visible

hydrological features. For these reasons, it is expected that at the landscape level there are many wetlands within both softwood and hardwood stands.

Little River is found just across Oak Ridge Road which borders the property and empties into the Ocean off the coast of Maine. The ocean is located about 1.25 miles to the east of this property. Little River is not considered a tidal wetland at the location of the project property. However, according to MNAP Little River is mapped as tidal on the opposite side of Pool Street to the east.

BEGINNING WITH HABITAT PRELIMINARY REVIEW

Beginning with Habitat databases were also used to determine information that should be more carefully observed in the field. These databases included riparian habitats, plant and animal habitats, and Conserved Land and Undeveloped Habitats.

Riparian Habitats

Beginning with Habitat's Riparian Habitat Database was used for research prior to the site visit. However, a wetland delineation was completed by Mark Hampton Associates, which more accurately describes the wetlands on the site. The wetland report is attached as Attachment G.

Based on the database information there is a larger centrally located forested wetland and a smaller scrub/shrub wetland located to the south along Oak Ridge Road within the property.

High Value Plant and Animal Habitats

The Beginning with Habitat High Value Plant and Animal Habitats database was used to look for potential sensitive habitats within the project area (Attachment H). The database search included habitats for endangered fish species, Maine listed plants, significant vernal pools, deer wintering areas, essential plover and tern habitat, exemplary natural communities, state listed animal habitats, inland wading bird and waterfowl habitat, shorebird habitat, seabird nesting islands, shellfish beds, tidal wading bird and waterfowl habitat, Atlantic salmon spawning habitat, Atlantic salmon rearing habitat, and wild brook trout habitat.

None of these habitats were found residing on the property. Tidal waterfowl/wading bird habitat was mapped downstream of the property. This habitat is mapped as follows: Little River towards the property from the Ocean but stops 0.25 miles downstream of the property. Inland waterfowl/wading bird habitat and deer wintering areas were also found approximately 0.75 miles from the property. There is a significant vernal pool located approximately 0.20 miles to the southeast of the property.

Conserved Land and Undeveloped Habitat

According to the Beginning with Habitat Conserved Lands and the Undeveloped Habitat Map, the property is within a 833-acre undeveloped habitat block (Attachment A). Additionally, there are more large undeveloped habitat blocks surrounding the block that the property resides on. There is an 976-acre block to the south, a 960-acre block to the north, and a 952-acre block to the east. Development generally remains in close proximity to roads, this is shown by the gray on the Attachment A. The space between development is situated far enough apart to have minimal impact on wildlife crossing over the roads into the other habitat blocks. In other words, it is a little barrier for wildlife to pass from block to block.

The purpose of the Undeveloped Habitat map is to minimize loss of connectivity. Connectivity is important for wildlife. Without connectivity, habitat fragmentation can occur and hinder genetic diversity. When species are faced with new challenges and do not have a high genetic diversity, they will lack genes that help species persist through the changing environments and stressors.

INFORMATION FOR PLANNING AND CONSULTATION (IFAC)

Endangered Species

Northern LongEared Bat

The United States Fish and Wildlife Service listed the Northern LongEared Bat (NLEB) (*Myotis septentrionalis*) as threatened with Interim 4(d) Rule. This listing affects development occurring within the range of the NLEB (www.fws.gov/midwest/endangered/mammals/nleb/nlebRangeMap.html) and within the White Nose Syndrome Buffer Zone (<http://www.fws.gov/midwest/nleb/WNSBuffer.pdf>) that could cause purposeful or incidental take (harm, kill or otherwise harass). This includes the clearing of trees beneficial to the NLEB. Tree clearing is discouraged near maternity roost trees during puprearing season (June 1 to July 31).

MAINE NATURAL AREAS PROGRAM (MNAP) DATABASE REVIEW

Based on the MNAP database review no rare botanical features documented within the project area. Although there was nothing within the project area, MNAP mentions that Salt Saltmarsh (*Spartina Saltmarsh*) is mapped within close proximity and should be kept in mind during field assessments. They also recommended no clearing within 75 ft of Little River to protect this rare species downstream (Attachment B).

MAINE INLAND FISHERIES & WILDLIFE (MEIFW) DATABASE REVIEW

JAI has reached out to Maine Inland Fisheries and Wildlife to inquire about any known locations of Endangered, Threatened, and Special concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of this property.

Based on the preliminary database review ME IFW has not mapped Essential Habitats that would directly be affected by a project on this property. That being said, there are known occurrences of spotted turtles in the region, and it would be best practice to have a 250 ft buffer from Little River that borders the property.

FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE

The site is within a 16,035-acre Focus Area of Ecological Significance for vernal pools. This large area is mapped by Beginning with Habitat as the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). No vernal pools were observed on-site during the habitat review. That being said, an official vernal pool search was not conducted by JAI. Mark Hampton Associates delineated the wetlands on-site and conducted the official vernal pool search who also determined that no vernal pools within the property.

WILDLIFE HABITAT/ON -SITE REVIEW

The information in this section summarizes site conditions observed during a site visit in early May of 2021. Jones Associates, Inc. did not delineate the wetlands on-site or conduct an official vernal pool investigation. Wetland delineations and vernal pools investigations were officially conducted by Mark Hampton Associates, Inc. and are shown on Attachment G and Attachment H.

HABITAT CHARACTERISTICS

Forested Scrub Shrub Wetland

There is a swath of wetland approximately 155 feet wide that flows slowly east to west near the center of the property. It appears the hydrology in this wetland is largely influenced by runoff from Pool Street and its associated culverted drainage. Hydrology in this wetland continues west about 0.2 miles off the property and eventually ends up in Little River.

This wetland has a forested canopy that consists primarily of maple (*Acer rubrum*), young white pine (*Pinus strobus*), and balsam fir (*Abies balsamea*). There is also dense scrub shrub vegetation occurring in the understory which is dominated by winterberry (*Ilex verticillata*), speckled alder (*Alnus incana*), red osier dogwood (*Cornus sericea*), and wetland grasses (*Poa* spp.). Percent cover in this forested area is high around 85-95%. Because of the open understory of the surrounding uplands this forested scrub wetland provides some beneficial habitat because it provides food, water, and shelter for organisms within the property.

Scrub Shrub Wetland

There is a smaller wetland located to the south of the property along Oak Ridge Road. This wetland is also semi-forested but is primarily scrub shrub consisting of mostly Morrow's honeysuckle (*Lonicera morowii*), an invasive species. The creation of the wetland is likely due to the creation of Oak Ridge Road. Oak Ridge Road acts as a barrier to hydrology moving south and water is able to inundate soils for a long enough period of time to create wetlands. Because much of this wetland is influenced by Oak Ridge Road and contains mostly invasive species it is not considered a habitat of much value.

Invasive Uplands

There is a small invasive upland area at the intersection of Oak Ridge Road and Pool Street likely caused from soil disturbance when creating the road. This area consists primarily of Morrow's honeysuckle (*Lonicera morrowi*), multiflora rose (*Rosa multiflora*), bittersweet nightshade (*Solanum dulcamara*), black locust (*Robinia pseudoacacia*), and Japanese knotweed (*Fallopia japonica*). Percent cover in this area is high, around 98%. Because this part of the property is almost completely invasive it is not considered a habitat of much value.

Although birds and insects were observed utilizing the area, invasive species are harmful to overall ecosystem health because our native species have not evolved to live in these types of habitats, making them less suited for survival. Additionally, invasive habitats provide habitat for invasive wildlife species. For this reason, the spread of invasive habitats leads to native wildlife habitat loss and contributes to invasive wildlife.

Forested Uplands

Because of the topography, the majority of the site is forested uplands and consists primarily of red oaks (*Quercus rubra*) and young white pine (*Pinus strobus*). Topography slopes generally to the south. In general, percent slopes increase as you move north on the property. The understory in these areas is relatively open but have a fairly dense overstory with percent cover at approximately 80%. Because of the number of oaks on this property there is high potential for high acorn yield. These acorns, which drop in the fall, are a great source of food for wildlife. Fat is an essential diet component for wildlife because it is the most energy dense macronutrient which helps animals store energy to get through harsh winters.

There is also a wood road on the property. Along this wood road, close Pool Street, there are a few small patches of Japanese knotweed in the forested understory.

WETLAND HABITAT

Wetlands are important features because they provide many beneficial functions for fish, wildlife, and humans. Food, cover, and standing water are associated with wetlands, making them excellent habitat components. As mentioned above, shrub and forested wetlands were observed on this property. The variation in wetland types helps maintain biodiversity by providing habitat to a wide range of species.

Vernal Pools

The site is within a 16,035-acre Focus Area of Ecological Significance for vernal pools. This large area is mapped by Beginning with Habitat as the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). Based on Mark Hampton Associate's vernal pool investigations in 2021, no vernal pools were observed.

Rivers, Streams, and Brooks

Little River is found off the property to the south and west. bounds the eastern portion of the property. The larger forested wetland within the property eventually does drain into Little River to the west. Little River is hydrologically connected to Little River Marsh as this river contributes to the overall health of the marsh below. This marsh is also known to have rare plant species. For this reason, MNAP states that salt saltmarsh may reside within the property. Based the field visit salt-hay saltmarsh was not observed within the property.

Most of the wildlife that was observed directly-site consisted of squirrels, chipmunks, songbirds, and insects. Other wildlife sign that was observed included deer and Turkey. The number of oak trees located within the property and at the landscape level is likely a big factor as to why many these species frequent the area. Acorns that the oaks drop in the fall is a great source of fat. Fat is an essential diet component for wildlife because it is the energy dense macronutrient which helps animals get through harsh winters.

Based on the database information provided by Maine Natural Areas Program (MNAP), Information for Planning and Consultation (IPAC), Maine Inland Fisheries and Wildlife (ME IFW), and Beginning with Habitat (BwH), the only important habitat previously documented to occur within the site is the 16,035-acre Focus Area of Ecological Significance for vernal pools (which the site does not contain). This large Focus Area is partly Beginning with Habitat as the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). Previously conducted vernal pool investigations by Mark Hampton Associates Inc. concluded that thermal pools were within the property.

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Based on the site findings, wetland and vernal pool reports, and the results from the databases, JAI has a few recommendations to retain as much wildlife habitat integrity as possible during development.

First, it is recommended that cutting occur outside the Northern ~~Large~~ Bat pupping season in areas where trees are occurring. It is also recommended that at least a 50' buffer be used from Little River per MNAP's request. ME IFW also recommends a 250' buffer from Little River to avoid potential impacts to spotted turtles. Although no spotted turtles were observed, this buffer would be considered a best practice.

Avoiding and minimizing impacts to wetlands to the furthest extent possible during the design phase of construction will be important, especially for the larger wetland. This wetland empties into the Little River which has rare plant species located downstream (within the marsh). Reducing sedimentation and pollution from this wetland will help maintain ecological integrity in these waters.

Lastly, it is recommended that invasive species be dealt with by a professional prior to developing in order to prevent spreading. Developing within this invasive area as much as possible would also be beneficial as it would reduce impacts to native habitat.

PHOTOGRAPHS



Characteristic larger forested shrub wetland (Taken: May 2021)



Characteristic southern scrub wetland (Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005
Jones Associates Inc. Photographer: Jason Tome



High abundance of oaks in the upland habitat (Taken: May 2021)



Oak overstory and young white pine in the understory (Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005
Jones Associates Inc. Photographer: Jason Tome



Large scrubshrub wetland located just off the property to the north (Taken: May 2021)



Beginning of larger forested wetland influenced by runoff and drainage from Pool Street
(Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005
Jones Associates Inc. Photographer: Jason Tome



Characteristic invasive species area (Taken: May 2021)



Location of invasive area (Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005

Jones Associates Inc.

Photographer: Jason Tome & Google Earth



Invasive bittersweet and black locus (Taken: May 2021)



Large amount of bittersweet suffocating black locus in trees (Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005
Jones Associates Inc. Photographer: Jason Tome



Small amounts of invasive Japanese knotweed in forested uplands: (Taken: May 2021)



Characteristic invasive shrubs within invasive area on property (Taken: May 2021)

918 POOL STREET, BIDDEFORD, MAINE 04005
Jones Associates Inc. Photographer: Jason Tome

ATTACHMENTS

ATTACHMENT A - UNDEVELOPED HABITAT/CONNECTIVITY DATABASE
ATTACHMENT B - HIGH VALUE PLANT AND ANIMAL HABITATS DATABASE
ATTACHMENT C – FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE DATABASE
ATTACHMENT D – INFORMATION FOR PLANNING AND CONSULTATION (IPAC)
ATTACHMENT E – MAINE NATURAL AREAS PROGRAM DATABASE (MNAP)
ATTACHMENT F – MAINE INLAND FISHERIES AND WILDLIFE DATABASE
ATTACHMENT G – MARK HAMPTON ASSOCIATES INC WETLAND REPORT
ATTACHMENT H – MARK HAMPTON ASSOCIATES INC VERNAL POOL REPORT

ATTACHMENT A - UNDEVELOPED HABITAT/CONNECTIVITY

Conserved Land and Undeveloped Habitat

Welcome **Layers** Legend

Layer Details:
Toggle layers on and off. Layers with gray checkbox will appear once zoomed to visible scale.

☒ Maine Conserved Lands

☐ Conserved Lands Ownerships

- ☐ Federal
- ☐ Municipal
- ☐ Water Dist., etc.
- ☐ Private
- ☐ State

☐ Conserved Lands Easements

☒ Focus Areas

☒ Undeveloped Blocks

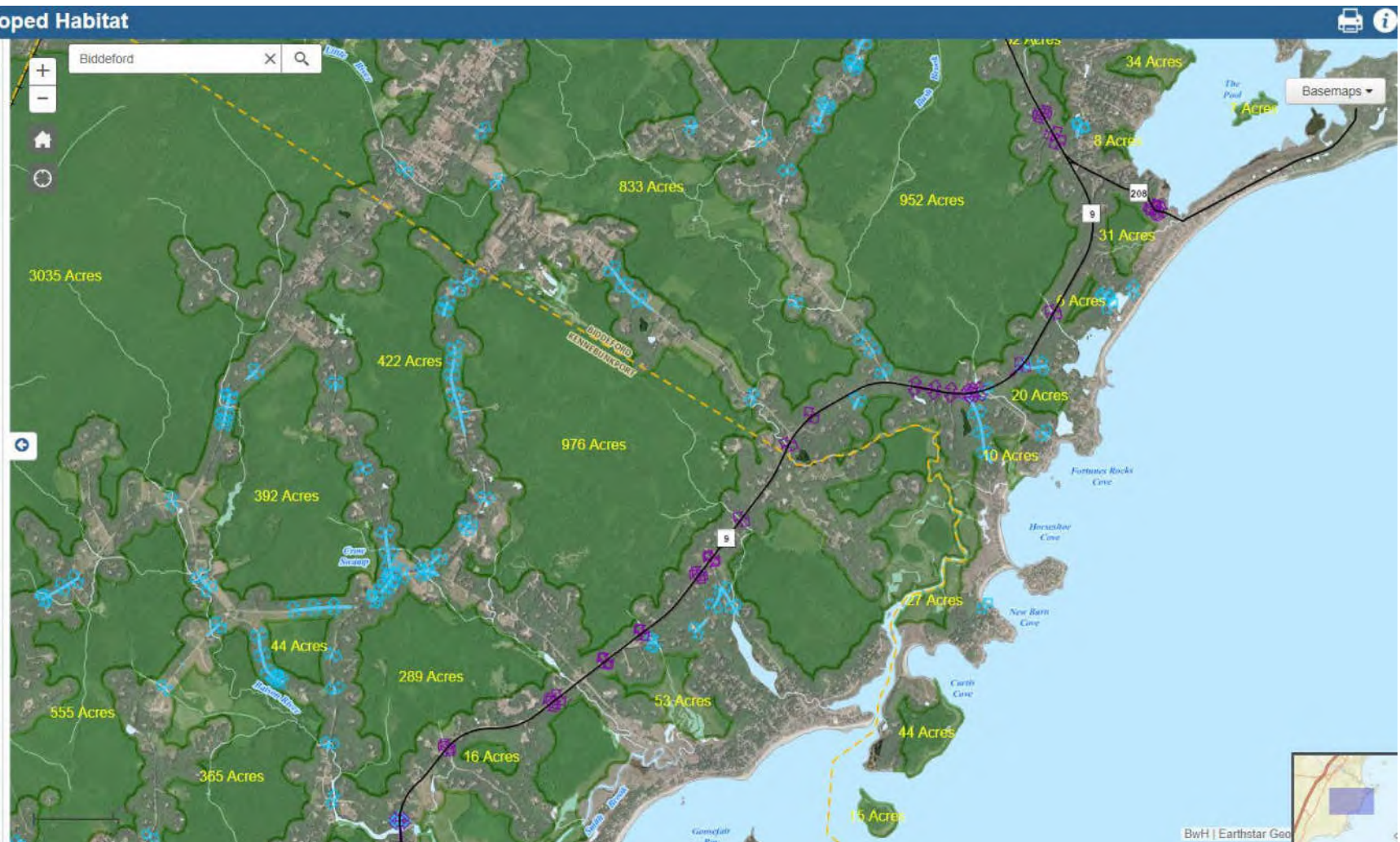
☒ Block Connectors

☒ Riparian Connectors

☒ Highway Bridge Connectors

☒ Developed Land

Hover:
☒ Check this box to enable your mouse to hover over features on the map. Click on the feature to identify more information.



ATTACHMENT B - HIGH VALUE PLANT AND ANIMAL HABITATS

Plant and Animal Habitats



Welcome Layers Legend

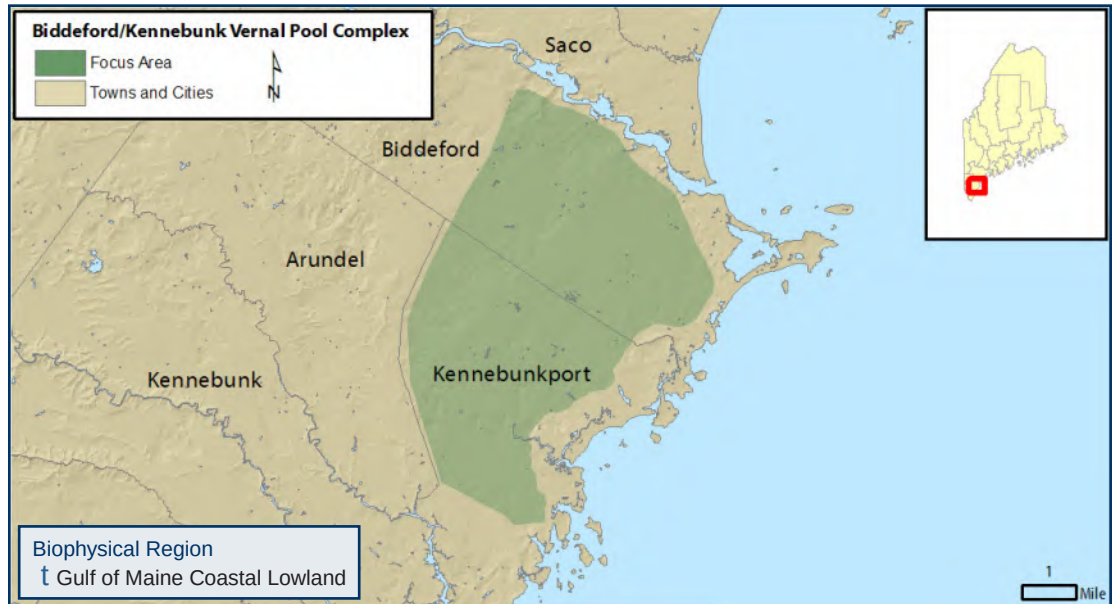
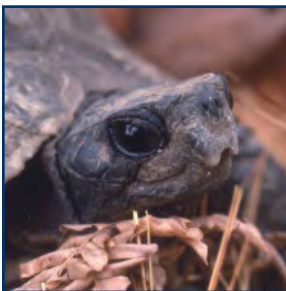
- Layer Details:**
Toggle layers on and off. Layers with gray checkbox will appear once zoomed to visible scale.
- ☒ Endangered Fish Species
 - ☒ Maine State Listed Plants
 - ☒ Significant Vernal Pools
 - ☒ Deer Wintering Areas
 - ☒ Essential Plover and Tern Habitat
 - ☒ Exemplary Natural Communities
 - ☒ State Listed Animal Habitats
 - ☒ Inland Wading Bird and Waterfowl Habitat
 - ☒ Shorebird Habitat
 - ☒ Seabird Nesting Islands
 - ☒ Shellfish Beds
 - ☒ Tidal Wading Bird and Waterfowl Habitat
 - ☒ Atlantic Salmon Spawning Habitat
 - ☒ Atlantic Salmon Rearing Habitat
 - ☒ Wild Brook Trout Habitat

Hover:
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ATTACHMENT C – FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE

Biddeford/Kennebunkport Vernal Pool Complex



WHY IS THIS AREA SIGNIFICANT?

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area includes thousands of acres of undeveloped forest and wetlands in Biddeford and Kennebunkport. The biological significance of this area is primarily a result of the high concentration of pocket swamps and vernal pools in an undeveloped landscape, an increasingly rare occurrence in Maine. The swamps and vernal pools provide habitat to rare species, most notably to Blanding's and spotted turtles, both species found primarily in the southern most part of the state where increasing development is contributing to fragmentation and loss of habitat.

OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to permanently protect remaining undeveloped areas and significant features.
- » Encourage towns to improve approaches to development that may impact focus area functions, including approaches to limit roads and habitat fragmentation.
- » Encourage enhanced riparian buffers and best management practices for forestry, vegetation clearing, and soil disturbance activities near wetlands and other significant features.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Rare Animals
Saltmarsh Sharp-tailed Sparrow
Spotted Turtle
Blanding's Turtle
Wood Turtle
Eastern Ribbon Snake

Rare Plants
Small Reed-grass
Button Sedge

Rare and Exemplary Natural Communities
Salt-hay Saltmarsh

Significant Wildlife Habitats
Inland Waterfowl and Wading Bird Habitat
Deer Wintering Area
Significant Vernal Pool

Public Access Opportunities

- » Kennebunk Greenbelt
- » Rachel Carson NWR, USFWS



Vernal Pool, Maine Department of Inland Fisheries and Wildlife

FOCUS AREA OVERVIEW

The Biddeford/Kennebunkport Focus Area covers 16,000 acres and includes thousands of acres of undeveloped forest and wetlands located in eastern Biddeford and northern Kennebunkport. The biological significance of this area is due to the high concentration of pocket swamps and vernal pools. The area is underlain by glacial till including moraine formations and by glacio-marine deposits including clay, both of which impede drainage and help create this unusual high density of swamps, vernal pools, and small streams. Concentrations of pocket swamps and vernal pools in undeveloped landscapes are becoming increasingly rare in Maine.

Although the focus area is bisected by a number of roads, it is likely that the interior of each of the remaining unfragmented forested blocks has never been cleared for farming due to the poor quality of the soils. The forest through much of the area is dominated by oak and pine, and the wetlands are largely dominated by red maple. Timber harvesting has probably been the primary historical use of these lands.

CHARACTERISTIC SPECIES

Vernal pools are ephemeral wetlands that typically fill with water from snow melt and spring runoff and often dry out over the course of the summer. They offer critical breeding

habitat for some species of amphibians and invertebrates such as wood frogs, spotted and blue salamanders, and fairy shrimp. The seasonal nature of the temporary pools maintains a sheltered environment conducive to the successful breeding of these animals. Vernal pools are also used as feeding and breeding habitat by many other animals such as spring peepers, grey tree frogs, and other common amphibians, as well as by several rare species. The amphibians and aquatic invertebrates that are dependent on these ponds for survival are an important food resource for forest dwellers such as turtles, snakes, birds, and small mammals. The vegetated condition of vernal pools varies from completely vegetated, usually with sedges, grasses, ferns, and scattered shrubs, to non-vegetated, with only dead leaves on the pool bottom.

The vernal pools, wetlands and uplands in this focus area support the state Threatened spotted turtle (*Clemmys guttata*) and the state Endangered Blanding's turtle (*Emys blandingii*). Spotted and Blanding's turtles are generally found only in the southernmost part of the state where increasing development contributes to loss of habitat, habitat fragmentation, and loss of individuals at road crossings. Spotted and Blanding's turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools in large, intact forested landscapes.

They also use small streams, shrub swamps, and wet meadows. Although these turtles spend most of their time in the water, they readily travel overland between wetlands during the spring and summer months. Upland habitats are critical for basking, aestivating (a period of late summer inactivity), nesting, and as travel corridors between wetlands.

Spotted and Blanding's turtles have evolved relatively long adult life spans to offset the long time it takes to reach reproductive maturity and to offset high levels of nest mortality. Because of this unusual life history, spotted and Blanding's turtle populations are at low densities, and thus populations are extremely vulnerable to any human sources of adult mortality. Road mortality and collecting for pets, for example, can be deleterious as the attrition of just a few individuals every year can lead to the long-term decline and extinction of a local population. The secondary effects of human development – increased predator populations (i.e., domestic cats, and raccoons), pollution, filling of small wetlands, and blocking upland travel corridors – also limit populations. Spotted and Blanding's turtles are strictly protected from take (collecting, killing or possession) by the Maine Endangered Species Act.

Vernal pools and pocket swamps are sometimes habitat for rare plant species in the southern most part of the state; however there has only been limited rare plant inventory within this focus area. Two rare plants, small reed grass (*Calamagrostis cinnoides*) and button sedge (*Carex bullata*), have been documented from specific locations within the focus area.

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area also supports Deer Wintering Areas including those mapped along portions of the upper Batson River, Little River, north of Lord's Pond, the Round Swamps area, and the largest that extends northwest from Tattle Corner and includes the upper watershed of Dungeon Brook. High to moderate value

Ecological Services of the Focus Area

- † Retains sediments and nutrients
- † Stores and conveys floodwaters
- † Contributes to regional biodiversity by providing high quality habitat for rare species
- † Protects water quality

Economic Contributions of the Focus Area

- † Provides recreational opportunities such as hunting, fishing, hiking, and wildlife watching
- † Recharges groundwater
- † Provides forest products

Inland Waterfowl and Wading Bird Habitats have been mapped along portions of the Batson River and Bush Brook as well. Both Deer Wintering Areas and Inland Waterfowl and Wading Bird Habitats are Significant Wildlife Habitat identified under the Natural Resources Protection Act.

CONSERVATION CONSIDERATIONS

- » Further fragmentation of the large forested blocks that make up this site will gradually lead to a decline in habitat suitability for certain area-sensitive species, and will increase road mortality for rare turtles.
- » Coastal towns in southern Maine have experienced rapid growth in the last decade, and many upland areas near the coast are under increasing threat. Unmanaged growth and sprawl can contribute to habitat fragmentation, introduction of invasive plant populations, and water quality degradation through pollution from storm water runoff and private sewage systems.
- » Inappropriate off-road vehicle (ORV) use can degrade wetlands and directly contribute to reptile and amphibian mortality. Existing roads and trails should be reviewed with particular recreation and access needs in mind, and trails closed if they run counter to protection needs. Fragmenting features should be minimized where possible.
- » Avoid road improvement projects (e.g. paving, widening) that may lead to increased traffic volume and speed within ¼ mile of known turtle wetlands. Water crossing structure repair, maintenance and installation projects should follow guidelines for aquatic species passage in order to avoid further fragmentation of aquatic and riparian habitats.
- » No activities should be permitted that could lead to the loss



Spotted Turtle, Maine Department of Inland Fisheries and Wildlife

or degradation of wetlands, regardless of size, including filling, dredging, sedimentation, or changing hydrology unless the activity is reviewed by MDIFW.

- » A minimum 250-foot forested buffer zone should be maintained around wetlands hosting known rare animal locations.
- » Impervious surfaces, yards, buildings and roads should comprise no more than 20% of the landscape within ¼ mile of rare animal wetlands. Natural forest habitat should dominate the landscape around these wetlands. Intensive developments, including subdivisions and service centers, that concentrate human populations within ¼ mile of turtle wetlands should be avoided.
- » Towns should strive to maintain important habitat areas identified by MDIFW in low density, rural settings by identifying these habitat areas in comprehensive plans and zoning accordingly.
- » Low-intensity cutting (single tree or small group selection, rewood harvest) within riparian buffers is compatible as long as operators avoid wetlands. Winter harvests are recommended to minimize impacts to turtles, amphibian prey, and wetland condition. Close adherence to Best Manage

ment Practices for forestry activities near vernal pools (available from Maine Audubon Society at 207-781-6180 ext. 222) will generally ensure the protection of all major wetland habitats.

- » Invasive plants and aquatic organisms have become an increasing problem in Maine and a threat to the state's natural communities. Disturbances to soils and natural vegetation and introductions of non-native species to terrestrial and aquatic habitats can create opportunities for colonization. Landowners and local conservation groups should be made aware of the potential threat of invasive species, of methods to limit establishment, and/or of appropriate techniques for removal. For more information on invasive plants visit: <http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm>.
- » With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an important safety net for biodiversity as species adjust their ranges to future climate conditions.



Blanding's Turtle, Maine Department of Inland Fisheries and Wildlife

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Saltmarsh Sharp-tailed Sparrow	<i>Ammodramus caudacutus</i>	SC	S3B	G4
	Spotted Turtle	<i>Clemmys guttata</i>	T	S3	G5
	Blanding's Turtle	<i>Emys blandingii</i>	E	S2	G4
	Wood Turtle	<i>Glyptemys insculpta</i>	SC	S4	G4
	Eastern or Northern Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
Plants	Small Reed-grass	<i>Calamagrostis cinnoides</i>	SC	S3	G5
	Button Sedge	<i>Carex bullata</i>	SC	S2	G5
Natural Communities	Salt-hay Saltmarsh	<i>Spartina saltmarsh</i>		S3	G5

State Status*

E	EndangeredRare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
T	ThreatenedRare and, with further decline, could become endangered; or federally listed as Threatened.
SC	Special ConcernRare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

*State status rankings are not assigned to natural communities.

State Rarity Rank

S1	Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
S2	Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3	Rare in Maine (on the order of 20–100 occurrences).
S4	Apparently secure in Maine.
S5	Demonstrably secure in Maine.

Global Rarity Rank

G1	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
G2	Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3	Globally rare (on the order of 20–100 occurrences).
G4	Apparently secure globally.
G5	Demonstrably secure globally.

ATTACHMENT D – INFORMATION FOR PLANNING AND CONSULTATION (IPAC)

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Official Species List

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Maine Ecological Services Field Office

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Project Summary

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Critical habitats

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ATTACHMENT E – MAINE NATURAL AREAS PROGRAM DATABASE (MNAP)



STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

May 4, 2021

Josie Ray
Jones Associates
280 Poland Spring Road
Auburn, ME 04210

Via email: jgriffen@jonesai.com

Re: Rare and exemplary botanical features in proximity to 918 Pool Street, Tax Map 4 Lot 48, Biddeford, Maine

Dear Ms. Ray

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received April 28, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Biddeford, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

Though the MNAP has no features mapped at the project location itself, tributary streams on the property connect to the Little River, which is hydrologically connected to the Little River Marsh where there is a rare Salt Marsh mapped and also a rare plant species. MNAP recommends no clearing within 75 feet of the Little River and all associated perennial and intermittent streams on the property, and the use of standard best management practices for erosion control to help prevent downstream impacts to this rare freshwater wetland. If clearing is planned within 75 feet of streams, please contact the MNAP for further guidance. Please see the table below and attached map and factsheets for more information about these features.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING



PHONE: (207) 287-8044
WWW.MAINE.GOV/DACF/MNAP

Feature	State Status	State Rank	Global Rank	Notes
Salthay Saltmarsh Spartina Saltmarsh	N/A	S3	G5	Occurrence Rank B Little River Marsh
Saltmarsh False Foxglove Agalinis maritima	Special Concern	S3	G5	Occurrence Rank C Little River Marsh

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
 207-287-8044 lisa.st.hilaire@maine.gov

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Conservation Status Ranks

State and Global Ranks This ranking system facilitates a quick assessment of a species' or habitat rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of 1 to 5. Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 G1	Critically Imperiled— At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 G2	Imperiled— At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 G3	Vulnerable— At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 G4	Apparently Secure— At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 G5	Secure— At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX GX	Presumed Extinct— Not located despite intensive searches and virtually no likelihood of rediscovery.
SH GH	Possibly Extinct— Known from only historical occurrences but still some hope of rediscovery.
S#S# G#G#	Range Rank A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range uncertainty about the status of the species or ecosystem.
SU GU	Unrankable— Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR SNR	Unranked— Global or subnational conservation status not yet assessed.
SNA GNA	Not Applicable— A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., native species or ecosystems).
Qualifier	Definition
S#? G#?	Inexact Numeric Rank Denotes inexact numeric rank.
Q	Questionable taxonomy that may reduce conservation priority. Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	Intraspecific Taxon (trinomial)— The status of intraspecific taxa (subspecies or varieties) are indicated by a "T" rank following the species' global rank.

State Status Endangered and Threatened are legal status designations authorized by statute. Please refer to MRS A Title 12, §544A and §544B.

Status	Definition
E	Endangered– Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	Threatened– Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	Special Concern– A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	Potentially Extirpated– A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

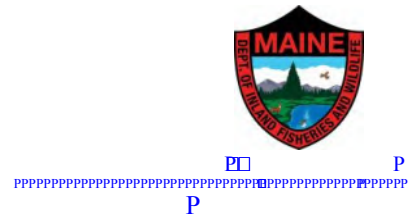
Element Occurrence (EO) ranks Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (§§31 as well as exemplary common natural community types (§§5 with EO ranks A/B).

Rank	Definition
A	Excellent– Excellent estimated viability/ecological integrity.
B	Good– Good estimated viability/ecological integrity.
C	Fair– Fair estimated viability/ecological integrity.
D	Poor– Poor estimated viability/ecological integrity.
E	Extant– Verified extant, but viability/ecological integrity not assessed.
H	Historical– Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	Extirpated– Documented loss of population or destruction of habitat.
U	Unrankable– Occurrence unable to be ranked due to lack of sufficient information (e. possible mistaken identification).
NR	Not Ranked– An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
<http://www.maine.gov/dacf/mnap>



ATTACHMENT F – MAINE INLAND FISHERIES AND WILDLIFE DATABASE



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The map shows a street grid in San Francisco. The street labeled "918 Pool Street" is highlighted in red. The building at 918 Pool Street is marked with a red dot and labeled "918 Pool Street". The map also shows the surrounding streets, including "14th St", "15th St", "16th St", "17th St", "18th St", "19th St", "20th St", "21st St", "22nd St", "23rd St", "24th St", "25th St", "26th St", "27th St", "28th St", "29th St", "30th St", "31st St", "32nd St", "33rd St", "34th St", "35th St", "36th St", "37th St", "38th St", "39th St", "40th St", "41st St", "42nd St", "43rd St", "44th St", "45th St", "46th St", "47th St", "48th St", "49th St", "50th St", "51st St", "52nd St", "53rd St", "54th St", "55th St", "56th St", "57th St", "58th St", "59th St", "60th St", "61st St", "62nd St", "63rd St", "64th St", "65th St", "66th St", "67th St", "68th St", "69th St", "70th St", "71st St", "72nd St", "73rd St", "74th St", "75th St", "76th St", "77th St", "78th St", "79th St", "80th St", "81st St", "82nd St", "83rd St", "84th St", "85th St", "86th St", "87th St", "88th St", "89th St", "90th St", "91st St", "92nd St", "93rd St", "94th St", "95th St", "96th St", "97th St", "98th St", "99th St", "100th St".

Endangered, Threatened, and Special Concern Species

A scatter plot showing the distribution of 1000 random permutations of the word "Myotis". The x-axis represents the number of permutations, ranging from 0 to 1000. The y-axis represents the number of permutations, ranging from 0 to 1000. The plot shows a dense cluster of points at the origin (0,0) and a few scattered points at higher values.

[illegible]

Significant Wildlife Habitat2

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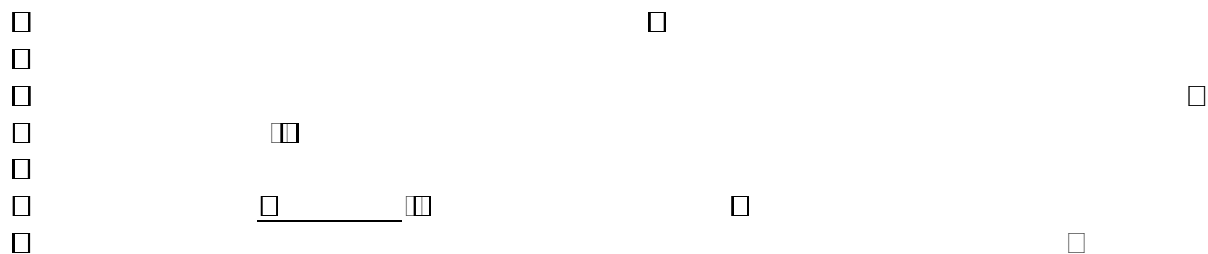
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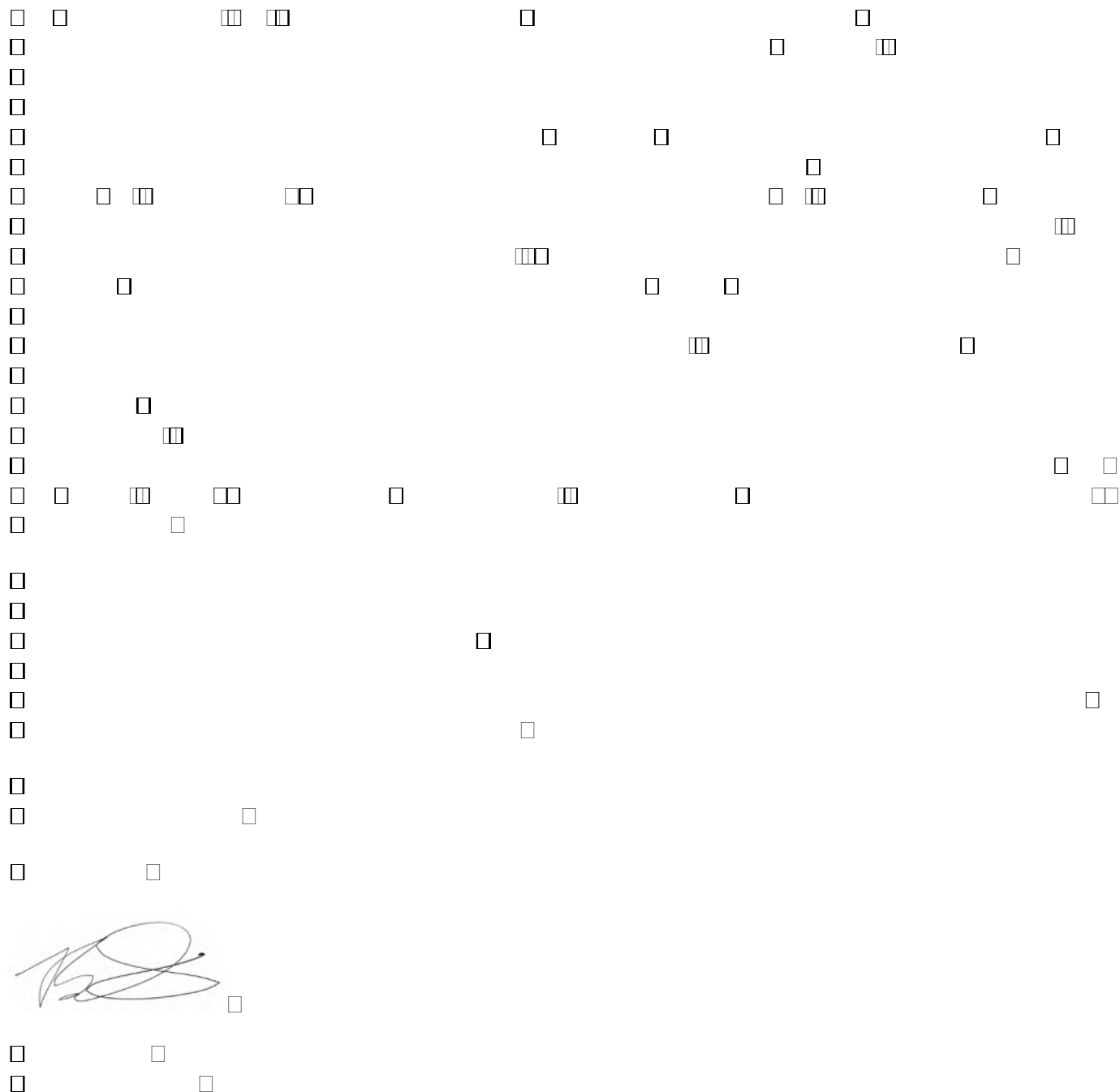
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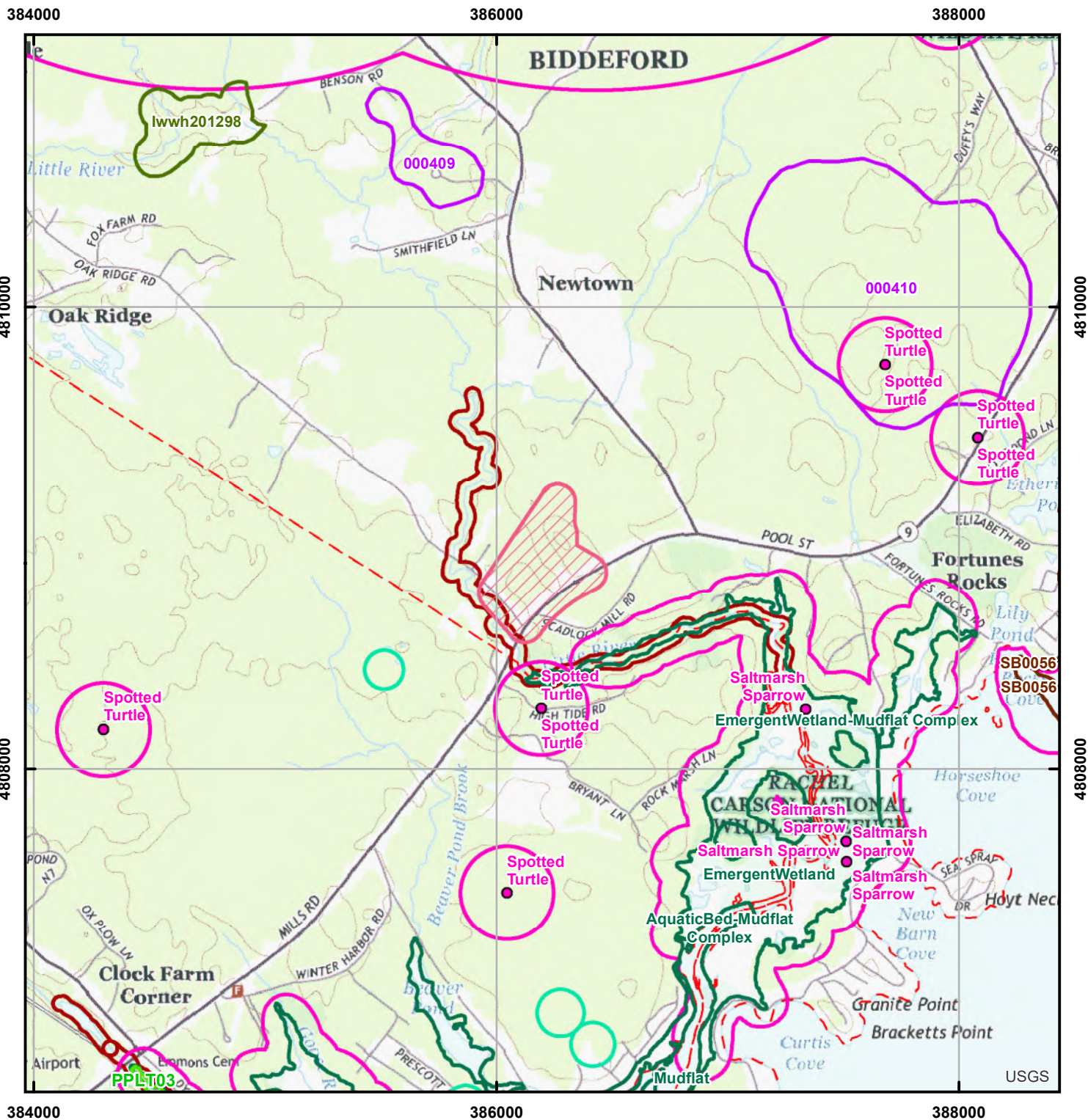
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Fisheries Habitat



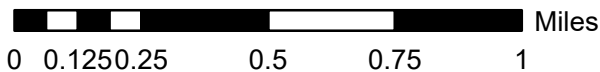


Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: 918 Pool Street, Biddeford
(Version 1)



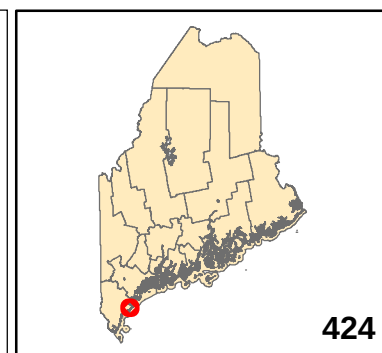
Maine Department of
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 5/6/2021

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|-------------------------------------|----------------------------------|---|
| Project Search Areas - All Versions | Deer Winter Area | Roseate Tern |
| Maine Cliff and Talus Areas | LUPC p-fw | Piping Plover and Least Tern |
| | Cooperative DWAs | Aquatic ETSc - 2.5 mi review |
| | Seabird Nesting Islands | Rare Mussels - 5 mi review |
| | Shorebird Areas | Maine Heritage Fish Waters |
| | Inland Waterfowl and Wading Bird | Arctic Charr Habitat |
| | 2008 lwwh - Shoreland Zoning | Redfin Pickerel and Swamp Darter Habitats - buffer100ft |
| | Tidal Waterfowl and Wading Bird | Special Concern occupied habitats - 100ft buffer |
| | Significant Vernal Pools | Wild Lake Trout Habitats |
| | Environmental Review Polygons | |



ATTACHMENT G – MARK HAMPTON ASSOCIATES INC WETLAND REPORT



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

March 5, 2021

Emily & Rob Ingwersen
Ginger Hill Design & Build
18 Ginger Hill Lane
Arundel, ME 04046

Re: Delineation of wetlands, 15.6+ acres 918 Pool Street, Biddeford, ME

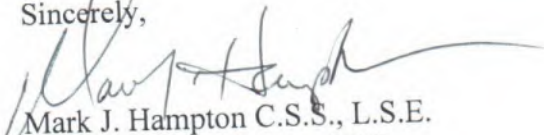
Dear Emily & Rob,

Today, we completed the delineation of the wetlands on a 15.6 acre parcel located at 918 Pool Street Biddeford. The delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by gps equipment capable of locating a point to within three feet. The wetland data has been forwarded to Walsh Engineering, Inc. The wetlands found on the parcel are forested wetlands. The wetlands do not meet the definition of wetlands of special as defined by Maine Department of Environmental Protection. The wetlands are associated with drainage moving across the parcel from east to west toward Little River.

If you have any questions or require additional information, please contact me.

Sincerely,


Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

ATTACHMENT H – MARK HAMPTON ASSOCIATES INC VERNAL POOL REPORT



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

May 17, 2021

Emily & Rob Ingwersen
Ginger Hill Design & Build
18 Ginger Hill Lane
Arundel, ME 04046

Re: Delineation of wetlands, 15.6 acre parcel, 918 Pool Street, Biddeford, ME

Dear Emily & Rob,

I have completed a vernal pool assessment on a 15.6 acre parcel located at 918 Pool Street Biddeford, ME. The vernal pool assessment was conducted in accordance with Chapter 335 Significant Wildlife Habitat, Section 9 Significant Vernal Pools for the Maine Department of Environmental Protection. This section outlines the definition of a vernal pool as well as the requirements of a vernal pool to meet the definition of significance as related to the number of amphibian egg masses counted during the breeding season.

Two site visits were made to the property over the course of six weeks beginning the first week in April. I found no vernal pools on the property.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

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[illegible]

ENGINEERING ASSOCIATES, INC. P

P
STORMWATER MANAGEMENT REPORT

WINDWARD RIDGE
Pool Street
Biddeford, Maine 04005

Introduction

[illegible]

Methodology

[illegible]

Pre-Development Conditions

[illegible]

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PostDevelopment Conditions

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PP □ PPPP □ PP PP PPP

PPPPPPPP PP PPP PP ;0 89/ PP

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□ xPPPPPPPPPPPP

P P □ P P P P zP P □ xP

PPPPPPPPPPz6P PPP

PPPP P zPP PPPPPPPPP

□ PPP-PP P xEP-EP ;/ xPP zP

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Stormwater Quantity

P □ P PPPPPPPPPPP

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Table 1 ±Peak FlowRates (cfs)				
Analysis Point		2-Year Storm	10-Year Storm	25-Year Storm
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□ ; PPP x□	P	7z;P	8zP	9zP
PPPPPPPPPP	P	7z-P	8z-P	9zIP

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PPPP-EP P PPPPP □ P PP; PP □ P

PPP P PP PPP xPPP □ PP zP

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PPPPPP P xP □ P PP

PPPP P □ PP □ zP

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Stormwater Quality

□ PP PP PPPPPPPPPPP P P P P

P PP □ PP / PP PPP PPPP

PP zP

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Erosion Control

PPPPPPPPPPPP □ EEP

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PzP P PPPPPPP PP

PP P P PPP □ PP □ P;z7zPPPPPP

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Inspection & Maintenance

PPPP4P PP PPPP

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Conclusions

Calculations show that the peak rate of runoff from the 2-, 10-, and 25-year storm events will not exceed the pre-development rate as required by the City of Biddeford.

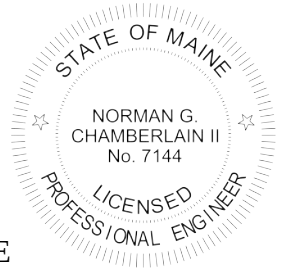
Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



Norman G. Chamberlain II, PE
Walsh Engineering Associates, Inc.



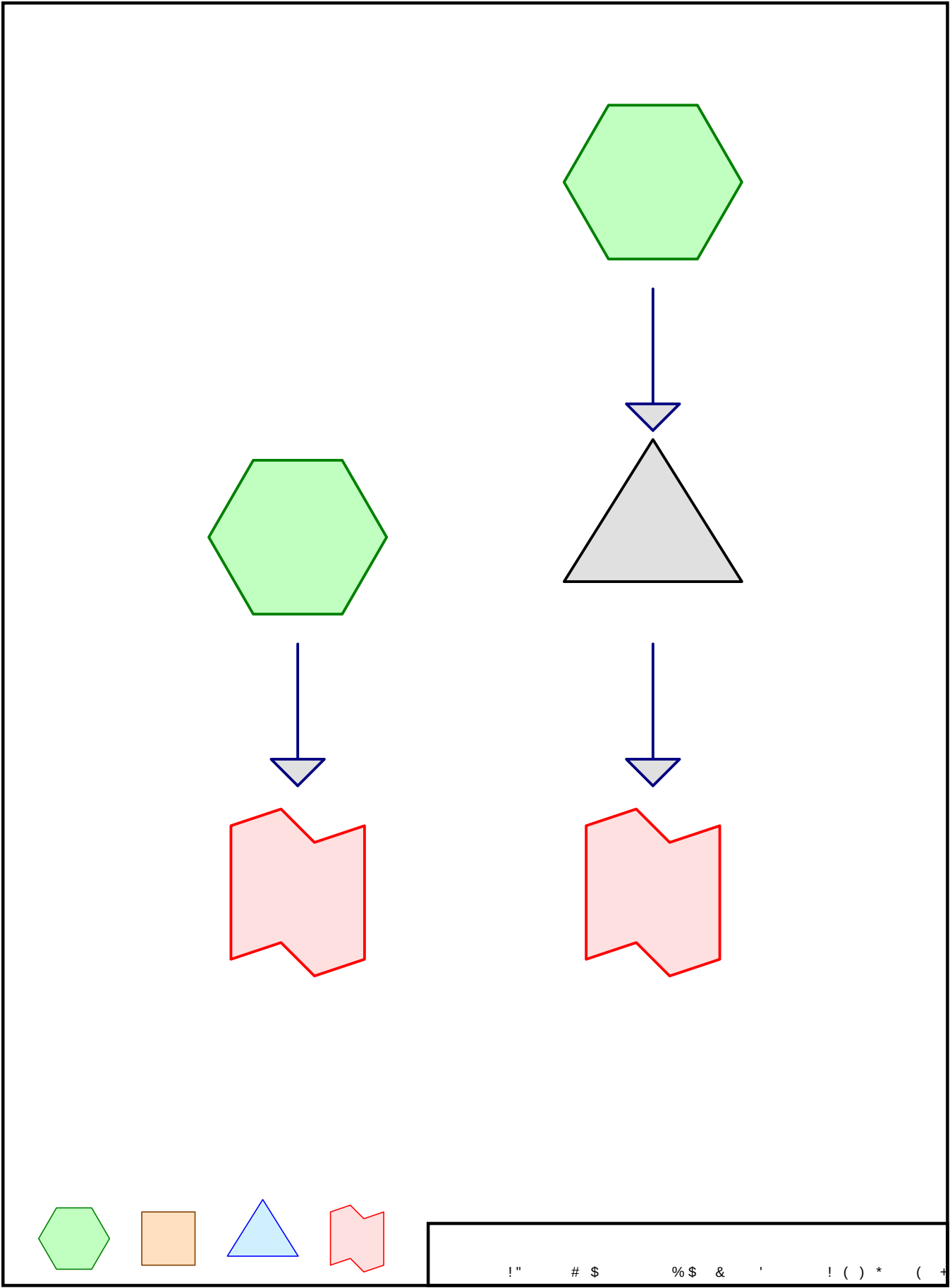
Supporting Data and Calculations

The following material presents calculations and copies of source material used during the analysis for this study.

- Appendix A: Pre-Development HydroCAD Report
- Appendix B: Post-Development HydroCAD Report
- Appendix C: High Intensity Soil Survey
Web Soil Survey Map
- Appendix D: Inspection & Maintenance Plan
- Appendix E: Drainage Plans
 - D1.0 – Pre-Development Drainage Plan
 - D2.0 – Post-Development Drainage Plan

Appendix A

Pre-DevelopmentHydroCAD Report



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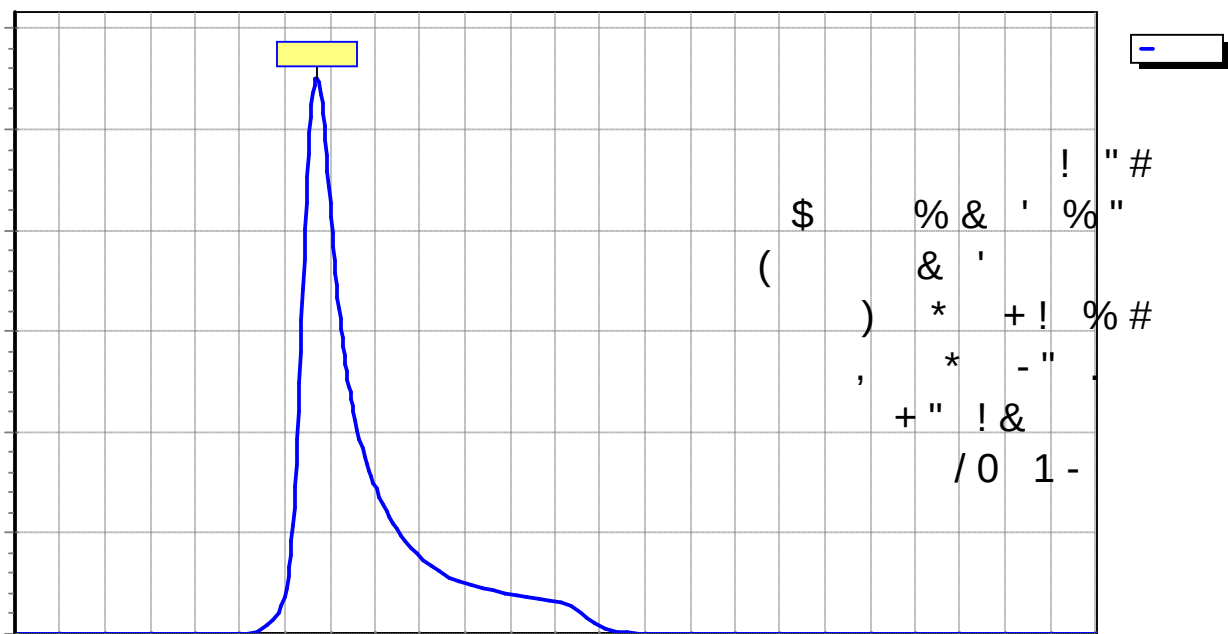
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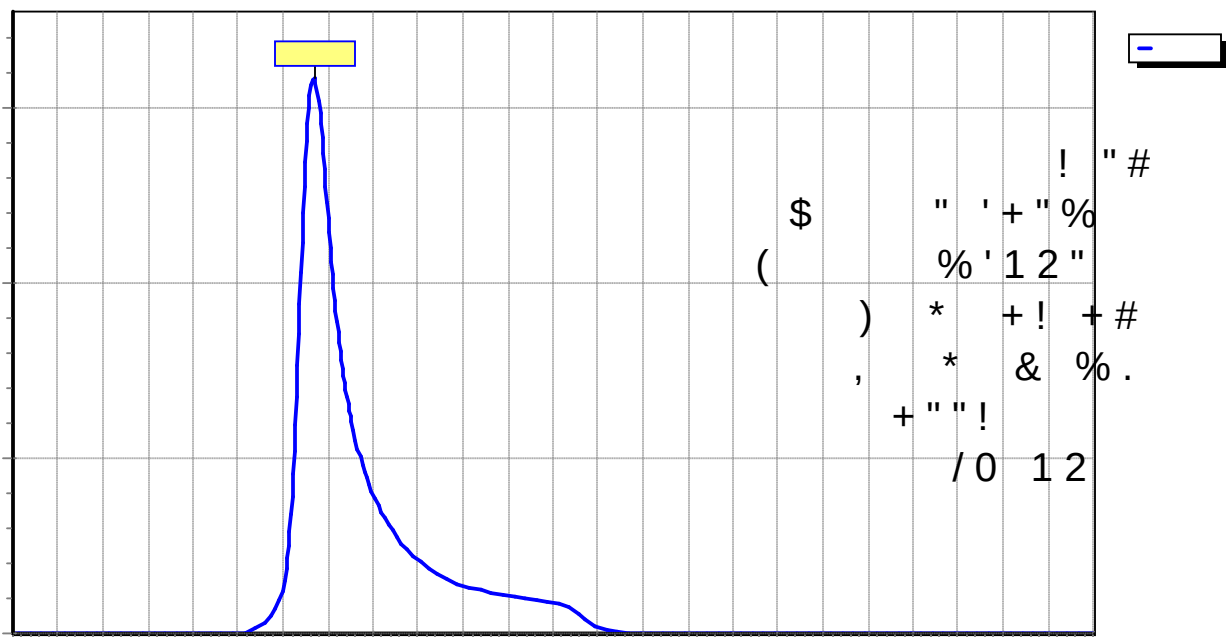
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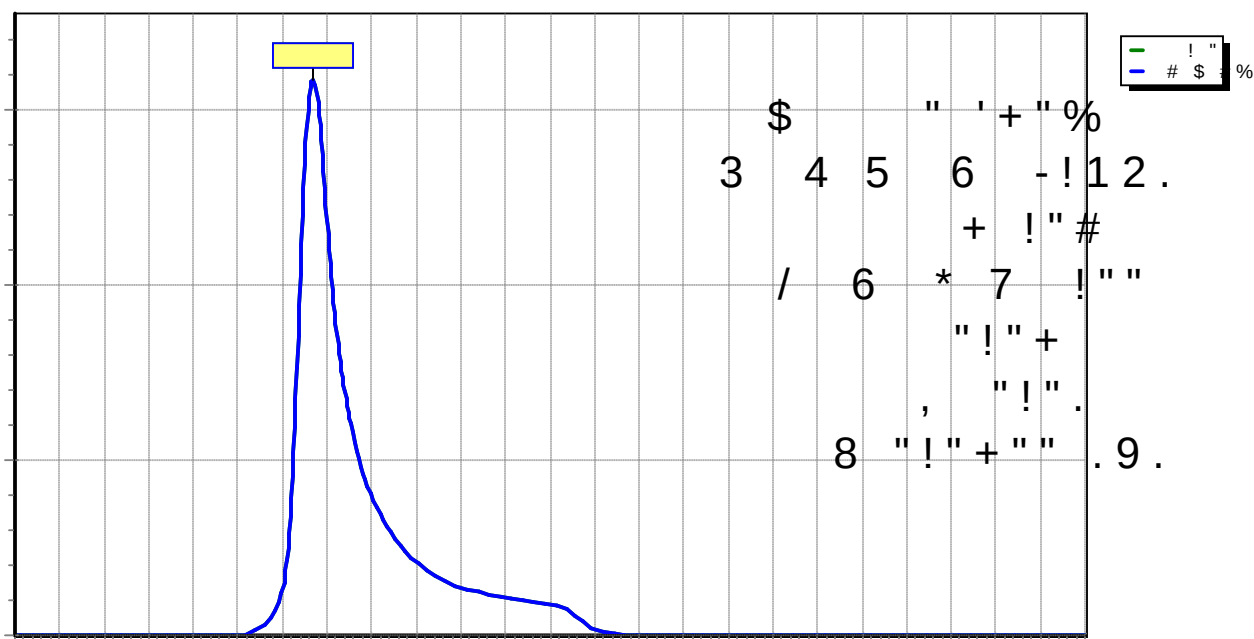
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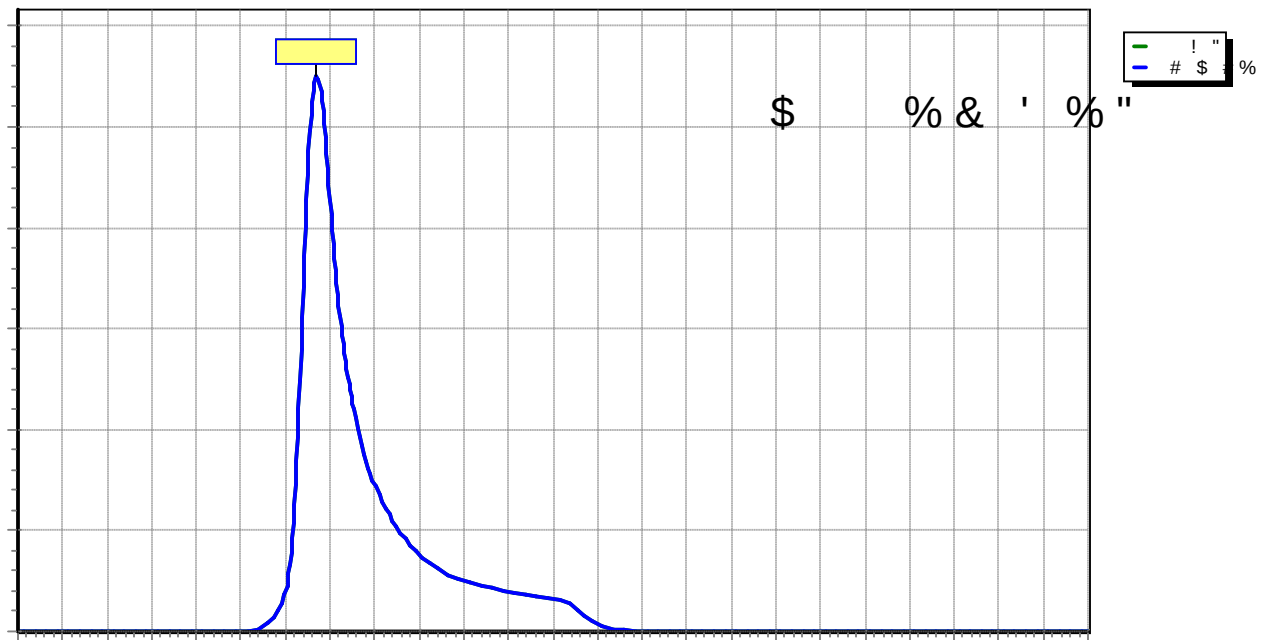
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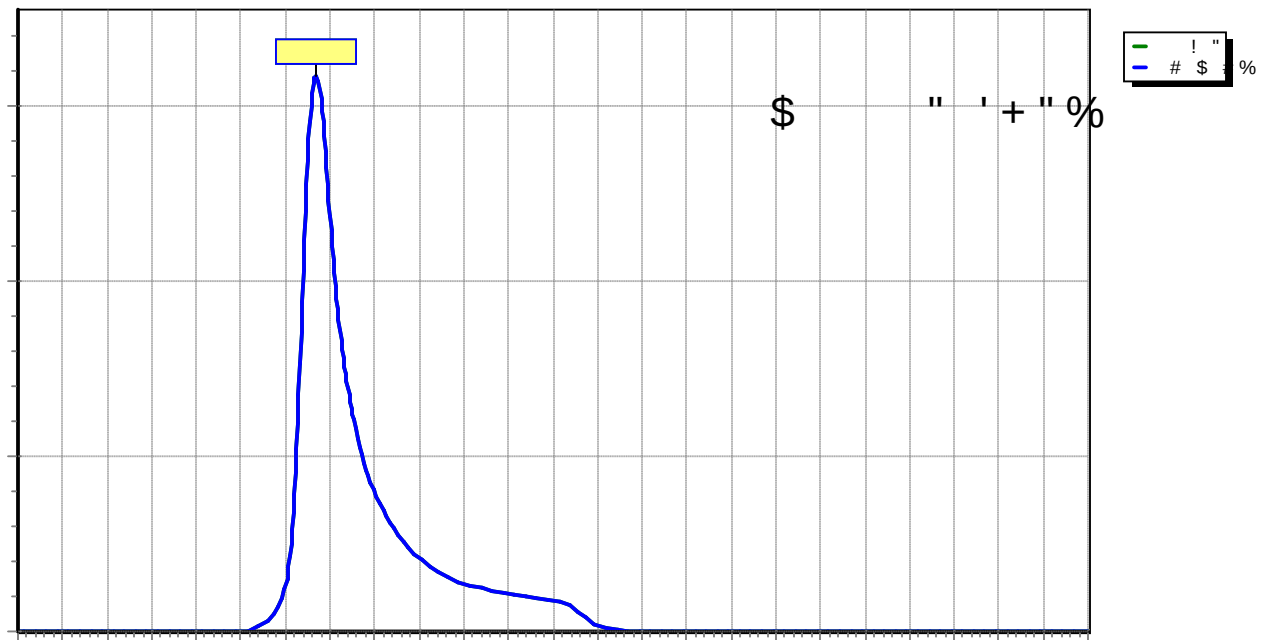
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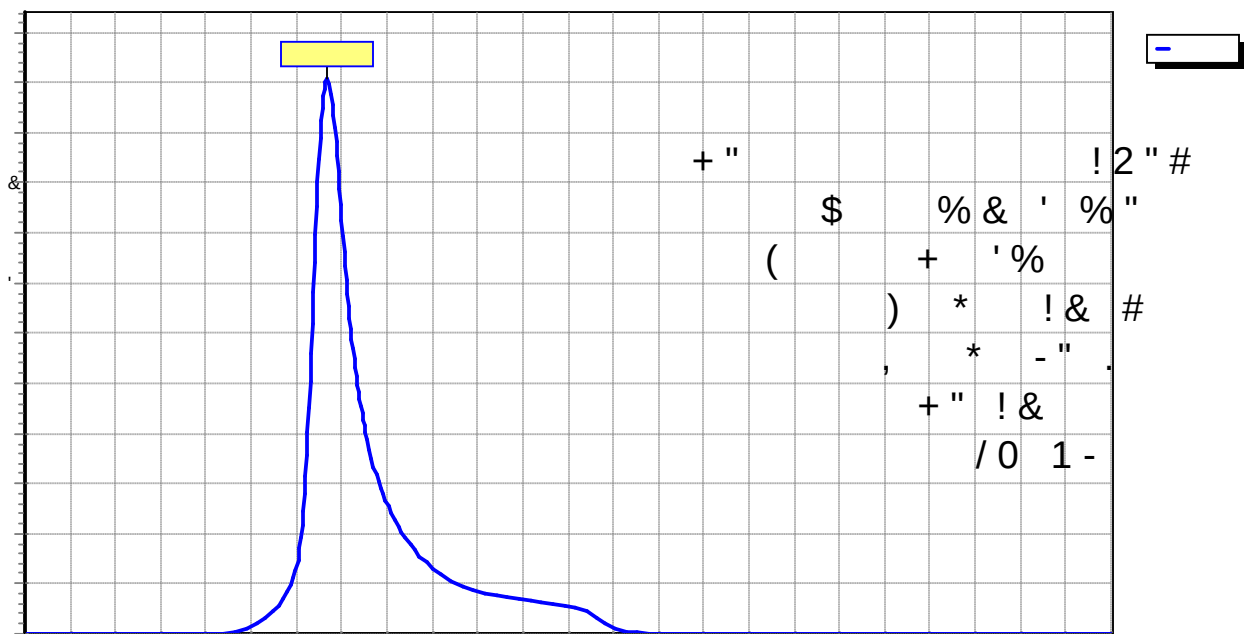
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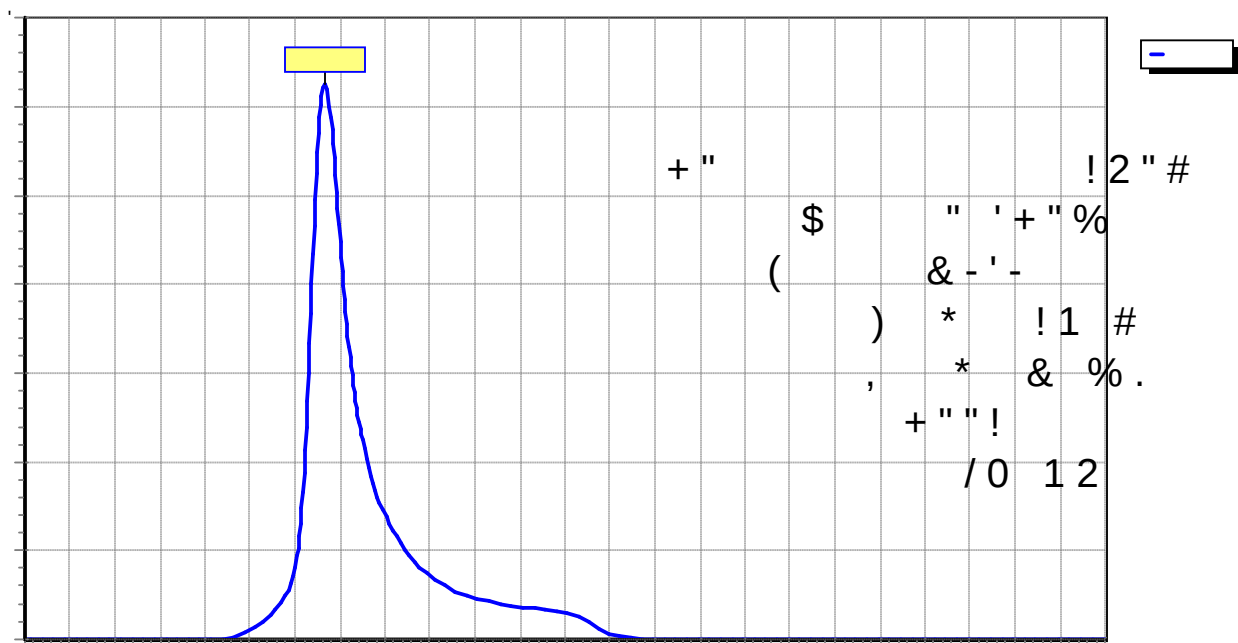
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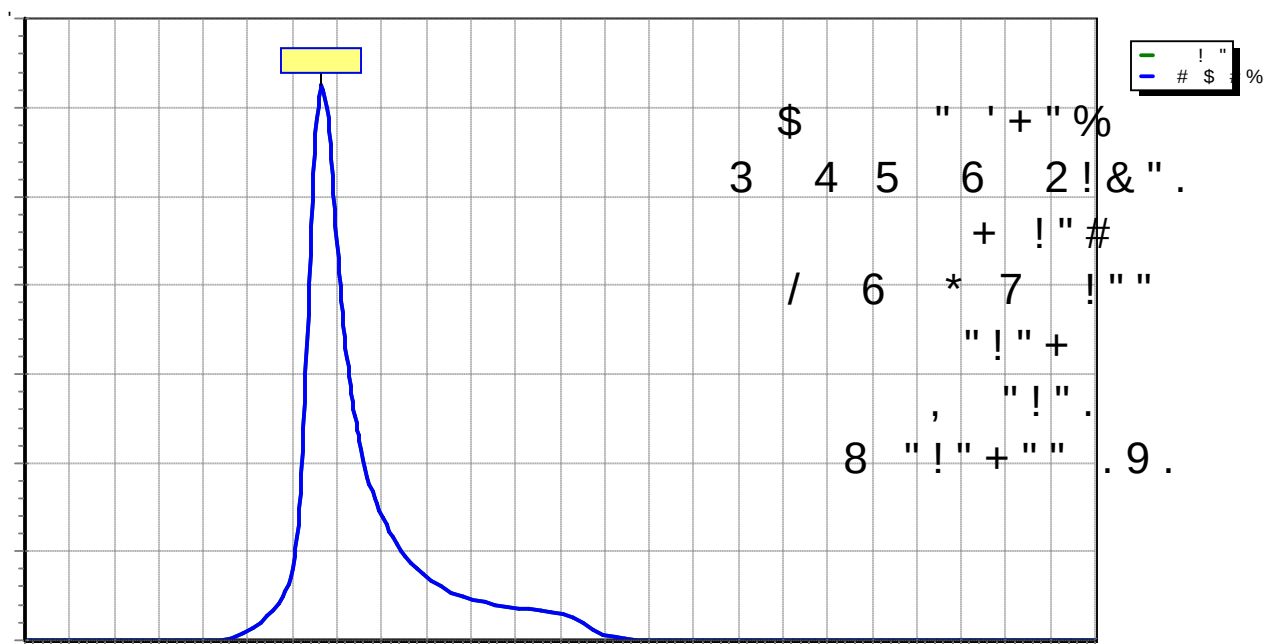
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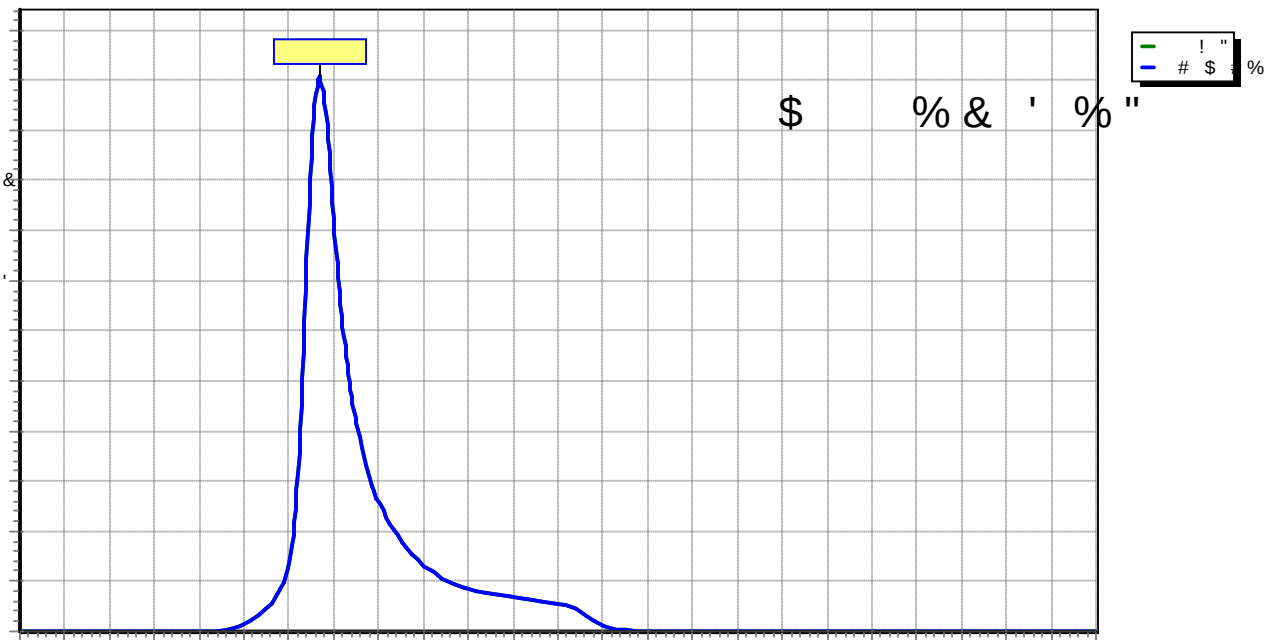


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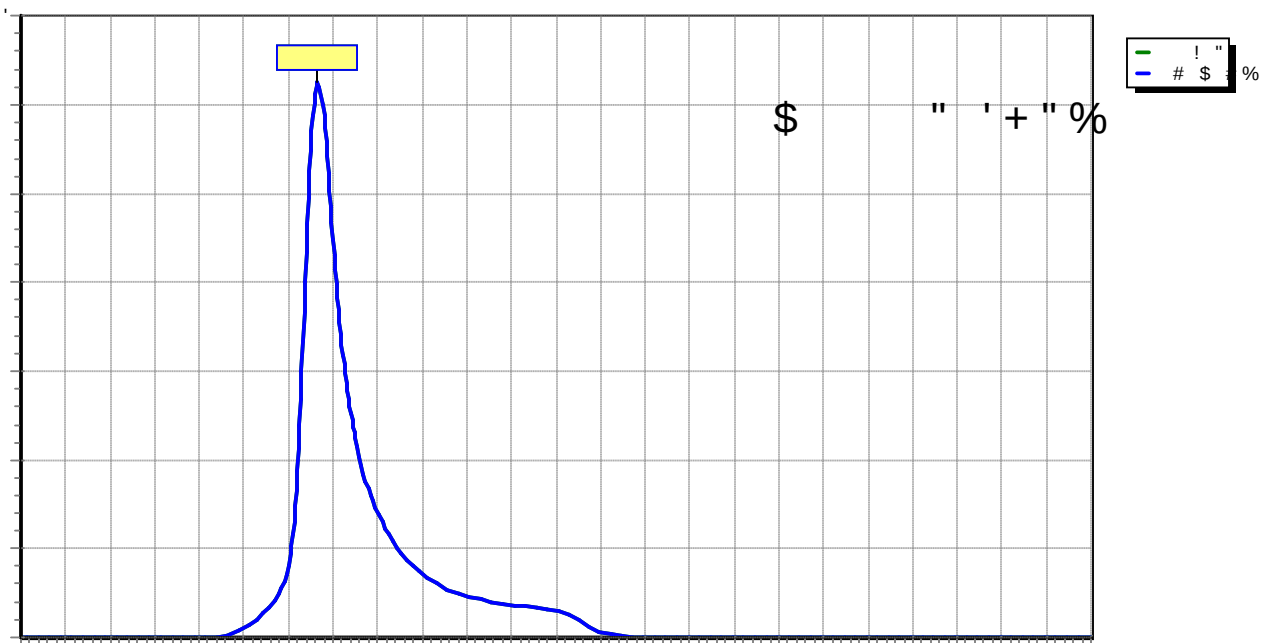
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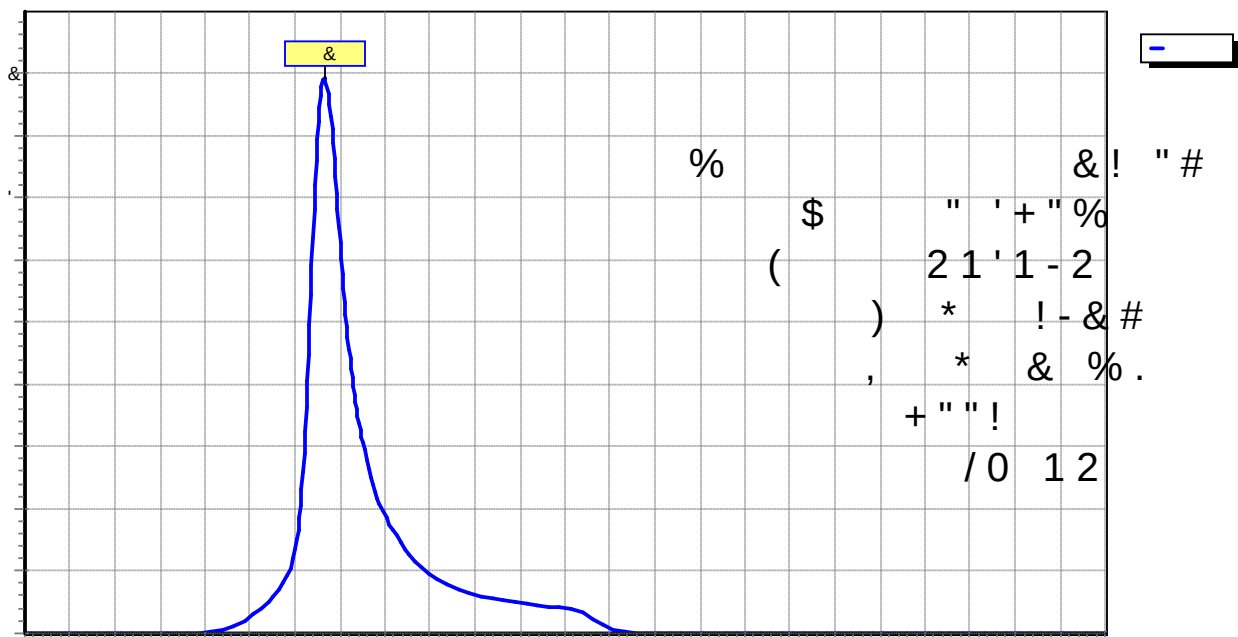
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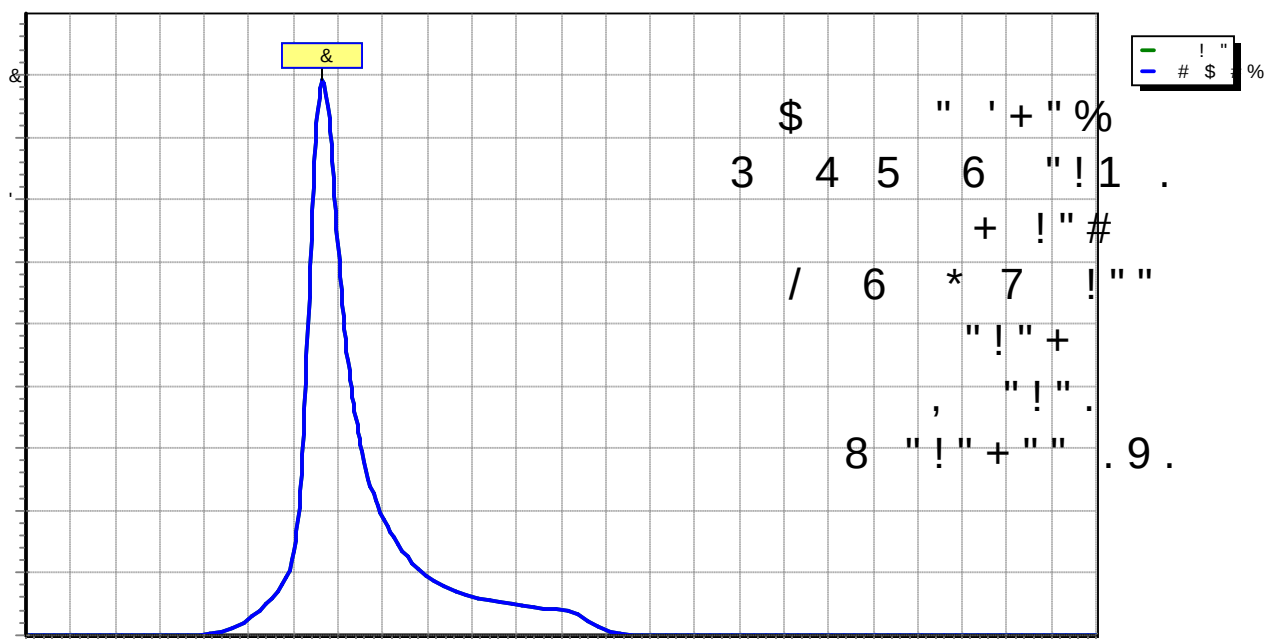
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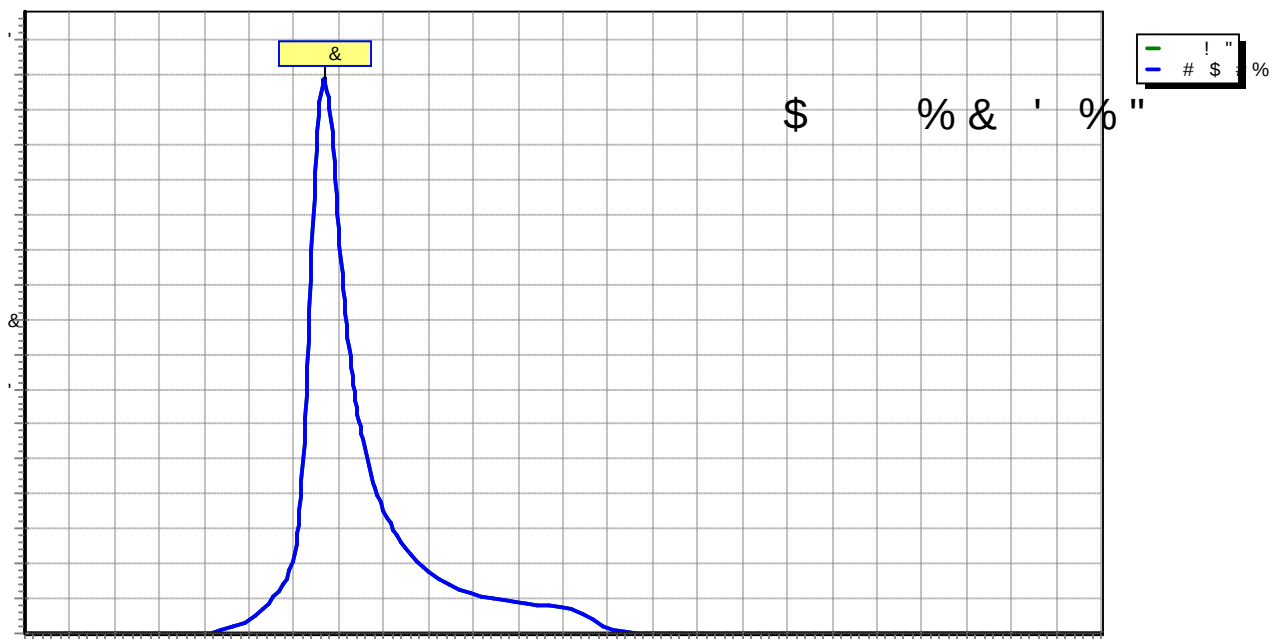
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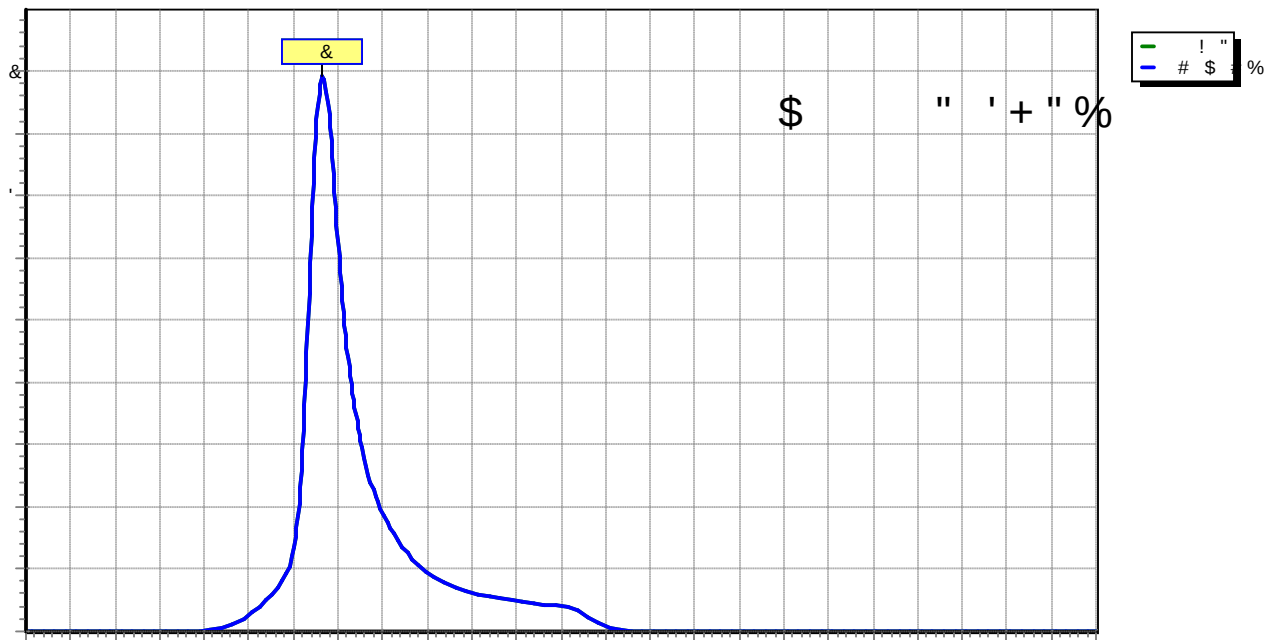
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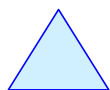
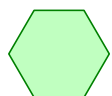
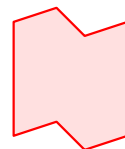
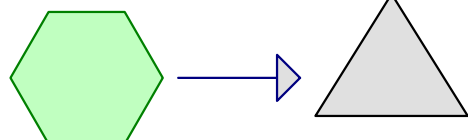
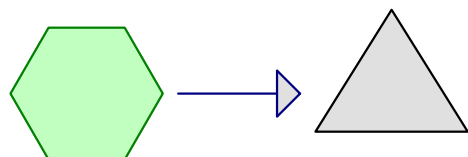
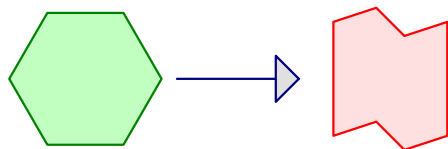
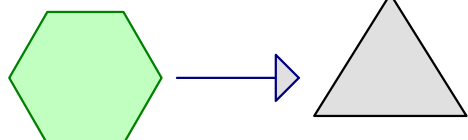
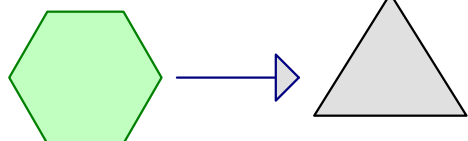
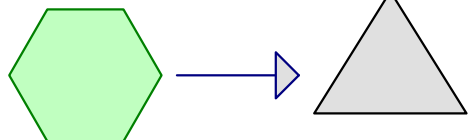
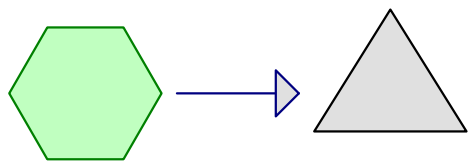
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Appendix B

PostDevelopment HydroCAD Report



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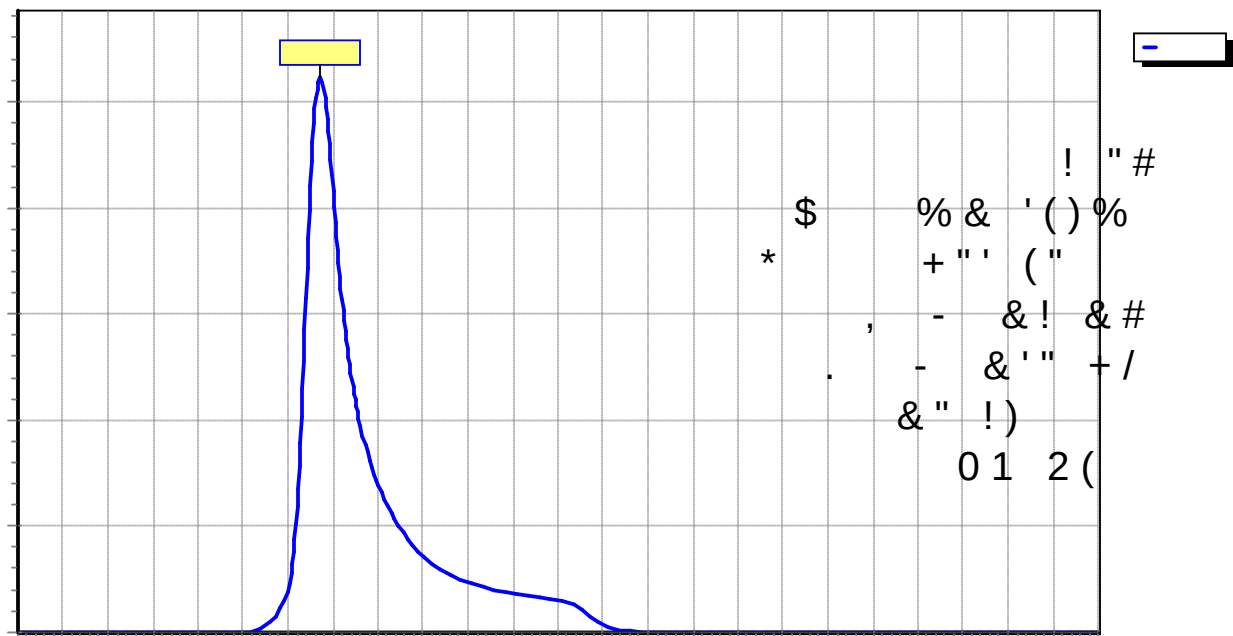
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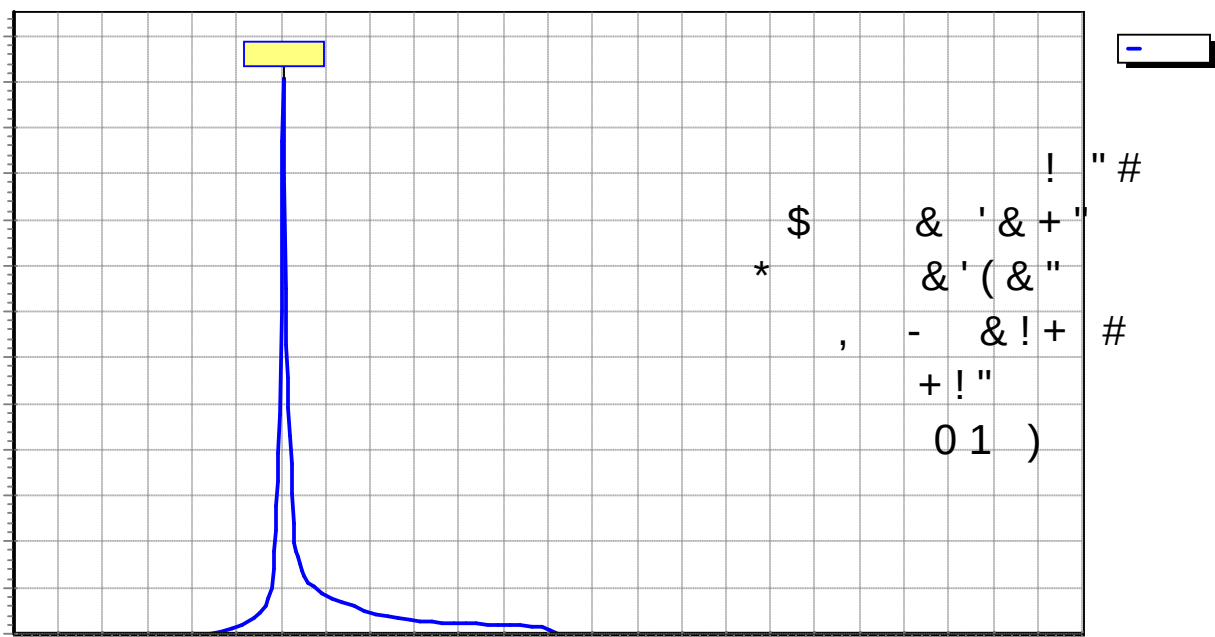
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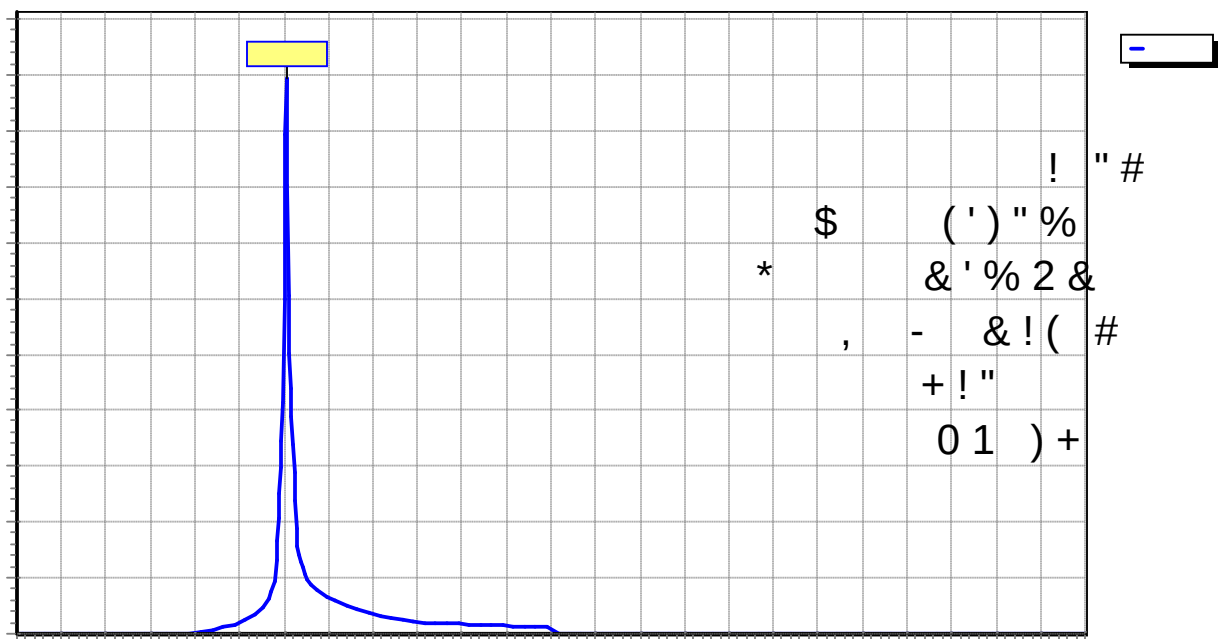
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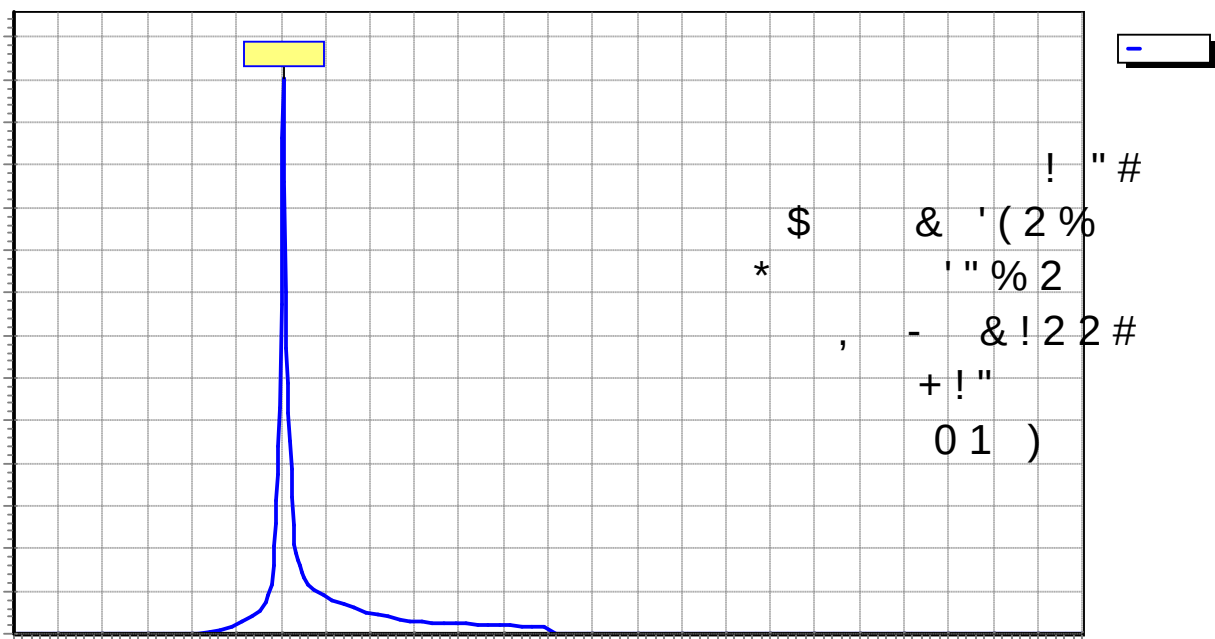
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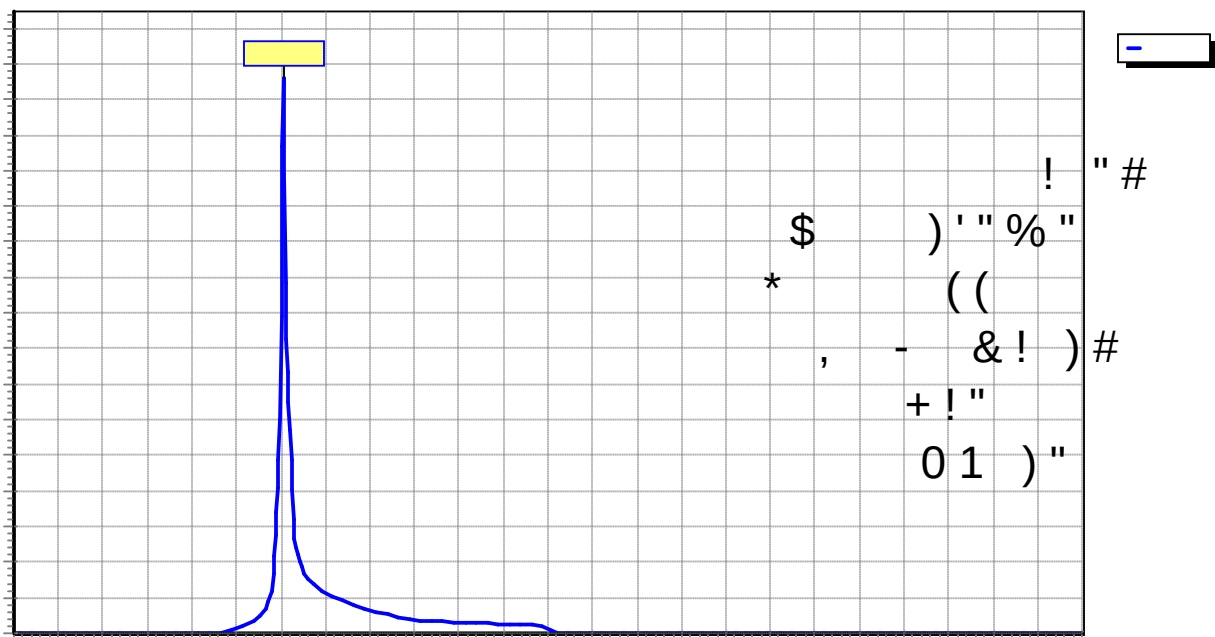
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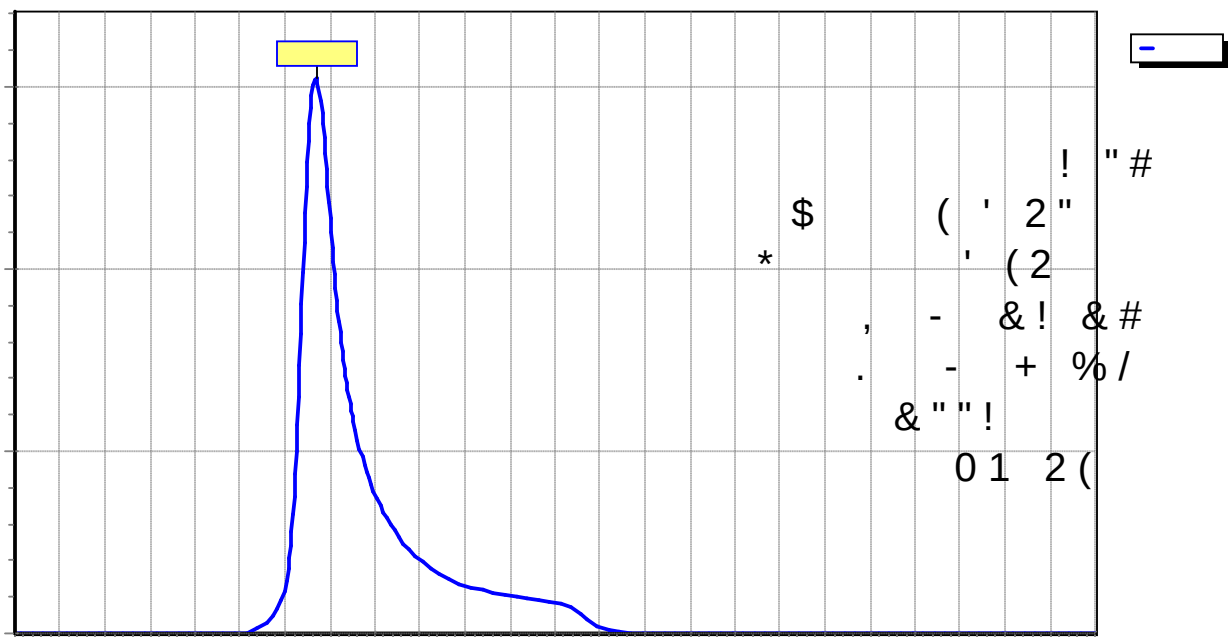
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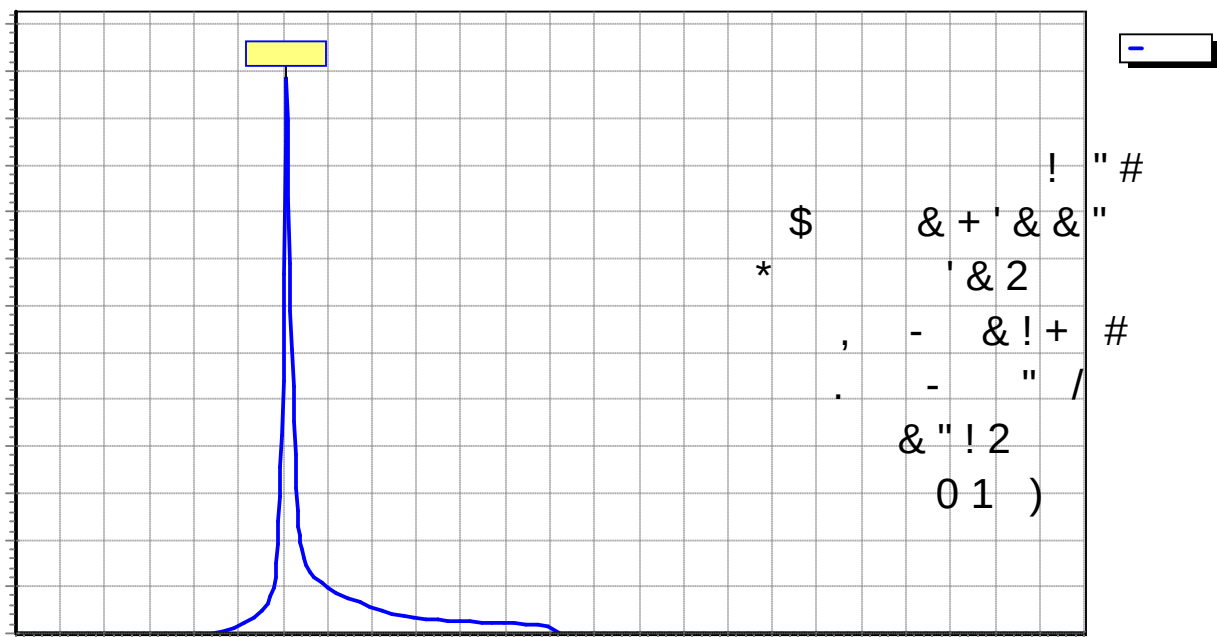
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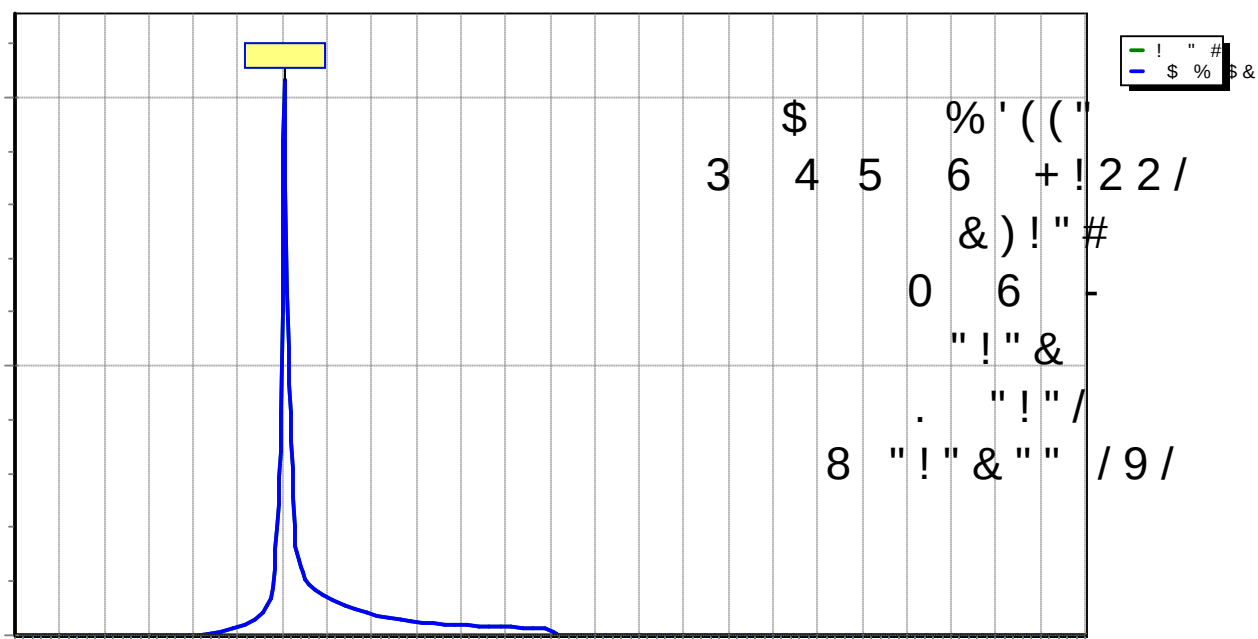
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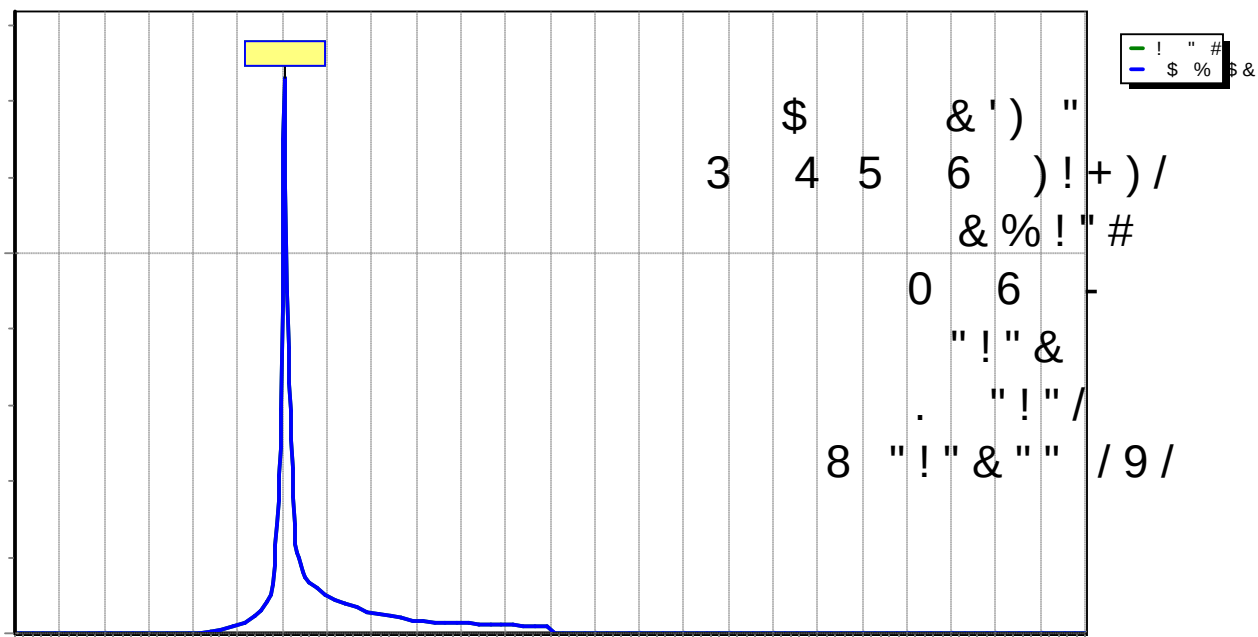
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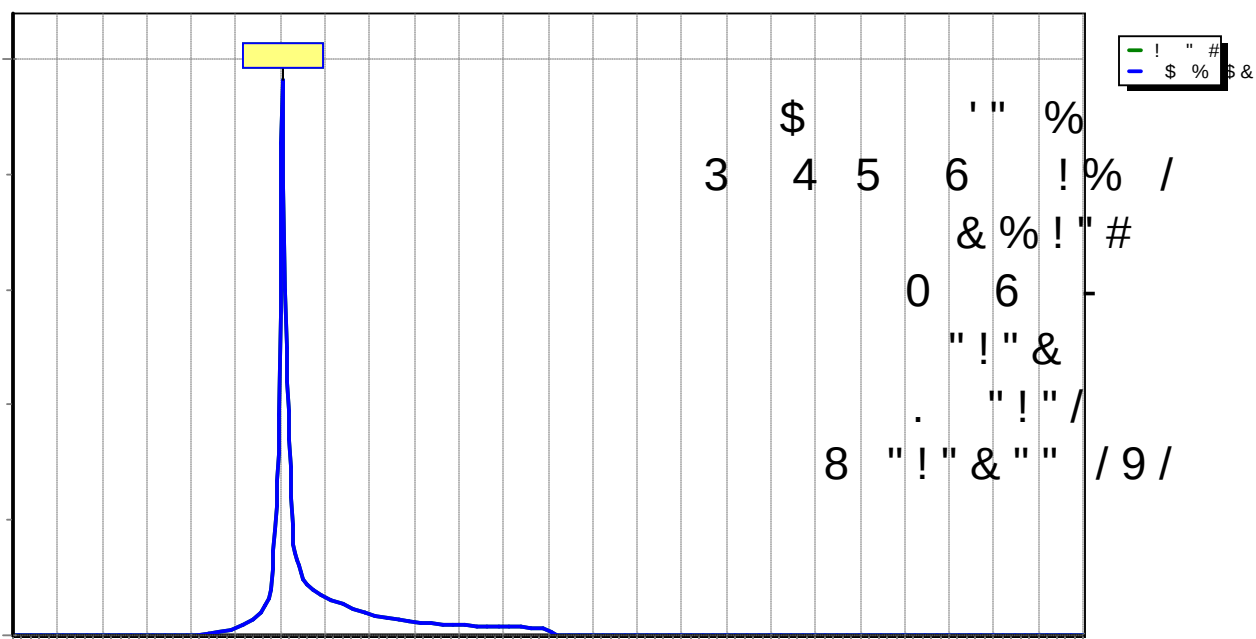
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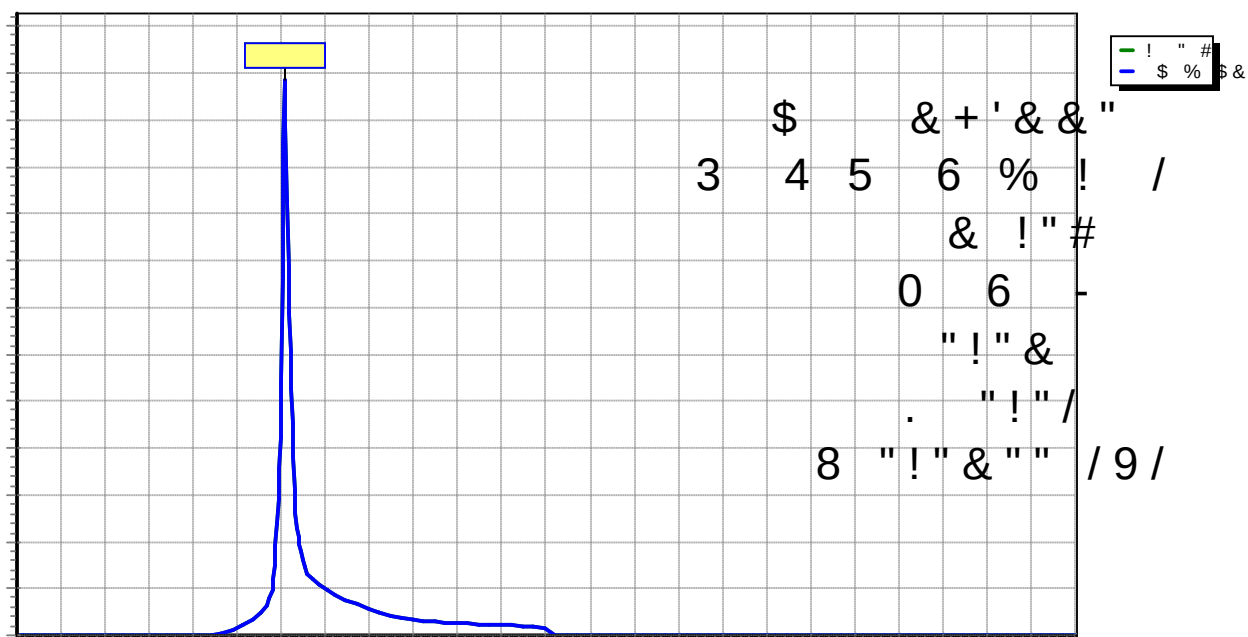
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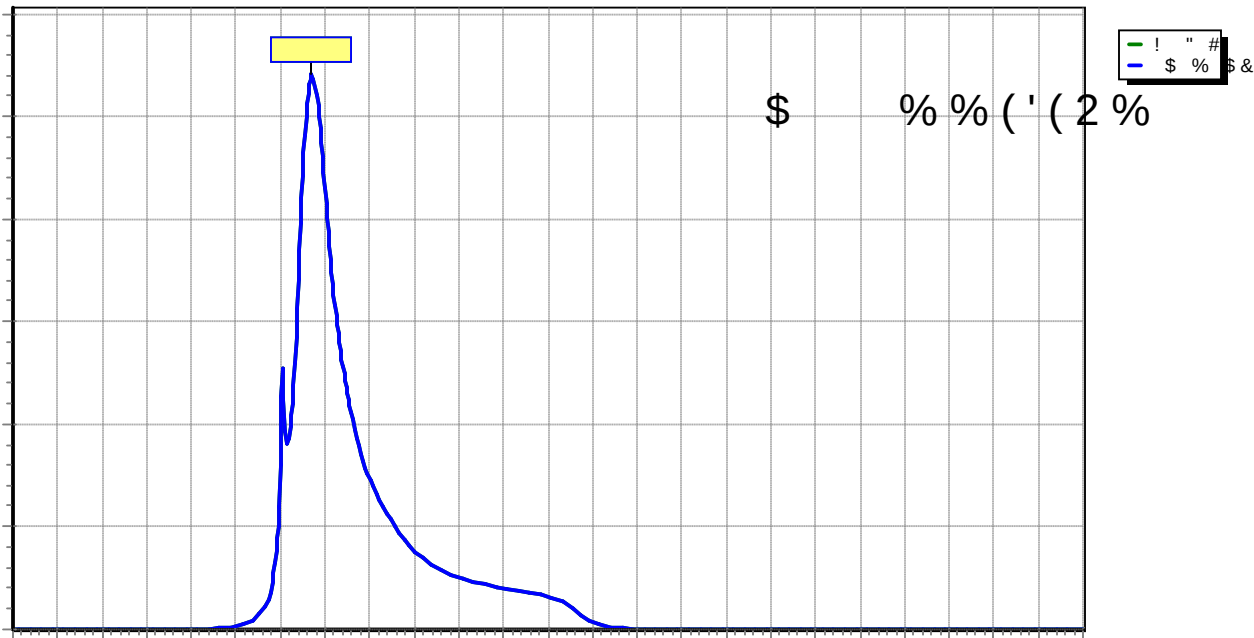


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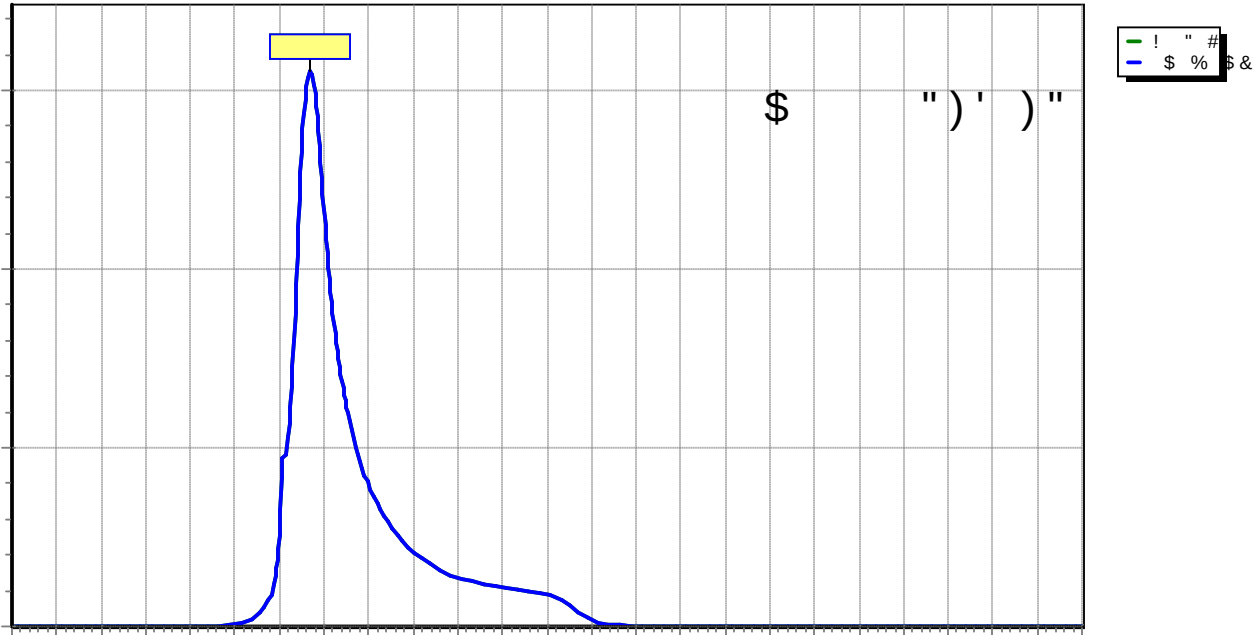
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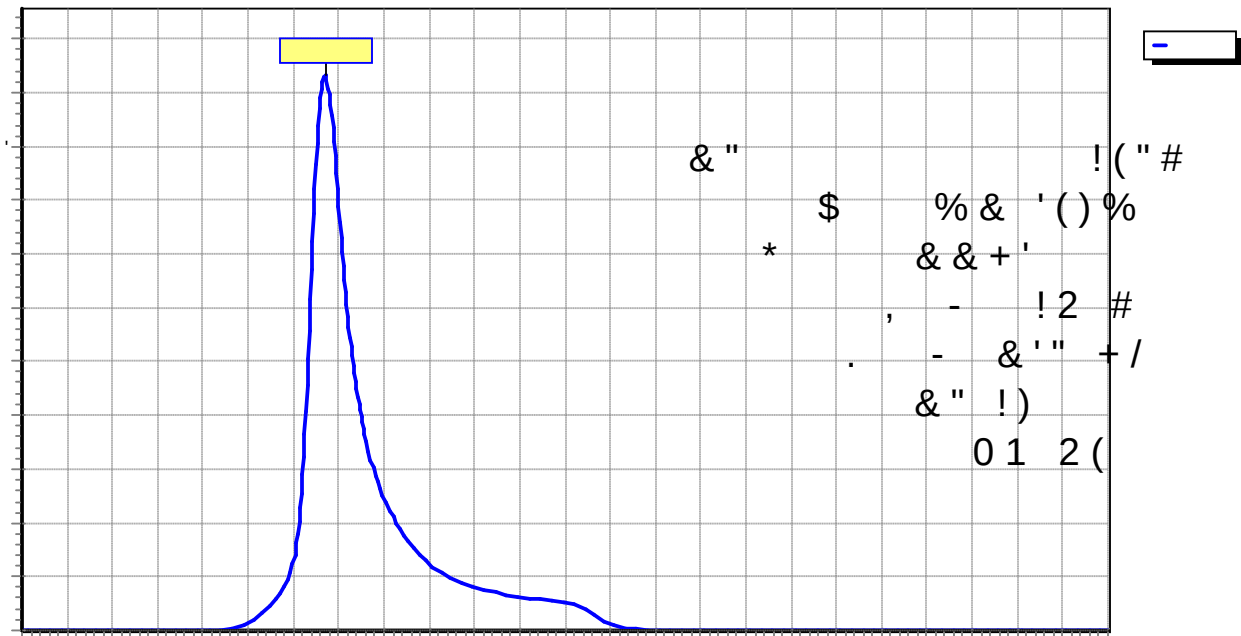
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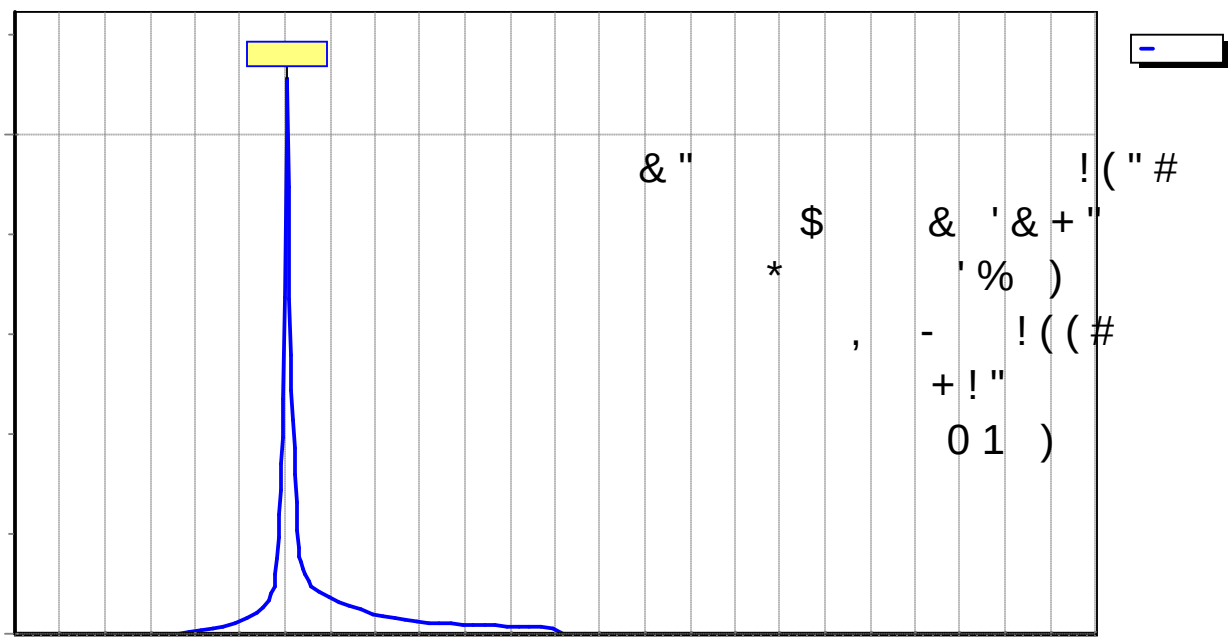
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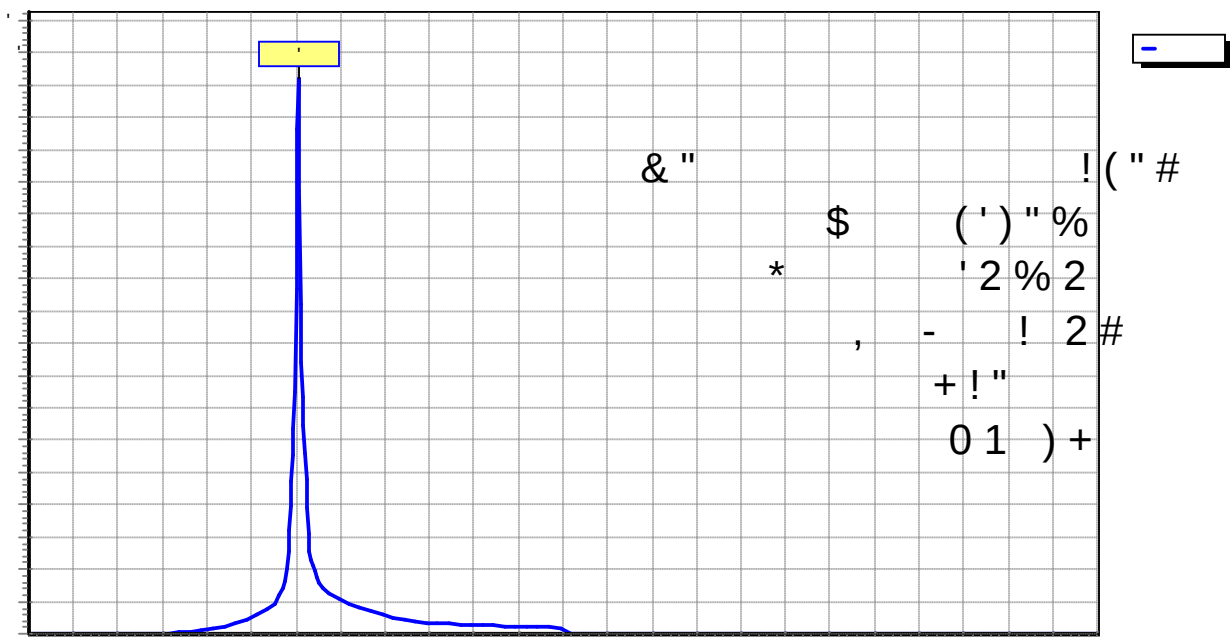
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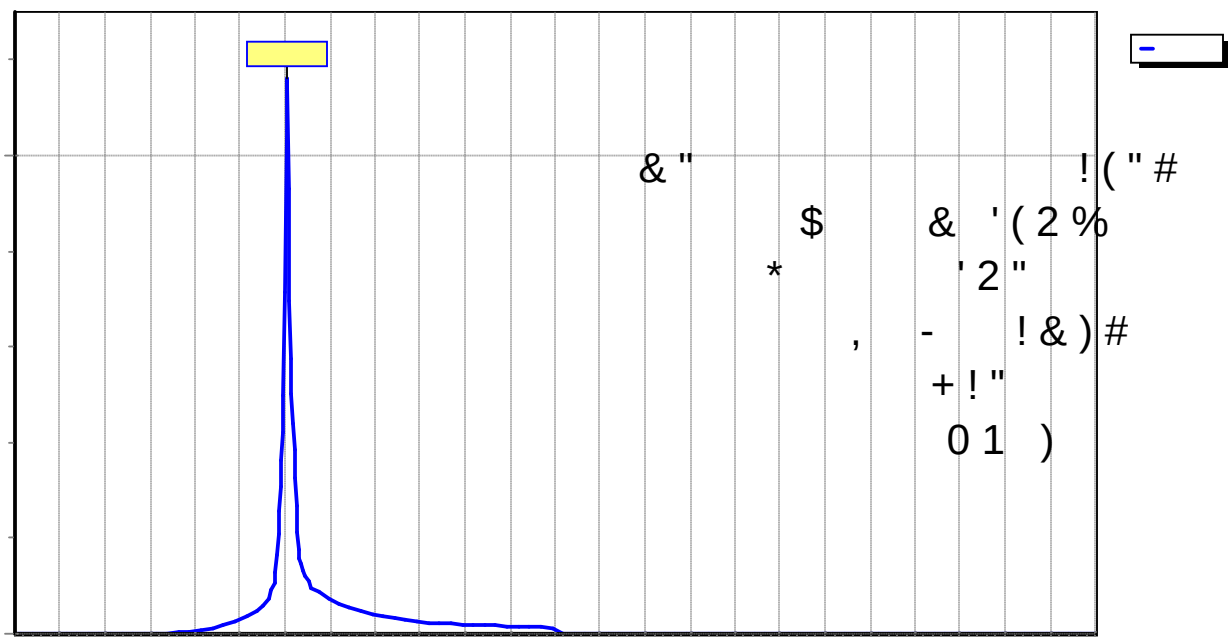
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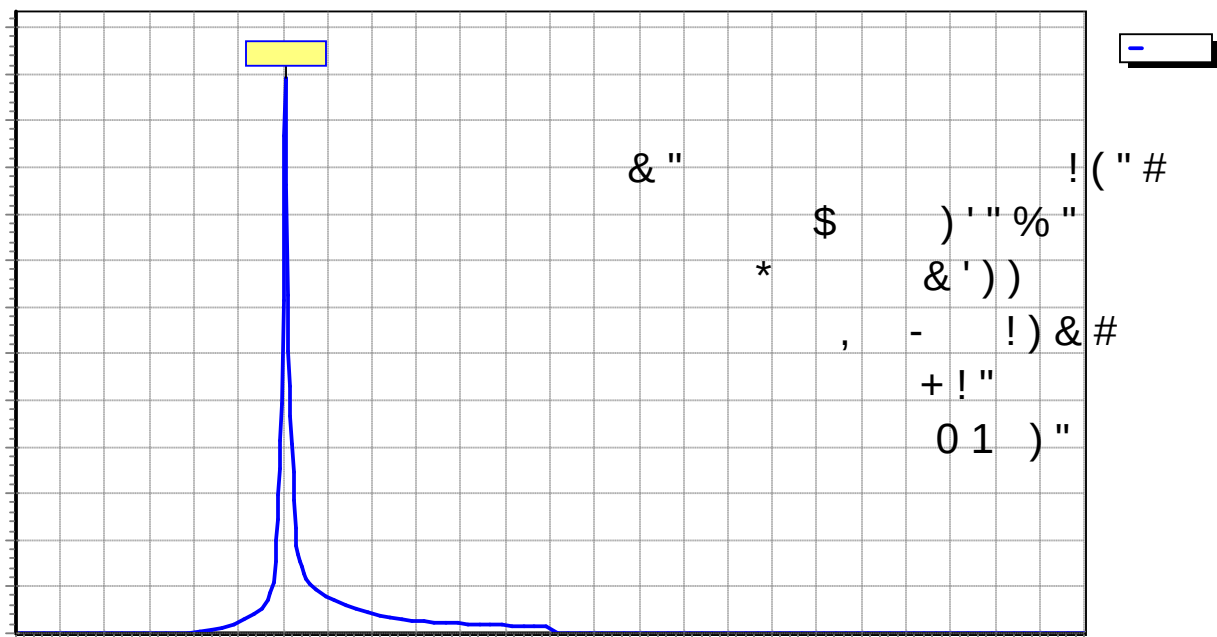
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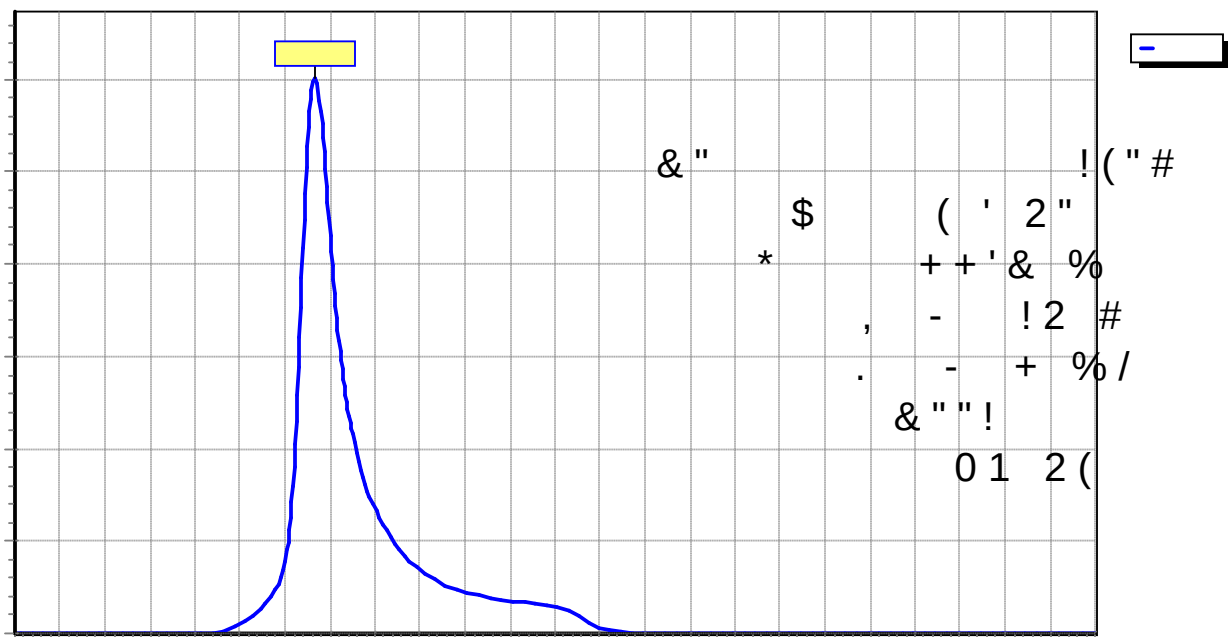
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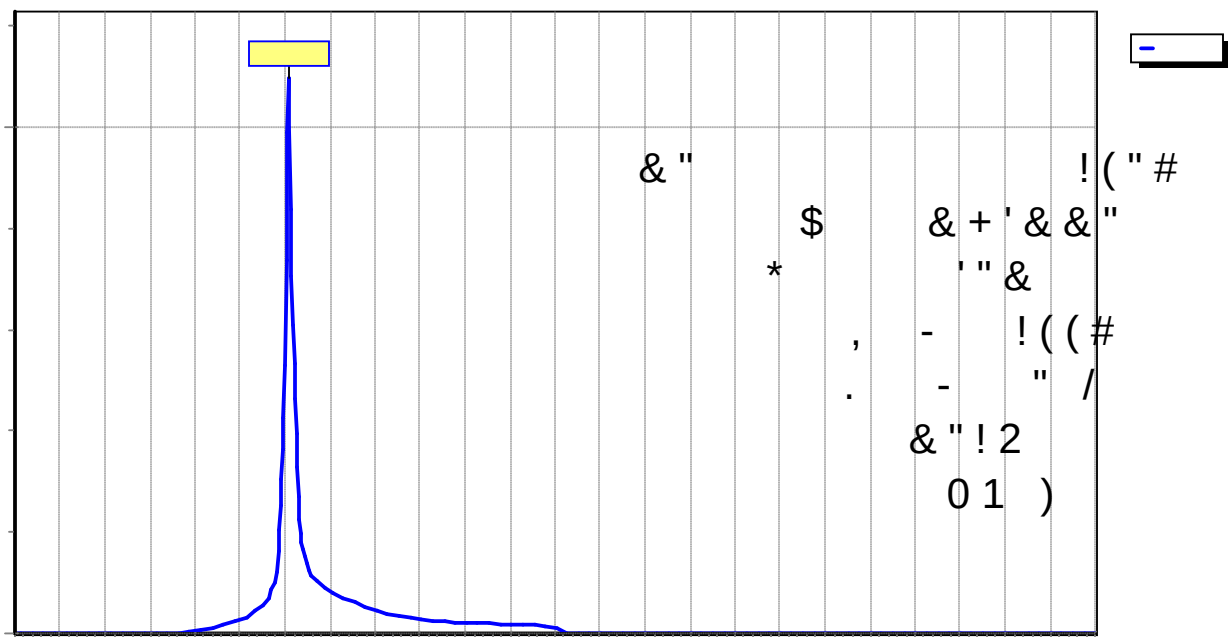
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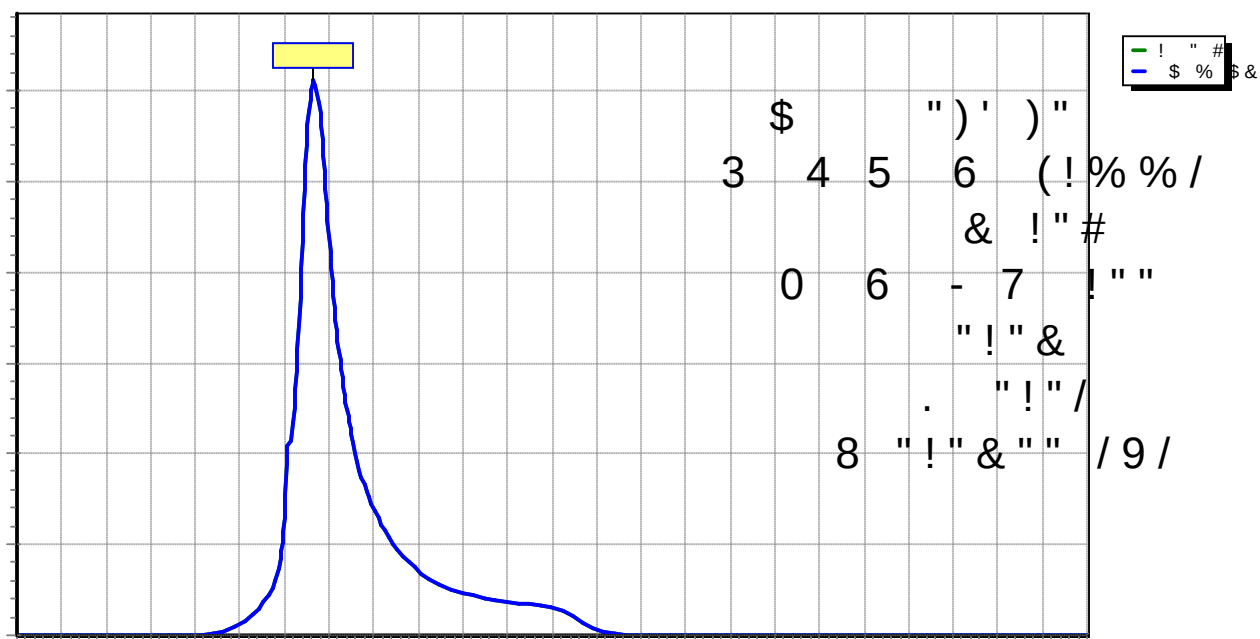
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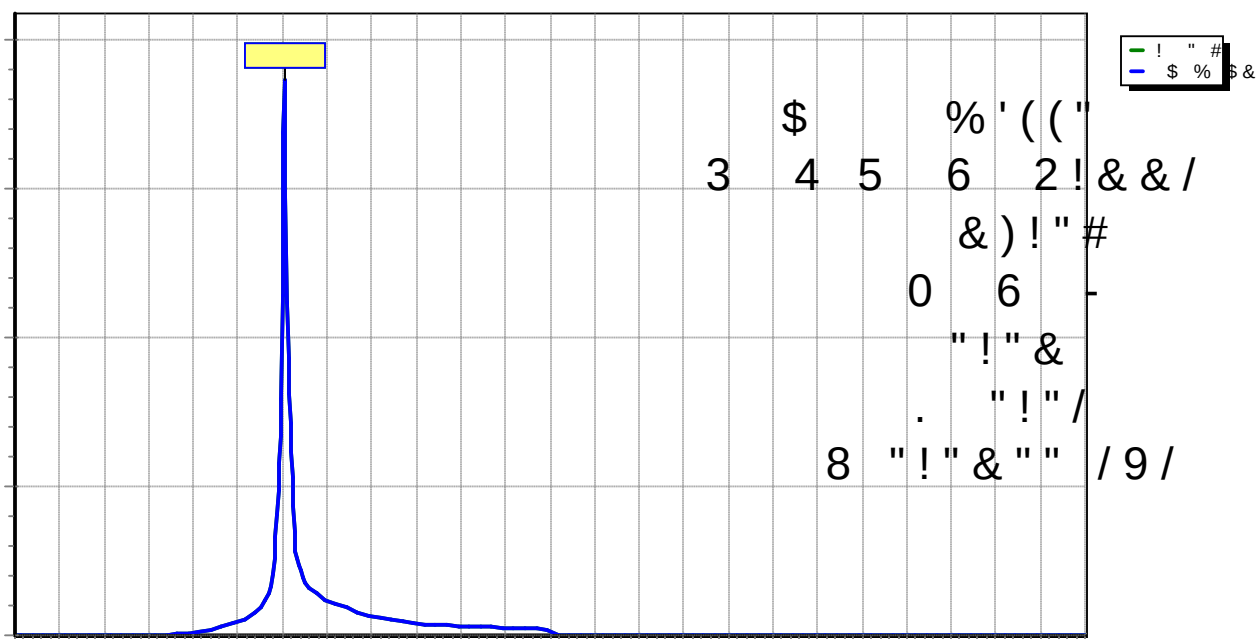
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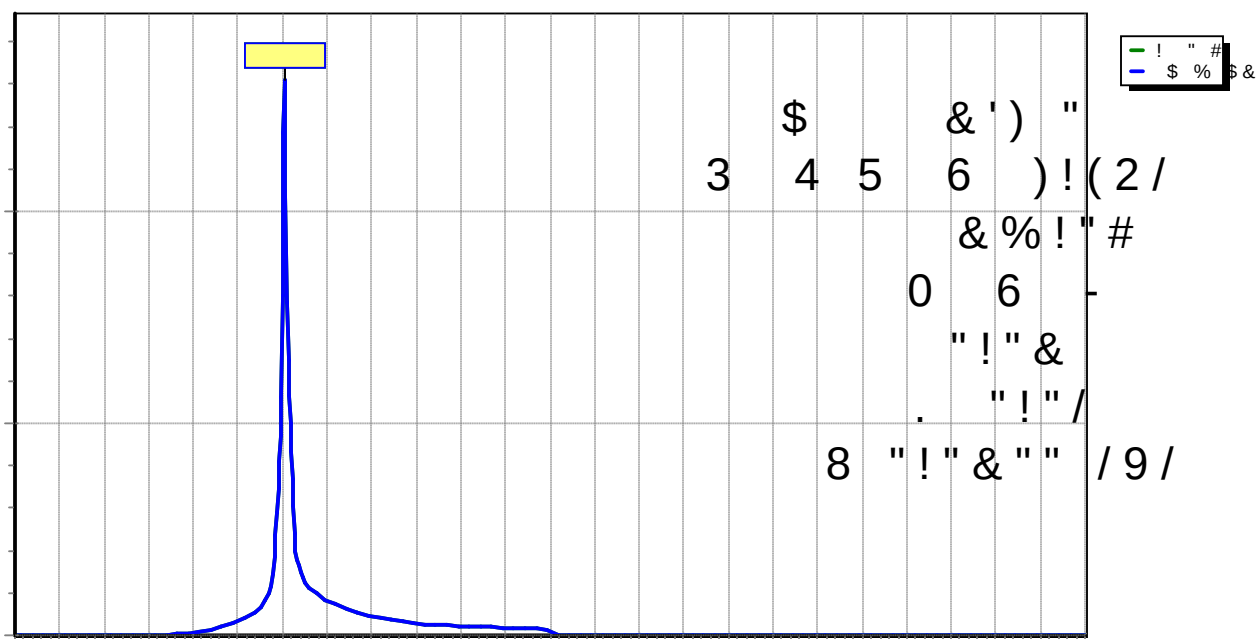
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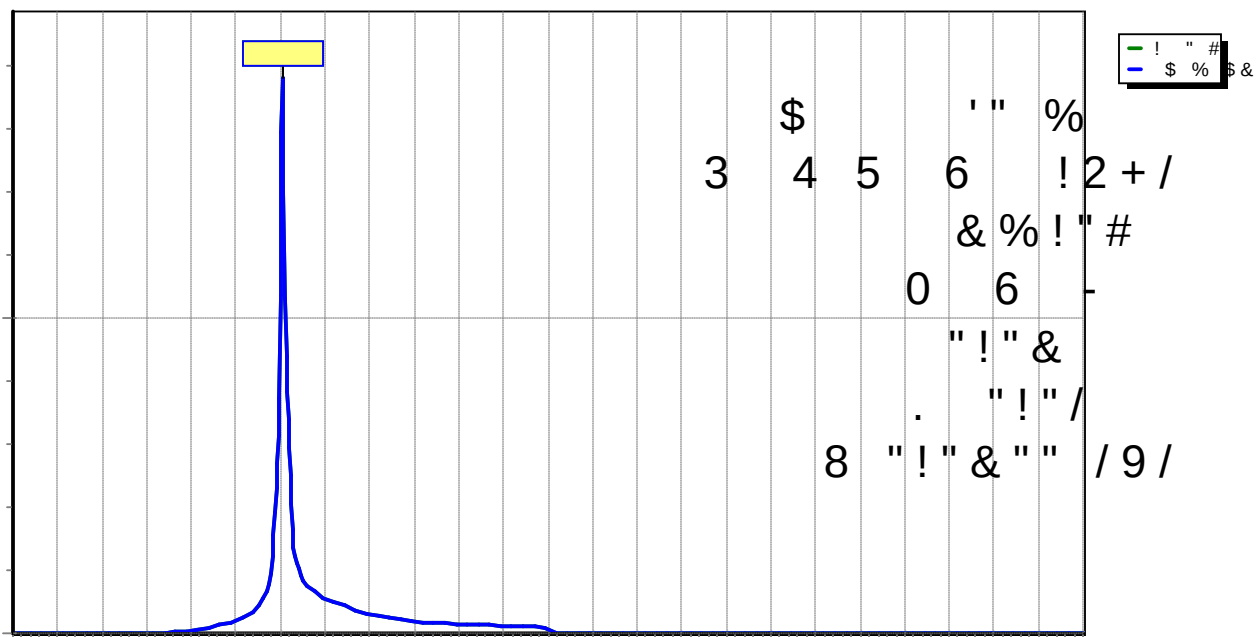
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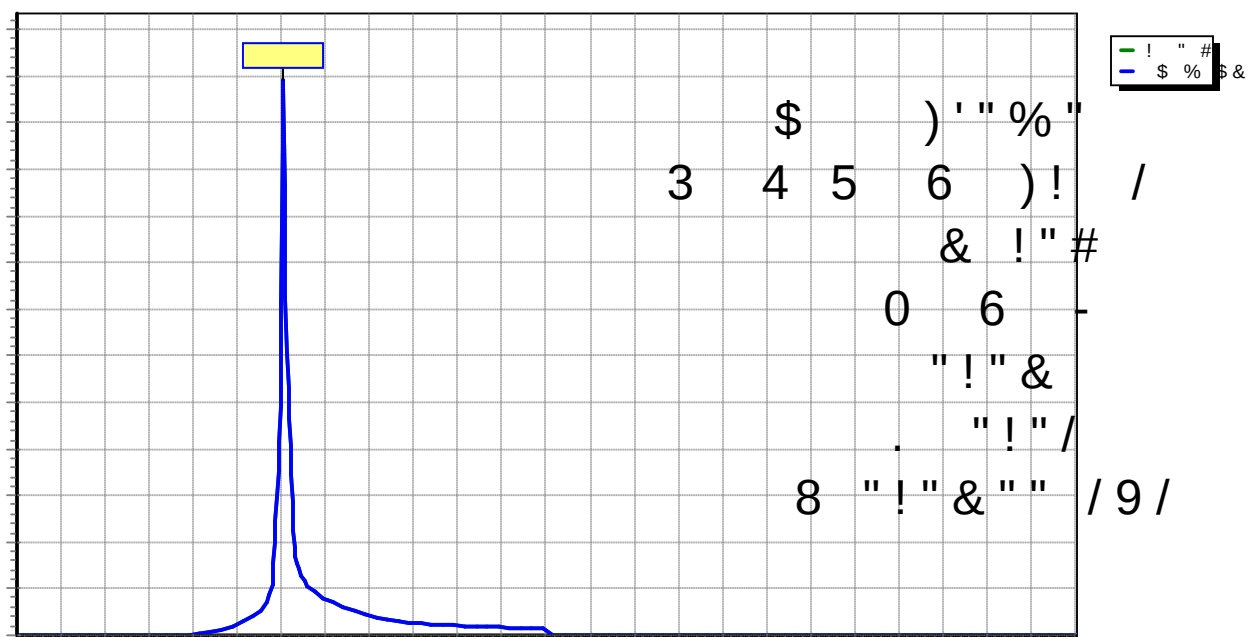
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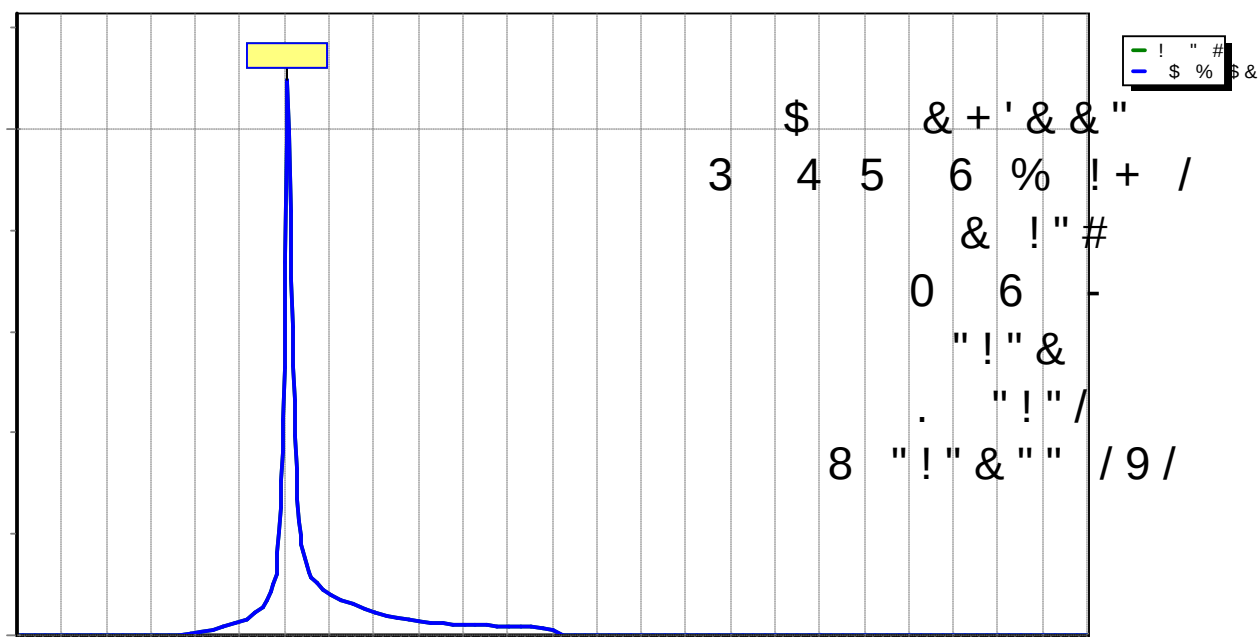
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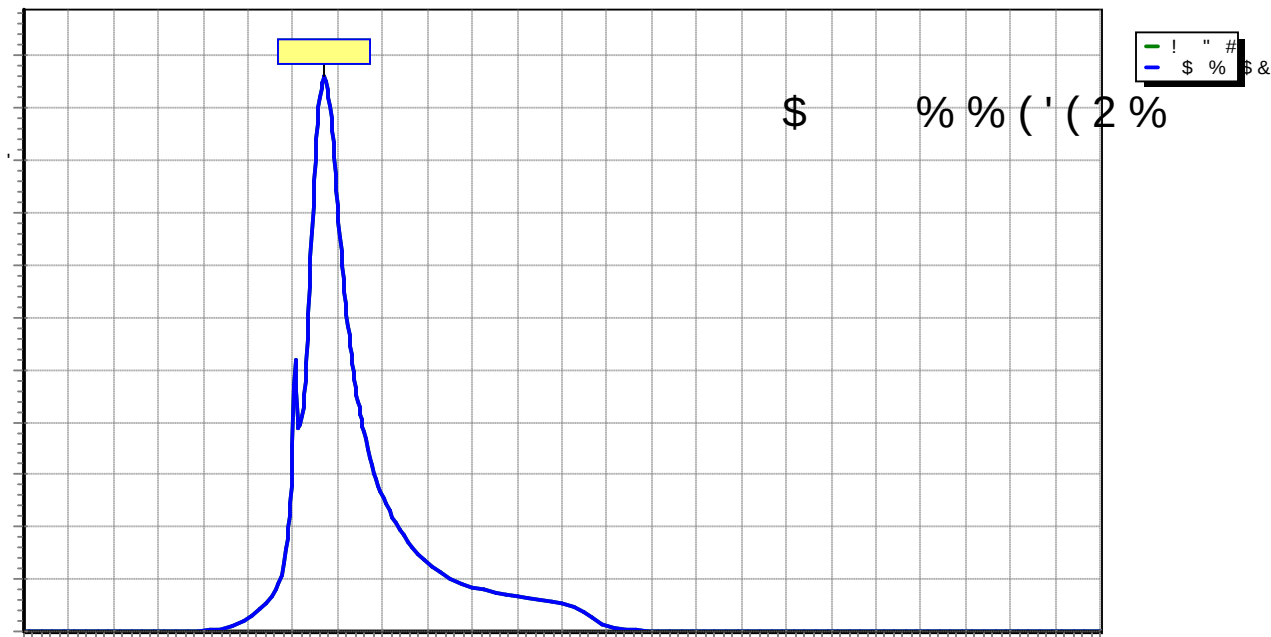


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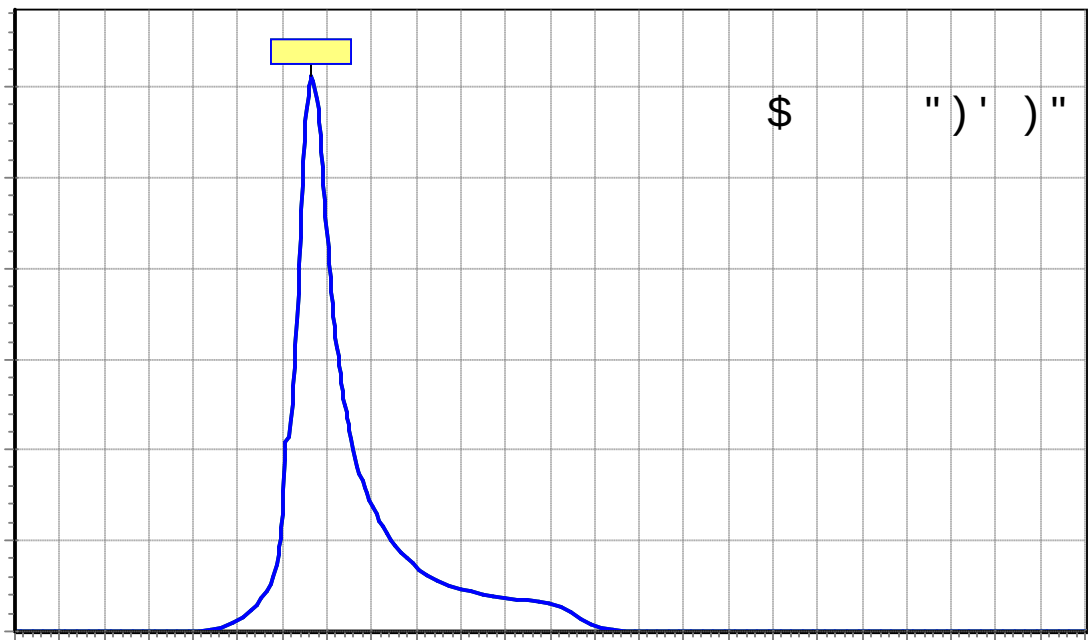
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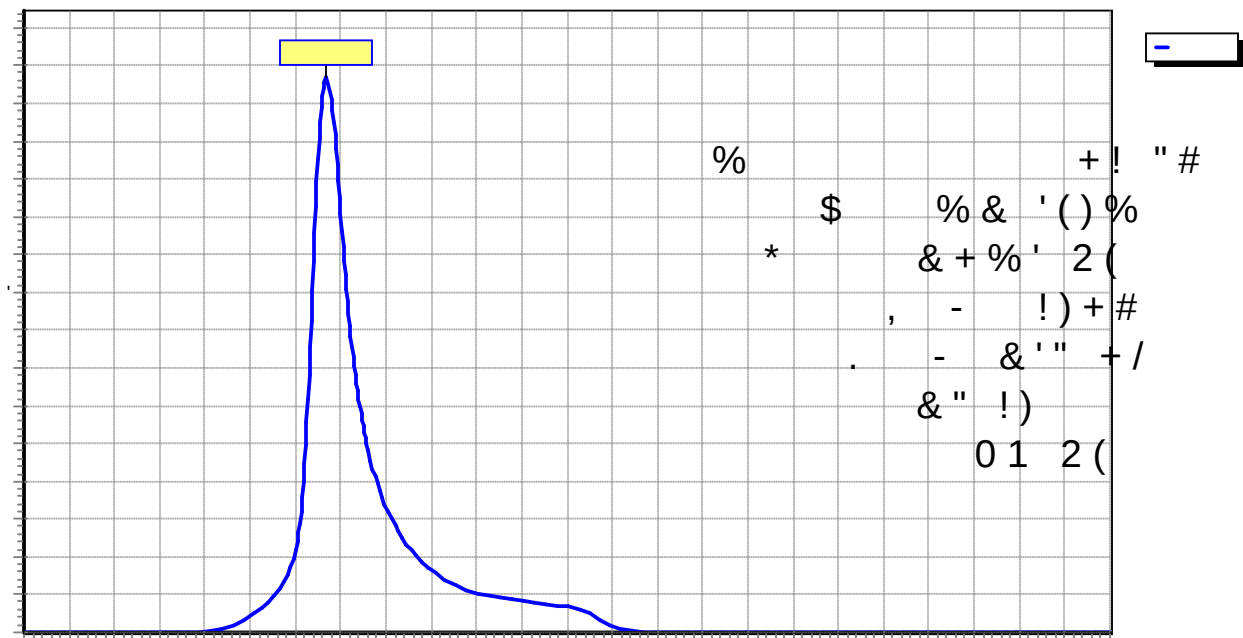
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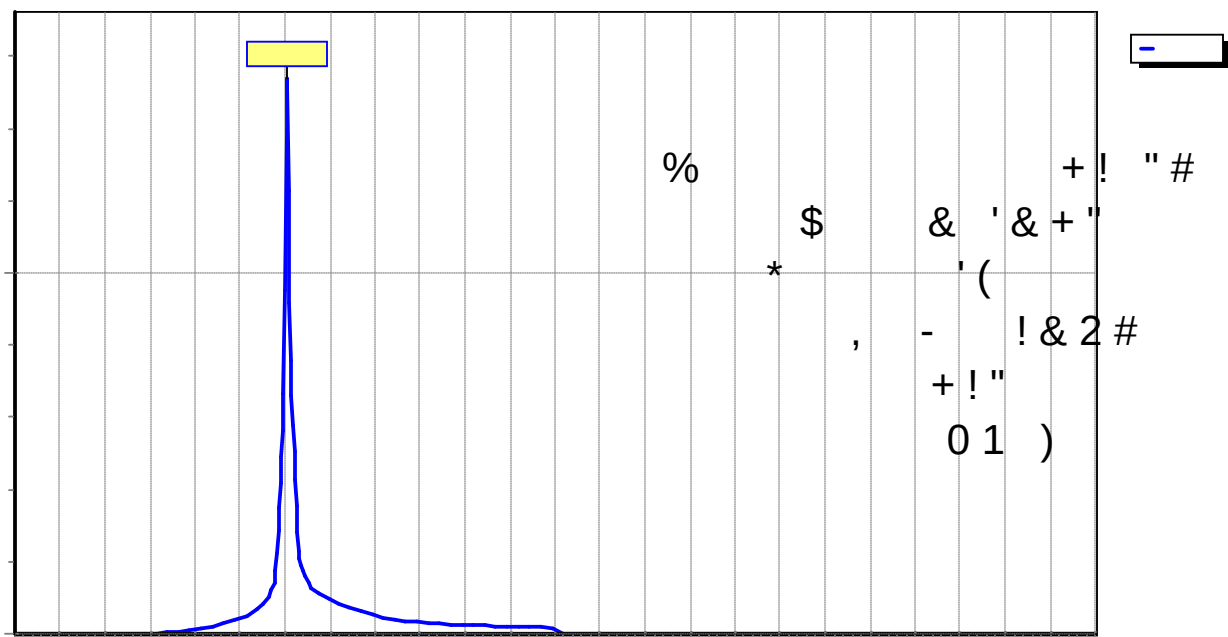
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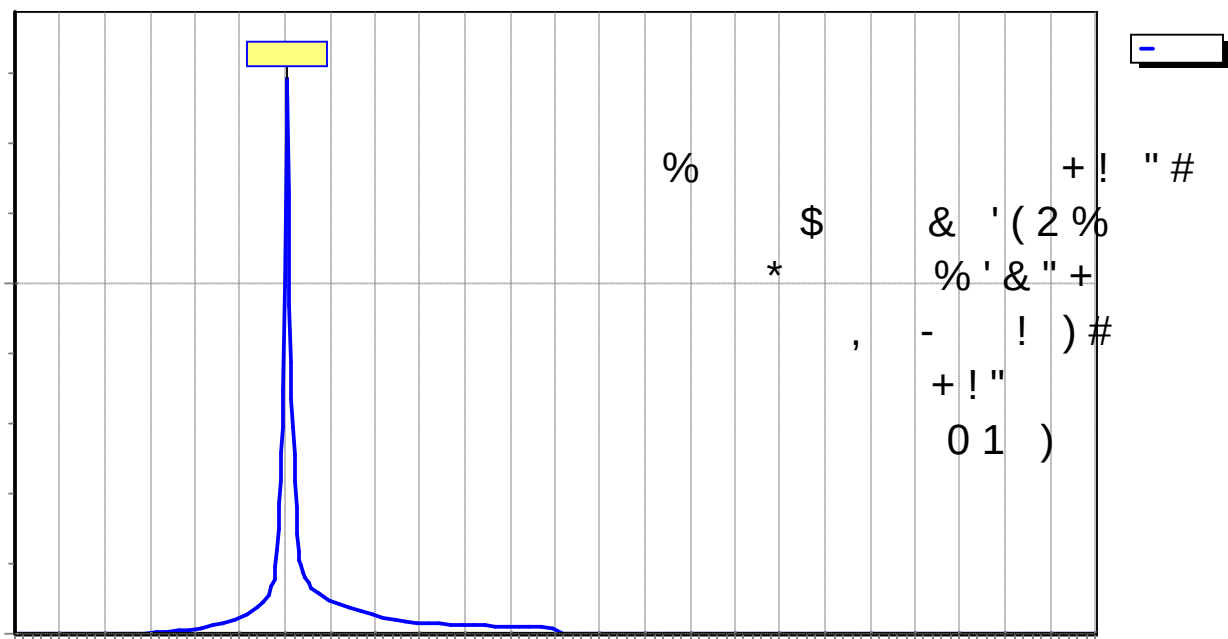
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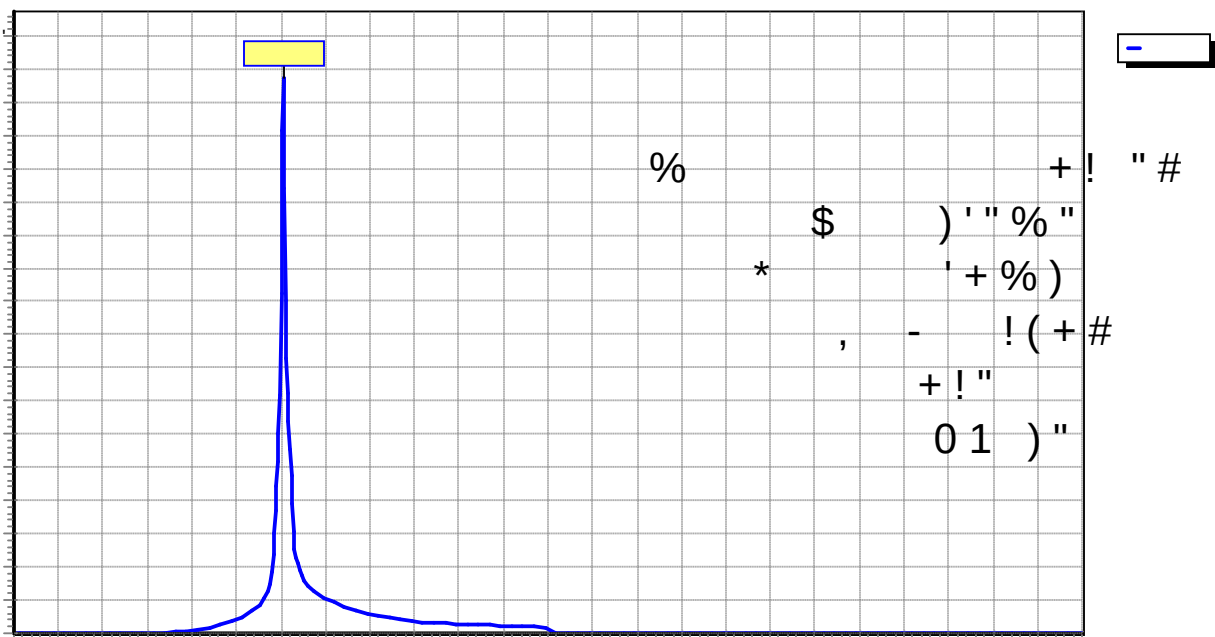
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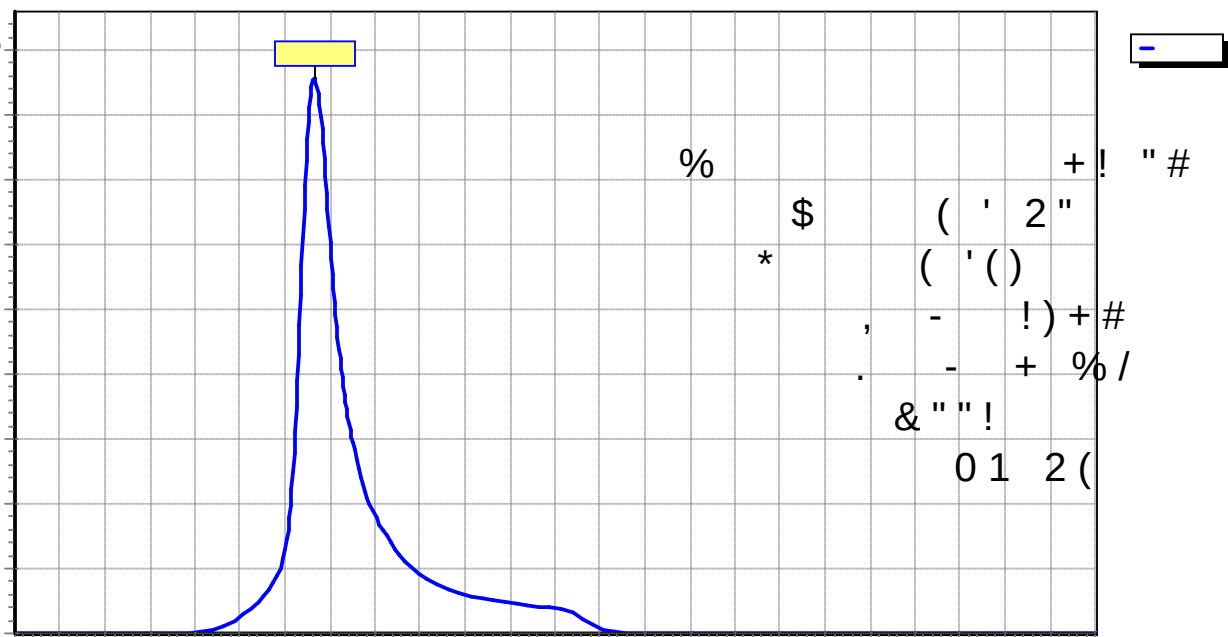
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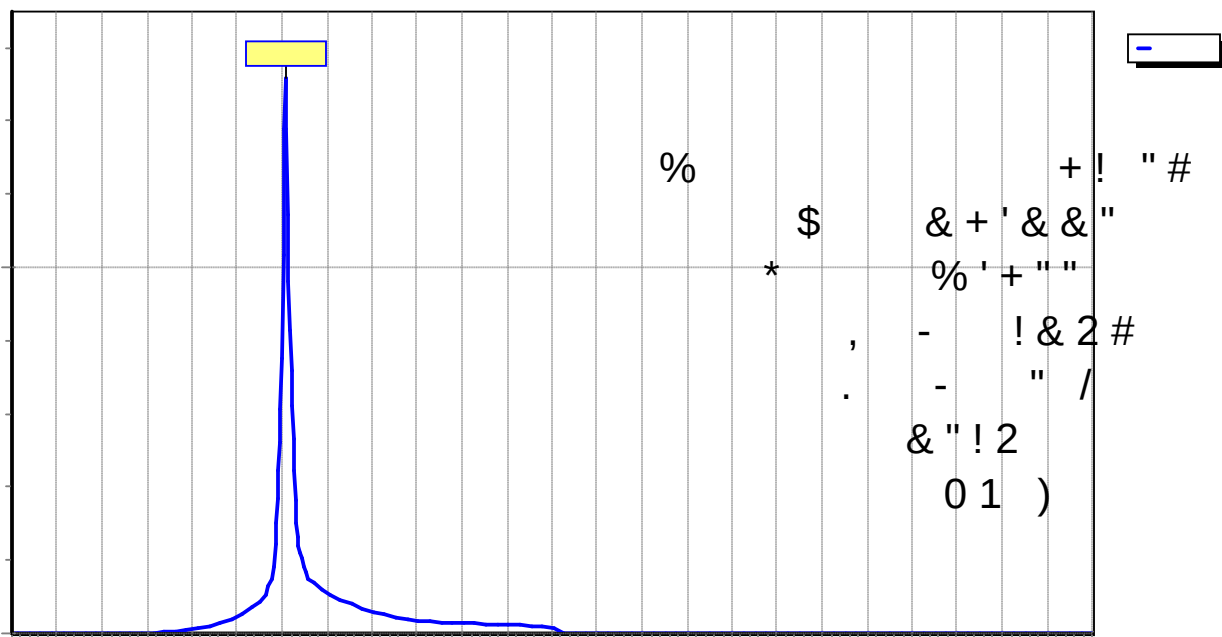
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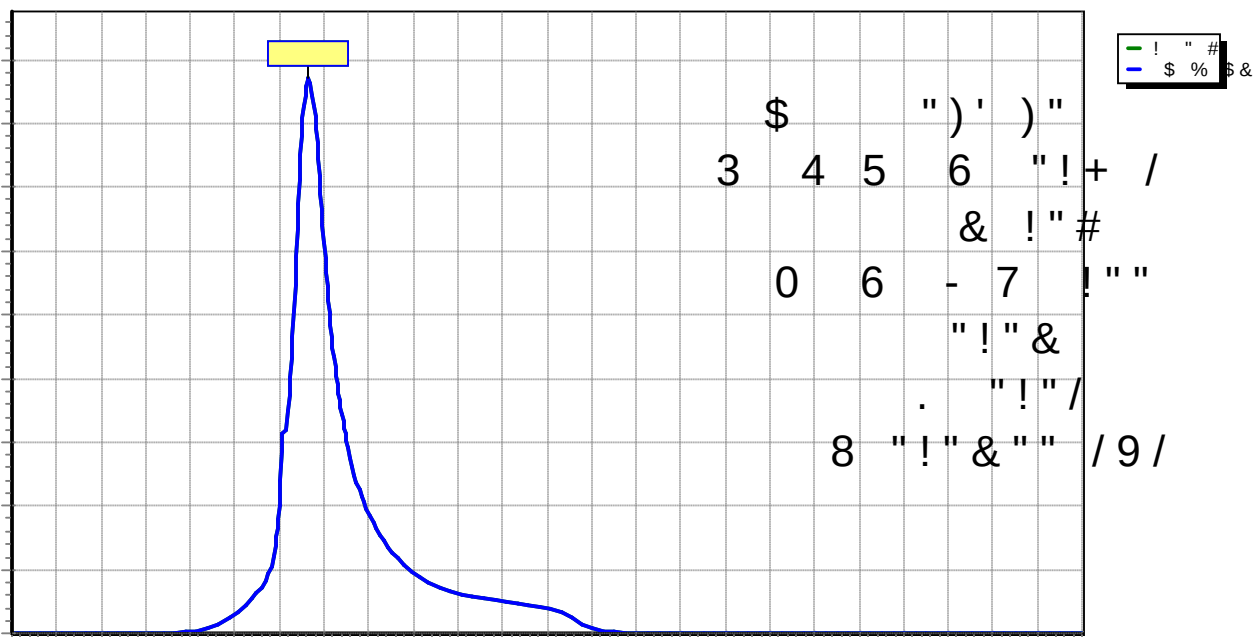
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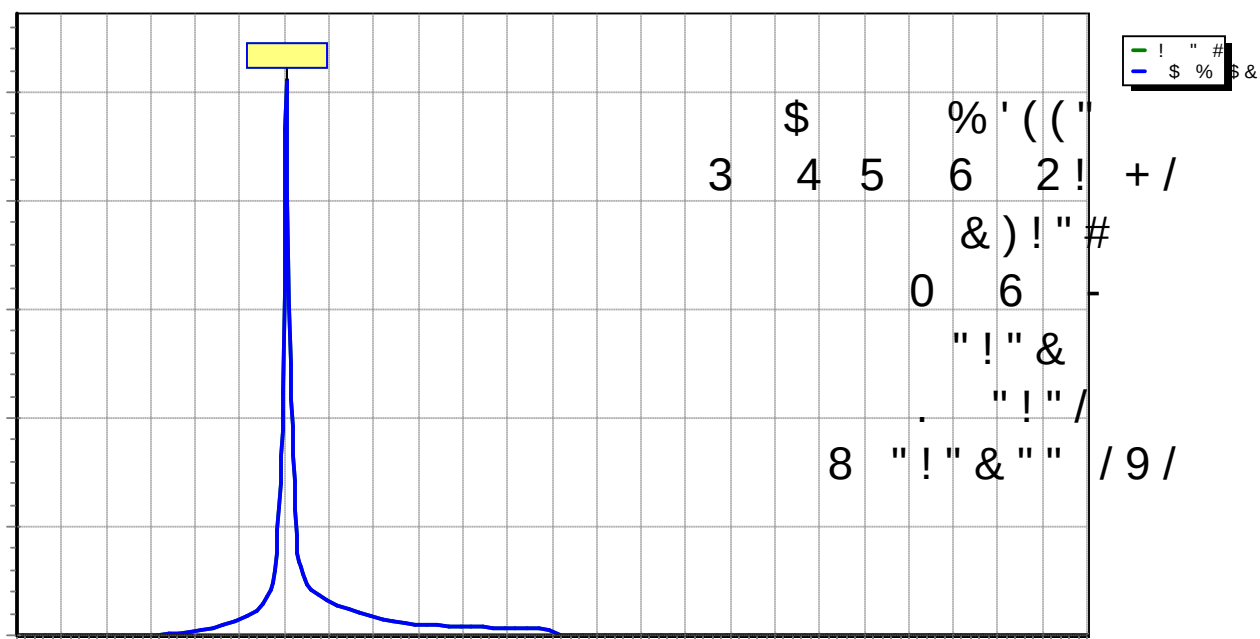
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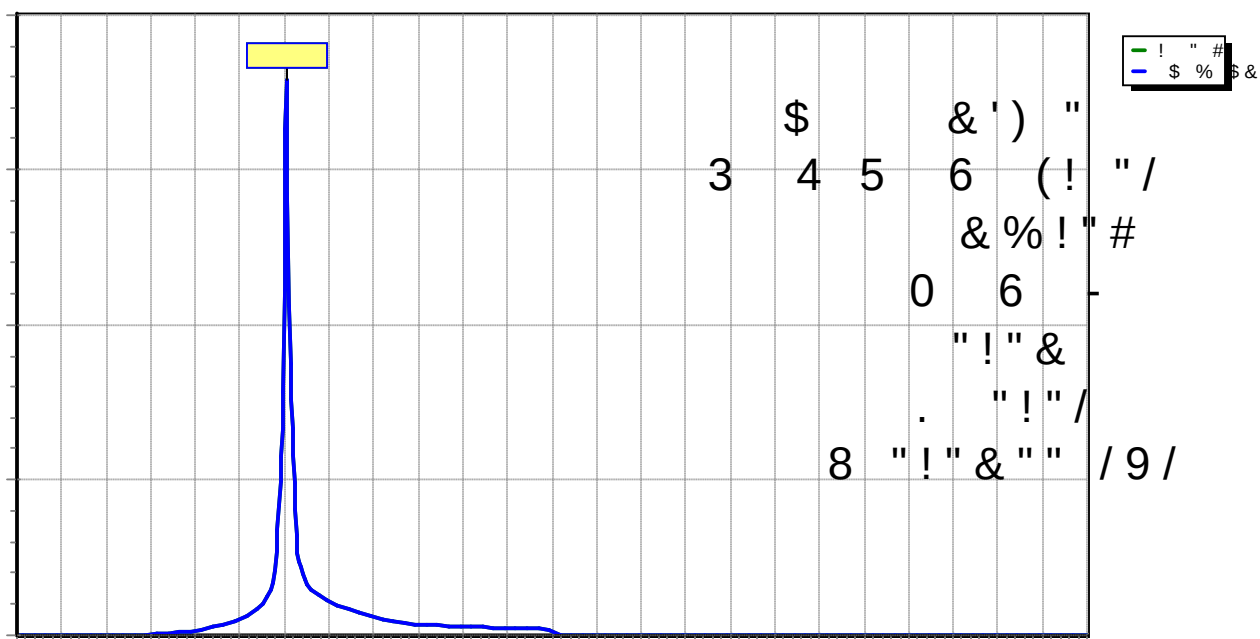
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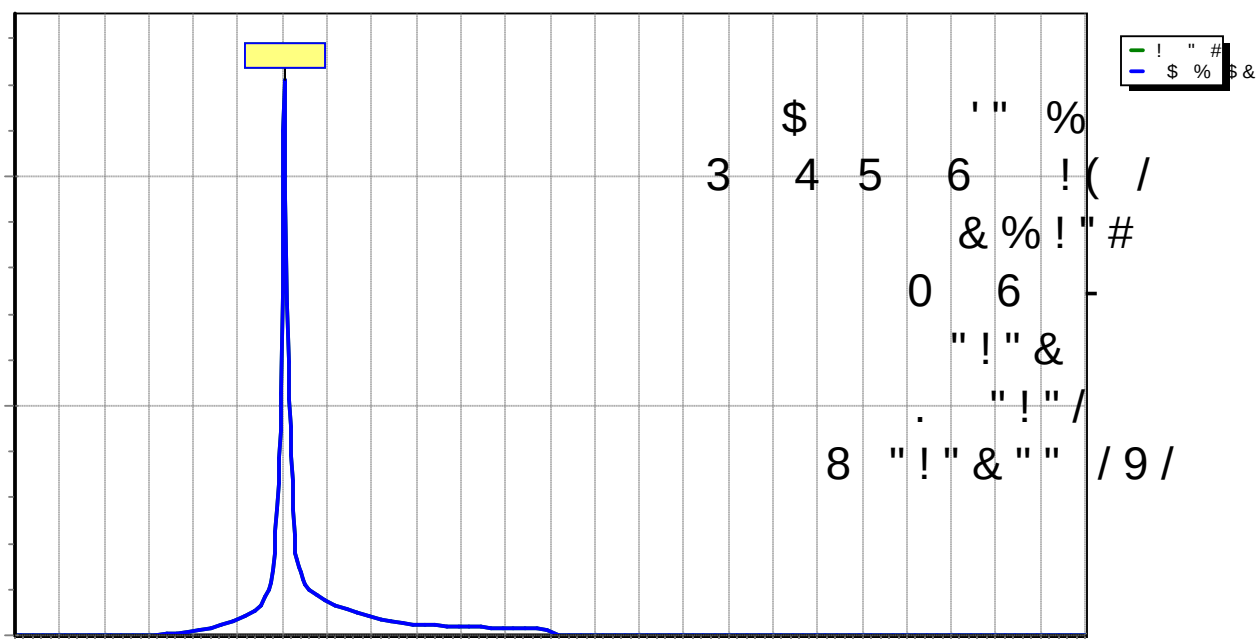
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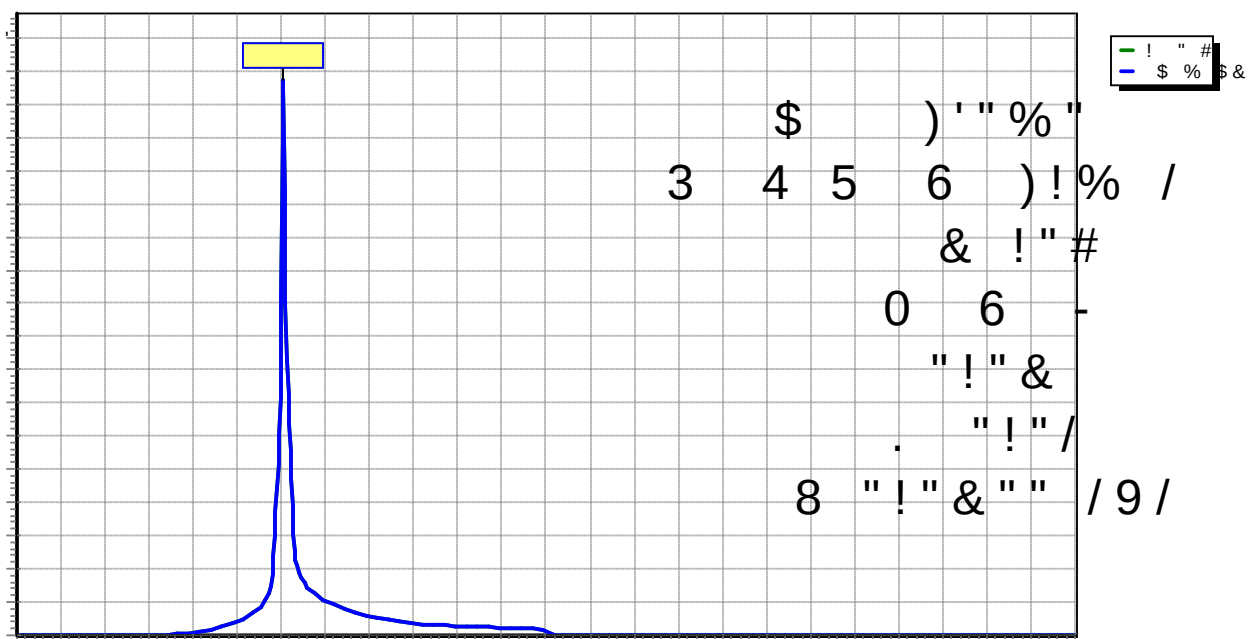
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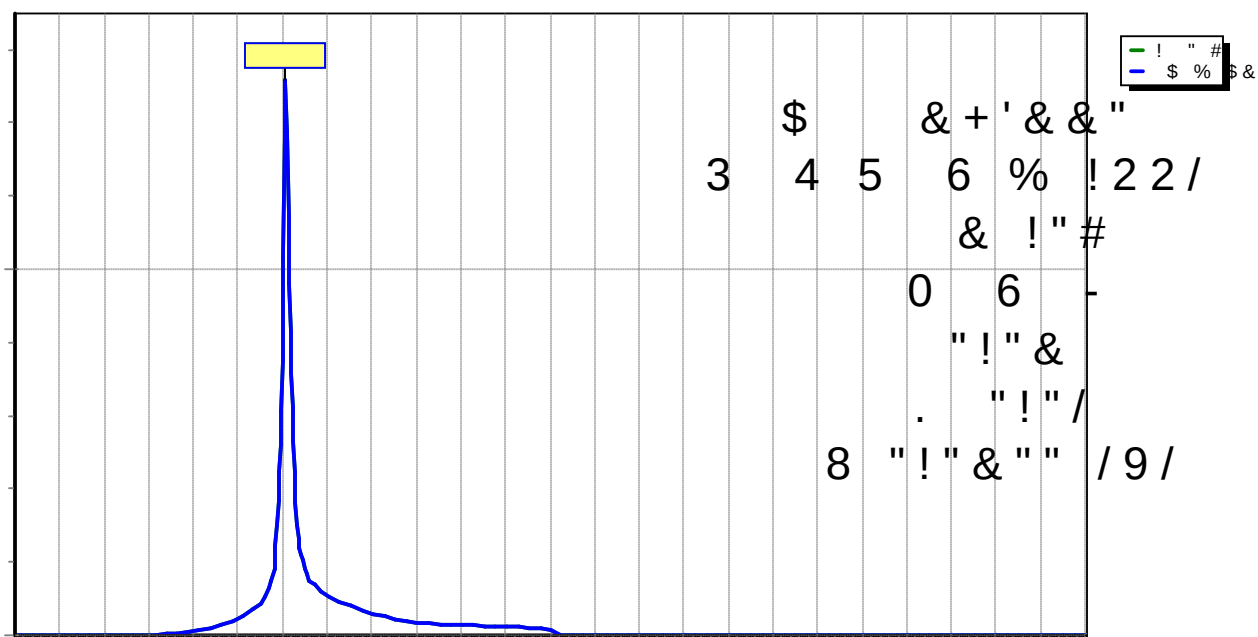
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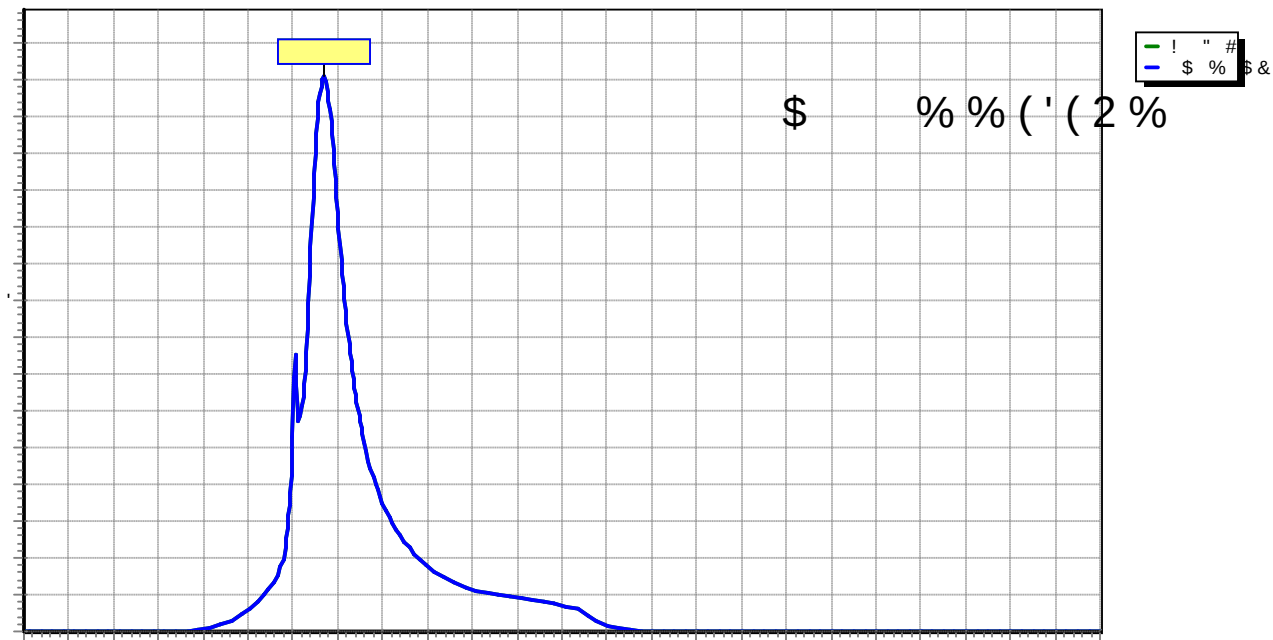


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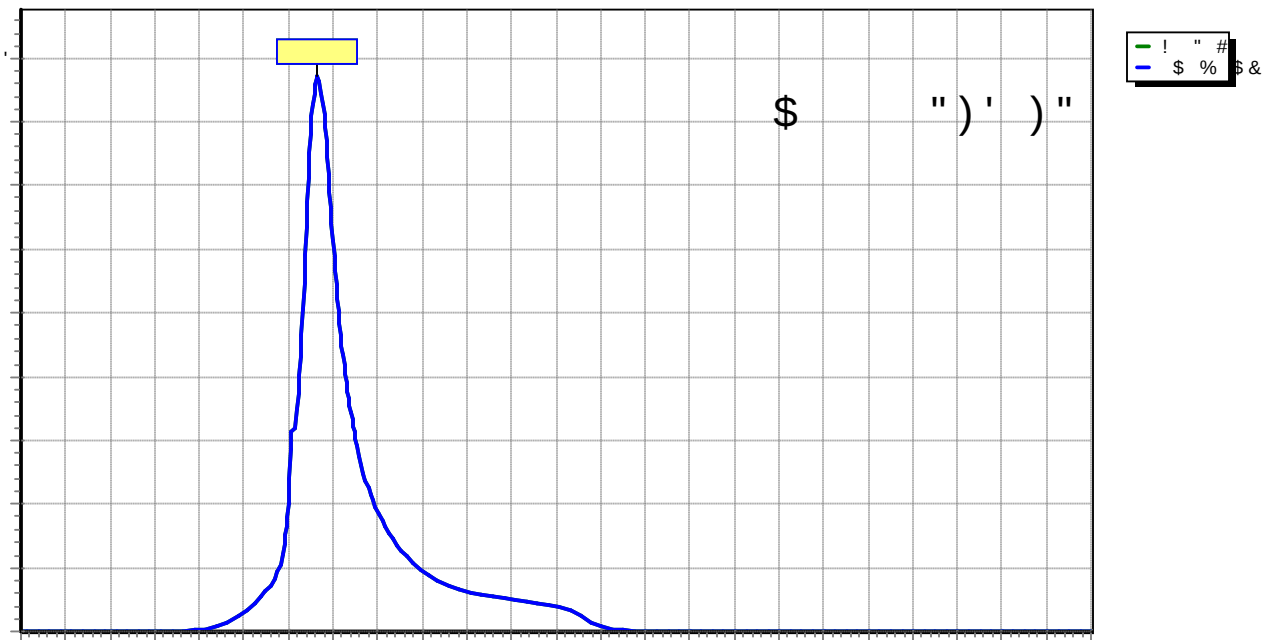


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Appendix C

High Intensity Soil Survey Web Soil Survey Map



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on May 5, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map – 2 foot contour intervals

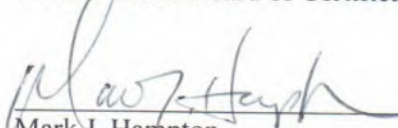
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263

July 17, 2017
Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

LYMAN-TUNBRIDGE COMPLEX

SETTING

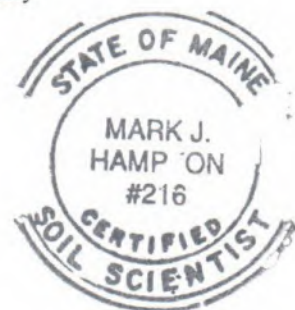
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(A) 0-3%, (B) 3-8%, (C) 8-15%, (D) 15-25%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING:	Buxton, Lamoine, Scantic
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USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.

P.O. BOX 1931 • PORTLAND, ME 04104-1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Colonel
(Aquic Haplorthods)

SETTING

PARENT MATERIAL:	Derived from dense, loamy glacial till
LANDFORM:	Drumlins and Sideslopes of glaciated uplands
POSITION IN LANDSCAPE:	Mid-positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Somewhat poorly drained with a perched watertable from 1.0 to 2.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dk gray brown, stony sandy loam 0-3"
	<u>Subsurface Layer:</u>	Dark Brown, stony sandy loam, 3-12"
	<u>Subsoil Layer:</u>	Olive Brown, stony sandy loam, 12-18"
	<u>Substratum:</u>	Olive, stony, sandy loam, 18-65"
HYDROLOGIC GROUP:	Group C	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Moderate and moderately slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

INCLUSIONS

(Within Mapping Unit)

CONTRASTING:	Scantic, Lyman-Tunbridge
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USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





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6495

918 Pool Street
Ginger Hill Design & Build
Biddeford, ME

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL:	Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM:	Coastal lowlands and river valleys
POSITION IN LANDSCAPE:	Lower positions on landform
SLOPE GRADIENT RANGES:	(A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
	<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
	<u>Substratum:</u>	Gray silty clay loam, 16"+
HYDROLOGIC GROUP:	Group D	
SURFACE RUNOFF:	Moderate to moderately slow	
PERMEABILITY:	Slow to very slow	
DEPTH TO BEDROCK:	Greater than 65 inches	
HAZARD TO FLOODING:	None	

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Colonel, Lyman-Tunbridge

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-1 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18	Sandy Loam	Firm	Olive	Common and Distinct
24				
30				
36				
42				
48				
54				
60				

Soil Details by	S.E.	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	3	D	2	14	☒ Restrictive Layer	☐ Bedrock
	Profile	Condition	Percent	Depth		
S.S.	Soil series/phase name:					Hydrologic
	Colonel SPD					Soil Group
					☐ Hydric	
					☒ Non-hydric	

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy Loam	Friable	Black	
6				
12	Silty Clay Loam	Firm	Gray	Common and Distinct
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by	S.E.	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	8	E	2	6	☒ Restrictive Layer	☐ Bedrock
	Profile	Condition	Percent	Depth		
S.S.	Soil series/phase name:					Hydrologic
	Scantic PD					Soil Group
					☒ Hydric	
					☐ Non-hydric	

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18	Sandy Loam	Firm	Olive	
24				
30				
36				
42				
48				
54				
60				

Soil Details by	S.E.	Soil Classification		Slope	Limiting Factor	☒ Groundwater
	3	D	2	12	☒ Restrictive Layer	☐ Bedrock
	Profile	Condition	Percent	Depth		
S.S.	Soil series/phase name:					Hydrologic
	Colonel SPD					Soil Group
					☐ Hydric	
					☒ Non-hydric	

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by	S.E.	Soil Classification		Slope	Limiting Factor	☐ Groundwater
	2	AIII	4	15	☒ Restrictive Layer	☐ Bedrock
	Profile	Condition	Percent	Depth		
S.S.	Soil series/phase name:					Hydrologic
	Lyman-Tunbridge WD					Soil Group
					☐ Hydric	
					☒ Non-hydric	

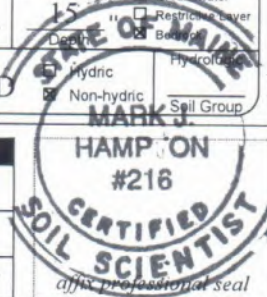
INVESTIGATOR INFORMATION AND SIGNATURE

Signature *Mark Hampton*

Date 4/8/21

Name Printed/typed Mark Hampton

Cert/Lic/Reg. # 263/216

Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-5 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Black
6	Loam		
12	Silty Clay	Firm	Gray
18	Loam		Common and
24			Distinct
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 8 Soil Classification E Slope 2 Limiting Factor 6 ☐ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Scantic PD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AIII Slope 4 Limiting Factor 16 ☐ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AII Slope 18 Limiting Factor 14 ☐ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-8 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24		Ledge	
30			
36			
42			
48			
54			
60			

Soil Details by S.E. 2 Soil Classification AIII Slope 6 Limiting Factor 16 ☐ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-9 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6	Sandy Loam	Friable	Red Brown	
12				
18	Sandy Loam	Firm	Olive	Common and Distinct
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 3 D Slope: 2 Limiting Factor: 13 " ☒ Groundwater
 Profile Condition Percent Depth ☒ Restrictive Layer ☐ Bedrock
 S.S. Soil series/phase name: Colonel SPD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-10 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 8 Limiting Factor: 15 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-11 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 16 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-12 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown	
6				
12	Sandy Loam	Friable	Red Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. Soil Classification: 2 AIII Slope: 3 Limiting Factor: 15 " ☐ Groundwater
 Profile Condition Percent Depth ☐ Restrictive Layer ☒ Bedrock
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature: Mark Hampton Date: 4/8/21
 Name Printed/typed: Mark Hampton Cert/Lic/Reg. #: 263/216
 Title: ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITESProject Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-13 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 15
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-14 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 6 Limiting Factor: 16
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-15 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AII Slope: 12 Limiting Factor: 12
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-16 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Red Brown	
	Ledge		

Depth below mineral soil surface (inches)

S.E. Soil Classification: 2 AIII Slope: 4 Limiting Factor: 15
 Profile Condition Percent Depth
 S.S. Soil series/phase name: Lyman-Tunbridge WD
☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
BiddefordExploration Symbol # SS-17 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Fine Sandy		
6	Loam	Friable	Black
12	Silty Clay	Firm	Gray
18	Loam		Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	8	E	2	6	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Scantic PD				
	☒ Hydric ☐ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-18 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24	Sandy Loam	Firm	Olive
30			Common and Distinct
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	13	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-19 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24	Sandy Loam	Firm	Olive
30			Common and Distinct
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	13	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

Exploration Symbol # SS-20 ☒ Test Pit ☐ Boring

" Organic horizon thickness Ground surface elev. _____

" Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
0	Sandy Loam	Friable	Dark Brown
6			
12	Sandy Loam	Friable	Red Brown
18			
24	Sandy Loam	Firm	Olive
30			Common and Distinct
36			
42			
48			
54			
60			

Soil Details by	S.E.	Soil Classification	Slope	Limiting Factor	☒ Groundwater
	3	D	2	12	☒ Restrictive Layer
	Profile	Condition	Percent	Depth	☐ Bedrock
S.S.	Soil series/phase name: Colonel SPD				
	☐ Hydric ☒ Non-hydric				
	Hydrologic Soil Group				

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date 4/8/21

Name Printed/typed

Mark Hampton

Cert/Lic/Reg. # 263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

SOIL PROFILE / CLASSIFICATION INFORMATION**DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES**Project Name:
Pool Street SubdivisionApplicant Name:
Ginger Hill Design and BuildProject Location (municipality):
Biddeford

Exploration Symbol # SS-21 ☒ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0	Fine Sandy		
6	Loam	Friable	Black
12	Silty Clay	Firm	Gray
18	Loam		Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 8 Condition E Slope 2 Limiting Factor 6 ☒ Restrictive Layer
 Percent Depth ☐ Bedrock
 S.S. Soil series/phase name: Scantic PD ☒ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 _____ " Organic horizon thickness Ground surface elev. _____
 _____ " Depth of exploration or to refusal

Texture	Consistency	Color	Mottling
0			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 Profile _____ Condition _____ Slope _____ Limiting Factor _____ ☐ Restrictive Layer
 Percent Depth ☐ Bedrock
 S.S. Soil series/phase name: _____ ☐ Hydric ☐ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature

Date

4/8/21

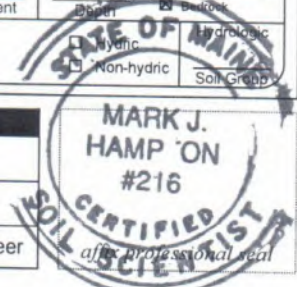
Name Printed/typed

Mark Hampton

Cert/Lic/Reg. #

263/216

Title

☒ Licensed Site Evaluator☒ Certified Soil Scientist☐ Certified Geologist☐ Professional Engineer

Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

SOIL SURVEY GENERAL NOTES

- 1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.
- 2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED MAY 5, 2021.
- 3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
- 4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

SOIL LEGEND

DRAINAGE CLASS

EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

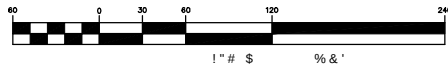
SLOPE DESIGNATION

0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



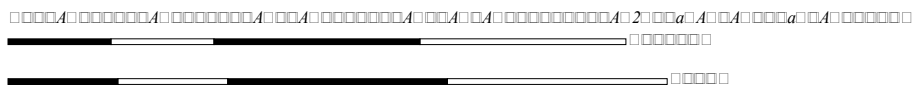
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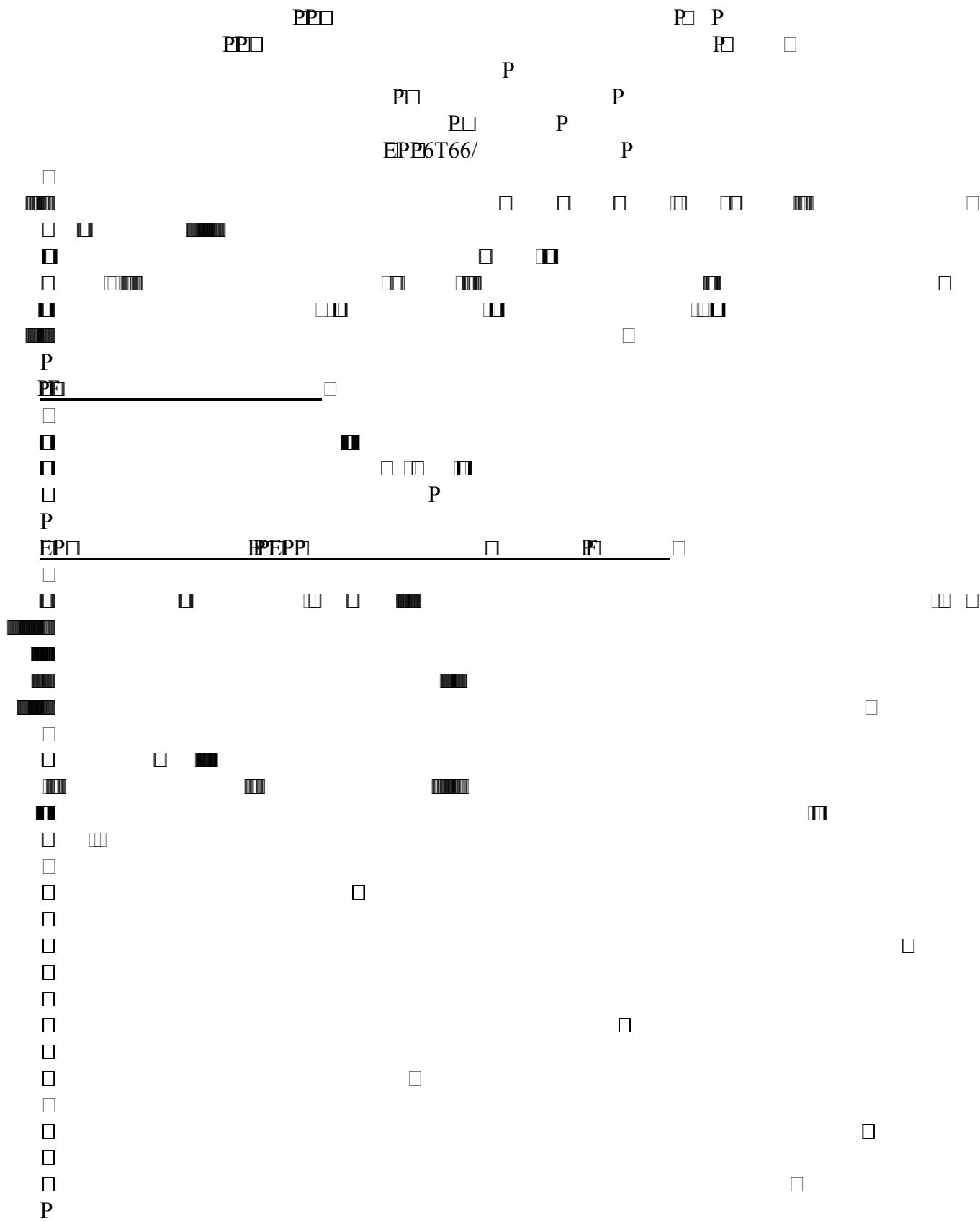
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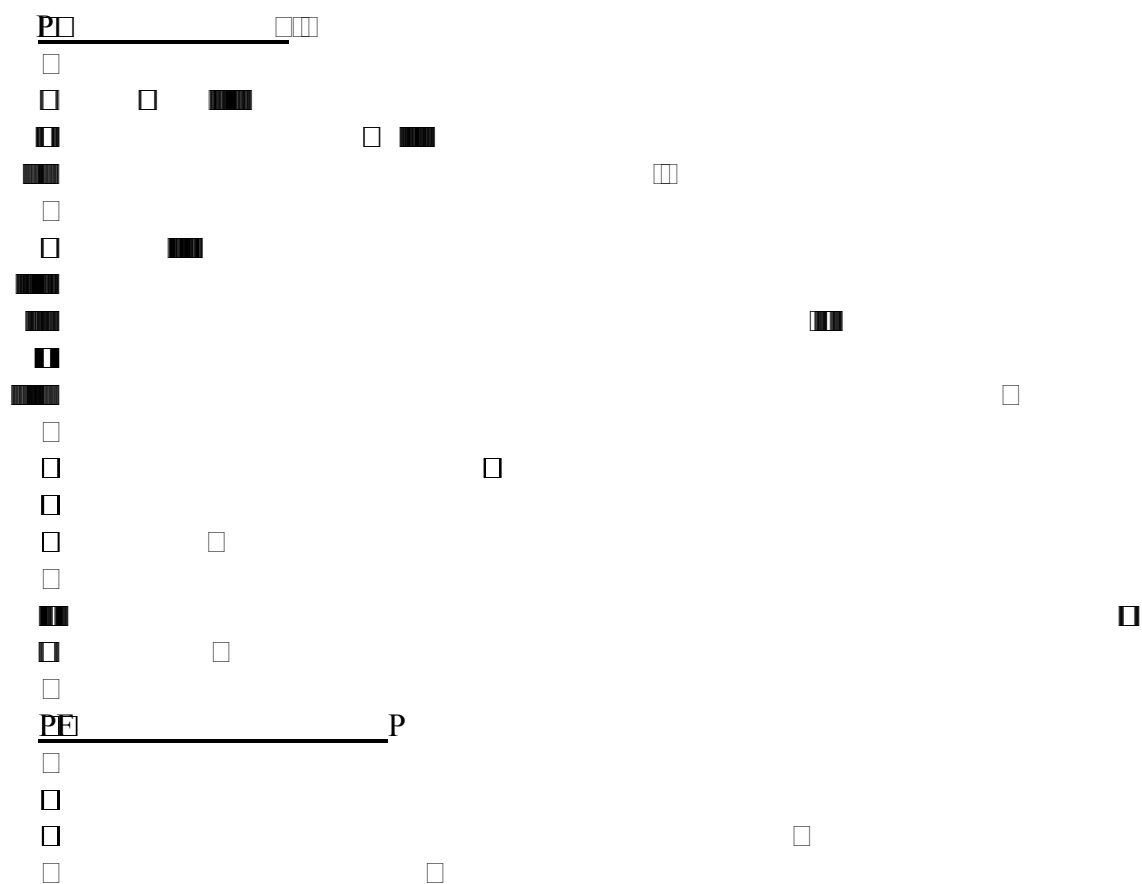
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Appendix D

Inspection and Maintenance Plan





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Appendix E

Drainage Plans

D1.0 ±Pre-Development Drainage Plan
D2.0 ±PostDevelopment Drainage Plan
(See Attachment 10 for Drainage Plans)



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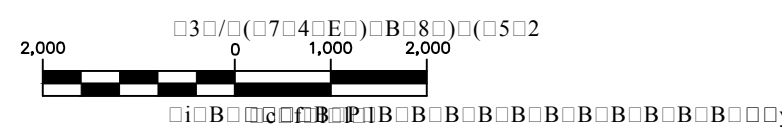
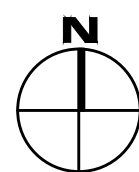
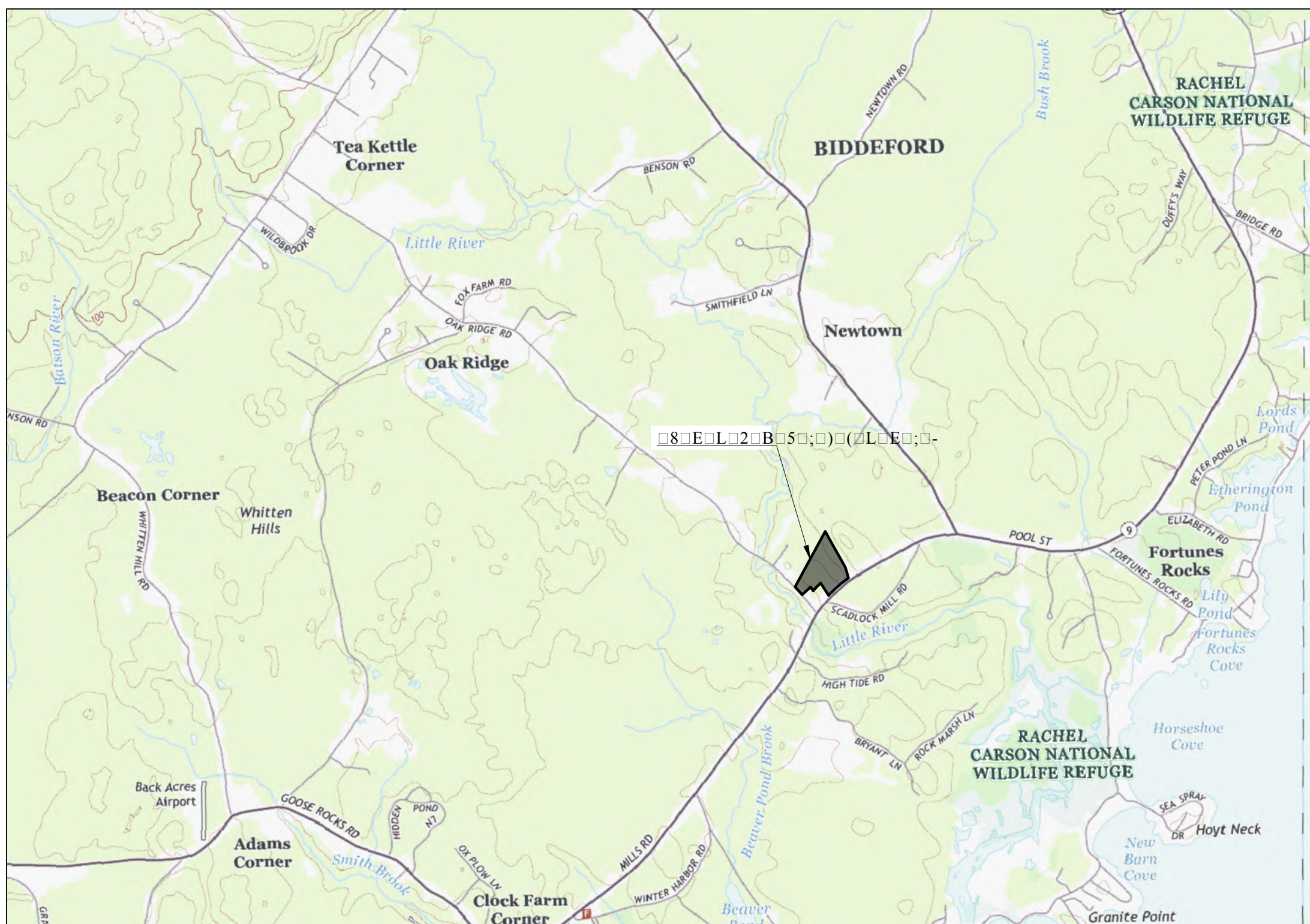
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WALSH
ENGINEERING ASSOCIATES, INC.

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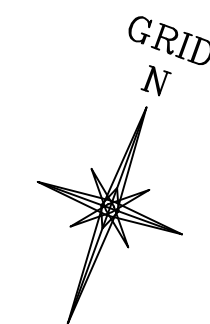
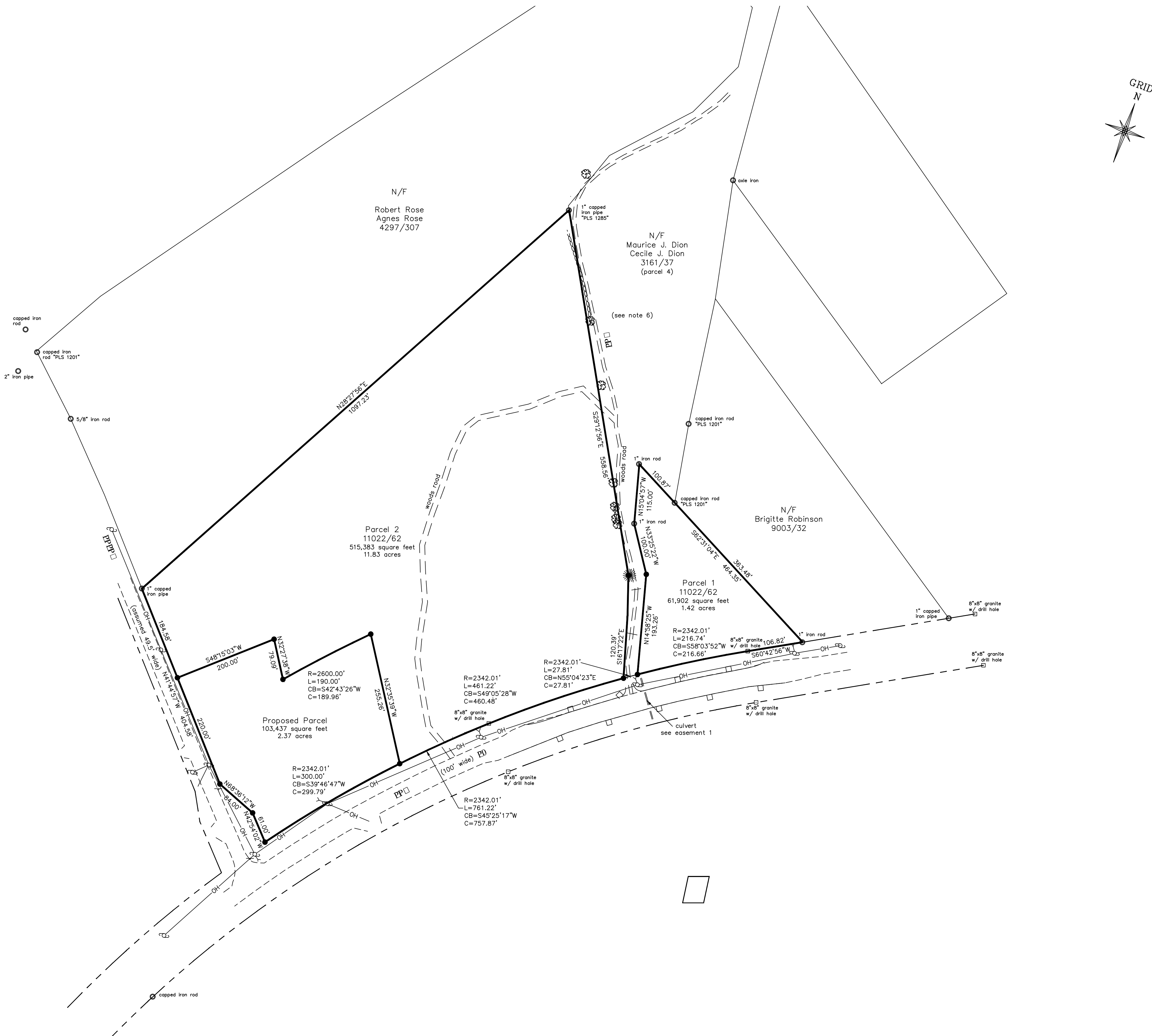
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- Iron marker — found
- Iron marker — set (#5 rebar)
- Property line (locus)
- Property line (buffer)
- Right of way line
- Guard rail
- Sign
- Utility pole
- Guy wire
- Overhead utility line
- Now or formerly of
- Deed reference (Book/Page)
- Stone wall
- Deciduous tree w/embedded wire fence
- Coniferous tree w/embedded wire fence

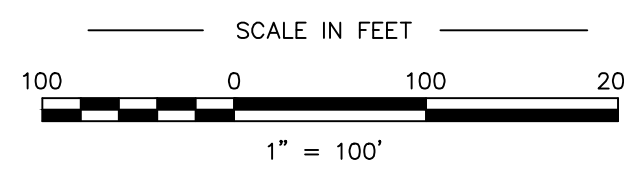
- 1) Book and Page references are to the York County Registry of Deeds, unless otherwise noted.
- 2) Bearings are referenced to grid north, Maine State Plane Coordinate System, West Zone, NAD83.
- 3) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.
- 4) Property lies within Zone C based on FIRM Community #230145 Panel #0010 B, effective date May 15, 1984. It does not lie within a special flood hazard area.
- 5) Project area was covered by snow and ice at the time of the survey and some features may have been obscured and not shown on this plan.
- 6) This portion of Oldtown Road was formerly known as Old Newtown Road. It was renamed by order of the City of Biddeford Municipal Officers on November 20, 1979. "Newtown Road" was discontinued by the City of Biddeford Municipal Officers on January 2, 1990 and described as "all of Newtown Road lying between Hills Beach Road on the northeast, and Pool Street on the southwest". The roadway has not been maintained and is presumed to be included in the "Newtown Road" discontinuance. The City of Biddeford retained a public easement over the discontinued road.

- 1) Plan Showing a Standard Boundary Survey made for Christopher Robinson by Dow and Coulombe, Inc. dated September 22, 1989 as recorded in Plan Book 186, Page 10.
- 2) Worksheet Sketch made for Hank Labrie by John Bruckler dated January 31, 1997.
- 3) Revision to Alphonse & Bernadette M. Dion Subdivision Boundary Survey and Re-Subdivision of Land of Peter S. and Shirley W. Bowen and David R. and Frances V. Consalvo made by Civil Consultants dated June 13, 2003 as recorded in Plan Book 284, Page 1.
- 4) Maine State Highway Commission Right of Way S.H.C. File No. 16-137 Sheet 5 of 5 dated December, 1961 as recorded in Plan Book 39, Page 7.
- 5) Standard Boundary Survey made for the Saco Valley Land Trust, Inc. made by Guy Casavant PLS #1301 dated October 16, 2002 as recorded in Plan Book 290, Page 28.
- 6) Standard Boundary Survey made for Albert A. & Isabella Chretien by BH2M dated April, 2006 and revised through April 6, 2010 as recorded in Book 343, Page 13.
- 5) Maine State Highway Commission Right of Way S.H.C. File No. 16-122 Sheet 1 of 2 dated June, 1958 as recorded in Plan Book 29, Page 11.
- 6) Boundary Survey made for Henry George Labrie III by Titcomb Associates dated February 24, 2021.

1) Drainage rights described in a Notice of Taking by the State of Maine recorded in Book 1481, Page 11

as noted

Ginger Hill Design & Build
18 Early Way, Arundel, Maine
Book 18664, Page 128



CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

Rex J. Croteau, P.L.S. #2273

PLAN OF

930 Pool Street Biddeford, Maine

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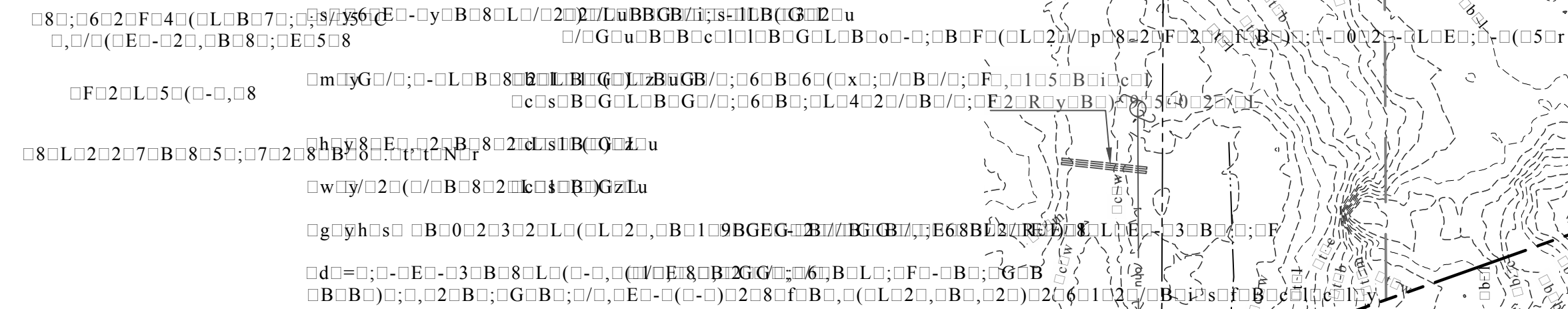
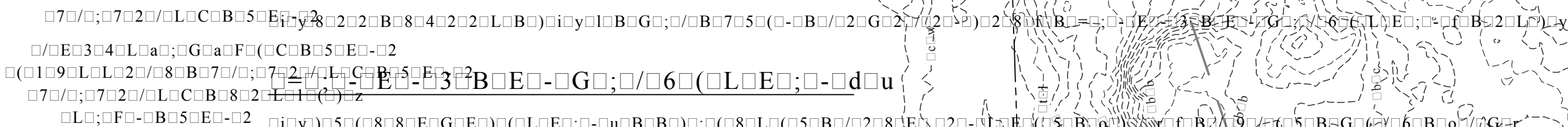
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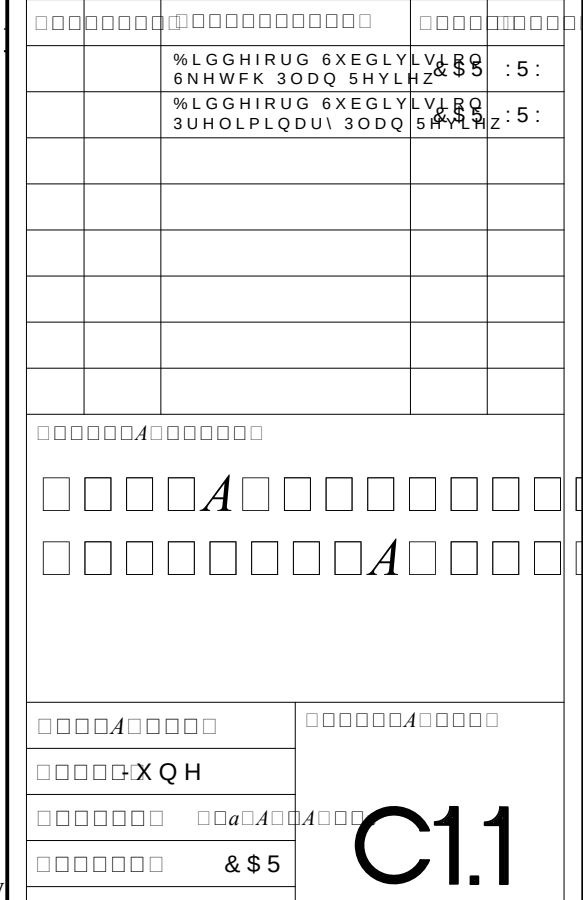
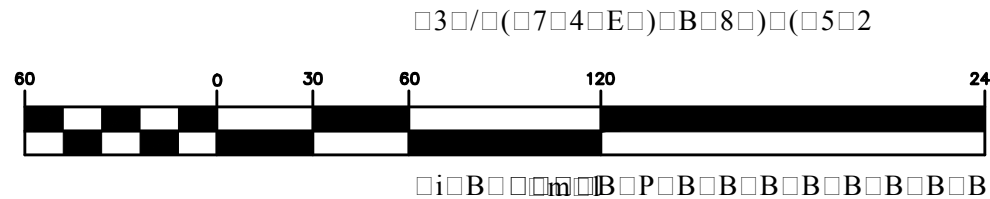
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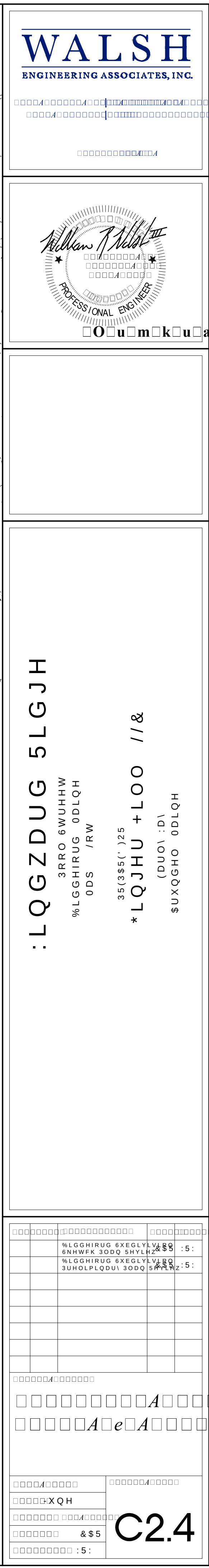
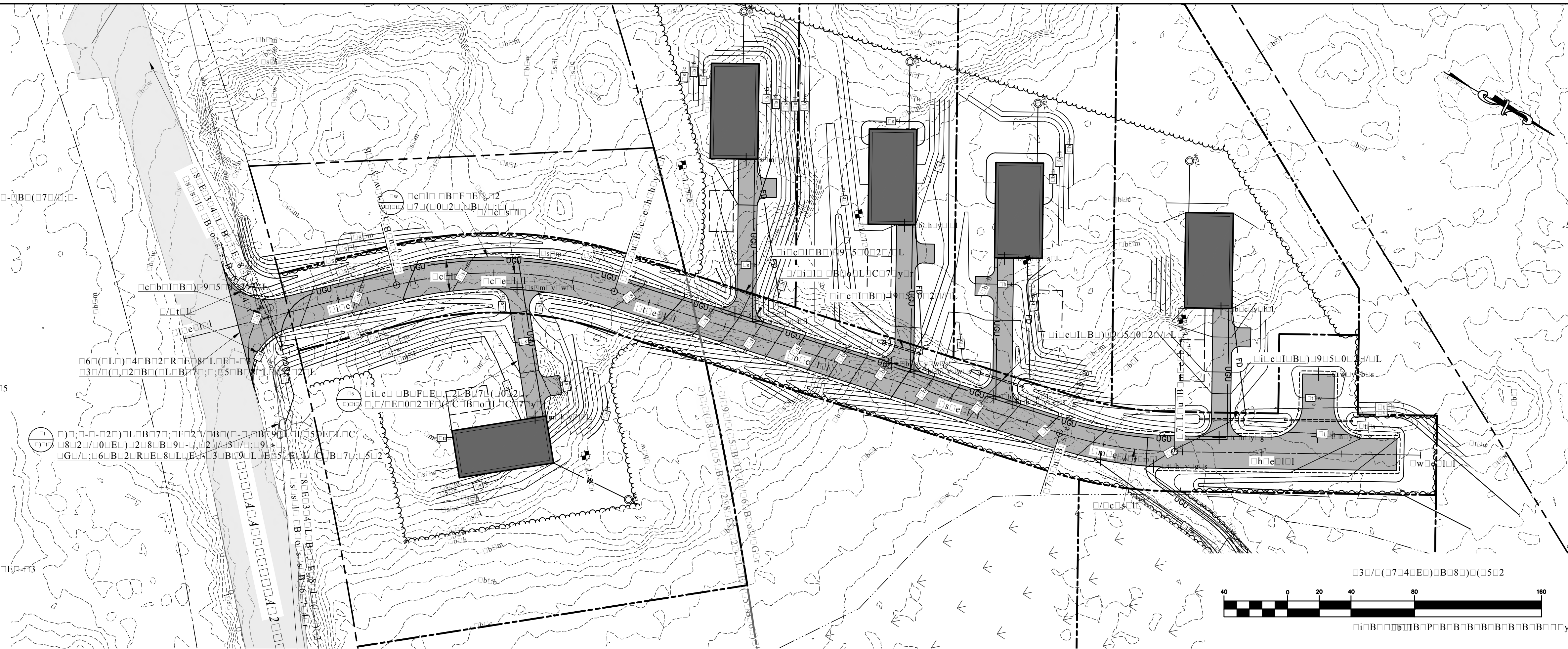
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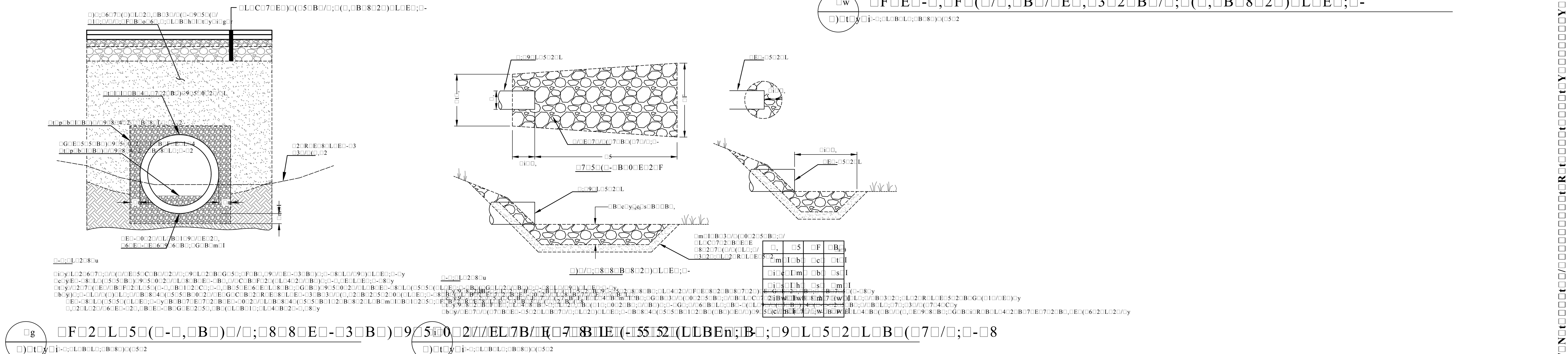
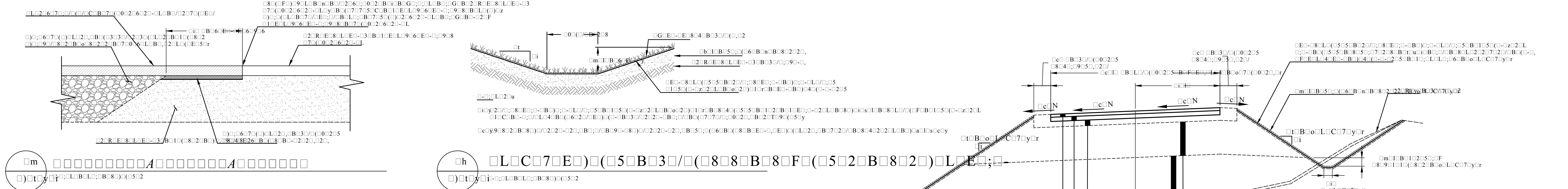
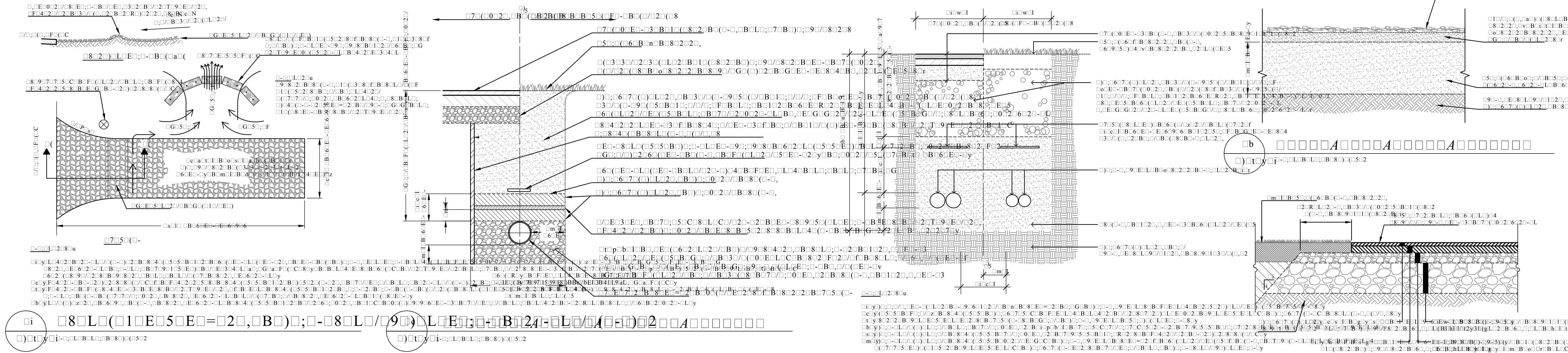


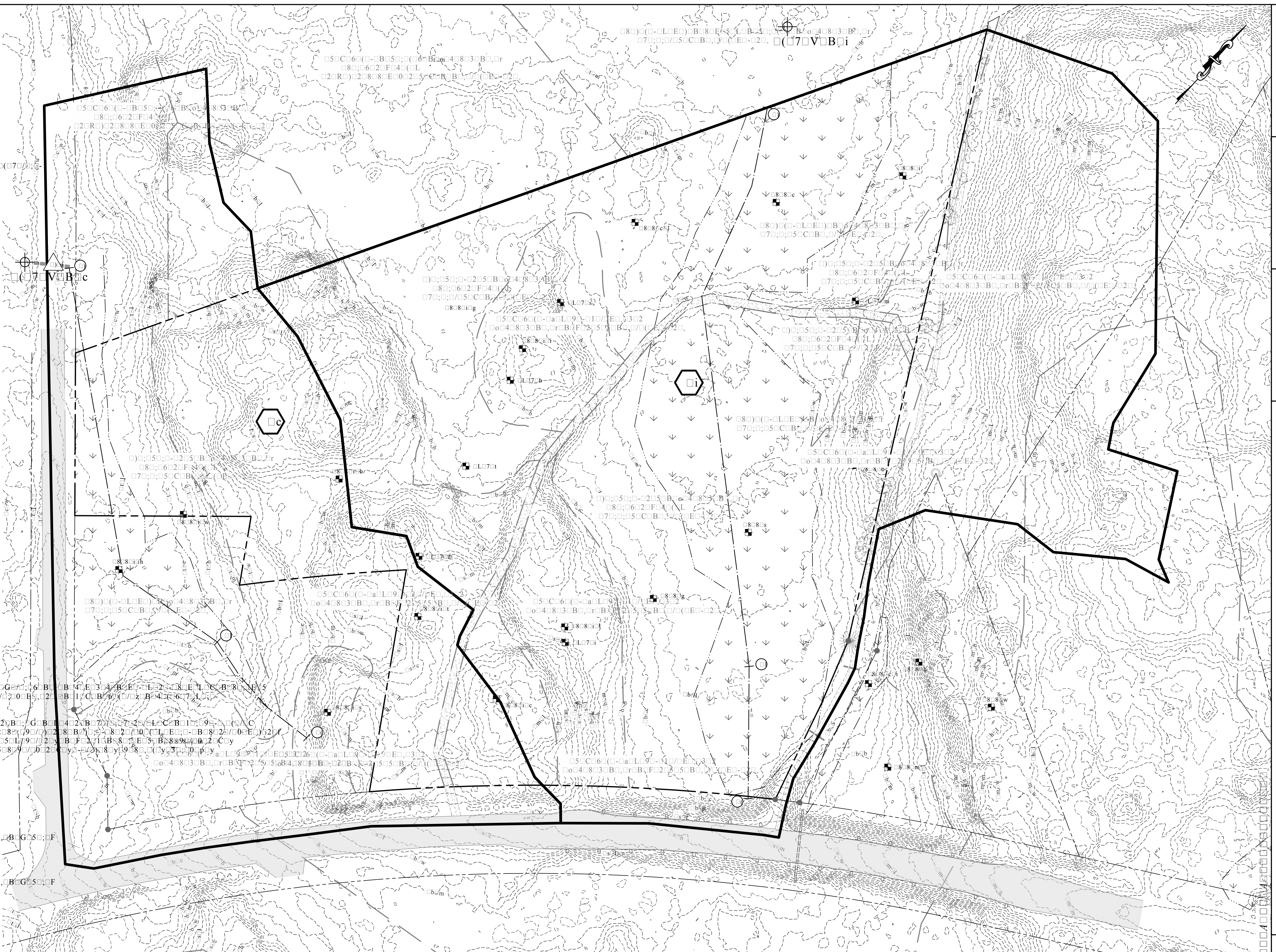
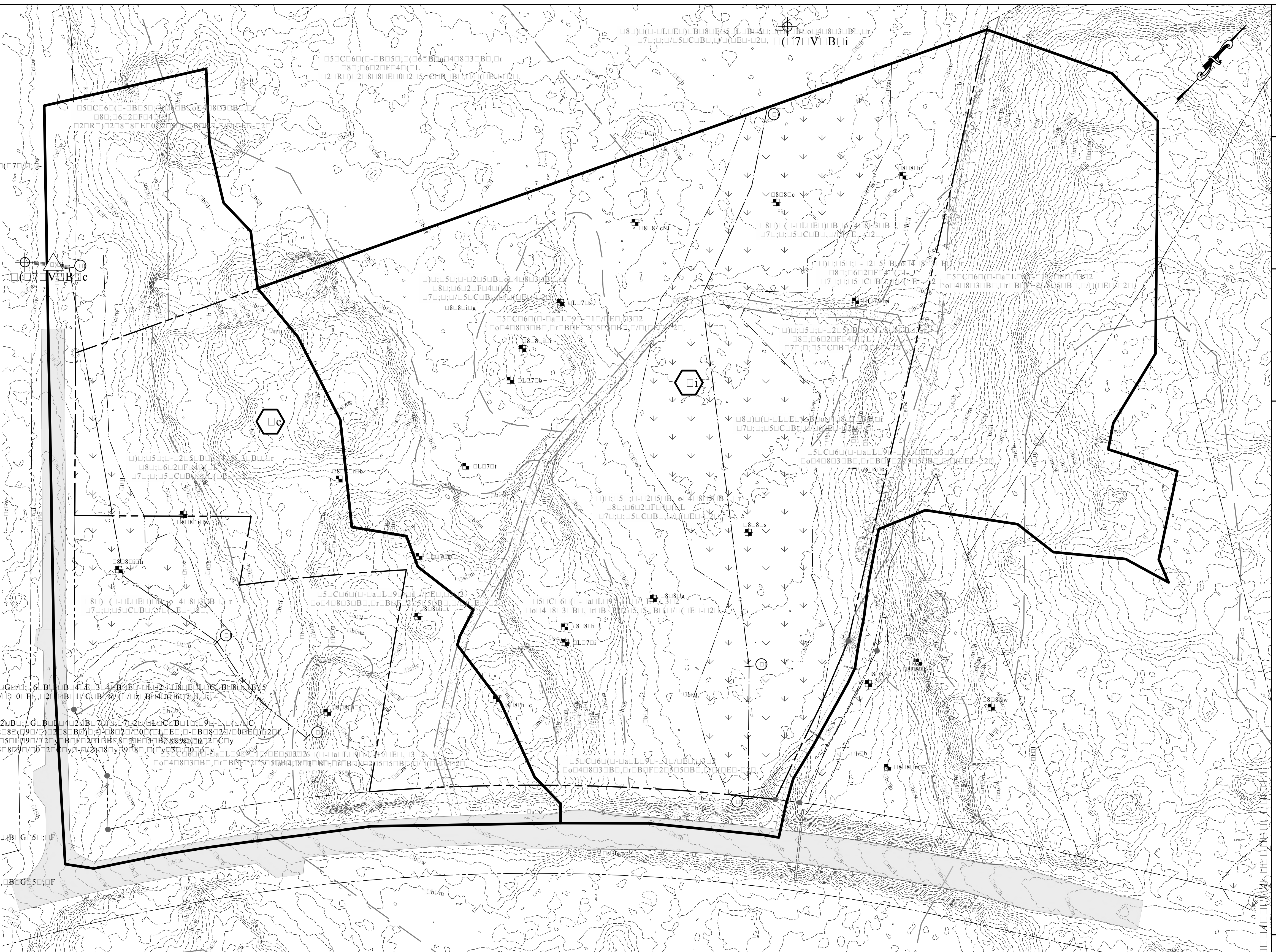
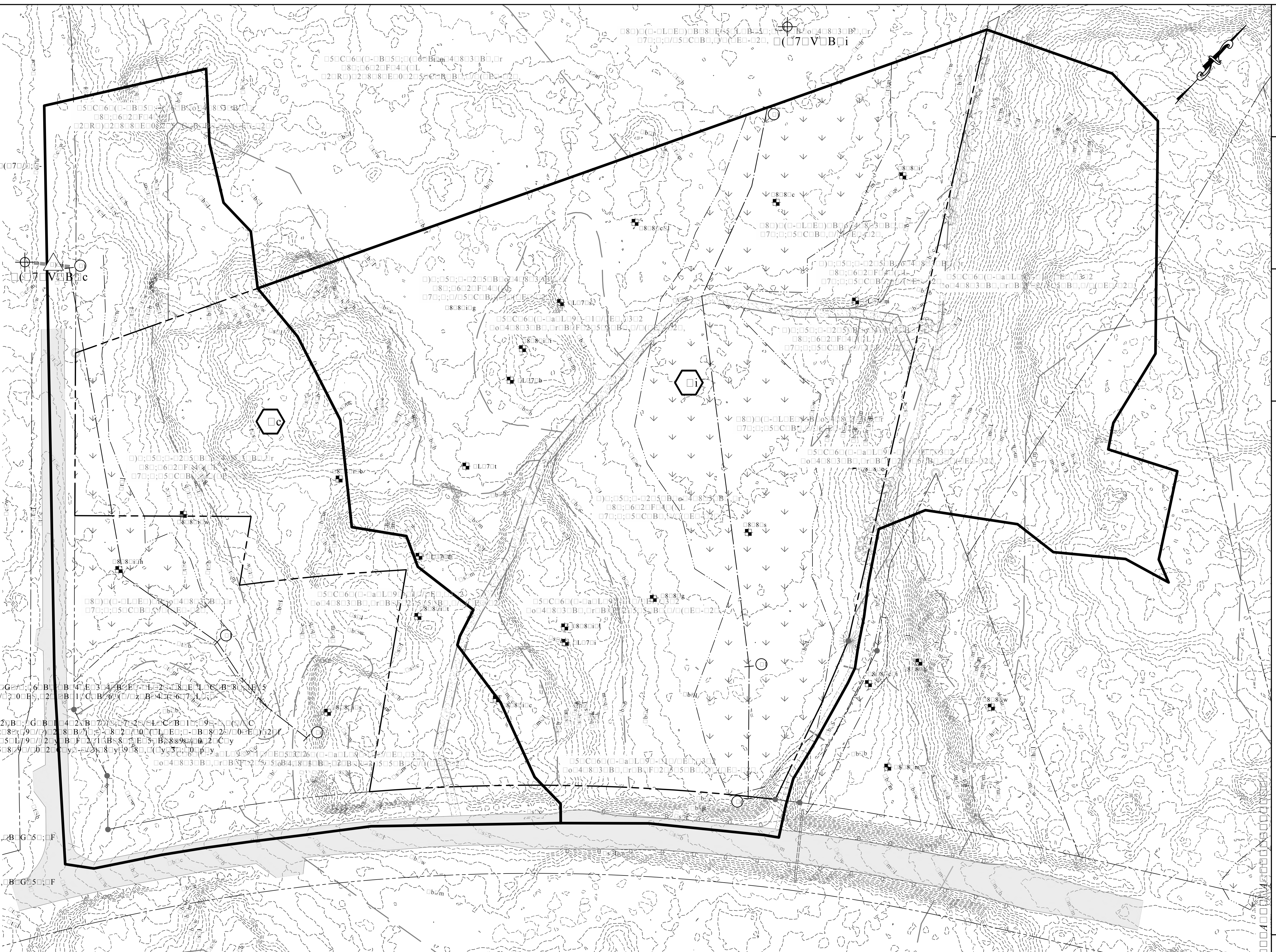


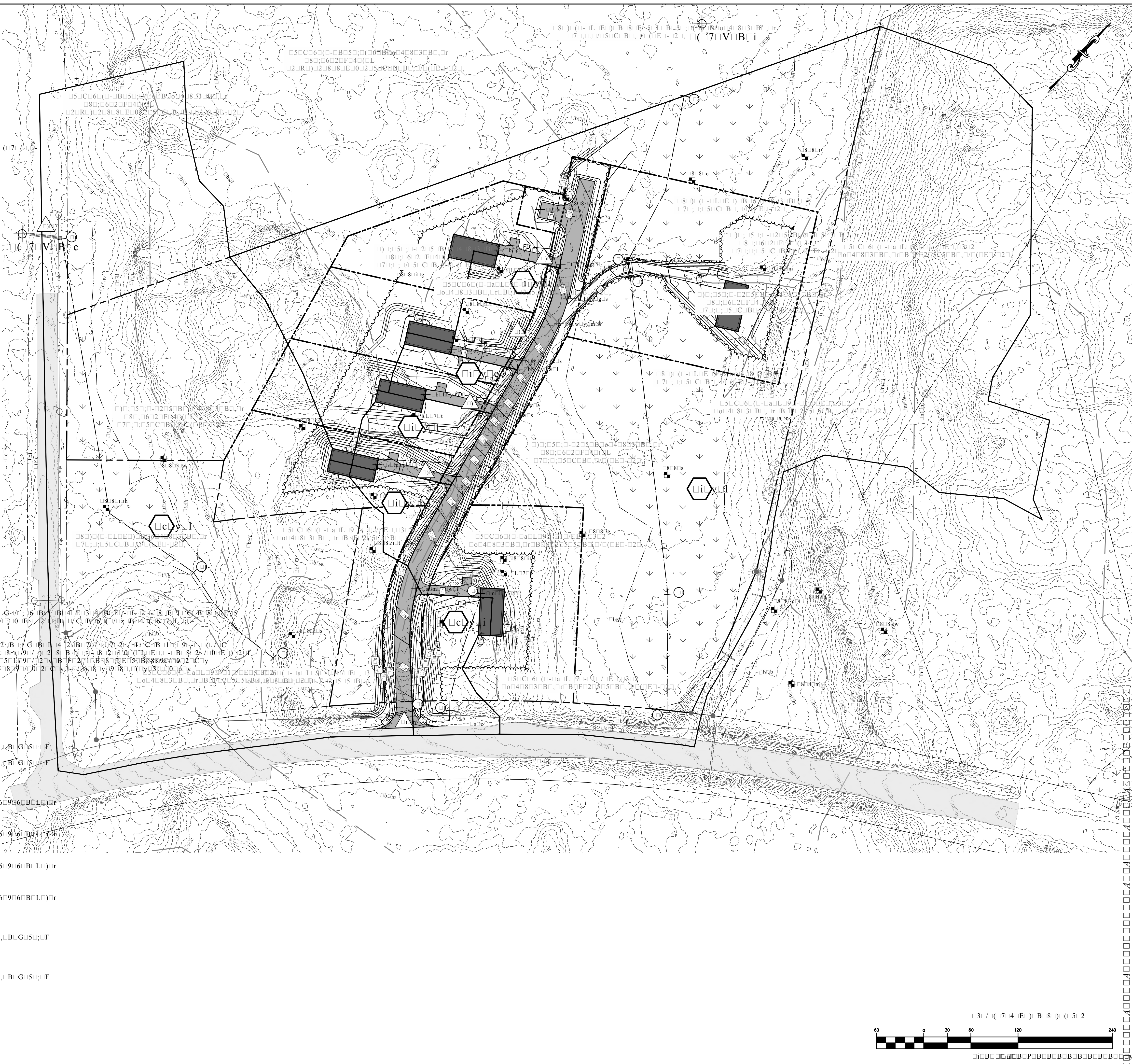
Net Residential Density Calculation (RF Zone)	
Gross Lot Area	381,091
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	65,925
Poorly/Very Poorly Drained	
Slopes > 33% (50% Deduction)	1,933
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	93,774
Soils of Statewide Significance	
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	219,460
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	5







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[illegible]

From: [Chrystina Gastelum](#)
To: [Bill Southwick \(southwick@maine.rr.com\)](mailto:southwick@maine.rr.com)
Cc: [Tansley, Greg](#)
Subject: Ginger Hill Applications
Date: Friday, July 16, 2021 9:29:06 AM

Hello Bill,

Last evening the BCC reviewed the two Ginger Hill applications, and we agree with Chris DiMatteo's assessments that the plans need work to meet the intent of the ordinance -- that is, to maximize conserved land and wildlife habitat. Clustering, potential for shared septic, preservation & management of open space, as well as understanding the needs of current inhabitants (particularly any rare species) are all listed concerns and we agree that these need to be better defined/designed in the plans.

I talked with Nan yesterday, and she will be copying us in the distribution of the PB Agenda Packet in the future, so we hope to have more timely feedback to you soon. We are getting the hang of the various cycles. That being said, Mr. DiMatteo's assessment also recommended consulting with the conservation commission, and I'm not sure how that's being done other than us proactively jumping in. We can do that, and now we have better alert systems, but I'm just letting you know that we are more than happy to consult, but sometimes we may need a nudge.

Thanks,
Chrystina Gastelum
Chair, Biddeford Conservation Commission

Bcc: Biddeford Conservation Commission

--

Chrystina Gastelum (gas-TELL-um) - she/her

PLANNING BOARD
REPORT

October 29, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: Leeward Meadows – Ginger Hill, LLC
918 Oak Ridge Road (Tax Map 4 Lot 57)

Subdivision Preliminary Plan Review

Review Status: New preliminary plan application

Board members and Mr. Tansley,

The following application and attached information has been provided for review:

1. Application form dated 9/15/2021.
2. Cover letter and Application Submission entitled: *Preliminary Subdivision Application for Leeward Meadows Subdivision, located at 158 Oak Ridge Road, Biddeford, Maine 04005, Map 4. Lot 57. Prepared For: Ginger Hill, LLC, 18 Early Way, Arundel, Maine 04046.* Prepared by Walsh Engineering Associates, dated 9/15/2021. This includes Stormwater Report, Soil Survey prepared by Mark Hampton and Wildlife Evaluation Report prepared by Jones Associates.
3. Engineering Plan set entitled: *Leeward Meadows, Oak Ridge Road, Biddeford, Maine 04005. Prepared For: Ginger Hill, LLC, 18 Early Way, Arundel, Maine 04046.* Prepared by Walsh Engineering Associates, dated 10/20/2021.
4. Response to Comments Letter: *RE: Preliminary Subdivision Application Leeward Meadows Subdivision, 158 Oak Ridge Road, Biddeford, Maine, Tax Map 4, Lot 57.* Prepared by Walsh Engineering Associates, dated 10/20/2021.
5. Homeowner's Association Documents: *Leeward Meadows Subdivision, Maine, Declaration of Covenants and Restrictions*
6. Letter from Jones Associates dated October 19, 2021.

With review of the above information and the Land Development Regulations and Subdivision Ordinance, I offer the following comments on compliance with the City's ordinances. See attached for remaining outstanding engineering related comments from Site Design Associates.

PROJECT DESCRIPTION

The applicant seeks to create 6 residential lots along a proposed 735-foot private road on a 15.5 AC parcel located in the Rural Farm (RF) zone. The site includes a large freshwater wetland among open field and woods.

COMPLETENESS REVIEW

The application is before the Planning Board as required by Chapter 66 (Subdivisions) subject to Subdivision review and approval. Per the City's Subdivision ordinance (66-26), all applications have a three-tier approval process beginning with a Sketch plan review. The Planning Board reviewed the Sketch Plan in July and the applicant has submitted a preliminary plan submission for review that appears to be complete.

COMPLIANCE WITH THE CITY'S ORDINANCES

The proposed minimum lot sizes and net density calculations appear to be in order. Required setbacks are also depicted and the applicant engaged a Landscape Architect to design the required Rural Farm Zone vegetated buffer. The latter may need logistical and design tweaks to be more effective and clearer as to its designated location.

City Staff, including Long Meadow P&LA and Site Design Associates, have had an opportunity to share comments on an earlier submission prior to placing the application on the Board's agenda. Considering the revised plans and the response to comments, the following are comments and recommendations that Board and the applicant may want to consider:

AGRICULTURAL SOILS (Sec. 66-2)

In speaking with the State Soil Scientist's office and the NRCS, it appears the soils listed in the HISS prepared by Mark Hampton, Associates do not include the specific soils listed as prime agricultural or having state-wide significance. It was suggested, however, that if the project used federal aid or funding, that an application to the NRCS regarding agricultural and state-wide significant soils was required since the its medium intensity soil surveys depict these soils on the property.

OPEN SPACE DESIGN

The open space design provides for a compact development towards the front of the parcel while preserving the majority of the riparian habitat that abuts existing conservation land to the rear. The latter is proposed to be protected under an easement held by the Kennebunkport Land Trust. The boundary of conservation land should be marked in some manner to identify it as such, and making it known in the HOA documents, drawing a distinction from the other open spaces, would be helpful too. The open space that is not proposed to be held by the Land Trust, should also be marked in some manner to articulate the line between lots and open space.

PRESERVATION IN PERPETUITY

As outlined in Sec. 16.E, Article VI of the Land Development Regulations, Open Space in a cluster development shall be preserved by means of a conservation easement held by a third party or held by the HOA by means of its declarations and covenants. A draft agreement and easement between the applicant and the land trust should be provided to the Board for review and approval. The draft HOA documents does not appear to include any language related to the non-land trust open space being preserved in perpetuity.

SUBDIVISION IN THE RURAL FARM (RF) ZONE (Sec. 66-79)

Buffer Location: This provision, among other items, requires a 75-foot wide vegetated buffer. The Plan depicts the 75-foot buffer in the location specified by the ordinance, measured from the public street. With consultation with City Staff, the applicant has located the required plantings for the buffer adjacent to the new private street instead. This provides for the current meadow/field to be maintained along Ridge Road.

If the Planning Board is amenable to this , a waiver to locate the required 75-wide buffer adjacent to proposed private street would be prudent, so it is clear from a regulatory perspective the proposed plantings' purpose. A note should be added to the plan indicating that the plantings shown are maintained as a buffer required under Sec. 66-79.

Buffer Design: The applicant has engaged with a landscape architect that has prepared a planting plan with an appropriate mix of plant species. The Board and the applicant should consider the following tweaks to the design:

1. The planting proposed is less than 75 feet wide, however, per 66-79 (3) b, the width can be reduced to no less than 50 feet wide. The Plan depicts 40 feet, of which 15 feet is located within the Street Right-Of-Way (ROW). This does not seem to be appropriate since the ROW is dedicated to street and related utilities and infrastructure, which is likely to be in conflict with maintaining a vegetated buffer.
2. The proposed vegetated buffer along the proposed street should be shifted out of the ROW and the planting strip increased to 50 feet wide. Added evergreen trees to make up the difference in width should be utilized to provide for an effective screen.
3. The actual delineation of the 75-foot buffer should be shown adjacent to the new street where the planting is proposed to be rather than measured from Ridge Road. (See attached sketch)
4. The plant species arborvitae is not comparable in size at maturity to the other Evergreen trees listed, having a spread of 12 feet vs. 20 feet for the spruce and fir trees. It is recommended that they are substituted with more of the evergreen species listed.
5. The addition of the native grasses and wildflower seeding to provide a "pollinator" meadow should be a nice asset to the proposed development. The final drawings should include

details on the best practices of executing this in a manner that will not provide an opportunity for invasive/exotic weeds to get established during establishment.

HOMEOWNERS ASSOCIATION DOCUMENTS

1. The open space that is not to be held by the land trust (*common area*) should be more defined in terms of management, as it relates to buffer requirements and maintaining existing natural screening of the development. The HOA documents should be drafted to help make expectations clear in maintaining the planted trees and shrubs in the open space as a buffer and vegetated screen, and existing vegetation that currently provide screening that is not proposed to be cleared, should be maintained as such.
2. Art. VI Sec. 12.d should include a reference to receiving Planning Board approval if granting easements is not reflected on the approved subdivision plan. Art VIII Sec. 2 should be subject to Board approval of an amended plan as well.
3. Encroachment of the open space by the homeowners or abutters should be addressed in terms of accountability as it relates to the open space being undeveloped and/or clearing that is contrary to the approved plan.
4. There does not appear to be any sections that address the shared maintenance of the private street, especially having the responsibility of contacting or ensuring that snow is removed in a reliable manner to aid in public safety access.

FIRE SAFETY

Chapter 30-87 requires underground fire suppression tanks for new (private/public) subdivisions, which are located outside the hydrant districts. The applicant should review the ordinance and coordinate with the Fire Department and demonstrate compliance prior to final approval.

PLAN RECOMMENDATIONS

1. A Stamped and signed final Boundary Survey should be submitted.
2. The Existing Conditions Plan references GIS topography/contour data. Is this adequate for final road and site grading design?
3. The Subdivision Plan should be prepared and certified by a Professional Land Surveyor, licensed in Maine.
4. The Subdivision Plan appears to not include typical/standard notes found on surveys and subdivision plans, e.g. deeds, ownership, plan references.... The latter is referenced to the cover sheet, however, the Subdivision Plan will be recorded and ideally should be one sheet, unless multiple sheets are recorded as well.
5. The Subdivision Plan notes should reflect any applicable City zoning or subdivision requirements, e.g. 75-foot buffer in the RF zone and Open Space preserved in perpetuity.
6. The plans should include signatory blocks and recording blocks where necessary.

WAIVER REQUESTS

None requested.

CONCLUSION

The Preliminary Plan appears to be complete for the Planning Board's consideration. The above comments reflect recommended changes that should be addressed and reflected in the final plans prior to approval by the Board.

If the Board is inclined to grant preliminary approval it should consider it being conditioned on the applicant addressing all outstanding comments from board members, City Staff and peer-reviewers prior to the final plan submission.

Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245

Subject: Leeward Meadows and Windward Ridge Subdivisions

Date: Thursday, October 28, 2021 at 11:12:39 AM Eastern Daylight Time

From: Tom Saucier

To: Tansley, Greg

CC: Christopher Di Matteo

Hi Greg

Per your request we have undertaken a review of the revised plans and documentation submitted to our office. It appears the majority of our comments have been addressed for both projects.

Below are some follow-up comments, numbered per the original comments:

Windward Ridge

A.2. The response indicated that the intent was for the proposed road to remain private. Reference should be made to Section 51 for private way requirements, including required notes, plans, and maintenance agreement, and registry filings required under section 51.D.

B.2. The response indicates that the existing woods road was modeled as an impervious surface, which usually includes gravel and paved surfaces, but generally not a vegetated woods road surface.

B.4. The analysis points should be shown at the property line, not well onto the abutting property, if that abutting property is not controlled by the applicant.

B.6. Sheet flow lengths should be a maximum of 100 ft for wooded conditions.

C.1.a. The response indicated that the road right of way would be field surveyed prior to construction. Given the intent is for the road to remain private, that seems like a reasonable alternative to us, if staff agrees.

C.1.b. The response indicates the existing culvert at the site entrance will be replaced. Drawing C-2.4 shows a new 24" culvert in plan view and an 18" culvert in the profile.

C.2.d. Not addressed.

C.3.g. The applicant should refer to your 10/22/21 email in regards to fire protection addressed.

C.4.a. The proposed 24" culvert at Pool Street still lacks adequate cover.

C.4.b. A sediment barrier should be shown downgradient of portions of the road and drive to lot 6.

C.4.j. The response indicates that the cross slope is now 1%. A minimum of 2% is required.

Leeward Meadow

A.2. The response indicated that the intent was for the proposed road to remain private. Reference should be made to Section 51 for private way requirements, including required notes, plans, and maintenance agreement, and registry filings required under section 51.D.

B.8. Sheet flow lengths should be a maximum of 100 ft for wooded conditions.

C.1.a. The response indicated that the road right of way would be field surveyed prior to construction. Given the intent is for the road to remain private, that seems like a reasonable alternative to us, if staff agrees.

C.2.c. Monumentation for the road is shown as iron pipes. Section 62-87 requires granite, unless otherwise approved by the city.

C.3.e. The applicant should refer to your 10/22/21 email in regards to fire protection addressed.

C.3.f. Utilities are still shown under the paved travel way.

Stormwater Management

For both projects, the stormwater quantity analysis indicates that the post development peak rates of runoff will be less than the existing rates of runoff. Rather than our office spending a lot of time reviewing the model to determine how this conclusion was reached, when both projects involve the creation of new impervious area, we request that the applicant expand on these results in the stormwater management report.

We do not anticipate that these comments will alter the overall concept for the projects. From an engineering standpoint, we believe that the project is ready for preliminary approval, if staff agrees, and the planning board is so inclined.

Thanks
Tom

Tom Saucier, P.E.
Site Design Associates
23 Whitney Way
Topsham, Maine 04086
207-449-4275

PLAN REFERENCES:

1. EXISTING CONDITIONS SURVEY, TOPOGRAPHY, TREE LINE, DRAINAGE & DEVELOPMENT CONCEPT TAKEN FROM ELECTRONIC FILE PREPARED BY WALSH ENGINEERING FOR GINGER HILL, LLC, DATED October 6, 2021.



A Street View Looking East Along Oak Ridge Road



B Street View Looking West Along Oak Ridge Road

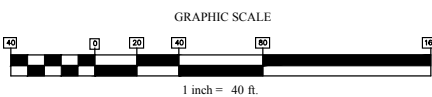
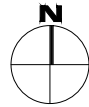
PLAN LIST:

QUANTITY	LABEL	NAME	SCIENTIFIC	SIZE	
TREES:					
3	LT	RED MAPLE	ACER RUBRUM	2.5-3" CAL	
2	LT	RED OAK	QUERCUS RUBRA	2.5-3" CAL	
3	LT	SWAMP WHITE OAK	QUERCUS BICOLOR	2.5-3" CAL	
3	LT	AMERICAN BEECH	FAGUS GRANDIFOLIA	2.5-3" CAL	
2	LT	GREEN ASH	FRAXINUS PENN.	2.5-3" CAL	
UNDERSTORY:					
5	ST	YELLOW BIRCH	BETULA ALLEGHANIENSIS	10-12 FT HT	
5	ST	HORNBEAM	CARPINUS CAROLINIANA	1.5-2" CAL	
6	ST	SERVICEBERRY	AMELANCHIER CANADENSIS	7-8 FT HT	
5	ST	PAGODA DOGWOOD	CORNUS ALTERNIFOLIA	8-10FT HT	
EVERGREENS:					
5	ET	WHITE SPRUCE	PICEA GLAUCA	7-8FT HT	
5	ET	WHITE PINE	PINUS STROBUS	7-8FT HT	
5	ET	BALSAM FIR	ABIES BALSAMEA	7-8FT HT	
5	ET	DARK AMERICAN ARBORVITAE	THUJA OCCIDENTALIS 'NIGRA'	7-8FT HT	
SHRUBS:					
14	SH	RED CHOKEBERRY	ARONIA ARBUTIFOLIA	24-30" HT	
13	SH	WINTERBERRY	ILEX VERTICILLATA	24-30" HT	
13	SH	WITHERED VIBURNUM	VIBURNUM CASSINOIDES	24-30" HT	
13	SH	NORTHERN BAYBERRY	MYRTA PENNSYLVANICA	24-30" HT	
13	SH	SWEET PEPPERBUSH	CLETHRA ALNIFOLIA	24-30" HT	
13	SH	COMMON WITCH HAZEL	HAMAMELUS VIRGINIANA	24-30" HT	
13	SH	FORSYTHIA	FORSYTHIA X INTERMEDIA	24-30" HT	
MEADOW:					
47,000 SF	MEADOW	NEW ENGLAND CONSERVATION / WILDLIFE MIX (NEW ENGLAND WETLAND PLANTS, INC. (413) 548-8000)			1 LB/1,750 SF

PLANTING NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL SUPPLY ALL PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE PLAN.
2. ANY SUBSTITUTION OF SPECIFIED PLANTS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT. ONLY NATIVE SPECIES AND/OR VARIETIES WILL BE ACCEPTABLE.
3. ALL TREE, SHRUB, VINE, AND PLANT BEDS (GROUNDCOVERS, PERENNIALS, BULBS, ETC.) LOCATIONS SHALL BE STAKED OR MARKED BY CONTRACTOR AND THEN APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD PRIOR TO PLANTING. CONTRACTOR MUST GIVE A MINIMUM 3 DAY NOTICE BETWEEN STAKING AND PLANTING.
4. ALL PLANTS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION (AS SET FORTH BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION).
5. ALL PLANTS SHALL BE DELIVERED TO THE SITE FOR REVIEW BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
6. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE EXISTENCE OF UNDERGROUND UTILITIES. THE LOCATION OF WHICH SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY EXCAVATION OPERATIONS. SHOULD THE LOCATION OF PROPOSED PLANTINGS CONFLICT WITH ANY OF SAID UTILITIES, ADJUST PLANT LOCATIONS ACCORDINGLY AFTER CONSULTATION WITH THE LANDSCAPE ARCHITECT.
7. PLANTING TREES AND SHRUBS: EXCAVATE PLANTING PITS WITH SLOPING SIDES, AND WITH BOTTOM OF EXCAVATION RAISED IN CENTER FOR DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION, AND LOOSEN SOIL ON SIDES OF SLOPES. SET PLANTS IN CENTER OF PIT WITH TOP OF BALL RAISED SLIGHTLY ABOVE FINISH GRADES. PLACE A SETTING LAYER OF COMPACTED PLANTING MIX. REMOVE BURLAP AND WIRE BASKETS FROM TOP OF BALLS. ON SIDES, FOLD BACK WIRE AND REMOVE UPPER PORTIONS OF BURLAP. DO NOT USE PLANT IF ROOT BALL IS CRACKED OR BROKEN. IF CONTAINER, REMOVE CONTAINER AND SOIL PERIMETER SOIL AND ROOTS. PLACE PLANTING MIX AROUND BALL/CONTAINER IN LAYERS, TAMPING TO ELIMINATE VOIDS AND AIR POCKETS. DO NOT COVER TOP OF ROOT BALL. PRUNE, THIN, AND SHAPE AFTER PLANTING.
8. MULCH PLANTING BEDS WITH 3" FINELY SHREDED AND AGED PINE BARK MULCH OR AS SPECIFIED ON THE PLAN.
9. ALL DISTURBED LAWN AREAS TO BE LOAMED AND SEEDING AS NECESSARY AT NO ADDITIONAL COST TO OWNER(S).
10. GRADES SHOWN REPRESENT PROPOSED GRADES PER CONTRACT. CONTRACTOR TO VERIFY GRADES AS NEEDED.
11. PLANT MATERIALS SHALL BE GUARANTEED FOR ONE (1) YEAR AFTER PLANTING. ANY DEAD, UNSIGHTLY, OR UNHEALTHY PLANTS SHALL BE REPLACED IN KIND AT NO COST TO THE OWNER(S).
12. THE CONTRACTOR SHALL REPLACE OR REPAIR TO ORIGINAL CONDITION ANY AND ALL UTILITIES, PAVING, CURBING, ETC., DAMAGED AS A RESULT OF THEIR OPERATIONS AT NO ADDITIONAL COST TO THE OWNER(S).
13. A PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO LANDSCAPE CONTRACTOR BEGINNING CONSTRUCTION OR ORDERING PLANT MATERIALS.

Plan View
Scale: 1" = 40'



WALSH
ENGINEERING ASSOCIATES, INC.

One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

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Scott Strynar
Landscape Architect, LLC.
58 Meehan Lane
North Berwick, ME 03906
(t) 207-957-4441
www.scottsstrynar.com

Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC

18 Early Way
Arundel, Maine 04046

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

Rev.	Date	Description	Drawn	Check
1	6/15/2021	Biddeford Subdivision Stakeout Plan Review	CAR	WRW
2	6/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
3	6/15/2021	Review per Engineer Review Comments	CAR	WRW

Sheet Title:
Landscape Plan

Job No.: 742
Date: June 15, 2021
Scale: 1" = 40'
Drawn: CAR
Checked: WRW
Sheet No.: L1.0

October 20, 2021

Biddeford Planning Board
c/o Mr. Greg Tansley, City Planner
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, ME 04005

**RE: Preliminary Subdivision Application
Leeward Meadows Subdivision
158 Oak Ridge Road, Biddeford, Maine
Tax Map 4, Lot 57**

Dear Mr. Tansley,

Walsh Engineering Associates (WEA) is pleased to provide these responses to comments and questions from the City of Biddeford for the proposed residential subdivision at the subject property. The questions addressed include the engineer review conducted by Site Design Associates dated September 29, 2021; comments provided by Long Meadow Planning & Landscape Architect, LLC via an e-mail and sketch dated October 12, 2021; and feedback provided during a meeting with the City on October 6, 2021. We have included the following information for your review:

- Declaration of Covenants & Restrictions Revision 1
- Environmental Consultation Letter by Jones Associates dated October 19, 2021
- Stormwater Report Revision 1 dated October 20, 2021
- Subdivision Plan Set Revision 2 dated October 20, 2021

Site Design Associates Engineer Review

A. General

1. The open space will be owned by the homeowner's association.
2. The road will remain private and maintained by the homeowner's association.
3. The "Leeward Meadows Owners Association" homeowner's association is proposed with the development. A draft of the declaration of covenants and restrictions for the homeowner's association was included in Attachment 7 of the Preliminary Subdivision Submission package dated September 15, 2021.
4. The stormwater model has been expanded upon to provide additional precision.

B. Drainage Plans and Calculations

1. The existing impervious areas referenced in the calculations are from the abutting properties to the east and west of the site, and Oak Ridge Road.

2. The pre-development SC-1 has been divided into multiple subcatchments to provide a better comparison pre to post development.
3. The 30" culvert under Oak Ridge Road has been revised in the model as a pond with storage. Stormwater will not overtop Oak Ridge Road during any modeled storm event.
4. All culverts have been modeled as ponds with storage behind them.
5. Reaches have been added to the models where appropriate.
6. The inverts for the culvert under Oak Ridge Road have been corrected.
7. The model has been revised to accurately model the culverts and ponding on site. Stormwater will not overtop Oak Ridge Road during any modeled storm event.
8. All time of concentrations have been reviewed to properly reflect site conditions. 150 feet has been utilized as the maximum sheet flow distance.
9. Drawing D2.1 has been added to the plan set at a larger scale, so time of concentration paths are more legible.
10. Culvert sizes and invert elevations have been reviewed and revised for consistency across the drawings and model.

C. Drawings

1. C1.0 – Existing Conditions Plan
 - a. Field survey data will be obtained for the full width of the right of way prior to construction.
 - b. The existing culvert at the site entrance will not be removed.
2. C2.1 – Cluster Subdivision Plan
 - a. Property line meets and bounds have been added to the plan.
 - b. There is no minimum street frontage requirement for cluster subdivisions.
 - c. Proposed right of way monumentation has been added to the plans.
 - d. Transformers and easements have been added to the plans.
3. C2.2 – Site Layout and Utility Plan
 - a. The plan is not binding relative to building footprint size, clearing limits, driveway locations and design, and lot layout. The designs shown are conceptual only and may be modified in the field based on actual building designs and locations.
 - b. Note for a sawcut and butt joints at Oak Ridge Road has been added.
 - c. Driveway culverts have been increased to a minimum 15" size.
 - d. Street signs have been added.
 - e. A request to review the project has been sent to the Biddeford Fire Department on multiple occasions. The Biddeford Fire Department has not provided any comments.
 - f. The underground utilities have been moved to the shoulder of the travel way.
 - g. A note regarding the clearing and grubbing of the right of way has been added.
4. C2.3 & C2.4 – Grading, Drainage, and Erosion Control Plan and Plan/Profiles
 - a. The inverts for the 30" culvert under Oak Ridge Road have been added.
 - b. The road will remain private.
 - c. The twin 15" culverts have been moved into the site to improve cover.

5. C3.1 – Site Details

- a. Details 2 and 9 have been revised to call for native material or common borrow for cross culvert bedding.
- b. Detail 6 has been revised.
- c. Detail 7 has been removed as it is not used.
- d. The subbase borrow has been revised to MDOT 703.19 Granular Borrow. A note has been added calling for 95% compaction. The cross section is superelevated to direct stormwater runoff from the surface of the road to one side, avoiding additional flow through proposed culverts. Underground utilities have been shown in the road shoulder. The road will remain private, but geotextile has been added between existing subsoil and gravel layers as suggested.

Long Meadow Planning & Landscape Architect Comments & City Meeting Feedback

1. Following the concept suggested by Greg Tansley during our October 6th meeting, a revised landscape plan has been prepared by Scott M. Strynar, Landscape Architect. Scott includes a mixture of native deciduous & coniferous trees and shrubs along the extents of the development and Leeward Meadows to provide visual screening of the development from Oak Ridge Road while allowing the existing meadow directly adjacent to Oak Ridge Road to remain as a pollinator meadow. Although this doesn't align exactly with the 75-ft buffer requirement, We believe this design will allow Oak Ridge Road to maintain the farm/meadow appearance it has had for the last 40+ years, while providing a beautiful pollinator meadow, combined with a visual screening adjacent to the proposed road best addresses the buffer requirements.
2. We have followed up with Wildlife Biologist Jason Tome of Jones Associates on their professional opinion regarding the meadow adjacent to Oak Ridge Road. They believe maintaining the field area would contrast well with the mature forest on site to improve overall biodiversity. We have included a letter from Jason Tome with this submission.
3. The client has had discussions with the Kennebunkport Conservation Trust for creating a conservation easement over the wooded land on the southern portion of the site which the Conservation Trust is willing to consider. We have shown a proposed easement line where we expect the conservation easement would be located. Talks with the Conservation Trust will continue, and we anticipate the conservation easement to be provided them.

We trust that we have adequately addressed the engineer comments provided. Please contact me if you require any additional information.

Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



William R. Walsh III, PE
Walsh Engineering Associates, Inc.

cc: Emily Ingwersen, Ginger Hill, LLC
Robert Ingwersen, Ginger Hill, LLC

enc: Declaration of Covenants & Restrictions Revision 1
Environmental Consultation Letter
Stormwater Report Revision 1
Subdivision Plan Set Revision 2

JONES ASSOCIATES

Foresters, Surveyors and
Environmental Consultants



Emily Ingwersen
Ginger Hill Design + Build
Arundel, ME
(207) 710-0812

October 19, 2021

Dear Emily,

We have reviewed your questions regarding the Leeward Meadows Neighborhood. In response to your buffer question, we do not see any problems with leaving the meadow habitat as a buffer as long as it meets your other vegetative buffer requirements. Field-specific plants and animals will be able to establish in this field area which contrasts well with the mature forest also found on-site. This contrasting of habitats will help improve overall biodiversity.

In response to your question regarding scrub-shrub buffer species along the road I would recommend you plant a mixture of species that like dryer soils in the non-wetland areas. Some good options are arrowwood (*Viburnum dentatum*), nannyberry viburnum (*Viburnum lentago*), withe-rod (*Viburnum nudum*), chokeberry (*Aronia melanocarpa*), and American hornbeam (*Carpinus caroliniana*). Within the wetland areas I would plant wetland-loving species including; red-osier dogwood (*Cornus sericea*), silky dogwood (*Cornus amomum*), winterberry (*Ilex verticillata*), and speckled alder (*Alnus incana*) would be good choices for this site.

If you have any questions, please do not hesitate to reach out or contact our office.

Much appreciated,

Jason Tome

**LEEWARD MEADOWS SUBDIVISION
BIDDEFORD, MAINE**

DECLARATION OF COVENANTS AND RESTRICTIONS

This Declaration is made this ____ day of _____, 2021, by Ginger Hill, LLC, with a place of business in Arundel, in the County of York and State of Maine (hereinafter called "Declarant").

W I T N E S S E T H:

WHEREAS, Declarant is the owner of real property situated on the southwesterly side of Oak Ridge Road, in the City of Biddeford, in the County of York and State of Maine, and desires to create a residential community thereon, pursuant to subdivision approval for such property, such approval being evidenced on "Standard Boundary Survey Showing Leeward Meadows Subdivision, Oak Ridge Road, Biddeford, Maine" by _____, dated _____ and recorded in the York County Registry of Deeds in Plan Book _____, Page _____; and

WHEREAS, Declarant desires to insure the preservation of values and amenities in the community and, to this end, desires to subject the real property described in ARTICLE I to the covenants, restrictions, easements, charges and liens hereinafter set forth, each and all of which are for the benefit of said property and each owner thereof; and

WHEREAS, Declarant has deemed it desirable for the efficient preservation of the values and amenities in the community to create an agency to which will be delegated and assigned the powers of maintaining and administering the common areas and facilities and administering and enforcing the covenants and restrictions and collecting and disbursing the assessments and charges hereinafter created; and

WHEREAS, Declarant has incorporated or will incorporate under the laws of the State of Maine, as a nonprofit corporation, LEEWARD MEADOWS OWNERS ASSOCIATION for the purpose of exercising the aforesaid functions.

NOW, THEREFORE, Declarant declares that the real property described in Article I is and shall be held, transferred, sold, conveyed and occupied subject to the covenants, restrictions, easements, charges and liens (sometimes referred to as "covenants and restrictions") hereinafter set forth in conveyances of lots.

ARTICLE I

PROPERTY SUBJECT TO THIS DECLARATION

The real property which is, and shall be held, transferred, sold, conveyed and occupied subject to this Declaration is located in the City of Biddeford, in the County of York and State of Maine, and is all of the land area shown on a plan entitled "Standard Boundary Survey Showing Leeward Meadows Subdivision, Oak Ridge Road, Biddeford, Maine" by _____, dated _____ and recorded in the York County Registry of Deeds in Plan Book ____, Page ____, hereinafter referred to as "the Plan," to which reference is made for a complete description thereof, all of which real property shall hereinafter be referred to as the "Property," specifically including all of the numbered lots, roads, easements, rights of way, and such other lands or areas which may be designated by Declarant. All conditions, restrictions and limitations shown on said Plan, whether or not specifically referred to herein, are incorporated by reference into this Declaration and made a part hereof.

ARTICLE II

DEFINITIONS

Section 1: "Association" shall refer to Leeward Meadows Owners Association, its successors and assigns.

Section 2: "Owner (s)" shall refer to the record owner, whether one or more persons or entities, of fee simple title to any Lot as depicted on the Plan.

Section 3: "Member" shall mean and refer to lot owners as provided in Article V.

Section 4: "Lot (s)" shall refer to those single family residential lots as depicted on said Plan.

Section 5: "Common Area" shall mean all real property owned by Declarant, or the Association after transfer, with improvements thereon, or real property in which Declarant or the Association has easement rights and which are intended for the common use and/or benefit of the Owners as depicted on said Plan, including areas shown on the Plan as "Open Space" and the subdivision road known as "Leeward Meadows".

ARTICLE III

OWNERSHIP, MAINTENANCE AND USE OF COMMON AREAS

Section 1: Every Owner shall have equal rights with respect to the common areas which shall pass with the title to every lot, subject to the right of the Association to charge reasonable fees for the maintenance and upkeep of any portion of the common area. All common areas shall be managed by the Association, which shall establish rules and regulations for the use thereof in accordance with the provisions of this Declaration.

Section 2: The common areas on the Plan denoted as “Open Space” shall remain in their natural state, including existing vegetation and wetlands. The Board of Directors of the Association may allow the removal of dead, dying or diseased trees. Those areas of the “Open Space” that are fields shall be mowed a minimum of once each year. The Board of Directors of the Association may also allow common garden space in certain areas of the “Open Space,” subject to such rules and regulations as the Board may adopt. The purpose of these regulations is to preserve the habitat of the “Open Space” as much as possible. This provision may not be substantially changed without prior approval of the Biddeford Planning Board.

Section 3 : Any Owner may delegate, in accordance with the Association’s Bylaws, his/her right of enjoyment to the common area and facilities to members of his/her family, his/her tenants and his/her invitees for limited periods of time.

Section 4: Unless earlier conveyed, the common areas shall be conveyed by Declarant to the Association within thirty (30) days after the sale of the last lot. The Declarant, or the Board of Directors of the Association, has the authority to grant a conservation easement over the Open Space to a conservation commission or to a recognized land trust.

ARTICLE IV

COVENANT FOR MAINTENANCE ASSESSMENTS

Section 1: The Owner of each lot hereby covenants, and by acceptance of a deed thereof, agrees to pay to the Association an annual assessment or charge. The assessment, together with interest, costs, and reasonable attorney’s fees incurred for collection of the same shall be a continuing lien on the Owner’s lot. The assessments levied by the association shall be used exclusively to maintain and/or improve the common areas.

Section 2: Both annual and special assessments shall be fixed at a uniform rate for all lots, with the exception of fees incurred pursuant to Article VI, Section 14E herein, which shall be designated the sole and exclusive obligation of such Owner in breach of these Covenants and Restrictions.

Section 3: The Directors shall fix the amount of the annual assessment and any special assessments in accordance with the procedure set forth in the Bylaws of the Association.

Section 4: The Directors shall upon demand furnish a certificate in recordable form setting forth whether the assessments on a specified lot have been paid. Such a certificate may be signed by the President, Treasurer or other designated officer.

Section 5: In addition to the annual assessments authorized above, the Association may levy, in any assessment year, a special assessment applicable to that year only for

the purpose of defraying, in whole or in part, the cost of any construction, reconstruction, repair or replacement of a capital improvement upon the common area including maintenance of the drainage easements to assure adequate runoff from the rights-of-way. Special assessments shall be determined by the Directors of the Association on an “as needed basis.”

Section 6: Any assessment not paid within thirty (30) days after the due date shall bear interest from the due date at a rate to be determined by the Directors, but in any event not less than ten percent (10%) per annum. The Directors, on behalf of the Association may bring an action at law against the Owner personally obligated to pay the same, or foreclose the lien against the property, in the manner as a mortgage on real estate or by any other means presently or hereafter provided by law or in equity. A suit to recover a money judgment for unpaid assessments, interest, penalties and cost of collection may be maintained against the lot owner personally without foreclosing or waiving the lien securing such assessment.

ARTICLE V

MEMBERSHIP AND VOTING RIGHTS

Section 1: The Association shall have one (1) class of voting Membership. The Members of the Association shall have no redemptive rights, as such Members, to acquire any Memberships of this Association that may, at any time, be issued by the Association, except as may be specifically provided in this Article.

Section 2: The Association shall elect a minimum of three (3) Directors to manage Association business. The Directors shall be chosen, and shall serve terms, as designated and set forth in the Bylaws of the Association. Directors shall elect corporate officers, which shall consist of a President, a Vice President, and a Treasurer.

Section 3: Meetings shall be called and conducted, and notices thereof sent, as provided and set forth in the Bylaws.

Section 4: Notwithstanding the foregoing or anything contained in this Declaration to the contrary, Declarant shall have the sole and exclusive right to appoint officers and directors to the Board until sixty (60) days after the sale of last lot in the subdivision or until Declarant voluntarily transfers control of the Association to the Members, whichever occurs first. During the period of control as set forth herein, Members of the Association, otherwise qualified hereunder, shall have non-voting membership, unless the provisions of this sentence are expressly waived relative to a particular issue by a writing signed by the Declarant.

ARTICLE VI

PROTECTIVE COVENANTS

Section 1: Declarant hereby declares that the following protective covenants shall apply to all lots in Leeward Meadows Subdivision for the benefit of all Owners. These covenants shall become effective immediately and shall run with the land described in any deed of conveyance, and be binding upon all persons claiming under the Declarant, as developer or otherwise, until termination by operation of law, or as hereinafter provided. The covenants and restrictions set forth herein shall be referenced in any future deeds of lots in Leeward Meadows Subdivision.

Section 2: Each lot shall be used for residential purposes. No lot may be subdivided. No structure shall have vinyl siding or pvc/plastic trim. No residence shall more than 3,500 square feet of living space, excluding garages and basements. In any event, no buildings or additions shall be erected, placed or allowed to stand on any lot in the subdivision unless and until the plans, specifications and locations thereof have been approved in writing by a duly authorized agent of Declarant, its successors or assigns, or the Association after assumption of control by the Association. All buildings and other structures, including fences, must be placed within the building envelope as shown on the Plan. Notwithstanding the foregoing, fences may be allowed in the Open Space for enclosure of animals, such as horses, with permission of the Declarant or the Board of Directors of the Association, as the case may be.

Section 3: No unregistered automobiles, trucks, motorcycles, motor homes or travel trailers, snowmobiles or boats or other similar motorized vehicles shall be stored on the premises for more than six (6) months without approval of the Board of Directors of the Association.

Section 4: Once construction of a building is commenced, work thereon must be prosecuted diligently and must be completed within a reasonable time, and in any event, within one (1) year from commencement of said work, provided, however, that additional time shall be allowed for exigent circumstances, including labor shortages, material shortages or delays and pandemics. "Completion" shall include grading, loaming and seeding.

Section 5: The erection or use of any satellite dish over twenty-four inches (24") in diameter within the limits of said subdivision must be approved, in writing, by the Board of Directors of the Association.

Section 6: Any use of the property must be in strict conformity with the provisions of any applicable zoning law, ordinance or regulation. Nothing contained in this article, or elsewhere in this Declaration, shall be construed to prohibit the Declarant from the use of any lot or dwelling for promotional or display purposes, or as "model homes," a sales office, or the like.

Section 7: No temporary structures shall be built upon the land other than those necessary and used in the course of construction of permanent buildings, and all such

structures shall be removed immediately upon completion of any building operation. Storage and garden sheds shall be allowed, within the building envelope for each lot as shown on the Plan.

Section 8: Any fence constructed upon the property shall be made of non-pressure treated wood or made of metal, but no other material.

Section 9: The use and operation of motorized vehicles of any kind or type, including but not limited to snowmobiles and ATVs, shall be prohibited in any wooded area of the Subdivision, including the wooded area of a lot owned by the operator or user of any such motorized vehicle.

Section 10: The discharge of firearms of any kind or type, for any purpose, is prohibited anywhere within the Subdivision.

Section 11: The use of chemical pesticides and herbicides on lawns and gardens is prohibited. Owners are encouraged to follow the recommendations of the City of Biddeford's "Yard Smart" program as set forth in the pamphlet entitled "10 Simple Steps Toward a Safe & Healthy Lawn"
(<https://www.biddefordmaine.org/DocumentCenter/View/1762/Conservation-Commission-Resources---Combined-PDF>).

Section 12: The Association shall have control over the common areas and its Directors shall enforce the aforementioned and following covenants, which shall be deemed to run with the land:

A. The Association shall, until transfer to a public authority or agency, arrange and provided for the proper maintenance of Leeward Meadows.

B. The Association shall prohibit any use of the property designated "Drainage Easement" on the plan for any purpose other than as a natural drainage swale, and shall arrange and provide for maintenance of said easements so that they continue to perform the function for which they are intended, but none other, including periodic cleaning, if necessary. Nothing contained herein shall allow the Association to enter upon said easement area for the purpose of cutting or removing any natural vegetation unless absolutely essential to the proper operation of said easement.

D. The Declarant, and Association, after transfer of the common areas, shall retain the sole right and power to grant any and all necessary easements over common areas to public utility authorities to carry out its obligations hereunder, either for installation or repair of same.

E. In addition to any other remedies provided for the Association herein, upon the apparent breach of Protective Covenants by any Lot Owner (s), the Directors on

behalf of the Association, shall notify said Owner(s) by certified mail of such breach, and include a reasonable description of the actions necessary to correct or cure such breach. If said Owner (s) does not take corrective action within seven (7) days from receipt of said notice, or object to the proposed action to be taken within said time period, the Directors shall, without further notice, be entitled to take such action as set forth in the Notice and to surcharge as a special assessment to said Owner (s) solely for all necessary and incidental expenses, including attorney's fees incurred in taking such corrective action. For this purpose, the Association or any agent thereof shall and by these presents, does have the right to enter upon land of any such breaching Owner to clean all drainage easements of all debris, to clean and maintain the culverts required by said Covenant, or to remove drainage water in accordance with the Plan, and to ensure compliance with any other applicable covenant, restriction or condition.

Section 13: Enforcement shall be by the Association as Plaintiff in a proper case, or by any Owner by proceeding at law or in equity against any persons violating, or attempting to violate any covenants, restrictions or conditions, either to restrain violation or to recover damages, or both, in the sole discretion of the party so proceeding. Any party successfully enforcing any of these covenants shall be entitled to recover against the party violating such covenant (s), as a monetary award, for the reasonable attorney's fees and costs incurred in such enforcement proceedings.

ARTICLE VII

RESERVATION OF RIGHTS AND EASEMENTS

Declarant reserves the following rights and easements:

Section 1: The right to install, maintain, repair and replace under, over and upon the common property and areas designated as easements or rights of way on the plan, and any ways on which said land abuts, or shall abut, such electric light, power, telephone and telegraph cables and wires, water, sewer and drainage pipes, mains and conduits, catch basins, surface drains and culverts, and such other facilities, installations, appurtenances and things as Declarant may deem necessary or convenient in connection with the provision of adequate drainage, sewerage disposal, water, electricity, telephone communications and other utilities to any portion of the property, and for the benefit of any other land owned by Declarant, its successors and assigns, including, but not limited to adjoining property, now owned or hereafter acquired by Declarant, which Declarant may choose to develop in the future; all of which rights and easements, Declarant, its successors and assigns, may assign to telephone, telegraph, power, water and other public and private utility companies and corporations as Declarant may determine;

Section 2: The right to add to or designate additional lands or areas as common areas as herein defined, or to dedicate and subject additional lands to the terms and conditions of this Declaration.

Section 3: An easement and right of way over all ways and other common spaces shown on the plan for ingress and egress by Declarant to adjoining property now owned or hereafter acquired by Declarant, its successors and assigns for all purposes related to development of such adjoining property and for permanent egress and ingress to such adjoining property by future owners of homes therein.

Section 4: The right to enter upon the land or any sold or unsold lot for the purpose of selectively cutting trees and clearing trees and brush to improve the physical appearance of the land.

Section 5: The right to waive or modify certain of the conditions, covenants and restrictions set forth in Article VI with respect to any additional lands dedicated and subject to the terms and conditions of this Declaration.

ARTICLE VIII

GENERAL PROVISIONS

Section 1: Invalidation of any one of these covenants or restrictions by judgment or court order shall not affect any other provisions which shall remain in full force and effect.

Section 2: The Covenants and Restrictions of this Declaration, which shall be recorded at the York County Registry of Deeds, shall run with and bind the land. This Declaration may be amended by an instrument signed by not less than sixty percent (60%) of said Owners. Any amendments hereto must be recorded at the York County Registry of Deeds.

WITNESS:

GINGER HILL, LLC

By: _____

Emily Ingwersen

Its: Manager Duly Authorized

STATE OF MAINE

YORK, ss

_____, 2021

Personally appeared Emily Ingwersen, Authorized Manager of Ginger Hill, LLC, and acknowledged the foregoing Declaration to be her free act and deed in her said capacity and the free act and deed of said company.

Before me,

Ralph W. Austin /Attorney at Law
Bar #1156

Leeward Meadows

Oak Ridge Road

Biddeford, Maine 04005

prepared for:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046
October 20, 2021

Design Consultants:

CIVIL ENGINEER
WALSH ENGINEERING ASSOCIATES, INC.
ONE KAREN DRIVE, SUITE 2A
WESTBROOK, MAINE 04092
207-553-9898

BOUNDARY SURVEYOR
TITCOMB ASSOCIATES, INC.
133 GRAY ROAD
FALMOUTH, MAINE 04105
207-797-9199

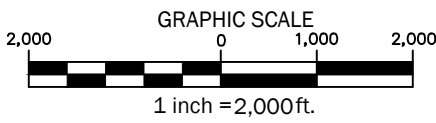
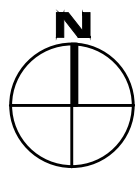
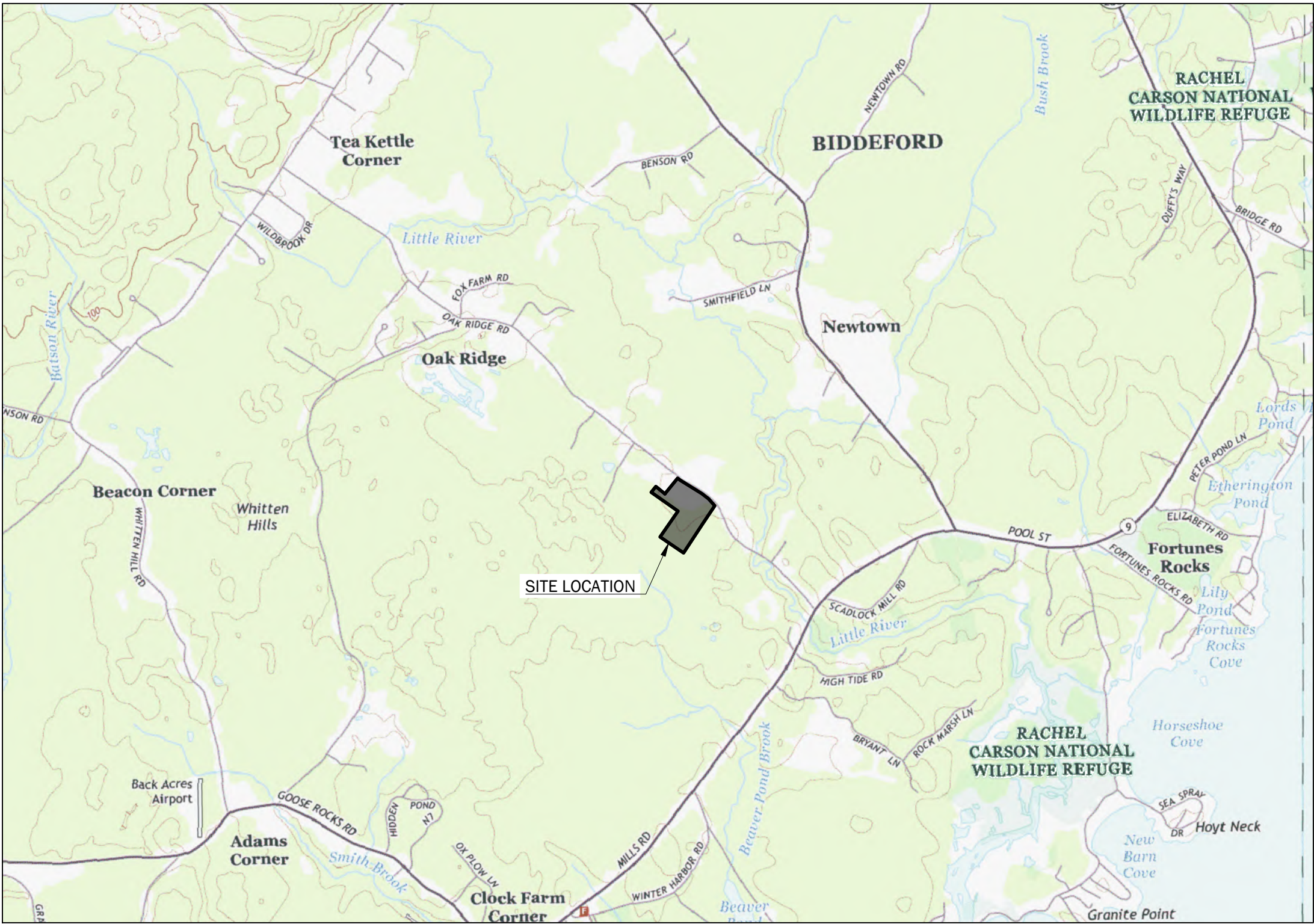
WETLAND & SOIL SCIENTIST
MARK HAMPTON ASSOCIATES, INC.
PO BOX 1931
PORTLAND, MAINE 04104
207-756-2900

WILDLIFE BIOLOGIST
JONES ASSOCIATES, INC
280 POLAND SPRING ROAD
AUBURN, MAINE 04210
207-241-0235

LANDSCAPE ARCHITECT
SCOTT STRYNAR LANDSCAPE ARCHITECT, LLC
98 MEEHAN LANE
NORTH BERWICK, MAINE 03906
207-957-4441



One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com



List of Drawings:

SHEET NO.	SHEET TITLE
	COVER SHEET
	BOUNDARY SURVEY 158 OAK RIDGE ROAD
C1.0	EXISTING CONDITIONS PLAN
C1.1	NET RESIDENTIAL DENSITY PLAN
C2.0	CONVENTIONAL LOT SUBDIVISION PLAN
C2.1	CLUSTER LOT SUBDIVISION PLAN
C2.2	SITE LAYOUT & UTILITIES PLAN
C2.3	GRADING & EROSION CONTROL PLAN
C2.4	LEEWARD MEADOWS PLAN & PROFILE
C3.0	SITE DETAILS
C3.1	SITE DETAILS
D1.0	PRE-DEVELOPMENT DRAINAGE PLAN
D2.0	POST DEVELOPMENT DRAINAGE PLAN
D2.1	POST DEVELOPMENT DRAINAGE PLAN
L1.0	LANDSCAPE PLAN

Record Owner:

GINGER HILL, LLC
18 EARLY WAY
ARUNDEL, MAINE 04046

Parcel ID:

MAP 4
LOT 57



VICINITY MAP

No Scale

NOTES

- 1) Book and Page references are to the York County Registry of Deeds, unless otherwise noted.
- 2) Bearings are referenced to grid north, Maine State Plane Coordinate System, West Zone, NAD83.
- 3) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.
- 4) Property lies within Zone C based on FIRM Community #230145 Panel #0010B, effective date May 15, 1984. Area of minimal flooding.
- 5) Wetlands delineated and located by Mark Hampton Associates, Inc.

PLAN REFERENCES

- 1) Plan showing Standard Boundary Survey made for James L. Thomson II & Nancy P. Thomson, by Dow & Coulombe, Inc., dated May 10, 1999 revised through March 31, 2011, recorded in Plan Book 356, Page 015.
- 2) Plan of land made for James L. Thomson II & Nancy P. Thomson, by Dow & Coulombe, Inc., dated January 13, 1995, recorded in Plan Book 222, Page 44.

ZONING

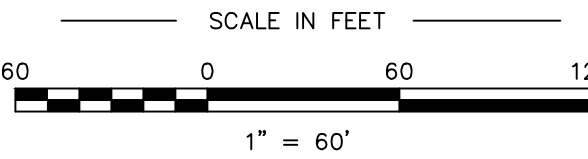
Rural Farm (RF)	
Minimum lot size	40,000 sq. ft.
Street frontage	200'
Setbacks:	
Front	40'
Side	25'
Rear	25'

AREA

Parcel A	675,601 square feet / 15.51 acres
Parcel B	67,771 square feet / 1.56 acres
Total	743,372 square feet / 17.07

OWNERS OF RECORD

Clover Leaf Investment Properties, LLC.
c/o Labrie Realty Group, LLC
56 Portland Road,
Kennebunk, Maine 04043
Book 16437, Page 645
Tax Map 4, Lot 57



PLAN OF
Boundary Survey

158 Oak Ridge Road Biddeford, Maine

MADE FOR
Ginger Hill Design & Build

18 Early Way Arundel, Maine

JOB #21337 DATE: April 14, 2021 SCALE: 1" = 60'

BOOK #933

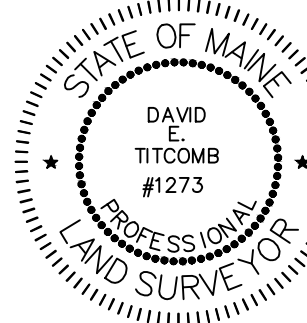
21337.dwg

Titcomb Associates
133 Gray Road, Falmouth, Maine 04105
(207)797-9199 www.titcombsurvey.com

CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

David E. Titcomb, P.L.S. #1273



PRELIMINARY

EXISTING

ROAD

PROPERTY LINE

RIGHT-OF-WAY LINE

ABUTTERS PROPERTY LINE

PROPERTY SETBACK

TOWN LINE

N/F
"OWNERS NAME" TAX
MAP TAX LOT DEED BOOK
AND PAGE

ABUTTER IDENTIFICATION

WETLANDS

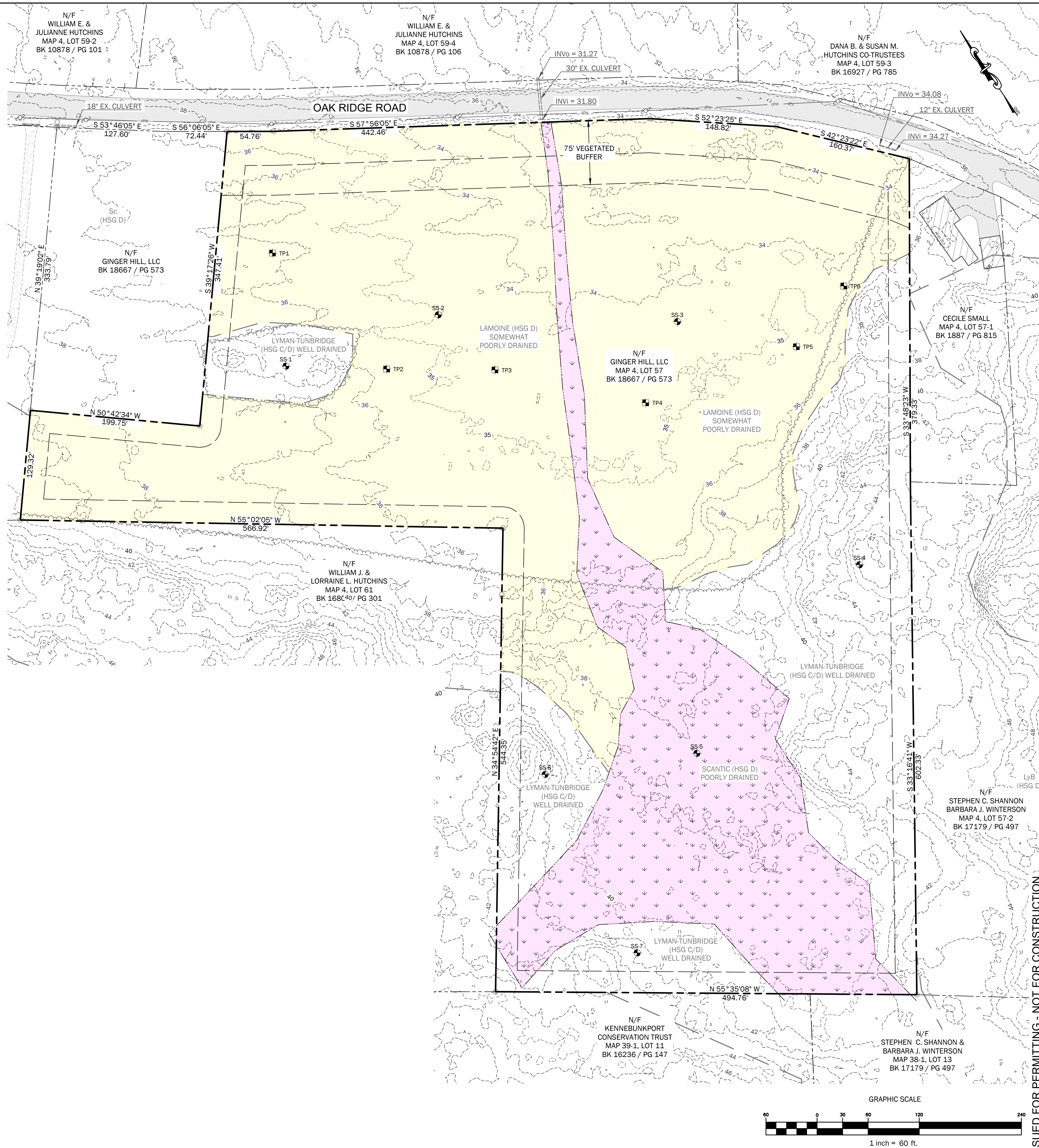
	SOMEWHAT POORLY DRAINED SOILS
	WETLANDS

Net Residential Density Calculation	
	Area (sf)
Gross Lot Area	675,530
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	195,097
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	120,635
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	359,799
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	8

1. SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

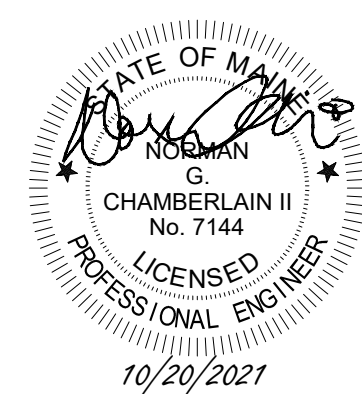
1. CLASSIFICATION: RURAL FARM (RF)
2. MIN. LOT AREA: 40,000 SF (NO WATER, NO SEWER, CONVENTIONAL)
20,000 SF (NO WATER, NO SEWER, CLUSTER)
3. MAX. LOT COVERAGE: 30%
4. MAX. BUILDING HEIGHT: 35 FT
5. MIN. STREET FRONTAGE: 200 FT (NO WATER, NO SEWER, CONVENTIONAL)
6. FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
7. SIDE SETBACK: 25 FT
8. REAR SETBACK: 25 FT
9. PARKING REQUIREMENTS: 2 PER DWELLING UNIT
10. 75' VEGETATED BUFFER FROM EXISTING ROW

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.



One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
	4/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
1	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title

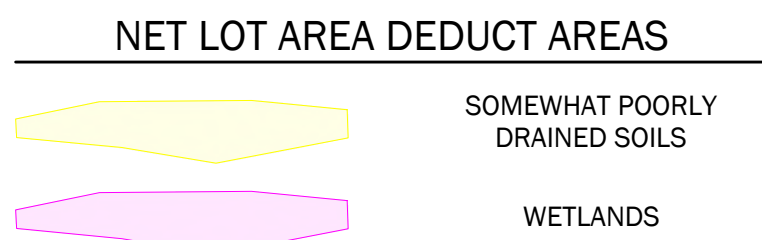
Net Residential
Density Plan

Job No.:	742
Date:	June 15, 2021
Scale:	1" = 60'
Drawn:	CAR
Checked:	WRW

Sheet No.:

C1.1

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION



Net Residential Density Calculation	
	Area (sf)
Gross Lot Area	675,530
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	195,097
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	120,635
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	359,799
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	8

Net Residential Density Calculation (Lot 1)	
	Area (sf)
Gross Lot Area	90,013
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	43,628
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	2,758
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	43,628
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 5)	
	Area (sf)
Gross Lot Area	57,353
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	16,784
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,570
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	84,196
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	33,291
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	3,751
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	47,155
Minimum Conventional Lot Area (RF Zone)	40,000

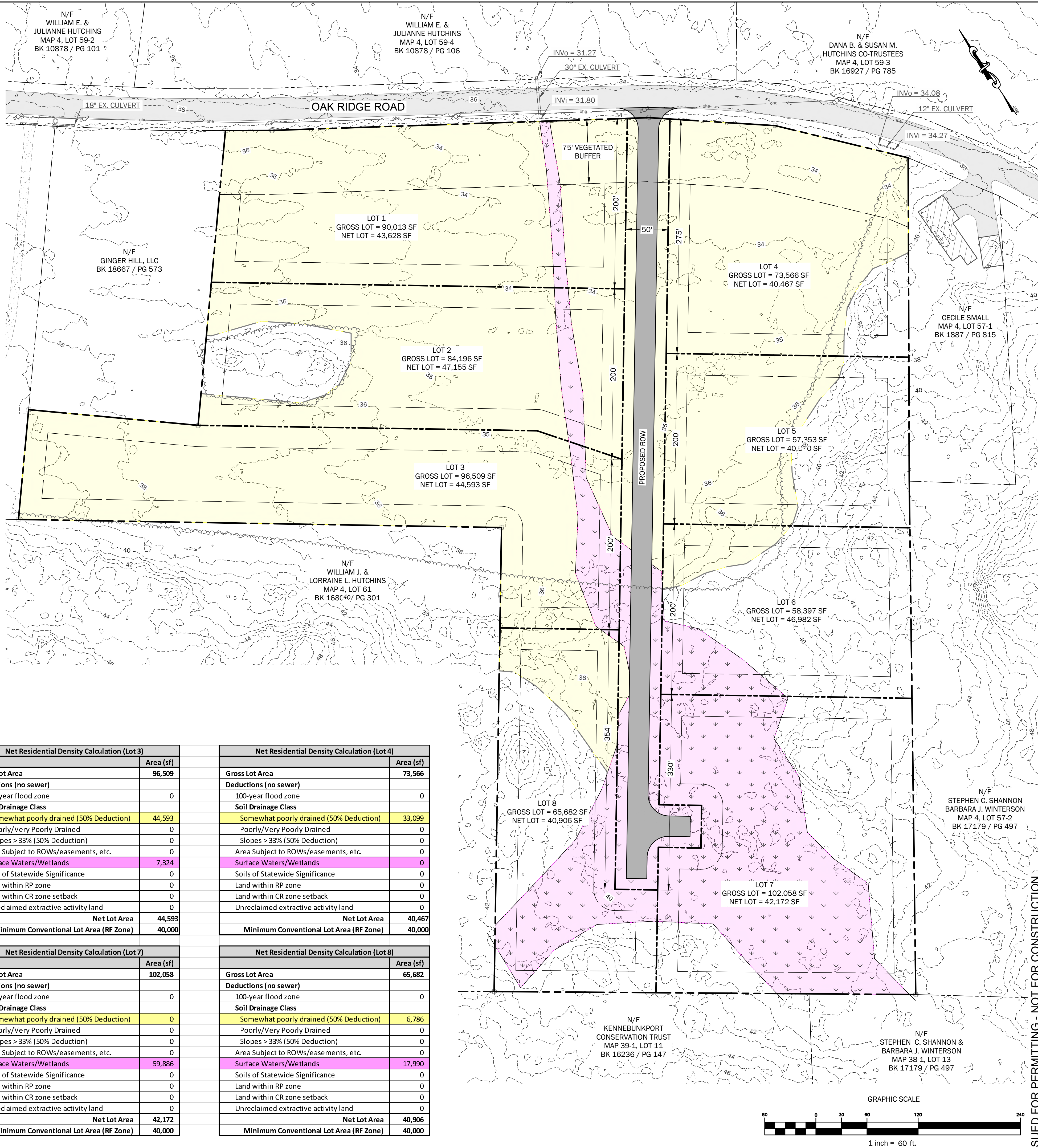
Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	58,397
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	3,590
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	7,826
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	46,982
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 3)	
	Area (sf)
Gross Lot Area	96,509
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	44,593
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	7,324
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	44,593
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 7)	
Gross Lot Area	Area (sf)
Deductions (no sewer)	102,058
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	0
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	59,886
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	42,172
Minimum Conventional Lot Area (RF Zone)	40,000

Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	73,566
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	33,099
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	40,467
Minimum Conventional Lot Area (RF Zone)	40,000

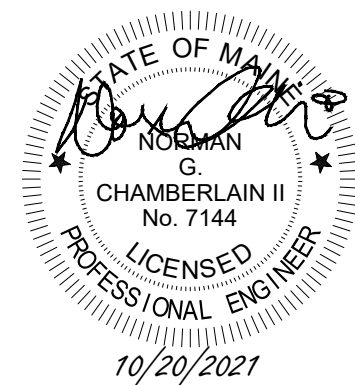
Net Residential Density Calculation (Lot 8)		Area (sf)
Gross Lot Area		65,682
Deductions (no sewer)		
100-year flood zone		0
Soil Drainage Class		
Somewhat poorly drained (50% Deduction)	6,786	
Poorly/Very Poorly Drained	0	
Slopes > 33% (50% Deduction)	0	
Area Subject to ROWs/easements, etc.	0	
Surface Waters/Wetlands	17,990	
Soils of Statewide Significance	0	
Land within RP zone	0	
Land within CR zone setback	0	
Unreleased extractive activity land	0	
Net Lot Area		40,906
Minimum Conventional Lot Area (RF Zone)		40,000



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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Checked
	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
1	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGO
2	10/20/2021	Revised per City Review Comments	CAR	NGO

Sheet Title

Conventional Lot Subdivision Plan

Job No. : 742

DOI: 10.1002/for

Date: June 15, 2021

Scale: $1'' = 60'$

Sheet No. _____

1

1

C2.0

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

LEGEND	
EXISTING	PROPERTY LINE
ROAD	RIGHT-OF-WAY LINE
	ABUTTERS PROPERTY LINE
	PROPERTY SETBACK
	TOWN LINE

N/F "OWNERS NAME" TAX MAP TAX LOT DEED BOOK AND PAGE	ABUTTER IDENTIFICATION

NET LOT AREA DEDUCT AREAS	
	SOMEWHAT POORLY DRAINED SOILS
	WETLANDS

Net Residential Density Calculation	
	Area (sf)
Gross Lot Area	675,530
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	195,097
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	120,635
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	359,799
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	8

Net Residential Density Calculation (Lot 1)	
	Area (sf)
Gross Lot Area	39,829
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	16,168
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	23,661
Minimum Cluster Lot Area (RF Zone)	20,000

Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	41,598
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	20,799
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,799
Minimum Cluster Lot Area (RF Zone)	20,000

Line Segment Table		
Line Segment	Bearing	Distance
L1	S56°05'05"E	54.76'
L2	S56°11'37"E	105.00'
L3	S56°11'37"E	60.00'
L4	S56°11'37"E	85.00'
L5	N47°36'38"E	27.73'
L6	S47°36'38"W	27.73'
L7	N50°42'34"W	41.36'

PLAN NOTES:

- SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

ZONING INFORMATION*:

- CLASSIFICATION: RURAL FARM (RF)
- MIN. LOT AREA: 40,000 SF (NO WATER, NO SEWER, CONVENTIONAL)
20,000 SF (NO WATER, NO SEWER, CLUSTER)
- MAX. LOT COVERAGE: 30%
- MAX. BUILDING HEIGHT: 35 FT
- MIN. STREET FRONTAGE: 200 FT (NO WATER, NO SEWER, CONVENTIONAL)
- FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
- SIDE SETBACK: 25 FT
- REAR SETBACK: 25 FT
- PARKING REQUIREMENTS: 2 PER DWELLING UNIT
- 75' VEGETATED BUFFER FROM EXISTING ROW

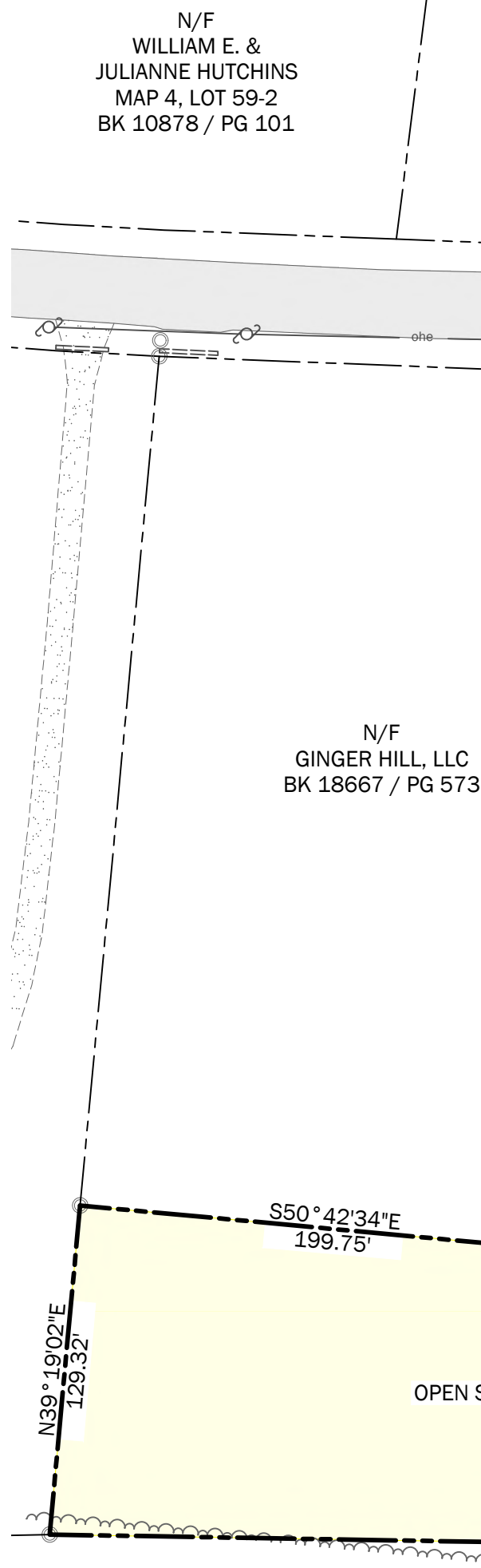
*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

Cluster Open Space Area Calculations			
Lot	Conventional Subdivision Minimum Lot Area (sf)	Net Lot Area (sf)	Cluster Subdivision Lot Area Reduction (sf)
1	40,000	23,661	16,339
2	40,000	20,909	19,091
3	40,000	20,374	19,626
4	40,000	20,799	19,201
5	40,000	24,605	15,395
6	40,000	22,495	17,505
Required Open Space Area			107,157
Provided Open Space Area			353,007
% of Required Open Space Provided			329.4%

Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	35,448
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	14,539
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,909
Minimum Cluster Lot Area (RF Zone)	20,000

Net Residential Density Calculation (Lot 5)	
	Area (sf)
Gross Lot Area	38,594
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	13,989
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	24,605
Minimum Cluster Lot Area (RF Zone)	20,000

Curve Segment Table				
Curve Segment	Curve Radius	Curve Length	Cord Bearing	Cord Length
C1	175.00'	159.42'	S05°58'06"W	153.96'
C2	175.00'	80.00'	S33°13'29"E	79.31'
C3	175.00'	30.15'	S51°15'26"E	30.12'
C4	175.00'	25.00'	S60°17'11"E	24.98'
C5	175.00'	100.00'	S80°44'57"E	98.64'
C6	175.00'	107.73'	N65°14'44"E	106.03'
C7	125.00'	166.23'	S85°42'30"W	154.25'
C8	125.00'	192.55'	N12°03'51"W	174.07'



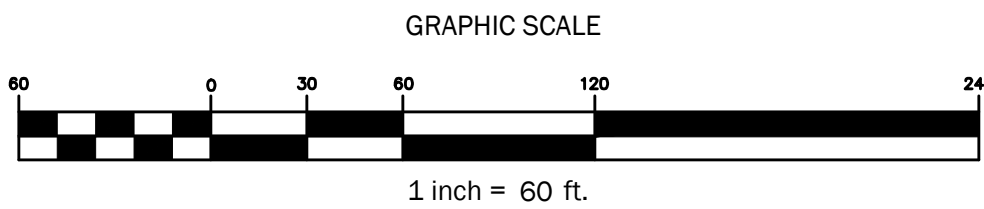
N/F
WILLIAM J. &
LORRAINE L. HUTCHINS
MAP 4, LOT 61
BK 16807 / PG 301

Net Residential Density Calculation (Lot 3)	
	Area (sf)
Gross Lot Area	40,748
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	20,374
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,374
Minimum Cluster Lot Area (RF Zone)	20,000

Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	34,197
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	11,702
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	22,495
Minimum Cluster Lot Area (RF Zone)	20,000

N/F
KENNEBUNKPORT
CONSERVATION TRUST
MAP 39-1, LOT 11
BK 16236 / PG 147

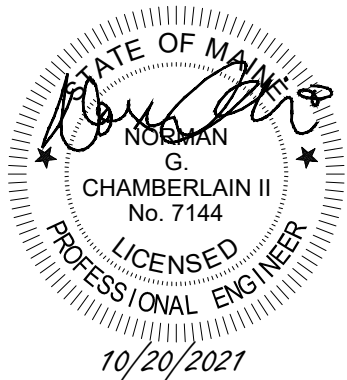
N/F
STEPHEN C. SHANNON &
BARBARA J. WINTERSON
MAP 38-1, LOT 13
BK 17179 / PG 497



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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
1	01/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
2	01/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
3	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:

Cluster Lot Subdivision Plan

Job No.:

Sheet No.:

Date:

June 15, 2021

Scale:

1" = 60'

Drawn:

CAR

Checked:

WRW

C2.1

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE
	ABUTTERS PROPERTY LINE
	EASEMENT
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	STORM DRAIN CULVERT
	RIP RAP IN/OUT PROTECTION APRON
	WATERLINE
	HYDRANT
	WATER LINE GATE VALVE
	SANITARY SEWER LINE
	SEWER MANHOLE
	OVERHEAD UTILITY
	UNDERGROUND UTILITY
	UTILITY POLE
	BUILDING
	RIPRAP
	LANDSCAPE/RETAINING WALL
	BITUMINOUS PAVEMENT
	GRAVEL
	CONCRETE
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	TREELINE
	TREE
	SILT FENCE
	EROSION CONTROL BERM
	TURF REINFORCEMENT MATTING
	CONSTRUCTION ENTRANCE

PLAN NOTES:

- SEE SHEET C1.0 FOR PLAN REFERENCES, ZONING INFORMATION, ETC.

ZONING INFORMATION*:

- CLASSIFICATION: RURAL FARM (RF)
- MIN. LOT AREA: 40,000 SF (NO WATER, NO SEWER, CONVENTIONAL)
20,000 SF (NO WATER, NO SEWER, CLUSTER)
- MAX. LOT COVERAGE: 30%
- MAX. BUILDING HEIGHT: 35 FT
- MIN. STREET FRONTAGE: 200 FT (NO WATER, NO SEWER, CONVENTIONAL)
- FRONT SETBACK: 40 FT FROM MAJOR ROW
25 FT FROM OTHER ROW
- SIDE SETBACK: 25 FT
- REAR SETBACK: 25 FT
- PARKING REQUIREMENTS: 2 PER DWELLING UNIT
- 75' VEGETATED BUFFER FROM EXISTING ROW

*ZONING STANDARDS FROM TOWN OF BIDDEFORD
CODE OF ORDINANCES, DATED DECEMBER 15, 2020.

LAYOUT, MATERIALS, AND UTILITY NOTES:

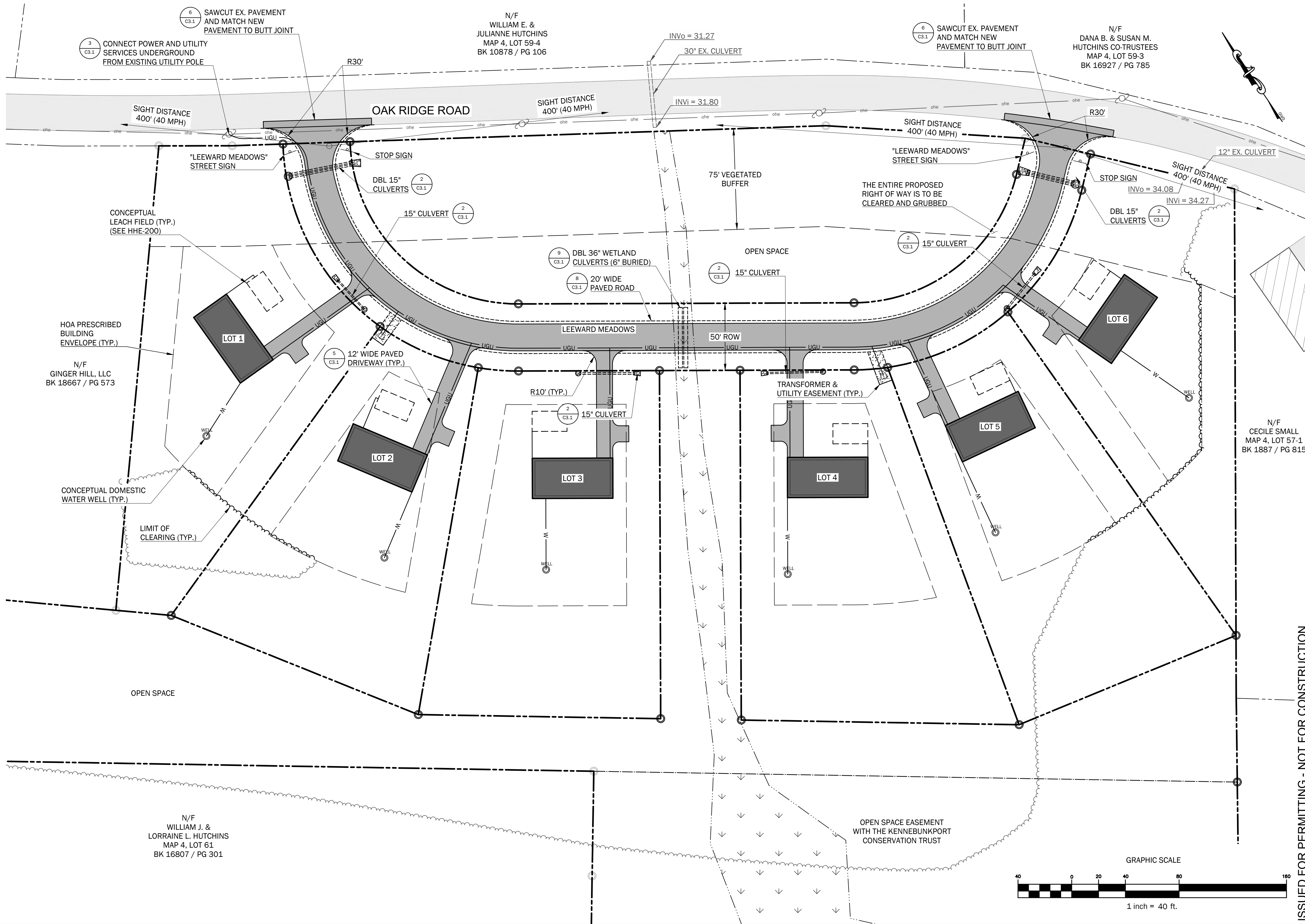
- ALL DIMENSIONS, LOCATIONS AND CONTROLS SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
- DO NOT SCALE THE DRAWINGS FOR REQUIRED DIMENSIONS. ANY DISCREPANCIES IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE.
- ALL ANGLES ARE 90 DEGREES UNLESS OTHERWISE SHOWN.
- ALL EDGES OF PAVING SHALL BE STAKED OUT BY THE CONTRACTOR AND REVIEWED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
- PROVIDE A SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING.
- ALL DISTURBED AREAS NOT OTHERWISE TREATED SHALL BE LOAMED AND SEEDED.
- CENTERLINES OF DRIVEWAY AND WALKWAY, PROPOSED PARKING LOTS AND PROPOSED UTILITY LINES SHALL BE LOCATED AND LAID OUT BY PROFESSIONALLY LICENSED SURVEYOR.
- SEE LANDSCAPING PLAN FOR NON-PAVED AREA SURFACE TREATMENTS AND CONCRETE PAVER PATTERN LAYOUTS.
- LOT GRADING, UTILITIES, PROPOSED UNIT LOCATIONS, AND LAWN AREAS ARE CONCEPTUAL ONLY AND MAY BE MODIFIED IN THE FIELD BASED ON ACTUAL BUILDING DESIGNS AND LOCATIONS.

GRADING, DRAINAGE AND UTILITIES NOTES:

- REFER TO SHEET C1.0 FOR BOUNDARY AND TOPOGRAPHIC INFORMATION.
- PRIOR TO ANY CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL VERIFY ALL AFFECTED GRADES. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE OWNER OR OWNER'S REPRESENTATIVE.
- ALL AREAS NOT REQUIRING GRADING SHALL BE LEFT UNDISTURBED. CONTRACTOR SHALL NOT DISTURB THESE AREAS AND PRESERVE EXISTING VEGETATION.
- GRADE ALL NEW WORK FOR POSITIVE DRAINAGE AND NO PUDDLING. MATCH EXISTING GRADES SMOOTHLY AND CONTINUOUSLY.
- DRAINAGE AT TERMINUS OF CURBING SHALL BE RIP-RAPPED UNLESS OTHERWISE SPECIFIED OR NOTED ON THE PLANS, OR AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
- OWNER AND PROJECT ENGINEER WILL BE CLOSELY MONITORING FINISH GRADING IN THE FIELD. CONTRACTOR SHALL PERFORM FINISH WORK AS DIRECTED BY THE OWNER OR PROJECT ENGINEER TO ACHIEVE THE FINISH GRADE CONDITIONS SHOWN ON THE PLANS.
- ALL SITE IMPROVEMENTS INCLUDING UTILITIES MUST CONFORM TO THE CITY OF BIDDEFORD'S TECHNICAL GUIDELINES AND STANDARDS.

EROSION CONTROL NOTES:

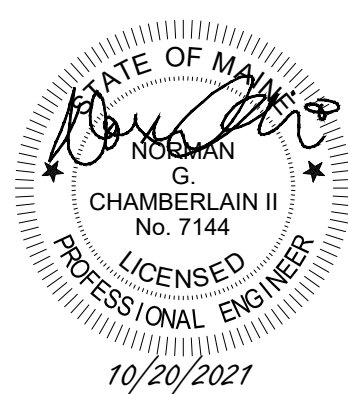
- THE CONTRACTOR SHALL INSTALL ALL EROSION AND SEDIMENTATION CONTROL MEASURES PRIOR TO CONSTRUCTION. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH THE DRAWINGS, SPECIFICATIONS.
- THE CONTRACTOR SHALL COMPLY WITH THE MAINE EROSION AND SEDIMENT CONTROL BMPs MANUAL AS PUBLISHED BY THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION'S BUREAU OF LAND AND WATER QUALITY, MARCH 2003 OR LATEST EDITION.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR REGRADING. ALL DISTURBED AREAS ON SITE NOT COVERED BY BUILDINGS OR PAVED AREAS SHALL BE STABILIZED WITH LOAM AND SEED, OR BY OTHER METHODS AS REQUIRED BY THE WRITTEN EROSION CONTROL PLAN.
- DISTURBED AREAS SHALL BE LIMITED TO ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION. FOR DISTURBED AREAS THAT ARE NOT UNDER ACTIVE CONSTRUCTION AND THAT CAN NOT YET UNDERGO FINAL GRADING, INSTALL TEMPORARY SEEDING AND MULCHING (REFER TO WRITTEN EROSION CONTROL PLAN).
- PERMANENT SEEDING OR STABILIZATION SHALL BE CARRIED OUT IMMEDIATELY AFTER FINAL GRADING IS COMPLETED, OR TEMPORARY MEASURES SHALL BE APPLIED SUCH AS MULCHING OR SEEDING UNTIL PERMANENT STABILIZATION MEASURES ARE IN PLACE.
- TOPSOIL SHALL BE STOCKPILED IN AREAS AWAY FROM PROTECTED NATURAL RESOURCES AND IN AREAS WHICH HAVE A MINIMAL POTENTIAL FOR EROSION; REFER TO OWNER FOR LOCATION OF MATERIAL STOCKPILE.
- ALL EROSION CONTROL MEASURES SHALL BE ROUTINELY INSPECTED AND REPAIRED IN ACCORDANCE WITH THE WRITTEN EROSION CONTROL PLAN FOR THE DURATION OF THE PROJECT UNTIL ALL AREAS ARE STABILIZED. REMOVE ACCUMULATED SILT AND SEDIMENT AS NEEDED AND MAINTAIN SILT FENCE IN GOOD, OPERABLE CONDITION.



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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Rev.	Date	Description	Drawn	Check
1	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
2	6/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
3	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:

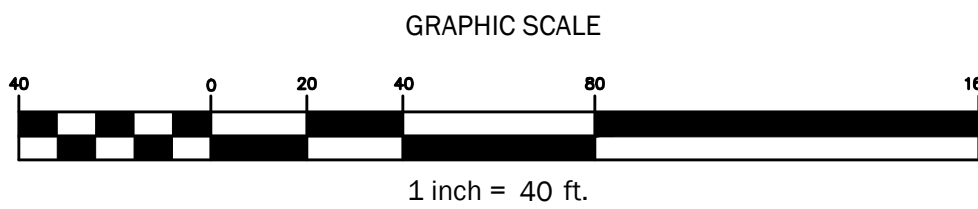
**Site Layout &
Utilities Plan**

Job No.: 742
Date: June 15, 2021
Scale: 1" = 40'
Drawn: CAR
Checked: WRW

Sheet No.:

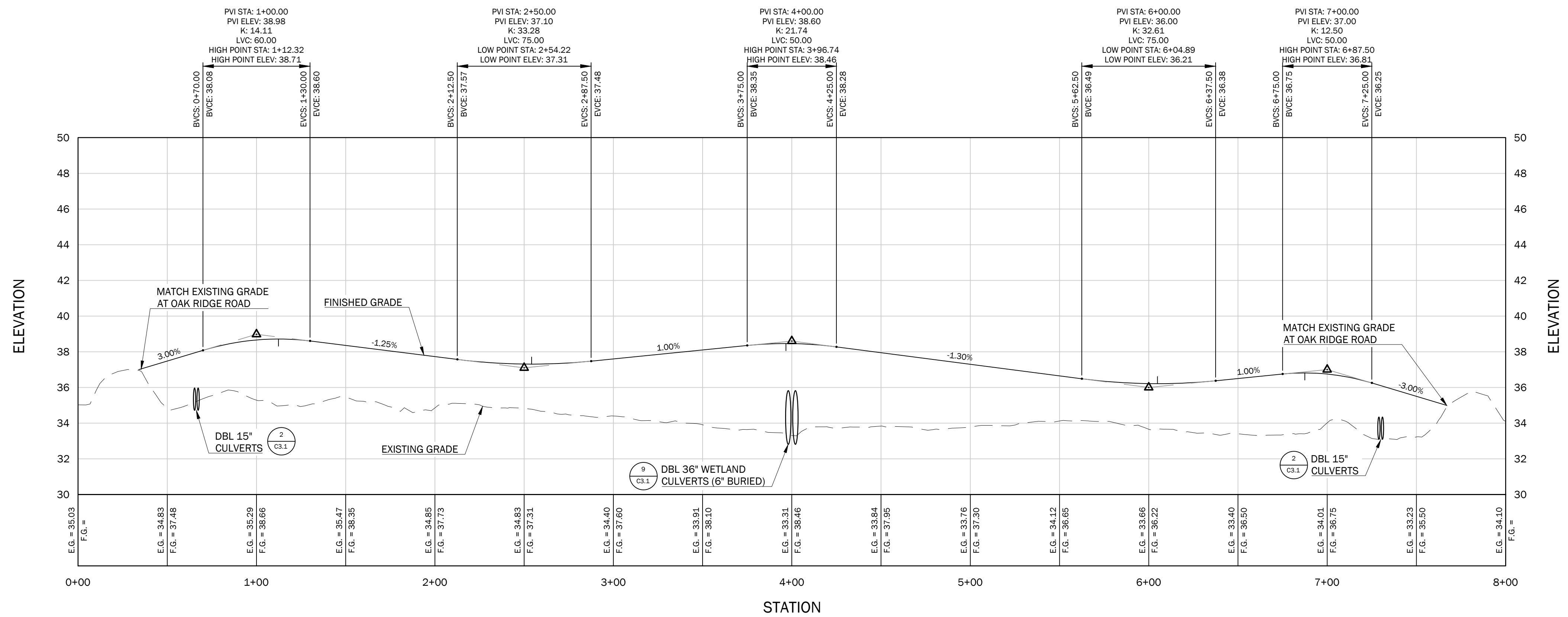
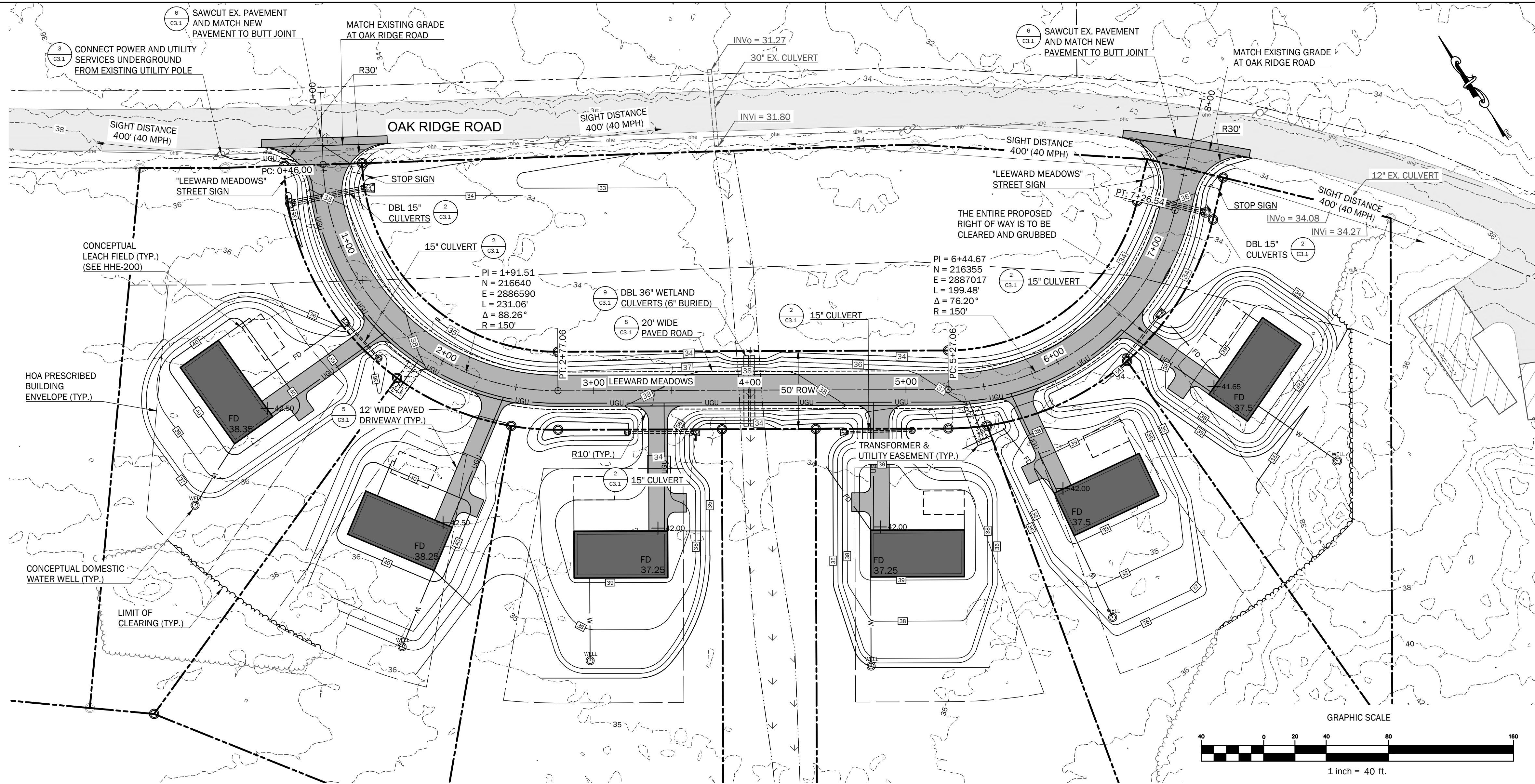
C2.2

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION



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LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE
	ABUTTERS PROPERTY LINE
	EASEMENT
	PROPERTY SETBACK
	IRON ROD OR PIN FOUND
	STORM DRAIN CATCH BASIN
	STORM DRAIN LINE
	STORM DRAIN CULVERT
	RIP RAP IN/OUT PROTECTION APRON
	WATERLINE
	HYDRANT
	WATER LINE GATE VALVE
	SANITARY SEWER LINE
	SEWER MANHOLE
	OVERHEAD UTILITY
	UNDERGROUND UTILITY
	UTILITY POLE
	BUILDING
	RIPRAP
	LANDSCAPE/RETAINING WALL
	BITUMINOUS PAVEMENT
	GRAVEL
	CONCRETE
	INDEX CONTOUR
	INTERMEDIATE CONTOUR
	TREELINE
	TREE
	SILT FENCE
	EROSION CONTROL BERM
	TURF REINFORCEMENT MATTING
	CONSTRUCTION ENTRANCE

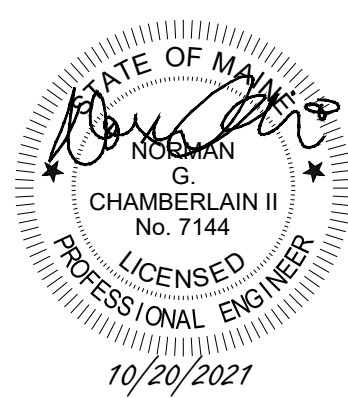


LEEWARD MEADOWS PROFILE

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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

PREPARED FOR:
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

ISSUED FOR PERMITTING - NOT FOR CONSTRUCTION

Rev.	Date	Description	Drawn	Check
1	6/15/2021	Biddeford Subdivision Sketch Plan Review	CAR	WRW
2	6/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
3	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:

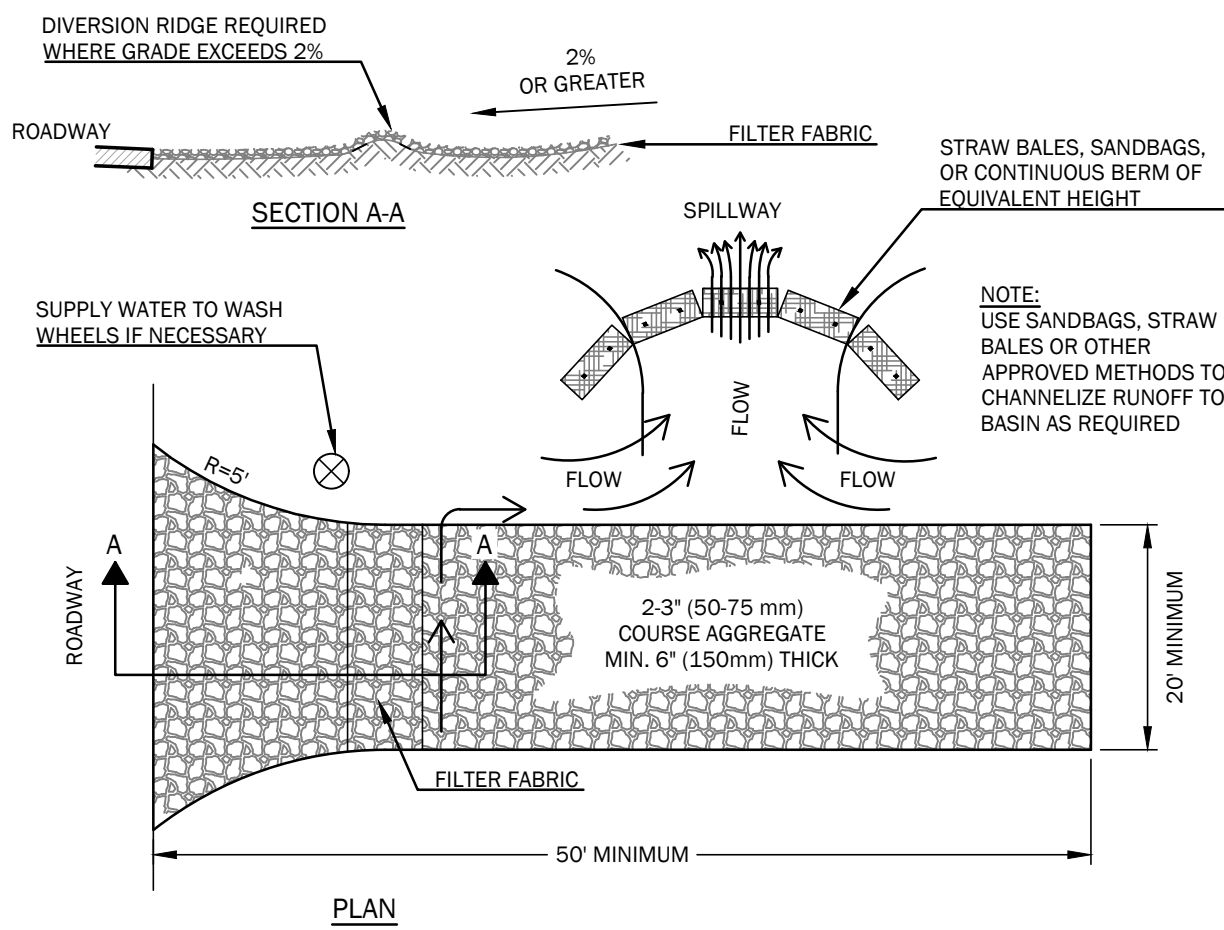
**Leeward Meadows
Plan & Profile View**

Job No.: 742
Date: June 15, 2021
Scale: As Shown
Drawn: CAR
Checked: WRW

Sheet No.:

C2.4

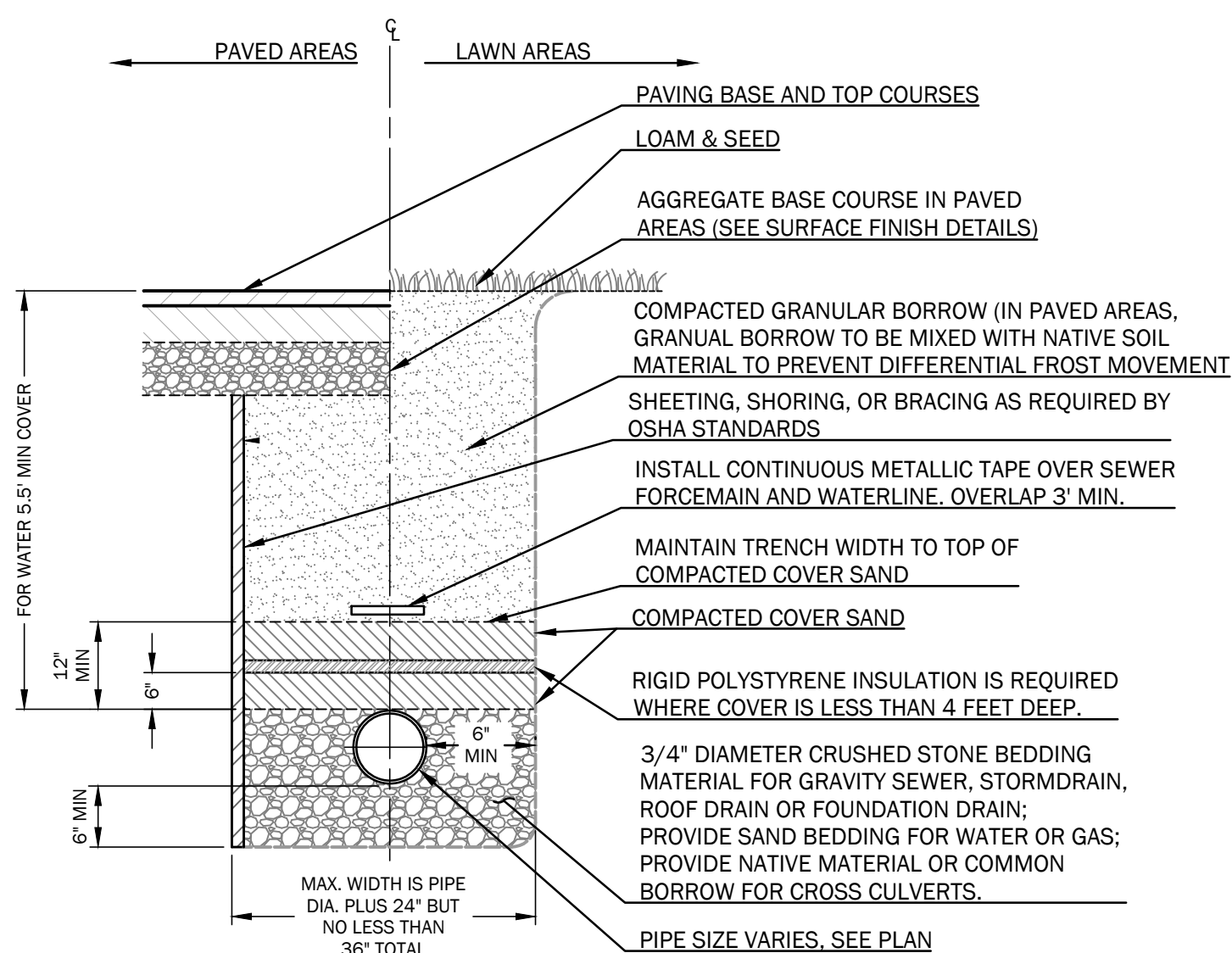
- 580



- NOTES:
- 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 CLEAN OUT OF ANY MEASURES USED TO TRAP SEDIMENT.
 - WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
 - WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS ONTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
 - TRACKED MUD AND SEDIMENT SHALL BE REMOVED BY VACUUMING PRIOR TO THE NEXT STORM EVENT.

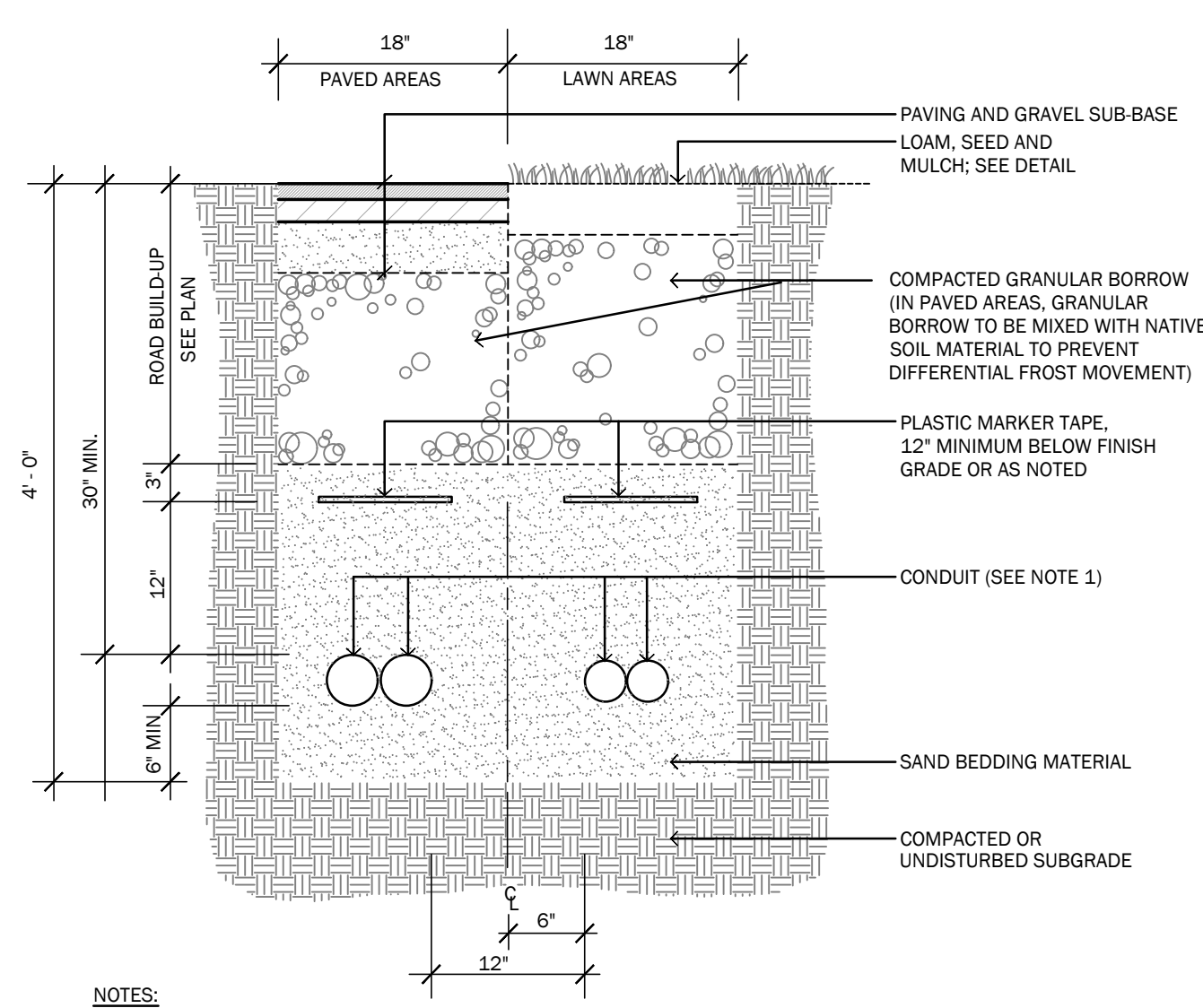
1 STABILIZED CONSTRUCTION ENTRANCE

C3.1 NOT TO SCALE



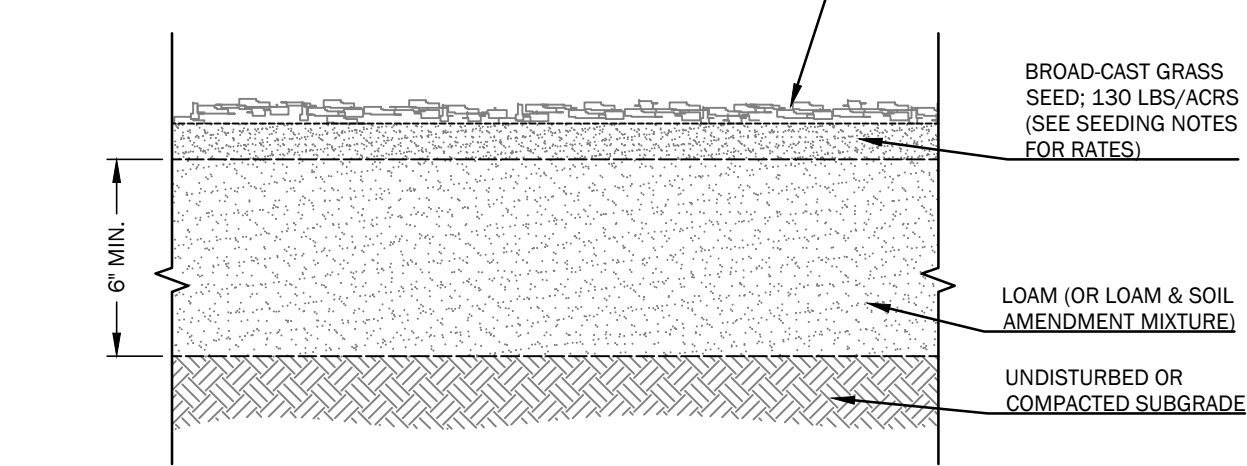
2 TYPICAL PIPE TRENCH DETAIL

C3.1 NOT TO SCALE



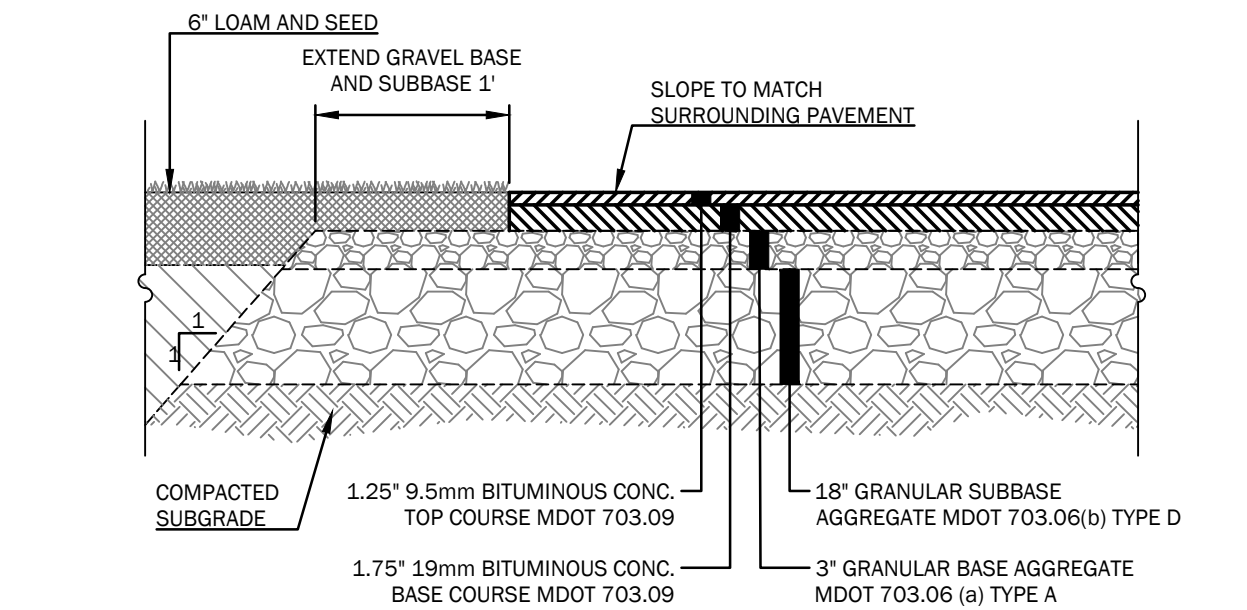
3 UNDERGROUND UTILITY TRENCH SECTION

C3.1 NOT TO SCALE



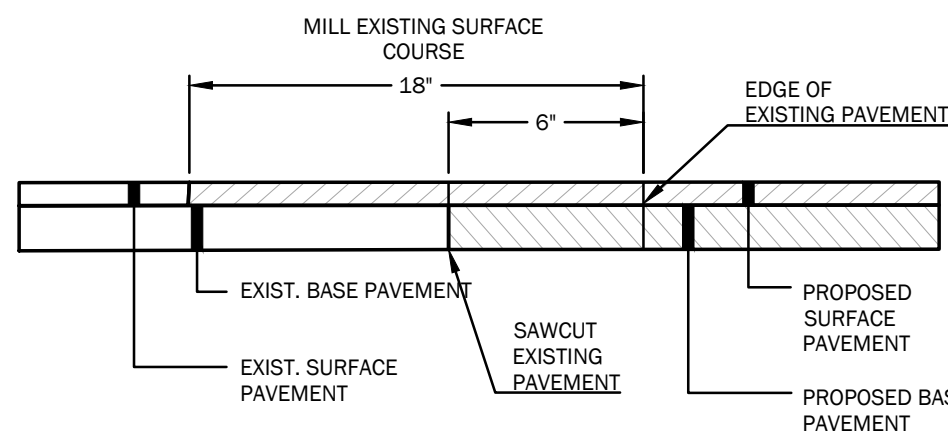
4 LOAM AND SEED DETAIL

C3.1 NOT TO SCALE



5 PAVED DRIVEWAY SECTION

C3.1 NOT TO SCALE

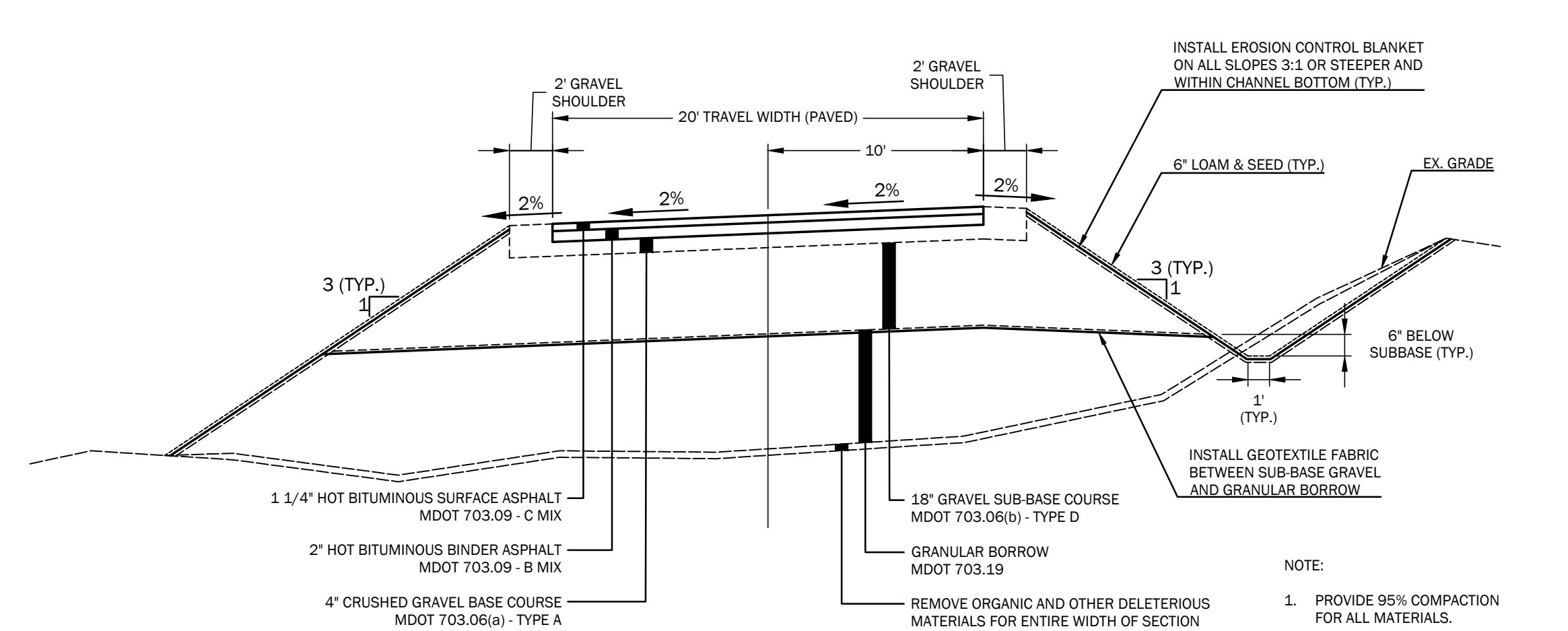


6 HMA PAVEMENT BUTT JOINT DETAIL

C3.1 NOT TO SCALE

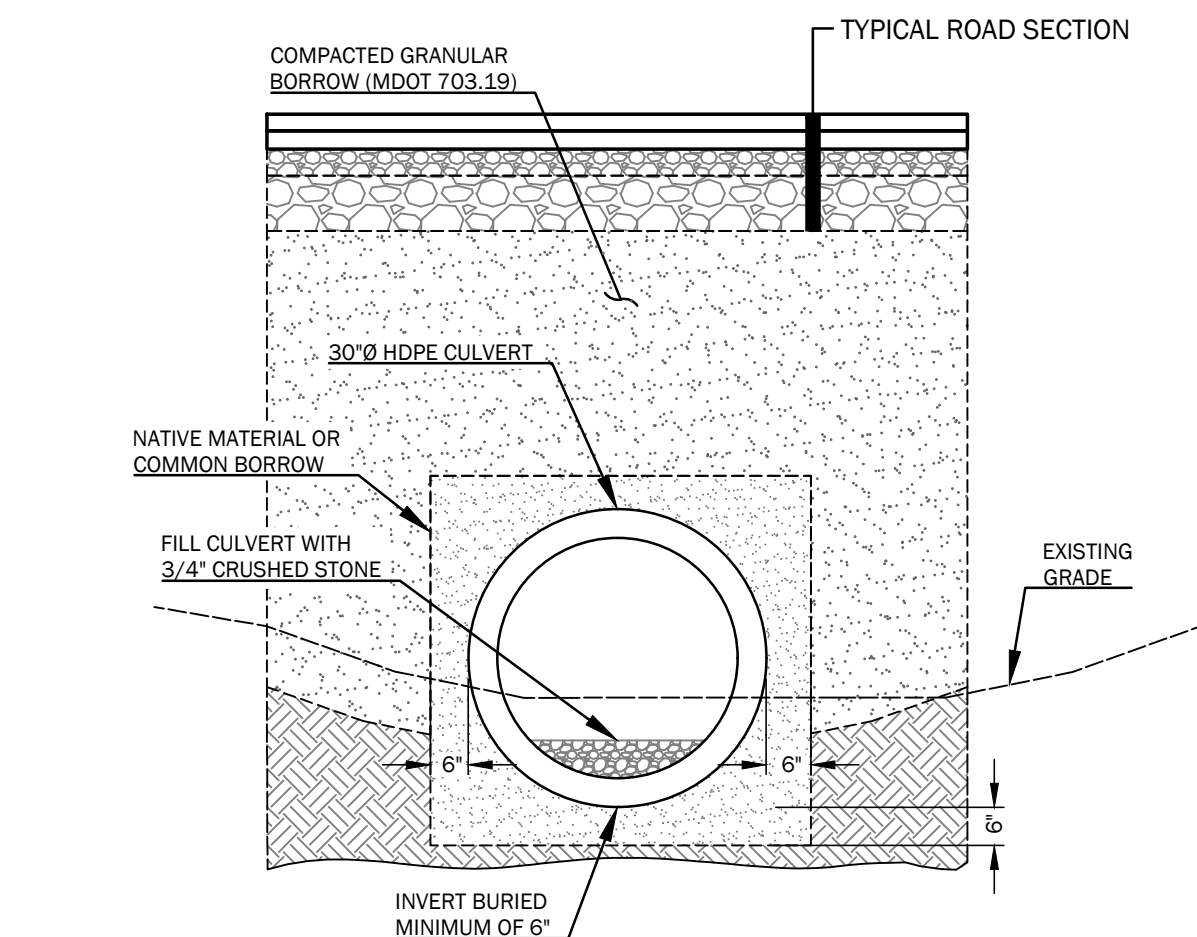
7 DETAIL NOT USED

C3.1 NOT TO SCALE



8 LEEWARD MEADOWS ROAD SECTION

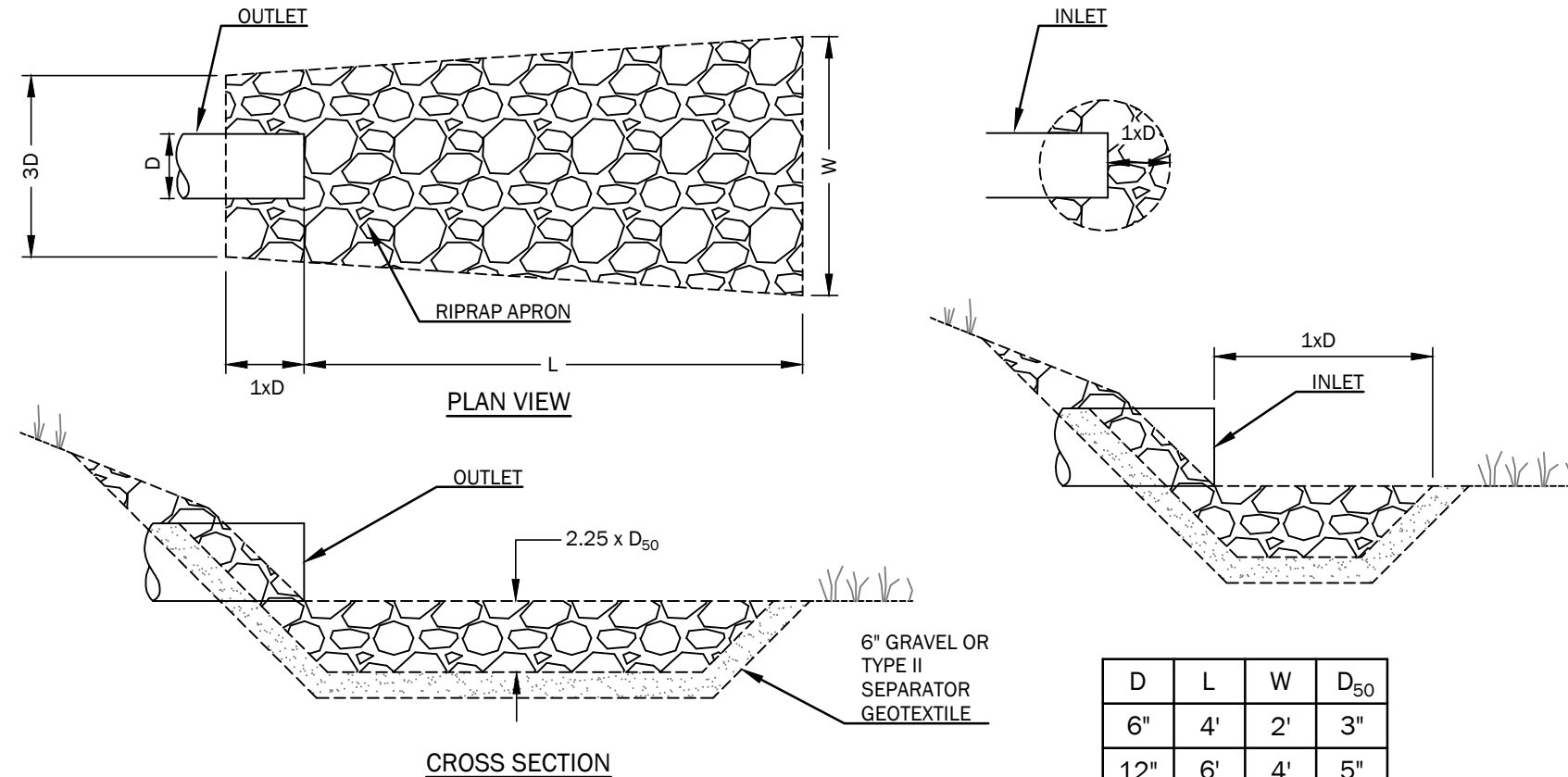
C3.1 NOT TO SCALE



- NOTES:
- TEMPORARILY REROUTE FLOW DURING CONSTRUCTION.
 - INSTALL CULVERTS IN DRY WEATHER CONDITIONS.
 - REPAIR WETLAND BEYOND LIMITS OF CULVERT INSTALLATION AFTER CONSTRUCTION.
 - CONTRACTOR SHALL VERIFY EXISTING GRADE ELEVATIONS AT PIPE INVERTS PRIOR TO INSTALLATION. PIPE INVERT SHALL BE SET 6\"/>

9 WETLAND CROSSING CULVERT INSTALLATION

C3.1 NOT TO SCALE

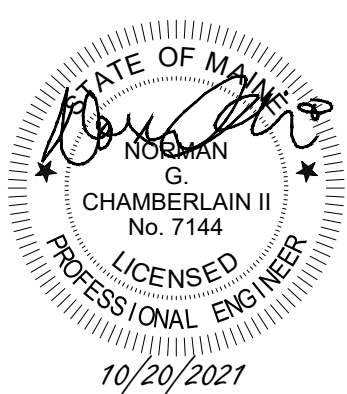


- NOTES:
- USE D_{50} NOTED ON TABLE UNLESS OTHERWISE SPECIFIED ON PLANS.
 - UNDERLAY RIPRAP WITH 6\"/>
 - USE WIDTHS NOTED ABOVE OR CONFORM TO NATURAL CHANNEL OR TOPOGRAPHY.
 - RIPRAP INLET PROTECTION SHALL BE A CIRCULAR APRON WITH A RADIUS OF 1X THE PIPE DIAMETER.

D	L	W	D ₅₀
6"	4'	2'	3"
12"	6'	4'	5"
15"	7'	5'	6"
18"	8'	6'	8"
24"	10'	8'	8"

10 RIPRAP INLET & OUTLET APRONS

C3.1 NOT TO SCALE



Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

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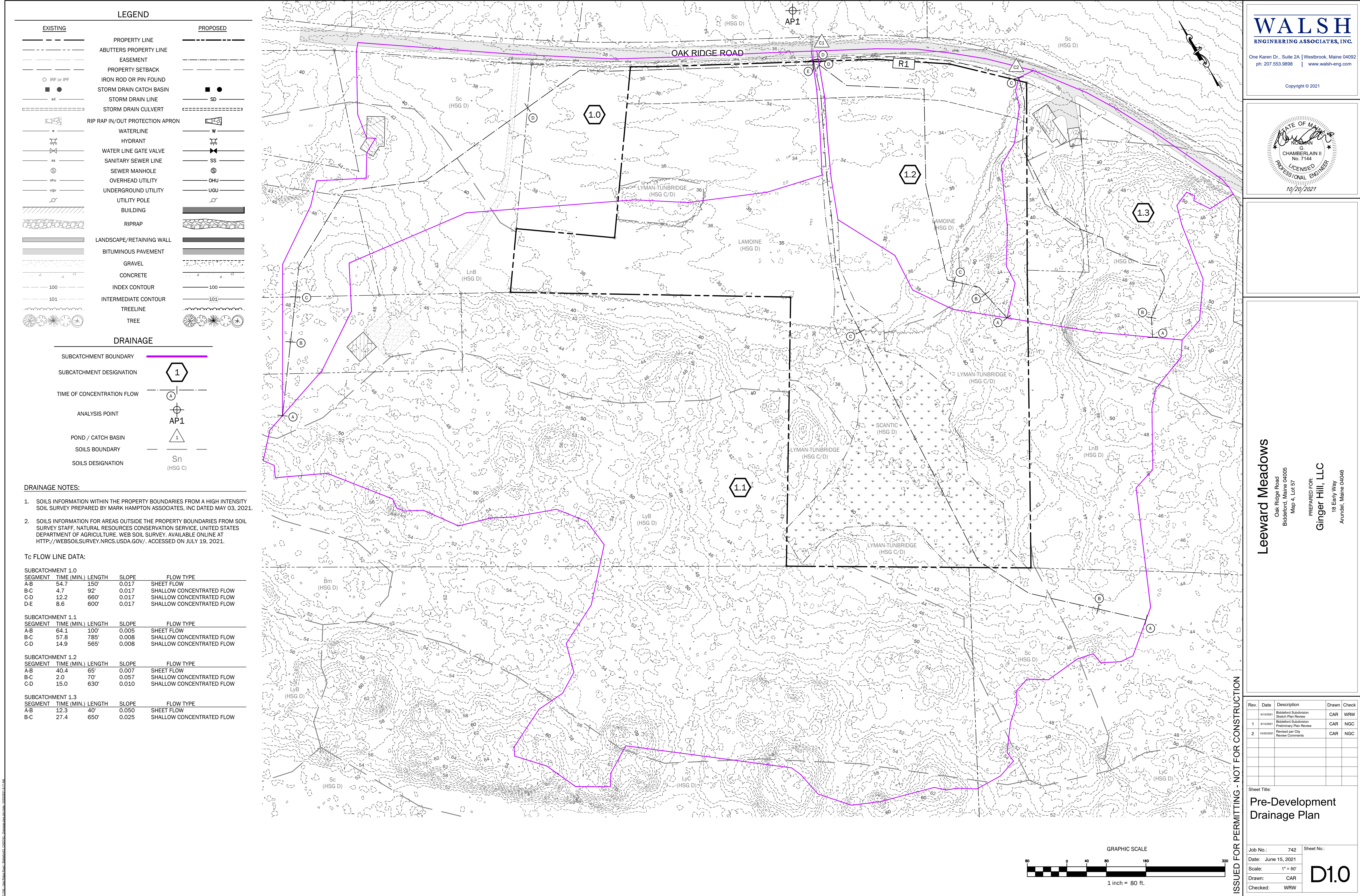
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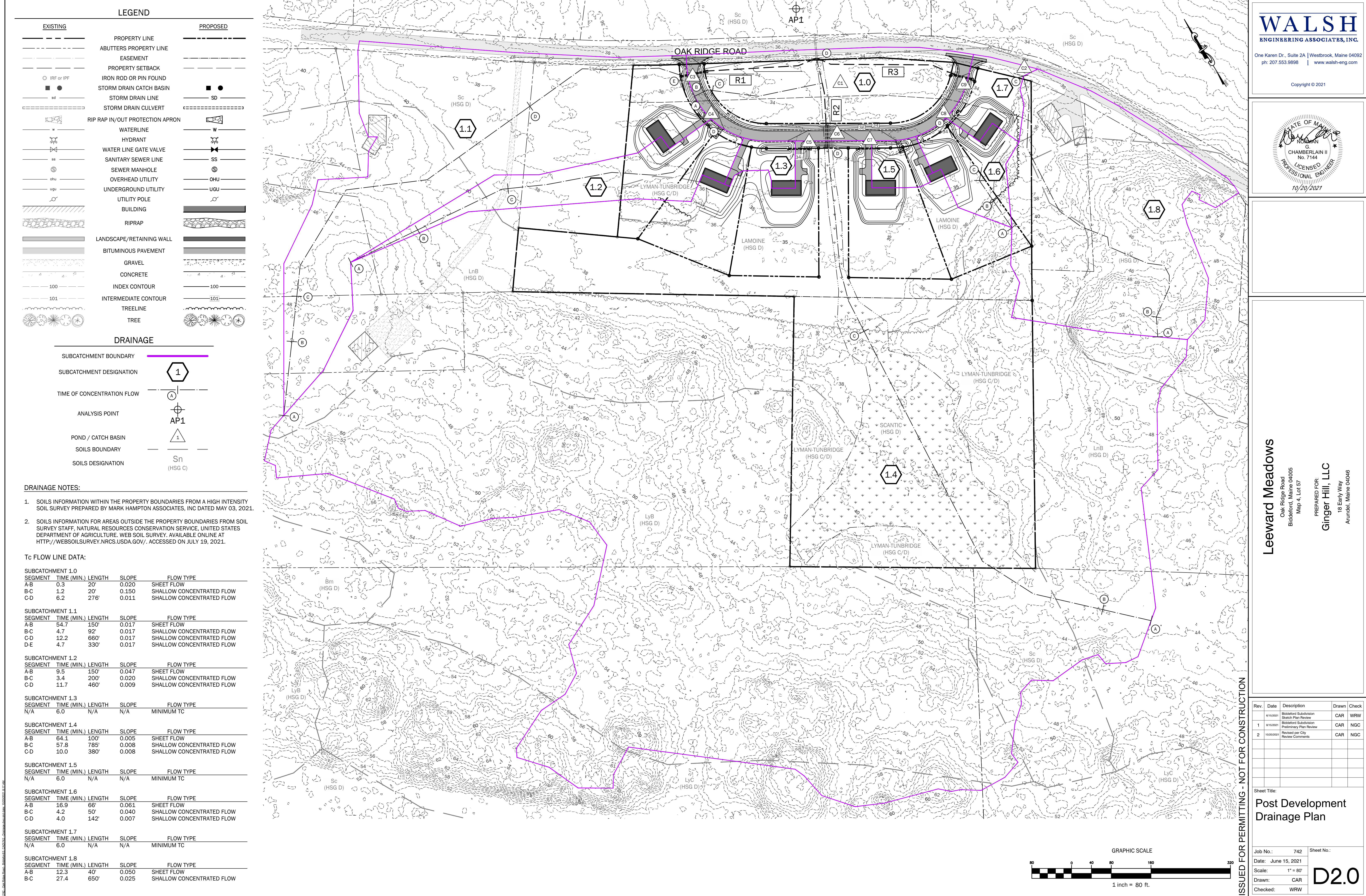
Job No.: 742
Date: June 15, 2021
Scale: No Scale
Drawn: CAR
Checked: WRW

Sheet No.:

C3.1

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LEGEND

EXISTING		PROPOSED
---	PROPERTY LINE	---
---	ABUTTERS PROPERTY LINE	---
---	EASEMENT	---
---	PROPERTY SETBACK	---
○ IRF or IPF	IRON ROD OR PIN FOUND	---
■	STORM DRAIN CATCH BASIN	■
sd	STORM DRAIN LINE	SD
---	STORM DRAIN CULVERT	---
---	RIP RAP IN/OUT PROTECTION APRON	---
W	WATERLINE	W
⊕	HYDRANT	⊕
SS	WATER LINE GATE VALVE	SS
SS	SANITARY SEWER LINE	SS
⊕	SEWER MANHOLE	⊕
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
⊕	UTILITY POLE	⊕
---	BUILDING	---
---	RIPRAP	---
---	LANDSCAPE/RETAINING WALL	---
---	BITUMINOUS PAVEMENT	---
---	GRAVEL	---
---	CONCRETE	---
100	INDEX CONTOUR	100
101	INTERMEDIATE CONTOUR	101
---	TREELINE	---
---	TREE	---

DRAINAGE

SUBCATCHMENT BOUNDARY	1
SUBCATCHMENT DESIGNATION	1
TIME OF CONCENTRATION FLOW	AP1
ANALYSIS POINT	AP1
POND / CATCH BASIN	1
SOILS BOUNDARY	Sn
SOILS DESIGNATION	(HSG C)

DRAINAGE NOTES:

- SOILS INFORMATION WITHIN THE PROPERTY BOUNDARIES FROM A HIGH INTENSITY SOIL SURVEY PREPARED BY MARK HAMPTON ASSOCIATES, INC DATED MAY 03, 2021.
- SOILS INFORMATION FOR AREAS OUTSIDE THE PROPERTY BOUNDARIES FROM SOIL SURVEY STAFF, NATURAL RESOURCES CONSERVATION SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE. WEB SOIL SURVEY. AVAILABLE ONLINE AT [HTTP://WEBSOILSURVEY.NRCS.USDA.GOV/](http://websoilsurvey.nrcs.usda.gov/). ACCESSED ON JULY 19, 2021.

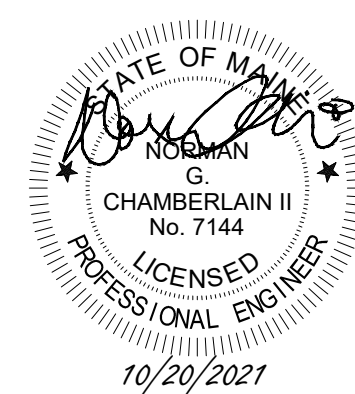
Tc FLOW LINE DATA:

SUBCATCHMENT 1.0	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	0.3	20'	0.020	SHEET FLOW
	B-C	1.2	20'	0.150	SHALLOW CONCENTRATED FLOW
	C-D	6.2	276'	0.011	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.1	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	54.7	150'	0.017	SHEET FLOW
	B-C	4.7	92'	0.017	SHALLOW CONCENTRATED FLOW
	C-D	12.2	660'	0.017	SHALLOW CONCENTRATED FLOW
	D-E	4.7	330'	0.017	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.2	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	9.5	150'	0.047	SHEET FLOW
	B-C	3.4	200'	0.020	SHALLOW CONCENTRATED FLOW
	C-D	11.7	460'	0.009	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.3	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	N/A	6.0	N/A	N/A	MINIMUM TC
SUBCATCHMENT 1.4	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	64.1	100'	0.005	SHEET FLOW
	B-C	57.8	785'	0.008	SHALLOW CONCENTRATED FLOW
	C-D	10.0	380'	0.008	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.5	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	N/A	6.0	N/A	N/A	MINIMUM TC
SUBCATCHMENT 1.6	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	16.9	66'	0.061	SHEET FLOW
	B-C	4.2	50'	0.040	SHALLOW CONCENTRATED FLOW
	C-D	4.0	142'	0.007	SHALLOW CONCENTRATED FLOW
SUBCATCHMENT 1.7	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	N/A	6.0	N/A	N/A	MINIMUM TC
SUBCATCHMENT 1.8	SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
	A-B	12.3	40'	0.050	SHEET FLOW
	B-C	27.4	650'	0.025	SHALLOW CONCENTRATED FLOW

WALSH
ENGINEERING ASSOCIATES, INC.

One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

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Leeward Meadows

Oak Ridge Road
Biddeford, Maine 04005
Map 4, Lot 57

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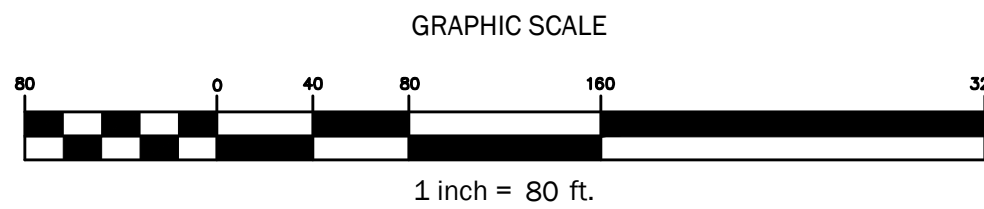
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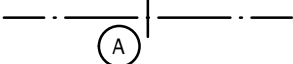
Post Development
Drainage Plan

Job No.:	742	Sheet No.:
Date:	June 15, 2021	
Scale:	1" = 80'	
Drawn:	CAR	
Checked:	WRW	

D2.0

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DRAINAGE	
SUBCATCHMENT BOUNDARY	
SUBCATCHMENT DESIGNATION	
TIME OF CONCENTRATION FLOW	
ANALYSIS POINT	
POND / CATCH BASIN	
SOILS BOUNDARY	
SOILS DESIGNATION	S_n (HSG C)

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SUBCATCHMENT 1.1				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	6.8	137'	0.005	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.2				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	51.3	150'	0.020	SHEET FLOW
B-C	9.1	92'	0.005	SHALLOW CONCENTRATED FLOW
C-D	12.9	660'	0.015	SHALLOW CONCENTRATED FLOW
D-E	13.6	333'	0.007	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.3				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	9.6	150'	0.046	SHEET FLOW
B-C	3.9	230'	0.019	SHALLOW CONCENTRATED FLOW
C-D	8.9	236'	0.008	SHALLOW CONCENTRATED FLOW
D-E	7.1	172'	0.003	SHALLOW CONCENTRATED FLOW

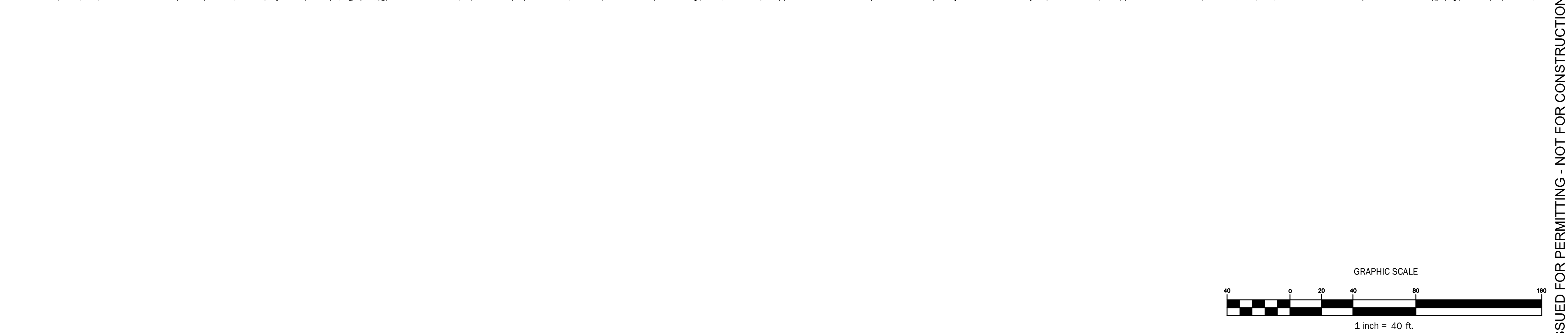
SUBCATCHMENT 1.4				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	13.2	150'	0.020	SHEET FLOW
B-C	3.7	129'	0.007	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.5				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	78.9	150'	0.007	SHEET FLOW
B-C	54.2	736'	0.008	SHALLOW CONCENTRATED FLOW
C-D	11.9	393'	0.006	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.6				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	32.6	150'	0.061	SHEET FLOW
B-C	6.9	327'	0.013	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.7				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	10.2	150'	0.039	SHEET FLOW
B-C	2.1	109'	0.015	SHALLOW CONCENTRATED FLOW

SUBCATCHMENT 1.8				
SEGMENT	TIME (MIN.)	LENGTH	SLOPE	FLOW TYPE
A-B	72.0	150'	0.008	SHEET FLOW
B-C	9.8	242'	0.027	SHALLOW CONCENTRATED FLOW
B-C	3.0	163'	0.016	SHALLOW CONCENTRATED FLOW



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1	6/15/2021	Biddeford Subdivision Switch Plan Review	CAR	WRW
1	9/15/2021	Biddeford Subdivision Preliminary Plan Review	CAR	NGC
2	10/20/2021	Revised per City Review Comments	CAR	NGC

Sheet Title:

Post Development Drainage Plan

Job No.:	742	Sheet No.:	
Date:	June 15, 2021		
Scale:	1" = 40'		
Drawn:	CAR		
Checked:	WRW		

D2.1

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PLAN REFERENCES:

1. EXISTING CONDITIONS SURVEY, TOPOGRAPHY, TREELINE, DRAINAGE & DEVELOPMENT CONCEPT TAKEN FROM ELECTRONIC FILE. PREPARED BY WALSH ENGINEERING FOR GINGER HILL, LLC. DATED October, 6, 2021



PLANTING NOTES:

1. THE LANDSCAPE CONTRACTOR SHALL SUPPLY ALL PLANTS IN QUANTITIES SUFFICIENT TO COMPLETE THE WORK SHOWN ON THE PLAN.
2. ANY SUBSTITUTION OF SPECIFIED PLANTS SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT. ONLY NATIVE SPECIES AND/OR VARIETIES WILL BE ACCEPTABLE.
3. ALL TREE, SHRUB, VINE, AND PLANT BED (GROUNDCOVERS, PERENNIALS, BULBS, ETC.) LOCATIONS SHALL BE STAKED OR MARKED BY CONTRACTOR AND THEN APPROVED BY THE LANDSCAPE ARCHITECT IN THE FIELD PRIOR TO PLANTING. CONTRACTOR MUST GIVE A MINIMUM 3 DAY NOTICE BETWEEN STAKING AND PLANTING.
4. ALL PLANTS INSTALLED SHALL MEET THE SPECIFICATIONS OF THE AMERICAN STANDARD FOR NURSERY STOCK (LATEST ADDITION) AS SET FORTH BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION.
5. ALL PLANTS SHALL BE DELIVERED TO THE SITE FOR REVIEW BY THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
6. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE EXISTENCE OF UNDERGROUND UTILITIES, THE LOCATION OF WHICH SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO ANY EXCAVATION OPERATIONS. SHOULD THE LOCATION OF PROPOSED PLANTINGS CONFLICT WITH ANY OF SAID UTILITIES, ADJUST PLANT LOCATIONS ACCORDINGLY AFTER CONSULTATION WITH THE LANDSCAPE ARCHITECT.
7. PLANTING TREES AND SHRUBS: EXCAVATE PLANTING PITS WITH SLOPING SIDES, AND WITH BOTTOM OF EXCAVATION RAISED IN CENTER FOR DRAINAGE. LOOSEN HARD SUBSOIL IN BOTTOM OF EXCAVATION, AND LOOSEN SOIL ON SIDES OF SLOPES. SET PLANTS IN CENTER OF PIT WITH TOP OF BALL RAISED SLIGHTLY ABOVE FINISH GRADES. PLACE A SETTING LAYER OF COMPACTED PLANTING MIX. REMOVE BURLAP AND WIRE BASKETS FROM TOP OF BALLS. ON SIDES, FOLD BACK WIRE AND REMOVE UPPER PORTIONS OF BURLAP. DO NOT USE PLANT IF ROOT BALL IS CRACKED OR BROKEN. IF CONTAINER, REMOVE CONTAINER AND SOIL PERIMETER SOIL AND ROOTS. PLACE PLANTING MIX AROUND BALL/CONTAINER IN LAYERS, TAMPING TO ELIMINATE VOIDS AND AIR POCKETS. DO NOT COVER TOP OF ROOT BALL. PRUNE, THIN, AND SHAPE AFTER PLANTING.
8. MULCH PLANTING BEDS WITH 3" FINELY SHREDDED AND AGED PINE BARK MULCH OR AS SPECIFIED ON THE PLAN.
9. ALL DISTURBED LAWN AREAS TO BE LOANED AND SEEDS AS NECESSARY AT NO ADDITIONAL COST TO OWNER(S).
10. GRADES SHOWN REPRESENT PROPOSED GRADES PER CONTRACT. CONTRACTOR TO VERIFY GRADES AS NEEDED.
11. PLANT MATERIALS SHALL BE GUARANTEED FOR ONE (1) YEAR AFTER PLANTING. ANY DEAD, UNSIGHTLY, OR UNHEALTHY PLANTS SHALL BE REPLACED IN KIND AT NO COST TO THE OWNER(S).
12. THE CONTRACTOR SHALL REPLACE OR REPAIR TO ORIGINAL CONDITION ANY AND ALL UTILITIES, PAVING, CURBING, ETC., DAMAGED AS A RESULT OF THEIR OPERATIONS AT NO ADDITIONAL COST TO THE OWNER(S).
13. A PRECONSTRUCTION MEETING SHALL BE HELD PRIOR TO LANDSCAPE CONTRACTOR BEGINNING CONSTRUCTION OR ORDERING PLANT MATERIALS.

EXISTING VEGETATION IN MEADOW

PROPERTY HAS BEEN A FARM/MEADOW FOR 40+ YEARS. (APPROX. 9 ACRES)

EXISTING MEADOW ON NORTH SIDE OF OAK RIDGE ROAD. (APPROX. 8 ACRES)



A Street View Looking East Along Oak Ridge Road



B Street View Looking West Along Oak Ridge Road

PLAN LIST:

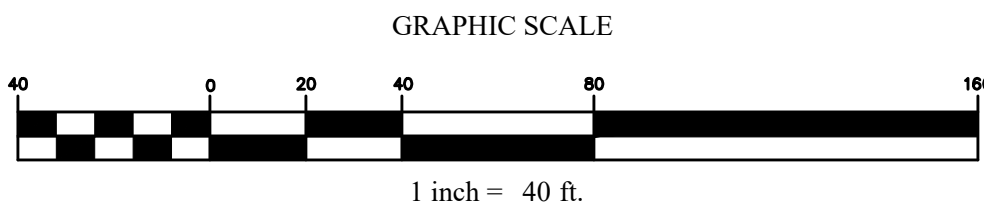
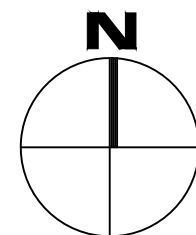
QUANTITY	LABEL	NAME	SCIENTIFIC	SIZE
TREES:				
3	LT	RED MAPLE	ACER RUBRUM	2.5-3' CAL
2	LT	RED OAK	QUERCUS RUBRA	2.5-3' CAL
3	LT	SWAMP WHITE OAK	QUERCUS BICOLOR	2.5-3' CAL
3	LT	AMERICAN BEECH	FAGUS GRANDIFOLIA	2.5-3' CAL
2	LT	GREEN ASH	FRAXINUS PENN.	2.5-3' CAL
UNDERSTORY:				
5	ST	YELLOW BIRCH	BETULA ALLEGHANIENSIS	10-12 FT HT
5	ST	HORNBEAM	CARPINUS CAROLINIANA	1.5-2' CAL
6	ST	SERVICEBERRY	AMELANCHIER CANADENSIS	7-8 FT HT
5	ST	PAGODA DOGWOOD	CORNUS ALTERNIFOLIA	8-10 FT HT
EVERGREENS:				
5	ET	WHITE SPRUCE	PICEA GLAUCA	7-8 FT HT
5	ET	WHITE PINE	PINUS STROBUS	7-8 FT HT
5	ET	BALSAM FIR	ABIES BALSAMEA	7-8 FT HT
5	ET	DARK AMERICAN ARBORVITAE	THUJA OCCIDENTALIS 'NIGRA'	7-8 FT HT
SHRUBS:				
14	SH	RED CHOKEBERRY	ARONIA ARBUTIFOLIA	24-30" HT
13	SH	WINTERBERRY	ILEX VERTICILLATA	24-30" HT
13	SH	WITHEROD VIBURNUM	VIBURNUM CASSINOIDES	24-30" HT
13	SH	NORTHERN BAYBERRY	MYRTICA PENNSYLVANICA	24-30" HT
13	SH	SWEET PEPPERBUSH	CLETHRA ALNIFOLIA	24-30" HT
13	SH	COMMON WITCH HAZEL	HAMAMELIS VIRGINIANA	24-30" HT
13	SH	FORSYTHIA	FORSYTHIA X INTERMEDIA	24-30" HT
MEADOW:				
47,000 SF	MEADOW	NEW ENGLAND CONSERVATION / WILDLIFE MIX (NEW ENGLAND WETLAND PLANTS, INC. (413) 548-8000)		1 LB/1,750 SF

MIXTURE OF NATIVE DECIDUOUS & CONIFEROUS TREES AND SHRUBS TO PROVIDE VISUAL SCREEN AT MATURITY.

PLANT SYMBOL / LEGEND

- LT - DECIDUOUS TREE LARGE
- ST - DECIDUOUS TREE UNDERSTORY
- ET - EVERGREEN TREE
- SH - SHRUB
- MEADOW - SEEDS MEADOW

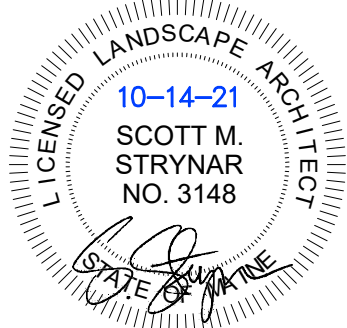
Plan View
Scale: 1" = 40'



WALSH
ENGINEERING ASSOCIATES, INC.

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Leeward Meadows

Oak Ridge Road
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Map 4, Lot 57

PREPARED FOR:
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18 Early Way
Aundell, Maine 04046

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Sheet Title:

Landscape Plan

Job No.: 742
Date: June 15, 2021
Scale: 1" = 40'
Drawn: CAR
Checked: WRW

Sheet No.:
L1.0

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STORMWATER MANAGEMENT REPORT REVISION 1

for

Leeward Meadows
Oak Ridge Road
Biddeford, Maine 04005

September 15, 2021
Revision 1: October 20, 2021

Submitted to:
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, Maine 04005

Submitted by:
Walsh Engineering Associates, Inc.
One Karen Drive, Suite 2A
Westbrook, Maine 04092

STORMWATER MANAGEMENT REPORT

LEEWARD MEADOWS Oak Ridge Road Biddeford, Maine 04005

Introduction

Walsh Engineering Associates, Inc. (WEA) was retained by Emily and Robert Ingwersen, dba Ginger Hill Design + Build (Applicant) to provide site design and stormwater management design services for the development of a six-lot subdivision and open space parcel on Oak Ridge Road in Biddeford. The proposed development includes six single-family dwellings, associated driveways, and a minor, nonurban residential street. The development will create a net increase of approximately 35,740± square feet (0.82± acres) of impervious surfaces.

This Stormwater Management Report assesses both pre-development and post development peak runoff rates of stormwater runoff from the developed site. The analysis provided herein was completed in accordance with the City of Biddeford stormwater standards.

The original Stormwater Management Report was submitted to the City of Biddeford as part of a preliminary subdivision application submission on September 15, 2021. This Revision 1 of the Stormwater Management Report reflects revisions made in response to comments provided via an engineer review conducted by Site Design Associates dated September 29, 2021.

Methodology

Stormwater runoff analysis has been performed to comply with the City of Biddeford Subdivision Regulations. The HydroCAD Stormwater Modeling System software (Version 10.0) developed by the Applied Microcomputer Systems of Chocorua, New Hampshire was used for the analysis. The program is based upon the TR-20 computer program and the TR-55 tabular method, both of which are based upon techniques developed by the USDA Soil Conservation Service. The analysis was performed for the 2-, 10-, and 25-year frequencies (3.3, 4.9, and 6.2 inches respectively) for York County. The 24-hour storm event with a Type III distribution were the basis for the analysis.

Pre-Development Conditions

The property is located within the watershed of the Little River. The parcel was previously undeveloped consisting of a large meadow with the remainder of the property being wooded. The property drains north towards a 30" culvert under Oak Ridge Road.

The pre-development condition was considered to be meadow area, wooded area, and impervious surfaces, as taken from the USDA NRCS online Web Soil Survey. The soil types onsite are Lyman-Tunbridge Complex, Lamoine, and Scantic listed as Hydrologic Soil Group (HSG) C/D and D. See the High Intensity Soil Survey and Web Soil Survey in Appendix C. The property drains north towards a 30" culvert under Oak Ridge Road (AP1).

Site topography, soil boundaries, pre-development drainage areas, and analysis point AP1 are shown on drawing D1.0 – Pre-Development Drainage Plan. Pre-development HydroCAD

calculations can be found in Appendix A. Pre-development peak flow rates at the analysis points are summarized in Table 1 for the 2-, 10-, and 25-year storm events.

Post-Development Conditions

The proposed project will include six single-family dwellings, associated driveways, and a minor, nonurban residential street. The street will have two connections onto Oak Ridge Road and all driveways will have access via the proposed street. The project will contain approximately 35,740± square feet of impervious area.

Post-development stormwater runoff from the site was analyzed by routing stormwater flows from the various developed subcatchments through proposed conveyance. Post-development HydroCAD calculations can be found in Appendix B and sheet D2.0 – Post Development Drainage Plan can be found in Appendix E. Post development peak flow rates at each of the analysis points are summarized in Table 1 for the 2-, 10-, and 25-year storm events.

Stormwater Quantity

The City of Biddeford stormwater standards require that peak flow rates discharging from the site are not increased as a result of the development.

Table 1 – Peak Flow Rates (cfs)			
Analysis Point	2-Year Storm	10-Year Storm	25-Year Storm
AP1 Pre-Development	12.9	21.0	25.1
Post Development	12.9	20.9	25.0

As shown in Table 1, the peak runoff rates at analysis point AP1 under the post development conditions will be equal to or less than the peak pre-development runoff rates for every storm event. Based on this analysis, we do not anticipate any adverse impacts on downgradient drainage systems due to the proposed development. Pre- and Post Development HydroCAD calculations can be found in Appendices A and B.

Stormwater Quality

The project is not in the watershed of a lake or Urban Impaired Stream and will not create over one acre of impervious surface or 5 acres of developed area and therefore does not require a Maine DEP Stormwater Permit.

Erosion Control

BMPs such as silt fence and/or filter berms of erosion control mix, erosion control blanket, mulch, and permanent seeding will be used to prevent erosion and downstream migration of sediment during construction. The locations of temporary and permanent erosion control measures are shown on the Site Plans in Appendix E on sheet C2.3. Erosion and sedimentation control notes and details can be found on sheets C3.0-C3.1.

Inspection & Maintenance

Ginger Hill Design + Build will be responsible for maintaining the stormwater facilities for the project until such time as the Homeowners Association will take over the system and maintenance of it. An Inspection and Maintenance Plan is included in Appendix D.

Conclusions

Calculations show that the peak rate of runoff from the 2-, 10-, and 25-year storm events will not exceed the pre-development rate as required by the City of Biddeford.

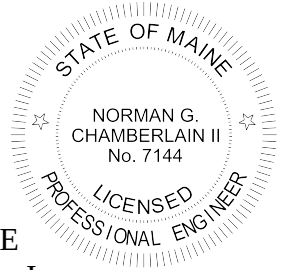
Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



Norman G. Chamberlain II, PE
Walsh Engineering Associates, Inc.

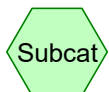
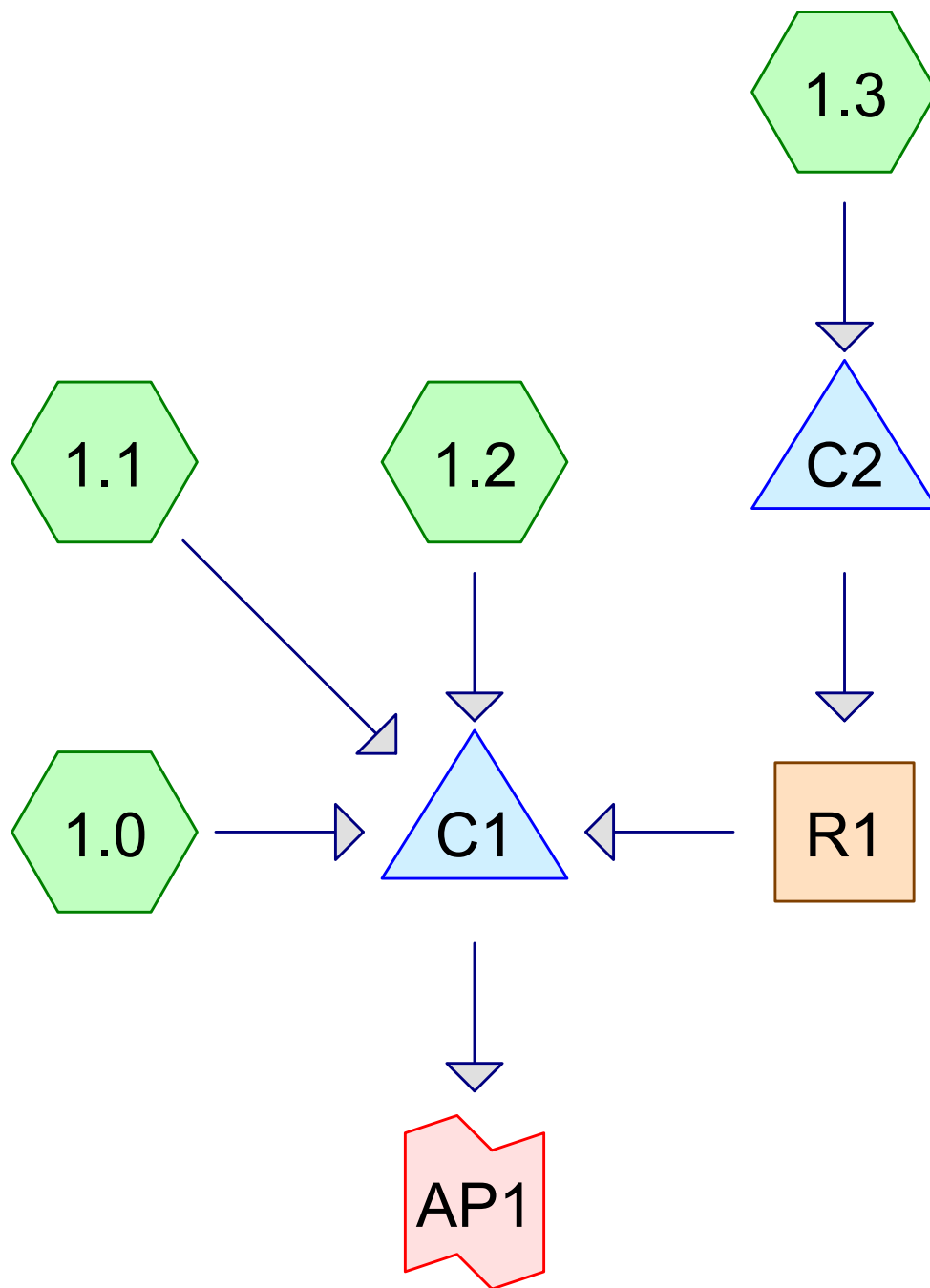


Supporting Data and Calculations

The following material presents calculations and copies of source material used during the analysis for this study.

- Appendix A: Pre-Development HydroCAD Report
- Appendix B: Post-Development HydroCAD Report
- Appendix C: High Intensity Soil Survey
Web Soil Survey Map
- Appendix D: Inspection & Maintenance Plan
- Appendix E: Drainage Plans
 - D1.0 – Pre-Development Drainage Plan
 - D2.0 – Post-Development Drainage Plan
 - D2.1 – Post-Development Drainage Plan

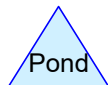
Appendix A
Pre-Development HydroCAD Report



Subcat



Reach



Pond



Link

Routing Diagram for Pre-Development

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Pre-Development

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Page 2

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
156,645	80	>75% Grass cover, Good, HSG D (1.0, 1.1)
2,465	71	Meadow, non-grazed, HSG C (1.1, 1.2)
480,300	78	Meadow, non-grazed, HSG D (1.0, 1.1, 1.2, 1.3)
37,330	98	Paved parking, HSG D (1.0, 1.1, 1.2, 1.3)
161,355	70	Woods, Good, HSG C (1.0, 1.1, 1.2, 1.3)
1,319,105	77	Woods, Good, HSG D (1.0, 1.1, 1.2, 1.3)
2,157,200	77	TOTAL AREA

Pre-Development

Type III 24-hr 2-Year Rainfall=3.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0: Runoff Area=340,010 sf 3.56% Impervious Runoff Depth>1.26"
Flow Length=1,502' Slope=0.0167 '/' Tc=80.2 min CN=79 Runoff=4.2 cfs 35,787 cf

Subcatchment 1.1: Runoff Area=1,475,335 sf 0.72% Impervious Runoff Depth>1.11"
Flow Length=1,450' Tc=136.8 min CN=77 Runoff=11.2 cfs 135,994 cf

Subcatchment 1.2: Runoff Area=168,765 sf 2.53% Impervious Runoff Depth>1.15"
Flow Length=765' Tc=57.4 min CN=77 Runoff=2.3 cfs 16,232 cf

Subcatchment 1.3: Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>1.22"
Flow Length=690' Tc=39.7 min CN=78 Runoff=3.0 cfs 17,649 cf

Reach R1: Avg. Flow Depth=0.29' Max Vel=1.69 fps Inflow=3.0 cfs 17,569 cf
n=0.022 L=400.0' S=0.0057 '/' Capacity=477.4 cfs Outflow=3.0 cfs 17,455 cf

Pond C1: Peak Elev=33.54' Storage=31,873 cf Inflow=15.7 cfs 205,469 cf
30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=12.9 cfs 202,711 cf

Pond C2: Peak Elev=34.64' Storage=148 cf Inflow=3.0 cfs 17,649 cf
Outflow=3.0 cfs 17,569 cf

Link AP1: Inflow=12.9 cfs 202,711 cf
Primary=12.9 cfs 202,711 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 205,663 cf Average Runoff Depth = 1.14"
98.27% Pervious = 2,119,870 sf 1.73% Impervious = 37,330 sf

Pre-Development

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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.0:

Runoff = 4.2 cfs @ 13.11 hrs, Volume= 35,787 cf, Depth> 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
6,265	70	Woods, Good, HSG C
20,930	77	Woods, Good, HSG D
168,410	78	Meadow, non-grazed, HSG D
132,305	80	>75% Grass cover, Good, HSG D
12,100	98	Paved parking, HSG D
340,010	79	Weighted Average
327,910		96.44% Pervious Area
12,100		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
8.6	600	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
80.2	1,502	Total			

Pre-Development

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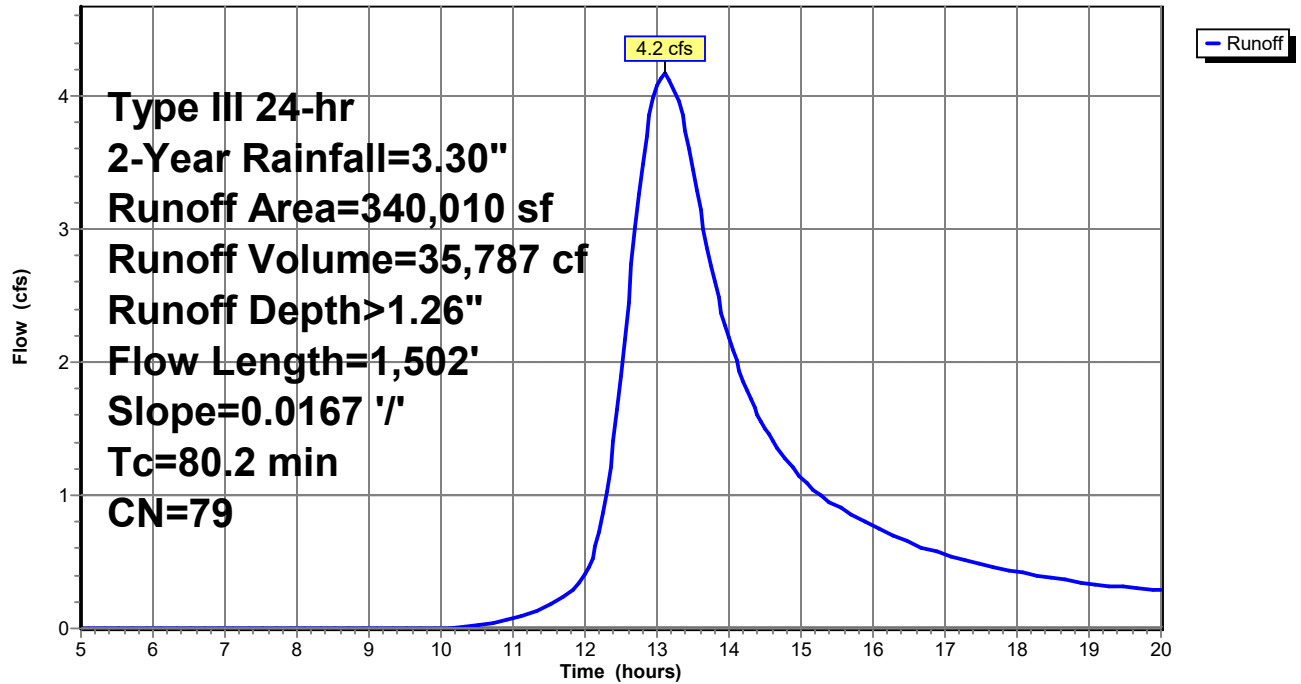
Type III 24-hr 2-Year Rainfall=3.30"

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Subcatchment 1.0:

Hydrograph



Pre-Development

Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.1:

Runoff = 11.2 cfs @ 13.86 hrs, Volume= 135,994 cf, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
118,320	70	Woods, Good, HSG C
1,145,650	77	Woods, Good, HSG D
2,375	71	Meadow, non-grazed, HSG C
174,000	78	Meadow, non-grazed, HSG D
24,340	80	>75% Grass cover, Good, HSG D
10,650	98	Paved parking, HSG D
1,475,335	77	Weighted Average
1,464,685		99.28% Pervious Area
10,650		0.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.9	565	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
136.8	1,450	Total			

Pre-Development

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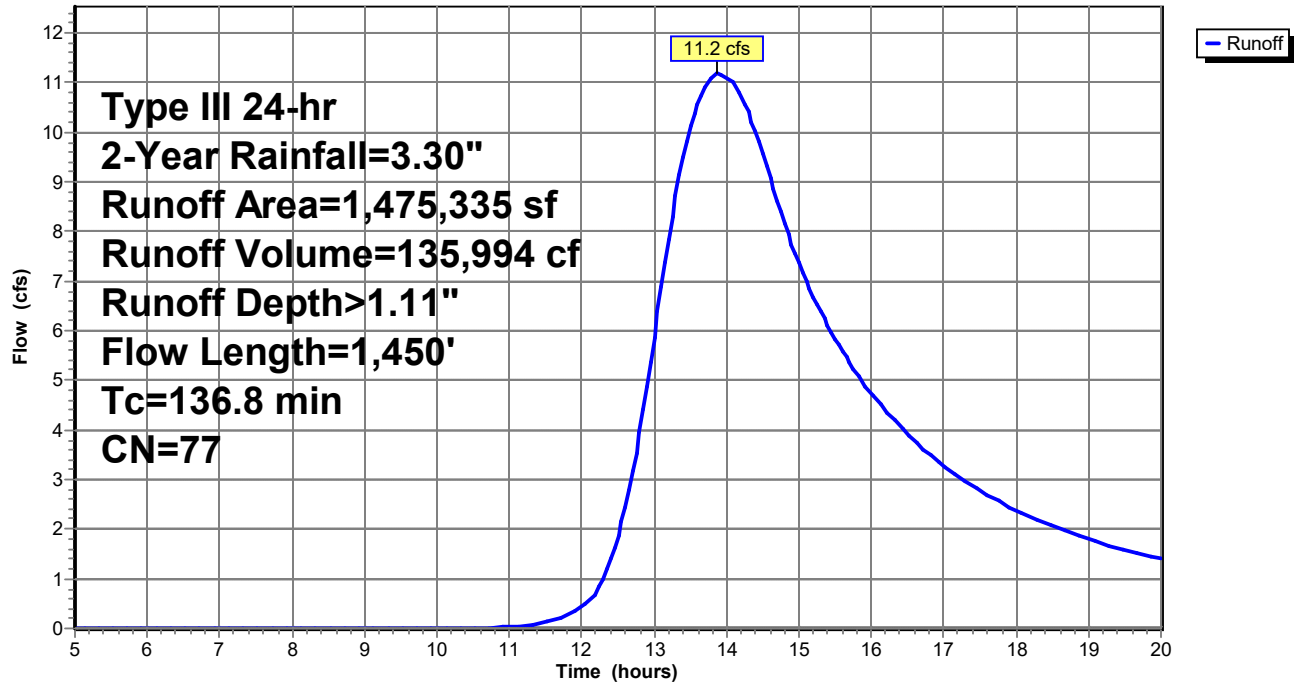
Type III 24-hr 2-Year Rainfall=3.30"

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Subcatchment 1.1:

Hydrograph



Pre-Development

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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.2:

Runoff = 2.3 cfs @ 12.82 hrs, Volume= 16,232 cf, Depth> 1.15"

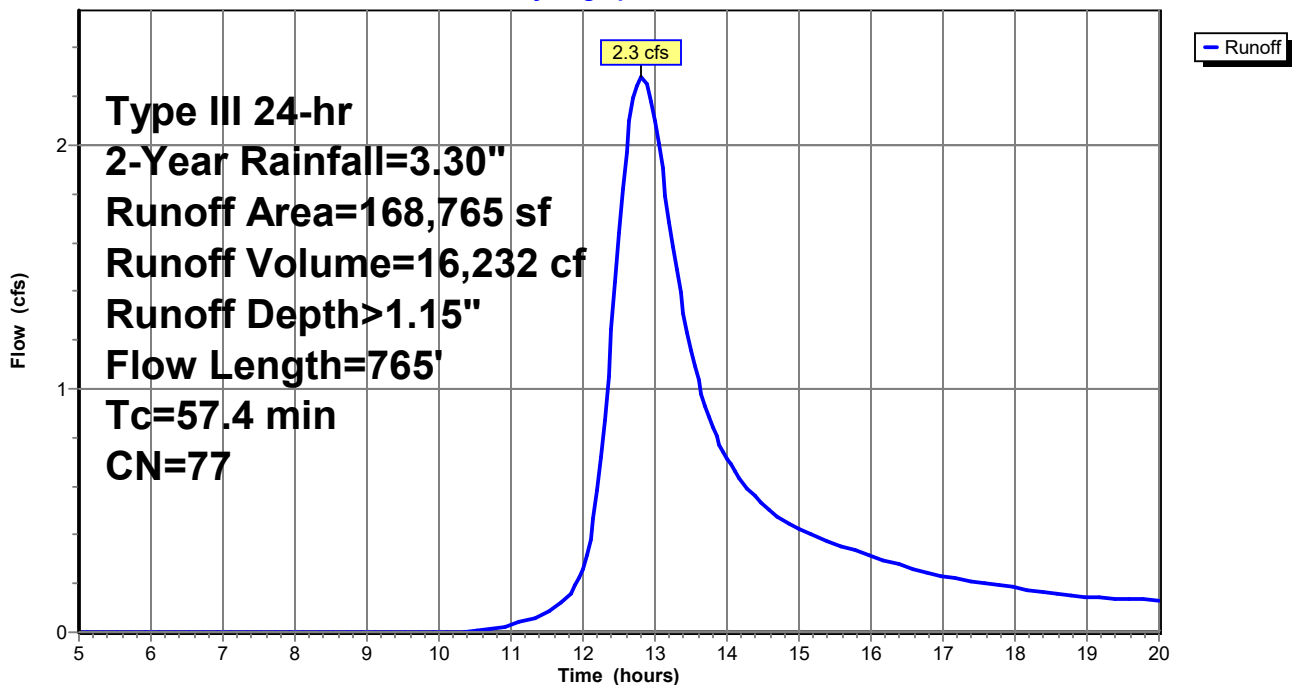
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
22,320	70	Woods, Good, HSG C
7,035	77	Woods, Good, HSG D
90	71	Meadow, non-grazed, HSG C
135,050	78	Meadow, non-grazed, HSG D
4,270	98	Paved parking, HSG D
168,765	77	Weighted Average
164,495		97.47% Pervious Area
4,270		2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.4	65	0.0067	0.03		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
2.0	70	0.0570	0.60		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
15.0	630	0.0100	0.70		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
57.4	765	Total			

Subcatchment 1.2:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.3:

Runoff = 3.0 cfs @ 12.57 hrs, Volume= 17,649 cf, Depth> 1.22"

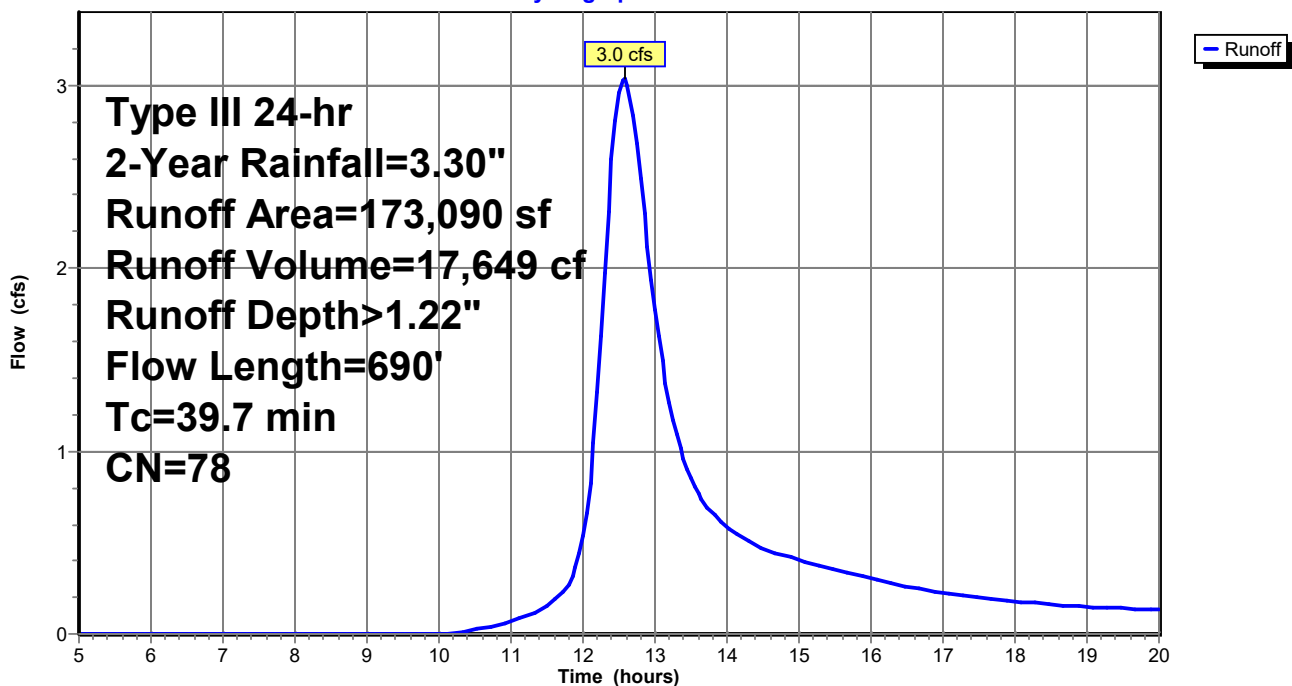
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
14,450	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.3:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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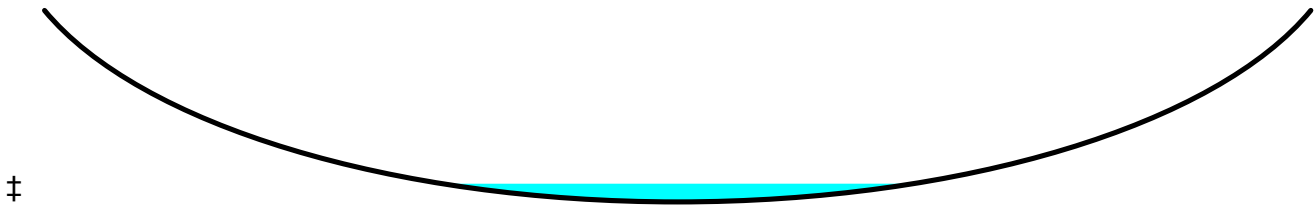
Summary for Reach R1:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 3.0 cfs @ 12.58 hrs, Volume= 17,569 cf
Outflow = 3.0 cfs @ 12.69 hrs, Volume= 17,455 cf, Atten= 1%, Lag= 6.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.69 fps, Min. Travel Time= 3.9 min
Avg. Velocity= 0.86 fps, Avg. Travel Time= 7.8 min

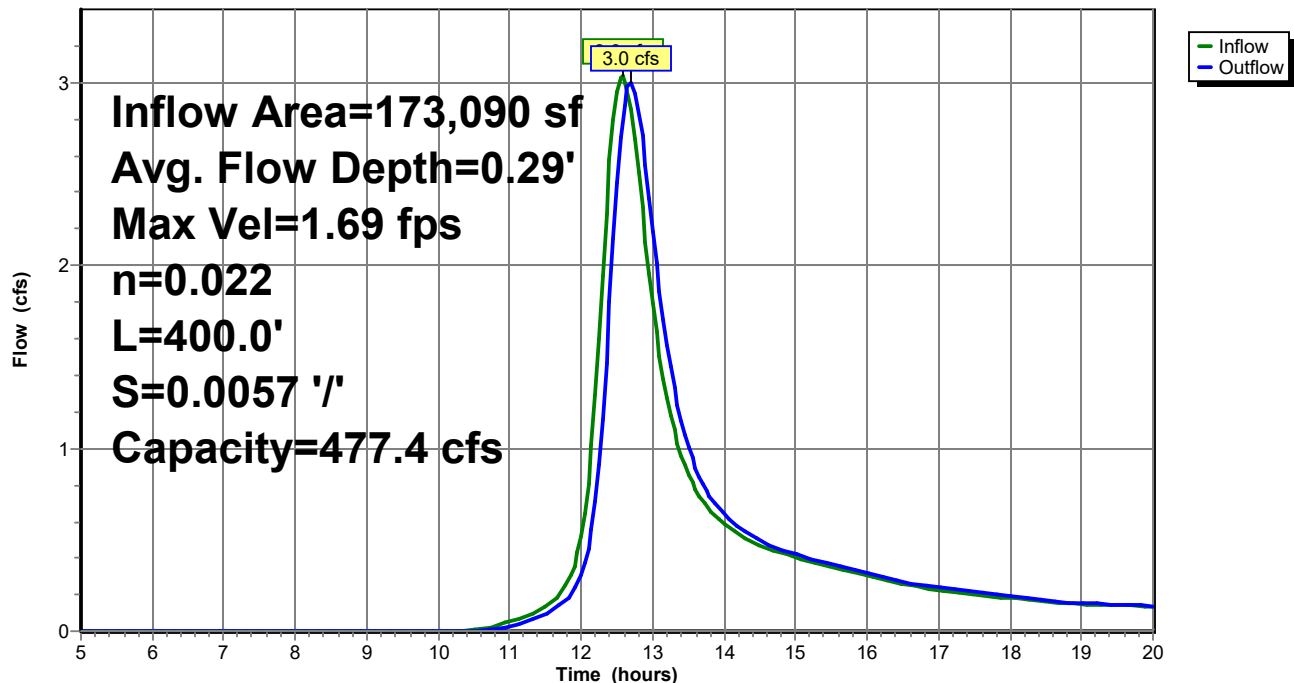
Peak Storage= 710 cf @ 12.63 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 3.00' Flow Area= 60.0 sf, Capacity= 477.4 cfs

30.00' x 3.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 400.0' Slope= 0.0057 '/'
Inlet Invert= 34.08', Outlet Invert= 31.80'



Reach R1:

Hydrograph



Pre-Development

Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 1.14" for 2-Year event
 Inflow = 15.7 cfs @ 13.50 hrs, Volume= 205,469 cf
 Outflow = 12.9 cfs @ 14.37 hrs, Volume= 202,711 cf, Atten= 18%, Lag= 52.0 min
 Primary = 12.9 cfs @ 14.37 hrs, Volume= 202,711 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 33.54' @ 14.37 hrs Surf.Area= 55,714 sf Storage= 31,873 cf
 Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 32.8 min calculated for 202,711 cf (99% of inflow)
 Center-of-Mass det. time= 28.7 min (918.6 - 889.8)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=12.9 cfs @ 14.37 hrs HW=33.54' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 12.9 cfs @ 3.54 fps)

Pre-Development

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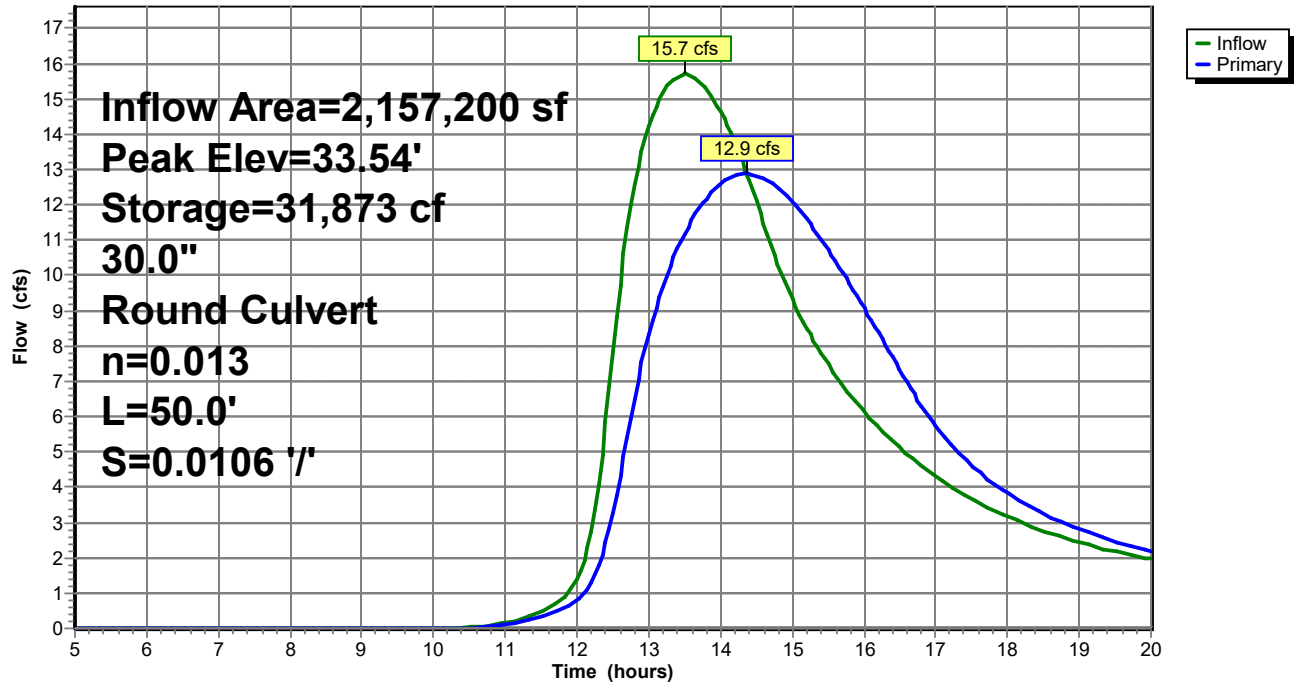
Type III 24-hr 2-Year Rainfall=3.30"

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Pond C1:

Hydrograph



Pre-Development

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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 3.0 cfs @ 12.57 hrs, Volume= 17,649 cf
Outflow = 3.0 cfs @ 12.58 hrs, Volume= 17,569 cf, Atten= 0%, Lag= 0.2 min
Primary = 3.0 cfs @ 12.58 hrs, Volume= 17,569 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.64' @ 12.58 hrs Surf.Area= 400 sf Storage= 148 cf
Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 3.1 min calculated for 17,569 cf (100% of inflow)
Center-of-Mass det. time= 1.4 min (834.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=3.0 cfs @ 12.58 hrs HW=34.64' (Free Discharge)

1=Culvert (Inlet Controls 0.4 cfs @ 1.63 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.6 cfs @ 0.93 fps)

Pre-Development

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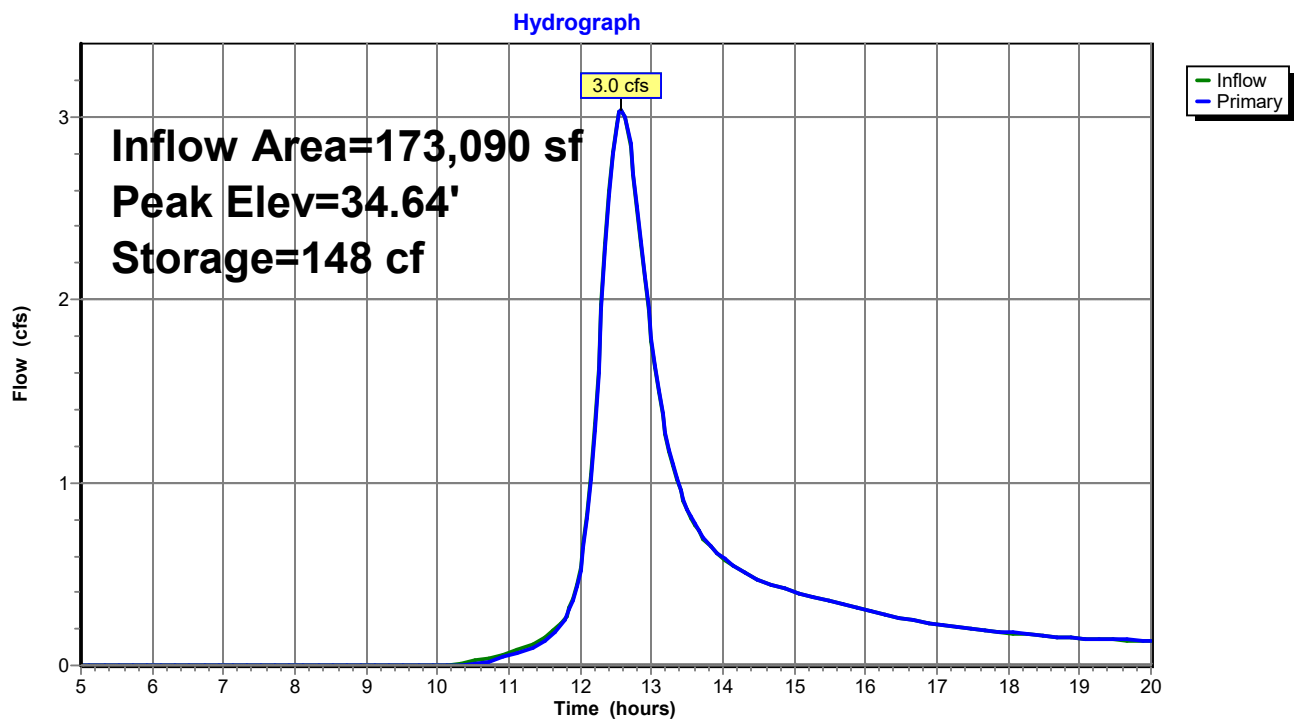
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Type III 24-hr 2-Year Rainfall=3.30"

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Pond C2:



Pre-Development

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Type III 24-hr 2-Year Rainfall=3.30"

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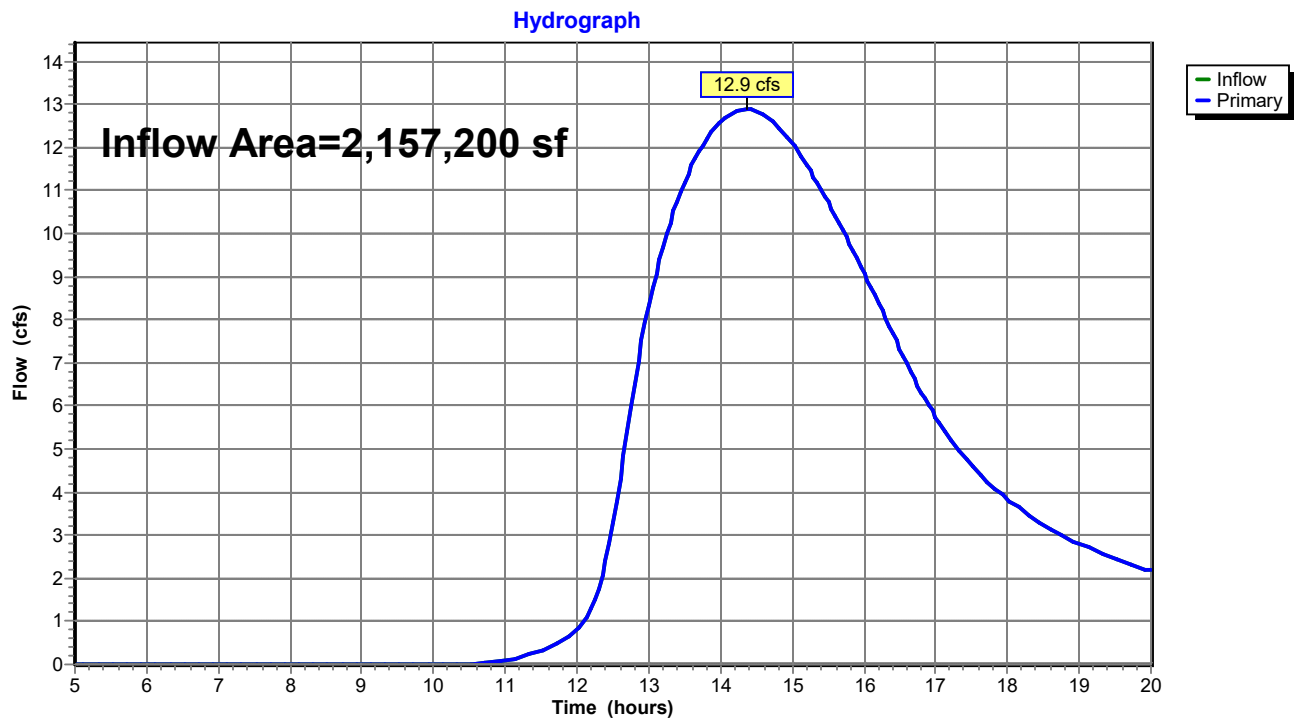
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Summary for Link AP1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 1.13" for 2-Year event
Inflow = 12.9 cfs @ 14.37 hrs, Volume= 202,711 cf
Primary = 12.9 cfs @ 14.37 hrs, Volume= 202,711 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



Pre-Development

Type III 24-hr 10-Year Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0: Runoff Area=340,010 sf 3.56% Impervious Runoff Depth>2.46"
Flow Length=1,502' Slope=0.0167 '/' Tc=80.2 min CN=79 Runoff=8.2 cfs 69,836 cf

Subcatchment 1.1: Runoff Area=1,475,335 sf 0.72% Impervious Runoff Depth>2.23"
Flow Length=1,450' Tc=136.8 min CN=77 Runoff=22.9 cfs 274,704 cf

Subcatchment 1.2: Runoff Area=168,765 sf 2.53% Impervious Runoff Depth>2.32"
Flow Length=765' Tc=57.4 min CN=77 Runoff=4.6 cfs 32,592 cf

Subcatchment 1.3: Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>2.42"
Flow Length=690' Tc=39.7 min CN=78 Runoff=6.0 cfs 34,870 cf

Reach R1: Avg. Flow Depth=0.40' Max Vel=2.09 fps Inflow=6.0 cfs 34,774 cf
n=0.022 L=400.0' S=0.0057 '/' Capacity=477.4 cfs Outflow=6.0 cfs 34,611 cf

Pond C1: Peak Elev=34.31' Storage=96,691 cf Inflow=31.9 cfs 411,742 cf
30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=21.0 cfs 405,951 cf

Pond C2: Peak Elev=34.73' Storage=183 cf Inflow=6.0 cfs 34,870 cf
Outflow=6.0 cfs 34,774 cf

Link AP1: Inflow=21.0 cfs 405,951 cf
Primary=21.0 cfs 405,951 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 412,001 cf Average Runoff Depth = 2.29"
98.27% Pervious = 2,119,870 sf 1.73% Impervious = 37,330 sf

Pre-Development

Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.0:

Runoff = 8.2 cfs @ 13.09 hrs, Volume= 69,836 cf, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
6,265	70	Woods, Good, HSG C
20,930	77	Woods, Good, HSG D
168,410	78	Meadow, non-grazed, HSG D
132,305	80	>75% Grass cover, Good, HSG D
12,100	98	Paved parking, HSG D
340,010	79	Weighted Average
327,910		96.44% Pervious Area
12,100		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
8.6	600	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
80.2	1,502	Total			

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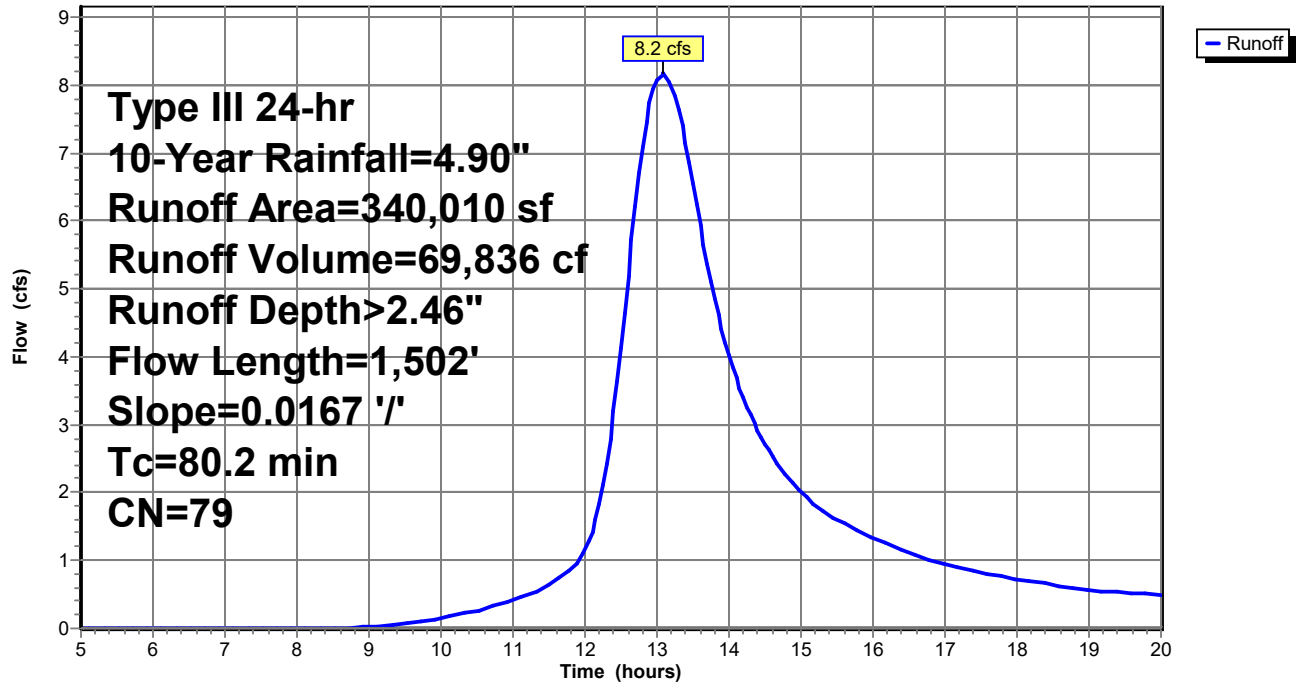
Type III 24-hr 10-Year Rainfall=4.90"

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Subcatchment 1.0:

Hydrograph



Pre-Development

Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.1:

Runoff = 22.9 cfs @ 13.84 hrs, Volume= 274,704 cf, Depth> 2.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
118,320	70	Woods, Good, HSG C
1,145,650	77	Woods, Good, HSG D
2,375	71	Meadow, non-grazed, HSG C
174,000	78	Meadow, non-grazed, HSG D
24,340	80	>75% Grass cover, Good, HSG D
10,650	98	Paved parking, HSG D
1,475,335	77	Weighted Average
1,464,685		99.28% Pervious Area
10,650		0.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.9	565	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
136.8	1,450	Total			

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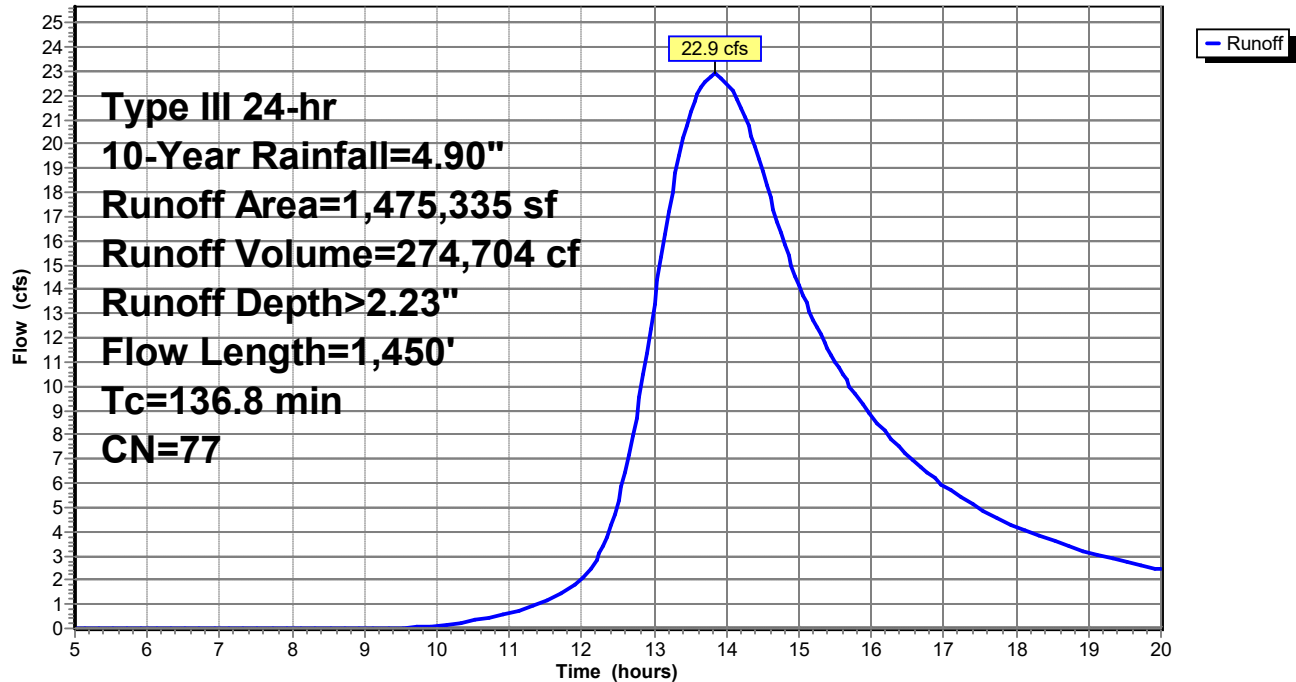
Type III 24-hr 10-Year Rainfall=4.90"

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Subcatchment 1.1:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.2:

Runoff = 4.6 cfs @ 12.79 hrs, Volume= 32,592 cf, Depth> 2.32"

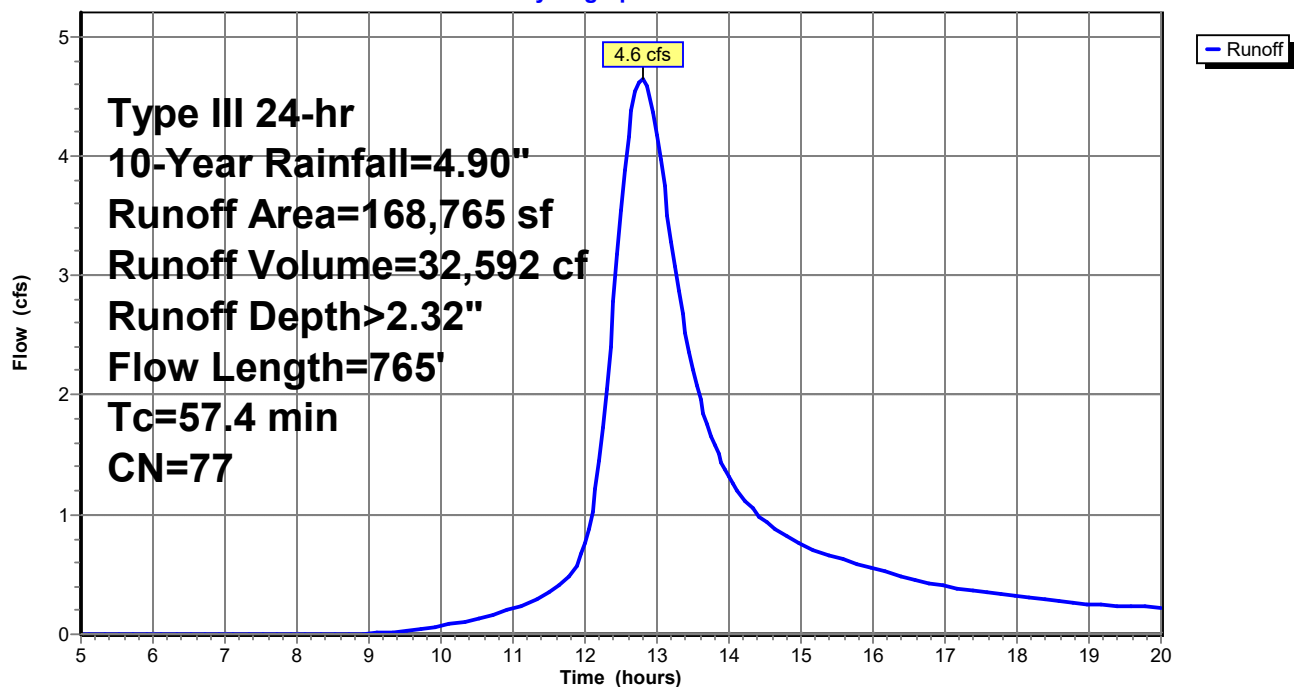
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
22,320	70	Woods, Good, HSG C
7,035	77	Woods, Good, HSG D
90	71	Meadow, non-grazed, HSG C
135,050	78	Meadow, non-grazed, HSG D
4,270	98	Paved parking, HSG D
168,765	77	Weighted Average
164,495		97.47% Pervious Area
4,270		2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.4	65	0.0067	0.03		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
2.0	70	0.0570	0.60		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
15.0	630	0.0100	0.70		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
57.4	765	Total			

Subcatchment 1.2:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.3:

Runoff = 6.0 cfs @ 12.55 hrs, Volume= 34,870 cf, Depth> 2.42"

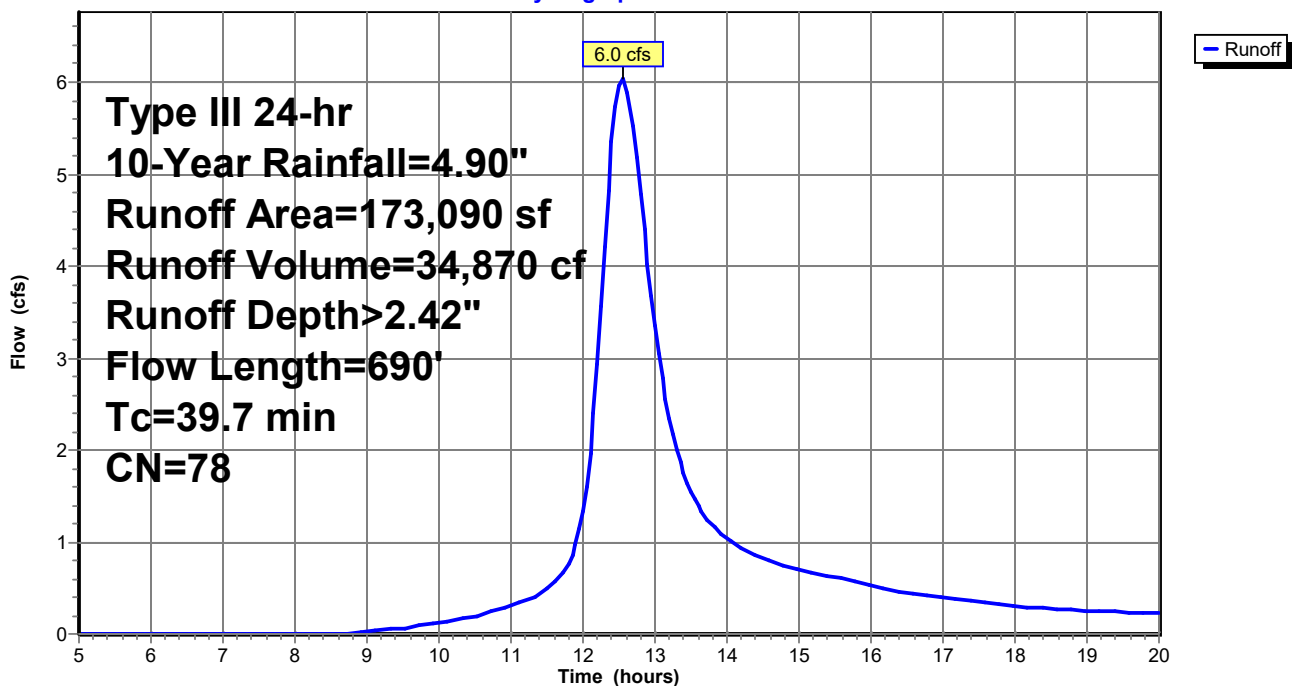
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
14,450	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.3:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Reach R1:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 2.41" for 10-Year event
Inflow = 6.0 cfs @ 12.56 hrs, Volume= 34,774 cf
Outflow = 6.0 cfs @ 12.65 hrs, Volume= 34,611 cf, Atten= 1%, Lag= 5.5 min

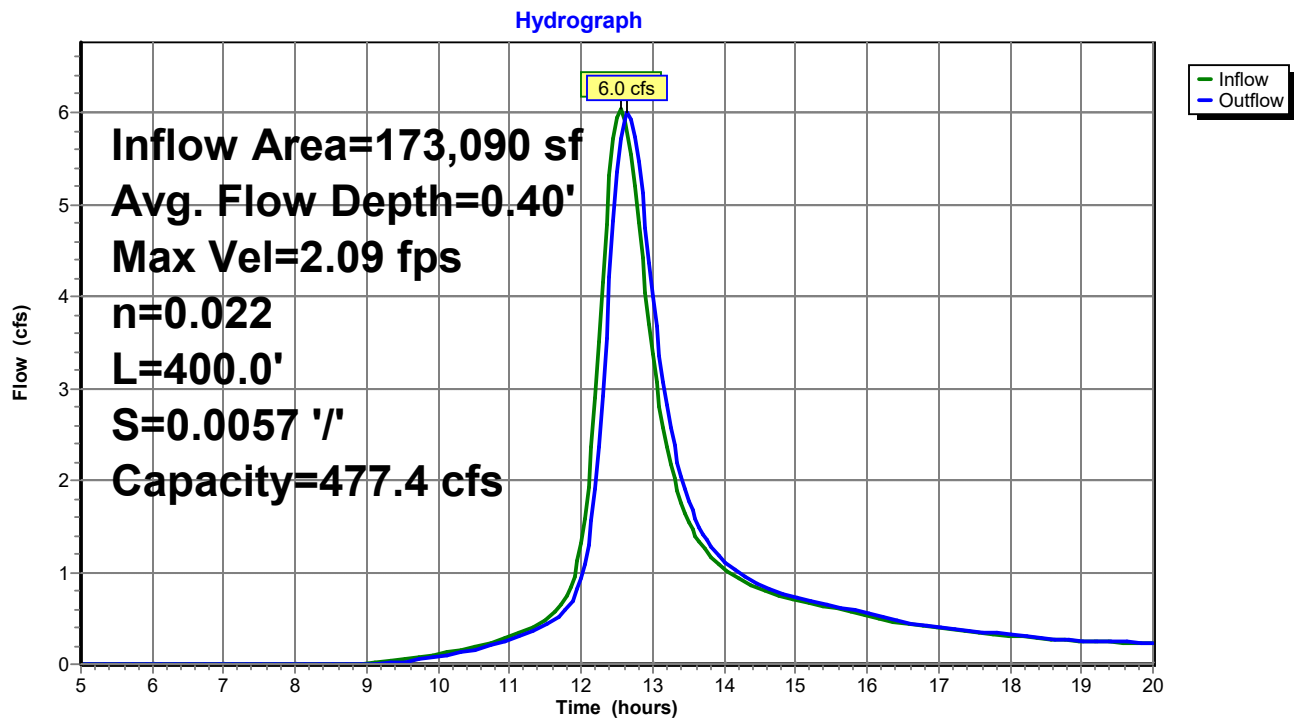
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.09 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 0.98 fps, Avg. Travel Time= 6.8 min

Peak Storage= 1,148 cf @ 12.60 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 3.00' Flow Area= 60.0 sf, Capacity= 477.4 cfs

30.00' x 3.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 400.0' Slope= 0.0057 '/'
Inlet Invert= 34.08', Outlet Invert= 31.80'



Reach R1:



Pre-Development

Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 2.29" for 10-Year event
 Inflow = 31.9 cfs @ 13.42 hrs, Volume= 411,742 cf
 Outflow = 21.0 cfs @ 14.69 hrs, Volume= 405,951 cf, Atten= 34%, Lag= 76.3 min
 Primary = 21.0 cfs @ 14.69 hrs, Volume= 405,951 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.31' @ 14.69 hrs Surf.Area= 119,174 sf Storage= 96,691 cf
 Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 55.2 min calculated for 405,951 cf (99% of inflow)
 Center-of-Mass det. time= 50.8 min (927.2 - 876.5)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=21.0 cfs @ 14.69 hrs HW=34.31' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 21.0 cfs @ 4.27 fps)

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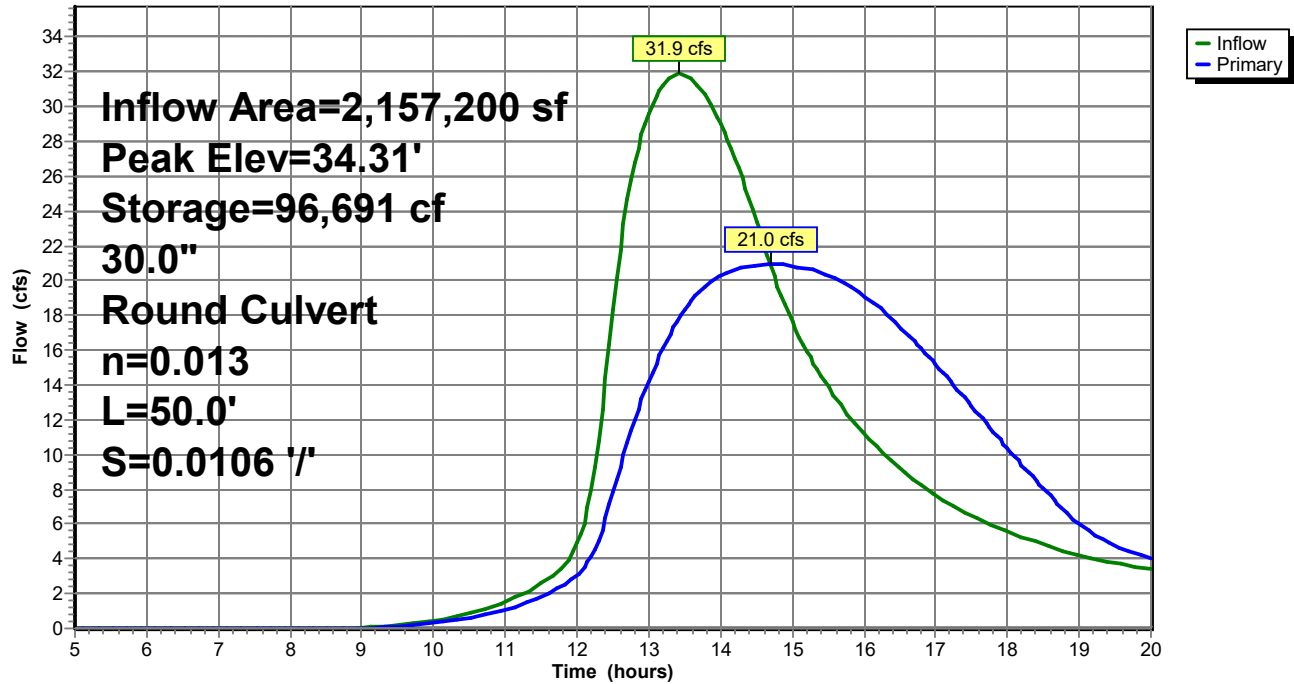
Type III 24-hr 10-Year Rainfall=4.90"

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Pond C1:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 2.42" for 10-Year event
 Inflow = 6.0 cfs @ 12.55 hrs, Volume= 34,870 cf
 Outflow = 6.0 cfs @ 12.56 hrs, Volume= 34,774 cf, Atten= 0%, Lag= 0.2 min
 Primary = 6.0 cfs @ 12.56 hrs, Volume= 34,774 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.73' @ 12.56 hrs Surf.Area= 400 sf Storage= 183 cf

Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 1.9 min calculated for 34,659 cf (99% of inflow)

Center-of-Mass det. time= 0.9 min (819.5 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=6.0 cfs @ 12.56 hrs HW=34.73' (Free Discharge)

1=Culvert (Barrel Controls 0.6 cfs @ 2.64 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 5.4 cfs @ 1.19 fps)

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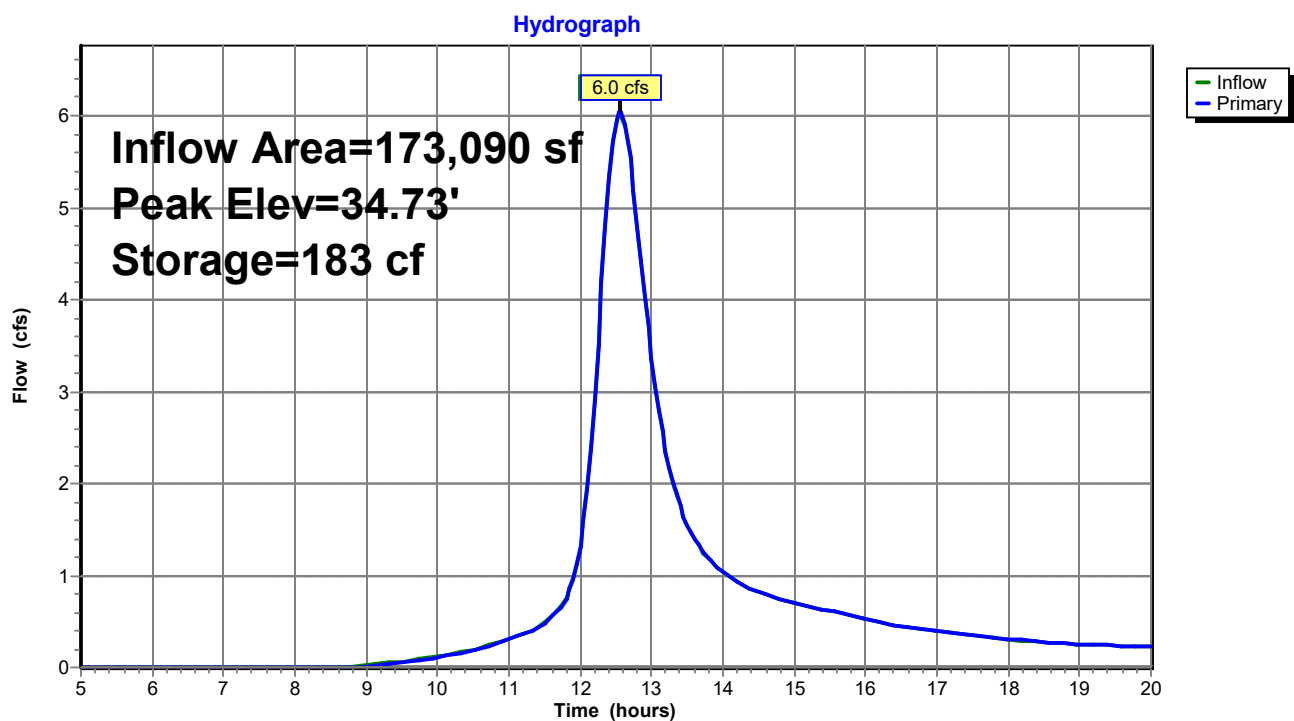
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Type III 24-hr 10-Year Rainfall=4.90"

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Pond C2:



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Type III 24-hr 10-Year Rainfall=4.90"

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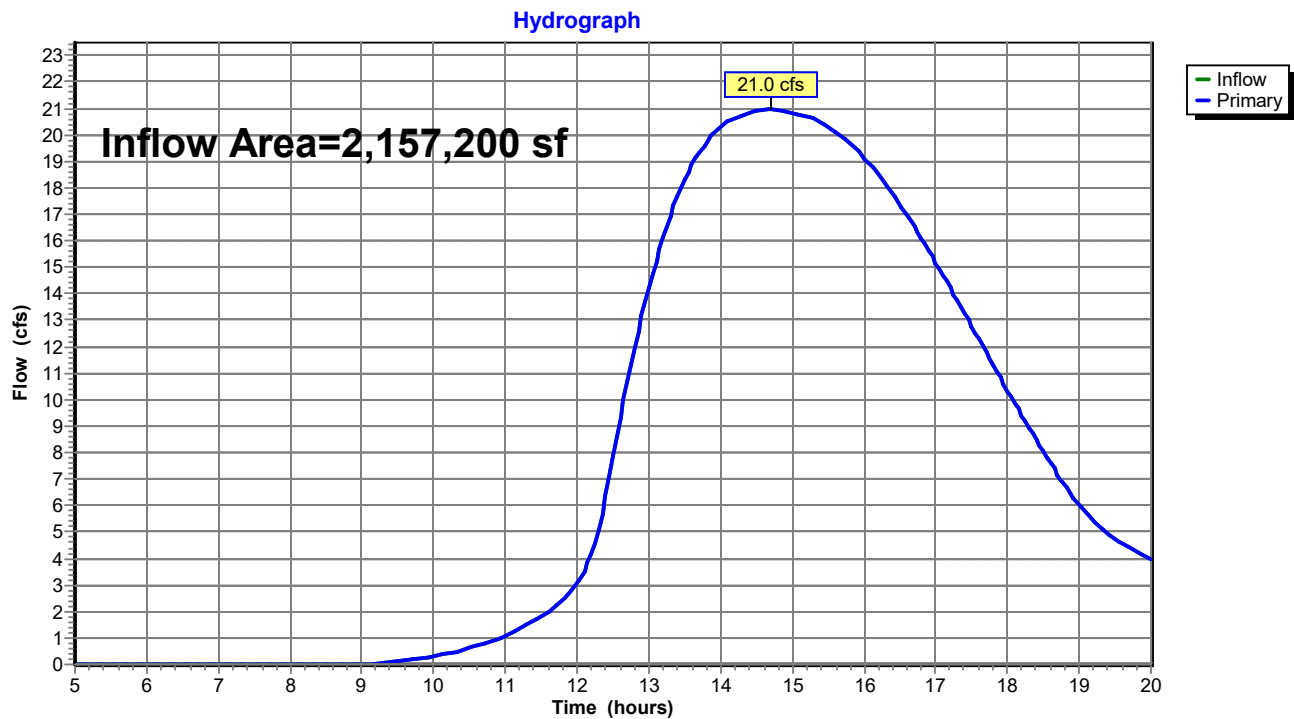
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Summary for Link AP1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 2.26" for 10-Year event
Inflow = 21.0 cfs @ 14.69 hrs, Volume= 405,951 cf
Primary = 21.0 cfs @ 14.69 hrs, Volume= 405,951 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



Pre-Development

Type III 24-hr 25-Year Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0: Runoff Area=340,010 sf 3.56% Impervious Runoff Depth>3.53"
Flow Length=1,502' Slope=0.0167 '/' Tc=80.2 min CN=79 Runoff=11.6 cfs 99,882 cf

Subcatchment 1.1: Runoff Area=1,475,335 sf 0.72% Impervious Runoff Depth>3.25"
Flow Length=1,450' Tc=136.8 min CN=77 Runoff=33.2 cfs 398,963 cf

Subcatchment 1.2: Runoff Area=168,765 sf 2.53% Impervious Runoff Depth>3.36"
Flow Length=765' Tc=57.4 min CN=77 Runoff=6.7 cfs 47,209 cf

Subcatchment 1.3: Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>3.48"
Flow Length=690' Tc=39.7 min CN=78 Runoff=8.6 cfs 50,147 cf

Reach R1: Avg. Flow Depth=0.47' Max Vel=2.34 fps Inflow=8.6 cfs 50,049 cf
n=0.022 L=400.0' S=0.0057 '/' Capacity=477.4 cfs Outflow=8.6 cfs 49,851 cf

Pond C1: Peak Elev=34.86' Storage=177,386 cf Inflow=46.1 cfs 595,905 cf
30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=25.1 cfs 580,476 cf

Pond C2: Peak Elev=34.79' Storage=208 cf Inflow=8.6 cfs 50,147 cf
Outflow=8.6 cfs 50,049 cf

Link AP1: Inflow=25.1 cfs 580,476 cf
Primary=25.1 cfs 580,476 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 596,201 cf Average Runoff Depth = 3.32"
98.27% Pervious = 2,119,870 sf 1.73% Impervious = 37,330 sf

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.0:

Runoff = 11.6 cfs @ 13.08 hrs, Volume= 99,882 cf, Depth> 3.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
6,265	70	Woods, Good, HSG C
20,930	77	Woods, Good, HSG D
168,410	78	Meadow, non-grazed, HSG D
132,305	80	>75% Grass cover, Good, HSG D
12,100	98	Paved parking, HSG D
340,010	79	Weighted Average
327,910		96.44% Pervious Area
12,100		3.56% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
8.6	600	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
80.2	1,502	Total			

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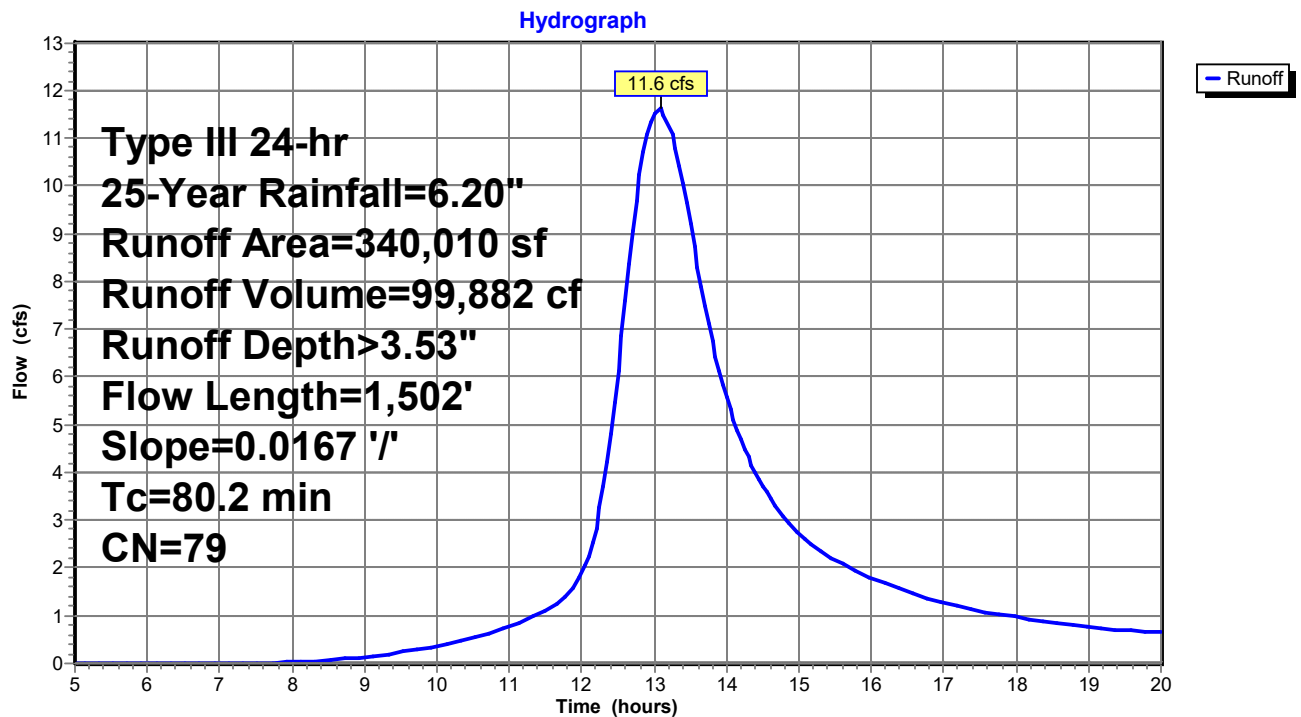
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Type III 24-hr 25-Year Rainfall=6.20"

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Subcatchment 1.0:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.1:

Runoff = 33.2 cfs @ 13.83 hrs, Volume= 398,963 cf, Depth> 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
118,320	70	Woods, Good, HSG C
1,145,650	77	Woods, Good, HSG D
2,375	71	Meadow, non-grazed, HSG C
174,000	78	Meadow, non-grazed, HSG D
24,340	80	>75% Grass cover, Good, HSG D
10,650	98	Paved parking, HSG D
1,475,335	77	Weighted Average
1,464,685		99.28% Pervious Area
10,650		0.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
14.9	565	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
136.8	1,450	Total			

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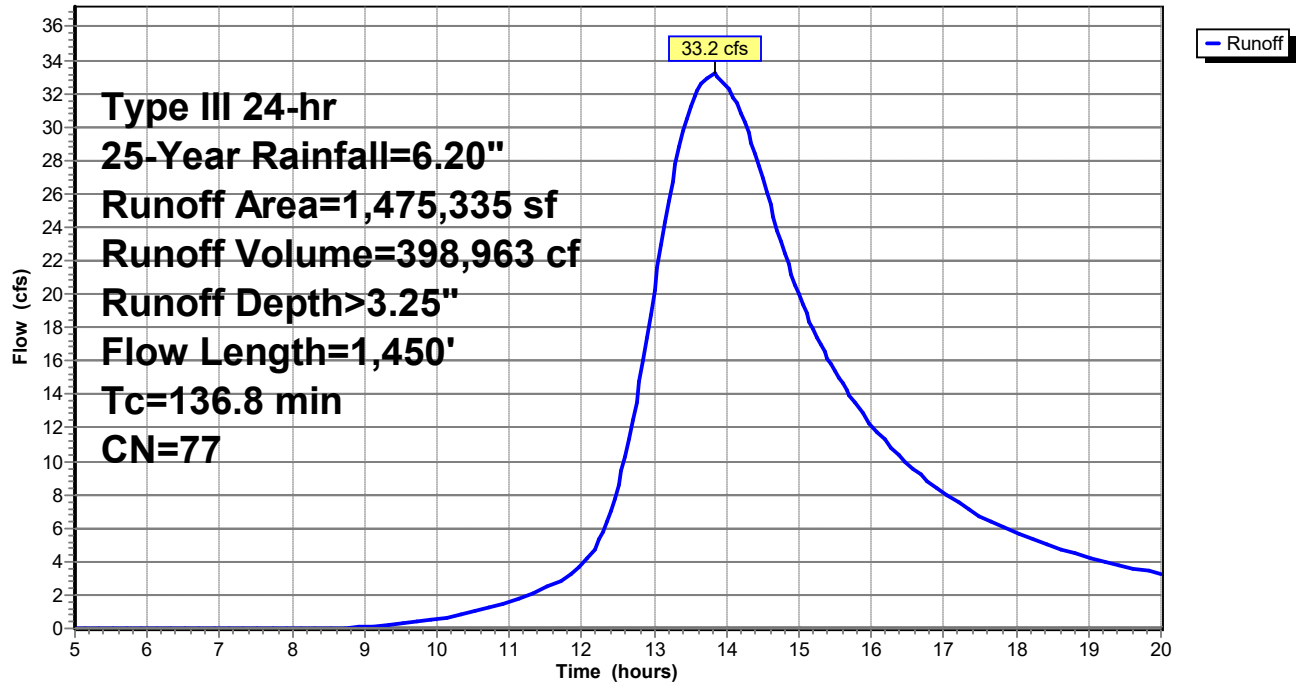
Type III 24-hr 25-Year Rainfall=6.20"

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Subcatchment 1.1:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.2:

Runoff = 6.7 cfs @ 12.78 hrs, Volume= 47,209 cf, Depth> 3.36"

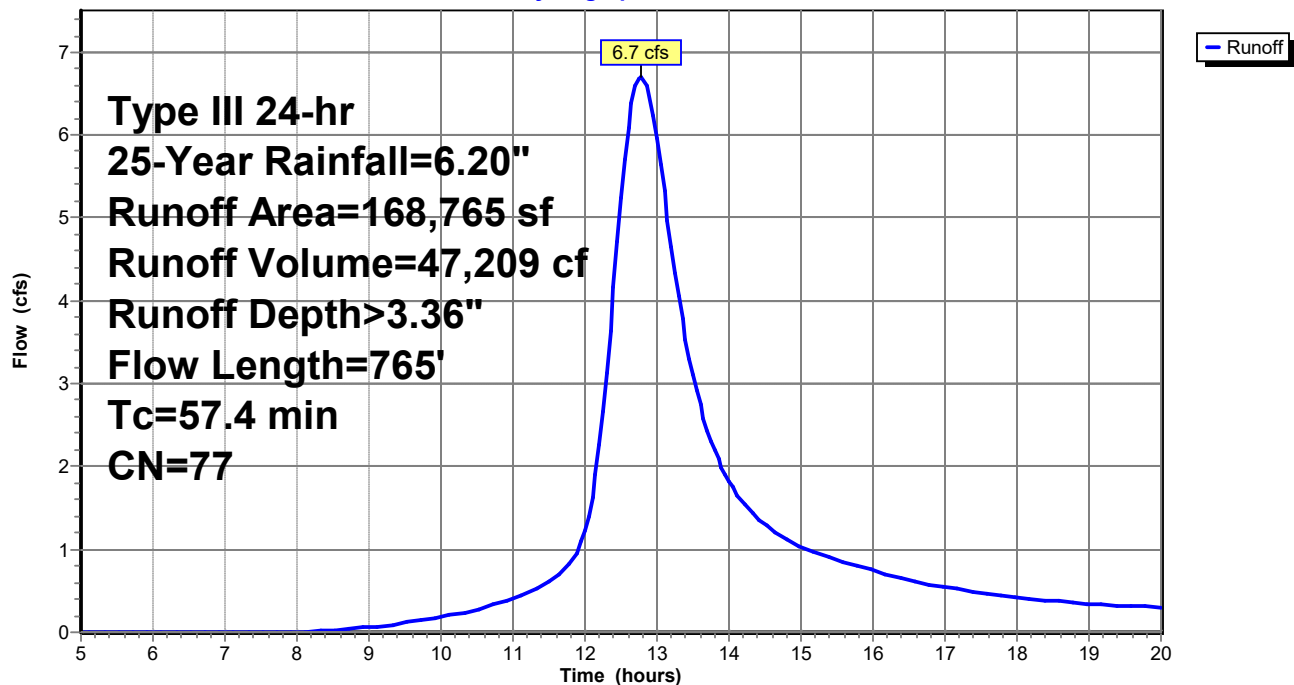
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
22,320	70	Woods, Good, HSG C
7,035	77	Woods, Good, HSG D
90	71	Meadow, non-grazed, HSG C
135,050	78	Meadow, non-grazed, HSG D
4,270	98	Paved parking, HSG D
168,765	77	Weighted Average
164,495		97.47% Pervious Area
4,270		2.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.4	65	0.0067	0.03		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
2.0	70	0.0570	0.60		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
15.0	630	0.0100	0.70		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
57.4	765	Total			

Subcatchment 1.2:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.3:

Runoff = 8.6 cfs @ 12.55 hrs, Volume= 50,147 cf, Depth> 3.48"

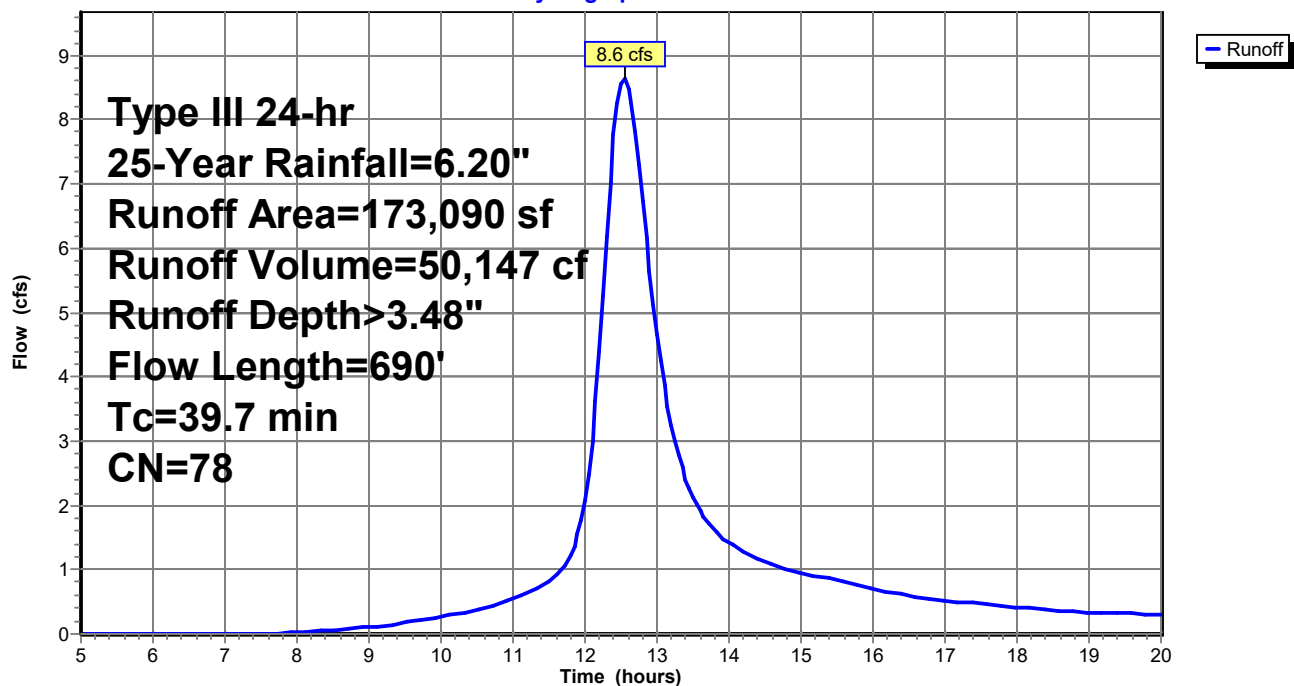
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
14,450	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.3:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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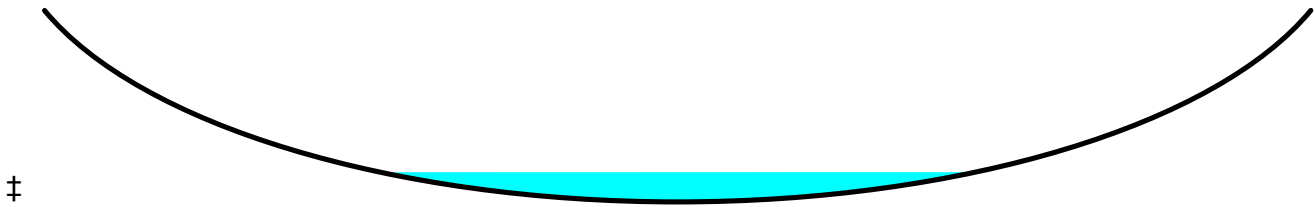
Summary for Reach R1:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 3.47" for 25-Year event
Inflow = 8.6 cfs @ 12.55 hrs, Volume= 50,049 cf
Outflow = 8.6 cfs @ 12.63 hrs, Volume= 49,851 cf, Atten= 1%, Lag= 4.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.34 fps, Min. Travel Time= 2.9 min
Avg. Velocity= 1.06 fps, Avg. Travel Time= 6.3 min

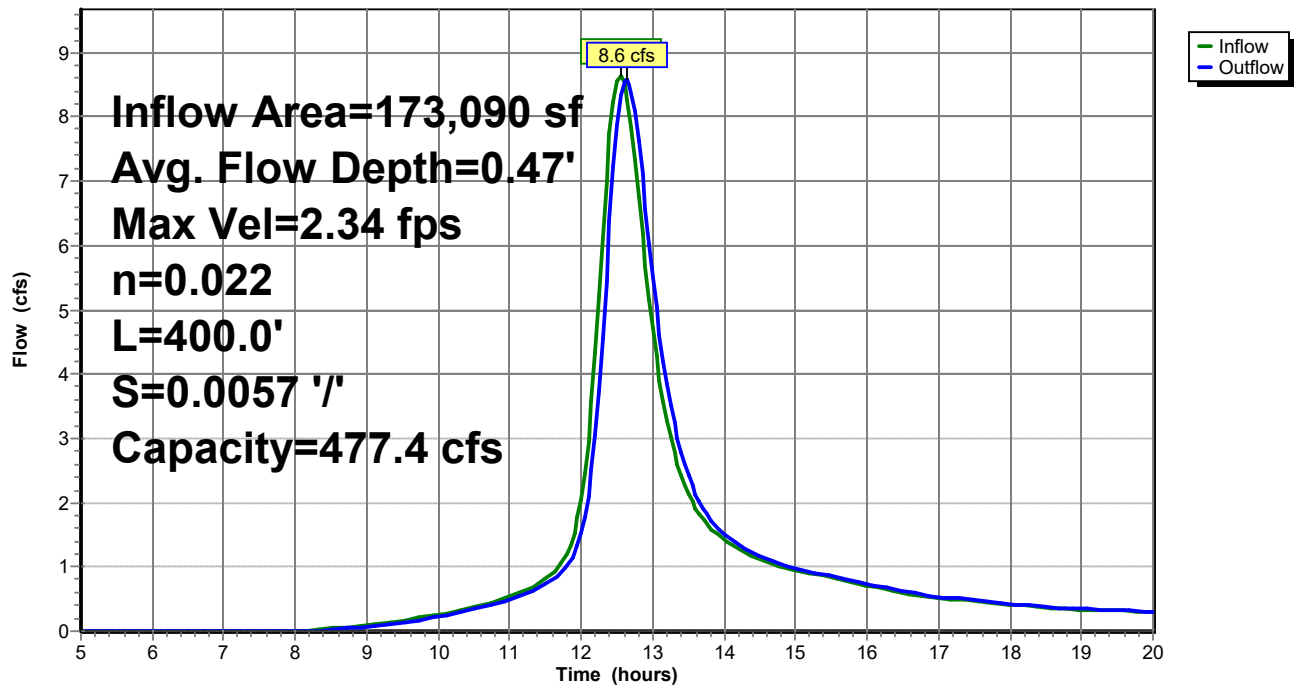
Peak Storage= 1,472 cf @ 12.58 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 3.00' Flow Area= 60.0 sf, Capacity= 477.4 cfs

30.00' x 3.00' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 400.0' Slope= 0.0057 '/'
Inlet Invert= 34.08', Outlet Invert= 31.80'



Reach R1:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 3.31" for 25-Year event
 Inflow = 46.1 cfs @ 13.40 hrs, Volume= 595,905 cf
 Outflow = 25.1 cfs @ 14.97 hrs, Volume= 580,476 cf, Atten= 46%, Lag= 94.6 min
 Primary = 25.1 cfs @ 14.97 hrs, Volume= 580,476 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.86' @ 14.97 hrs Surf.Area= 177,287 sf Storage= 177,386 cf
 Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 82.3 min calculated for 578,547 cf (97% of inflow)
 Center-of-Mass det. time= 74.1 min (943.1 - 869.0)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=25.1 cfs @ 14.97 hrs HW=34.86' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 25.1 cfs @ 5.11 fps)

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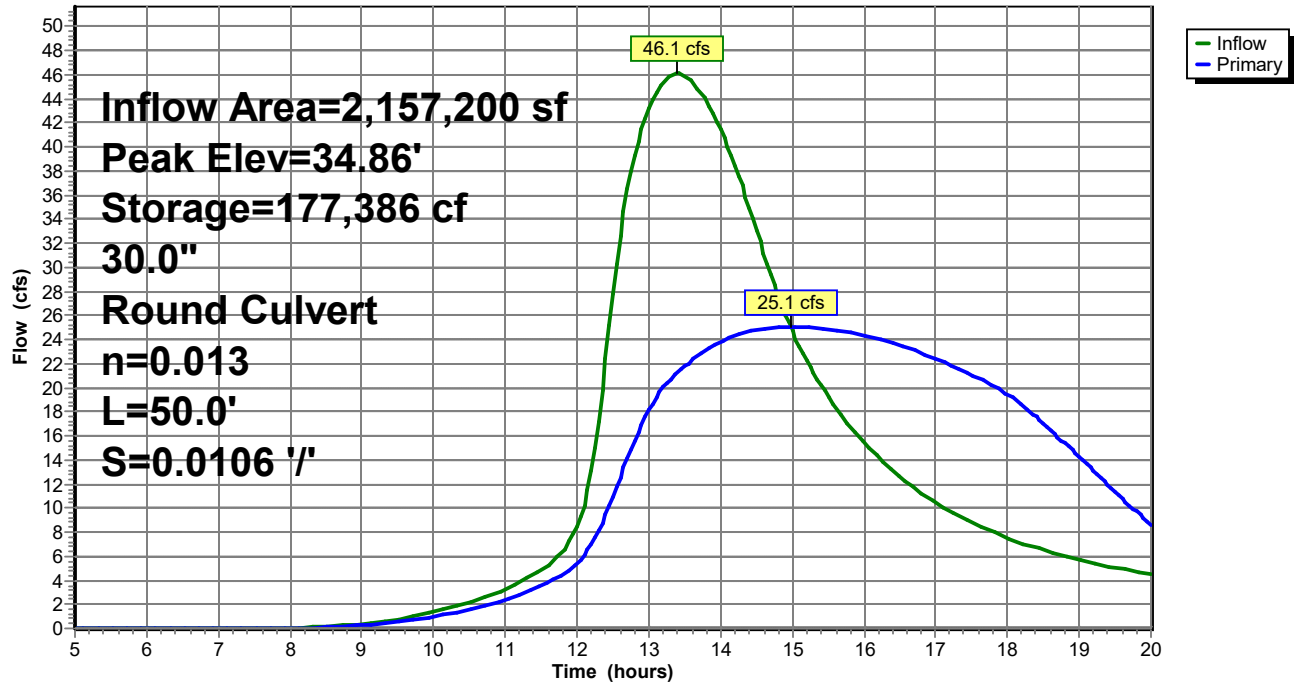
Type III 24-hr 25-Year Rainfall=6.20"

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Pond C1:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 3.48" for 25-Year event
Inflow = 8.6 cfs @ 12.55 hrs, Volume= 50,147 cf
Outflow = 8.6 cfs @ 12.55 hrs, Volume= 50,049 cf, Atten= 0%, Lag= 0.2 min
Primary = 8.6 cfs @ 12.55 hrs, Volume= 50,049 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.79' @ 12.55 hrs Surf.Area= 400 sf Storage= 208 cf
Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 1.5 min calculated for 49,883 cf (99% of inflow)
Center-of-Mass det. time= 0.8 min (811.2 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=8.6 cfs @ 12.55 hrs HW=34.79' (Free Discharge)

1=Culvert (Barrel Controls 0.8 cfs @ 2.76 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 7.9 cfs @ 1.36 fps)

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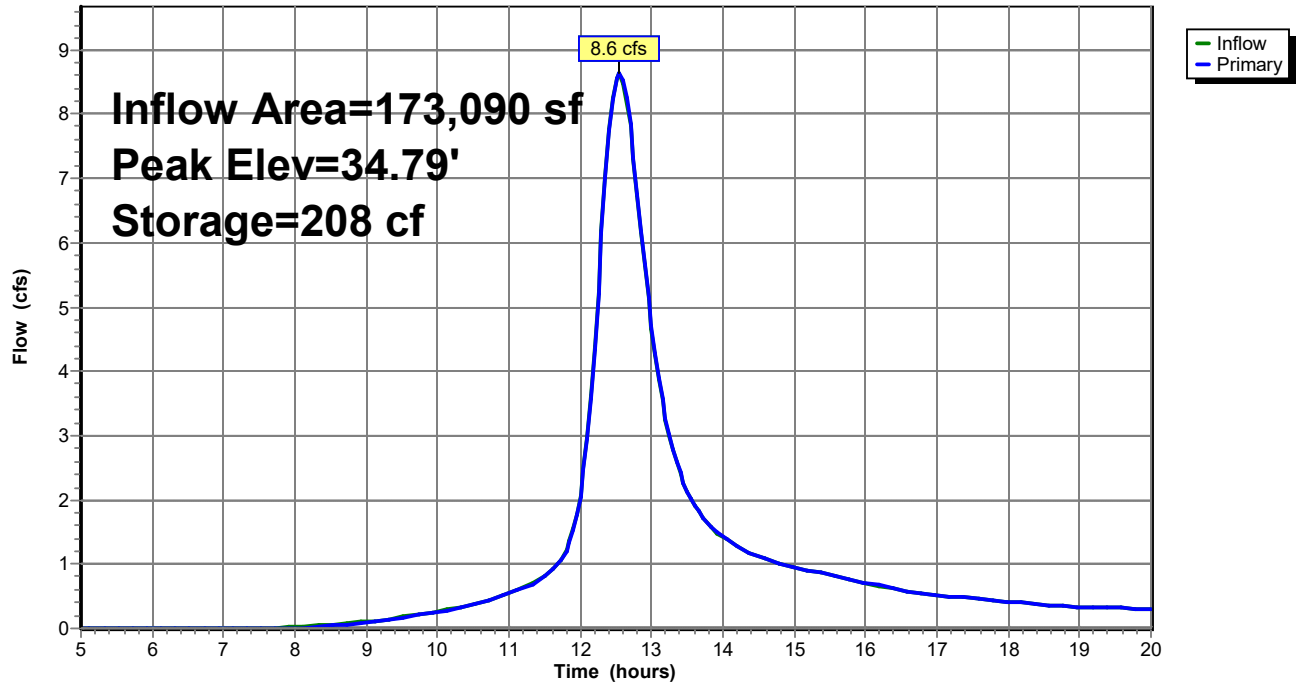
Type III 24-hr 25-Year Rainfall=6.20"

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Pond C2:

Hydrograph



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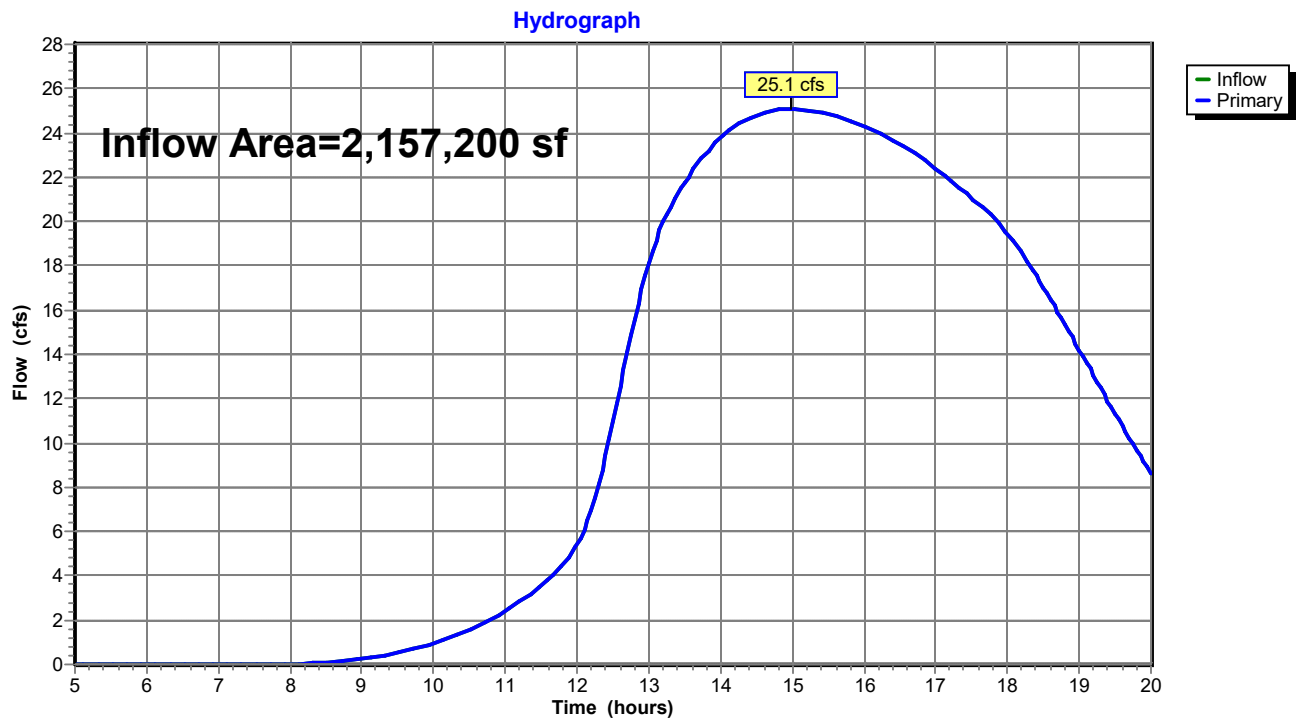
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Summary for Link AP1:

Inflow Area = 2,157,200 sf, 1.73% Impervious, Inflow Depth > 3.23" for 25-Year event
Inflow = 25.1 cfs @ 14.97 hrs, Volume= 580,476 cf
Primary = 25.1 cfs @ 14.97 hrs, Volume= 580,476 cf, Atten= 0%, Lag= 0.0 min

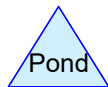
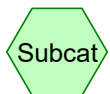
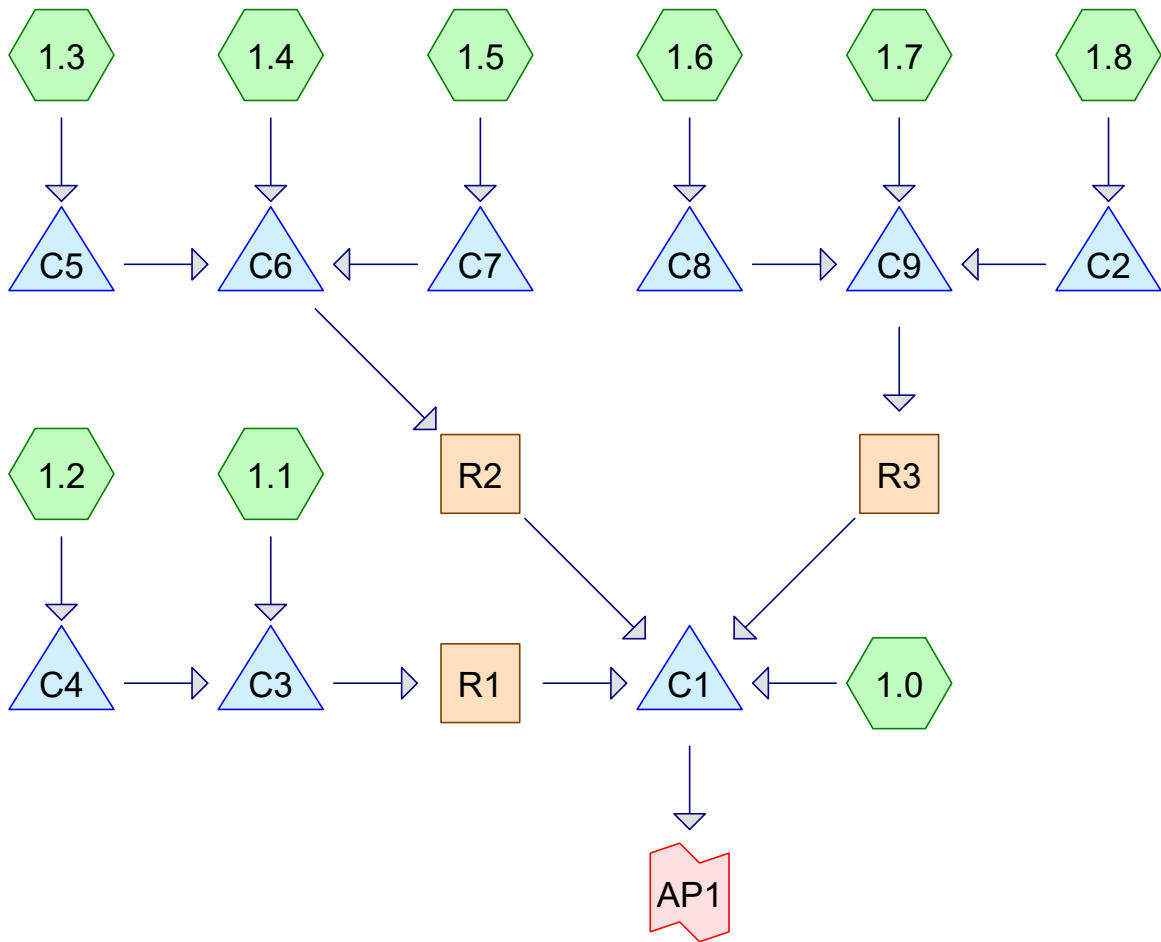
Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



Appendix B

Post Development HydroCAD Report



Routing Diagram for Post Development
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Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
9,985	74	>75% Grass cover, Good, HSG C (1.2, 1.4, 1.6, 1.8)
291,545	80	>75% Grass cover, Good, HSG D (1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7)
4,090	71	Meadow, non-grazed, HSG C (1.2, 1.4)
314,110	78	Meadow, non-grazed, HSG D (1.0, 1.1, 1.2, 1.4, 1.7, 1.8)
73,070	98	Paved parking, HSG D (1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8)
149,575	70	Woods, Good, HSG C (1.4, 1.6, 1.8)
1,314,825	77	Woods, Good, HSG D (1.0, 1.1, 1.4, 1.6, 1.7, 1.8)
2,157,200	78	TOTAL AREA

Post Development

Type III 24-hr 2-Year Rainfall=3.30"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0:	Runoff Area=93,065 sf 23.24% Impervious Runoff Depth>1.57" Flow Length=316' Tc=7.7 min CN=83 Runoff=3.9 cfs 12,188 cf
Subcatchment 1.1:	Runoff Area=225,475 sf 5.35% Impervious Runoff Depth>1.33" Flow Length=1,232' Slope=0.0167 '/' Tc=76.3 min CN=80 Runoff=3.0 cfs 24,967 cf
Subcatchment 1.2:	Runoff Area=51,750 sf 4.53% Impervious Runoff Depth>1.29" Flow Length=810' Tc=24.6 min CN=79 Runoff=1.2 cfs 5,579 cf
Subcatchment 1.3:	Runoff Area=9,380 sf 23.88% Impervious Runoff Depth>1.64" Tc=6.0 min CN=84 Runoff=0.4 cfs 1,286 cf
Subcatchment 1.4:	Runoff Area=1,549,650 sf 1.07% Impervious Runoff Depth>1.11" Flow Length=1,265' Tc=131.9 min CN=77 Runoff=12.0 cfs 143,293 cf
Subcatchment 1.5:	Runoff Area=10,510 sf 19.27% Impervious Runoff Depth>1.57" Tc=6.0 min CN=83 Runoff=0.5 cfs 1,377 cf
Subcatchment 1.6:	Runoff Area=25,645 sf 8.42% Impervious Runoff Depth>1.36" Flow Length=258' Tc=25.1 min CN=80 Runoff=0.6 cfs 2,901 cf
Subcatchment 1.7:	Runoff Area=18,635 sf 19.64% Impervious Runoff Depth>1.57" Tc=6.0 min CN=83 Runoff=0.8 cfs 2,442 cf
Subcatchment 1.8:	Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>1.22" Flow Length=690' Tc=39.7 min CN=78 Runoff=3.0 cfs 17,649 cf
Reach R1:	Avg. Flow Depth=0.22' Max Vel=1.99 fps Inflow=3.3 cfs 30,506 cf n=0.022 L=225.0' S=0.0116 '/' Capacity=216.9 cfs Outflow=3.3 cfs 30,420 cf
Reach R2:	Avg. Flow Depth=0.49' Max Vel=2.14 fps Inflow=12.0 cfs 145,841 cf n=0.022 L=135.0' S=0.0044 '/' Capacity=134.5 cfs Outflow=12.0 cfs 145,569 cf
Reach R3:	Avg. Flow Depth=0.28' Max Vel=1.33 fps Inflow=3.3 cfs 22,811 cf n=0.022 L=280.0' S=0.0036 '/' Capacity=120.6 cfs Outflow=3.3 cfs 22,684 cf
Pond C1:	Peak Elev=33.54' Storage=31,954 cf Inflow=15.6 cfs 210,861 cf 30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=12.9 cfs 208,084 cf
Pond C2:	Peak Elev=34.64' Storage=148 cf Inflow=3.0 cfs 17,649 cf Outflow=3.0 cfs 17,569 cf
Pond C3:	Peak Elev=35.61' Storage=1,350 cf Inflow=3.3 cfs 30,539 cf 15.0" Round Culvert x 2.00 n=0.013 L=48.0' S=0.0104 '/' Outflow=3.3 cfs 30,506 cf
Pond C4:	Peak Elev=36.49' Storage=136 cf Inflow=1.2 cfs 5,579 cf 15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=1.2 cfs 5,571 cf

Post Development

Type III 24-hr 2-Year Rainfall=3.30"

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Pond C5: Peak Elev=34.54' Storage=36 cf Inflow=0.4 cfs 1,286 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=0.4 cfs 1,285 cf

Pond C6: Peak Elev=34.12' Storage=1,782 cf Inflow=12.0 cfs 145,954 cf
36.0" Round Culvert w/ 6.0" inside fill x 2.00 n=0.013 L=45.0' S=0.0067 '/' Outflow=12.0 cfs 145,841 cf

Pond C7: Peak Elev=34.54' Storage=71 cf Inflow=0.5 cfs 1,377 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=0.4 cfs 1,376 cf

Pond C8: Peak Elev=34.20' Storage=118 cf Inflow=0.6 cfs 2,901 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0094 '/' Outflow=0.6 cfs 2,899 cf

Pond C9: Peak Elev=33.92' Storage=2,280 cf Inflow=3.7 cfs 22,911 cf
15.0" Round Culvert x 2.00 n=0.013 L=36.0' S=0.0111 '/' Outflow=3.3 cfs 22,811 cf

Link AP1: Inflow=12.9 cfs 208,084 cf
Primary=12.9 cfs 208,084 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 211,683 cf Average Runoff Depth = 1.18"
96.61% Pervious = 2,084,130 sf 3.39% Impervious = 73,070 sf

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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.0:

Runoff = 3.9 cfs @ 12.11 hrs, Volume= 12,188 cf, Depth> 1.57"

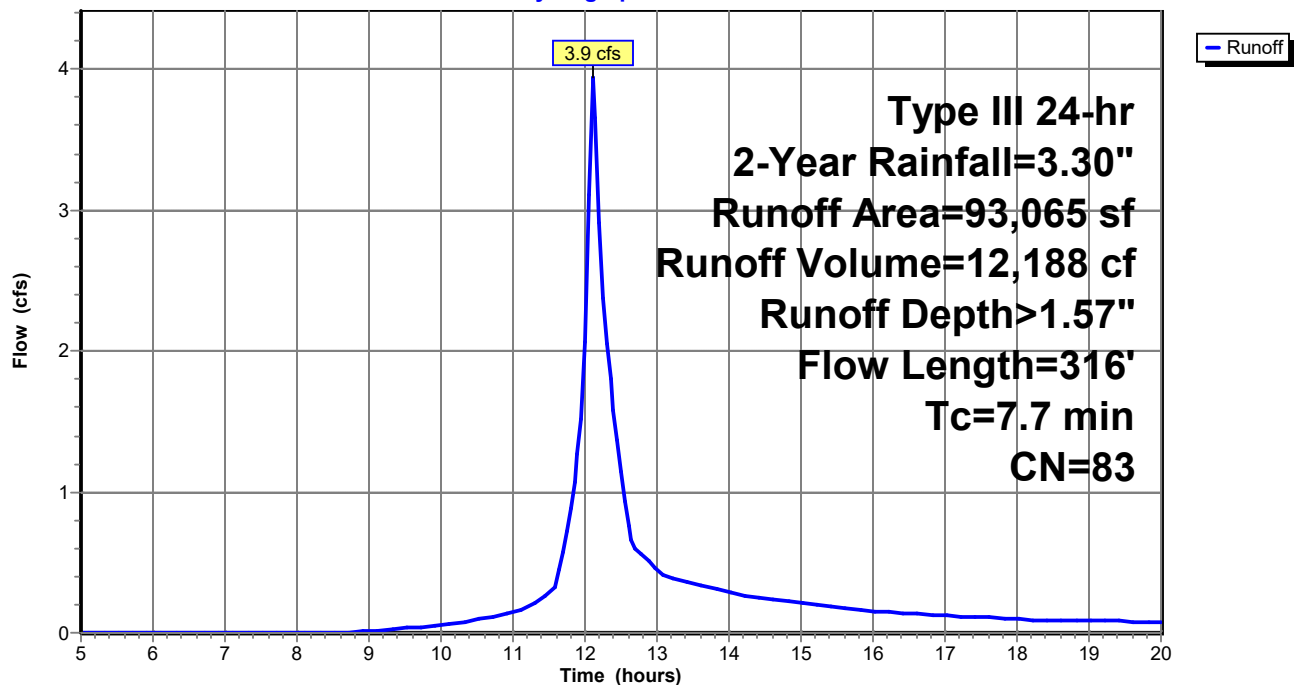
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
1,900	77	Woods, Good, HSG D
60,950	78	Meadow, non-grazed, HSG D
8,585	80	>75% Grass cover, Good, HSG D
21,630	98	Paved parking, HSG D
93,065	83	Weighted Average
71,435		76.76% Pervious Area
21,630		23.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.01		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.30"
1.2	20	0.1500	0.28		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
6.2	276	0.0111	0.74		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
7.7	316	Total			

Subcatchment 1.0:

Hydrograph



Post Development

Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.1:

Runoff = 3.0 cfs @ 13.04 hrs, Volume= 24,967 cf, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
20,935	77	Woods, Good, HSG D
57,900	78	Meadow, non-grazed, HSG D
134,575	80	>75% Grass cover, Good, HSG D
12,065	98	Paved parking, HSG D
225,475	80	Weighted Average
213,410		94.65% Pervious Area
12,065		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
4.7	330	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
76.3	1,232	Total			

Post Development

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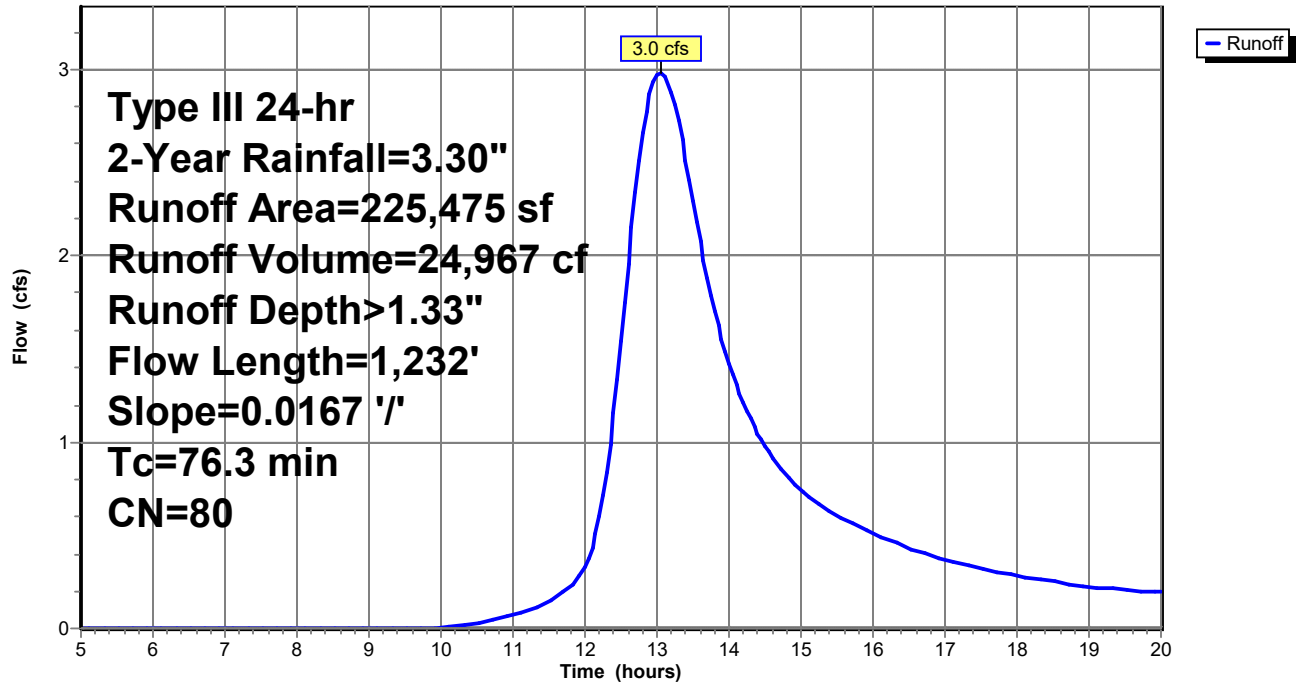
Type III 24-hr 2-Year Rainfall=3.30"

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Subcatchment 1.1:

Hydrograph



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Summary for Subcatchment 1.2:

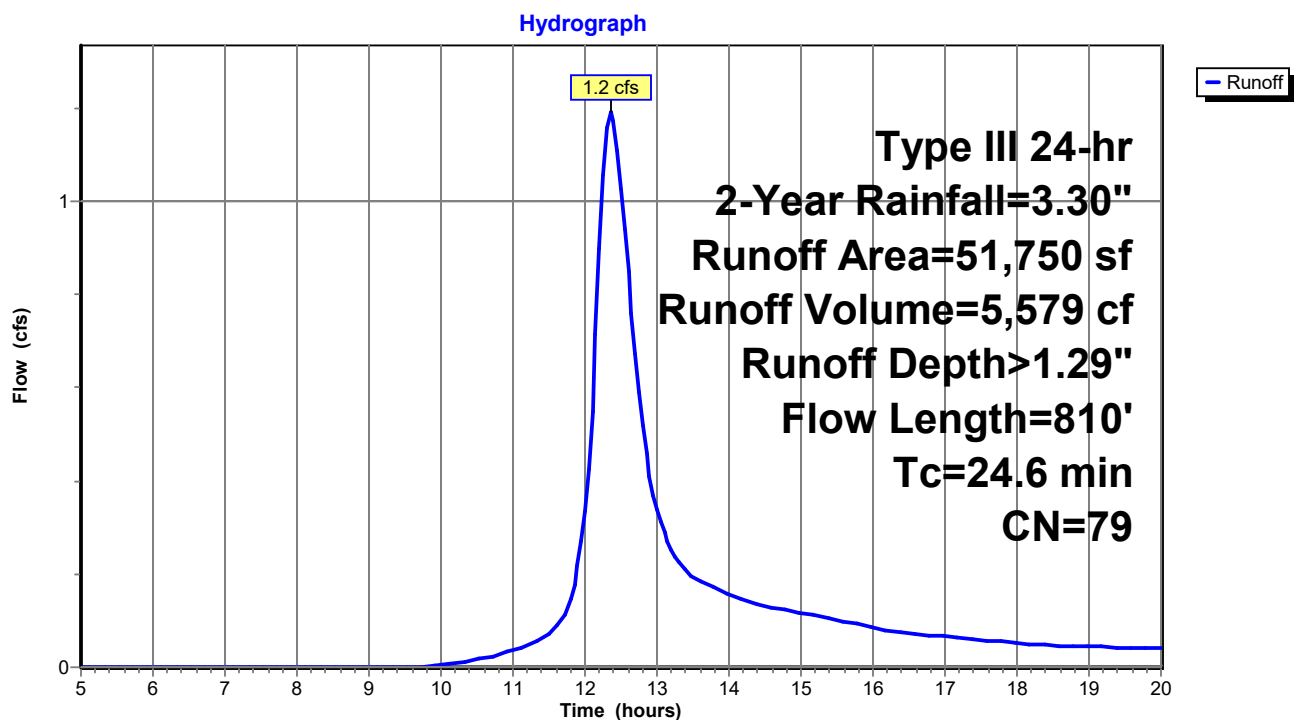
Runoff = 1.2 cfs @ 12.36 hrs, Volume= 5,579 cf, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
1,625	71	Meadow, non-grazed, HSG C
18,275	78	Meadow, non-grazed, HSG D
3,655	74	>75% Grass cover, Good, HSG C
25,850	80	>75% Grass cover, Good, HSG D
2,345	98	Paved parking, HSG D
51,750	79	Weighted Average
49,405		95.47% Pervious Area
2,345		4.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	150	0.0467	0.26		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.30"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
11.7	460	0.0088	0.66		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
24.6	810	Total			

Subcatchment 1.2:



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Summary for Subcatchment 1.3:

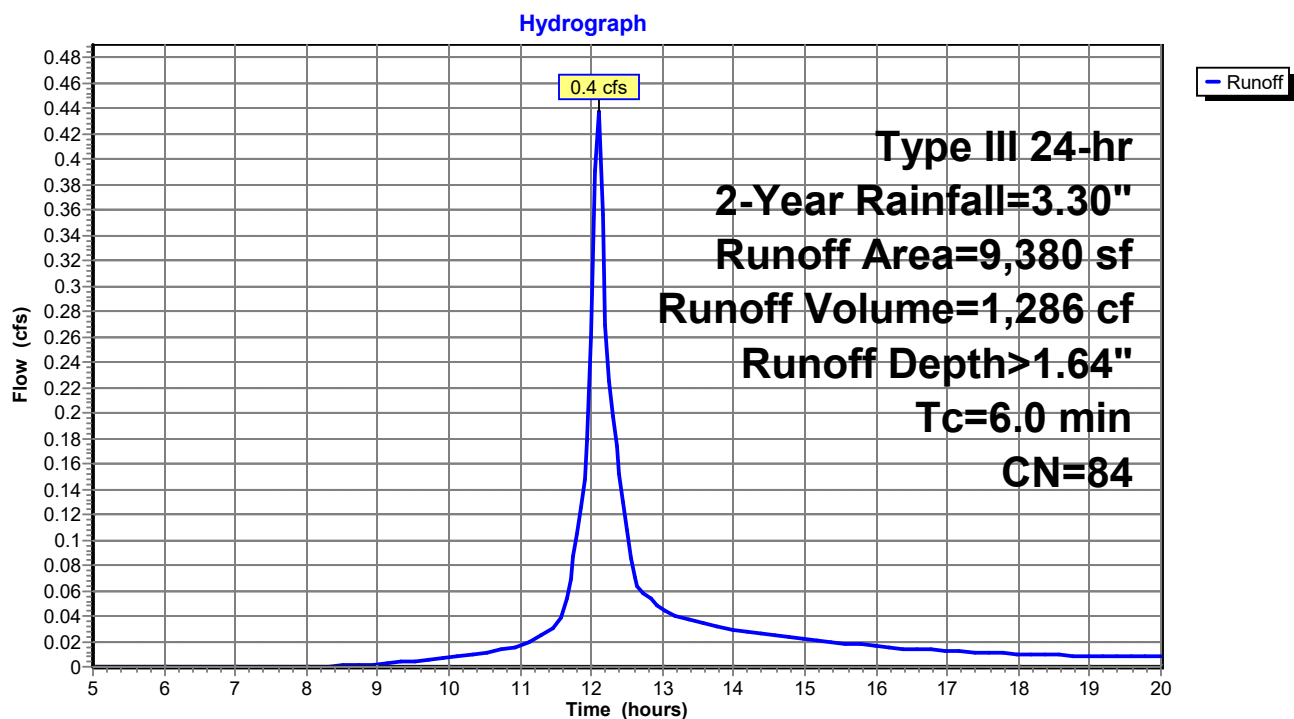
Runoff = 0.4 cfs @ 12.09 hrs, Volume= 1,286 cf, Depth> 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
7,140	80	>75% Grass cover, Good, HSG D
2,240	98	Paved parking, HSG D
9,380	84	Weighted Average
7,140		76.12% Pervious Area
2,240		23.88% Impervious Area

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

Subcatchment 1.3:



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.4:

Runoff = 12.0 cfs @ 13.88 hrs, Volume= 143,293 cf, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
134,385	70	Woods, Good, HSG C
1,145,175	77	Woods, Good, HSG D
2,465	71	Meadow, non-grazed, HSG C
167,535	78	Meadow, non-grazed, HSG D
2,580	74	>75% Grass cover, Good, HSG C
80,875	80	>75% Grass cover, Good, HSG D
16,635	98	Paved parking, HSG D
1,549,650	77	Weighted Average
1,533,015		98.93% Pervious Area
16,635		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
10.0	380	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
131.9	1,265	Total			

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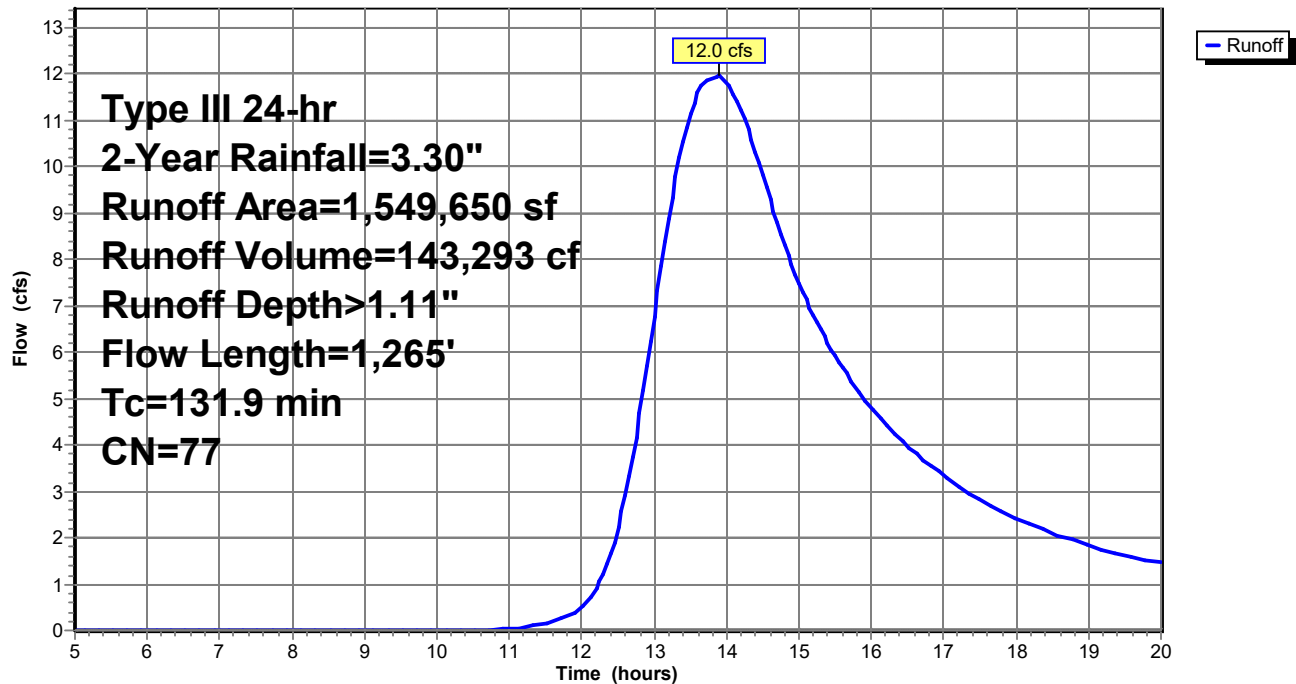
Type III 24-hr 2-Year Rainfall=3.30"

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Subcatchment 1.4:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Subcatchment 1.5:

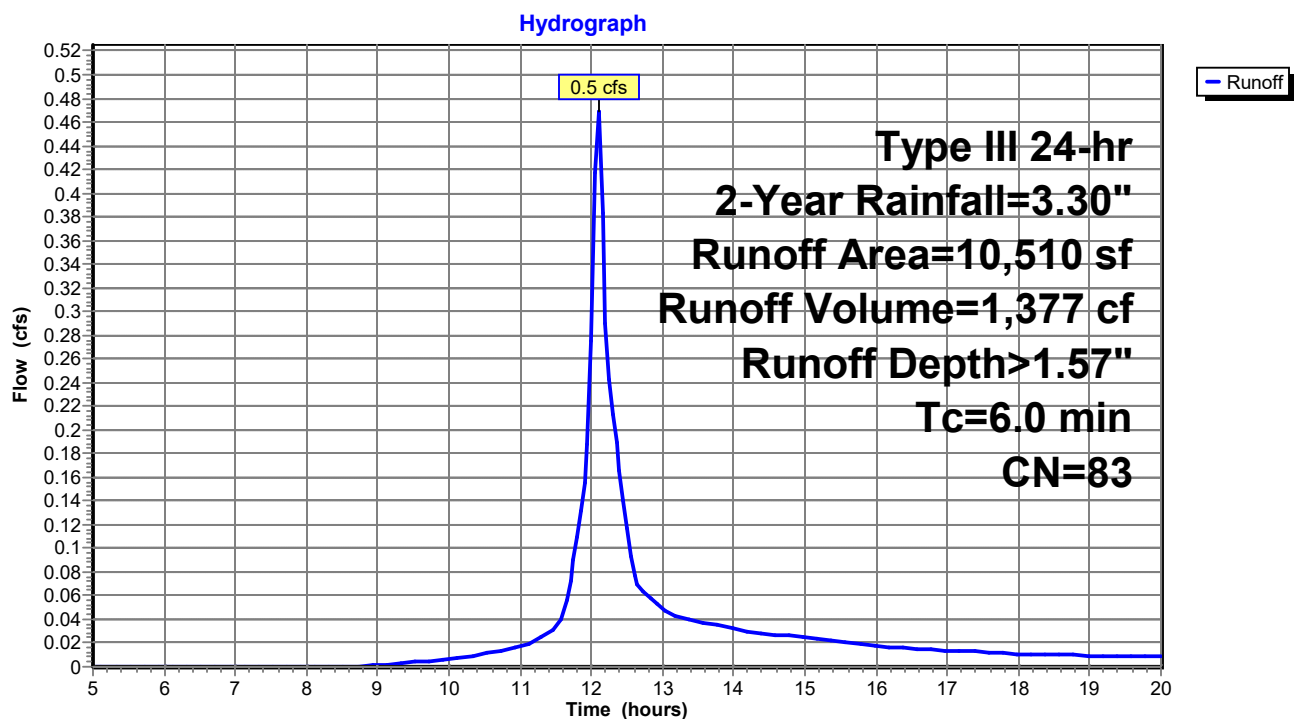
Runoff = 0.5 cfs @ 12.09 hrs, Volume= 1,377 cf, Depth> 1.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
8,485	80	>75% Grass cover, Good, HSG D
2,025	98	Paved parking, HSG D
10,510	83	Weighted Average
8,485		80.73% Pervious Area
2,025		19.27% Impervious Area

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

Subcatchment 1.5:



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Summary for Subcatchment 1.6:

Runoff = 0.6 cfs @ 12.36 hrs, Volume= 2,901 cf, Depth> 1.36"

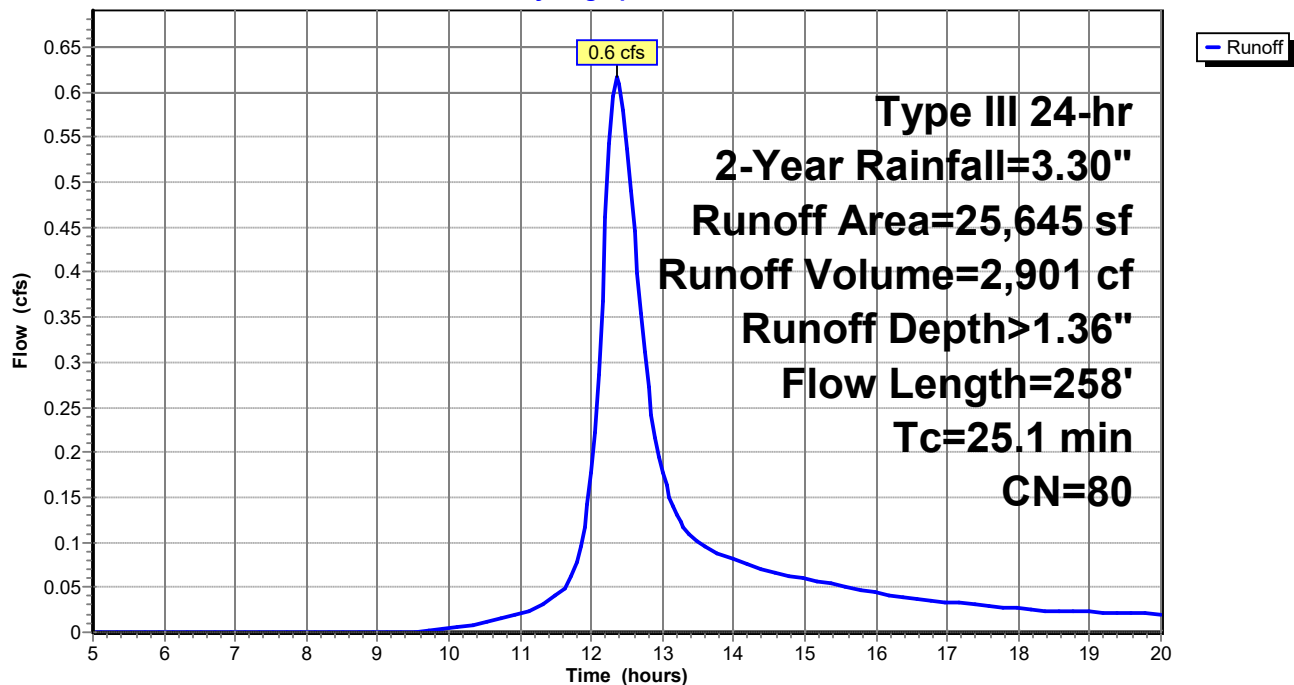
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
2,300	70	Woods, Good, HSG C
445	77	Woods, Good, HSG D
2,190	74	>75% Grass cover, Good, HSG C
18,550	80	>75% Grass cover, Good, HSG D
2,160	98	Paved parking, HSG D
25,645	80	Weighted Average
23,485		91.58% Pervious Area
2,160		8.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0606	0.06		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.2	50	0.0400	0.20		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
4.0	142	0.0070	0.59		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
25.1	258	Total			

Subcatchment 1.6:

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Summary for Subcatchment 1.7:

Runoff = 0.8 cfs @ 12.09 hrs, Volume= 2,442 cf, Depth> 1.57"

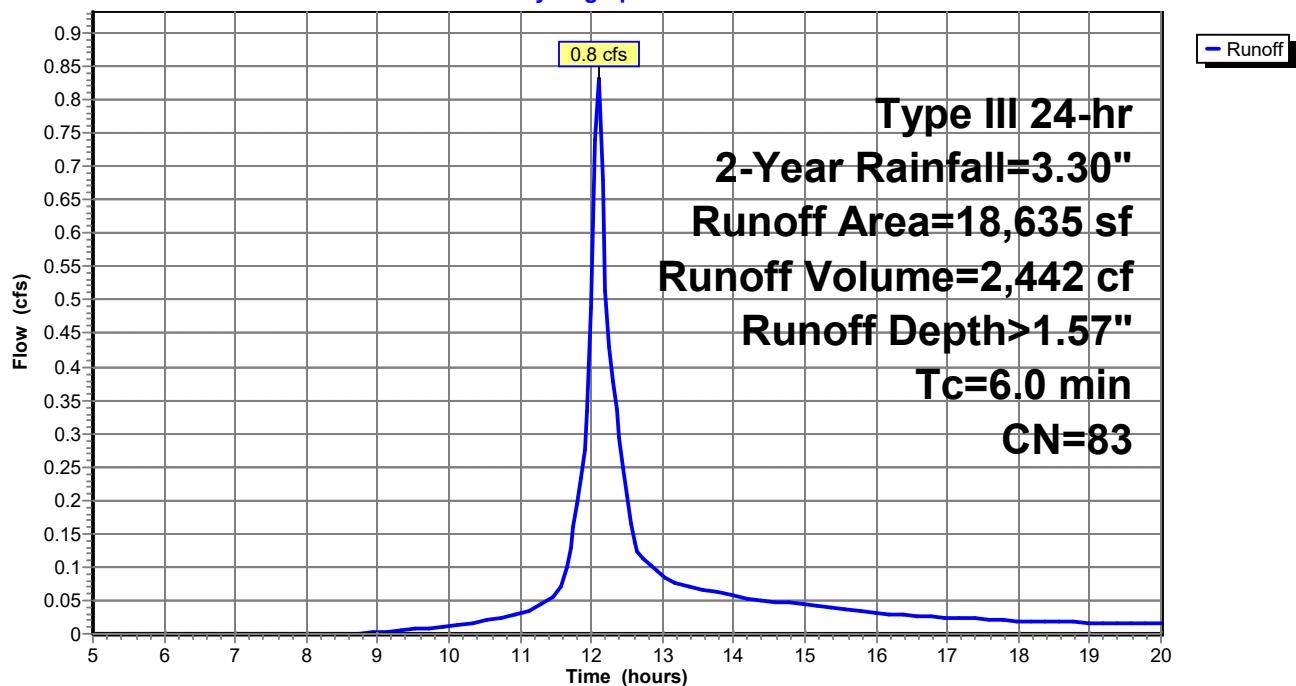
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
880	77	Woods, Good, HSG D
6,610	78	Meadow, non-grazed, HSG D
7,485	80	>75% Grass cover, Good, HSG D
3,660	98	Paved parking, HSG D
18,635	83	Weighted Average
14,975		80.36% Pervious Area
3,660		19.64% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Summary for Subcatchment 1.8:

Runoff = 3.0 cfs @ 12.57 hrs, Volume= 17,649 cf, Depth> 1.22"

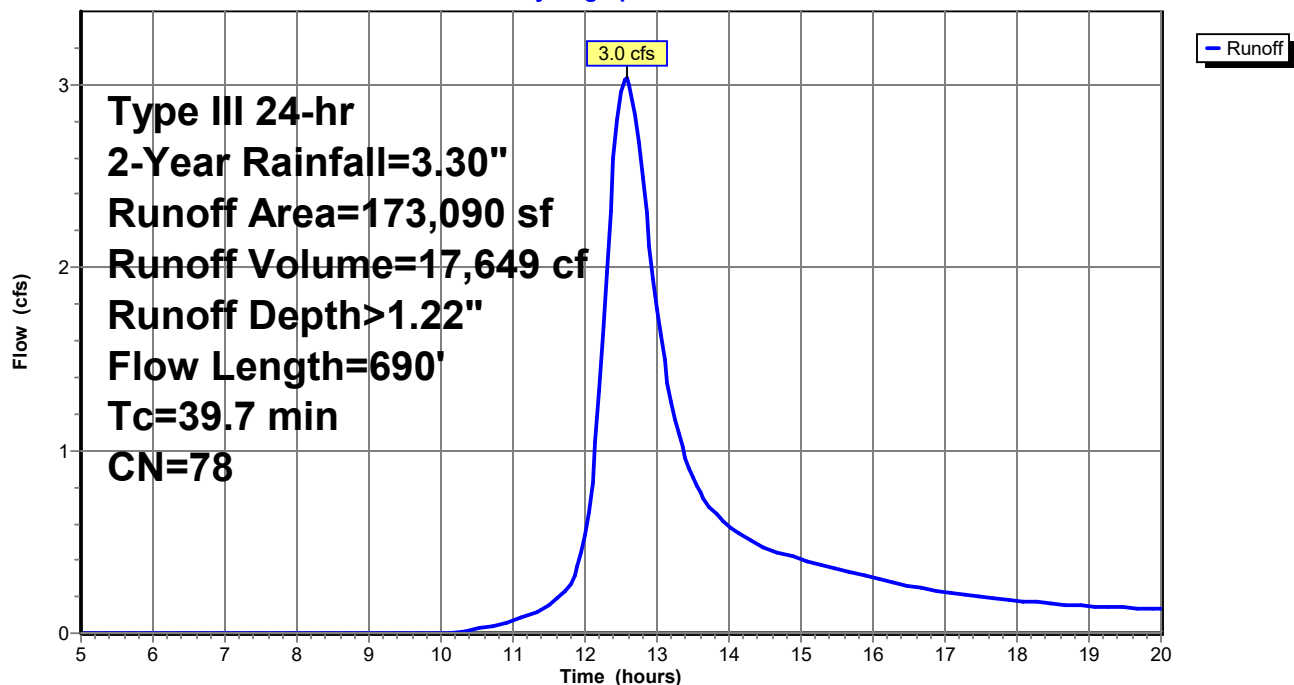
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.30"

Area (sf)	CN	Description
12,890	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
1,560	74	>75% Grass cover, Good, HSG C
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.8:

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Type III 24-hr 2-Year Rainfall=3.30"

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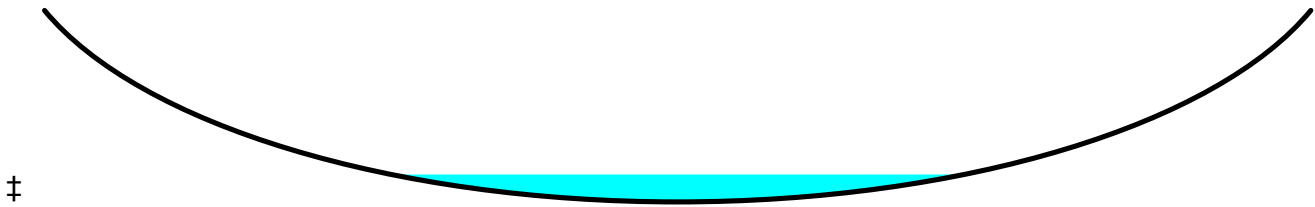
Summary for Reach R1:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 1.32" for 2-Year event
Inflow = 3.3 cfs @ 13.12 hrs, Volume= 30,506 cf
Outflow = 3.3 cfs @ 13.17 hrs, Volume= 30,420 cf, Atten= 0%, Lag= 3.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.99 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.13 fps, Avg. Travel Time= 3.3 min

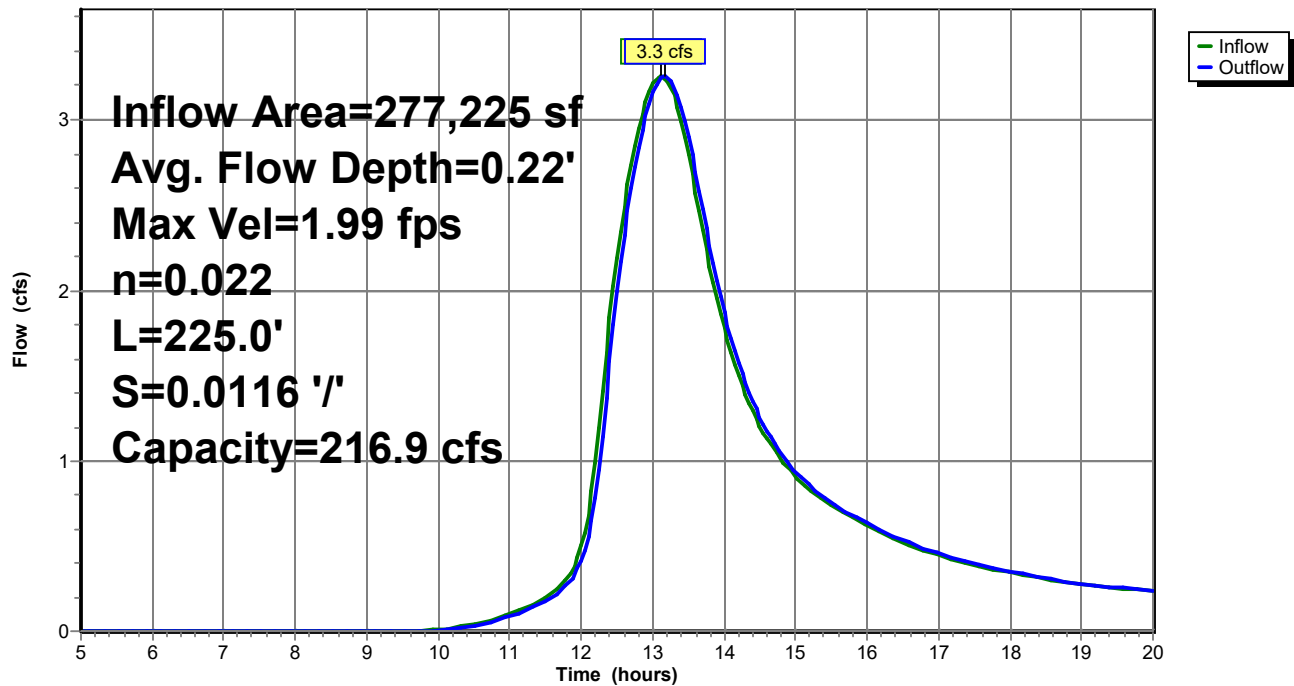
Peak Storage= 368 cf @ 13.14 hrs
Average Depth at Peak Storage= 0.22'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 216.9 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 225.0' Slope= 0.0116 '/'
Inlet Invert= 34.40', Outlet Invert= 31.80'



Reach R1:

Hydrograph



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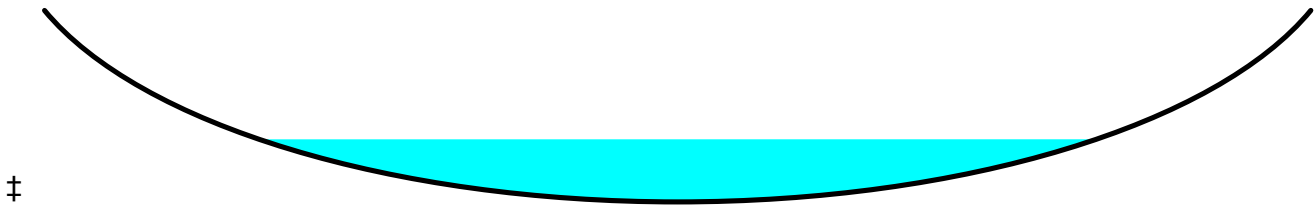
Summary for Reach R2:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 1.12" for 2-Year event
Inflow = 12.0 cfs @ 13.94 hrs, Volume= 145,841 cf
Outflow = 12.0 cfs @ 13.96 hrs, Volume= 145,569 cf, Atten= 0%, Lag= 1.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.14 fps, Min. Travel Time= 1.1 min
Avg. Velocity = 1.17 fps, Avg. Travel Time= 1.9 min

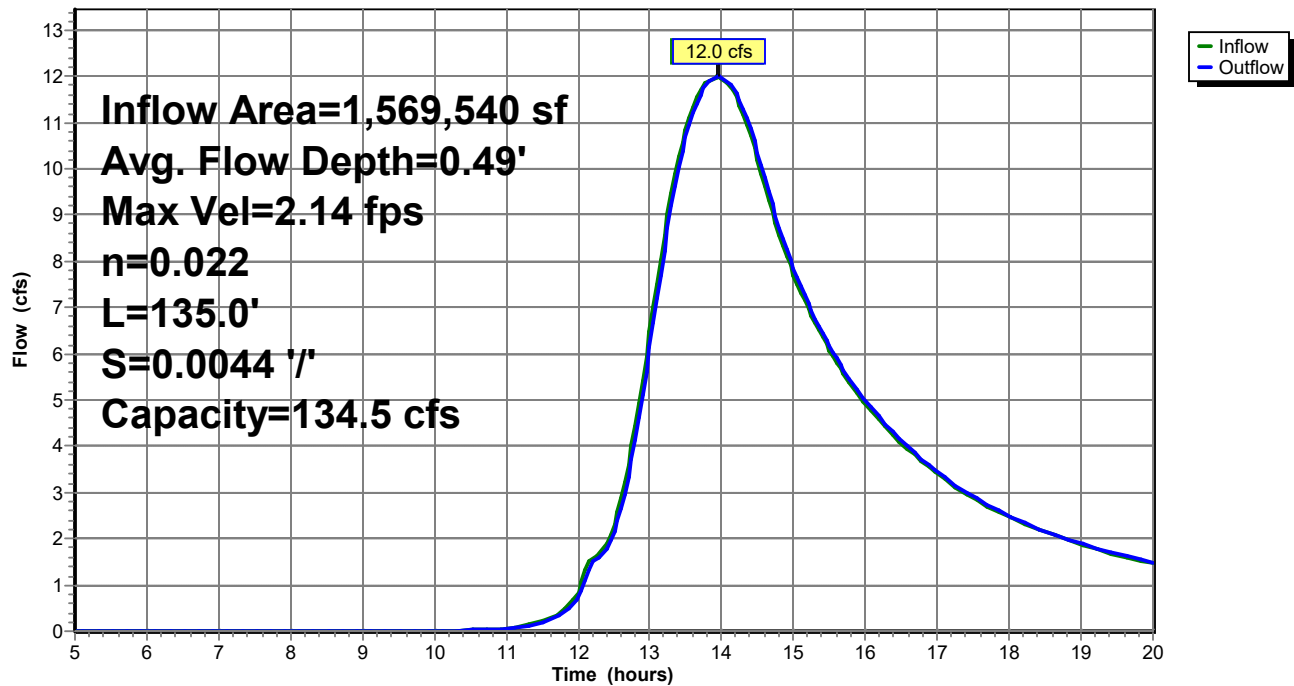
Peak Storage= 759 cf @ 13.95 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 134.5 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 135.0' Slope= 0.0044 '/'
Inlet Invert= 32.40', Outlet Invert= 31.80'



Reach R2:

Hydrograph



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Summary for Reach R3:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 1.26" for 2-Year event
Inflow = 3.3 cfs @ 12.72 hrs, Volume= 22,811 cf
Outflow = 3.3 cfs @ 12.82 hrs, Volume= 22,684 cf, Atten= 1%, Lag= 6.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.33 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 0.64 fps, Avg. Travel Time= 7.3 min

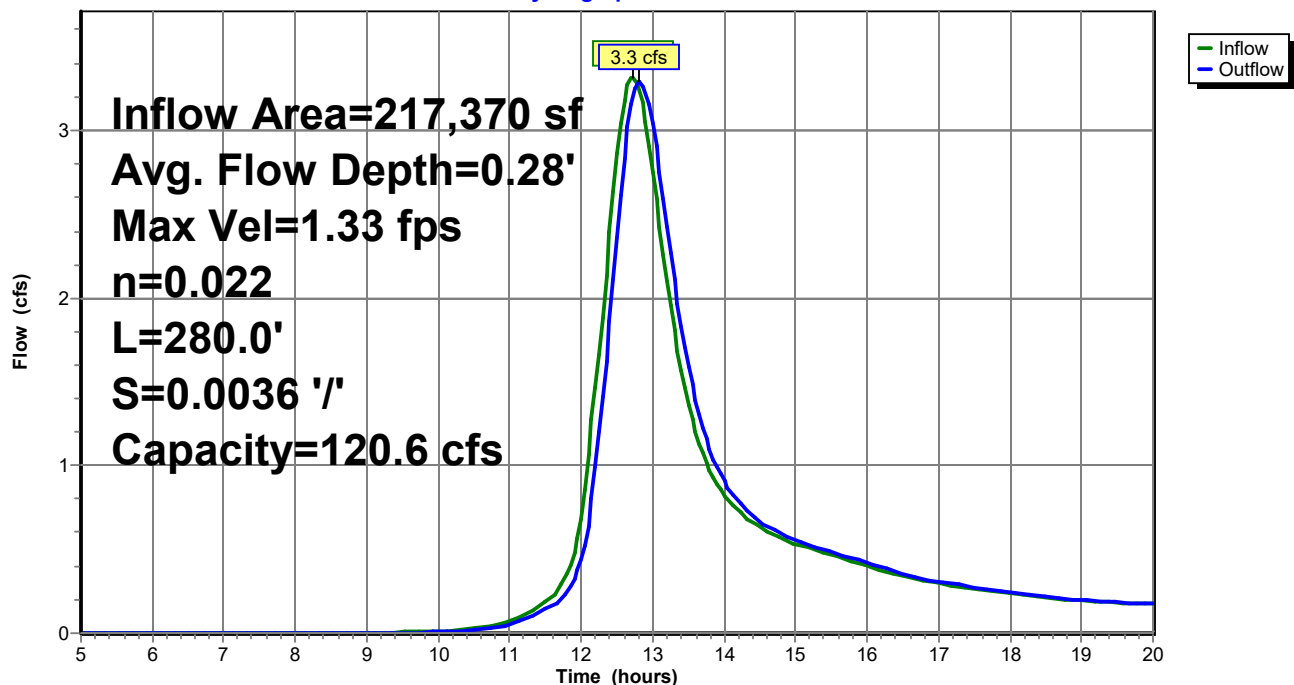
Peak Storage= 693 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 120.6 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 280.0' Slope= 0.0036 '/'
Inlet Invert= 32.80', Outlet Invert= 31.80'



Reach R3:

Hydrograph



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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 1.17" for 2-Year event
 Inflow = 15.6 cfs @ 13.66 hrs, Volume= 210,861 cf
 Outflow = 12.9 cfs @ 14.44 hrs, Volume= 208,084 cf, Atten= 17%, Lag= 46.7 min
 Primary = 12.9 cfs @ 14.44 hrs, Volume= 208,084 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 33.54' @ 14.44 hrs Surf.Area= 55,810 sf Storage= 31,954 cf
 Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 32.5 min calculated for 207,393 cf (98% of inflow)
 Center-of-Mass det. time= 28.5 min (914.6 - 886.2)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=12.9 cfs @ 14.44 hrs HW=33.54' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 12.9 cfs @ 3.54 fps)

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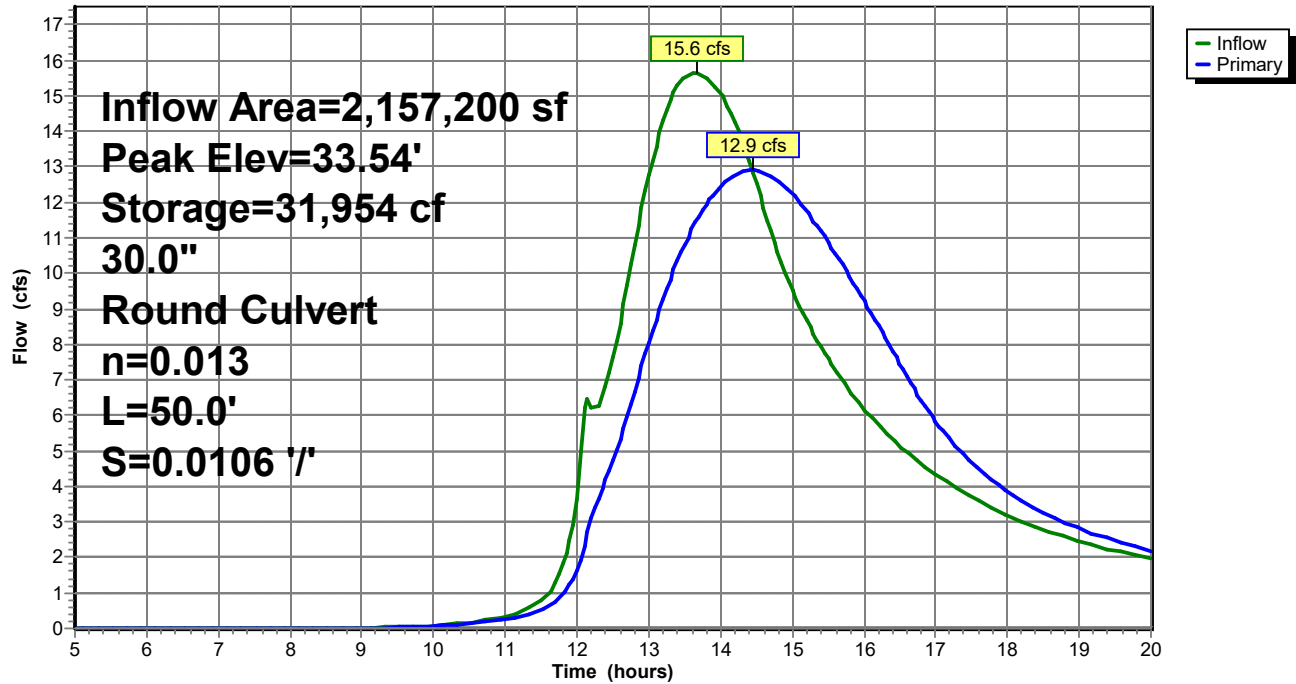
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Pond C1:

Hydrograph



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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 1.22" for 2-Year event
Inflow = 3.0 cfs @ 12.57 hrs, Volume= 17,649 cf
Outflow = 3.0 cfs @ 12.58 hrs, Volume= 17,569 cf, Atten= 0%, Lag= 0.2 min
Primary = 3.0 cfs @ 12.58 hrs, Volume= 17,569 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.64' @ 12.58 hrs Surf.Area= 400 sf Storage= 148 cf

Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 3.1 min calculated for 17,569 cf (100% of inflow)

Center-of-Mass det. time= 1.4 min (834.7 - 833.3)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=3.0 cfs @ 12.58 hrs HW=34.64' (Free Discharge)

1=Culvert (Inlet Controls 0.4 cfs @ 1.63 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.6 cfs @ 0.93 fps)

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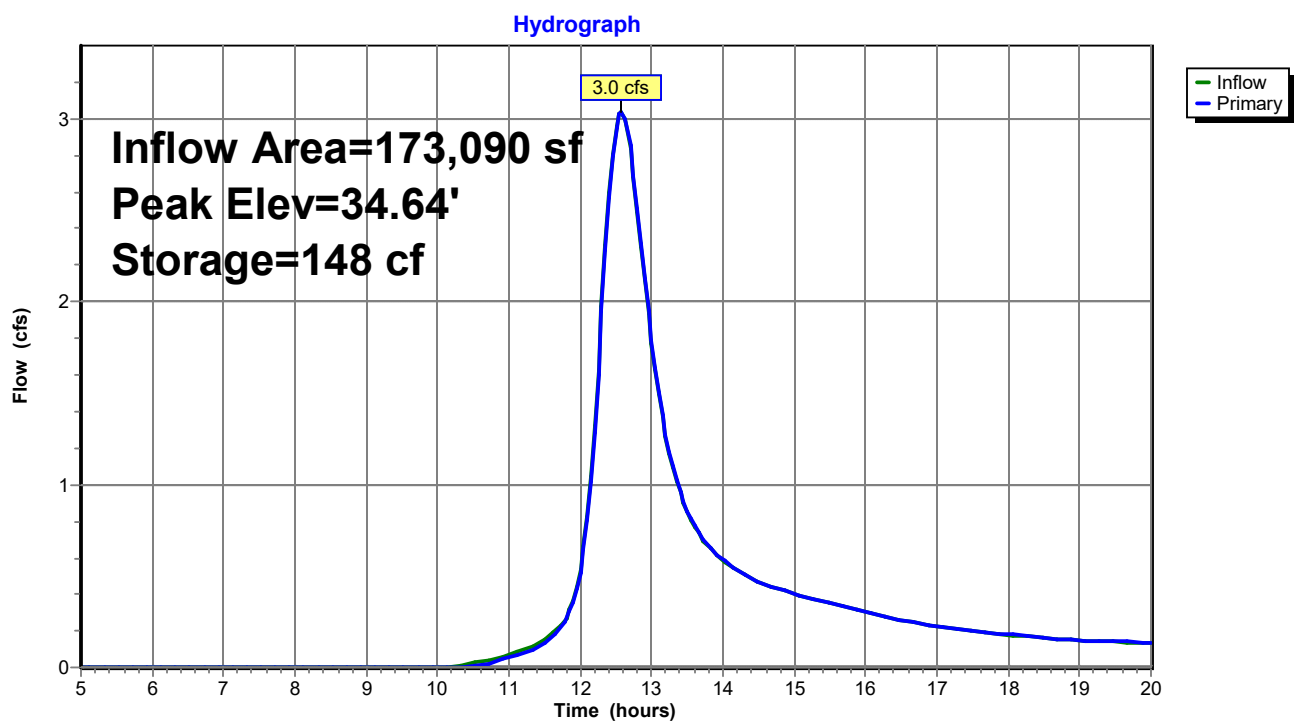
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Pond C2:



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Summary for Pond C3:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 1.32" for 2-Year event
Inflow = 3.3 cfs @ 12.97 hrs, Volume= 30,539 cf
Outflow = 3.3 cfs @ 13.12 hrs, Volume= 30,506 cf, Atten= 2%, Lag= 8.6 min
Primary = 3.3 cfs @ 13.12 hrs, Volume= 30,506 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 35.61' @ 13.12 hrs Surf.Area= 4,310 sf Storage= 1,350 cf

Flood Elev= 36.15' Surf.Area= 7,000 sf Storage= 3,555 cf

Plug-Flow detention time= 5.3 min calculated for 30,506 cf (100% of inflow)

Center-of-Mass det. time= 5.0 min (855.1 - 850.2)

Volume	Invert	Avail.Storage	Storage Description
#1	34.90'	3,555 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.90	0	0	0
35.00	100	5	5
36.00	7,000	3,550	3,555

Device	Routing	Invert	Outlet Devices
#1	Primary	34.90'	15.0" Round Culvert X 2.00 L= 48.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.90' / 34.40' S= 0.0104 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.3 cfs @ 13.12 hrs HW=35.61' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 3.3 cfs @ 2.26 fps)

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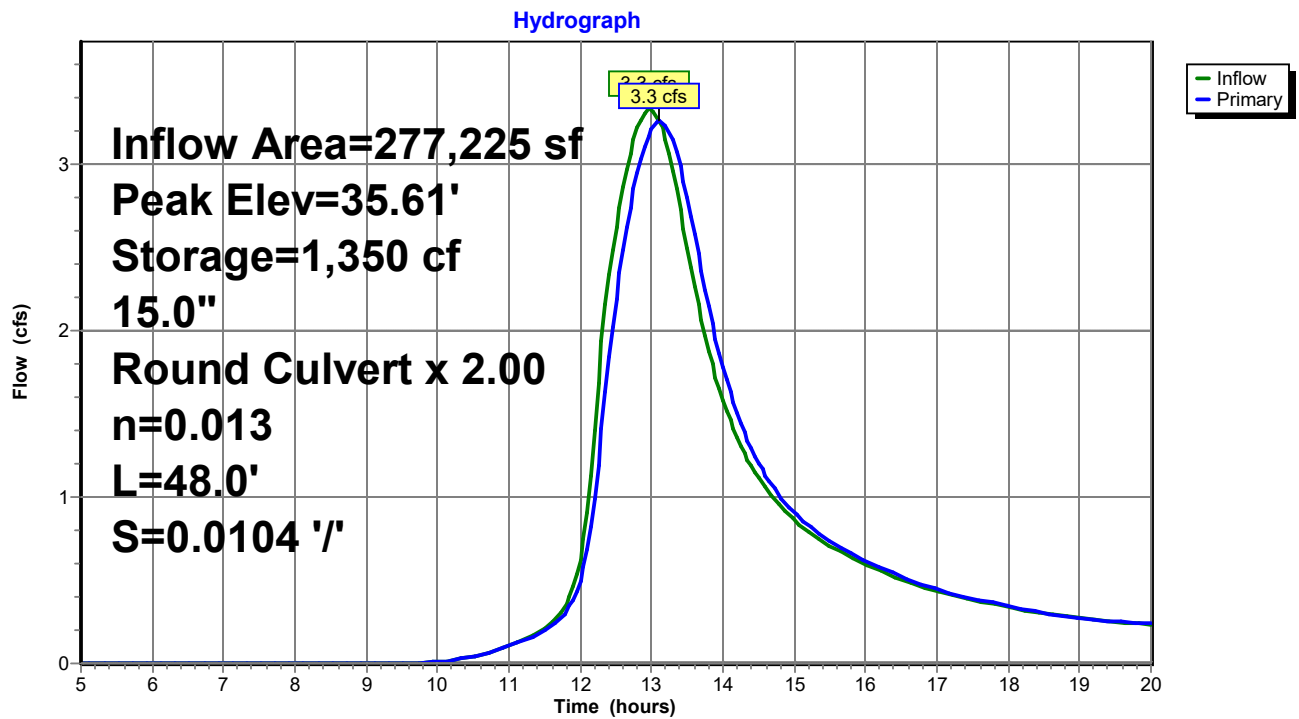
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Pond C3:



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Summary for Pond C4:

Inflow Area = 51,750 sf, 4.53% Impervious, Inflow Depth > 1.29" for 2-Year event
Inflow = 1.2 cfs @ 12.36 hrs, Volume= 5,579 cf
Outflow = 1.2 cfs @ 12.39 hrs, Volume= 5,571 cf, Atten= 1%, Lag= 1.8 min
Primary = 1.2 cfs @ 12.39 hrs, Volume= 5,571 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 36.49' @ 12.39 hrs Surf.Area= 371 sf Storage= 136 cf

Flood Elev= 37.15' Surf.Area= 600 sf Storage= 383 cf

Plug-Flow detention time= 2.4 min calculated for 5,571 cf (100% of inflow)

Center-of-Mass det. time= 1.9 min (821.2 - 819.3)

Volume	Invert	Avail.Storage	Storage Description
#1	35.90'	383 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.90	0	0	0
36.00	150	8	8
37.00	600	375	383

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.90' / 35.60' S= 0.0100 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.2 cfs @ 12.39 hrs HW=36.49' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 1.2 cfs @ 2.07 fps)

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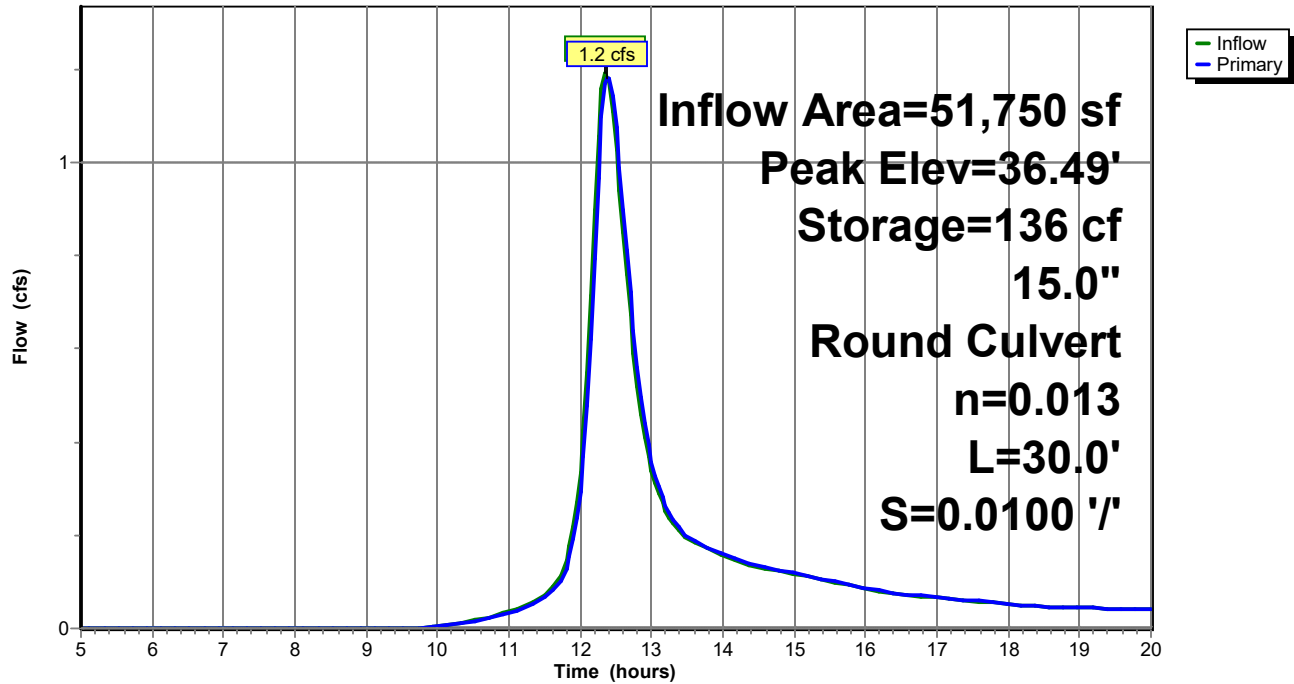
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Pond C4:

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Summary for Pond C5:

Inflow Area = 9,380 sf, 23.88% Impervious, Inflow Depth > 1.64" for 2-Year event
Inflow = 0.4 cfs @ 12.09 hrs, Volume= 1,286 cf
Outflow = 0.4 cfs @ 12.12 hrs, Volume= 1,285 cf, Atten= 4%, Lag= 1.4 min
Primary = 0.4 cfs @ 12.12 hrs, Volume= 1,285 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.54' @ 12.12 hrs Surf.Area= 212 sf Storage= 36 cf

Flood Elev= 35.45' Surf.Area= 680 sf Storage= 466 cf

Plug-Flow detention time= 1.4 min calculated for 1,281 cf (100% of inflow)

Center-of-Mass det. time= 1.2 min (793.3 - 792.2)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	2,100 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	500	200	200
36.00	900	700	900
37.00	1,500	1,200	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.4 cfs @ 12.12 hrs HW=34.53' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.4 cfs @ 1.55 fps)

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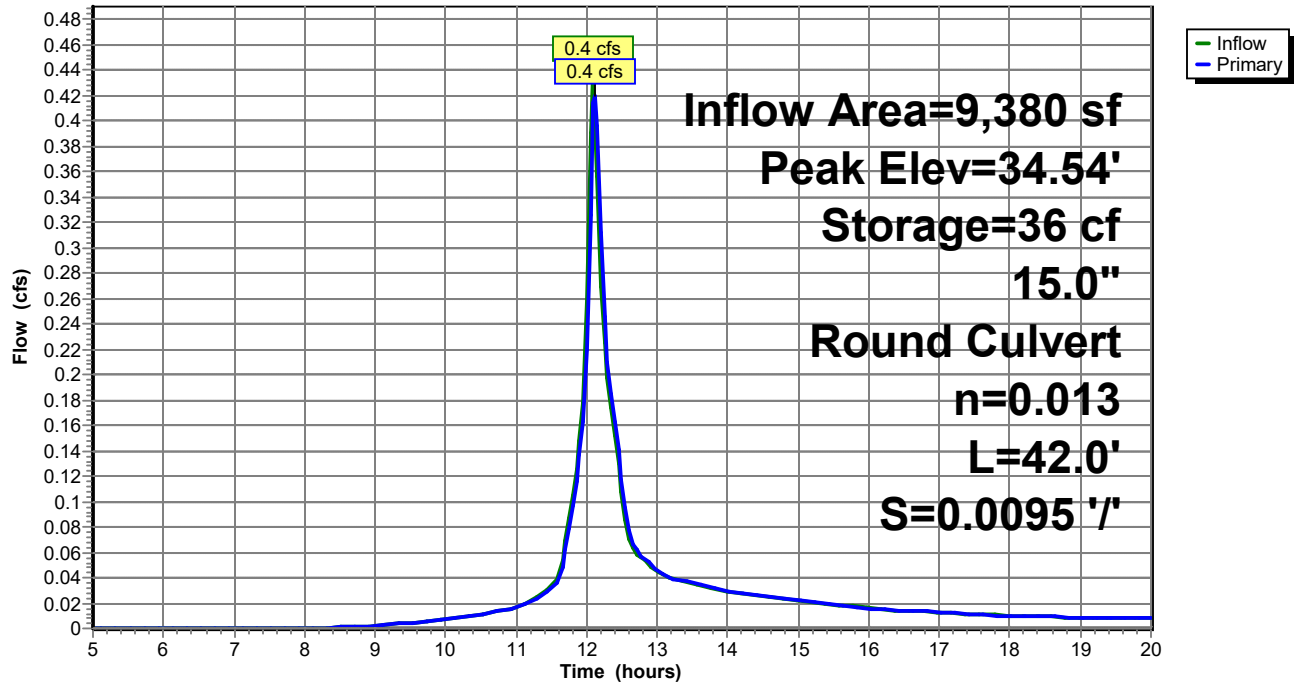
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Pond C5:

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Summary for Pond C6:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 1.12" for 2-Year event
Inflow = 12.0 cfs @ 13.88 hrs, Volume= 145,954 cf
Outflow = 12.0 cfs @ 13.94 hrs, Volume= 145,841 cf, Atten= 0%, Lag= 3.2 min
Primary = 12.0 cfs @ 13.94 hrs, Volume= 145,841 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.12' @ 13.94 hrs Surf.Area= 6,467 sf Storage= 1,782 cf
Flood Elev= 35.70' Surf.Area= 31,200 sf Storage= 18,300 cf

Plug-Flow detention time= 1.9 min calculated for 145,841 cf (100% of inflow)
Center-of-Mass det. time= 1.7 min (904.2 - 902.5)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	18,300 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	3,000	1,200	1,200
35.00	31,200	17,100	18,300

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	36.0" Round Culvert X 2.00 w/ 6.0" inside fill L= 45.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.70' / 32.40' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 6.29 sf

Primary OutFlow Max=12.0 cfs @ 13.94 hrs HW=34.12' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 12.0 cfs @ 2.37 fps)

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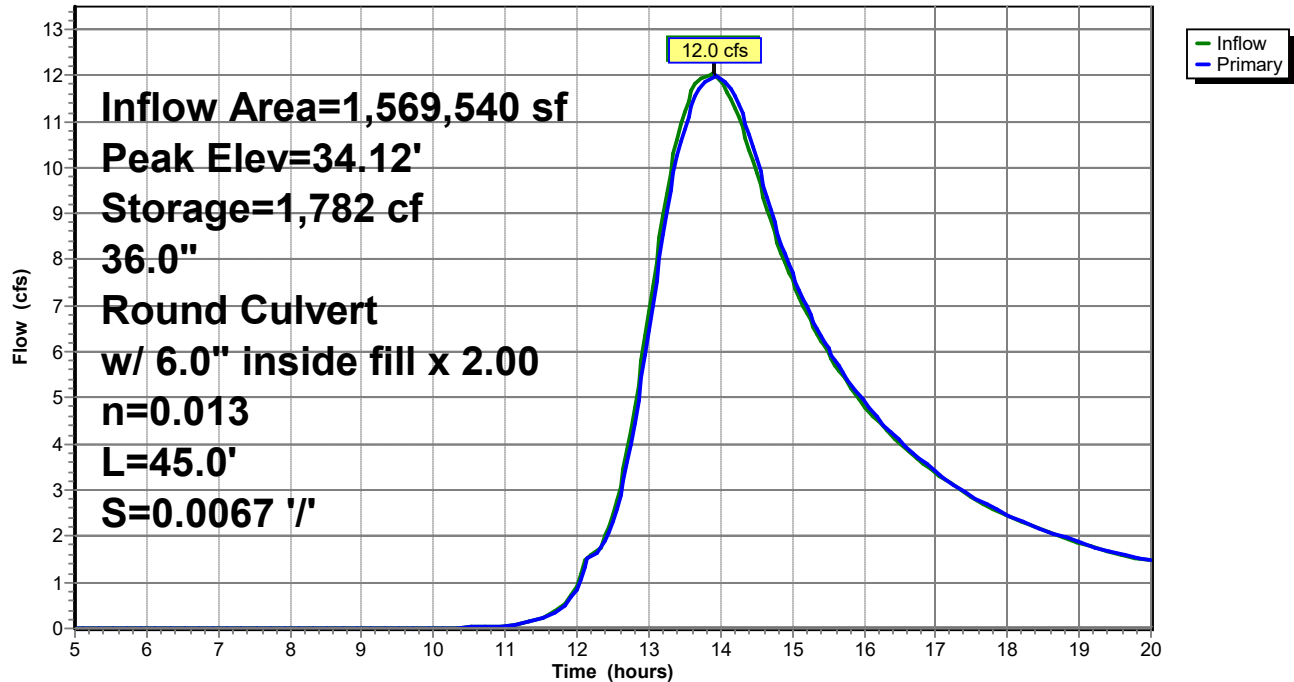
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Pond C6:

Hydrograph



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Summary for Pond C7:

Inflow Area = 10,510 sf, 19.27% Impervious, Inflow Depth > 1.57" for 2-Year event
Inflow = 0.5 cfs @ 12.09 hrs, Volume= 1,377 cf
Outflow = 0.4 cfs @ 12.14 hrs, Volume= 1,376 cf, Atten= 11%, Lag= 2.7 min
Primary = 0.4 cfs @ 12.14 hrs, Volume= 1,376 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.54' @ 12.14 hrs Surf.Area= 422 sf Storage= 71 cf

Flood Elev= 35.45' Surf.Area= 1,473 sf Storage= 956 cf

Plug-Flow detention time= 2.7 min calculated for 1,371 cf (100% of inflow)

Center-of-Mass det. time= 2.3 min (797.1 - 794.8)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	1,925 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	1,000	400	400
36.00	2,050	1,525	1,925

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.4 cfs @ 12.14 hrs HW=34.53' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.4 cfs @ 1.56 fps)

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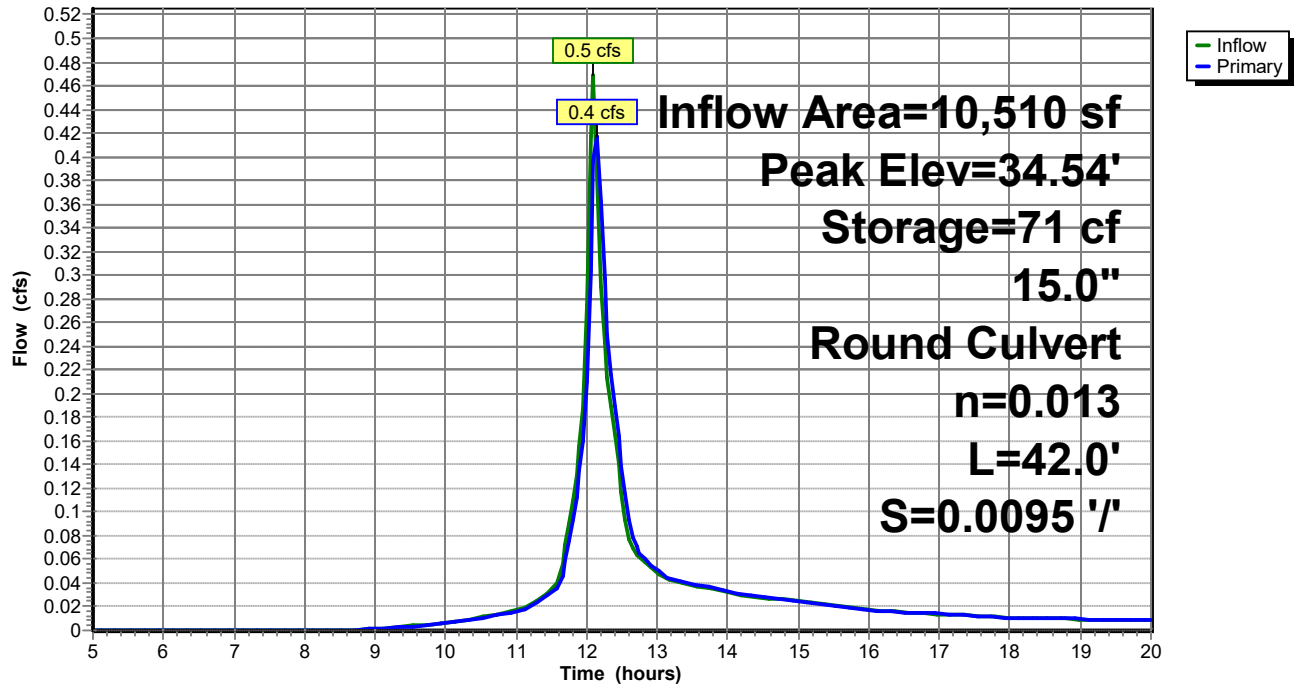
Type III 24-hr 2-Year Rainfall=3.30"

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Pond C7:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C8:

Inflow Area = 25,645 sf, 8.42% Impervious, Inflow Depth > 1.36" for 2-Year event
Inflow = 0.6 cfs @ 12.36 hrs, Volume= 2,901 cf
Outflow = 0.6 cfs @ 12.44 hrs, Volume= 2,899 cf, Atten= 5%, Lag= 5.0 min
Primary = 0.6 cfs @ 12.44 hrs, Volume= 2,899 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.20' @ 12.44 hrs Surf.Area= 861 sf Storage= 118 cf

Flood Elev= 35.05' Surf.Area= 3,650 sf Storage= 1,915 cf

Plug-Flow detention time= 2.2 min calculated for 2,899 cf (100% of inflow)

Center-of-Mass det. time= 1.9 min (819.2 - 817.3)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	1,915 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.80	0	0	0
34.00	150	15	15
35.00	3,650	1,900	1,915

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	15.0" Round Culvert L= 32.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.80' / 33.50' S= 0.0094 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.6 cfs @ 12.44 hrs HW=34.20' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.6 cfs @ 1.71 fps)

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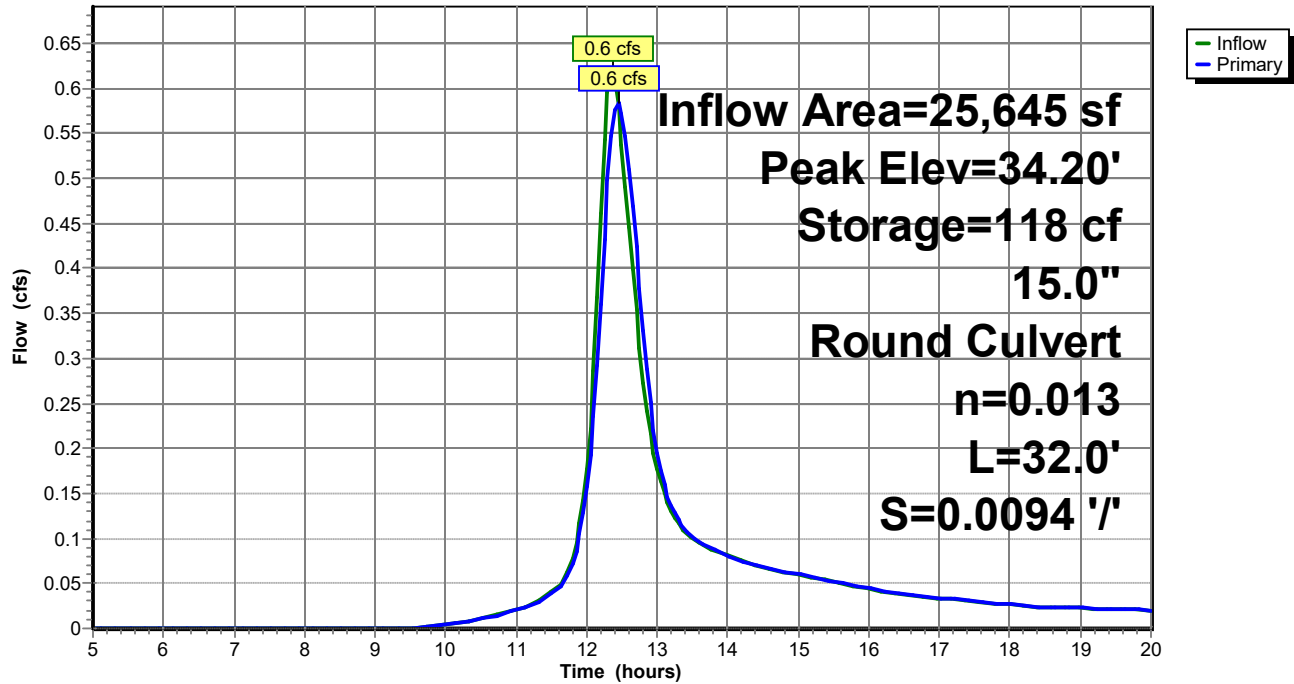
Type III 24-hr 2-Year Rainfall=3.30"

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Pond C8:

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.30"

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Summary for Pond C9:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 1.26" for 2-Year event
Inflow = 3.7 cfs @ 12.53 hrs, Volume= 22,911 cf
Outflow = 3.3 cfs @ 12.72 hrs, Volume= 22,811 cf, Atten= 11%, Lag= 11.4 min
Primary = 3.3 cfs @ 12.72 hrs, Volume= 22,811 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 33.92' @ 12.72 hrs Surf.Area= 6,361 sf Storage= 2,280 cf
Flood Elev= 34.45' Surf.Area= 8,968 sf Storage= 6,455 cf

Plug-Flow detention time= 10.5 min calculated for 22,736 cf (99% of inflow)
Center-of-Mass det. time= 8.9 min (837.4 - 828.5)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	12,015 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	7,100	2,840	2,840
35.00	11,250	9,175	12,015

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	15.0" Round Culvert X 2.00 L= 36.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.20' / 32.80' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.3 cfs @ 12.72 hrs HW=33.92' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.3 cfs @ 2.27 fps)

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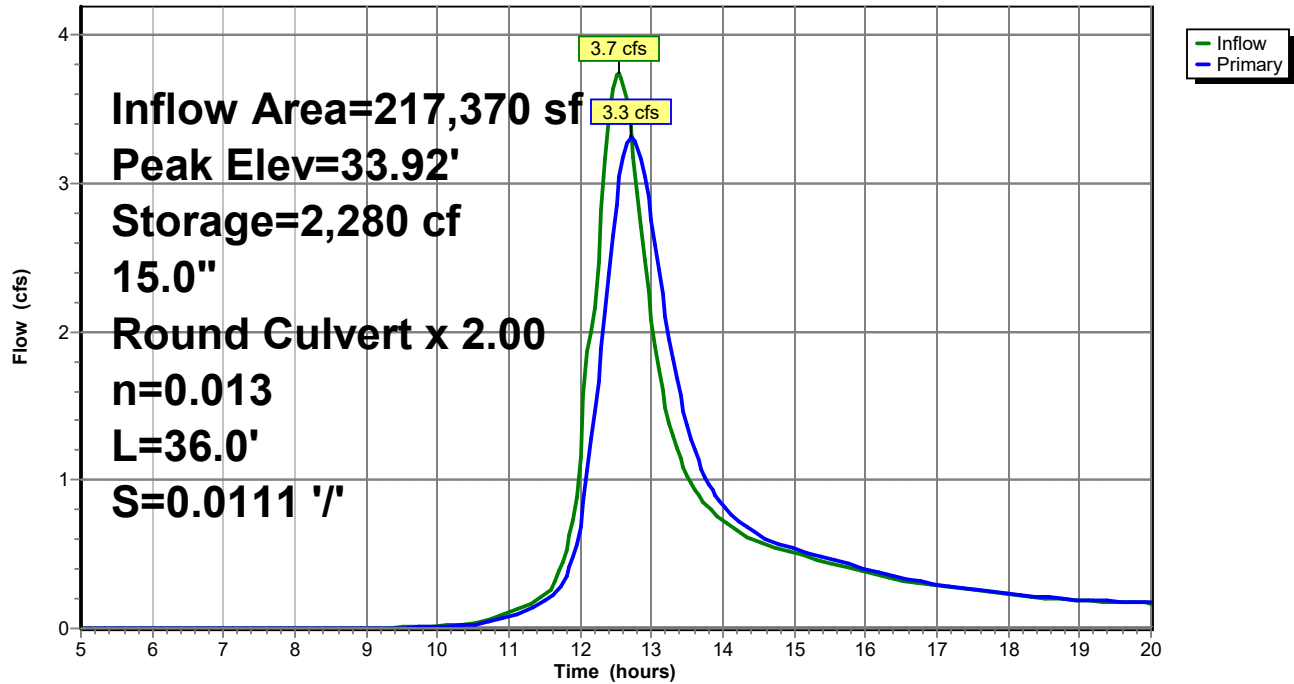
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Pond C9:

Hydrograph



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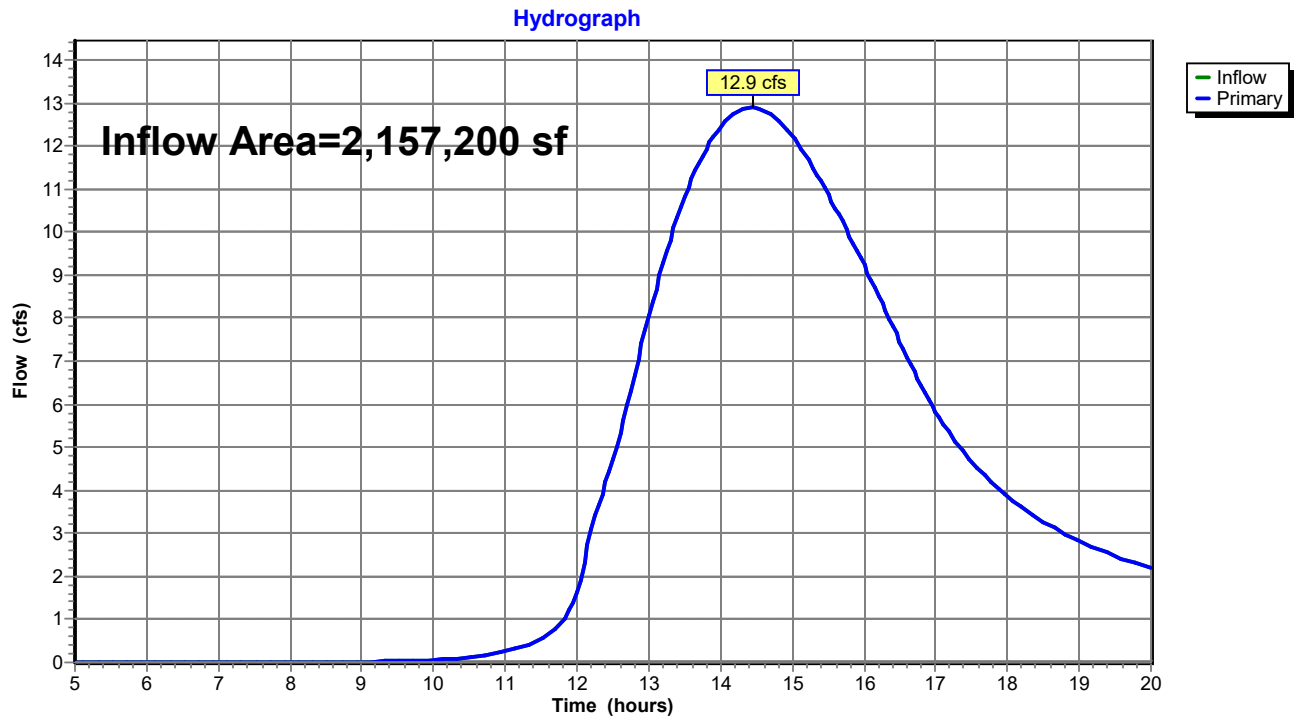
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Summary for Link AP1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 1.16" for 2-Year event
Inflow = 12.9 cfs @ 14.44 hrs, Volume= 208,084 cf
Primary = 12.9 cfs @ 14.44 hrs, Volume= 208,084 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



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Type III 24-hr 10-Year Rainfall=4.90"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0:	Runoff Area=93,065 sf 23.24% Impervious Runoff Depth>2.89" Flow Length=316' Tc=7.7 min CN=83 Runoff=7.2 cfs 22,406 cf
Subcatchment 1.1:	Runoff Area=225,475 sf 5.35% Impervious Runoff Depth>2.56" Flow Length=1,232' Slope=0.0167 '/' Tc=76.3 min CN=80 Runoff=5.8 cfs 48,009 cf
Subcatchment 1.2:	Runoff Area=51,750 sf 4.53% Impervious Runoff Depth>2.52" Flow Length=810' Tc=24.6 min CN=79 Runoff=2.3 cfs 10,852 cf
Subcatchment 1.3:	Runoff Area=9,380 sf 23.88% Impervious Runoff Depth>2.98" Tc=6.0 min CN=84 Runoff=0.8 cfs 2,332 cf
Subcatchment 1.4:	Runoff Area=1,549,650 sf 1.07% Impervious Runoff Depth>2.24" Flow Length=1,265' Tc=131.9 min CN=77 Runoff=24.5 cfs 289,320 cf
Subcatchment 1.5:	Runoff Area=10,510 sf 19.27% Impervious Runoff Depth>2.89" Tc=6.0 min CN=83 Runoff=0.9 cfs 2,532 cf
Subcatchment 1.6:	Runoff Area=25,645 sf 8.42% Impervious Runoff Depth>2.60" Flow Length=258' Tc=25.1 min CN=80 Runoff=1.2 cfs 5,563 cf
Subcatchment 1.7:	Runoff Area=18,635 sf 19.64% Impervious Runoff Depth>2.89" Tc=6.0 min CN=83 Runoff=1.5 cfs 4,489 cf
Subcatchment 1.8:	Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>2.42" Flow Length=690' Tc=39.7 min CN=78 Runoff=6.0 cfs 34,870 cf
Reach R1:	Avg. Flow Depth=0.29' Max Vel=2.42 fps Inflow=6.2 cfs 58,773 cf n=0.022 L=225.0' S=0.0116 '/' Capacity=216.9 cfs Outflow=6.2 cfs 58,650 cf
Reach R2:	Avg. Flow Depth=0.68' Max Vel=2.64 fps Inflow=24.1 cfs 293,953 cf n=0.022 L=135.0' S=0.0044 '/' Capacity=134.5 cfs Outflow=24.1 cfs 293,562 cf
Reach R3:	Avg. Flow Depth=0.38' Max Vel=1.62 fps Inflow=6.3 cfs 44,654 cf n=0.022 L=280.0' S=0.0036 '/' Capacity=120.6 cfs Outflow=6.3 cfs 44,473 cf
Pond C1:	Peak Elev=34.30' Storage=95,875 cf Inflow=30.5 cfs 419,090 cf 30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=20.9 cfs 413,270 cf
Pond C2:	Peak Elev=34.73' Storage=183 cf Inflow=6.0 cfs 34,870 cf Outflow=6.0 cfs 34,774 cf
Pond C3:	Peak Elev=35.96' Storage=3,303 cf Inflow=6.4 cfs 58,848 cf 15.0" Round Culvert x 2.00 n=0.013 L=48.0' S=0.0104 '/' Outflow=6.2 cfs 58,773 cf
Pond C4:	Peak Elev=36.77' Storage=259 cf Inflow=2.3 cfs 10,852 cf 15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=2.3 cfs 10,840 cf

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Pond C5: Peak Elev=34.66' Storage=66 cf Inflow=0.8 cfs 2,332 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=0.7 cfs 2,331 cf

Pond C6: Peak Elev=34.63' Storage=8,754 cf Inflow=24.6 cfs 294,180 cf
36.0" Round Culvert w/ 6.0" inside fill x 2.00 n=0.013 L=45.0' S=0.0067 '/' Outflow=24.1 cfs 293,953 cf

Pond C7: Peak Elev=34.66' Storage=134 cf Inflow=0.9 cfs 2,532 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=0.8 cfs 2,529 cf

Pond C8: Peak Elev=34.37' Storage=304 cf Inflow=1.2 cfs 5,563 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0094 '/' Outflow=1.1 cfs 5,560 cf

Pond C9: Peak Elev=34.28' Storage=5,000 cf Inflow=7.4 cfs 44,823 cf
15.0" Round Culvert x 2.00 n=0.013 L=36.0' S=0.0111 '/' Outflow=6.3 cfs 44,654 cf

Link AP1: Inflow=20.9 cfs 413,270 cf
Primary=20.9 cfs 413,270 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 420,372 cf Average Runoff Depth = 2.34"
96.61% Pervious = 2,084,130 sf 3.39% Impervious = 73,070 sf

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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.0:

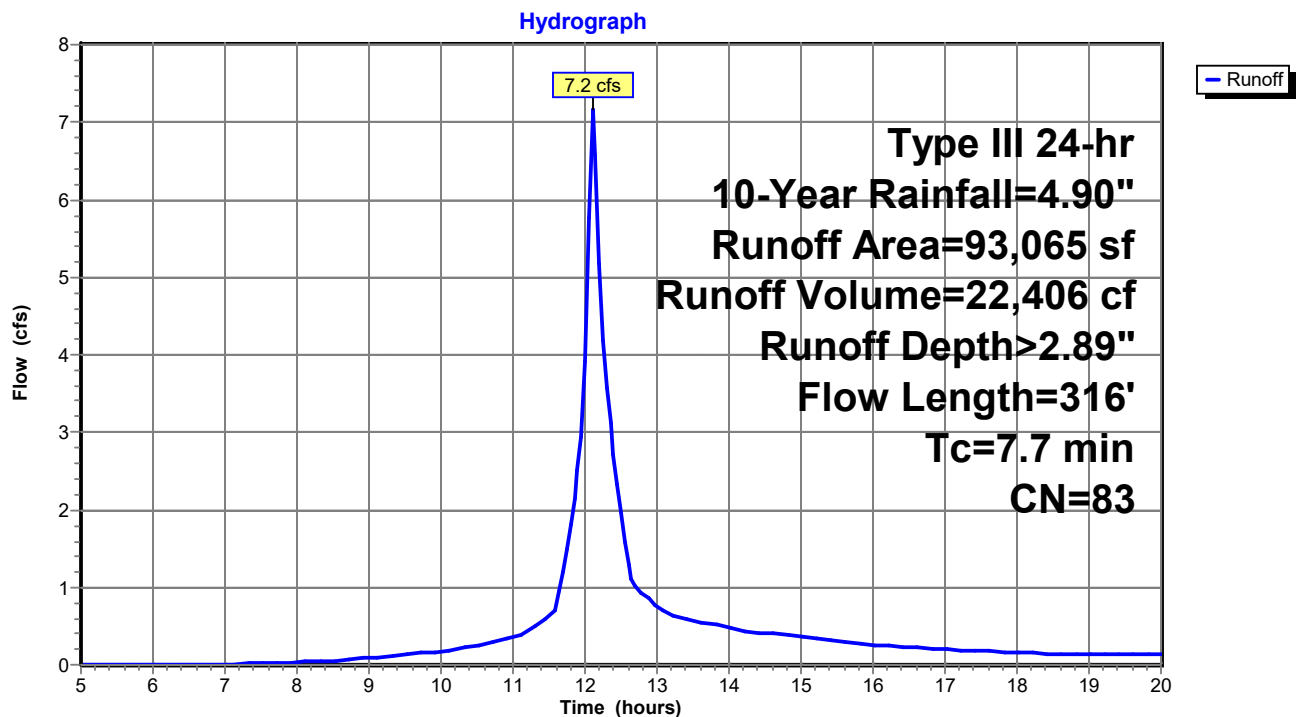
Runoff = 7.2 cfs @ 12.11 hrs, Volume= 22,406 cf, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
1,900	77	Woods, Good, HSG D
60,950	78	Meadow, non-grazed, HSG D
8,585	80	>75% Grass cover, Good, HSG D
21,630	98	Paved parking, HSG D
93,065	83	Weighted Average
71,435		76.76% Pervious Area
21,630		23.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.01		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.30"
1.2	20	0.1500	0.28		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
6.2	276	0.0111	0.74		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
7.7	316	Total			

Subcatchment 1.0:



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.1:

Runoff = 5.8 cfs @ 13.01 hrs, Volume= 48,009 cf, Depth> 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
20,935	77	Woods, Good, HSG D
57,900	78	Meadow, non-grazed, HSG D
134,575	80	>75% Grass cover, Good, HSG D
12,065	98	Paved parking, HSG D
225,475	80	Weighted Average
213,410		94.65% Pervious Area
12,065		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
4.7	330	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
76.3	1,232	Total			

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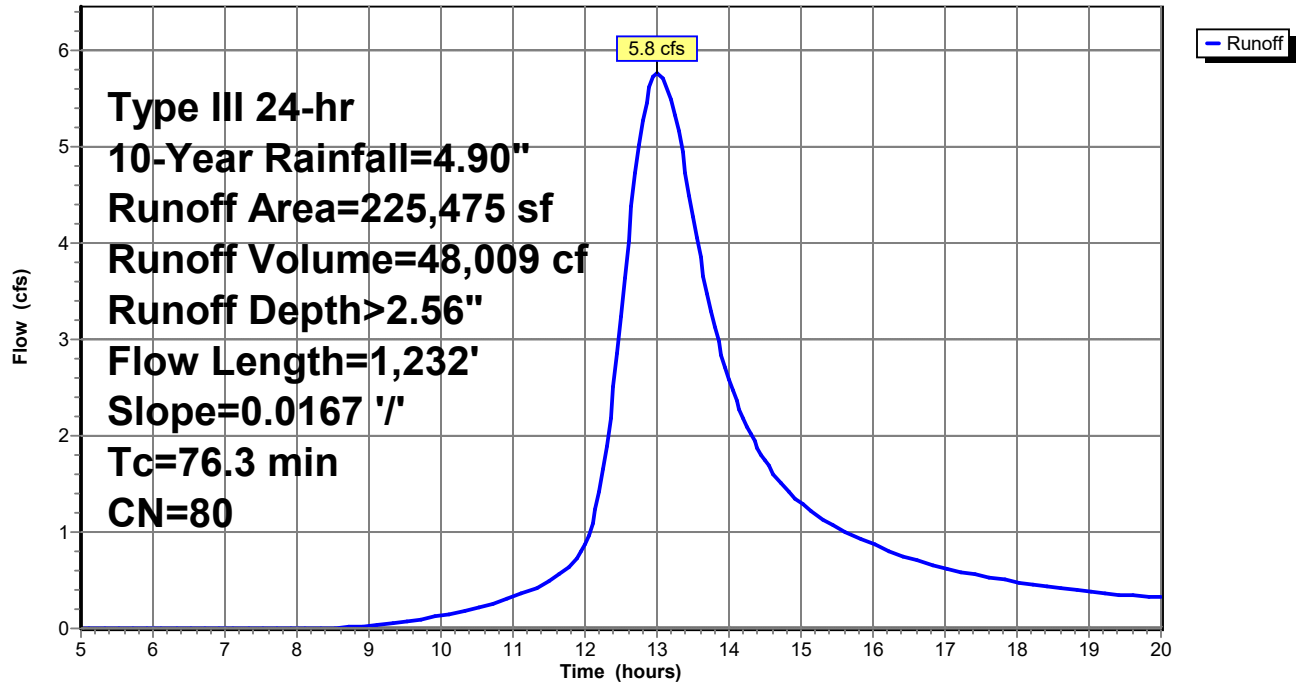
Type III 24-hr 10-Year Rainfall=4.90"

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Subcatchment 1.1:

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Summary for Subcatchment 1.2:

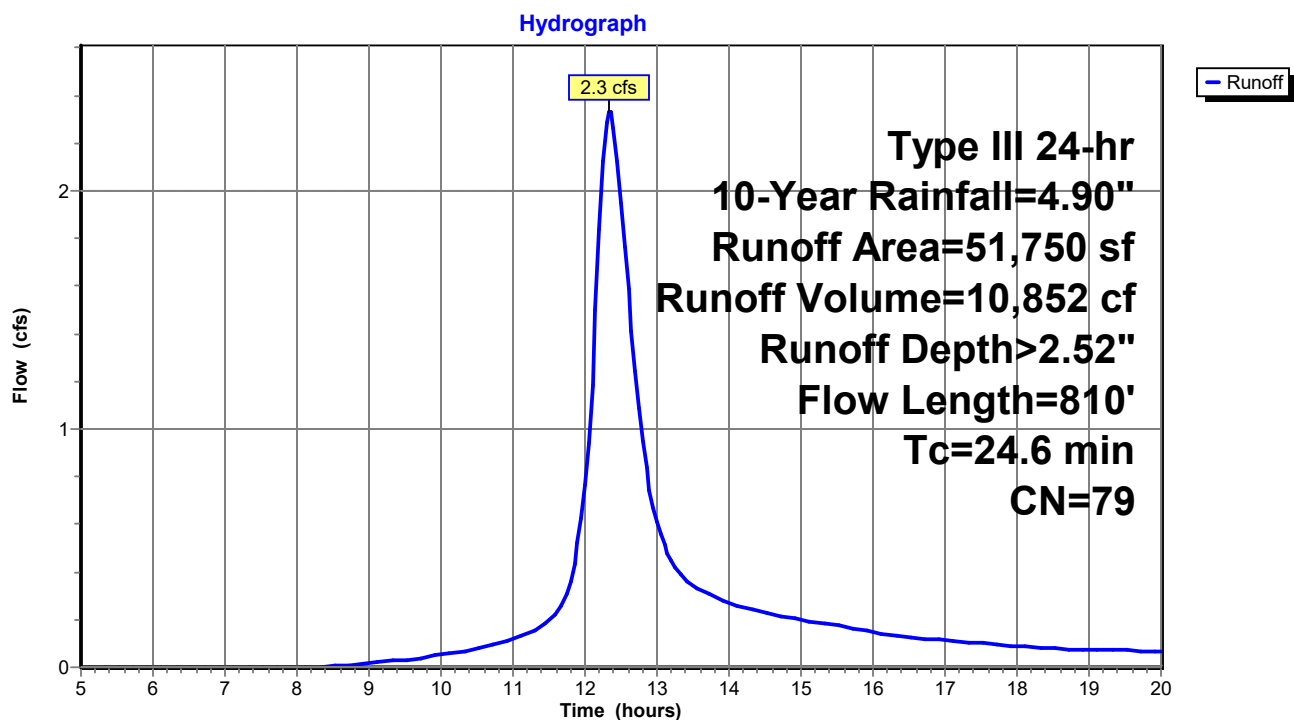
Runoff = 2.3 cfs @ 12.34 hrs, Volume= 10,852 cf, Depth> 2.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
1,625	71	Meadow, non-grazed, HSG C
18,275	78	Meadow, non-grazed, HSG D
3,655	74	>75% Grass cover, Good, HSG C
25,850	80	>75% Grass cover, Good, HSG D
2,345	98	Paved parking, HSG D
51,750	79	Weighted Average
49,405		95.47% Pervious Area
2,345		4.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	150	0.0467	0.26		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.30"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
11.7	460	0.0088	0.66		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
24.6	810	Total			

Subcatchment 1.2:



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Summary for Subcatchment 1.3:

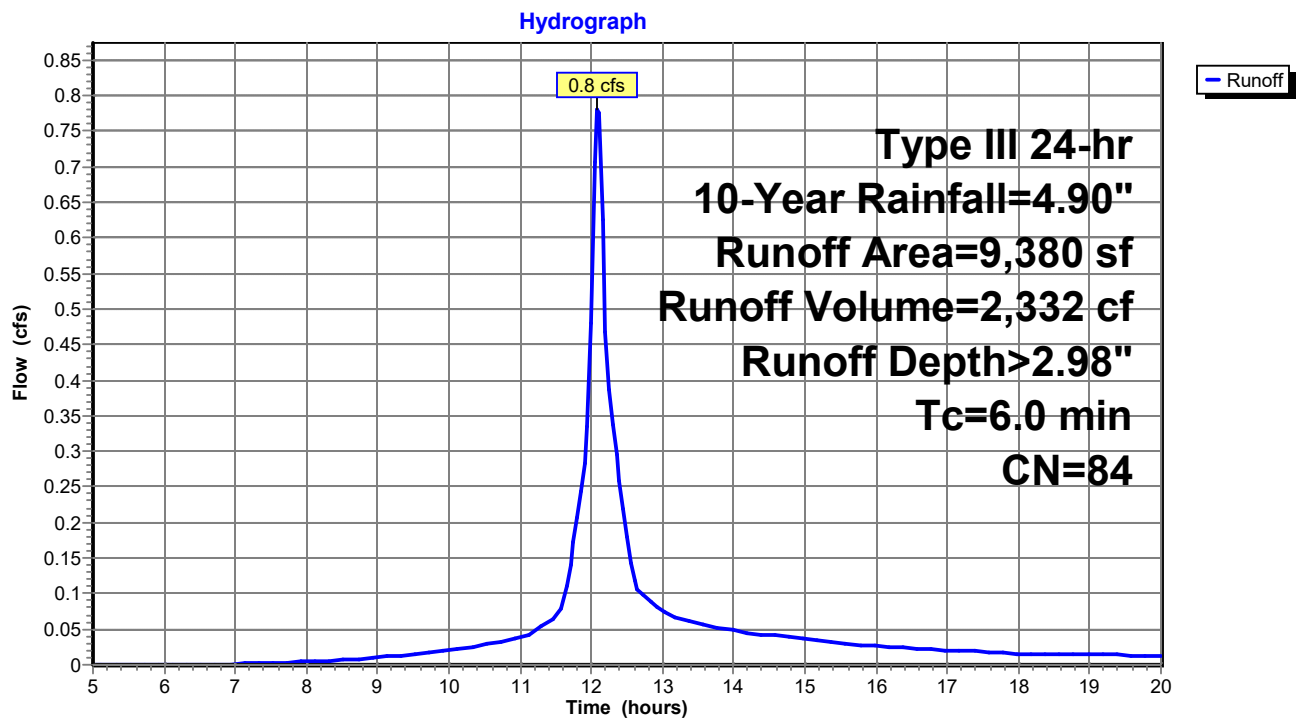
Runoff = 0.8 cfs @ 12.09 hrs, Volume= 2,332 cf, Depth> 2.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
7,140	80	>75% Grass cover, Good, HSG D
2,240	98	Paved parking, HSG D
9,380	84	Weighted Average
7,140		76.12% Pervious Area
2,240		23.88% Impervious Area

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

Subcatchment 1.3:



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.4:

Runoff = 24.5 cfs @ 13.77 hrs, Volume= 289,320 cf, Depth> 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
134,385	70	Woods, Good, HSG C
1,145,175	77	Woods, Good, HSG D
2,465	71	Meadow, non-grazed, HSG C
167,535	78	Meadow, non-grazed, HSG D
2,580	74	>75% Grass cover, Good, HSG C
80,875	80	>75% Grass cover, Good, HSG D
16,635	98	Paved parking, HSG D
1,549,650	77	Weighted Average
1,533,015		98.93% Pervious Area
16,635		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
10.0	380	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
131.9	1,265	Total			

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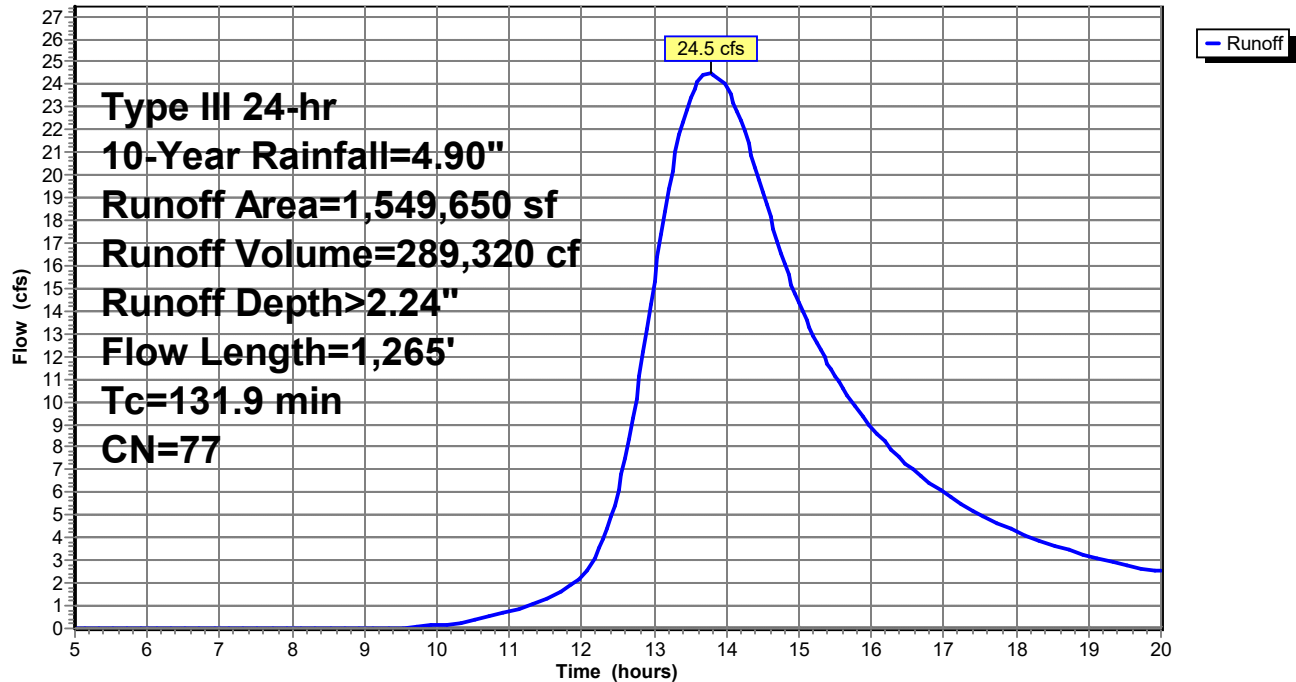
Type III 24-hr 10-Year Rainfall=4.90"

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Subcatchment 1.4:

Hydrograph



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Summary for Subcatchment 1.5:

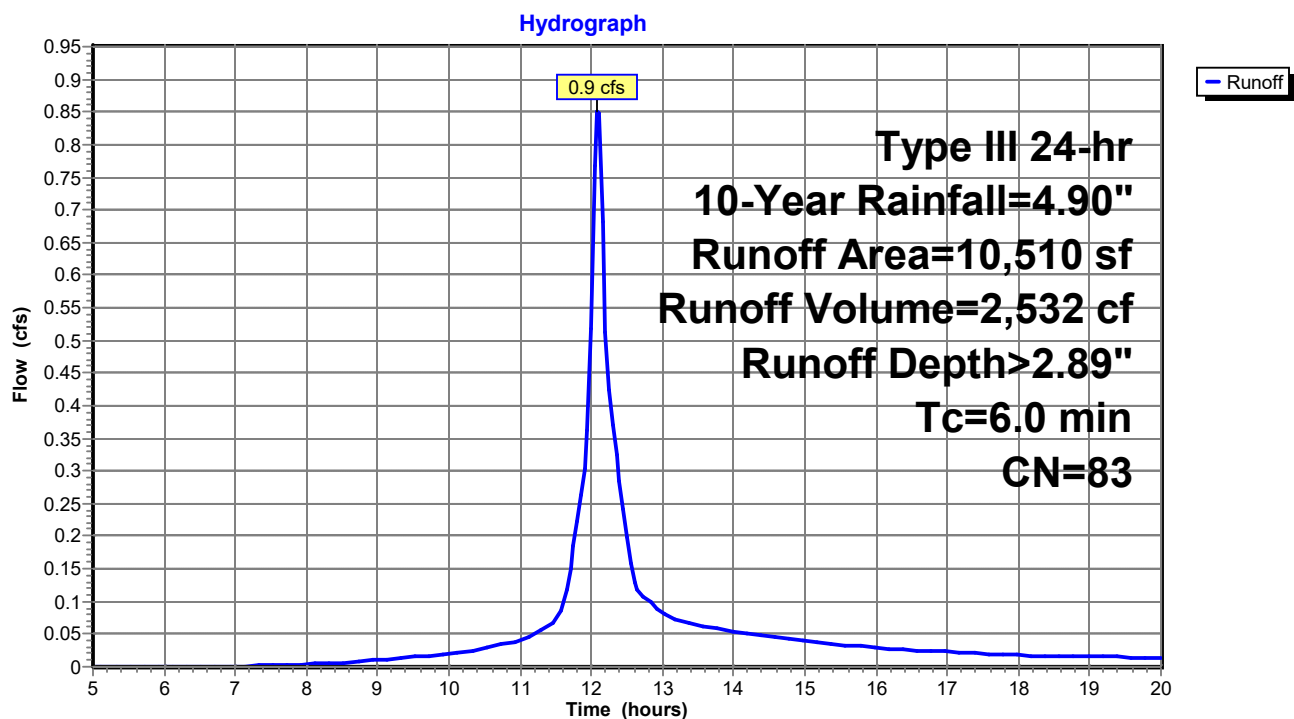
Runoff = 0.9 cfs @ 12.09 hrs, Volume= 2,532 cf, Depth> 2.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
8,485	80	>75% Grass cover, Good, HSG D
2,025	98	Paved parking, HSG D
10,510	83	Weighted Average
8,485		80.73% Pervious Area
2,025		19.27% Impervious Area

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

Subcatchment 1.5:



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.6:

Runoff = 1.2 cfs @ 12.35 hrs, Volume= 5,563 cf, Depth> 2.60"

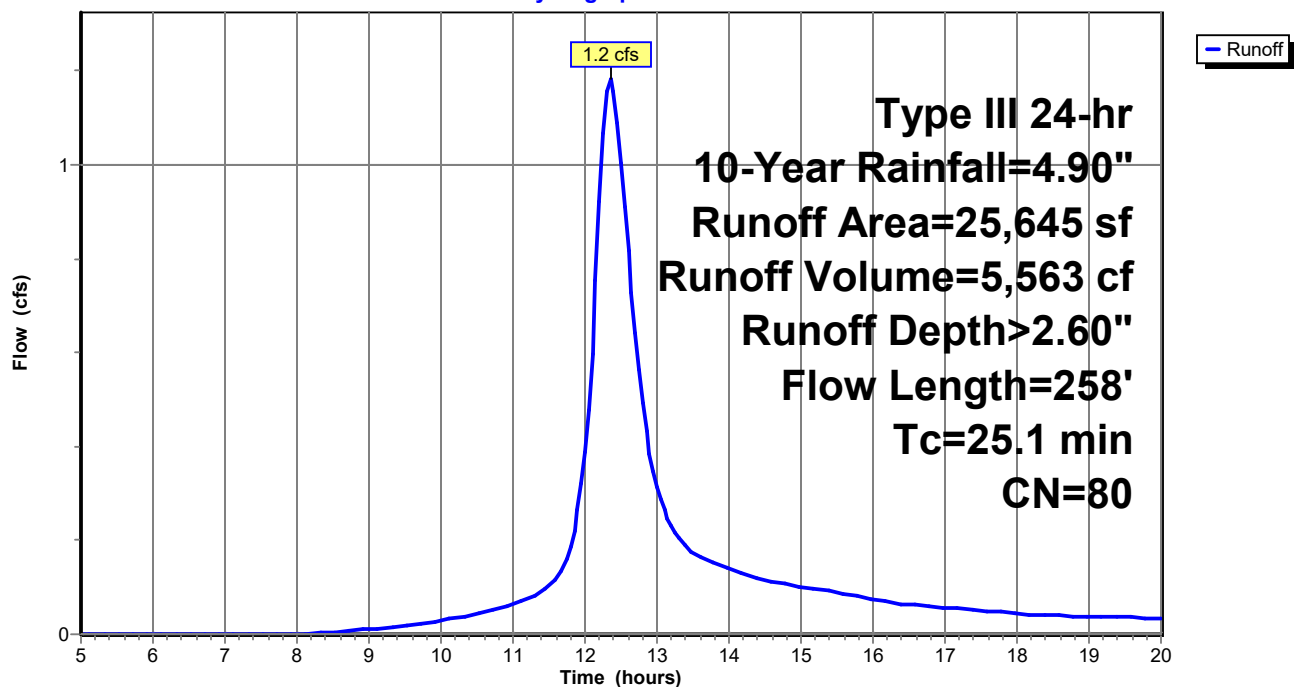
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
2,300	70	Woods, Good, HSG C
445	77	Woods, Good, HSG D
2,190	74	>75% Grass cover, Good, HSG C
18,550	80	>75% Grass cover, Good, HSG D
2,160	98	Paved parking, HSG D
25,645	80	Weighted Average
23,485		91.58% Pervious Area
2,160		8.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0606	0.06		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.2	50	0.0400	0.20		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
4.0	142	0.0070	0.59		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
25.1	258	Total			

Subcatchment 1.6:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Subcatchment 1.7:

Runoff = 1.5 cfs @ 12.09 hrs, Volume= 4,489 cf, Depth> 2.89"

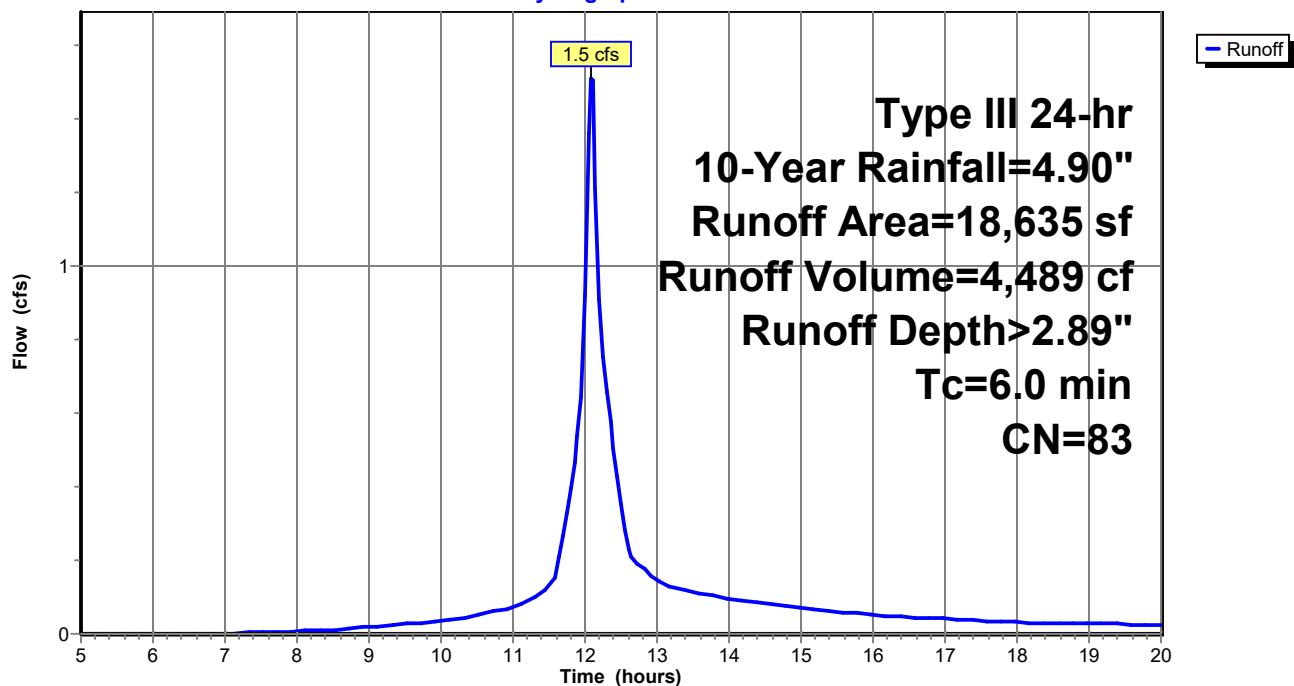
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
880	77	Woods, Good, HSG D
6,610	78	Meadow, non-grazed, HSG D
7,485	80	>75% Grass cover, Good, HSG D
3,660	98	Paved parking, HSG D
18,635	83	Weighted Average
14,975		80.36% Pervious Area
3,660		19.64% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Summary for Subcatchment 1.8:

Runoff = 6.0 cfs @ 12.55 hrs, Volume= 34,870 cf, Depth> 2.42"

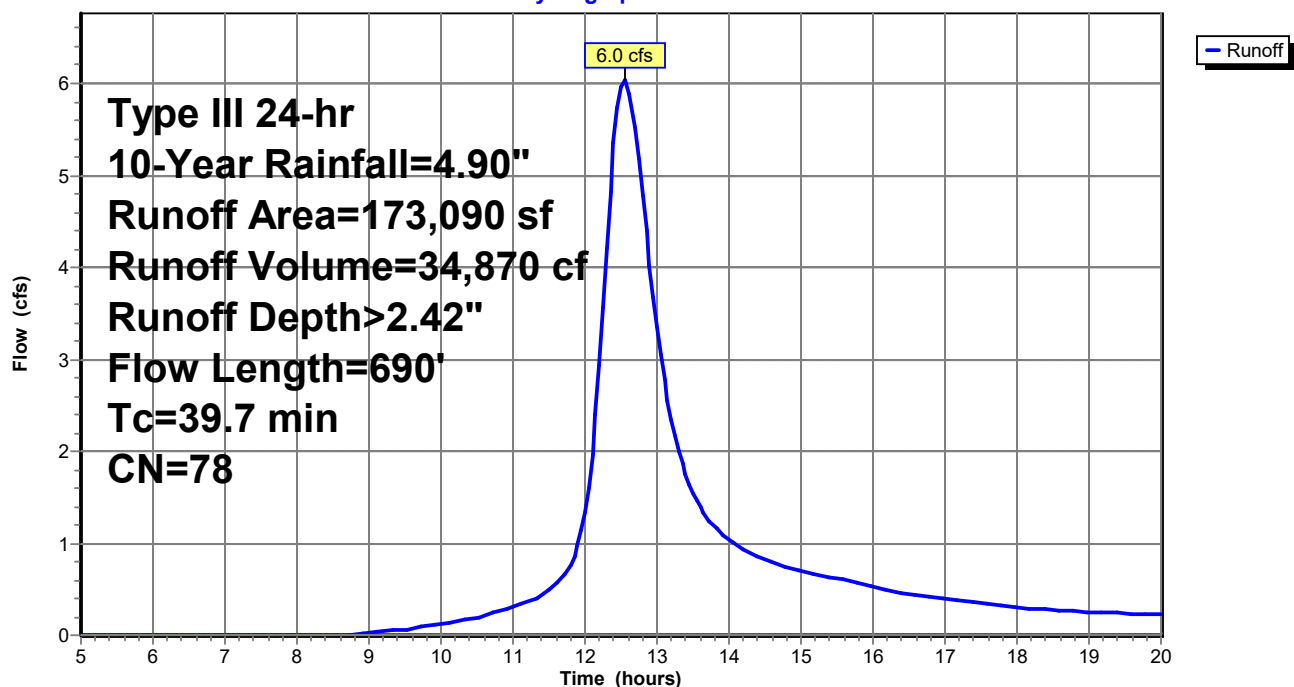
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.90"

Area (sf)	CN	Description
12,890	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
1,560	74	>75% Grass cover, Good, HSG C
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.8:

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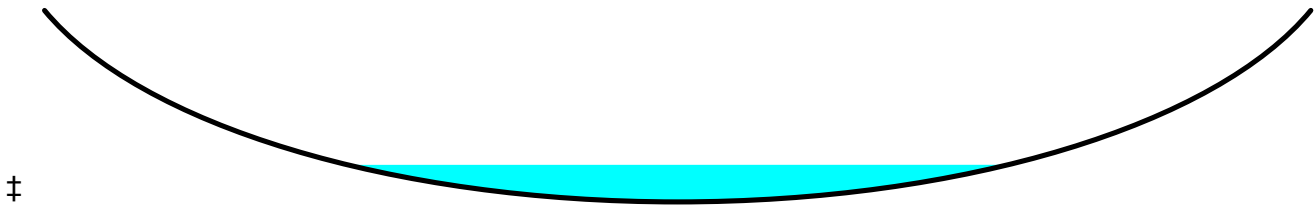
Summary for Reach R1:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 2.54" for 10-Year event
Inflow = 6.2 cfs @ 13.13 hrs, Volume= 58,773 cf
Outflow = 6.2 cfs @ 13.17 hrs, Volume= 58,650 cf, Atten= 0%, Lag= 2.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.42 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 1.29 fps, Avg. Travel Time= 2.9 min

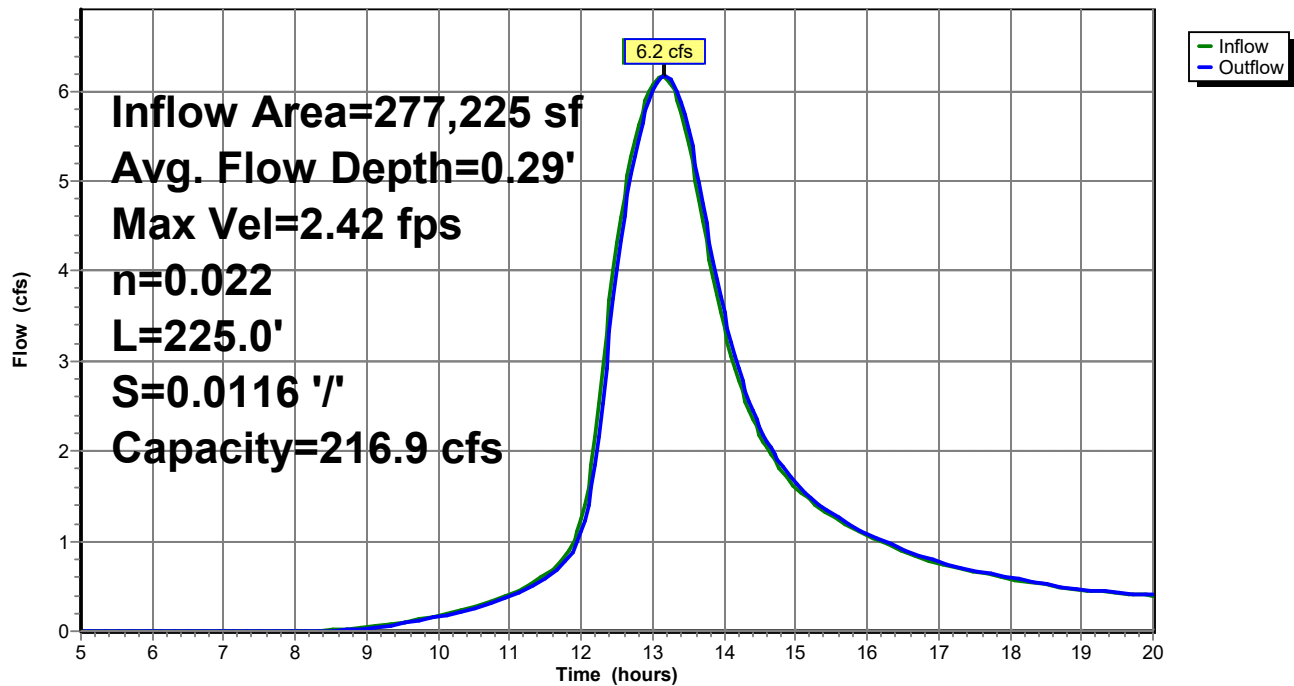
Peak Storage= 572 cf @ 13.15 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 216.9 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 225.0' Slope= 0.0116 '/'
Inlet Invert= 34.40', Outlet Invert= 31.80'



Reach R1:

Hydrograph



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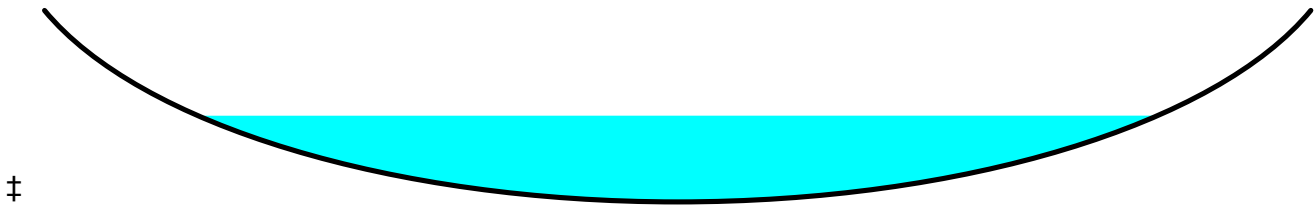
Summary for Reach R2:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 2.25" for 10-Year event
Inflow = 24.1 cfs @ 13.98 hrs, Volume= 293,953 cf
Outflow = 24.1 cfs @ 14.01 hrs, Volume= 293,562 cf, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.64 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 1.35 fps, Avg. Travel Time= 1.7 min

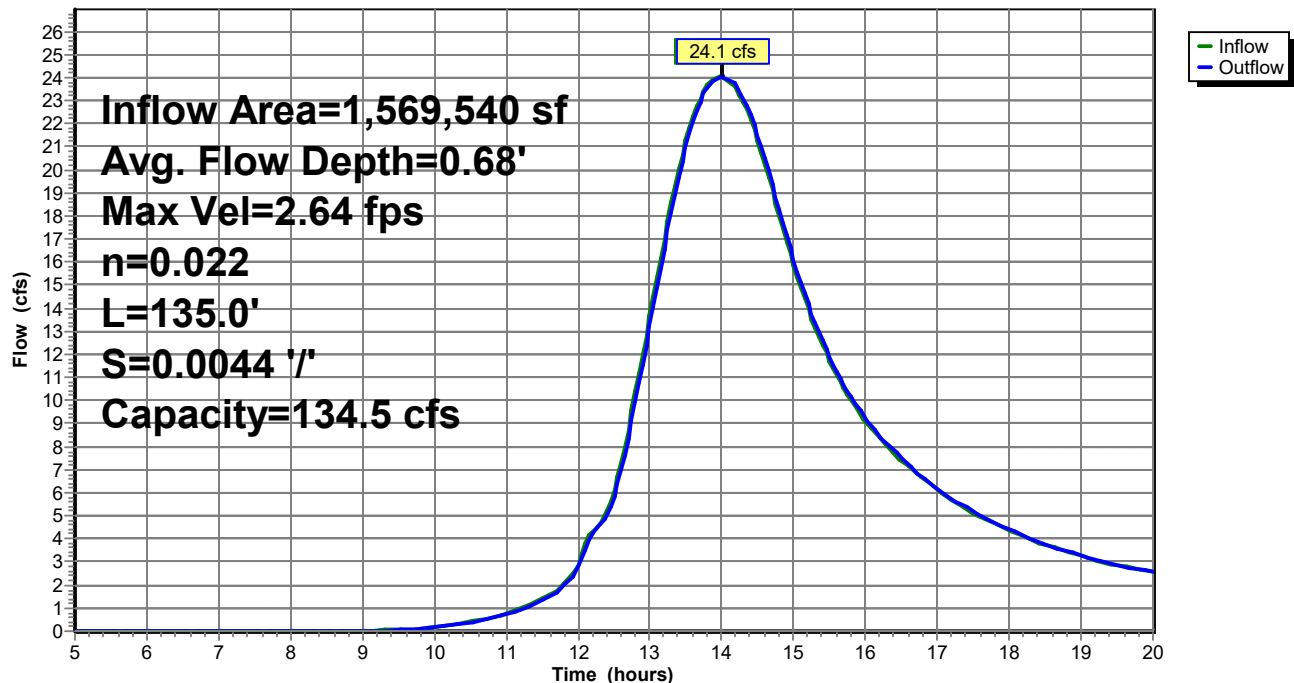
Peak Storage= 1,229 cf @ 13.99 hrs
Average Depth at Peak Storage= 0.68'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 134.5 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 135.0' Slope= 0.0044 '/'
Inlet Invert= 32.40', Outlet Invert= 31.80'



Reach R2:

Hydrograph



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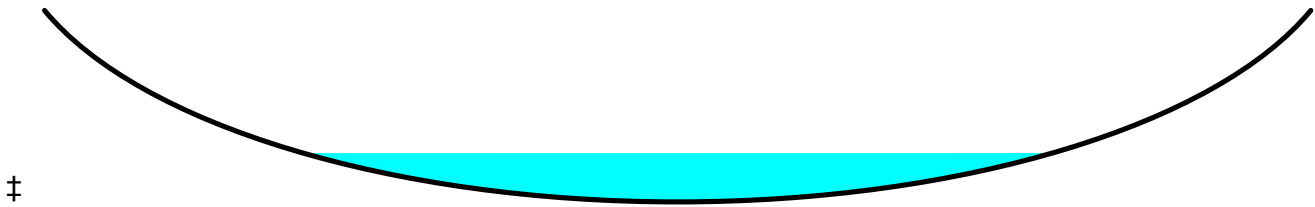
Summary for Reach R3:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 2.47" for 10-Year event
Inflow = 6.3 cfs @ 12.73 hrs, Volume= 44,654 cf
Outflow = 6.3 cfs @ 12.81 hrs, Volume= 44,473 cf, Atten= 0%, Lag= 4.9 min

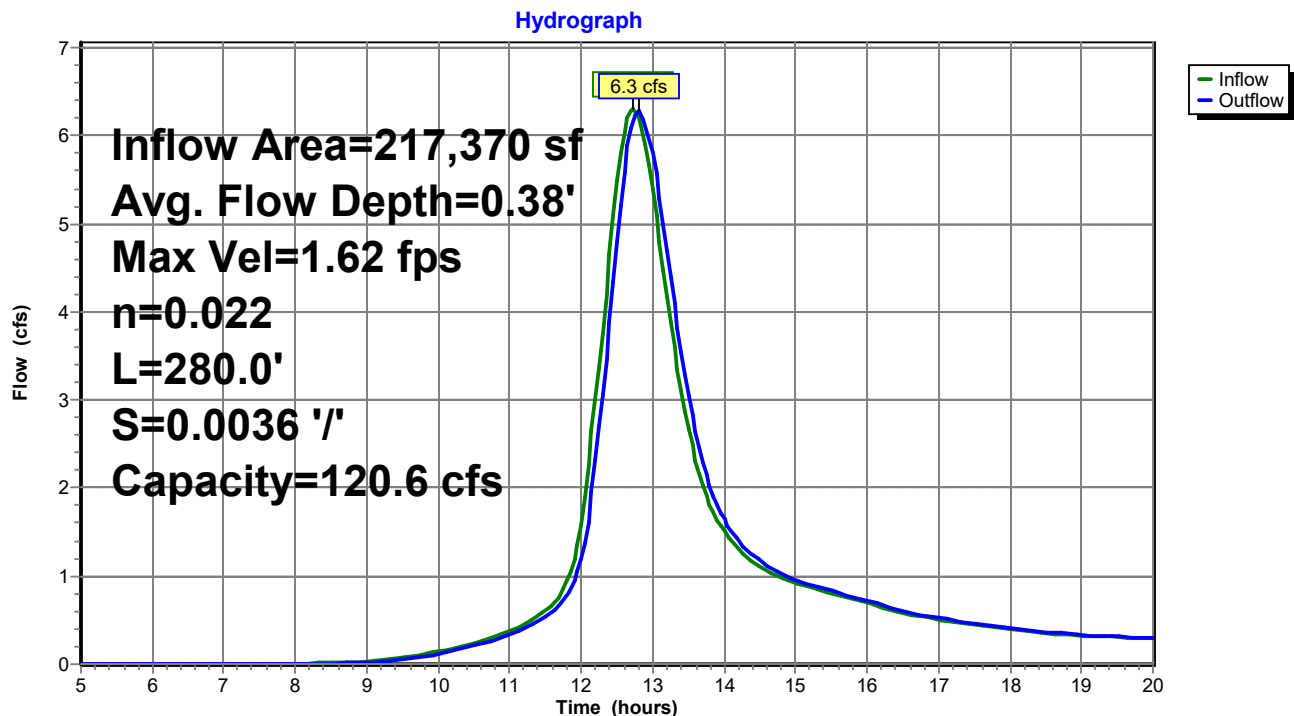
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.62 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 0.73 fps, Avg. Travel Time= 6.4 min

Peak Storage= 1,085 cf @ 12.76 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 120.6 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 280.0' Slope= 0.0036 '/'
Inlet Invert= 32.80', Outlet Invert= 31.80'



Reach R3:



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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 2.33" for 10-Year event
Inflow = 30.5 cfs @ 13.69 hrs, Volume= 419,090 cf
Outflow = 20.9 cfs @ 14.85 hrs, Volume= 413,270 cf, Atten= 31%, Lag= 69.3 min
Primary = 20.9 cfs @ 14.85 hrs, Volume= 413,270 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.30' @ 14.85 hrs Surf.Area= 118,441 sf Storage= 95,875 cf
Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 54.3 min calculated for 413,270 cf (99% of inflow)
Center-of-Mass det. time= 49.9 min (924.5 - 874.6)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=20.9 cfs @ 14.85 hrs HW=34.30' (Free Discharge)
↑**1=Culvert** (Inlet Controls 20.9 cfs @ 4.26 fps)

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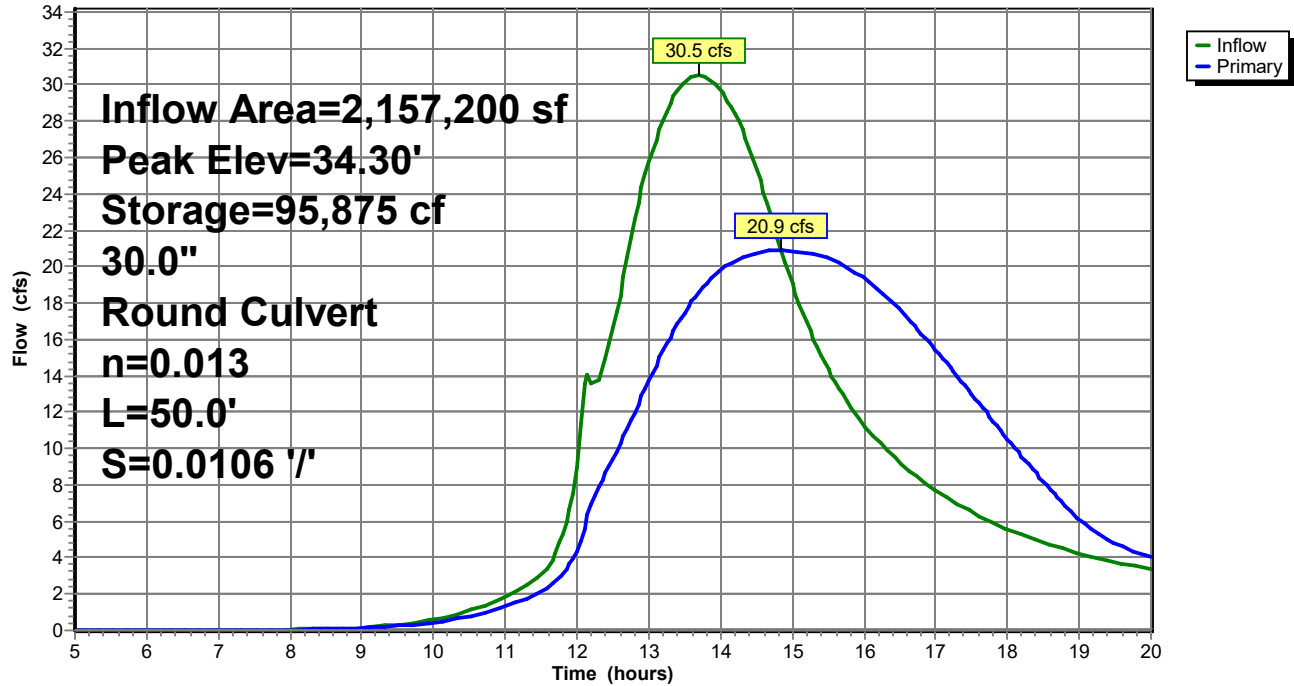
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Pond C1:

Hydrograph



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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 2.42" for 10-Year event
Inflow = 6.0 cfs @ 12.55 hrs, Volume= 34,870 cf
Outflow = 6.0 cfs @ 12.56 hrs, Volume= 34,774 cf, Atten= 0%, Lag= 0.2 min
Primary = 6.0 cfs @ 12.56 hrs, Volume= 34,774 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.73' @ 12.56 hrs Surf.Area= 400 sf Storage= 183 cf
Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 1.9 min calculated for 34,659 cf (99% of inflow)
Center-of-Mass det. time= 0.9 min (819.5 - 818.5)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=6.0 cfs @ 12.56 hrs HW=34.73' (Free Discharge)

1=Culvert (Barrel Controls 0.6 cfs @ 2.64 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 5.4 cfs @ 1.19 fps)

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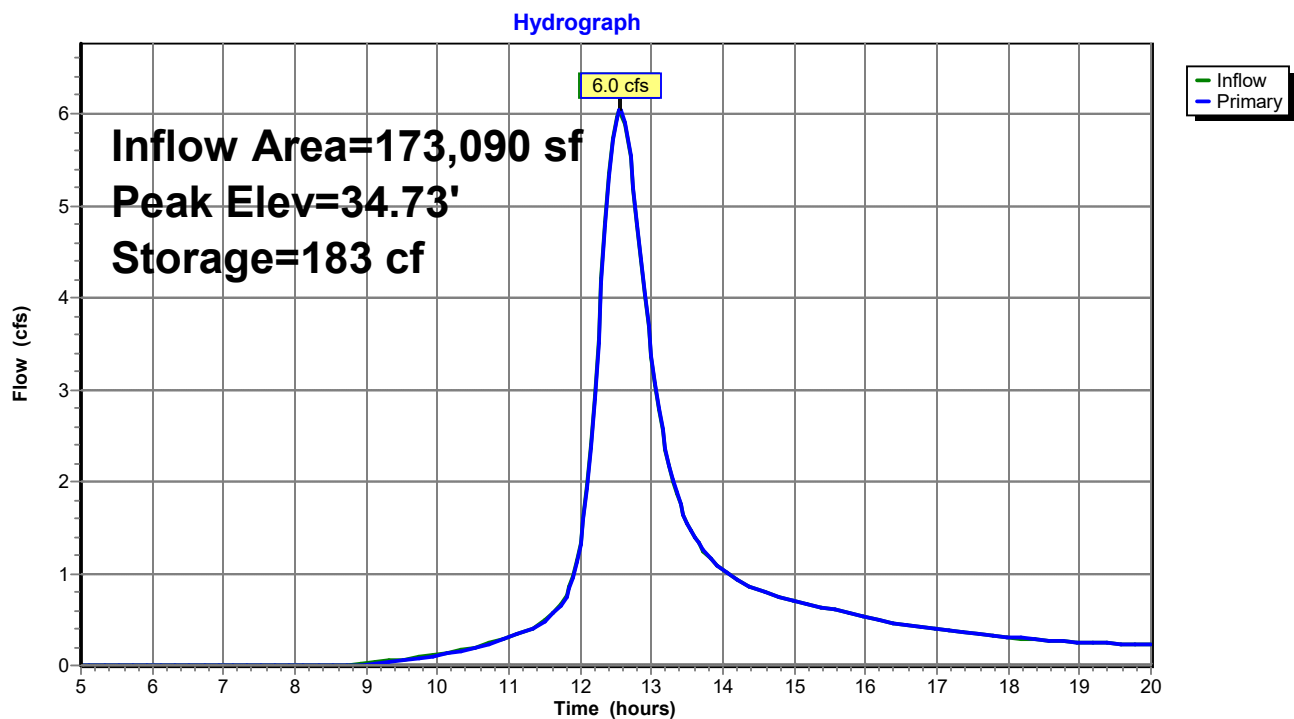
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Pond C2:



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Summary for Pond C3:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 2.55" for 10-Year event
Inflow = 6.4 cfs @ 12.95 hrs, Volume= 58,848 cf
Outflow = 6.2 cfs @ 13.13 hrs, Volume= 58,773 cf, Atten= 4%, Lag= 11.0 min
Primary = 6.2 cfs @ 13.13 hrs, Volume= 58,773 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 35.96' @ 13.13 hrs Surf.Area= 6,747 sf Storage= 3,303 cf
Flood Elev= 36.15' Surf.Area= 7,000 sf Storage= 3,555 cf

Plug-Flow detention time= 6.7 min calculated for 58,578 cf (100% of inflow)
Center-of-Mass det. time= 6.2 min (842.4 - 836.2)

Volume	Invert	Avail.Storage	Storage Description
#1	34.90'	3,555 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.90	0	0	0
35.00	100	5	5
36.00	7,000	3,550	3,555

Device	Routing	Invert	Outlet Devices
#1	Primary	34.90'	15.0" Round Culvert X 2.00 L= 48.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.90' / 34.40' S= 0.0104 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.2 cfs @ 13.13 hrs HW=35.96' (Free Discharge)
↑**1=Culvert** (Inlet Controls 6.2 cfs @ 2.77 fps)

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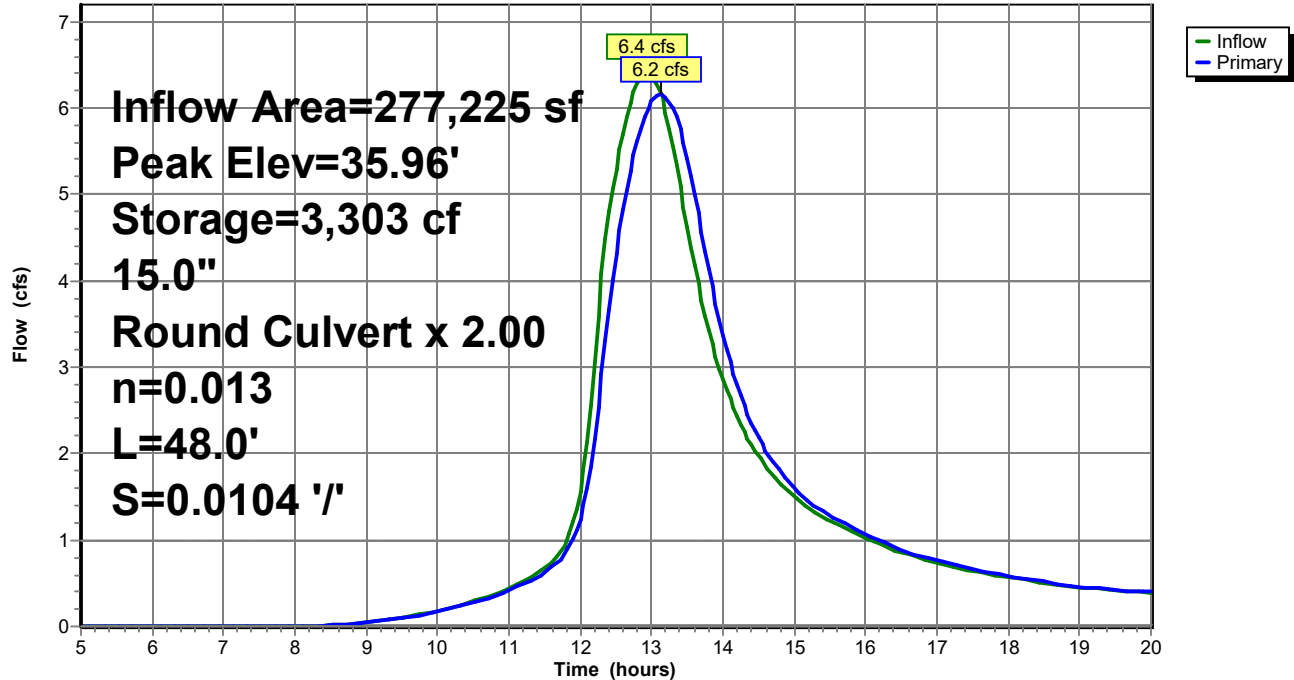
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Pond C3:

Hydrograph



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Summary for Pond C4:

Inflow Area = 51,750 sf, 4.53% Impervious, Inflow Depth > 2.52" for 10-Year event
Inflow = 2.3 cfs @ 12.34 hrs, Volume= 10,852 cf
Outflow = 2.3 cfs @ 12.38 hrs, Volume= 10,840 cf, Atten= 1%, Lag= 2.0 min
Primary = 2.3 cfs @ 12.38 hrs, Volume= 10,840 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 36.77' @ 12.38 hrs Surf.Area= 499 sf Storage= 259 cf

Flood Elev= 37.15' Surf.Area= 600 sf Storage= 383 cf

Plug-Flow detention time= 2.2 min calculated for 10,840 cf (100% of inflow)

Center-of-Mass det. time= 1.8 min (806.4 - 804.6)

Volume	Invert	Avail.Storage	Storage Description
#1	35.90'	383 cf	STORAGE (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.90	0	0	0
36.00	150	8	8
37.00	600	375	383

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.90' / 35.60' S= 0.0100 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.3 cfs @ 12.38 hrs HW=36.77' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 2.3 cfs @ 2.51 fps)

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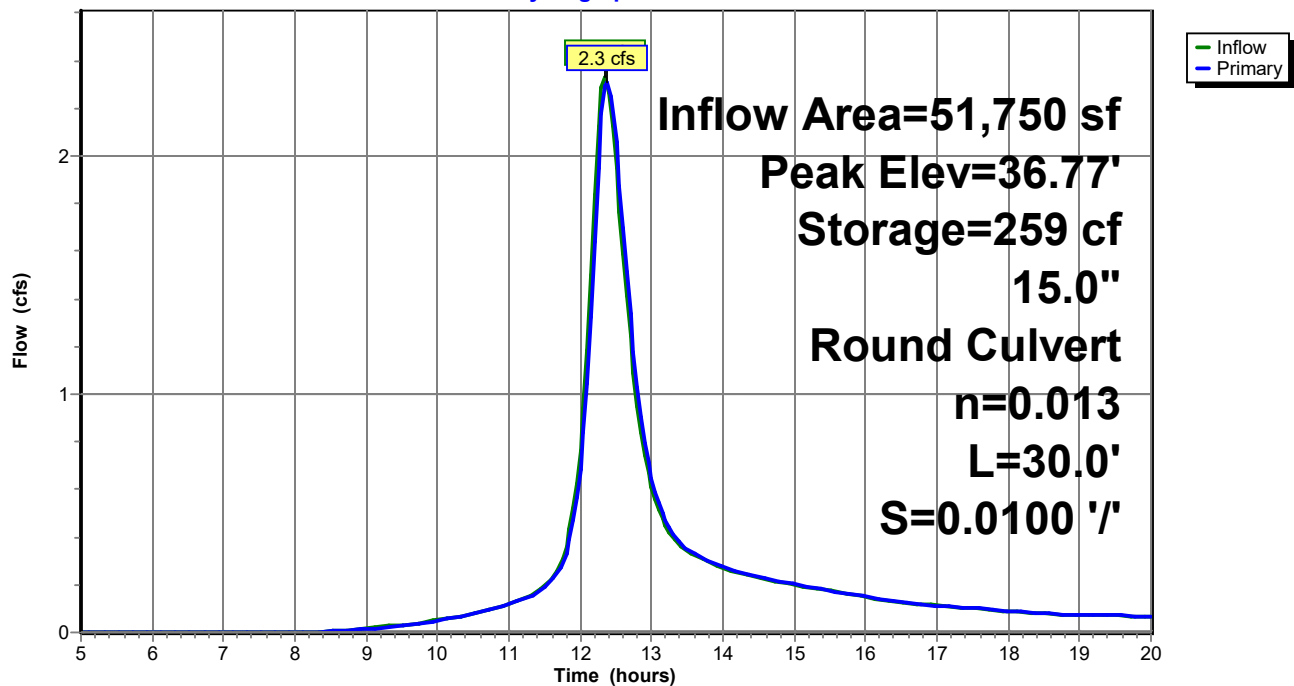
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Pond C4:

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Summary for Pond C5:

Inflow Area = 9,380 sf, 23.88% Impervious, Inflow Depth > 2.98" for 10-Year event
Inflow = 0.8 cfs @ 12.09 hrs, Volume= 2,332 cf
Outflow = 0.7 cfs @ 12.12 hrs, Volume= 2,331 cf, Atten= 4%, Lag= 1.5 min
Primary = 0.7 cfs @ 12.12 hrs, Volume= 2,331 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.66' @ 12.12 hrs Surf.Area= 288 sf Storage= 66 cf
Flood Elev= 35.45' Surf.Area= 680 sf Storage= 466 cf

Plug-Flow detention time= 1.4 min calculated for 2,331 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (779.5 - 778.3)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	2,100 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	500	200	200
36.00	900	700	900
37.00	1,500	1,200	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.7 cfs @ 12.12 hrs HW=34.65' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 0.7 cfs @ 1.81 fps)

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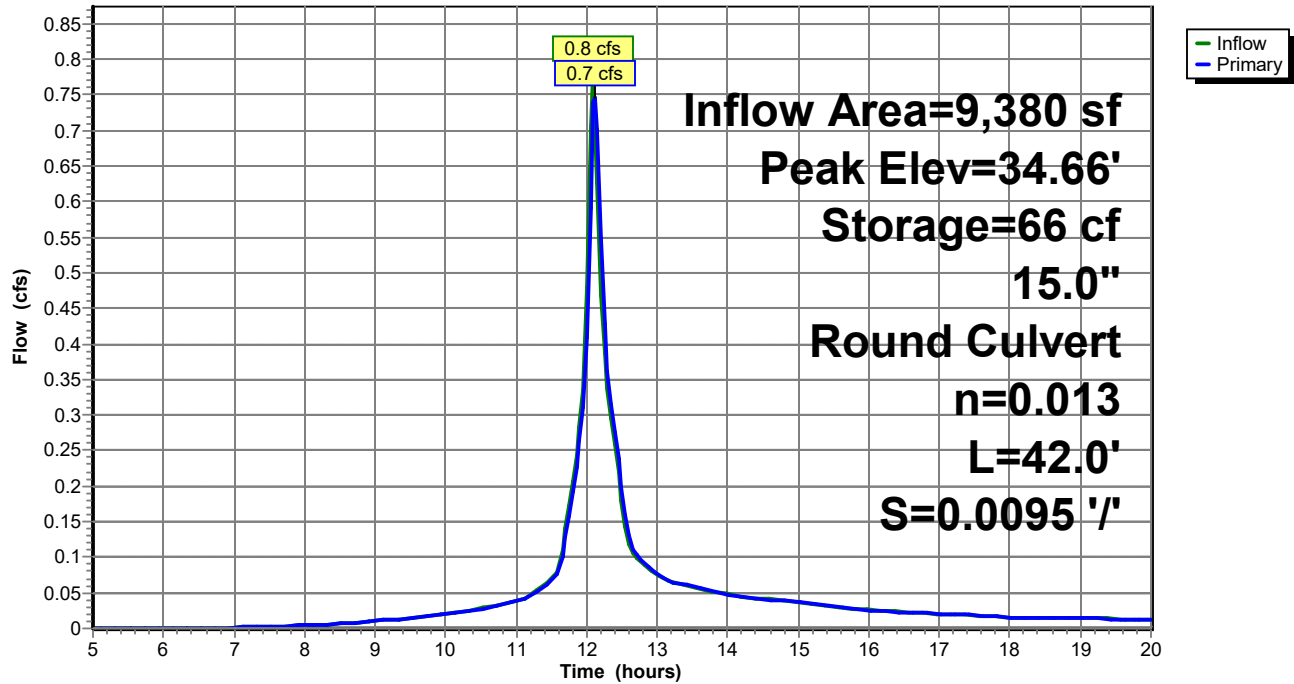
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Pond C5:

Hydrograph



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Summary for Pond C6:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 2.25" for 10-Year event
Inflow = 24.6 cfs @ 13.77 hrs, Volume= 294,180 cf
Outflow = 24.1 cfs @ 13.98 hrs, Volume= 293,953 cf, Atten= 2%, Lag= 12.8 min
Primary = 24.1 cfs @ 13.98 hrs, Volume= 293,953 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.63' @ 13.98 hrs Surf.Area= 20,857 sf Storage= 8,754 cf

Flood Elev= 35.70' Surf.Area= 31,200 sf Storage= 18,300 cf

Plug-Flow detention time= 3.6 min calculated for 293,953 cf (100% of inflow)

Center-of-Mass det. time= 3.4 min (892.8 - 889.4)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	18,300 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	3,000	1,200	1,200
35.00	31,200	17,100	18,300

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	36.0" Round Culvert X 2.00 w/ 6.0" inside fill L= 45.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.70' / 32.40' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 6.29 sf

Primary OutFlow Max=24.1 cfs @ 13.98 hrs HW=34.63' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 24.1 cfs @ 2.98 fps)

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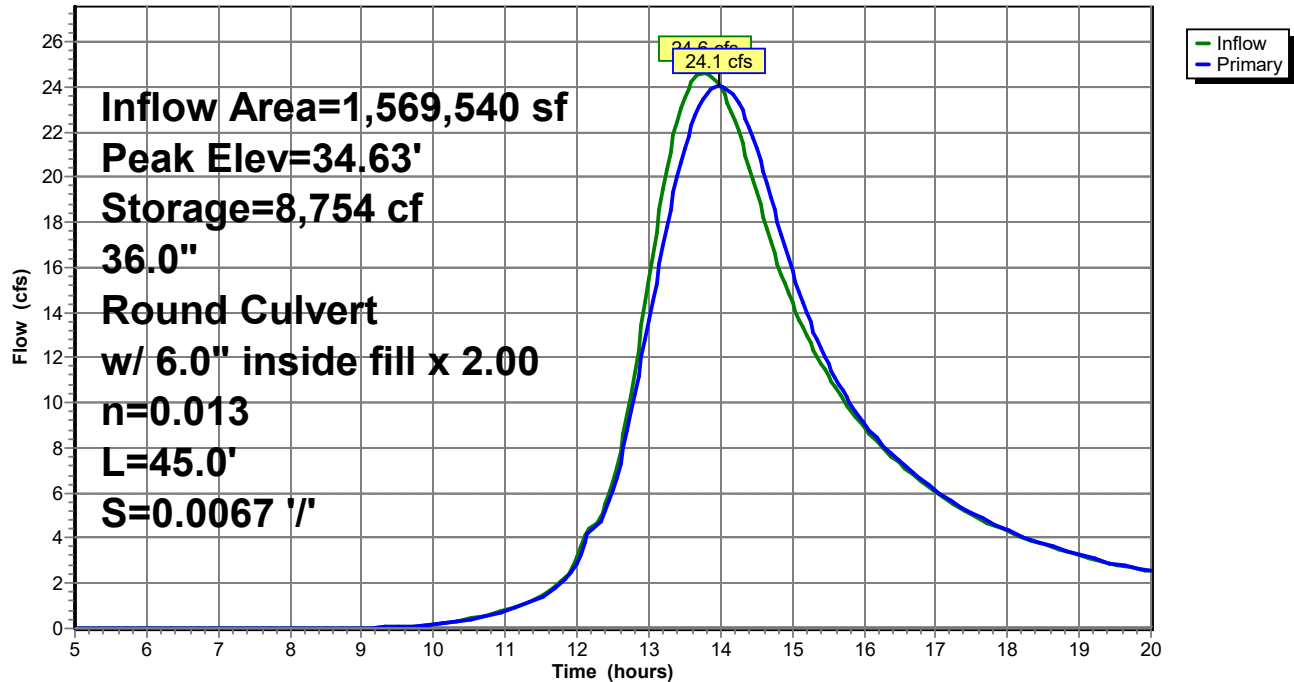
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Pond C6:

Hydrograph



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Summary for Pond C7:

Inflow Area = 10,510 sf, 19.27% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 0.9 cfs @ 12.09 hrs, Volume= 2,532 cf
Outflow = 0.8 cfs @ 12.14 hrs, Volume= 2,529 cf, Atten= 11%, Lag= 2.7 min
Primary = 0.8 cfs @ 12.14 hrs, Volume= 2,529 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.66' @ 12.14 hrs Surf.Area= 578 sf Storage= 134 cf
Flood Elev= 35.45' Surf.Area= 1,473 sf Storage= 956 cf

Plug-Flow detention time= 2.8 min calculated for 2,521 cf (100% of inflow)
Center-of-Mass det. time= 2.4 min (783.2 - 780.8)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	1,925 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	1,000	400	400
36.00	2,050	1,525	1,925

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.7 cfs @ 12.14 hrs HW=34.66' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 0.7 cfs @ 1.82 fps)

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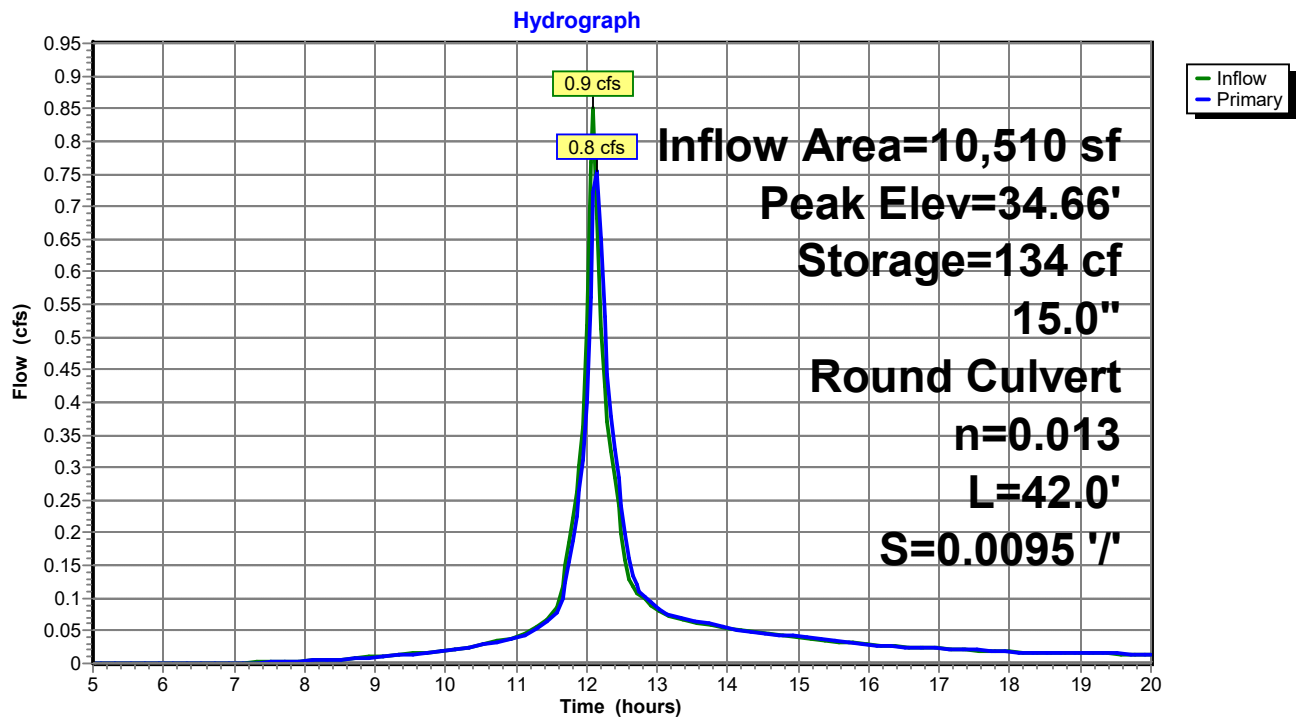
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Pond C7:



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Summary for Pond C8:

Inflow Area = 25,645 sf, 8.42% Impervious, Inflow Depth > 2.60" for 10-Year event
Inflow = 1.2 cfs @ 12.35 hrs, Volume= 5,563 cf
Outflow = 1.1 cfs @ 12.45 hrs, Volume= 5,560 cf, Atten= 8%, Lag= 6.1 min
Primary = 1.1 cfs @ 12.45 hrs, Volume= 5,560 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.37' @ 12.45 hrs Surf.Area= 1,431 sf Storage= 304 cf
Flood Elev= 35.05' Surf.Area= 3,650 sf Storage= 1,915 cf

Plug-Flow detention time= 2.8 min calculated for 5,542 cf (100% of inflow)
Center-of-Mass det. time= 2.6 min (805.4 - 802.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	1,915 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.80	0	0	0
34.00	150	15	15
35.00	3,650	1,900	1,915

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	15.0" Round Culvert L= 32.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.80' / 33.50' S= 0.0094 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.1 cfs @ 12.45 hrs HW=34.37' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 1.1 cfs @ 2.02 fps)

Post Development

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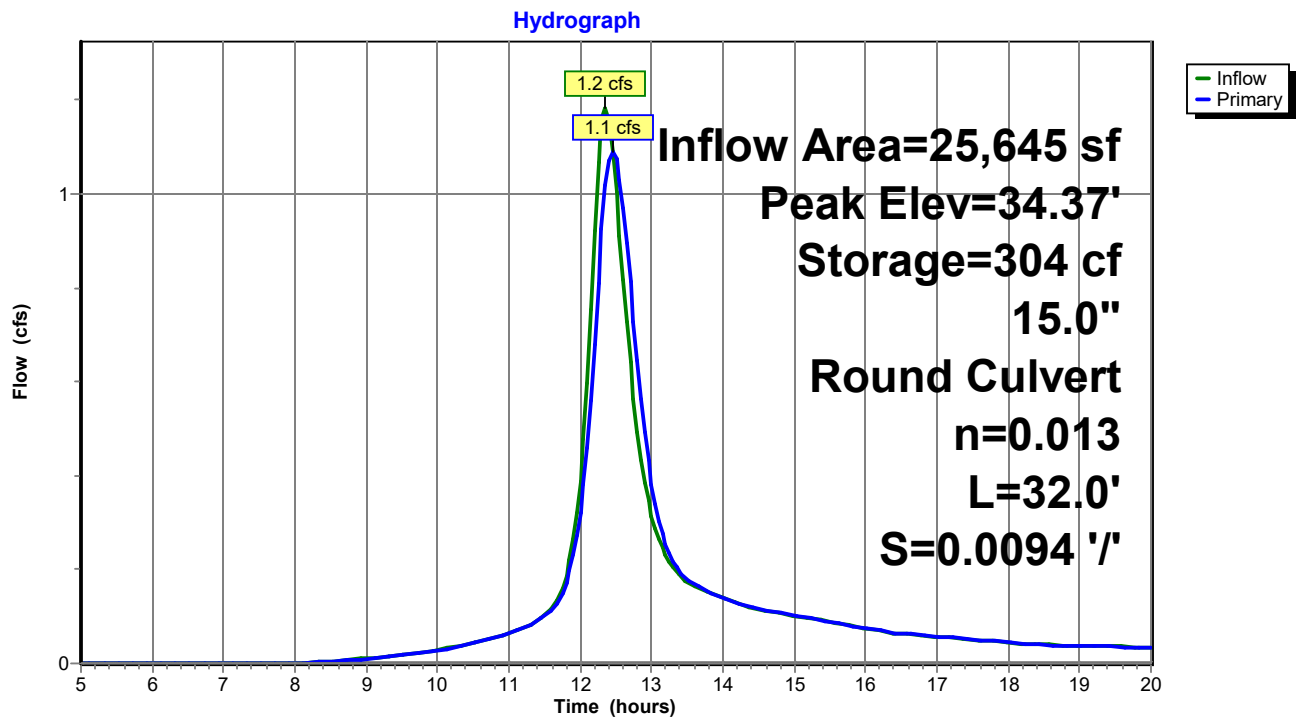
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Type III 24-hr 10-Year Rainfall=4.90"

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Pond C8:



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Type III 24-hr 10-Year Rainfall=4.90"

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Summary for Pond C9:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 2.47" for 10-Year event
 Inflow = 7.4 cfs @ 12.52 hrs, Volume= 44,823 cf
 Outflow = 6.3 cfs @ 12.73 hrs, Volume= 44,654 cf, Atten= 15%, Lag= 12.7 min
 Primary = 6.3 cfs @ 12.73 hrs, Volume= 44,654 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 34.28' @ 12.73 hrs Surf.Area= 8,267 sf Storage= 5,000 cf
 Flood Elev= 34.45' Surf.Area= 8,968 sf Storage= 6,455 cf

Plug-Flow detention time= 11.3 min calculated for 44,654 cf (100% of inflow)
 Center-of-Mass det. time= 9.9 min (823.7 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	12,015 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	7,100	2,840	2,840
35.00	11,250	9,175	12,015

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	15.0" Round Culvert X 2.00 L= 36.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.20' / 32.80' S= 0.0111 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=6.3 cfs @ 12.73 hrs HW=34.28' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 6.3 cfs @ 2.79 fps)

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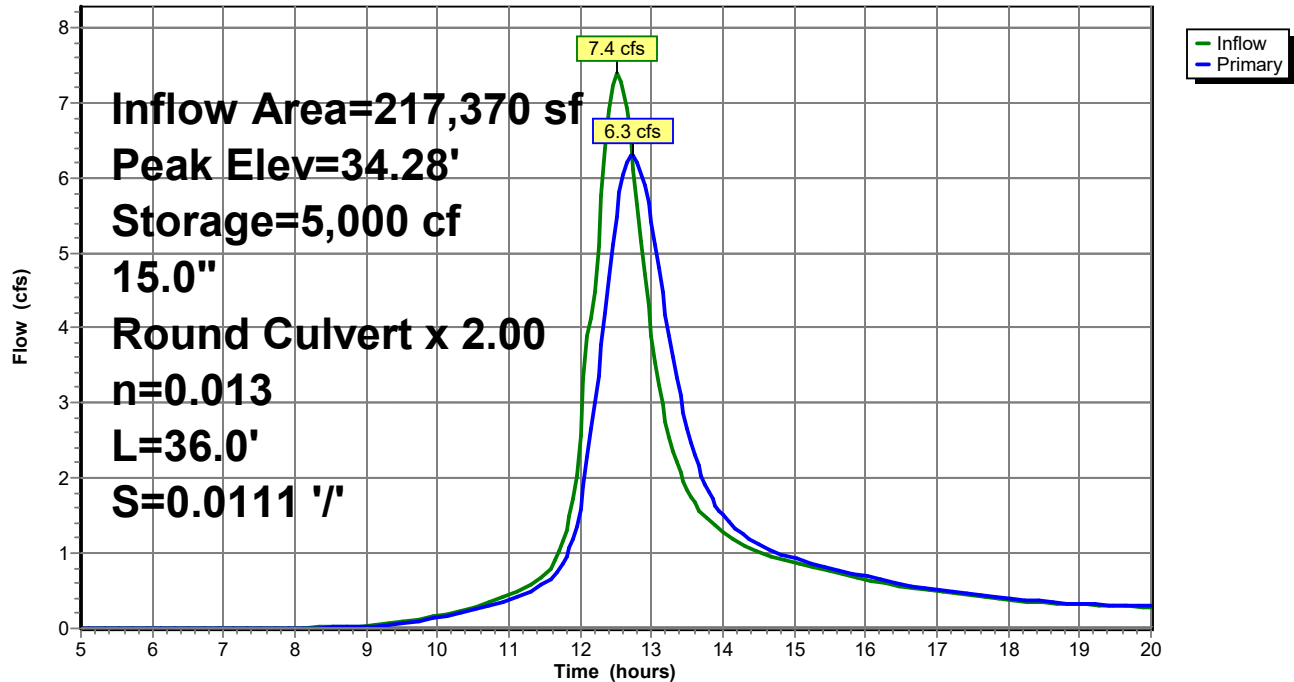
Type III 24-hr 10-Year Rainfall=4.90"

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Pond C9:

Hydrograph



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Type III 24-hr 10-Year Rainfall=4.90"

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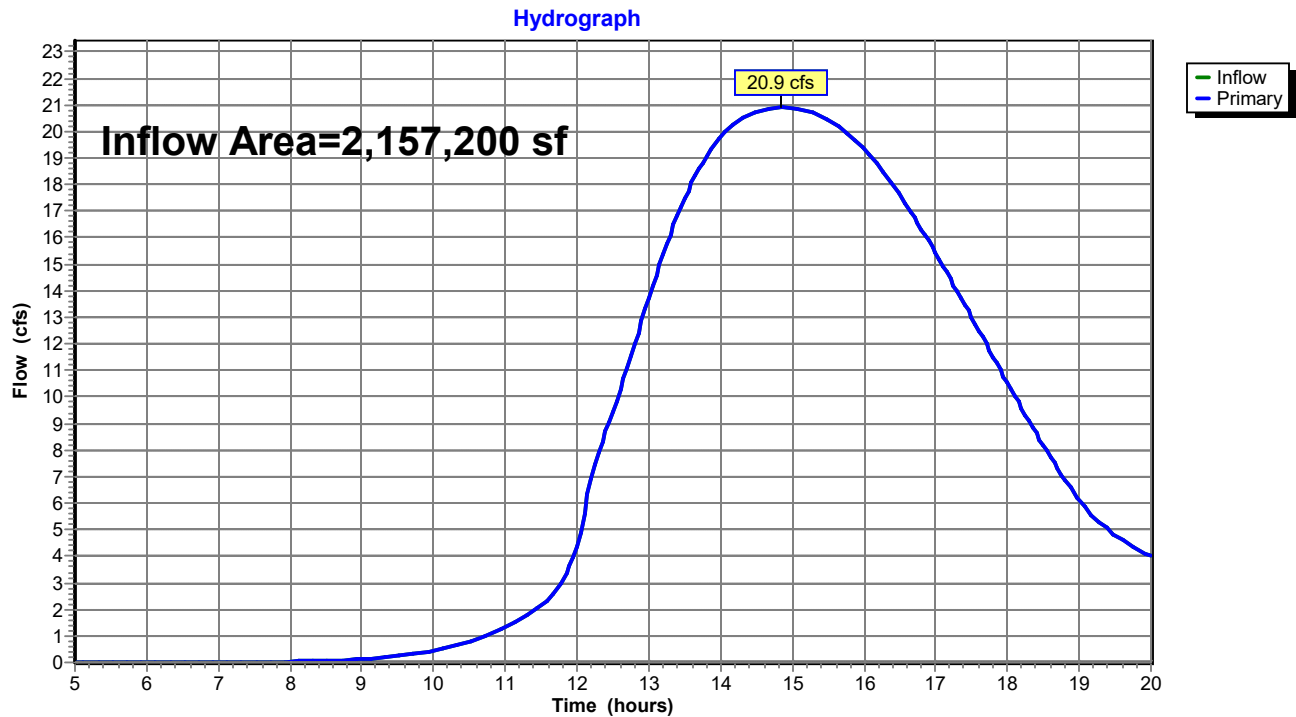
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Summary for Link AP1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 2.30" for 10-Year event
Inflow = 20.9 cfs @ 14.85 hrs, Volume= 413,270 cf
Primary = 20.9 cfs @ 14.85 hrs, Volume= 413,270 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



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Type III 24-hr 25-Year Rainfall=6.20"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 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 1.0:	Runoff Area=93,065 sf 23.24% Impervious Runoff Depth>4.02" Flow Length=316' Tc=7.7 min CN=83 Runoff=9.9 cfs 31,196 cf
Subcatchment 1.1:	Runoff Area=225,475 sf 5.35% Impervious Runoff Depth>3.63" Flow Length=1,232' Slope=0.0167 '/' Tc=76.3 min CN=80 Runoff=8.1 cfs 68,212 cf
Subcatchment 1.2:	Runoff Area=51,750 sf 4.53% Impervious Runoff Depth>3.59" Flow Length=810' Tc=24.6 min CN=79 Runoff=3.3 cfs 15,499 cf
Subcatchment 1.3:	Runoff Area=9,380 sf 23.88% Impervious Runoff Depth>4.13" Tc=6.0 min CN=84 Runoff=1.1 cfs 3,228 cf
Subcatchment 1.4:	Runoff Area=1,549,650 sf 1.07% Impervious Runoff Depth>3.25" Flow Length=1,265' Tc=131.9 min CN=77 Runoff=35.5 cfs 420,109 cf
Subcatchment 1.5:	Runoff Area=10,510 sf 19.27% Impervious Runoff Depth>4.02" Tc=6.0 min CN=83 Runoff=1.2 cfs 3,525 cf
Subcatchment 1.6:	Runoff Area=25,645 sf 8.42% Impervious Runoff Depth>3.69" Flow Length=258' Tc=25.1 min CN=80 Runoff=1.7 cfs 7,895 cf
Subcatchment 1.7:	Runoff Area=18,635 sf 19.64% Impervious Runoff Depth>4.02" Tc=6.0 min CN=83 Runoff=2.1 cfs 6,250 cf
Subcatchment 1.8:	Runoff Area=173,090 sf 5.96% Impervious Runoff Depth>3.48" Flow Length=690' Tc=39.7 min CN=78 Runoff=8.6 cfs 50,147 cf
Reach R1:	Avg. Flow Depth=0.35' Max Vel=2.73 fps Inflow=9.4 cfs 83,579 cf n=0.022 L=225.0' S=0.0116 '/' Capacity=216.9 cfs Outflow=9.1 cfs 83,431 cf
Reach R2:	Avg. Flow Depth=0.81' Max Vel=2.97 fps Inflow=35.3 cfs 426,525 cf n=0.022 L=135.0' S=0.0044 '/' Capacity=134.5 cfs Outflow=34.8 cfs 426,048 cf
Reach R3:	Avg. Flow Depth=0.44' Max Vel=1.77 fps Inflow=8.3 cfs 63,961 cf n=0.022 L=280.0' S=0.0036 '/' Capacity=120.6 cfs Outflow=8.3 cfs 63,741 cf
Pond C1:	Peak Elev=34.85' Storage=175,679 cf Inflow=43.0 cfs 604,417 cf 30.0" Round Culvert n=0.013 L=50.0' S=0.0106 '/' Outflow=25.0 cfs 588,440 cf
Pond C2:	Peak Elev=34.79' Storage=208 cf Inflow=8.6 cfs 50,147 cf Outflow=8.6 cfs 50,049 cf
Pond C3:	Peak Elev=36.54' Storage=3,555 cf Inflow=9.1 cfs 83,696 cf 15.0" Round Culvert x 2.00 n=0.013 L=48.0' S=0.0104 '/' Outflow=9.4 cfs 83,579 cf
Pond C4:	Peak Elev=37.01' Storage=383 cf Inflow=3.3 cfs 15,499 cf 15.0" Round Culvert n=0.013 L=30.0' S=0.0100 '/' Outflow=3.3 cfs 15,483 cf

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Type III 24-hr 25-Year Rainfall=6.20"

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Pond C5: Peak Elev=34.74' Storage=92 cf Inflow=1.1 cfs 3,228 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=1.0 cfs 3,226 cf

Pond C6: Peak Elev=35.04' Storage=18,300 cf Inflow=35.6 cfs 426,857 cf
36.0" Round Culvert w/ 6.0" inside fill x 2.00 n=0.013 L=45.0' S=0.0067 '/' Outflow=35.3 cfs 426,525 cf

Pond C7: Peak Elev=34.75' Storage=188 cf Inflow=1.2 cfs 3,525 cf
15.0" Round Culvert n=0.013 L=42.0' S=0.0095 '/' Outflow=1.0 cfs 3,522 cf

Pond C8: Peak Elev=34.48' Storage=490 cf Inflow=1.7 cfs 7,895 cf
15.0" Round Culvert n=0.013 L=32.0' S=0.0094 '/' Outflow=1.5 cfs 7,890 cf

Pond C9: Peak Elev=34.62' Storage=8,085 cf Inflow=10.5 cfs 64,189 cf
15.0" Round Culvert x 2.00 n=0.013 L=36.0' S=0.0111 '/' Outflow=8.3 cfs 63,961 cf

Link AP1: Inflow=25.0 cfs 588,440 cf
Primary=25.0 cfs 588,440 cf

Total Runoff Area = 2,157,200 sf Runoff Volume = 606,061 cf Average Runoff Depth = 3.37"
96.61% Pervious = 2,084,130 sf 3.39% Impervious = 73,070 sf

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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.0:

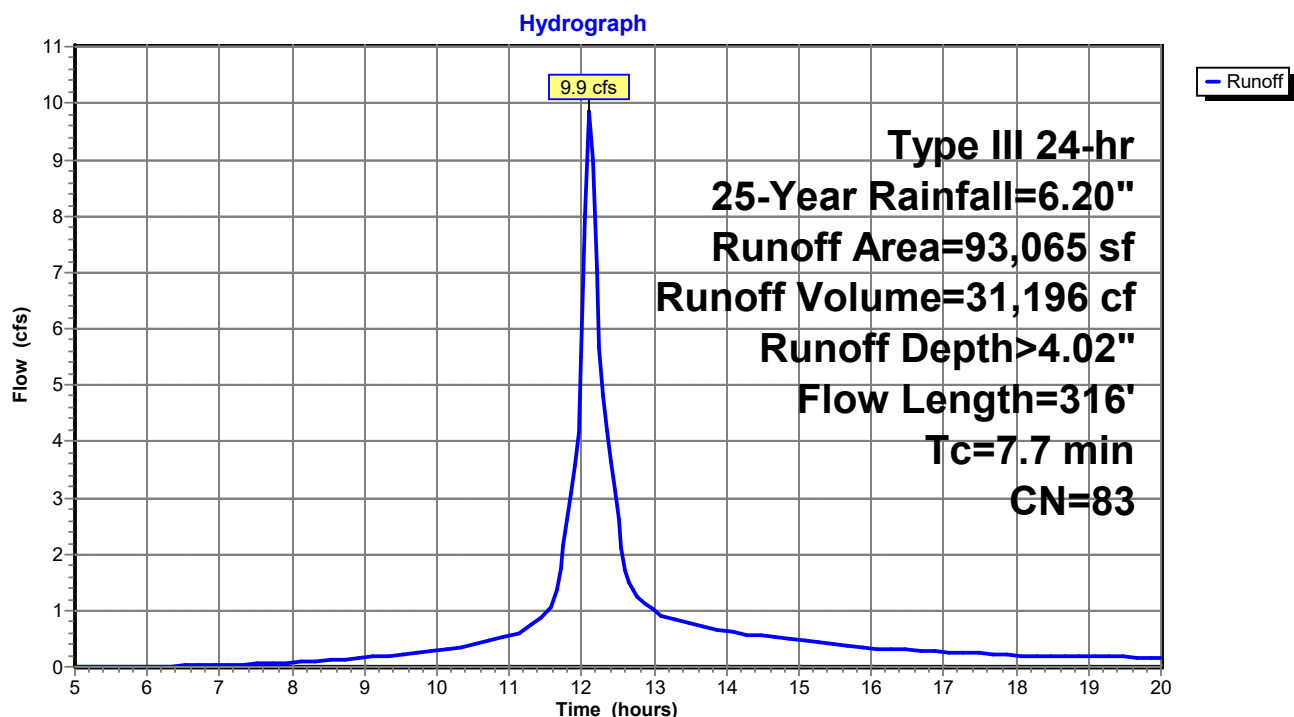
Runoff = 9.9 cfs @ 12.11 hrs, Volume= 31,196 cf, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
1,900	77	Woods, Good, HSG D
60,950	78	Meadow, non-grazed, HSG D
8,585	80	>75% Grass cover, Good, HSG D
21,630	98	Paved parking, HSG D
93,065	83	Weighted Average
71,435		76.76% Pervious Area
21,630		23.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.3	20	0.0200	1.01		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 3.30"
1.2	20	0.1500	0.28		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
6.2	276	0.0111	0.74		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
7.7	316	Total			

Subcatchment 1.0:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.1:

Runoff = 8.1 cfs @ 13.00 hrs, Volume= 68,212 cf, Depth> 3.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
20,935	77	Woods, Good, HSG D
57,900	78	Meadow, non-grazed, HSG D
134,575	80	>75% Grass cover, Good, HSG D
12,065	98	Paved parking, HSG D
225,475	80	Weighted Average
213,410		94.65% Pervious Area
12,065		5.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.7	150	0.0167	0.05		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.7	92	0.0167	0.32		Shallow Concentrated Flow, B-C Forest w/Heavy Litter Kv= 2.5 fps
12.2	660	0.0167	0.90		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
4.7	330	0.0167	1.16		Shallow Concentrated Flow, D-E Cultivated Straight Rows Kv= 9.0 fps
76.3	1,232	Total			

Post Development

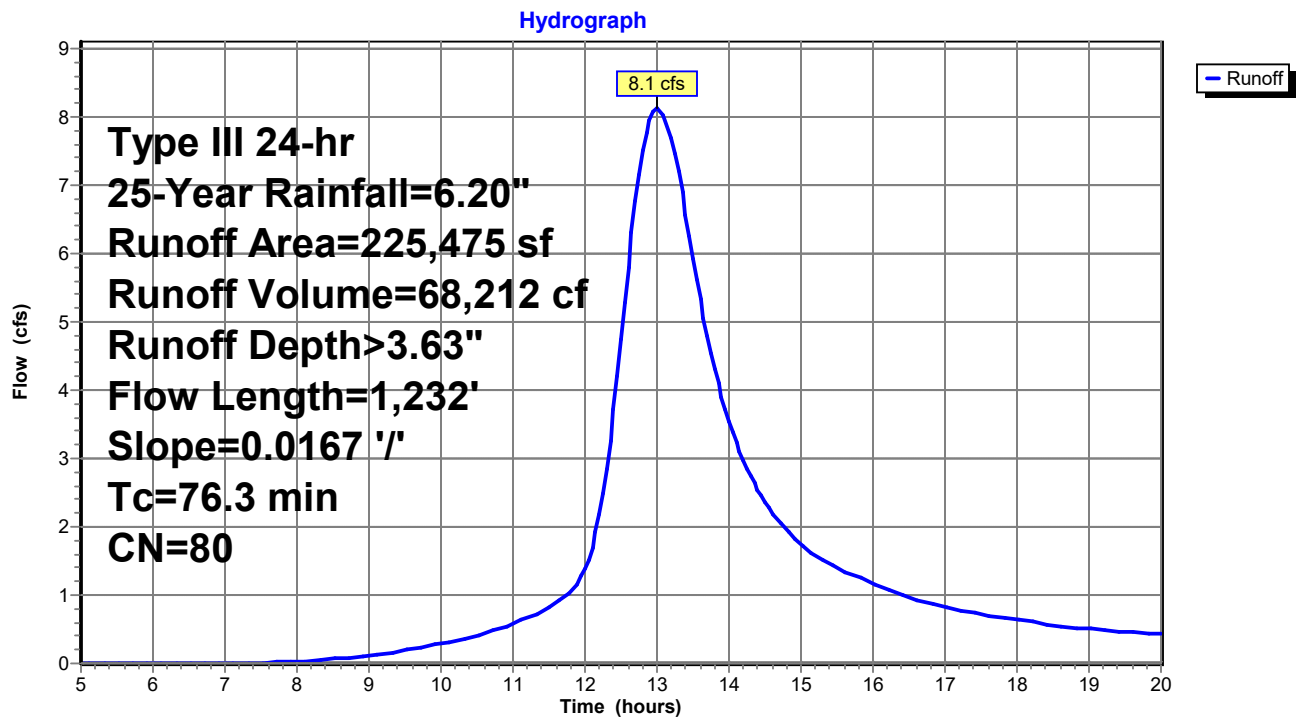
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Type III 24-hr 25-Year Rainfall=6.20"

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Subcatchment 1.1:



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Summary for Subcatchment 1.2:

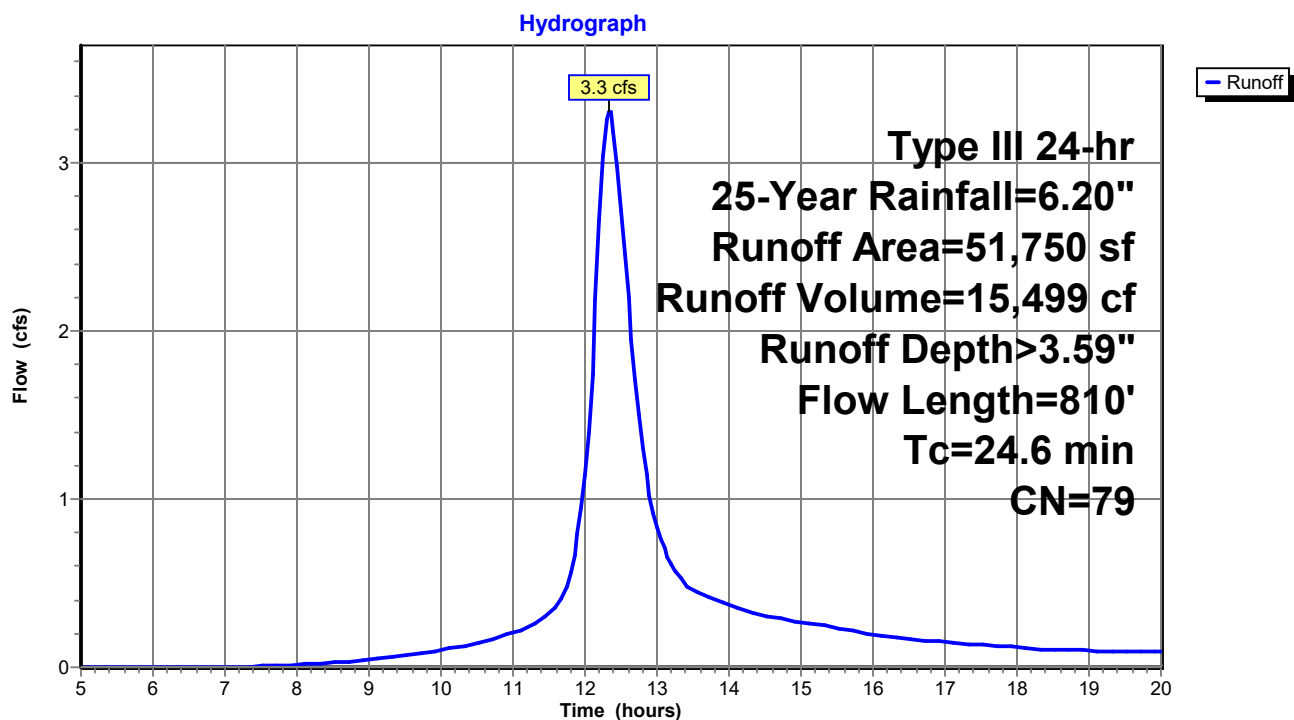
Runoff = 3.3 cfs @ 12.34 hrs, Volume= 15,499 cf, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
1,625	71	Meadow, non-grazed, HSG C
18,275	78	Meadow, non-grazed, HSG D
3,655	74	>75% Grass cover, Good, HSG C
25,850	80	>75% Grass cover, Good, HSG D
2,345	98	Paved parking, HSG D
51,750	79	Weighted Average
49,405		95.47% Pervious Area
2,345		4.53% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	150	0.0467	0.26		Sheet Flow, A-B Grass: Short n= 0.150 P2= 3.30"
3.4	200	0.0200	0.99		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
11.7	460	0.0088	0.66		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
24.6	810	Total			

Subcatchment 1.2:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.3:

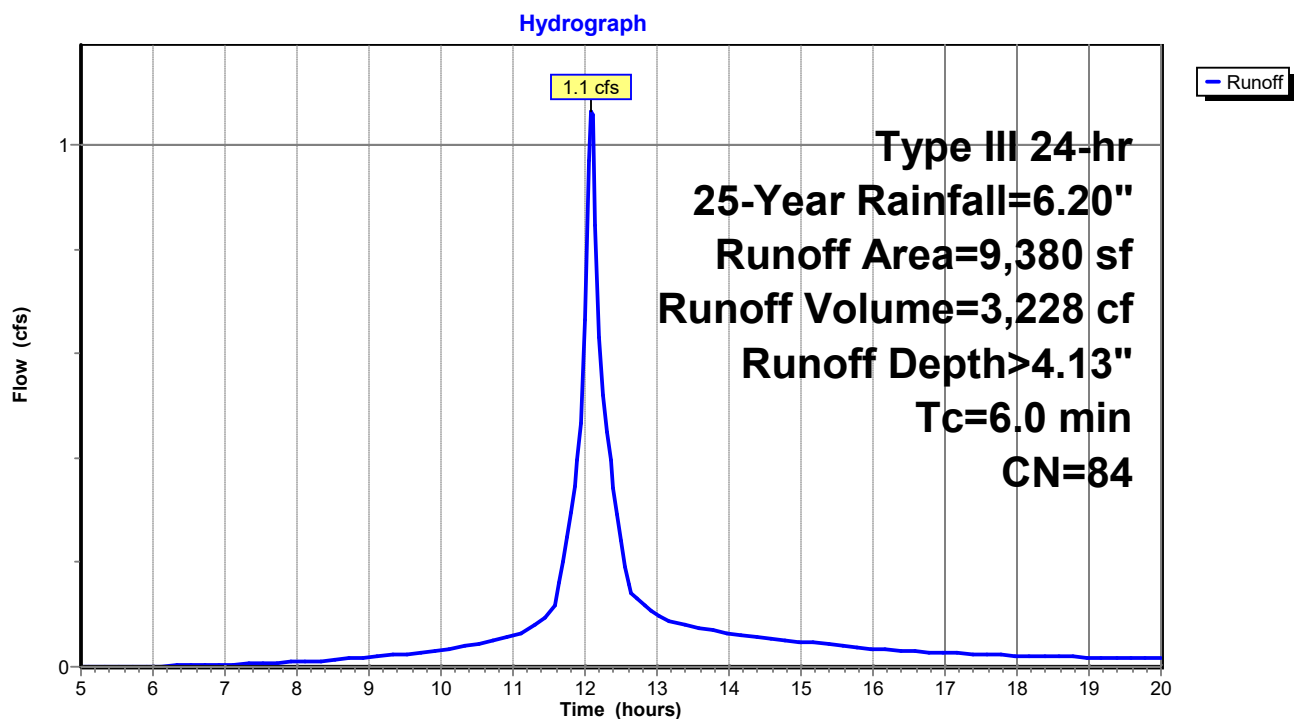
Runoff = 1.1 cfs @ 12.09 hrs, Volume= 3,228 cf, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
7,140	80	>75% Grass cover, Good, HSG D
2,240	98	Paved parking, HSG D
9,380	84	Weighted Average
7,140		76.12% Pervious Area
2,240		23.88% Impervious Area

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

Subcatchment 1.3:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.4:

Runoff = 35.5 cfs @ 13.74 hrs, Volume= 420,109 cf, Depth> 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
134,385	70	Woods, Good, HSG C
1,145,175	77	Woods, Good, HSG D
2,465	71	Meadow, non-grazed, HSG C
167,535	78	Meadow, non-grazed, HSG D
2,580	74	>75% Grass cover, Good, HSG C
80,875	80	>75% Grass cover, Good, HSG D
16,635	98	Paved parking, HSG D
1,549,650	77	Weighted Average
1,533,015		98.93% Pervious Area
16,635		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
64.1	100	0.0050	0.03		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
57.8	785	0.0082	0.23		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
10.0	380	0.0082	0.63		Shallow Concentrated Flow, C-D
					Short Grass Pasture Kv= 7.0 fps
131.9	1,265	Total			

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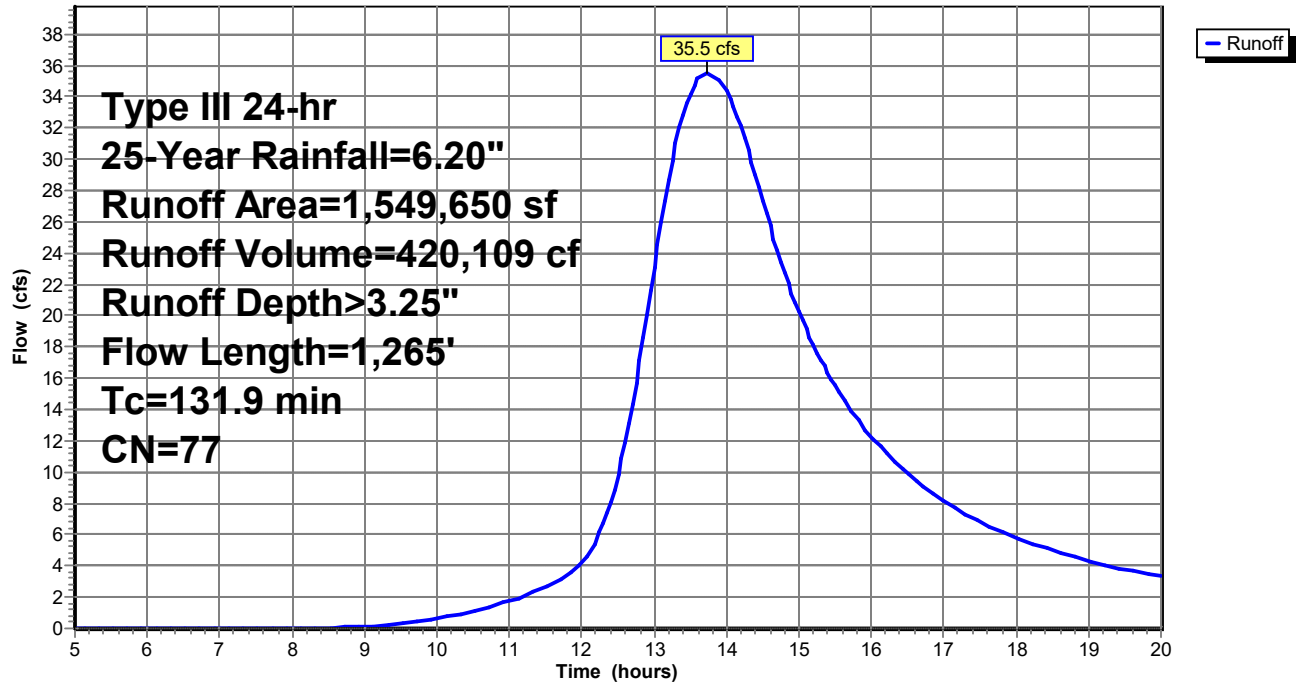
Type III 24-hr 25-Year Rainfall=6.20"

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Subcatchment 1.4:

Hydrograph



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Summary for Subcatchment 1.5:

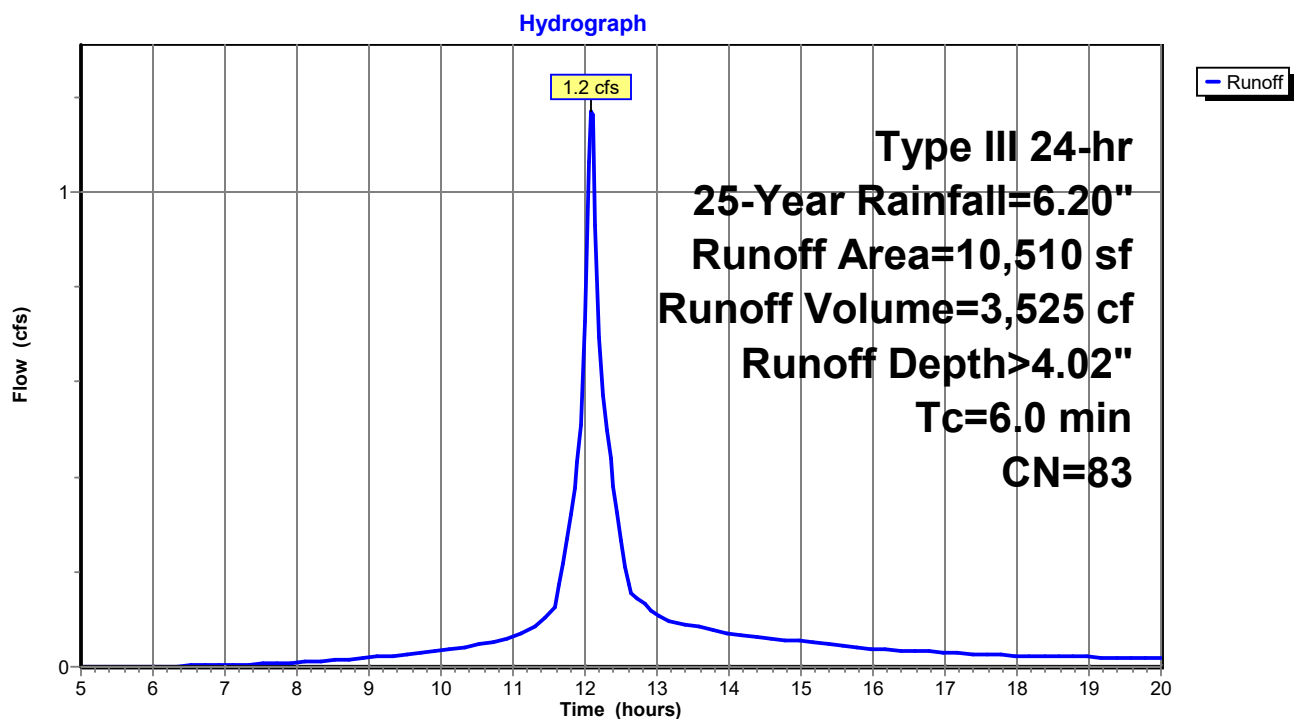
Runoff = 1.2 cfs @ 12.09 hrs, Volume= 3,525 cf, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
8,485	80	>75% Grass cover, Good, HSG D
2,025	98	Paved parking, HSG D
10,510	83	Weighted Average
8,485		80.73% Pervious Area
2,025		19.27% Impervious Area

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

Subcatchment 1.5:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.6:

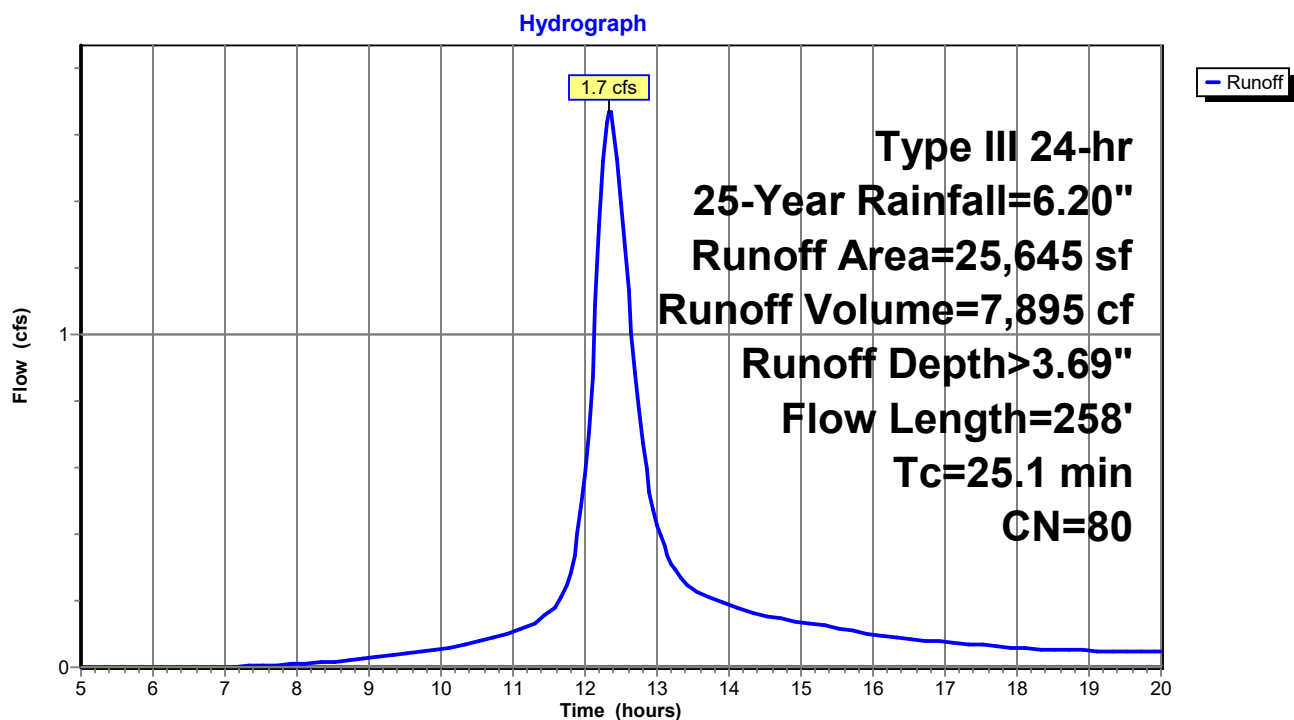
Runoff = 1.7 cfs @ 12.34 hrs, Volume= 7,895 cf, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
2,300	70	Woods, Good, HSG C
445	77	Woods, Good, HSG D
2,190	74	>75% Grass cover, Good, HSG C
18,550	80	>75% Grass cover, Good, HSG D
2,160	98	Paved parking, HSG D
25,645	80	Weighted Average
23,485		91.58% Pervious Area
2,160		8.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0606	0.06		Sheet Flow, A-B Woods: Dense underbrush n= 0.800 P2= 3.30"
4.2	50	0.0400	0.20		Sheet Flow, B-C Grass: Short n= 0.150 P2= 3.30"
4.0	142	0.0070	0.59		Shallow Concentrated Flow, C-D Short Grass Pasture Kv= 7.0 fps
25.1	258	Total			

Subcatchment 1.6:



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.7:

Runoff = 2.1 cfs @ 12.09 hrs, Volume= 6,250 cf, Depth> 4.02"

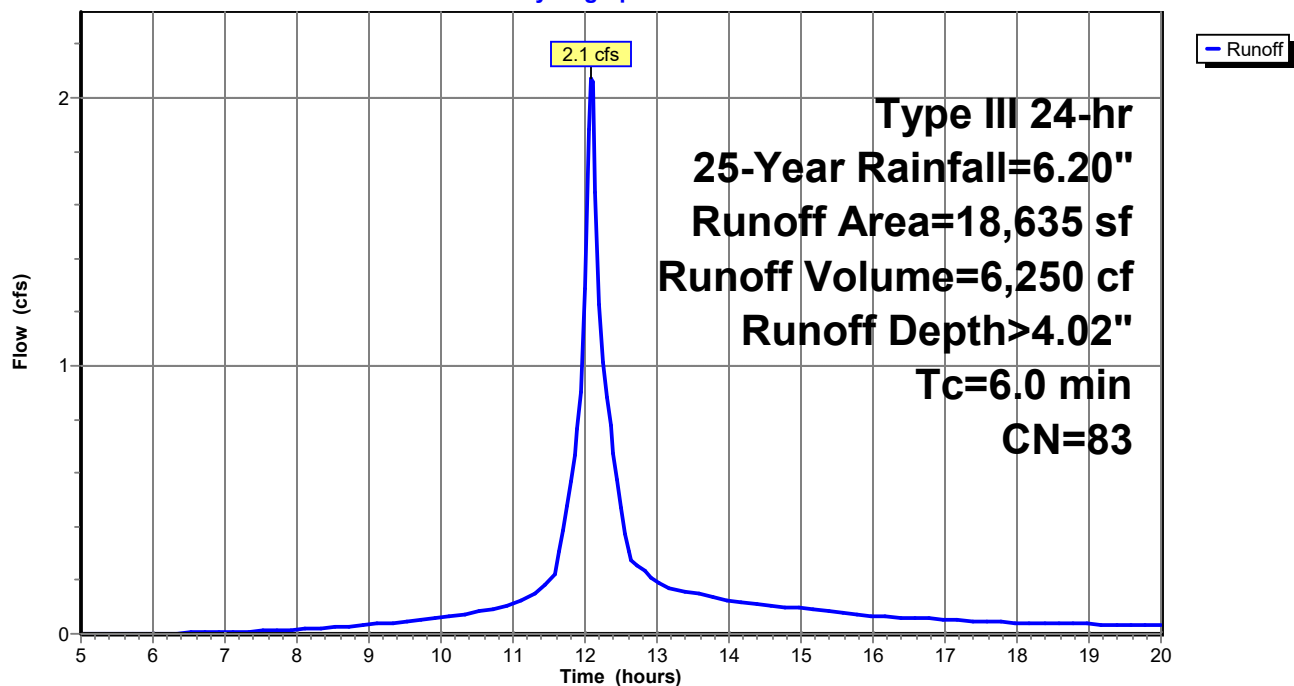
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
880	77	Woods, Good, HSG D
6,610	78	Meadow, non-grazed, HSG D
7,485	80	>75% Grass cover, Good, HSG D
3,660	98	Paved parking, HSG D
18,635	83	Weighted Average
14,975		80.36% Pervious Area
3,660		19.64% Impervious Area

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

Subcatchment 1.7:

Hydrograph



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Type III 24-hr 25-Year Rainfall=6.20"

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Summary for Subcatchment 1.8:

Runoff = 8.6 cfs @ 12.55 hrs, Volume= 50,147 cf, Depth> 3.48"

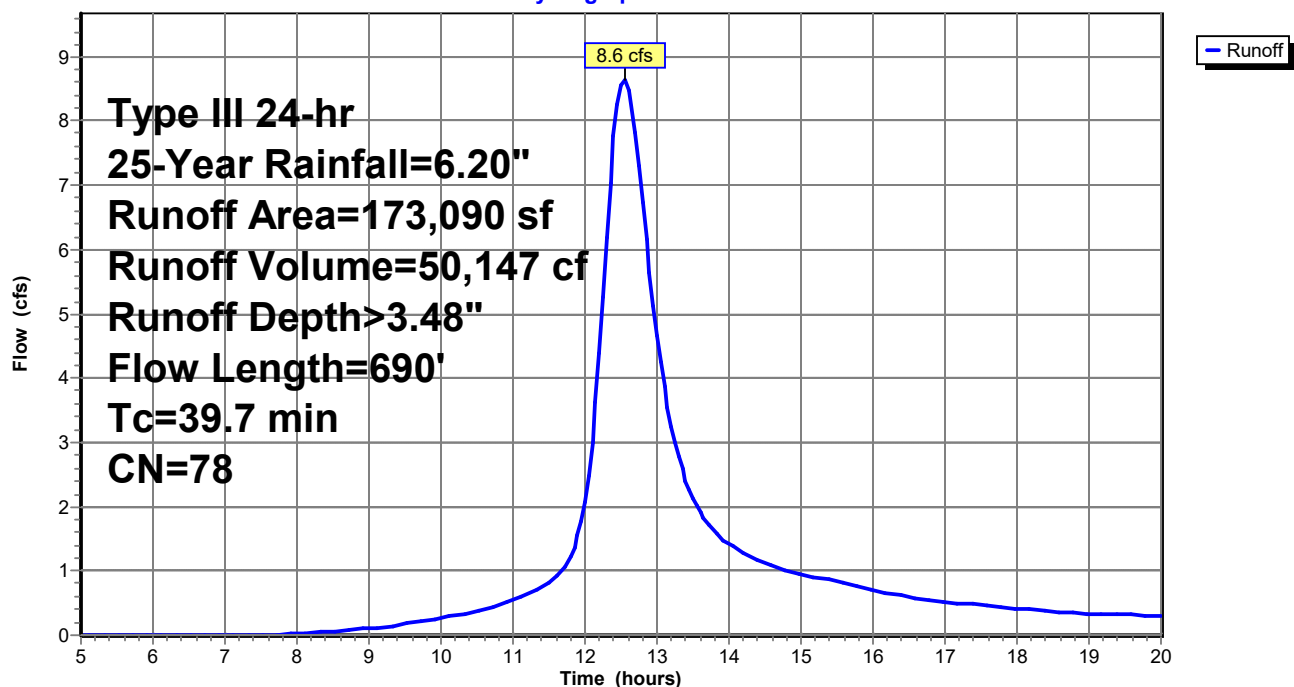
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.20"

Area (sf)	CN	Description
12,890	70	Woods, Good, HSG C
145,490	77	Woods, Good, HSG D
2,840	78	Meadow, non-grazed, HSG D
1,560	74	>75% Grass cover, Good, HSG C
10,310	98	Paved parking, HSG D
173,090	78	Weighted Average
162,780		94.04% Pervious Area
10,310		5.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.3	40	0.0500	0.05		Sheet Flow, A-B
					Woods: Dense underbrush n= 0.800 P2= 3.30"
27.4	650	0.0250	0.40		Shallow Concentrated Flow, B-C
					Forest w/Heavy Litter Kv= 2.5 fps
39.7	690	Total			

Subcatchment 1.8:

Hydrograph



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Summary for Reach R1:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 3.62" for 25-Year event
Inflow = 9.4 cfs @ 12.90 hrs, Volume= 83,579 cf
Outflow = 9.1 cfs @ 12.97 hrs, Volume= 83,431 cf, Atten= 4%, Lag= 4.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.73 fps, Min. Travel Time= 1.4 min
Avg. Velocity = 1.38 fps, Avg. Travel Time= 2.7 min

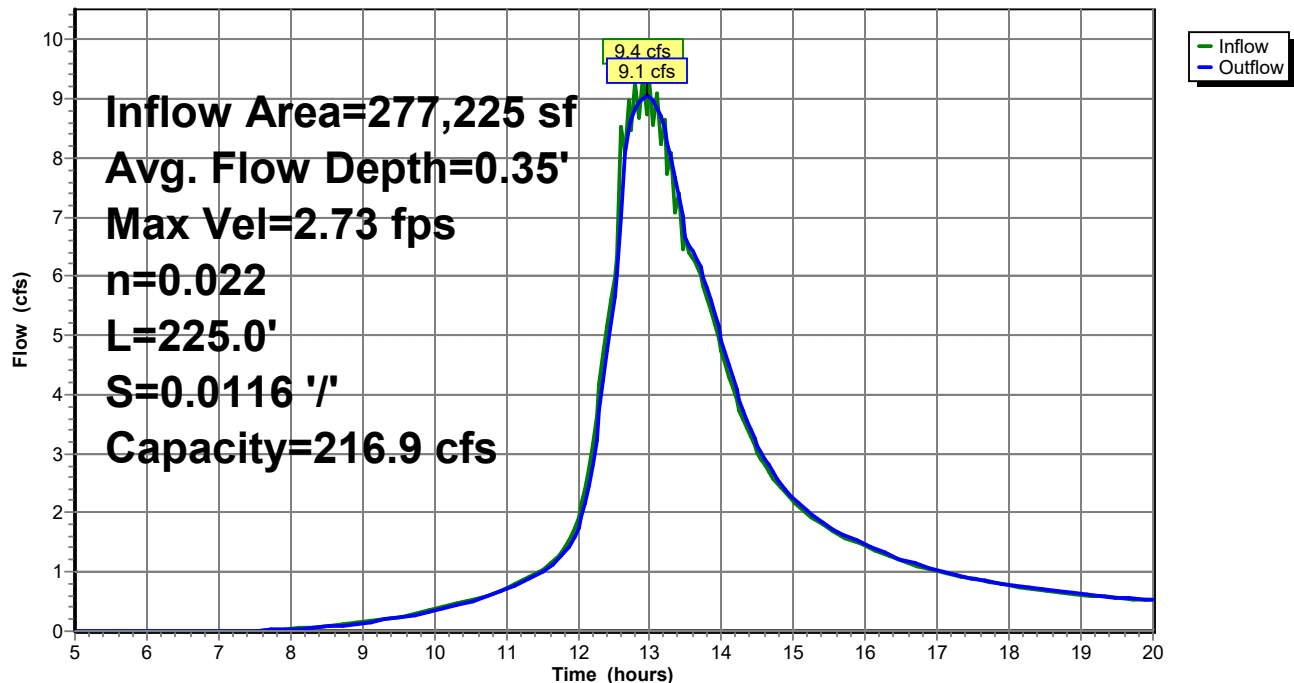
Peak Storage= 748 cf @ 12.95 hrs
Average Depth at Peak Storage= 0.35'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 216.9 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 225.0' Slope= 0.0116 '/'
Inlet Invert= 34.40', Outlet Invert= 31.80'



Reach R1:

Hydrograph



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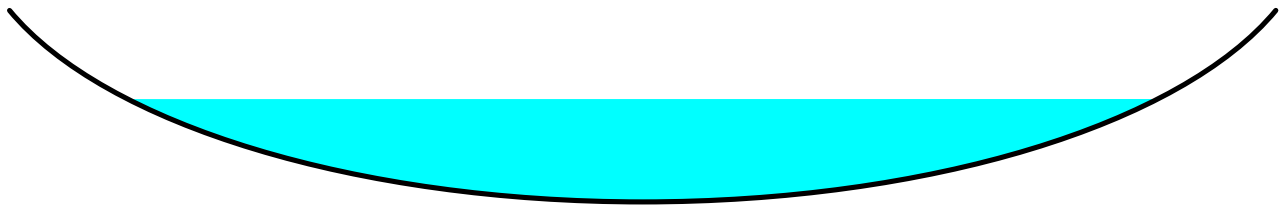
Summary for Reach R2:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 3.26" for 25-Year event
Inflow = 35.3 cfs @ 13.95 hrs, Volume= 426,525 cf
Outflow = 34.8 cfs @ 13.97 hrs, Volume= 426,048 cf, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.97 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 1.46 fps, Avg. Travel Time= 1.5 min

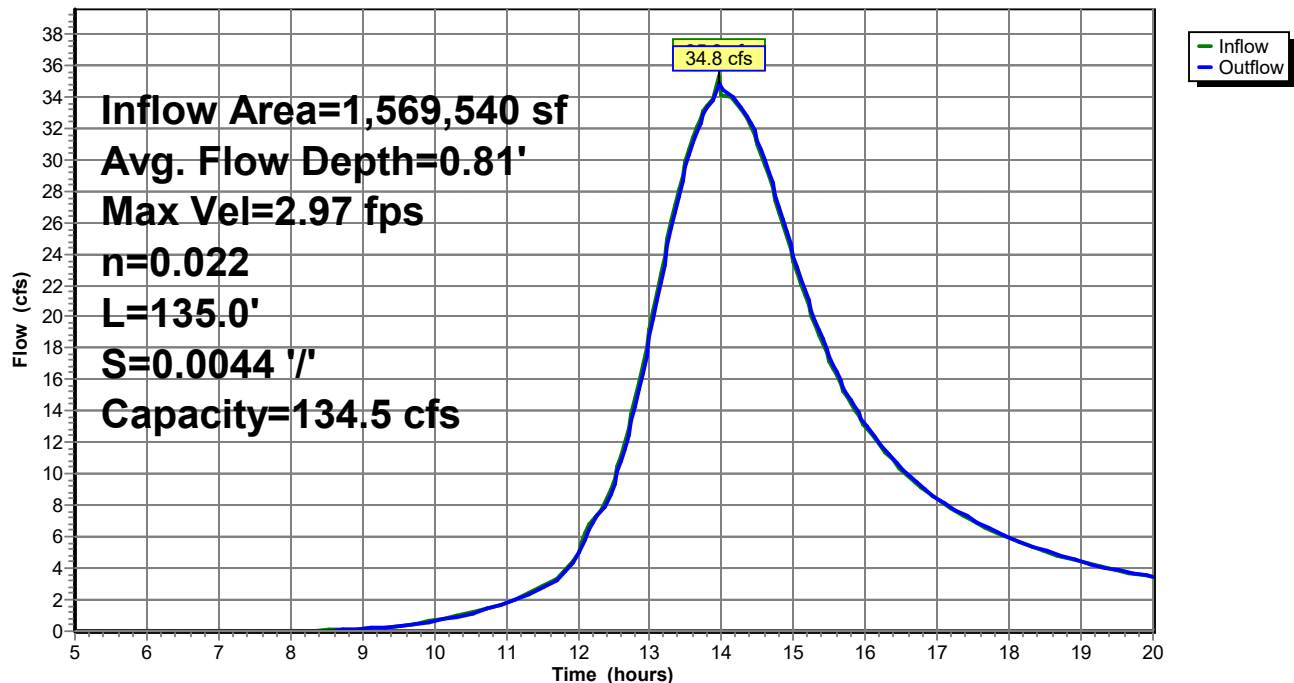
Peak Storage= 1,593 cf @ 13.96 hrs
Average Depth at Peak Storage= 0.81'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 134.5 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 135.0' Slope= 0.0044 '/'
Inlet Invert= 32.40', Outlet Invert= 31.80'



Reach R2:

Hydrograph



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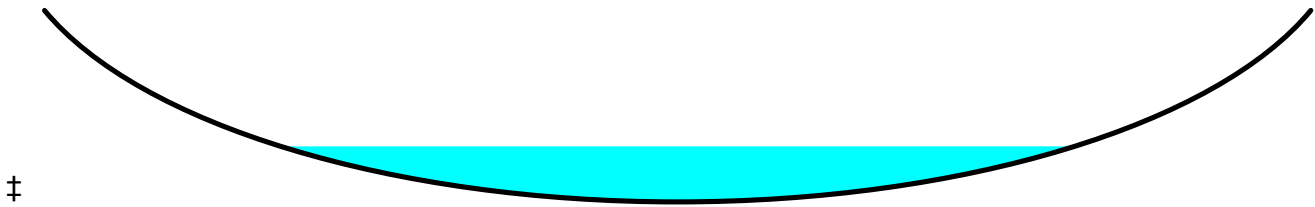
Summary for Reach R3:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 3.53" for 25-Year event
Inflow = 8.3 cfs @ 12.77 hrs, Volume= 63,961 cf
Outflow = 8.3 cfs @ 12.85 hrs, Volume= 63,741 cf, Atten= 0%, Lag= 4.5 min

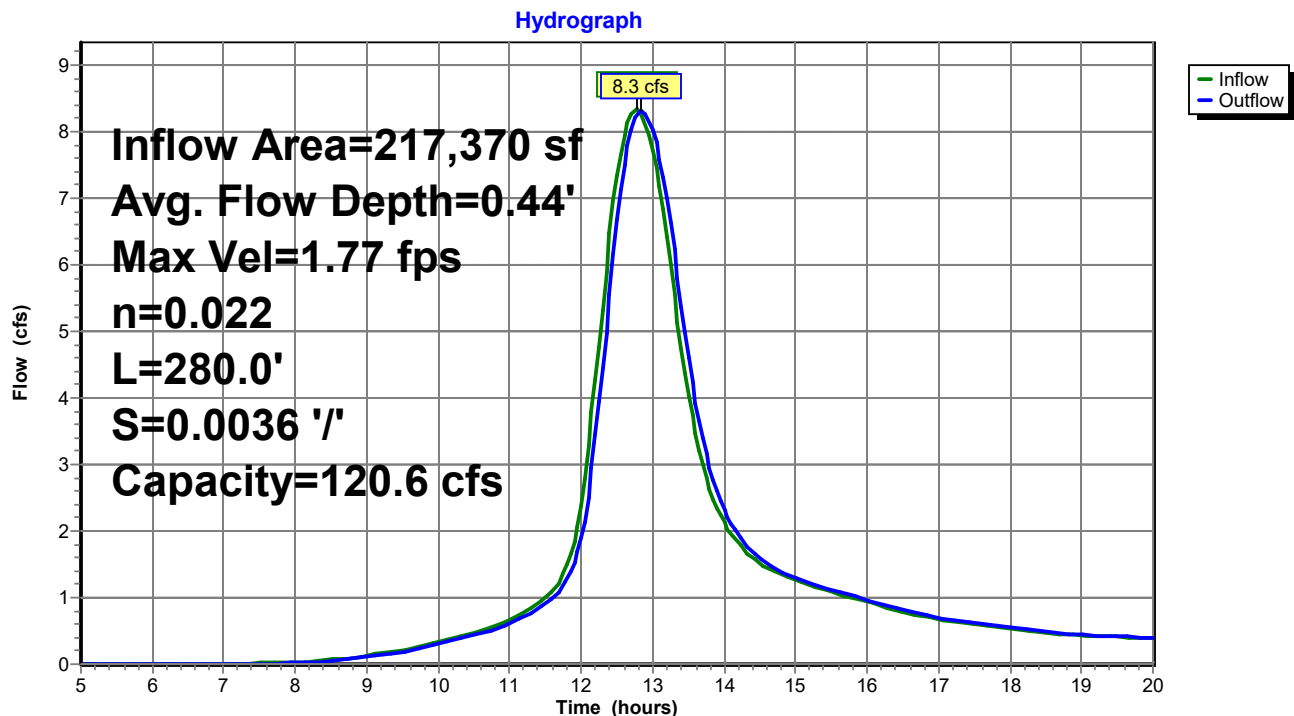
Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.77 fps, Min. Travel Time= 2.6 min
Avg. Velocity= 0.79 fps, Avg. Travel Time= 5.9 min

Peak Storage= 1,318 cf @ 12.80 hrs
Average Depth at Peak Storage= 0.44'
Bank-Full Depth= 1.50' Flow Area= 30.0 sf, Capacity= 120.6 cfs

30.00' x 1.50' deep Parabolic Channel, n= 0.022 Earth, clean & straight
Length= 280.0' Slope= 0.0036 '/'
Inlet Invert= 32.80', Outlet Invert= 31.80'



Reach R3:



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Summary for Pond C1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 3.36" for 25-Year event
Inflow = 43.0 cfs @ 13.95 hrs, Volume= 604,417 cf
Outflow = 25.0 cfs @ 15.18 hrs, Volume= 588,440 cf, Atten= 42%, Lag= 73.8 min
Primary = 25.0 cfs @ 15.18 hrs, Volume= 588,440 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.85' @ 15.18 hrs Surf.Area= 176,257 sf Storage= 175,679 cf
Flood Elev= 34.30' Surf.Area= 117,925 sf Storage= 95,304 cf

Plug-Flow detention time= 80.5 min calculated for 588,440 cf (97% of inflow)
Center-of-Mass det. time= 72.2 min (940.7 - 868.5)

Volume	Invert	Avail.Storage	Storage Description
#1	31.80'	204,005 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
31.80	0	0	0
32.00	1,550	155	155
33.00	20,850	11,200	11,355
34.00	85,900	53,375	64,730
35.00	192,650	139,275	204,005

Device	Routing	Invert	Outlet Devices
#1	Primary	31.80'	30.0" Round Culvert L= 50.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 31.80' / 31.27' S= 0.0106 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

Primary OutFlow Max=25.0 cfs @ 15.18 hrs HW=34.85' (Free Discharge)
↑**1=Culvert** (Inlet Controls 25.0 cfs @ 5.09 fps)

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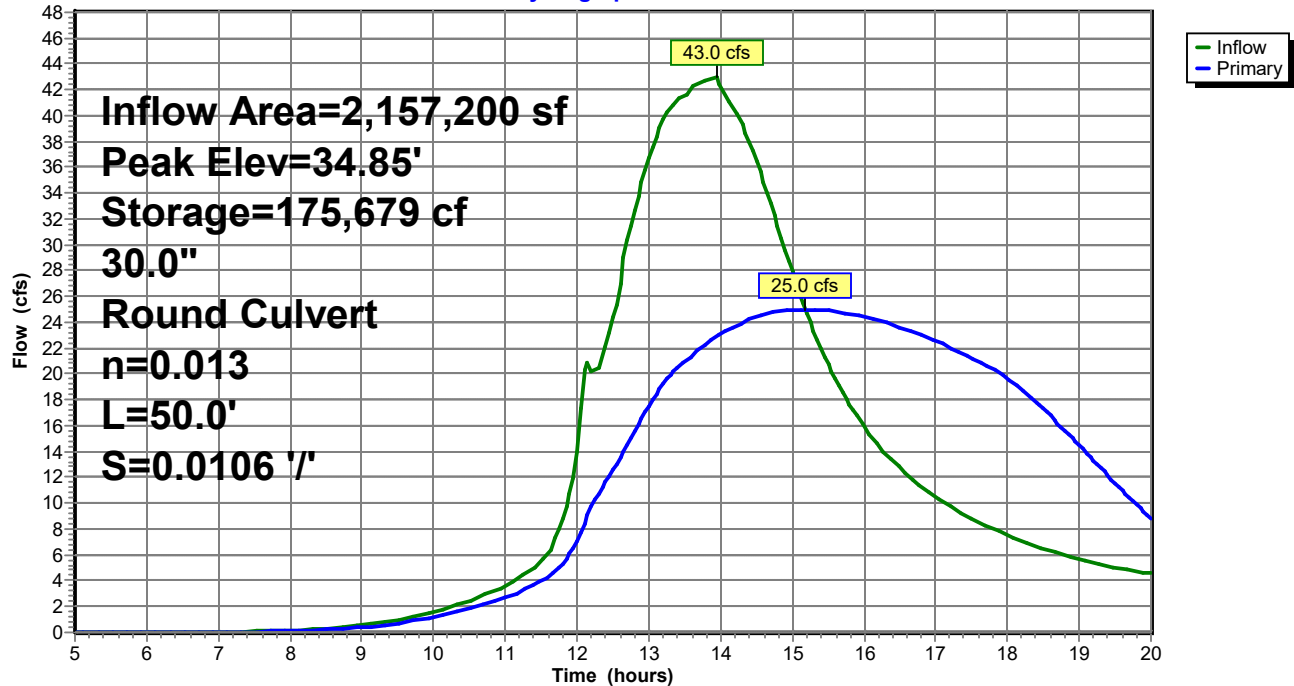
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Pond C1:

Hydrograph



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Summary for Pond C2:

Inflow Area = 173,090 sf, 5.96% Impervious, Inflow Depth > 3.48" for 25-Year event
Inflow = 8.6 cfs @ 12.55 hrs, Volume= 50,147 cf
Outflow = 8.6 cfs @ 12.55 hrs, Volume= 50,049 cf, Atten= 0%, Lag= 0.2 min
Primary = 8.6 cfs @ 12.55 hrs, Volume= 50,049 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.79' @ 12.55 hrs Surf.Area= 400 sf Storage= 208 cf
Flood Elev= 35.27' Surf.Area= 400 sf Storage= 292 cf

Plug-Flow detention time= 1.5 min calculated for 49,883 cf (99% of inflow)
Center-of-Mass det. time= 0.8 min (811.2 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.27'	292 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.27	400	0	0
35.00	400	292	292

Device	Routing	Invert	Outlet Devices
#1	Primary	34.27'	12.0" Round Culvert L= 20.1' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.27' / 34.08' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Primary	34.50'	20.0' 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

Primary OutFlow Max=8.6 cfs @ 12.55 hrs HW=34.79' (Free Discharge)

1=Culvert (Barrel Controls 0.8 cfs @ 2.76 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 7.9 cfs @ 1.36 fps)

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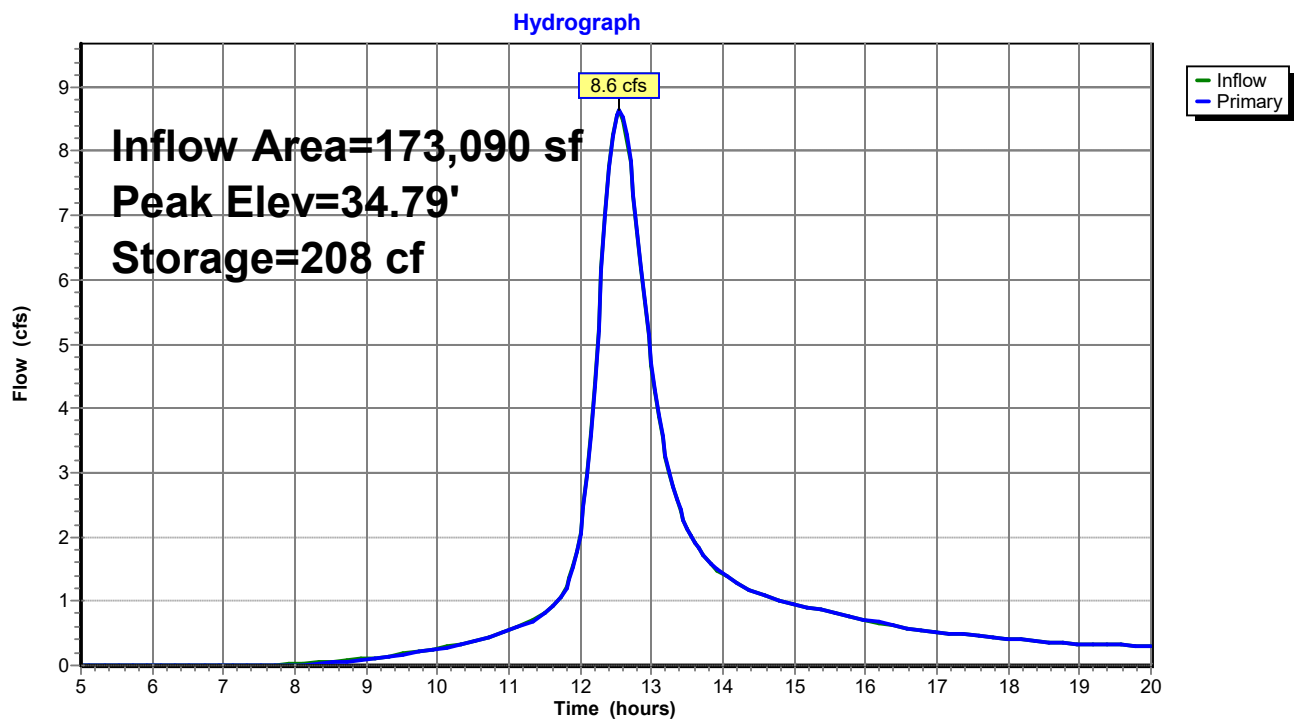
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Pond C2:



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Summary for Pond C3:

Inflow Area = 277,225 sf, 5.20% Impervious, Inflow Depth > 3.62" for 25-Year event
Inflow = 9.1 cfs @ 12.94 hrs, Volume= 83,696 cf
Outflow = 9.4 cfs @ 12.90 hrs, Volume= 83,579 cf, Atten= 0%, Lag= 0.0 min
Primary = 9.4 cfs @ 12.90 hrs, Volume= 83,579 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 36.54' @ 12.90 hrs Surf.Area= 7,000 sf Storage= 3,555 cf
Flood Elev= 36.15' Surf.Area= 7,000 sf Storage= 3,555 cf

Plug-Flow detention time= 6.6 min calculated for 83,579 cf (100% of inflow)
Center-of-Mass det. time= 6.1 min (834.5 - 828.4)

Volume	Invert	Avail.Storage	Storage Description
#1	34.90'	3,555 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.90	0	0	0
35.00	100	5	5
36.00	7,000	3,550	3,555

Device	Routing	Invert	Outlet Devices
#1	Primary	34.90'	15.0" Round Culvert X 2.00 L= 48.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.90' / 34.40' S= 0.0104 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=9.4 cfs @ 12.90 hrs HW=36.53' (Free Discharge)
↑**1=Culvert** (Inlet Controls 9.4 cfs @ 3.82 fps)

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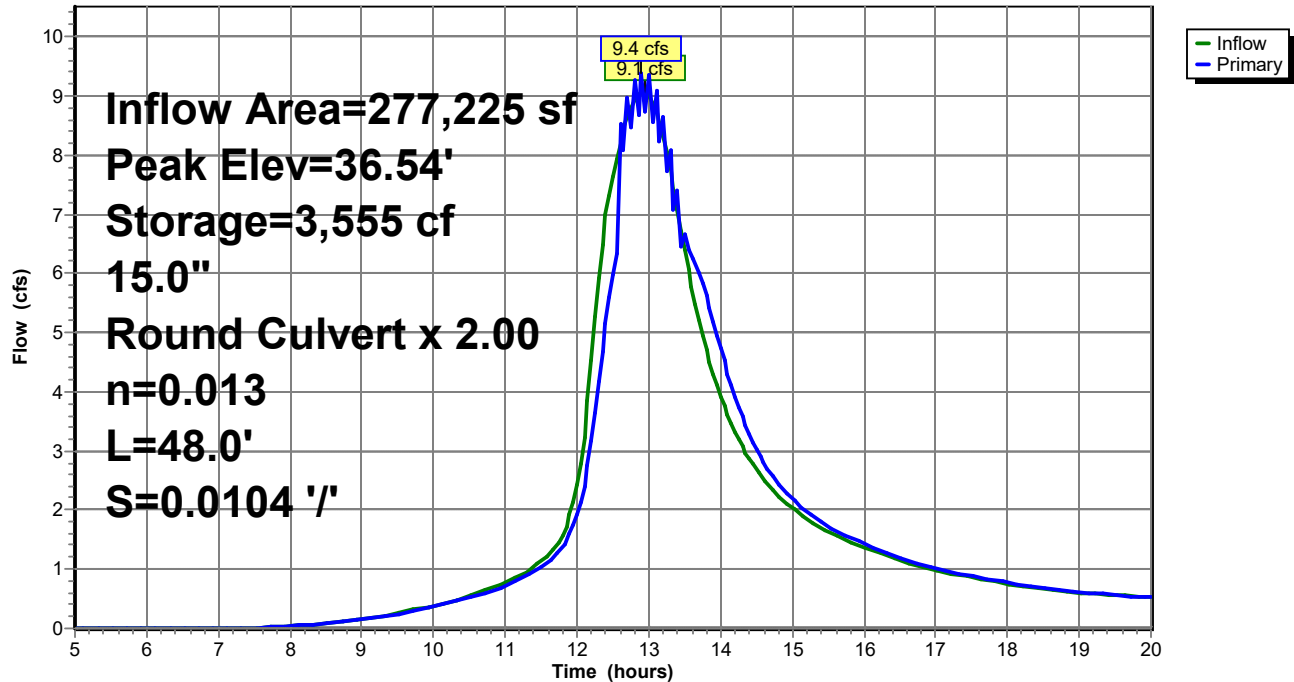
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Pond C3:

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Summary for Pond C4:

Inflow Area = 51,750 sf, 4.53% Impervious, Inflow Depth > 3.59" for 25-Year event
Inflow = 3.3 cfs @ 12.34 hrs, Volume= 15,499 cf
Outflow = 3.3 cfs @ 12.38 hrs, Volume= 15,483 cf, Atten= 1%, Lag= 2.7 min
Primary = 3.3 cfs @ 12.38 hrs, Volume= 15,483 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 37.01' @ 12.38 hrs Surf.Area= 600 sf Storage= 383 cf
Flood Elev= 37.15' Surf.Area= 600 sf Storage= 383 cf

Plug-Flow detention time= 2.2 min calculated for 15,432 cf (100% of inflow)
Center-of-Mass det. time= 1.8 min (798.2 - 796.5)

Volume	Invert	Avail.Storage	Storage Description
#1	35.90'	383 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
35.90	0	0	0
36.00	150	8	8
37.00	600	375	383

Device	Routing	Invert	Outlet Devices
#1	Primary	35.90'	15.0" Round Culvert L= 30.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 35.90' / 35.60' S= 0.0100 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.3 cfs @ 12.38 hrs HW=37.01' (Free Discharge)
↑**1=Culvert** (Inlet Controls 3.3 cfs @ 2.83 fps)

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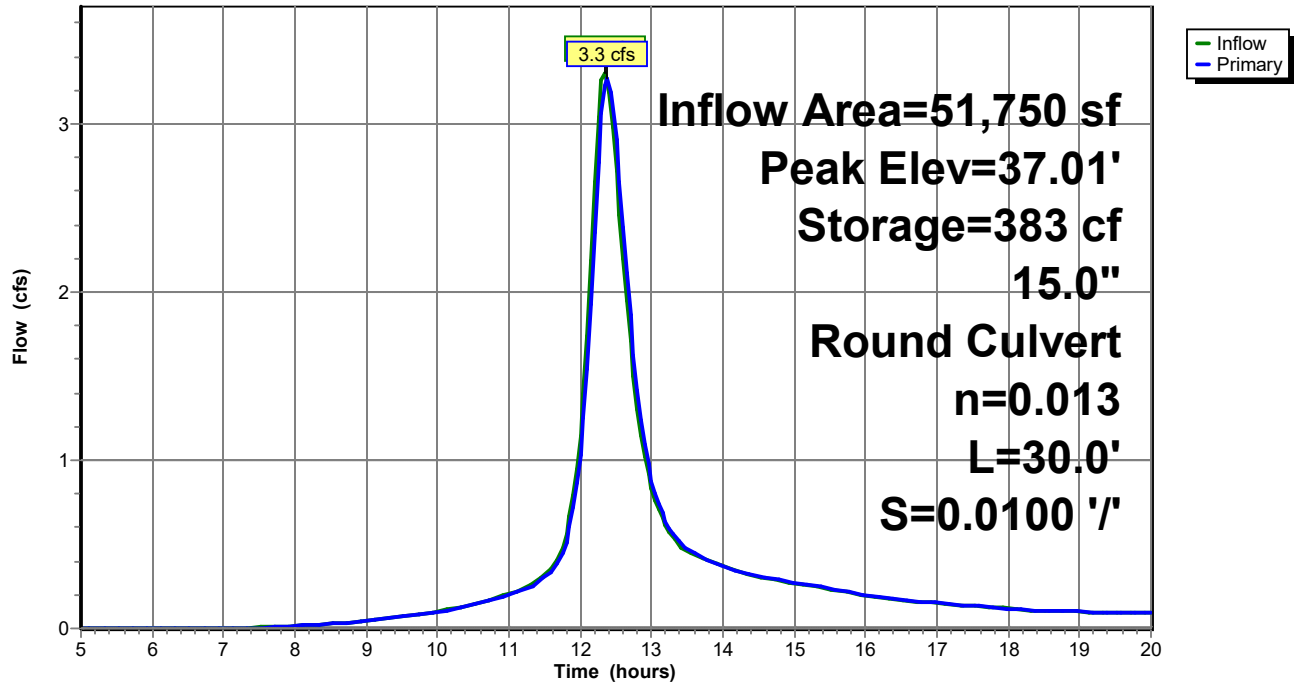
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Pond C4:

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Summary for Pond C5:

Inflow Area = 9,380 sf, 23.88% Impervious, Inflow Depth > 4.13" for 25-Year event
Inflow = 1.1 cfs @ 12.09 hrs, Volume= 3,228 cf
Outflow = 1.0 cfs @ 12.11 hrs, Volume= 3,226 cf, Atten= 5%, Lag= 1.5 min
Primary = 1.0 cfs @ 12.11 hrs, Volume= 3,226 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.74' @ 12.11 hrs Surf.Area= 340 sf Storage= 92 cf
Flood Elev= 35.45' Surf.Area= 680 sf Storage= 466 cf

Plug-Flow detention time= 1.4 min calculated for 3,216 cf (100% of inflow)
Center-of-Mass det. time= 1.2 min (771.8 - 770.6)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	2,100 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	500	200	200
36.00	900	700	900
37.00	1,500	1,200	2,100

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' S= 0.0095 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.11 hrs HW=34.74' (Free Discharge)

↑**1=Culvert** (Inlet Controls 1.0 cfs @ 1.97 fps)

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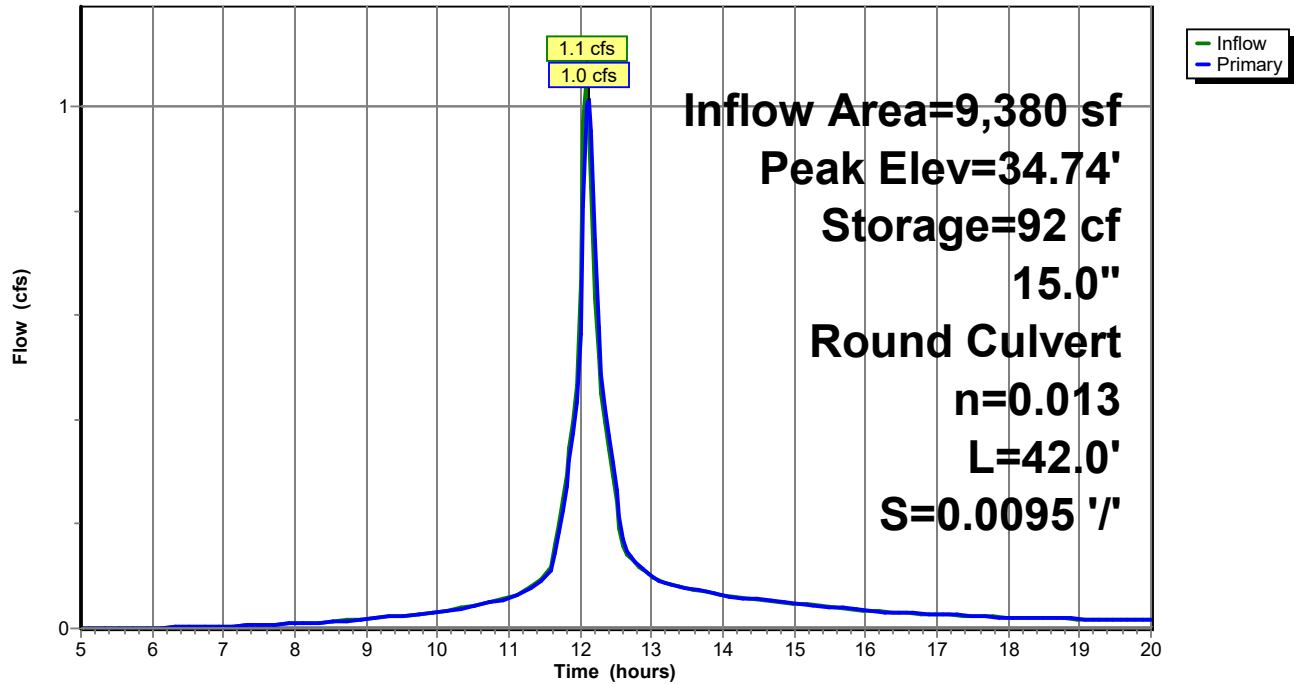
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Pond C5:

Hydrograph



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Summary for Pond C6:

Inflow Area = 1,569,540 sf, 1.33% Impervious, Inflow Depth > 3.26" for 25-Year event
Inflow = 35.6 cfs @ 13.74 hrs, Volume= 426,857 cf
Outflow = 35.3 cfs @ 13.95 hrs, Volume= 426,525 cf, Atten= 1%, Lag= 12.7 min
Primary = 35.3 cfs @ 13.95 hrs, Volume= 426,525 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 35.04' @ 13.95 hrs Surf.Area= 31,200 sf Storage= 18,300 cf
Flood Elev= 35.70' Surf.Area= 31,200 sf Storage= 18,300 cf

Plug-Flow detention time= 5.3 min calculated for 426,525 cf (100% of inflow)
Center-of-Mass det. time= 5.0 min (887.1 - 882.1)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	18,300 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	3,000	1,200	1,200
35.00	31,200	17,100	18,300

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	36.0" Round Culvert X 2.00 w/ 6.0" inside fill L= 45.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 32.70' / 32.40' S= 0.0067 ' S= 0.0067 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 6.29 sf

Primary OutFlow Max=35.3 cfs @ 13.95 hrs HW=35.04' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 35.3 cfs @ 3.43 fps)

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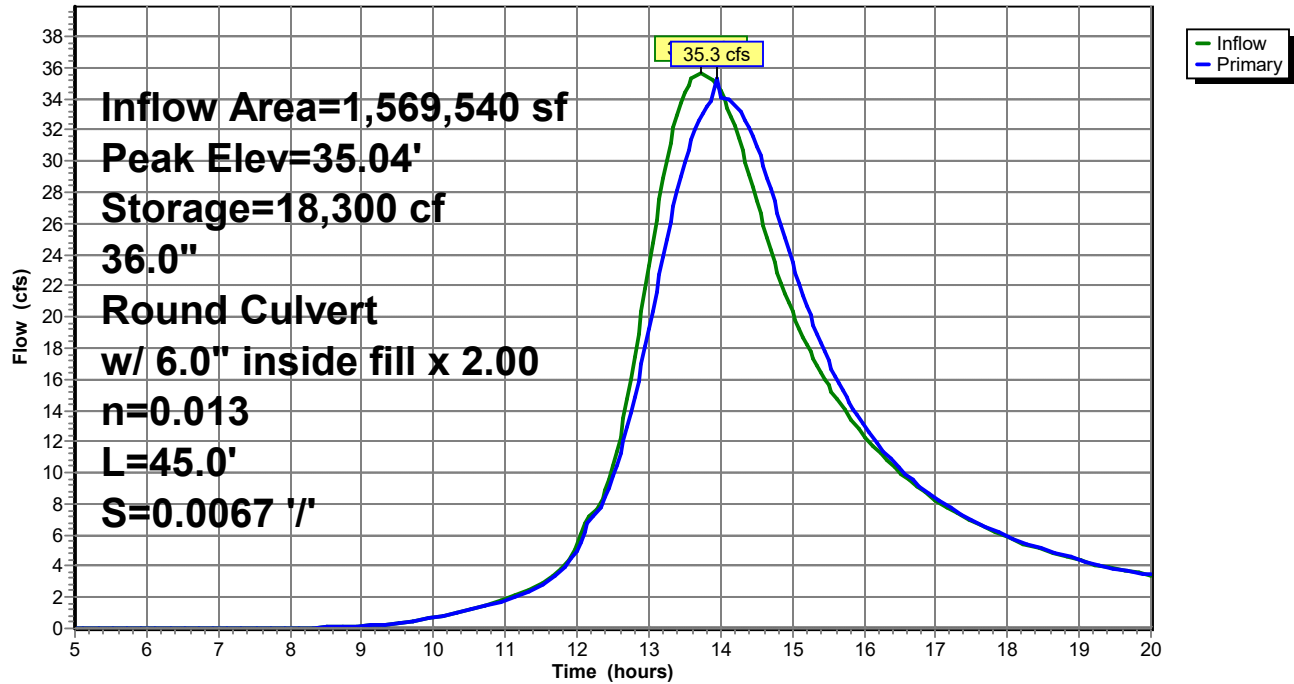
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Pond C6:

Hydrograph



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Summary for Pond C7:

Inflow Area = 10,510 sf, 19.27% Impervious, Inflow Depth > 4.02" for 25-Year event
Inflow = 1.2 cfs @ 12.09 hrs, Volume= 3,525 cf
Outflow = 1.0 cfs @ 12.14 hrs, Volume= 3,522 cf, Atten= 12%, Lag= 2.8 min
Primary = 1.0 cfs @ 12.14 hrs, Volume= 3,522 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 34.75' @ 12.14 hrs Surf.Area= 685 sf Storage= 188 cf

Flood Elev= 35.45' Surf.Area= 1,473 sf Storage= 956 cf

Plug-Flow detention time= 2.8 min calculated for 3,510 cf (100% of inflow)

Center-of-Mass det. time= 2.4 min (775.4 - 772.9)

Volume	Invert	Avail.Storage	Storage Description
#1	34.20'	1,925 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
34.20	0	0	0
35.00	1,000	400	400
36.00	2,050	1,525	1,925

Device	Routing	Invert	Outlet Devices
#1	Primary	34.20'	15.0" Round Culvert L= 42.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 34.20' / 33.80' S= 0.0095 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.0 cfs @ 12.14 hrs HW=34.74' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 1.0 cfs @ 1.98 fps)

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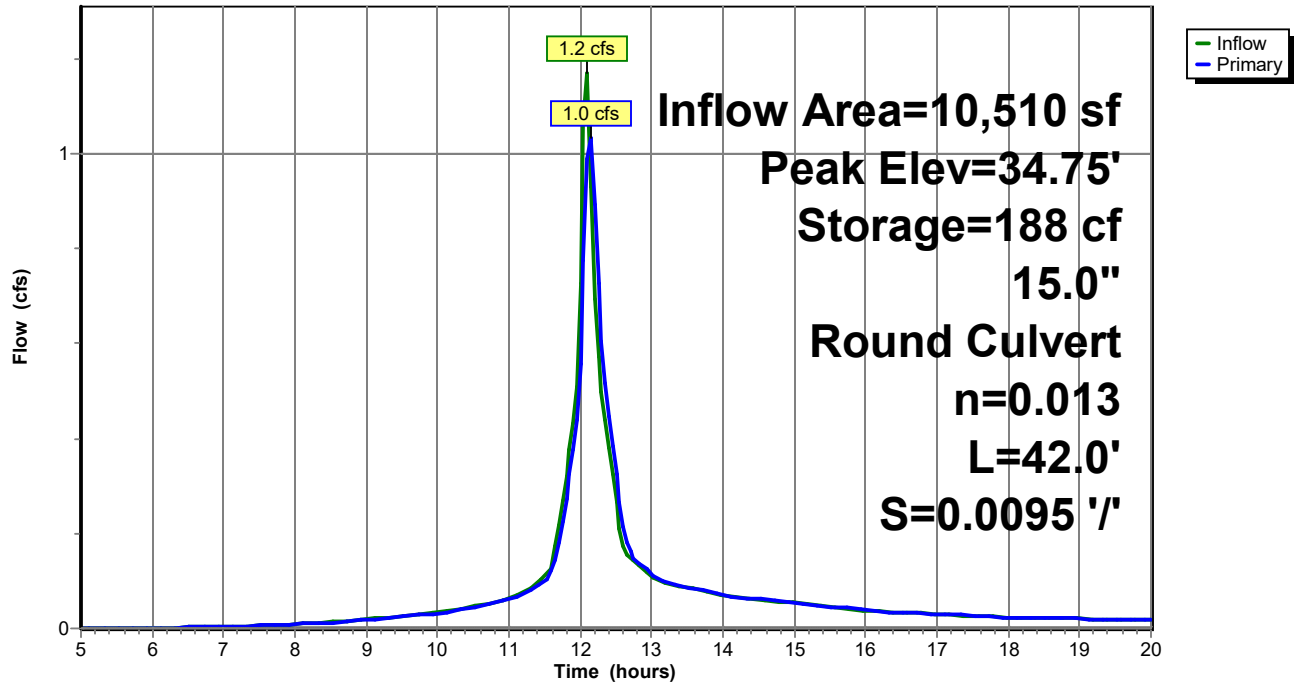
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Pond C7:

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Summary for Pond C8:

Inflow Area = 25,645 sf, 8.42% Impervious, Inflow Depth > 3.69" for 25-Year event
Inflow = 1.7 cfs @ 12.34 hrs, Volume= 7,895 cf
Outflow = 1.5 cfs @ 12.46 hrs, Volume= 7,890 cf, Atten= 9%, Lag= 6.7 min
Primary = 1.5 cfs @ 12.46 hrs, Volume= 7,890 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.48' @ 12.46 hrs Surf.Area= 1,829 sf Storage= 490 cf
Flood Elev= 35.05' Surf.Area= 3,650 sf Storage= 1,915 cf

Plug-Flow detention time= 3.2 min calculated for 7,864 cf (100% of inflow)
Center-of-Mass det. time= 3.0 min (797.8 - 794.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.80'	1,915 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.80	0	0	0
34.00	150	15	15
35.00	3,650	1,900	1,915

Device	Routing	Invert	Outlet Devices
#1	Primary	33.80'	15.0" Round Culvert L= 32.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.80' / 33.50' S= 0.0094 ' / Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.5 cfs @ 12.46 hrs HW=34.48' (Free Discharge)
↑ **1=Culvert** (Inlet Controls 1.5 cfs @ 2.21 fps)

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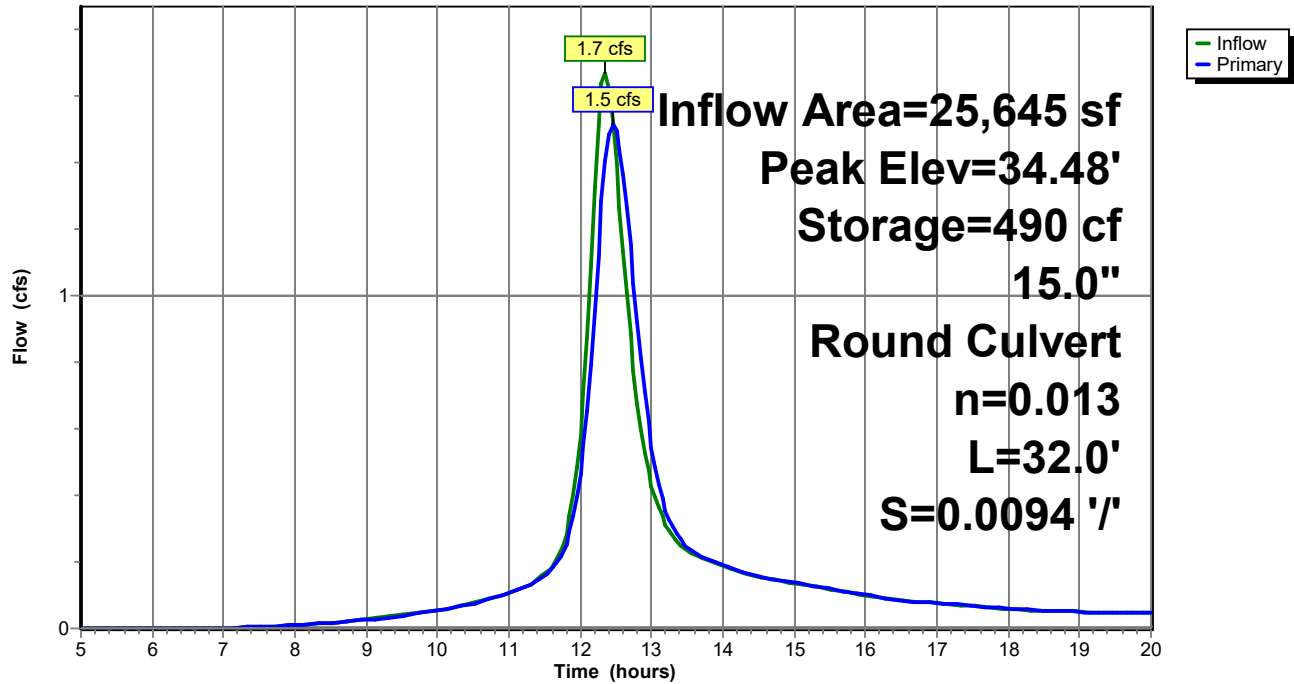
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Pond C8:

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Summary for Pond C9:

Inflow Area = 217,370 sf, 7.42% Impervious, Inflow Depth > 3.54" for 25-Year event
Inflow = 10.5 cfs @ 12.51 hrs, Volume= 64,189 cf
Outflow = 8.3 cfs @ 12.77 hrs, Volume= 63,961 cf, Atten= 21%, Lag= 15.5 min
Primary = 8.3 cfs @ 12.77 hrs, Volume= 63,961 cf

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 34.62' @ 12.77 hrs Surf.Area= 9,692 sf Storage= 8,085 cf
Flood Elev= 34.45' Surf.Area= 8,968 sf Storage= 6,455 cf

Plug-Flow detention time= 12.4 min calculated for 63,961 cf (100% of inflow)
Center-of-Mass det. time= 11.0 min (816.8 - 805.8)

Volume	Invert	Avail.Storage	Storage Description
#1	33.20'	12,015 cf	STORAGE (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
33.20	0	0	0
34.00	7,100	2,840	2,840
35.00	11,250	9,175	12,015

Device	Routing	Invert	Outlet Devices
#1	Primary	33.20'	15.0" Round Culvert X 2.00 L= 36.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 33.20' / 32.80' S= 0.0111 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=8.3 cfs @ 12.77 hrs HW=34.62' (Free Discharge)
↑**1=Culvert** (Inlet Controls 8.3 cfs @ 3.40 fps)

Post Development

Prepared by Walsh Engineering Associates, Inc.
HydroCAD® 10.00-25 s/n 02135 © 2019 HydroCAD Software Solutions LLC

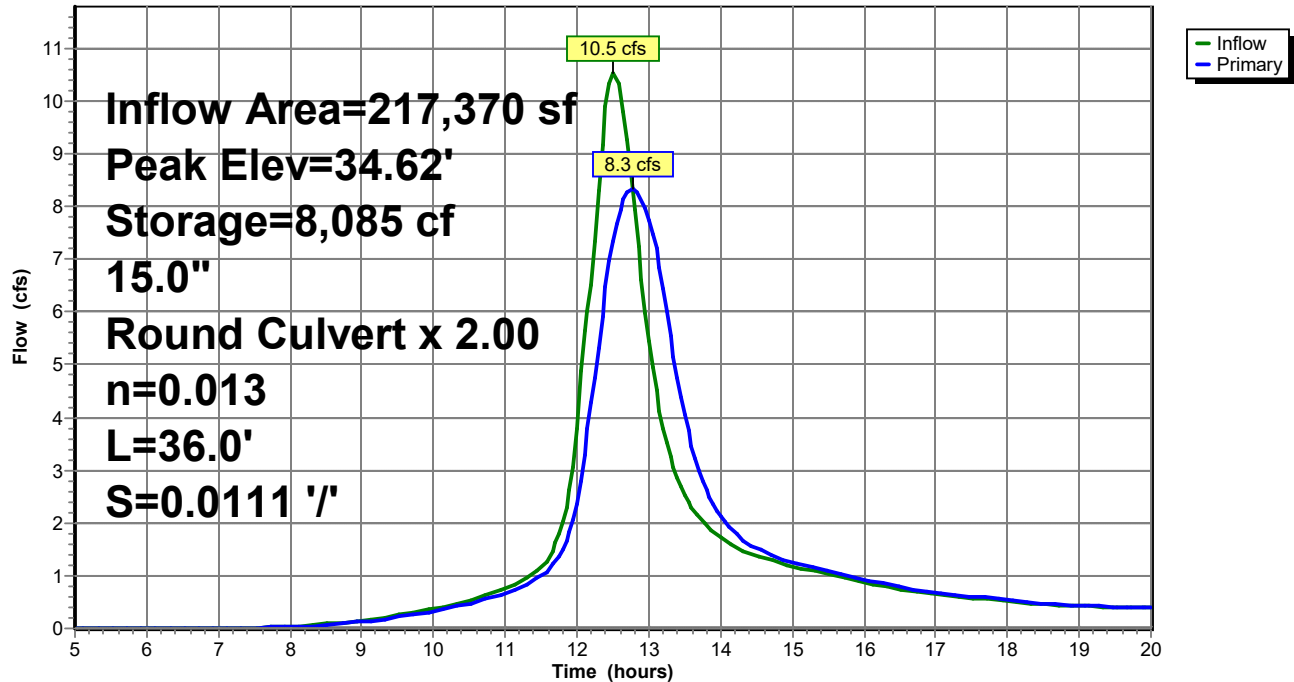
Type III 24-hr 25-Year Rainfall=6.20"

Printed 10/18/2021

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Pond C9:

Hydrograph



Post Development

Prepared by Walsh Engineering Associates, Inc.
HydroCAD® 10.00-25 s/n 02135 © 2019 HydroCAD Software Solutions LLC

Type III 24-hr 25-Year Rainfall=6.20"

Printed 10/18/2021

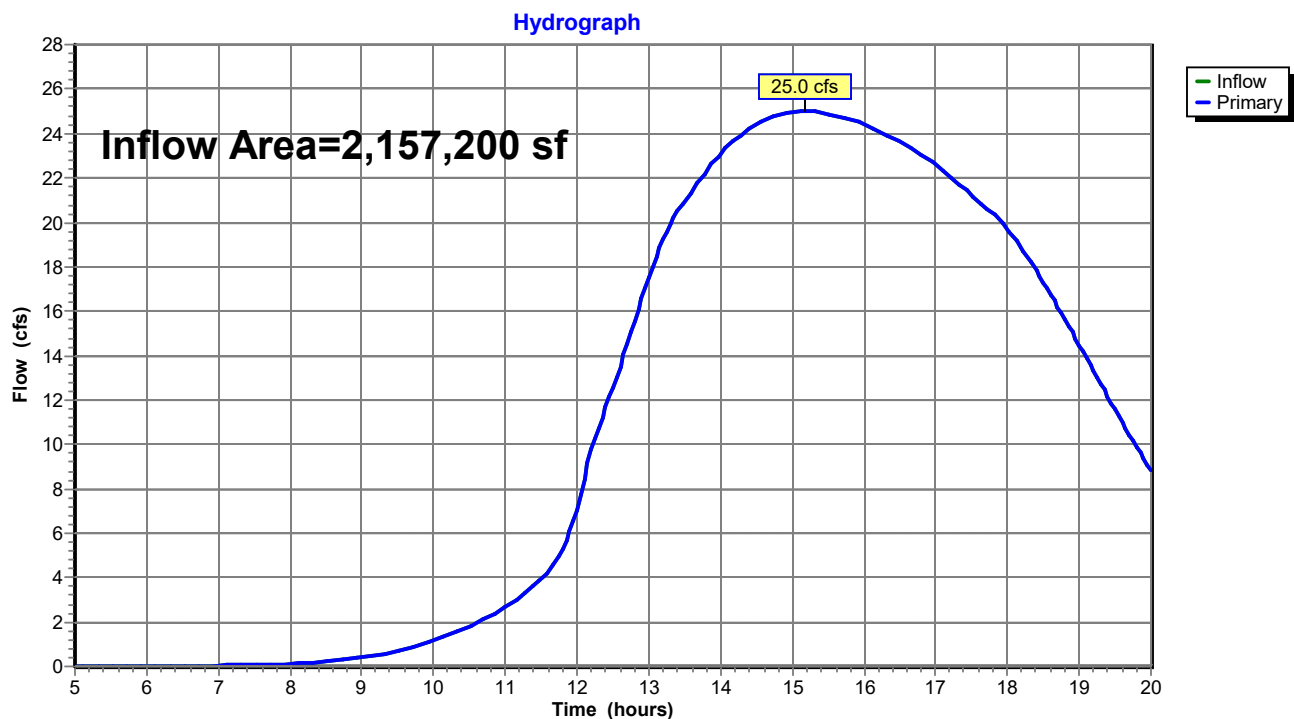
Page 107

Summary for Link AP1:

Inflow Area = 2,157,200 sf, 3.39% Impervious, Inflow Depth > 3.27" for 25-Year event
Inflow = 25.0 cfs @ 15.18 hrs, Volume= 588,440 cf
Primary = 25.0 cfs @ 15.18 hrs, Volume= 588,440 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Link AP1:



Appendix C

High Intensity Soil Survey
Web Soil Survey Map



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on April 20, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map –2 foot contour intervals

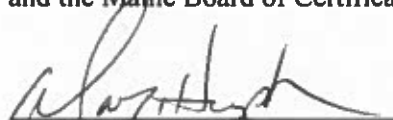
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

P.O. BOX 1981 • PORTLAND, ME 04104 • 1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

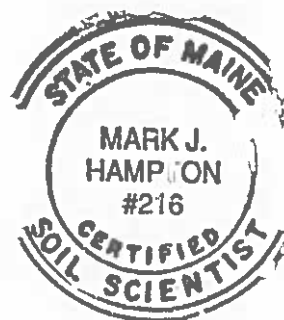
The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263

May 3, 2021

Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

LYMAN-TUNBRIDGE COMPLEX

SETTING

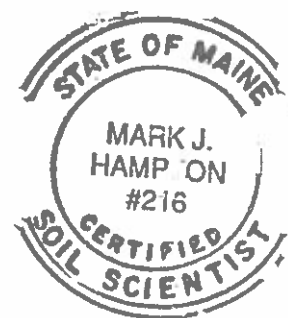
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING:	Buxton, Lamoine, Scantic
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USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Lamoine
(Aeric Haplaquepts)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Intermediate positions on landform
SLOPE GRADIENT RANGES: (A) 0-3 %

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 0.5 to 2.0 feet below the surface at some time from November to June or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark Brown, fine sandy loam 0-7"
<u>Subsurface Layer:</u>	Lt. Olive brown silt loam, 7-14"
<u>Subsoil Layer:</u>	Olive silty clay loam, 14-21"
<u>Substratum:</u>	Olive, silty clay loam, 21-65"

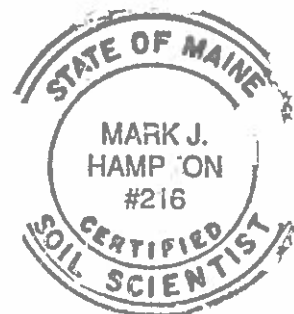
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Buxton, Scantic

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





MARK HAMPTON ASSOCIATES, INC.

• SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Lower positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
<u>Substratum:</u>	Gray silty clay loam, 16"+

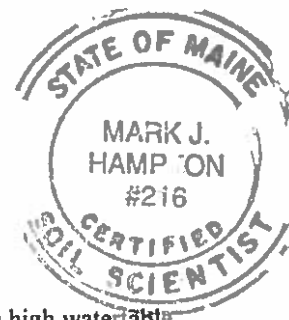
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Buxton, Lamoine

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-1 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
8 Sandy Loam	Friable	Dark Brown	
12 Sandy Loam	Friable	Brown	
18	Ledge		
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 2 Condition AIII Slope 4 Limiting Factor 18 ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
8 Fine Sandy Loam	Friable	Dark Brown	
12 Fine Sandy Loam	Friable	Brown	
18 Silty Clay Loam	Firm	Gray	Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 8 Condition D Slope 2 Limiting Factor 14 ☐ Restrictive Layer
 S.S. Soil series/phase name: Lamoine SPD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
8 Fine Sandy Loam	Friable	Dark Brown	
12 Fine Sandy Loam	Friable	Brown	
18 Silty Clay Loam	Firm	Gray	Common and Distinct
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 8 Condition D Slope 2 Limiting Factor 13 ☐ Restrictive Layer
 S.S. Soil series/phase name: Lamoine SPD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

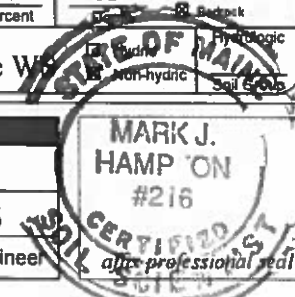
Texture	Consistency	Color	Mottling
8 Fine Sandy Loam	Friable	Dark Brown	
12 Fine Sandy Loam	Friable	Brown	
18	Ledge		
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 Profile 2 Condition AIII Slope 4 Limiting Factor 15 ☐ Restrictive Layer
 S.S. Soil series/phase name: Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic
 Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature	Date <u>5/3/21</u>
Name Printed/typed <u>Mark J Hampton</u>	Cert/Lic/Reg. # <u>263/216</u>
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



6578

747

SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-5 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Black	
6	Loam			
12	Silty Clay	Firm	Gray	Common and Distinct
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ Groundwater
 S.S. ☒ Restrictive Layer
☐ Bedrock
☒ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 8 Condition E Slope 2 Percent
 Limiting Factor 6 Depth
 Soil series/phase name: **Scantic PD**

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown	
6	Loam			
12	Sandy	Friable	Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 2 Condition AIII Slope 4 Percent
 Limiting Factor 15 Depth
 Soil series/phase name: **Lyman-Tunbridge WD**

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown	
6	Loam			
12	Sandy	Friable	Brown	
18				
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 2 Condition AIII Slope 6 Percent
 Limiting Factor 15 Depth
 Soil series/phase name: **Lyman-Tunbridge WD**

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

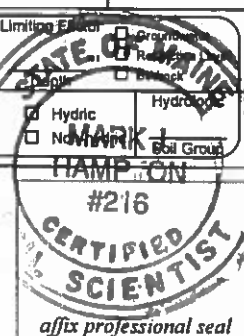
Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile _____ Condition _____ Slope _____ Percent
 Limiting Factor _____ Depth
 Soil series/phase name: _____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature <i>Mark J Hampton</i>	Date 5/3/21
Name Printed/typed Mark J Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

SOIL SURVEY GENERAL NOTES

- 1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.
- 2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED APRIL 20, 2021.
- 3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
- 4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

SOIL LEGEND

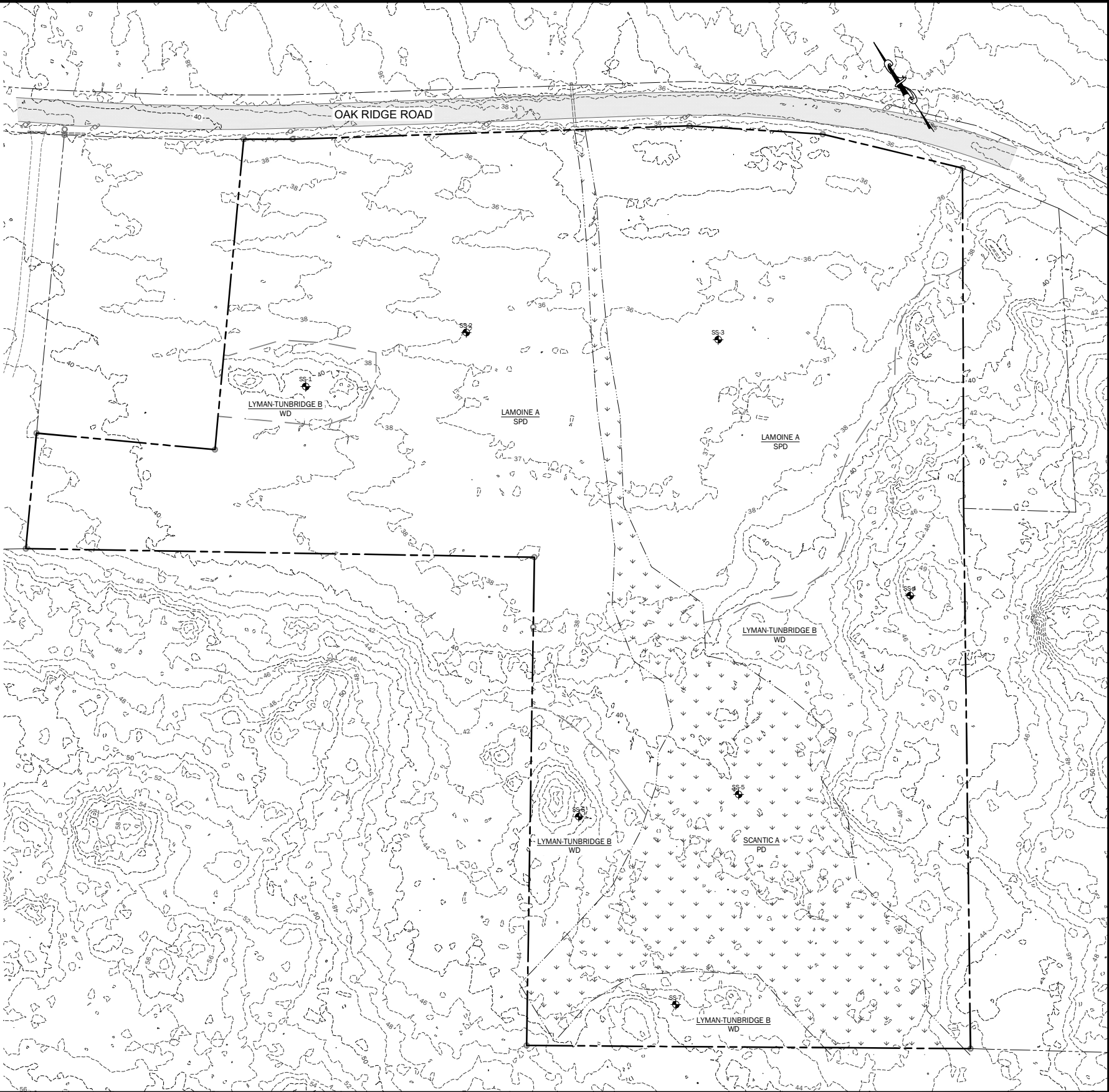
DRAINAGE CLASS

EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

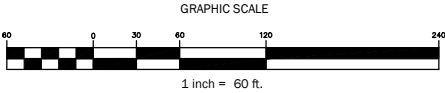
SLOPE DESIGNATION

0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



MARK HAMPTON ASSOCIATES, INC.
P.O. BOX 1931
PORTLAND, MAINE 04104

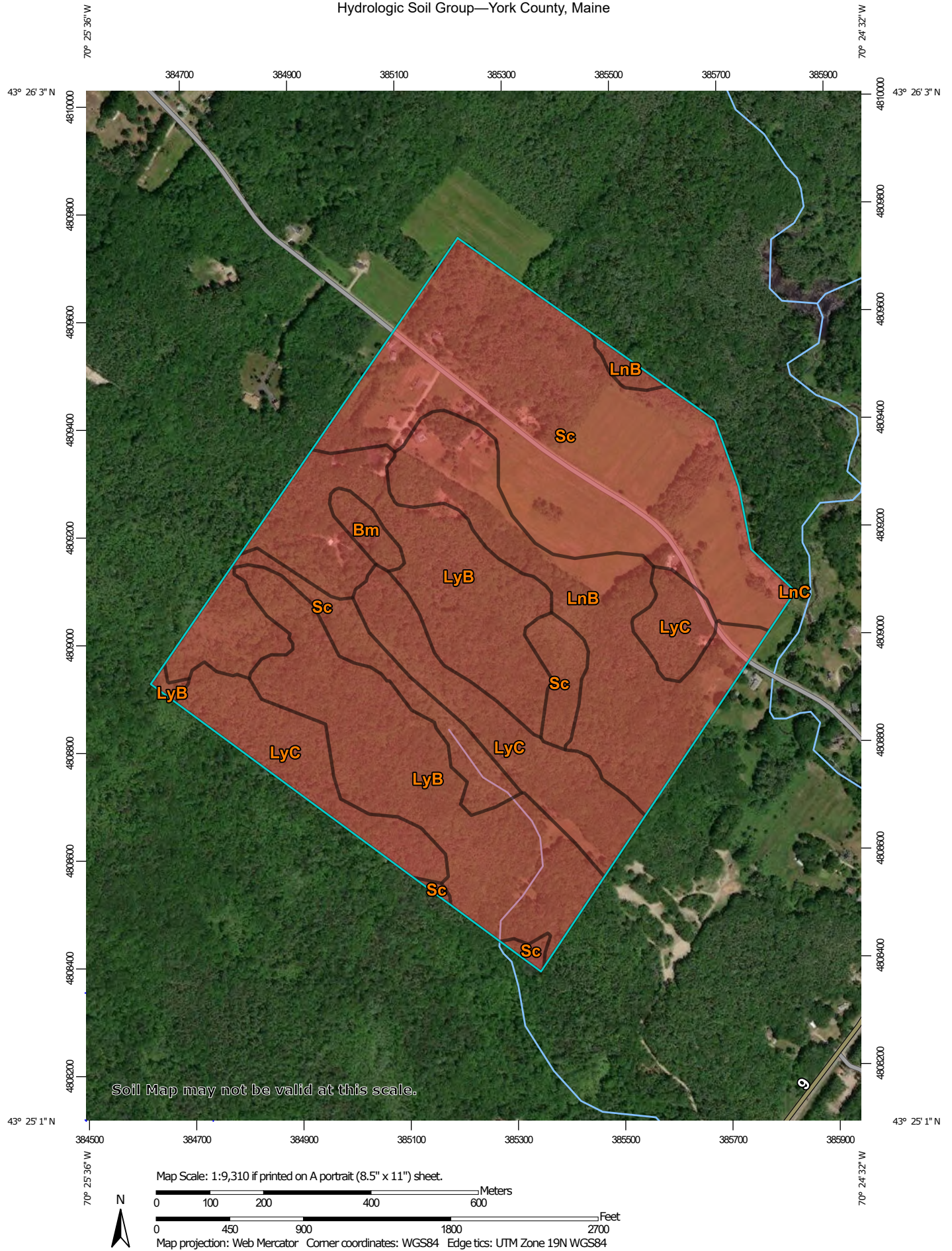


DATE: AUGUST 20, 2021

GINGER HILL, LLC
18 EARLY WAY, ARUNDEL, MAINE

HIGH INTENSITY SOIL SURVEY
185 OAK RIDGE ROAD, BIDDEFORD, MAINE, MAP 04, LOT 57

Hydrologic Soil Group—York County, Maine



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

Water Features

 Streams and Canals

Transportation

 Rails
 Interstate Highways
 US Routes
 Major Roads
 Local Roads

Background

 Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: York County, Maine
 Survey Area Data: Version 19, May 29, 2020

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 9, 2017

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Bm	Biddeford mucky peat, 0 to 3 percent slopes	D	2.4	1.1%
LnB	Lyman loam, 3 to 8 percent slopes, rocky	D	34.4	15.8%
LnC	Lyman loam, 8 to 15 percent slopes, rocky	D	0.0	0.0%
LyB	Lyman-Rock outcrop complex, 3 to 8 percent slopes	D	64.1	29.5%
LyC	Lyman-Rock outcrop complex, 8 to 15 percent slopes	D	34.0	15.6%
Sc	Scantic silt loam, 0 to 3 percent slopes	D	82.6	38.0%
Totals for Area of Interest			217.5	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

Appendix D

Inspection and Maintenance Plan

INSPECTION AND MAINTENANCE OF STORMWATER MANAGEMENT FACILITIES PLAN

LEEWARD MEADOWS Oak Ridge Road Biddeford, Maine 04005

Stormwater Management Facilities include swales, paved areas, gravel areas, culverts, riprapped aprons, and level spreaders. Periodic inspection and maintenance of these site features and devices is necessary to prevent erosion, protect roadways and other gravel areas, and remove pollutants from stormwater runoff. Ginger Hill Design + Build will be responsible for the inspection and maintenance of the stormwater facilities associated with this project until all units are sold. At that time, inspection and maintenance will be transferred to the Homeowners Association.

SIGNIFICANT RAINFALL:

For the purposes of this Inspection and Maintenance Plan, a significant rainfall event shall be defined as a storm of 0.5 inches or more in a 24-hour period, heavy, intense rainfall, such as thunder showers or during periods of significant snowmelt.

SWALES, DITCHES, PAVED AREAS, AND GRAVEL AREAS:

Swales, ditches, paved areas, and gravel areas are easily inspected during a site walk or even a ride-by. Since visual inspection is easy, their condition should be assessed during and/or after significant rainfall events. Any damage or unusual condition such as sedimentation of a ditch, erosion, damaged curb or dying vegetation should be recorded, dated and initialed by the inspector when observed. Even if there is no damage, the inspector should make record of these inspections at least twice annually.

Paved and gravel areas should be visually inspected monthly during the winter. The inspector should pay particular attention for evidence of erosion. The date and initials of the inspector should be recorded on the forms provided as well as a notation of any cleanup effort that was made and repairs to eroded areas.

Open swales and ditches shall be inspected twice per year (in spring and fall) to assure that debris and/or sediments do not reduce the effectiveness of the system. Debris and sediments shall be removed at that time. Any sign of erosion or blockage shall be immediately repaired to assure a vigorous growth of vegetation for the stability of the ditches and slopes proper function. Maintenance shall include, but not be limited to, mowing, trimming and removal of vegetation in the ditches and slopes as required in order to prevent vegetation from blocking or diverting storm flows, replacement of riprap channel lining to prevent scour of the channel invert, removing vegetation and debris from the culverts.

Vegetated ditches should be mowed at least monthly during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be reseeded and mulched immediately.

CULVERT PIPES:

Inspect culvert pipes when inspecting other stormwater maintenance facilities. At least annually make a visual inspection of the pipe. During the daylight you should be able to see light through most pipes as they have been laid to a straight line and grade.

Remove any obstructions to flow; remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit; and to repair any erosion damage at the pipe inlet and outlet. Sediment should be removed when its level exceeds 20% of the pipe diameter. This may be accomplished by hydraulic flushing or any mechanical means; however, care should be taken to contain the sediment at the pipe outlet, and not flush the sediments into the stormwater filter or wetland areas.

Riprap aprons where stone is displaced should be replaced and chinked to assure stability. With time, additional riprap may be added. Vegetation growing through riprap should be removed on an annual basis.

Record inspections on the forms provided noting condition of pipe and any maintenance procedures implemented.

SEDIMENT DISPOSAL:

Any sediment or debris removed during maintenance of the stormwater system must be disposed of in accordance with the Maine Solid Waste Disposal Rules.

LEEWARD MEADOWS BIDDEFORD, MAINE			
INSPECTION / MAINTENANCE LOG			
SWALES, DITCHES, PAVED AREAS, AND GRAVEL AREAS			
I: INSPECTED - C: CLEANED - S: SWEEPED - R: REPAIRED			
DATE	INITIALS	ACTION	COMMENT
5/10/19	RST	I, C	EXAMPLE: Removed sand around CB's 19 and 20. Heavy rain over the weekend.

LEEWARD MEADOWS BIDDEFORD, MAINE
INSPECTION / MAINTENANCE LOG
CULVERT PIPES
I: INSPECTED - C: CLEANED - R: REPAIRED

INSPECTION / MAINTENANCE LOG

CULVERT PIPES

I: INSPECTED - C: CLEANED - R: REPAIRED

[illegible]

**STORMWATER MANAGEMENT SYSTEM
MAINTENANCE PROGRAM
SUMMARY CHECKLIST**

Item	Commentary	Frequency			
		Month	Semi-Annual	Annual	Long-Term
Open Swale, Ditches & Inlet Structures	Inspect for debris accumulation, erosion and excessive vegetation. Mow monthly, remove debris, repair and revegetate any area of erosion	X Mow		X	
Pavement & Gravel Surfaces	Review for damage and buildup of debris and sand.	X	X Sweep		
Culverts	Inspect for sediment build-up in pipe. Flush and remove as required.			X	
Riprap	Inspect for erosion, sediment and vegetation. Clean and rebuild as required.			X	

Appendix E

Drainage Plans

D1.0 – Pre-Development Drainage Plan

D2.0 – Post Development Drainage Plan
(See Attachment 10 for Drainage Plans)

Preliminary Subdivision Application City of Biddeford, Maine

for

Leeward Meadows Subdivision

**Located At:
158 Oak Ridge Road
Biddeford, Maine 04005**

September 15, 2021

Applicant
Ginger Hill, LLC
18 Early Way
Arundel, Maine 04046

Prepared By
Walsh Engineering Associates, Inc.
1 Karen Drive, Suite 2A
Westbrook, Maine 04092



September 15, 2021

Biddeford Planning Board
c/o Mr. Greg Tansley, City Planner
City of Biddeford
205 Main Street
P.O. Box 586
Biddeford, ME 04005

**RE: Preliminary Subdivision Application
Leeward Meadows Subdivision
158 Oak Ridge Road, Biddeford, Maine
Tax Map 4, Lot 57**

Dear Mr. Tansley,

On behalf of Ginger Hill, LLC (applicant), Walsh Engineering Associates, Inc. (WEA) is pleased to submit this Preliminary Subdivision Application. The Applicant is proposing to develop a six-lot residential cluster subdivision with a public road and open space at 158 Oak Ridge Road in Biddeford.

Existing Conditions

The project is located on the 15.5± acres parcel identified by the City of Biddeford's Assessor's Tax Map as Map 4, Lot 57 in the Rural Farm (RF) District. The site is currently undeveloped consisting of meadow and forested area with frontage on Oak Ridge Road. Wetlands and soils have been identified on site by Mark Hampton Associates, Inc. on April 20, 2021. Soils on the site are generally poorly or somewhat poorly draining. Stormwater drains north towards the wetland on site and across Oak Ridge Road via a 30-inch culvert. The project is not located within an Essential or Significant Habitat as evaluated by Jones Associates, Inc. in May of 2021. There is not public sewer or water service available for the property.

Proposed Development

The applicant is proposing to subdivide the property into six residential lots, a large open space area, and a proposed public road for access. Each residential lot will include a single-family house and driveway as conceptually shown on the site plans. A 735± foot long road with two entrances on Oak Ridge Road is proposed for the access. A request to turn over the road to the City of Biddeford as a public street will be filed in the future. The road has been designed to meet the City of Biddeford's roadway construction standards for a nonurban, minor residential street. A sidewalk is not proposed with the street due the absence of sidewalks within proximity of the project and to maintain the rural characteristics of the area. The development will be serviced by private water and private septic systems. Electric and telecommunication utilities will be run underground from an existing utility pole to service the lots. The development of the project will not have adverse effect on stormwater runoff and all drainage systems have been adequately

designed. Applicable permits with the Maine Department of Environmental Protection (DEP) and the Army Corps of Engineers (ACOE) will be obtained prior to any wetland impact. Review requests sent out to the required departments are included with this submission.

The subdivision will utilize cluster development standards in order to preserve open space and natural resources on the property. A conventional subdivision layout plan, cluster subdivision layout plan, and net residential area calculations for each layout are included per cluster development requirements. The size of residential lots has been minimized to the extent practical in order to maximize the open space area. The open space is intended to preserve natural resources on the property and will be managed by the homeowner's association for the development. A landscaping plan incorporating a mix of native trees and shrubs to provide visual screening from Oak Ridge Road has been prepared in accordance with vegetated buffer requirements of the Rural Farm District.

We trust that we have provided the appropriate information to be placed on the next available planning board meeting. We look forward to working with the city to make this project a success. Please let me know if you have any questions or require any additional information.

Respectfully,

A handwritten signature in cursive script, appearing to read "William R. Walsh III".

William R. Walsh III, PE
Walsh Engineering Associates, Inc.

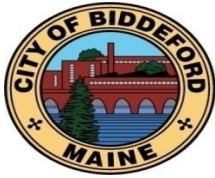
cc. Emily Ingwersen, Ginger Hill, LLC
Robert Ingwersen, Ginger Hill, LLC

Enc. Preliminary Subdivision Application Materials
Preliminary Subdivision Plan Set dated 9/15/21
Preliminary Subdivision Application Fee (\$700.00)

TABLE OF CONTENTS

Application, Agent Authorization, & Certificate of Good Standing

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Attachment 7: Declaration of Covenants & Restrictions	7
Attachment 8: Consultant Reports	8
Attachment 9: Stormwater Report	9
Attachment 10: Site Plans	10



City of Biddeford Planning Board Application

P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

Type of Application:

☐ Shoreland Zoning Permit ☐ Site Plan Review ☐ Extraction
☐ Conditional Use Permit ☒ Subdivision ☐ Private Way
☐ Other: _____

Applicant Information:

Name: Ginger Hill Design + Build
Mailing Address: 18 Early Way, Arundel, ME 04046
Telephone: (207) 710-0812
Email: emily@gingerhilldesignbuild.com

What is your legal interest in the property?

☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Information:

Name: Ginger Hill, LLC dba Ginger Hill Design + Build
Mailing Address: 18 Early Way, Arundel, ME 04046
Telephone: (207) 710-0812
Email: emily@gingerhilldesignbuild.com

Agent's Information:

Name: William R. Walsh III, PE - Walsh Engineering Associates, Inc.
Mailing Address: 1 Karen Drive, Suite 2A, Westbrook, Maine 04092
Telephone: (207) 553-9898
Email: bill@walsh-eng.com

Engineer/Surveyor's Information:

Name: William R. Walsh III, PE - Walsh Engineering Associates, Inc.
Mailing Address: 1 Karen Drive, Suite 2A, Westbrook, Maine 04092
Telephone: 207-553-9898
Email: bill@walsh-eng.com

Project Location and Lot Information:

Street Address: 158 Oak Ridge Road
Tax Map: 4 Lot: 57
Current Zoning: Rural Farm Shoreland Zoning: N/A
Size of Lot: 15.5 (X)acres ()s.f. Lot Frontage: 806 ft
Existing use of Property: The existing lot is currently undeveloped

Property currently serviced by:

☒ City Road ☐ Public Sewer ☐ Public Water ☐ Public Trash
☐ Private Road ☐ Septic System ☐ Private Well ☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☒ Flat (0-3% slope) ☐ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15%+ Slope)

Are there any wetlands or waterbodies on the site? ☒ (Yes) ☐ (No) if yes attach information

Do you plan to bring fill onto the lot? ☐ (Yes) ☒ (No) If yes attach information

Description of proposed use of property:

Project/Proposed Use:

The lot will be used for the construction of a 6-lot residential subdivision.

Property to be Serviced by:

☐ City Road ☐ Public Sewer ☐ Public Water ☒ Public Trash
☒ Private Road ☒ Septic System ☒ Private Well ☐ Private Hauler

Is this project part of a larger project? ☐ (Yes) ☒ (No)

If in a Shoreland Zone:

Percent of residential lot coverage (Max 20%): _____

Percent of structure expansion (Max 30%): _____

☒ **If Subdivision Review, number of lots proposed:** 6

☒ **If a Private Way is proposed, number of lots served:** 6

If Site Plan Review, you must provide the following information:

Total new square feet footprint of structure: _____

Total new square feet paving/parking: _____

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

☒ Fire Department-Contact Chief or Deputy Chief – 282-9986

☒ Ability to Serve for Water Service – Maine Water – 282-1543

☒ Ability to Serve for Sewer Service – Engineering Dept – Tom Milligan 284-9118

☒ Police Department – e-911 Road Name Designation – Contact Joanne Fisk 282-5127

- B. Letter to Planning Board describing project, Waiver requests, proposed improvements, addressing permit requirements, ect.
- C. Photographs of Site.
- D. Architectural renderings/drawings of proposed buildings, as required.
- E. Engineering Plans, as required.

Fees (Due at time of Submission):

- \$40 Nonrefundable Administration Fee is required for every application.
- Refer to “Attachment A Fees and Charges” of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it’s attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of the review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting an application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

X Project proposed to have 1 acre or more of Site disturbance:

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of Applicant: Melissa J. McRobert (agent) **Date** 9/15/21

Signature of Property Owner: Melissa J. McRobert (agent) **Date** 9/15/21

IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE) CHECKWITH PLANNING STAFF FOR CLARIFICATION.

To Whom It May Concern,

By this letter, the undersigned authorizes Walsh Engineering Associates, Inc. to act as the agent for the undersigned in the preparation and submission of all Federal, State, and Local City permit applications and relevant documents and correspondence for all necessary permits for the construction on the property at Oak Ridge Road, Biddeford, Maine 04005 (Tax Map 4, Lot 57, Parcel A) to attend meetings and site visits; to appear before all boards, commissions, and committees, and to provide such other services as are necessary and appropriate in furtherance of the aforementioned project.

Sincerely,

Ginger Hill, LLC

Company

Emily Ingwersen

Signature

Emily Ingwersen, Manager

Printed Name and Title

6/14/2021

Date

**MAINE**Department of the Secretary of State
Bureau of Corporations, Elections and Commissions**Corporate Name Search**

Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Mon Aug 02 2021 10:54:51. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
GINGER HILL, LLC	20150386DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
07/30/2014	N/A	MAINE

Other Names (A=Assumed ; F=Former)

GINGER HILL DESIGN & BUILD	A
----------------------------	---

Clerk/Registered Agent

RALPH W. AUSTIN
P.O. BOX 468
BIDDEFORD, ME 04005

[Back to previous screen](#)[New Search](#)

Click on a link to obtain additional information.

List of Filings

[View list of filings](#)

Obtain additional information:

Additional Addresses

[Plain Copy](#)[Certified copy](#)

Certificate of Existence [\(more info\)](#)

Short Form without amendments	Long Form with amendments
(\$30.00)	(\$30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.
If you encounter problems, visit the [troubleshooting page](#).



ATTACHMENT 1
APPLICATION REQUIREMENTS CHECKLIST

SUBDIVISIONS

66 Attachment 2

City of Biddeford

Appendix B Required Information Checklist [Ord. of 6-20-1995]

In order for any application to be considered complete the following information must be provided at least two weeks prior to the Planning Board meeting. All plans for subdivisions shall contain the following information:

	Yes	No	N/A	Remarks
(1) Name of subdivision, owner and engineer or surveyor	X			
(2) Graphic scale, date, drawn, North point and its date, and whether it is true or magnetic	X			
(3) Boundaries of the tract	X			
(4) Existing zoning	X			
(5) Ownership and location of abutting properties	X			
(6) Name, location, width, profile, cross-section, radius of curves, angles of change in direction and center line length of all angles of change in direction and center line length of all proposed streets; other public ways, building lines and easements in the subdivision; intersection of existing streets	X			
(7) Type, location, profile and cross-section of all existing and/or proposed surface water drainage	X			
(8) Location of all existing and/or proposed utilities	X			
(9) Location of all existing and/or proposed sanitary sewers showing size, profile, and cross-section, or description, plan, location of other means of sewage disposal with evidence of successful soil evaluation	X			
(10) Topography at two-foot contour intervals, unless otherwise prescribed by the Board. In addition the location of existing natural or man-made features influencing the layout of the proposed subdivision shall be shown.	X			

BIDDEFORD CODE

	Yes	No	N/A	Remarks
(11) Lot lines and approximate dimensions	X			
(12) Proposed uses of property	X			
(13) Proposed public areas, if any	X			
(14) Copy of deed, or option for purchase, for land being subdivided	X			
(15) Reserved fire lane areas	X			
(16) Location of soil evaluation test pits for each lot on plan	X			
(17) Location of well or water supply for each lot	X			
(18) Aesthetics; trees, berms, shrubs, green strips, parks, etc.	X			
(19) Location and details for sedimentation and erosion control measures	X			
The preliminary of a subdivision shall be drawn at a scale no smaller than 100 feet (1 cm = 12 m) to the inch	X			
A preliminary plan shall include a location map insert, showing the relationship of the proposed subdivision to adjacent properties and public access, and drawn at no smaller scale than 2,000 feet (1 cm = 240 m) to the inch. It is suggested that reduced sections of City maps be used for this purpose.	X			

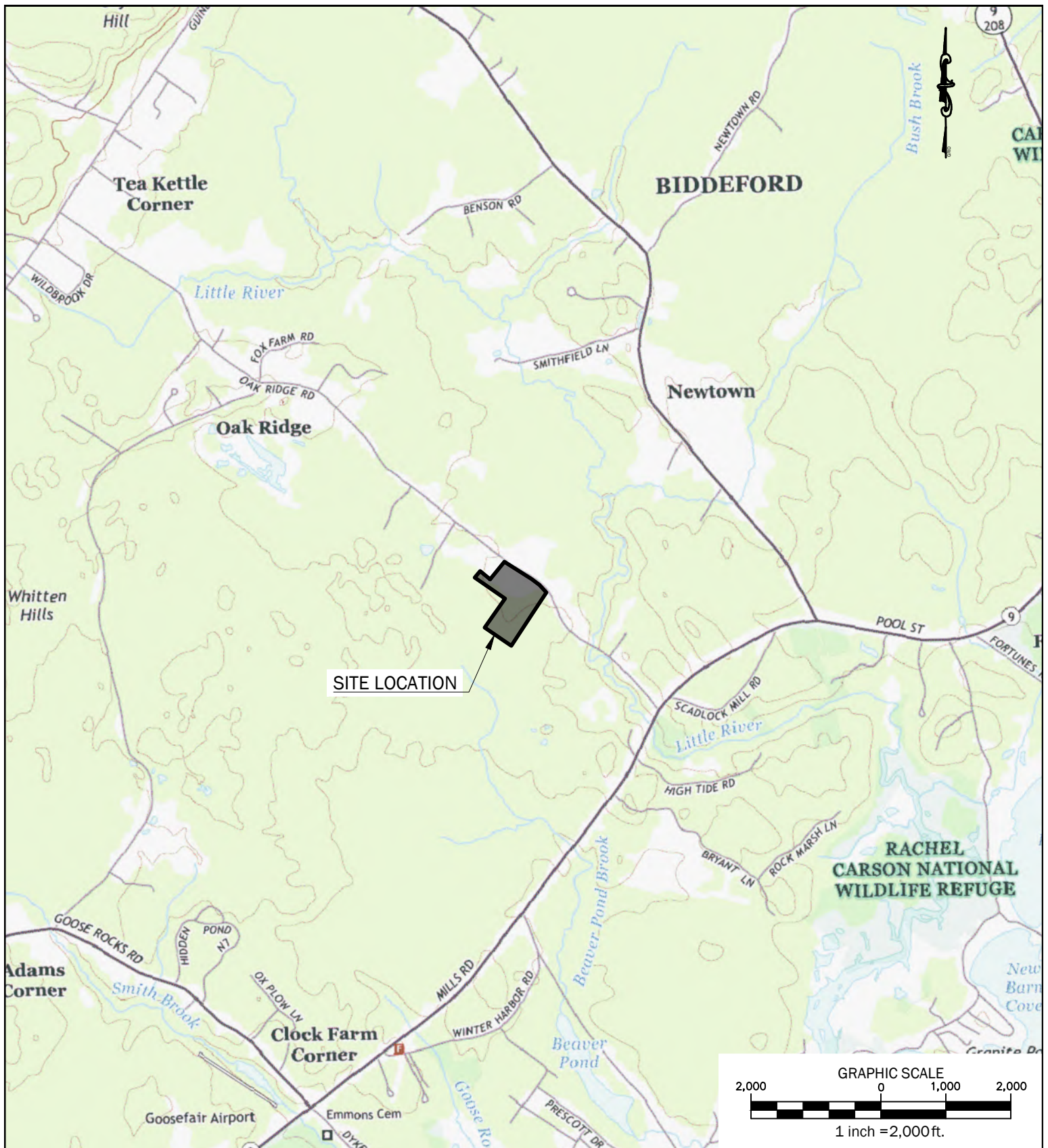
In addition to the above plat information, the Subdivider shall provide the following documents:

	Yes	No	N/A	Remarks
Valid deed or option indicating an interest held by the subdivider in the parcel of land	X			
Completed application form	X			
Narrative of the proposed project briefly describing the general nature of the project i.e., type of project; residential or commercial; number of lots intended to create	X			
Draft covenants and deeds for each lot proposed	X			
Easement documents for proposed rights-of-way for utilities, drainage ways, roadways and other	X			

SUBDIVISIONS

	Yes	No	N/A	Remarks
travelways or public amenities	X			
Statement of financial capability of subdivider to undertake the proposed project	X			
Statement identifying principals involved in the project	X			
Statement demonstrating that the subdividers have the technical capability to complete the proposed project as presented	X			
Copies of such covenants or deed restrictions as are intended to all or part of the tracts	X			
Review by water company, power company and City Engineering, Police and Fire Departments	X			

**ATTACHMENT 2
LOCATION MAP**



WALSH
ENGINEERING ASSOCIATES, INC.

One Karen Dr., Suite 2A | Westbrook, Maine 04092
ph: 207.553.9898 | www.walsh-eng.com

Copyright © 2021

Residential Subdivision

Ginger Hill Design + Build
158 Oak Ridge Road
Biddeford, Maine 04005

Sheet Title:

Site Location

Job No.: 737

Date: June 15, 2021

Scale: 1" = 2,000'

Drawn: CAR

Checked: WRW

ATTACHMENT 3
TITLE, RIGHT OR INTEREST

- Warranty Deed Bk 18667, Pg 573

DLN: 1002140144237

Space above for recording information

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS that **CLOVER LEAF INVESTMENT PROPERTIES, LLC**, a Maine limited liability company with a principal place of business in Kennebunkport, York County, Maine, in consideration of One Dollar and other valuable consideration, grants to **GINGER HILL, LLC dba GINGER HILL DESIGN & BUILD**, a Maine limited liability company with a principal place of business in Arundel, York County, Maine (with a mailing address of 18 Early Way, Arundel, Maine 04046), with **warranty covenants**, the following described property:

A certain lot or parcel of land situated on the westerly side of Oak Ridge Road, so-called, in the City of Biddeford, County of York and State of Maine, more particularly bounded and described as follows:

Beginning at a 1 inch iron pipe 4.4' tall, more or less, on the apparent westerly side of said Oak Ridge Road at the northerly corner of land now or formerly of one Small as described in deed recorded in the York Registry of Deeds in Book 1887, Page 815;

Thence South 50° 15' West by said Small land a distance of 379.39 feet to a 4" x 4" granite monument with drill hole and land formerly of Nancy P. Thomson and being described in deed from the said Nancy P. Thomson to Stephen C. Shannon and Barbara J. Winterson dated December 12, 2011, and recorded in the York Registry of Deeds in Book 16224, Page 346;

Thence South 52° 13' 45" West by remaining land formerly of said Nancy P. Thomson a distance of 616.27 feet to a found 2", more or less, iron pipe being 1.5' tall,

more or less, and land now or formerly of Hutchins as described in deed recorded in the York Registry of Deeds in Book 1894, Page 50;

Thence, North 38° 00' West by said Hutchins land a distance of 495.00 feet to $\frac{3}{4}$ inch iron pipe with cap;

Thence North 52° 00' East still by said Hutchins land a distance of 544.5 feet to an iron rod with cap (said line passes through an iron pipe located a distance of 78.04 feet on a course of South 52° 00' West from the last mentioned iron pipe);

Thence North 38° 00' West by land of Hutchins a distance of 566.9' feet to $\frac{3}{4}$ inch iron rod with cap and land now or formerly of one Booker;

Thence North 55° 45' East by land now or formerly of Booker and land now or formerly of one Ryan a distance of 462.4 feet to an iron pipe at the apparent westerly side of Oak Ridge Road;

Thence by the westerly sideline of said Oak Ridge Road the following courses and distances:

- (a) South 37° 20' East a distance of 127.6 feet to an iron pipe driven into the ground;
- (b) South 39° 40' East a distance of 127.2 feet to an iron pipe driven into the ground;
- (c) South 41° 30' East a distance of 442.3 feet to an iron pipe driven into the ground;
- (d) South 36° 00' East a distance of 149.0 feet to a $\frac{3}{4}$ inch iron pipe driven into the ground; and
- (e) South 25° 50' East a distance of 160.40 feet to the 1 inch iron pipe which marks the point of beginning.

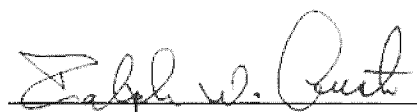
The above bearings refer to the 1974 Magnetic Meridian. The above descriptions were generated from plan entitled "Plan Showing A Standard Boundary Survey Made For James L. Thomson II and Nancy P. Thomson", dated May 10, 1999, and revised on March 31, 2011, prepared by Dow & Coulombe, Inc. The above described premises are conveyed subject to such matters as may be shown on said plan.

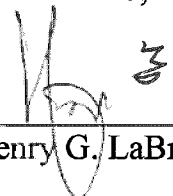
Also conveying herewith all of the Grantor's right, title and interest in and to that real estate lying between the northerly and southerly sidelines of the above described premises as extended in a northeasterly direction to the centerline of Oak Ridge Road, so-called.

Being the same premises conveyed to the within Grantor by deed from Nancy P. Thomson dated October 15, 2012 and recorded in the York County Registry of Deeds in Book 16437, Page 645.

IN WITNESS WHEREOF the said CLOVER LEAF INVESTMENT PROPERTIES, LLC, has caused this instrument to be executed by Henry G. LaBrie, III, its Member, duly authorized, this 13th day of May 2021.

CLOVER LEAF INVESTMENT
PROPERTIES, LLC

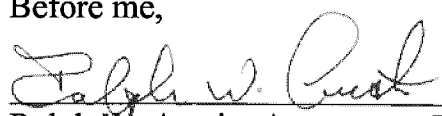

WITNESS

By: 
Henry G. LaBrie, III, Member

STATE OF MAINE
YORK, ss.

May 13, 2021

Then personally appeared the above-named Henry G. LaBrie, III, Member of Clover Leaf Investment Properties, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation, before me,

Before me,

Ralph W. Austin, Attorney-at-Law
Maine Bar No. 1156

□ □□P
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PID 102242 MBLU 4-59-3	HUTCHINS, DANA B & SUSAN M CO-TRUSTEES	43 MARIPOSA	IRVINE, CA 92604
PID 639 MBLU 4-57-1	SMALL, CECILE	146 OAK RIDGE RD	BIDDEFORD, ME 04005-9104
PID 121006 MBLU 4-61-9	FORTIER, MICHAEL R	130 OAK RIDGE RD	BIDDEFORD, ME 04005
PID 640 MBLU 4-58	LEPROHON, LOUIS A & LINDA A	154 OAK RIDGE RD	BIDDEFORD, ME 04005-9104
PID 644 MBLU 4-59-2	HUTCHINS, WILLIAM E & JULIANNE	119 OAK RIDGE RD	BIDDEFORD, ME 04005-9730
PID 645 MBLU 4-61	HUTCHINS, WILLIAM J & LORRAINE L	113 OAK RIDGE RD	BIDDEFORD, ME 04005
PID 638 MBLU 4-57	SHANNON, STEPHEN C	158 OAK RIDGE RD	BIDDEFORD, ME 04005
PID 648 MBLU 4-61-3	FORTIER, ROBERT M & MAUREEN B	130 OAK RIDGE RD	BIDDEFORD, ME 04005
PID 120672 MBLU 4-57-2	CLOVER LEAF INVESTMENT PROPERTIES, LLC	930 POOL ST	BIDDEFORD, ME 04005

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September 1, 2021

To Whom it May Concern:

Re: Ginger Hill Design & Build/Rob & Emily Ingwersen

Biddeford Savings (the "Bank") has completed a preliminary review of Ginger Hill's proposed subdivision called Leeward Meadows on Oak Ridge Road, Biddeford. Based on the Bank's analysis and past experience with Ginger Hill, we believe that the business and its principals possess the financial capacity to successfully complete the proposed project.

This letter is not an approval for financing.

Please feel free to give me a call if you have any questions.

Sincerely,

Cynthia E. Convery
Vice President
Biddeford Savings
(207) 571-5675
cconvery@biddefordsavings.com



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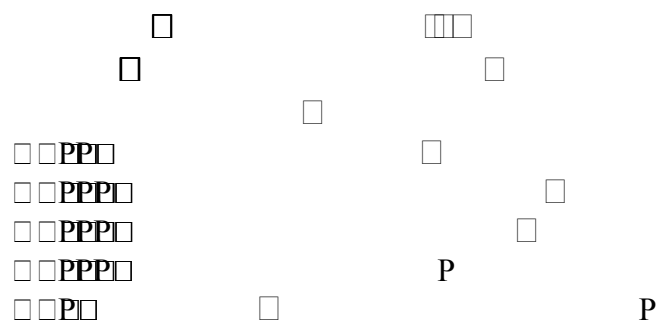
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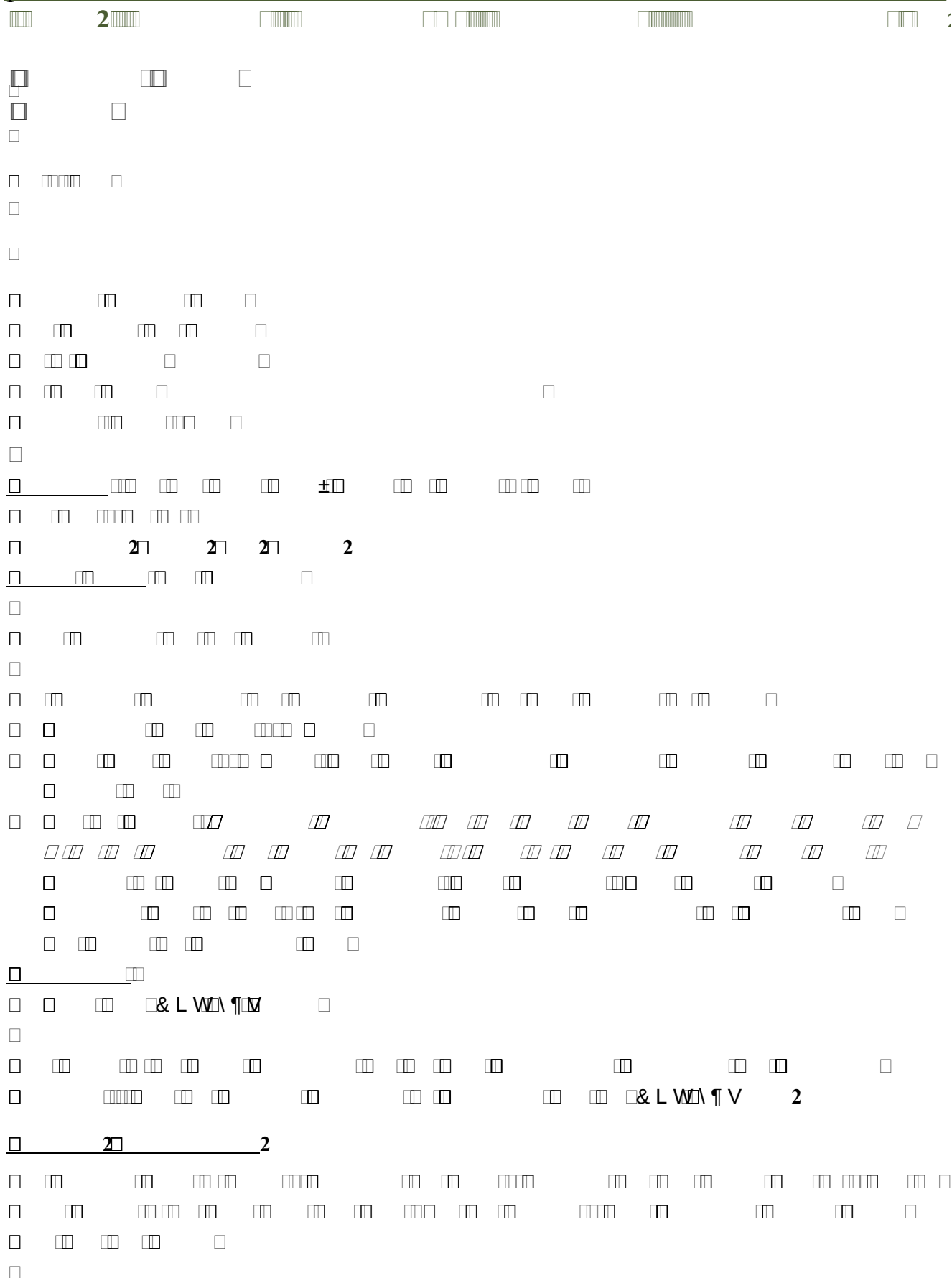
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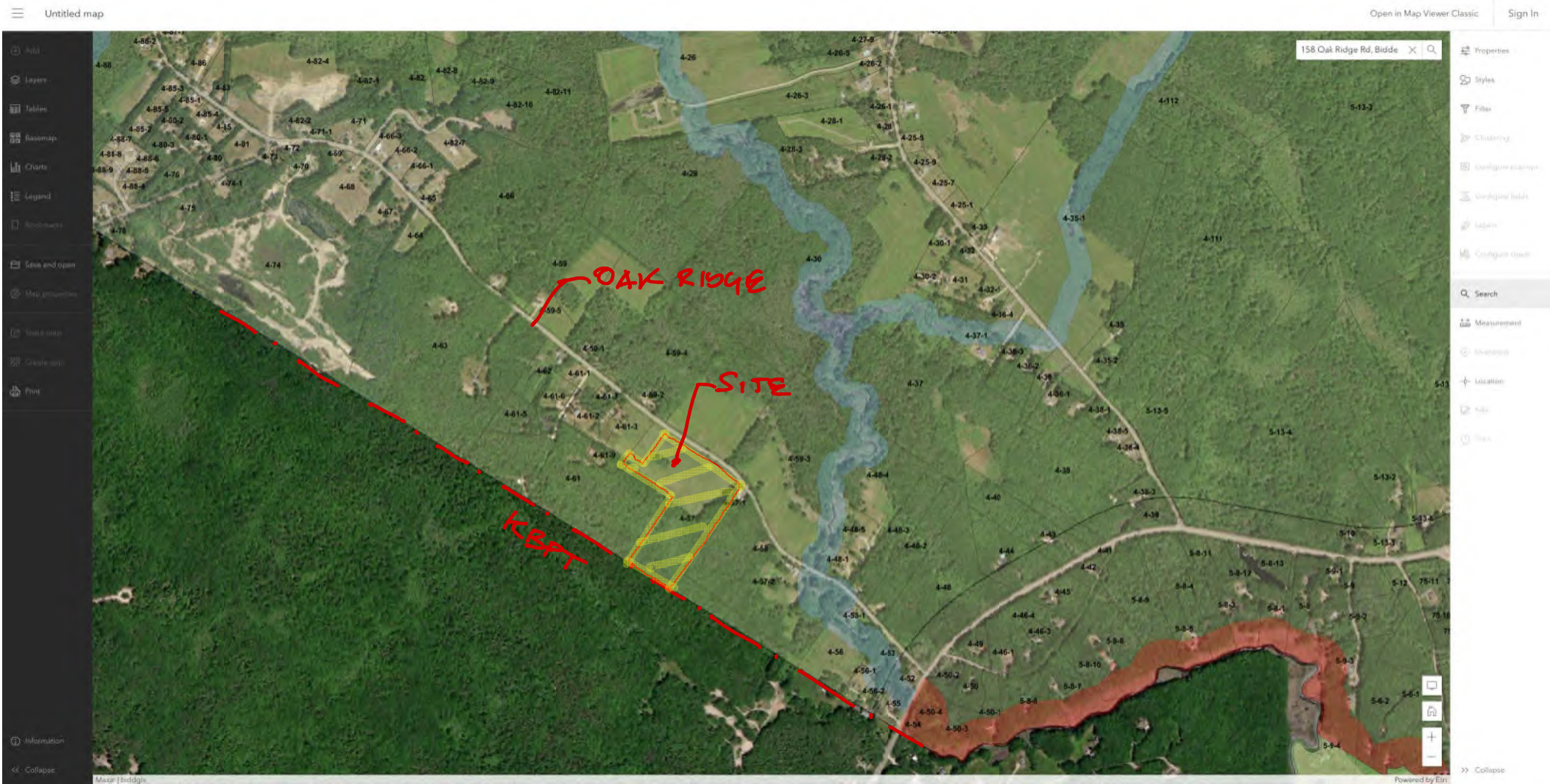
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JOANNE W. FISK
Deputy Chief

Communications and Records
joanne.fisk@biddefordmaine.org



Nationally Accredited

39 Alfred Street
Biddeford, Maine 04005



(207) 282-5127
biddefordmaine.org/police

!



August 11, 2021

City of Biddeford Fire Department
c/o Kevin Duross, Deputy Fire Chief
152 Alfred Street
Biddeford, Maine 04005

**RE: Preliminary Subdivision Review Request
Leeward Meadows Subdivision
Oak Ridge Road**

Dear Kevin,

In accordance with the City of Biddeford's Preliminary Subdivision Application requirements, Walsh Engineering Associates, Inc. (WEA) is required to obtain approval from various departments (Fire Department included) regarding the proposed development and include those approvals with our preliminary submission. This letter seeks to respectfully request that the Fire Department reviews the attached site plans in regards to the planned "Leeward Meadows" subdivision and either presents any questions or concerns with the development or extends its approval.

Should you have any questions or request further information, please don't hesitate to contact me at Isaiah@Walsh-eng.com or (207) 553-9898.

Respectfully,

Isaiah Bates

Isaiah Bates
Walsh Engineering Associates, Inc.

Enc: Site Location Plan
C1.0 Existing Conditions Plan
C2.1 Cluster Lot Subdivision Plan
C2.2 Site Layout & Utilities Plan



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MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

August 30, 2021

Mr. Isaiah Bates
Walsh Engineering
One Karen Drive
Suite 2A
Westbrook, ME 04092

Project: MHPC# 1437-21 Leeward Meadows Subdivision; 158 Oak Ridge Road
Proposed Subdivision
Town: Biddeford, ME

Dear Mr. Bates:

In response to your recent request, I have reviewed the information received August 20, 2021 to initiate consultation on the above referenced project.

Based on the information provided, I have concluded that there are no National Register eligible properties on or adjacent to the parcels. In addition, the project area is not considered sensitive for archaeological resources.

Please contact Megan M. Rideout of our staff, at megan.m.rideout@maine.gov or 207-287-2992, if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney
State Historic Preservation Officer



[illegible]

799

[illegible]

[illegible]

[illegible]

[illegible]



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on April 20, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map –2 foot contour intervals

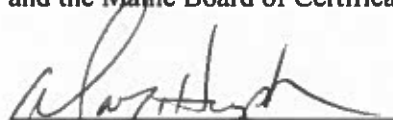
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

P.O. BOX 1981 • PORTLAND, ME 04104 • 1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

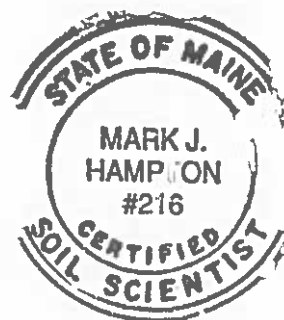
The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263

May 3, 2021

Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

LYMAN-TUNBRIDGE COMPLEX

SETTING

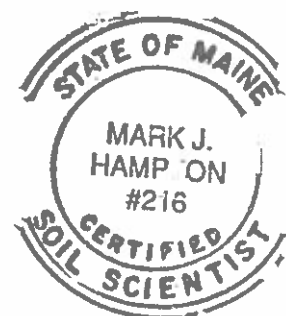
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING:	Buxton, Lamoine, Scantic
--------------	--------------------------



USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Lamoine
(Aeric Haplaquepts)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Intermediate positions on landform
SLOPE GRADIENT RANGES: (A) 0-3 %

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 0.5 to 2.0 feet below the surface at some time from November to June or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark Brown, fine sandy loam 0-7"
<u>Subsurface Layer:</u>	Lt. Olive brown silt loam, 7-14"
<u>Subsoil Layer:</u>	Olive silty clay loam, 14-21"
<u>Substratum:</u>	Olive, silty clay loam, 21-65"

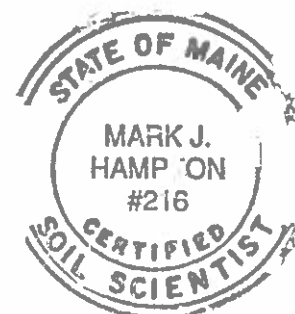
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Buxton, Scantic

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





MARK HAMPTON ASSOCIATES, INC.

• SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolauustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Lower positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
<u>Substratum:</u>	Gray silty clay loam, 16"+

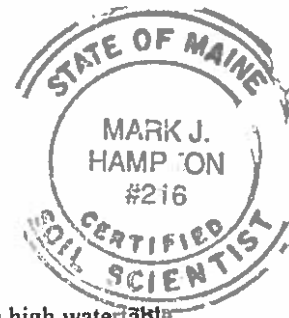
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Buxton, Lamoine

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-1 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown	
6	Loam			
12	Sandy	Friable	Brown	
18				
24	ΛΛ	Ledge	ΛΛ	
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ S.S. ☒

Soil Classification Profile <u>2</u> Condition <u>AIII</u>	Slope Percent <u>4</u>	Limiting Factor Depth <u>18</u> " ☐ Groundwater ☐ Restrictive Layer ☒ Bedrock	Hydrologic ☐ Hydric ☒ Non-hydric
Soil series/phase name: Lyman-Tunbridge WD			
Soil Group			

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Dark Brown	
6	Loam			
12	Fine Sandy	Friable	Brown	
18				
24	Silty Clay	Firm	Gray	Common and Distinct
30	Loam			
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ S.S. ☒

Soil Classification Profile <u>8</u> Condition <u>D</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>14</u> " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock	Hydrologic ☐ Hydric ☒ Non-hydric
Soil series/phase name: Lamoine SPD			
Soil Group			

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Dark Brown	
6	Loam			
12	Fine Sandy	Friable	Brown	
18				
24	Silty Clay	Firm	Gray	Common and Distinct
30	Loam			
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ S.S. ☒

Soil Classification Profile <u>8</u> Condition <u>D</u>	Slope Percent <u>2</u>	Limiting Factor Depth <u>13</u> " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock	Hydrologic ☐ Hydric ☒ Non-hydric
Soil series/phase name: Lamoine SPD			
Soil Group			

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

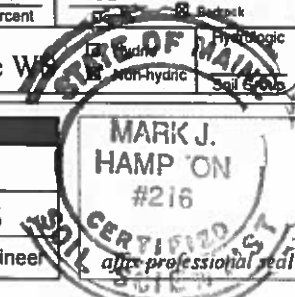
Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Dark Brown	
6	Loam			
12	Fine Sandy	Friable	Brown	
18				
24	ΛΛ	Ledge	ΛΛ	
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ S.S. ☒

Soil Classification Profile <u>2</u> Condition <u>AIII</u>	Slope Percent <u>4</u>	Limiting Factor Depth <u>15</u> " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock	Hydrologic ☐ Hydric ☒ Non-hydric
Soil series/phase name: Lyman-Tunbridge WD			
Soil Group			

INVESTIGATOR INFORMATION AND SIGNATURE

Signature <i>Mark J Hampton</i>	Date 5/3/21
Name Printed/typed Mark J Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-5 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
9 Fine Sandy	Friable	Black	
6 Loam			
12 Silty Clay	Firm	Gray	Common and Distinct
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☒ Groundwater
 S.S. ☒ Restrictive Layer
☐ Bedrock

Soil Classification 8 E	Slope 2	Limiting Factor 6
Profile Condition	Percent	Depth

Soil series/phase name: **Scantic PD**

☒ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
9 Sandy	Friable	Dark Brown	
6 Loam			
12 Sandy	Friable	Brown	
18			
24	Ledge		
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock

Soil Classification 2 AIII	Slope 4	Limiting Factor 15
Profile Condition	Percent	Depth

Soil series/phase name: **Lyman-Tunbridge WD**

☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
9 Sandy	Friable	Dark Brown	
6 Loam			
12 Sandy	Friable	Brown	
18			
24	Ledge		
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock

Soil Classification 2 AIII	Slope 6	Limiting Factor 15
Profile Condition	Percent	Depth

Soil series/phase name: **Lyman-Tunbridge WD**

☐ Hydric ☐ Non-hydric Hydrologic Soil Group

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
9			
6			
12			
18			
24			
30			
36			
42			
48			
54			
60			

Depth below mineral soil surface (inches)

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock

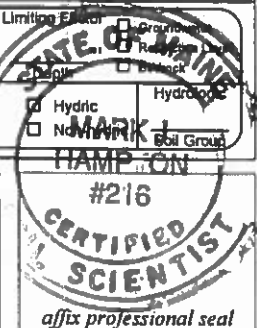
Soil Classification	Slope	Limiting Factor
Profile Condition	Percent	Depth

Soil series/phase name:

☐ Hydric ☐ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature <i>Mark J Hampton</i>	Date 5/3/21
Name Printed/typed Mark J Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

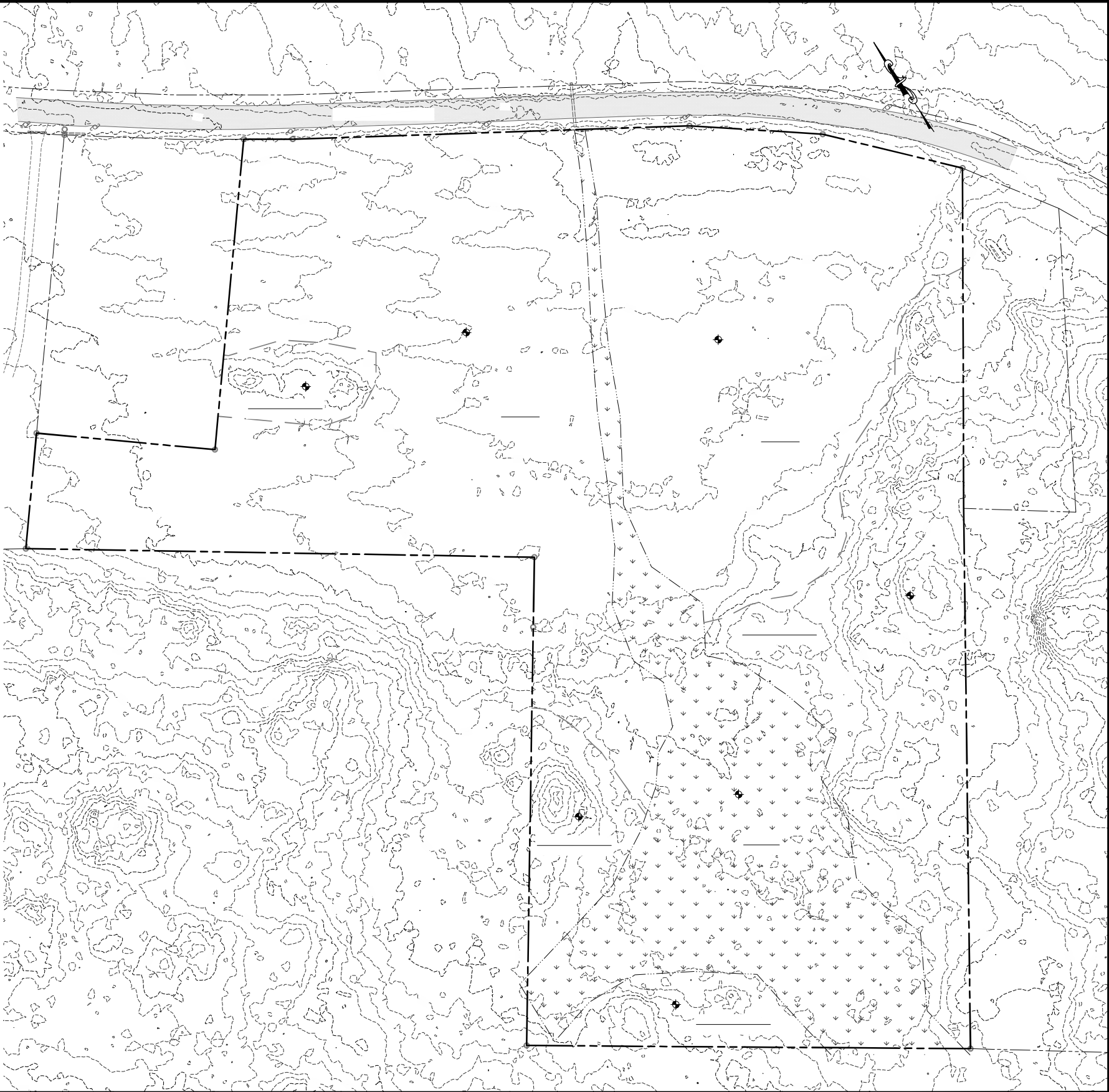
- SOIL SURVEY GENERAL NOTES**
1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.
 2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED APRIL 20, 2021.
 3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
 4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

SOIL LEGEND

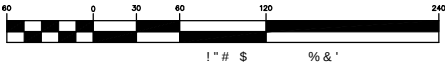
DRAINAGE CLASS	
EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

SLOPE DESIGNATION	
0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



! " #



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MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518
June 29, 2021

Mr. Bill Walsh
Walsh Engineering Associates, Inc
One Karen Drive Suite 2A
Westbrook, ME 04092

Re: Prime Agricultural Soils, 158 Oak Ridge Road, Ginger Hill Design & Build,
Biddeford, ME

Dear Bill,

I am writing this letter to certify that all of the soils I mapped on this 13+ acre parcel of land located at 158 Oak Ridge Road and noted as lot 57 on tax map 4 for the City of Biddeford do not meet the criteria of prime agricultural soils or soils of Statewide Importance as defined in Article VI, Section 44, Net Density Calculations, A.5 of the City of Biddeford Zoning Ordinance. Section 44.A.5 states that soils in the rural farm zone identified by the US Soil Conservation Service, now known as the Natural Resources Conservation Service, as being soils of statewide importance, prime agricultural soils and/or unique soils are to be deducted in the density calculations. Section 44.A.5 then lists the soils identified on a map prepared by the Southern Maine Regional Planning Commission. The list identifies the following soils:

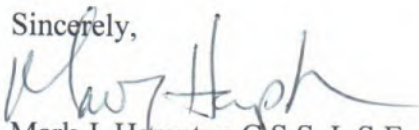
Adams loamy sands (0-3%), Allagash very fine sandy loam (3-8%), Allagash very fine sandy loam (8-15%), Becket fine sandy loam (3-8%), Buxton (3-8%), Buxton (8-15%), Colton gravelly loamy coarse sand (0-8%), Croghan loamy sand (0-8%), Elmwood fine sandy loam (0-8%), Elmwood sand loam (8-15%), Lyman fine sandy loam (3-8%), Madawaska fine sandy loam (0-8%), Naumburg sand, Ondawa fine sandy loam, Podunk and Winooski soils, Raynham silt loam, Rumney loam, Scio silt loam (3-8%), and Skerry fine sandy loam (0-8%).

I have prepared and submitted a recently completed high intensity soil survey of the property. The soil map unit I mapped on the property included Lyman-Tunbridge sandy loam (3-8%), Lamoine silt loam (3-8%), and Scantic silt loam (0-3%). None of the soil map units I mapped on the property are included in the list of soils mapping unit found in Article VI, Section 44.A.5 as noted above.

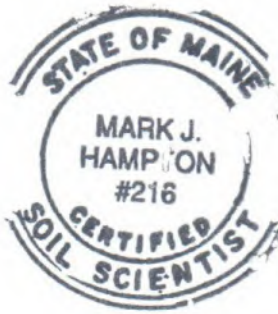
Therefore, in my professional capacity as a certified soil scientist, can certify that the soils which occur on lot 57 tax map 4 at 158 Oak Ridge Road are not prime agricultural soils, soils of statewide importance and/or unique soils as noted in Article VI, Section 44.A.5 of the City of Biddeford Zoning Ordinance.

If you have any questions or require additional information, please contact me.

Sincerely,



Mark J. Hampton C.S.S, L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263



SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION

>> CAUTION: LPI APPROVAL REQUIRED <<

City, Town, or Plantation **Biddeford**
Street or Road **Leeward Meadows**
Subdivision, Lot # **Lot 1**

Town/City _____ Permit # _____
Date Permit Issued: ___/___/___ Fee: \$ _____ Double Fee Charged []

OWNER/APPLICANT INFORMATION

Name (last, first, MI) **Ginger Hill Design & Build** Owner ☒
Applicant ☐
Mailing Address of Owner/Applicant **18 Ginger Hill Lane**
Arundel 04046
Daytime Tel. # **229-0280**

Local Plumbing Inspector Signature _____ L.P.I. # _____
Fee: \$ _____ state min fee \$ _____ Locally adopted fee
Copy: [] Owner [] Town [] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

(1st) date approved _____

Signature of Owner or Applicant _____ Date _____

Local Plumbing Inspector Signature _____ (2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES

1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY

1 SQ. FT. ACRES

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit No. of Bedrooms: **3**
2. Multiple Family Dwelling, No. of Units: _____
3. Other: _____ (specify)
Current Use Seasonal Year Round **Undeveloped**

TYPE OF WATER SUPPLY

1. Drilled Well
2. Dug Well
3. Private
4. Public
5. Other

SHORELAND ZONING

Yes ☐ No ☒

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. Concrete
a. Regular
 - b. Low Profile
 2. Plastic
 3. Other: _____
- CAPACITY: **1000** GAL.

DISPOSAL FIELD TYPE & SIZE

1. Stone Bed
 2. Stone Trench
 3. Proprietary Device
a. cluster array
 - b. regular load
 - c. Linear
 - d. H-20 load
 4. Other: _____
- SIZE: **1152** sq. ft. in. ft.

GARBAGE DISPOSAL UNIT

1. No
 2. Yes
 3. Maybe
- If Yes or Maybe, specify one below:
- a. multi-compartment tank
 - b. _____ tanks in series
 - c. increase in tank capacity
 - d. Filter on Tank Outlet

DESIGN FLOW

270 gallons per day

- BASED ON:
1. Table 4A (dwelling unit(s))
 2. Table 4C (other facilities)
- SHOW CALCULATIONS for other facilities

SOIL DATA & DESIGN CLASS

PROFILE CONDITION **8 / D**
at Observation Hole # **TP1**
Depth **12** "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. ft. / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

1. Not Required
 2. May Be Required
 3. Required
- Specify only for engineered systems:
DOSE: _____ gallons

3. Section 4G (meter readings)
- ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. **43** d **25** m **39** s
Lon. **70** d **24** m **57** s
if g.p.s, state margin of error: **15**

SITE EVALUATOR STATEMENT

I certify that on **8/25/21** (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature

Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/25/21

Date

E-mail Address

Note : Changes to or deviations from the _____ n should be confirmed with the Site Evaluator.

6510

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Leeward Meadows

Lot 1

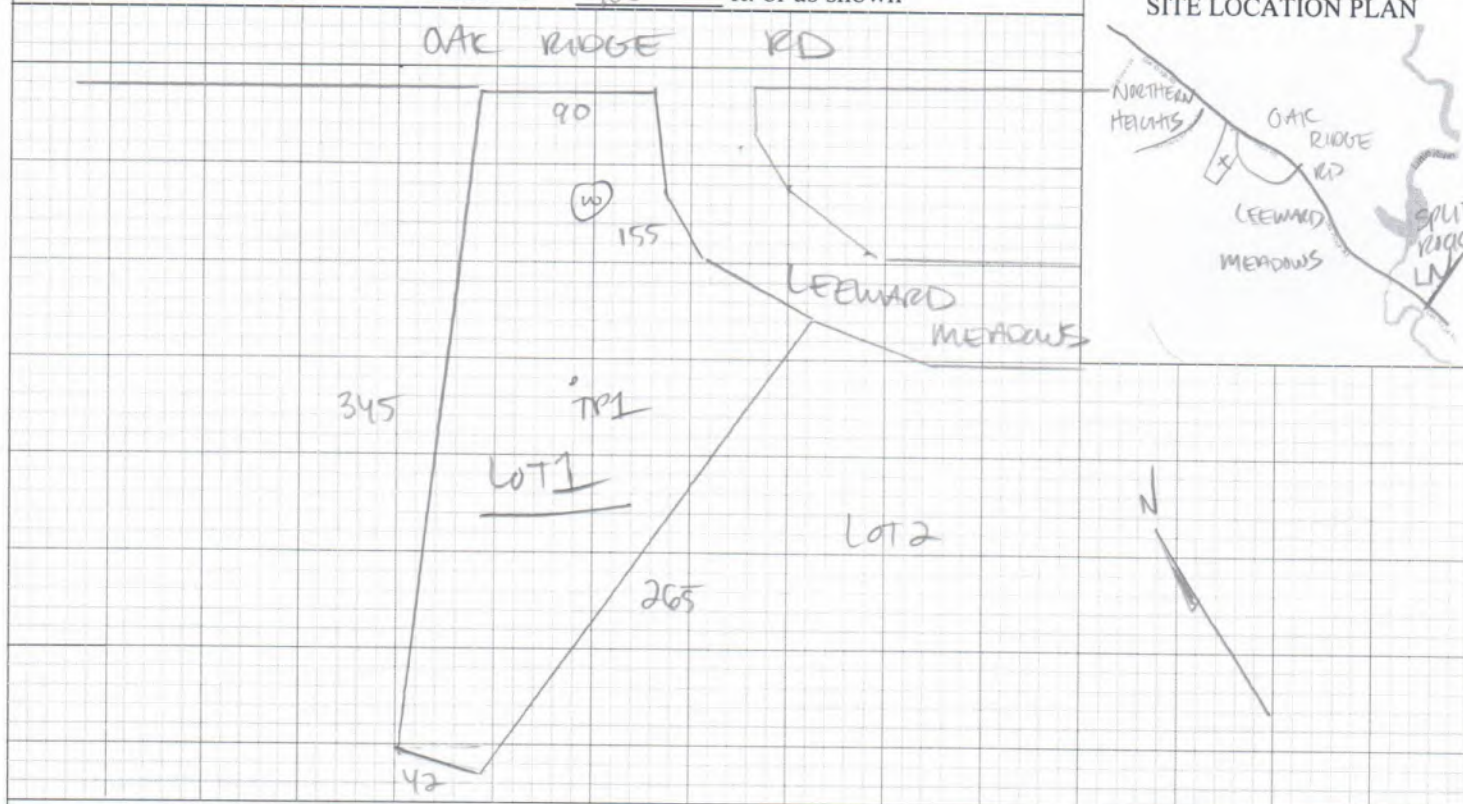
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0 Fine Sandy Loam	Friable	Dark Brown	
10 Fine Sandy Loam	Friable	Brown	
20 Silty Clay Loam	Firm	Gray	Common and Distinct
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☒ Ground Water
8 D	2 %	12 "	☒ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
10			
20			
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

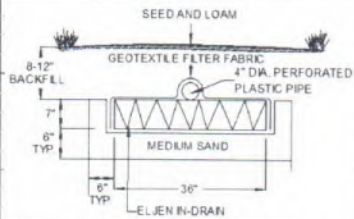
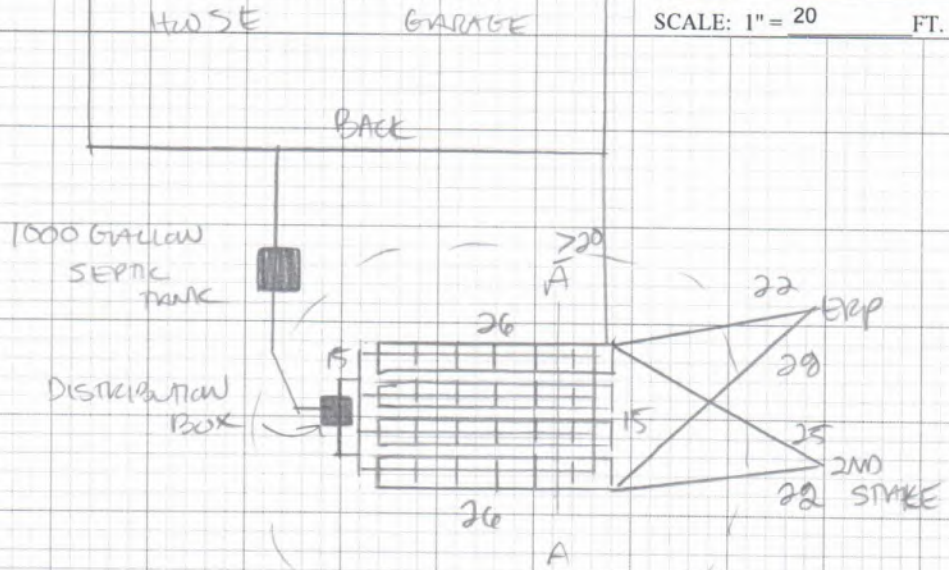
Street, Road, Subdivision
Leeward Meadows

Lot 1

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



1 ROW OF 6 ELJENS
= 24 TOTAL

FILL REQUIREMENTS

Depth of Fill (Upslope) 27
Depth of Fill (Downslope) 31

CONSTRUCTION ELEVATIONS

Finished Grade Elevation -12
Top of Distribution Pipe or Proprietary Device -22
Bottom of Disposal Area -33

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40\"/>

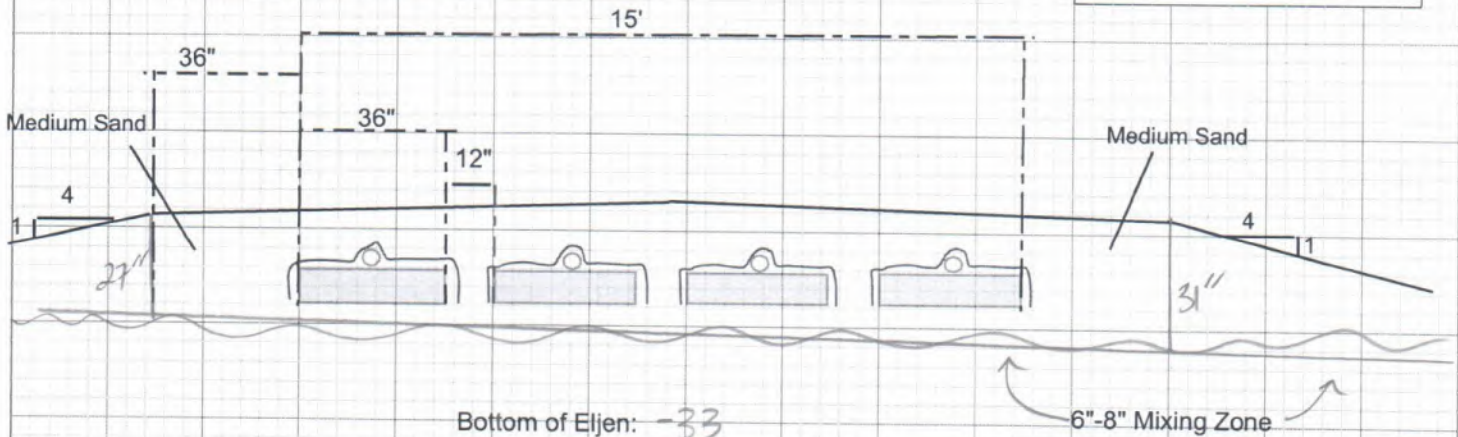
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

Page 3 of 3
HHE-200 Rev. 02/11

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

6518
Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Leeward Meadows	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 2	Local Plumbing Inspector Signature L.P.I. #	
OWNER/APPLICANT INFORMATION		The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Name (last, first, MI)	Ginger Hill Design & Build	Fee: \$ state min fee \$ Locally adopted fee	Copy: [] Owner [] Town [] State
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	Municipal Tax Map # Lot #	
Daytime Tel. #	229-0280	CAUTION: INSPECTION REQUIRED	
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant Date		(1st) date approved	
		Local Plumbing Inspector Signature (2nd) date approved	
PERMIT INFORMATION			
TYPE OF APPLICATION 1. First Time System 2. Replacement System Type replaced: _____ Year installed: _____ 3. Expanded System a. <25% Expansion b. ≥25% Expansion 4. Experimental System 5. Seasonal Conversion	THIS APPLICATION REQUIRES 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	DISPOSAL SYSTEM COMPONENTS 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: _____ 4. Non-engineered Treatment Tank (only) 5. Holding Tank, _____ gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: _____ 12. Miscellaneous Components	
SIZE OF PROPERTY 1 SQ. FT. ACRES	DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling Unit No. of Bedrooms: 3 2. Multiple Family Dwelling, No. of Units: _____ 3. Other: _____ (specify) Current Use Seasonal Year Round Undeveloped	TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other	
SHORELAND ZONING Yes No	DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)		
TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: _____ CAPACITY: 1000 GAL.	DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array c. Linear b. regular load d. H-20 load 4. Other: _____ SIZE: 1152 sq. ft. lin. ft.	GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. _____ tanks in series c. increase in tank capacity d. Filter on Tank Outlet	DESIGN FLOW 270 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS PROFILE CONDITION 8 / D at Observation Hole # TP1 Depth 12" of Most Limiting Soil Factor	DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: _____ gallons	3. Section 4G (meter readings) ATTACH WATER METER DATA LATITUDE AND LONGITUDE at center of disposal area Lat. 43 d 25 m 38 s Lon. 70 d 24 m 56 s if g.p.s, state margin of error: 15
SITE EVALUATOR STATEMENT			
I certify that on 8/25/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature Mark J Hampton		263 SE # 207-756-2900 Telephone Number	8/25/21 Date
Site Evaluator Name Printed		E-mail Address	

Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Leeward Meadows

Lot 2

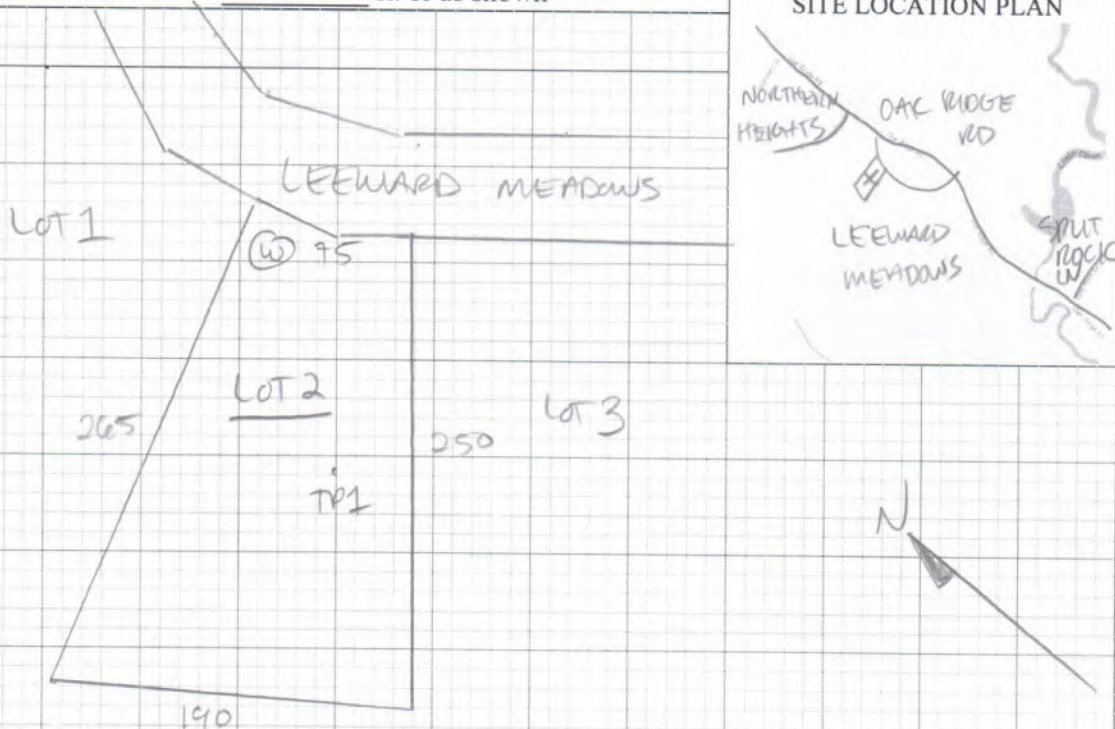
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0 Fine Sandy Loam	Friable	Dark Brown	
10 Fine Sandy Loam	Friable	Brown	
20 Silty Clay Loam	Firm	Gray	Common and Distinct
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
8 D	2 %	12 "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
10			
20			
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

Planting
Site Evaluator Signature

263

SE #

8/25/21

Date

Page 2 of 3
HHE-200 Rev. 02/11

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

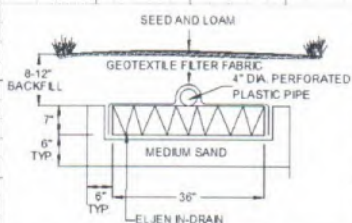
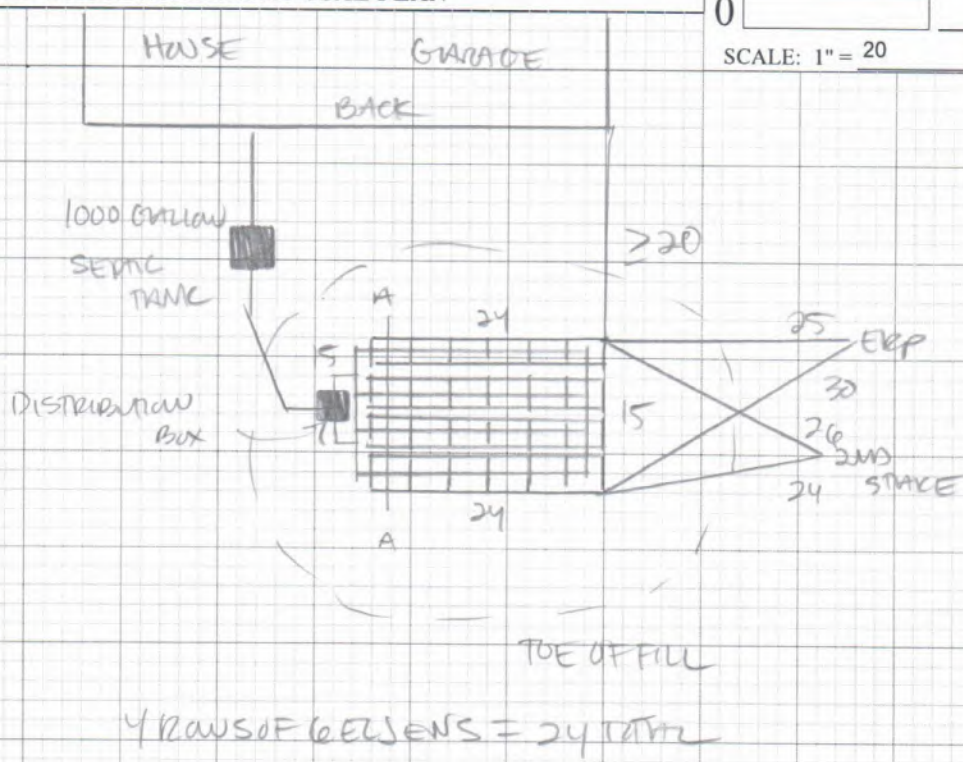
Town, City, Plantation
Biddeford

Street, Road, Subdivision
Leeward Meadows Lot 2

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0
SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) **27**
Depth of Fill (Downslope) **31**

CONSTRUCTION ELEVATIONS

Finished Grade Elevation **-12**
Top of Distribution Pipe or Proprietary Device **-22**
Bottom of Disposal Area **-33**

ELEVATION REFERENCE POINT

Location & Description: Top of grade stake, 40" above grade
Reference Elevation: **0**

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



Bottom of Eljen: **-33**

6"-8" Mixing Zone

[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6518

PROPERTY LOCATION

City, Town, or Plantation Biddeford
Street or Road Leeward Meadows
Subdivision, Lot # Lot 3

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____
Date Permit Issued: ____/____/____ Fee: \$ _____ Double Fee Charged []

OWNER/APPLICANT INFORMATION

Name (last, first, MI) Ginger Hill Design & Build Owner ☒
Applicant ☐
Mailing Address of 18 Ginger Hill Lane
Owner/Applicant Arundel 04046
Daytime Tel. # 229-0280

Local Plumbing Inspector Signature _____ L.P.I. # _____
Fee: \$ _____ state min fee \$ _____ Locally adopted fee
Copy: [] Owner [] Town [] State

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

(1st) date approved _____

Signature of Owner or Applicant _____ Date _____

Local Plumbing Inspector Signature _____ (2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. >25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES

1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY

1 1 SQ. FT. ACRES

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit No. of Bedrooms: 3
2. Multiple Family Dwelling, No. of Units: _____
3. Other: _____ (specify) _____
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY

1. Drilled Well
2. Dug Well
3. Private
4. Public
5. Other

SHORELAND ZONING

Yes ☐ No ☒

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. Concrete
a. Regular
- b. Low Profile
2. Plastic
3. Other: _____
- CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE

1. Stone Bed
2. Stone Trench
3. Proprietary Device
a. cluster array
- b. regular load
- c. Linear
- d. H-20 load
4. Other: _____
- SIZE: 1152 sq. ft. in. ft.

GARBAGE DISPOSAL UNIT

1. No
 2. Yes
 3. Maybe
- If Yes or Maybe, specify one below:
- a. multi-compartment tank
 - b. _____ tanks in series
 - c. increase in tank capacity
 - d. Filter on Tank Outlet

DESIGN FLOW

270 gallons per day
BASED ON:
1. Table 4A (dwelling unit(s))
2. Table 4C (other facilities)
SHOW CALCULATIONS for other facilities

SOIL DATA & DESIGN CLASS

PROFILE CONDITION 8 / D
at Observation Hole # TP1
Depth 13 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. ft. / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

1. Not Required
 2. May Be Required
 3. Required
- Specify only for engineered systems:
DOSE: _____ gallons

3. Section 4G (meter readings)
ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. 43 d 25 m 37 s
Lon. 70 d 24 m 56 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 8/25/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature

Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/25/21

Date

E-mail Address

Note: Changes to or deviations from the _____ should be confirmed with the Site Evaluator.

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

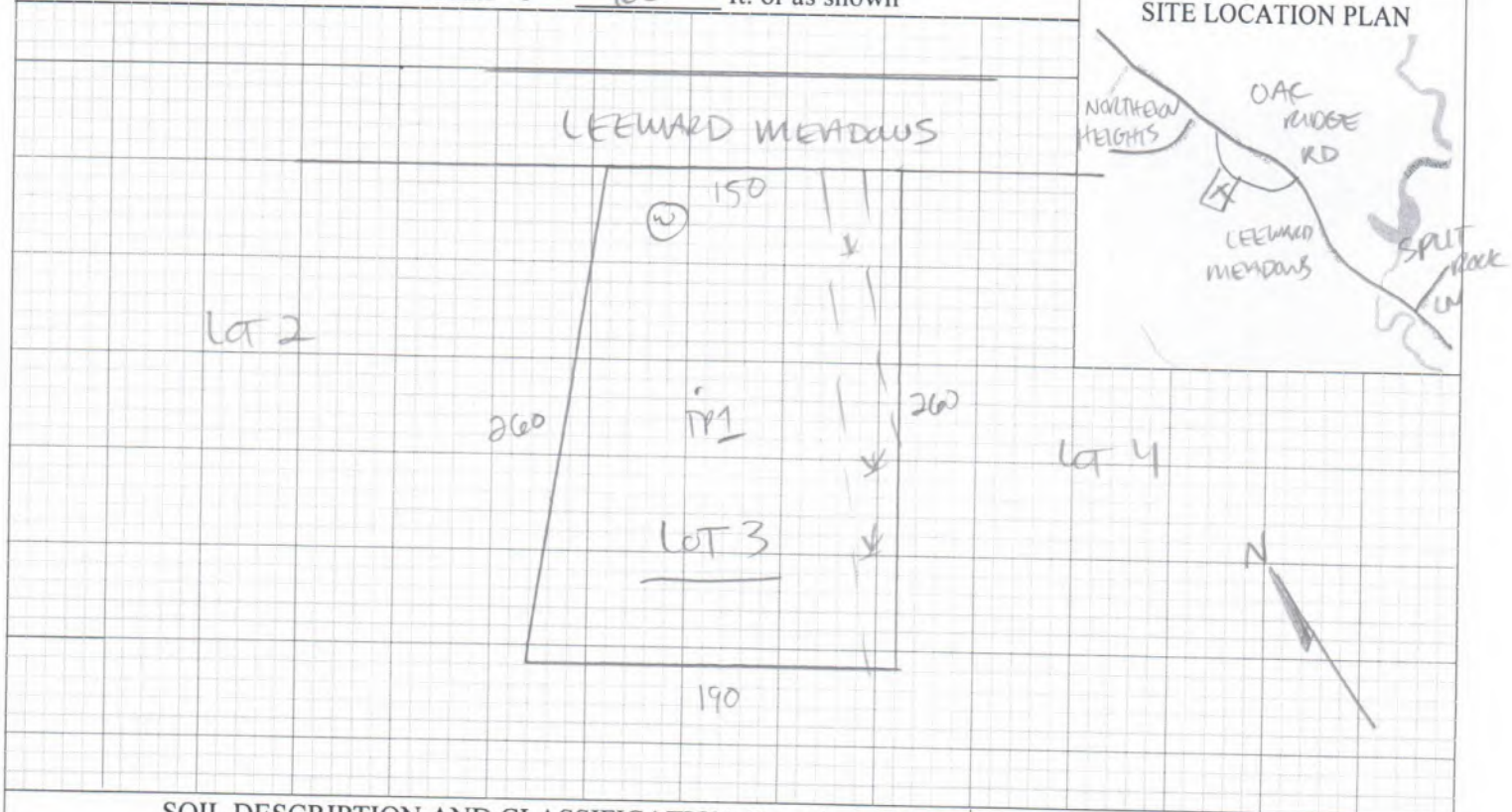
Town, City, Plantation Biddeford
Street, Road, Subdivision Leeward Meadows Lot 3

Owner's Name
Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0 Fine Sandy Loam	Friable	Dark Brown	
10 Fine Sandy Loam	Friable	Brown	
20 Silty Clay Loam	Firm	Gray	Common and Distinct
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☒ Ground Water
8 D	0 %	13 "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
10			
20			
30			
40			
50			

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

[Signature]

Site Evaluator Signature

263

SE #

8/25/21

Date

Page 2 of 3
HHE-200 Rev. 02/11

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

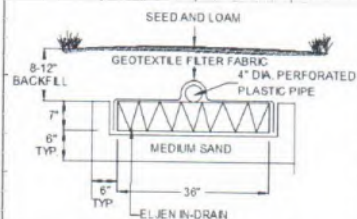
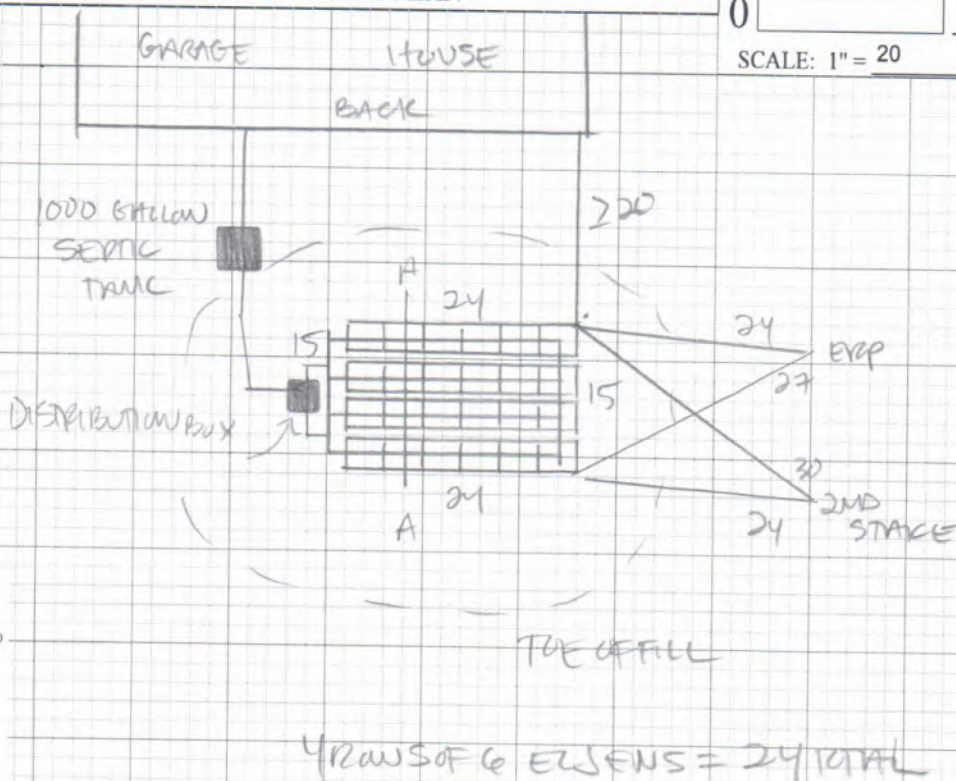
Street, Road, Subdivision
Leeward Meadows

Lot 3

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0 FT.
SCALE: 1" = 20



FILL REQUIREMENTS

Depth of Fill (Upslope) 26
Depth of Fill (Downslope) 27

CONSTRUCTION ELEVATIONS

Finished Grade Elevation -14
Top of Distribution Pipe or Proprietary Device -24
Bottom of Disposal Area -35

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40" above grade
Reference Elevation: 0

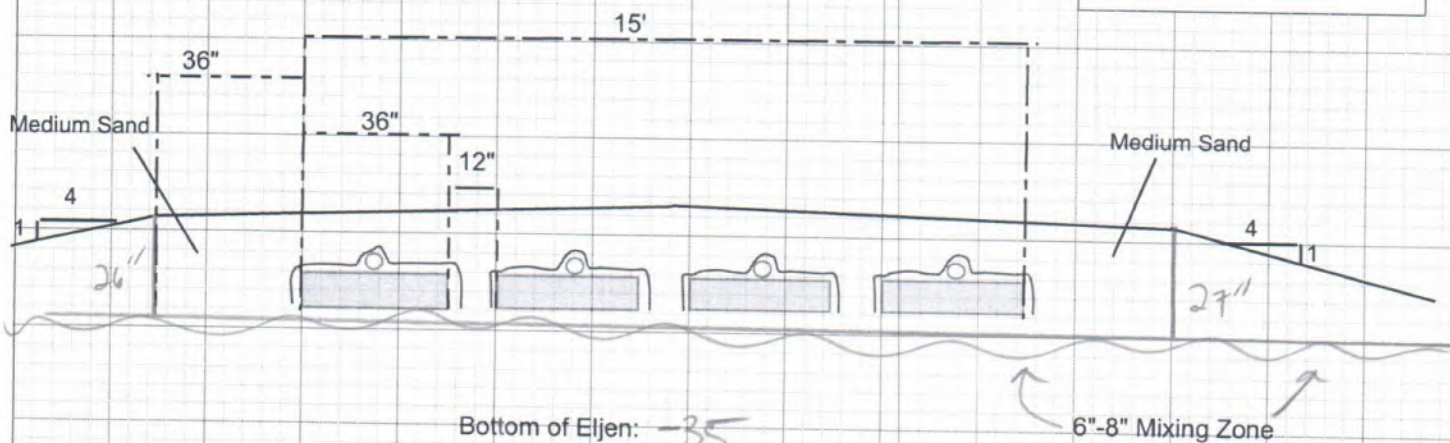
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Note: All ground to be filled must be scarified



[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6518

PROPERTY LOCATION

City, Town, or Plantation Biddeford
Street or Road Leeward Meadows
Subdivision, Lot # Lot 4

>> CAUTION: LPI APPROVAL REQUIRED <<

Town/City _____ Permit # _____
Date Permit Issued ____/____/____ Fee: \$ _____ Double Fee Charged []

Local Plumbing Inspector Signature _____ L.P.I. # _____

Fee: \$ _____ state min fee \$ _____ Locally adopted fee
Copy: [] Owner [] Town [] State

OWNER/APPLICANT INFORMATION

Name (last, first, MI) Ginger Hill Design & Build Owner ☒
Applicant ☐
Mailing Address of 18 Ginger Hill Lane
Owner/Applicant Arundel 04046
Daytime Tel. # 229-0280

The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # _____ Lot # _____

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

(1st) date approved _____

Signature of Owner or Applicant _____ Date _____

Local Plumbing Inspector Signature _____

(2nd) date approved _____

PERMIT INFORMATION

TYPE OF APPLICATION

1. First Time System
2. Replacement System
Type replaced: _____
Year installed: _____
3. Expanded System
a. <25% Expansion
b. ≥25% Expansion
4. Experimental System
5. Seasonal Conversion

THIS APPLICATION REQUIRES

1. No Rule Variance
2. First Time System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
3. Replacement System Variance
a. Local Plumbing Inspector Approval
b. State & Local Plumbing Inspector Approval
4. Minimum Lot Size Variance
5. Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

1. Complete Non-engineered System
2. Primitive System (graywater & alt. toilet)
3. Alternative Toilet, specify: _____
4. Non-engineered Treatment Tank (only)
5. Holding Tank, _____ gallons
6. Non-engineered Disposal Field (only)
7. Separated Laundry System
8. Complete Engineered System (2000 gpd or more)
9. Engineered Treatment Tank (only)
10. Engineered Disposal Field (only)
11. Pre-treatment, specify: _____
12. Miscellaneous Components

SIZE OF PROPERTY

1 SQ. FT.
ACRES

DISPOSAL SYSTEM TO SERVE

1. Single Family Dwelling Unit No. of Bedrooms: 3
2. Multiple Family Dwelling, No. of Units: _____
3. Other: _____
(specify) _____
Current Use Seasonal Year Round Undeveloped

TYPE OF WATER SUPPLY

1. Drilled Well
2. Dug Well
3. Private
4. Public
5. Other

SHORELAND ZONING

Yes ☐ No ☒

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

1. Concrete
a. Regular
- b. Low Profile
2. Plastic
3. Other: _____

CAPACITY: 1000 GAL.

DISPOSAL FIELD TYPE & SIZE

1. Stone Bed
2. Stone Trench
3. Proprietary Device
a. cluster array
- b. regular load
- c. Linear
- d. H-20 load
4. Other: _____

SIZE: 1152 sq. ft. in. ft.

GARBAGE DISPOSAL UNIT

1. No
 2. Yes
 3. Maybe
- If Yes or Maybe, specify one below:
- a. multi-compartment tank
 - b. _____ tanks in series
 - c. increase in tank capacity
 - d. Filter on Tank Outlet

DESIGN FLOW

270 gallons per day

BASED ON:

1. Table 4A (dwelling unit(s))
2. Table 4C (other facilities)

SHOW CALCULATIONS for other facilities

SOIL DATA & DESIGN CLASS

PROFILE CONDITION
8 / D
at Observation Hole # TP1
Depth 13 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

1. Medium---2.6 sq. ft. / gpd
2. Medium---Large 3.3 sq. ft. / gpd
3. Large---4.1 sq. ft. / gpd
4. Extra Large---5.0 sq. ft. / gpd

EFFLUENT/EJECTOR PUMP

1. Not Required
 2. May Be Required
 3. Required
- Specify only for engineered systems:
DOSE: _____ gallons

3. Section 4G (meter readings)
- ATTACH WATER METER DATA

LATITUDE AND LONGITUDE

at center of disposal area
Lat. 43 d 25 m 35 s
Lon. 70 d 24 m 53 s
if g.p.s, state margin of error: 15

SITE EVALUATOR STATEMENT

I certify that on 8/25/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).

Site Evaluator Signature

Mark J Hampton

Site Evaluator Name Printed

263

SE #

207-756-2900

Telephone Number

8/25/21

Date

E-mail Address

Note : Changes to or deviations from the _____ n should be confirmed with the Site Evaluator.

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

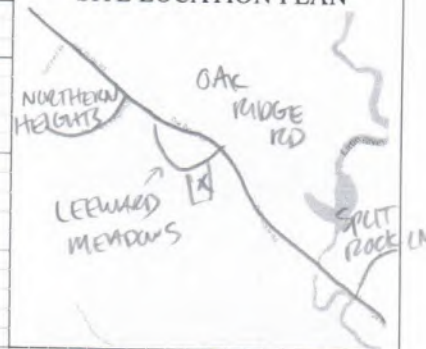
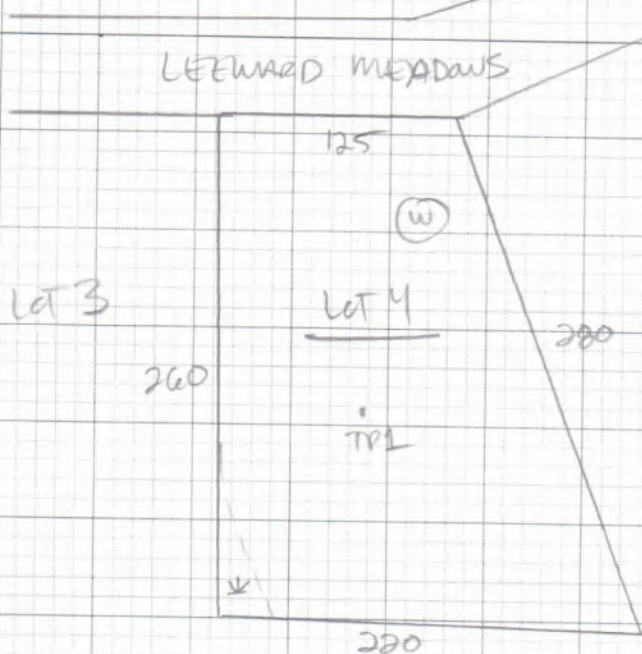
Town, City, Plantation **Biddeford** Street, Road, Subdivision **Leeward Meadows Lot 4**

Owner's Name
Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy Loam	Friable	Dark Brown	
10	Fine Sandy Loam	Friable	Brown	
20	Silty Clay Loam	Firm	Gray	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
<u>8</u> <u>D</u>	<u>0</u> %	<u>13</u> "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
<u> </u> <u> </u>	<u> </u> %	<u> </u> "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

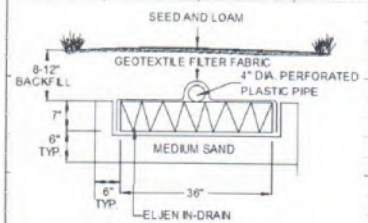
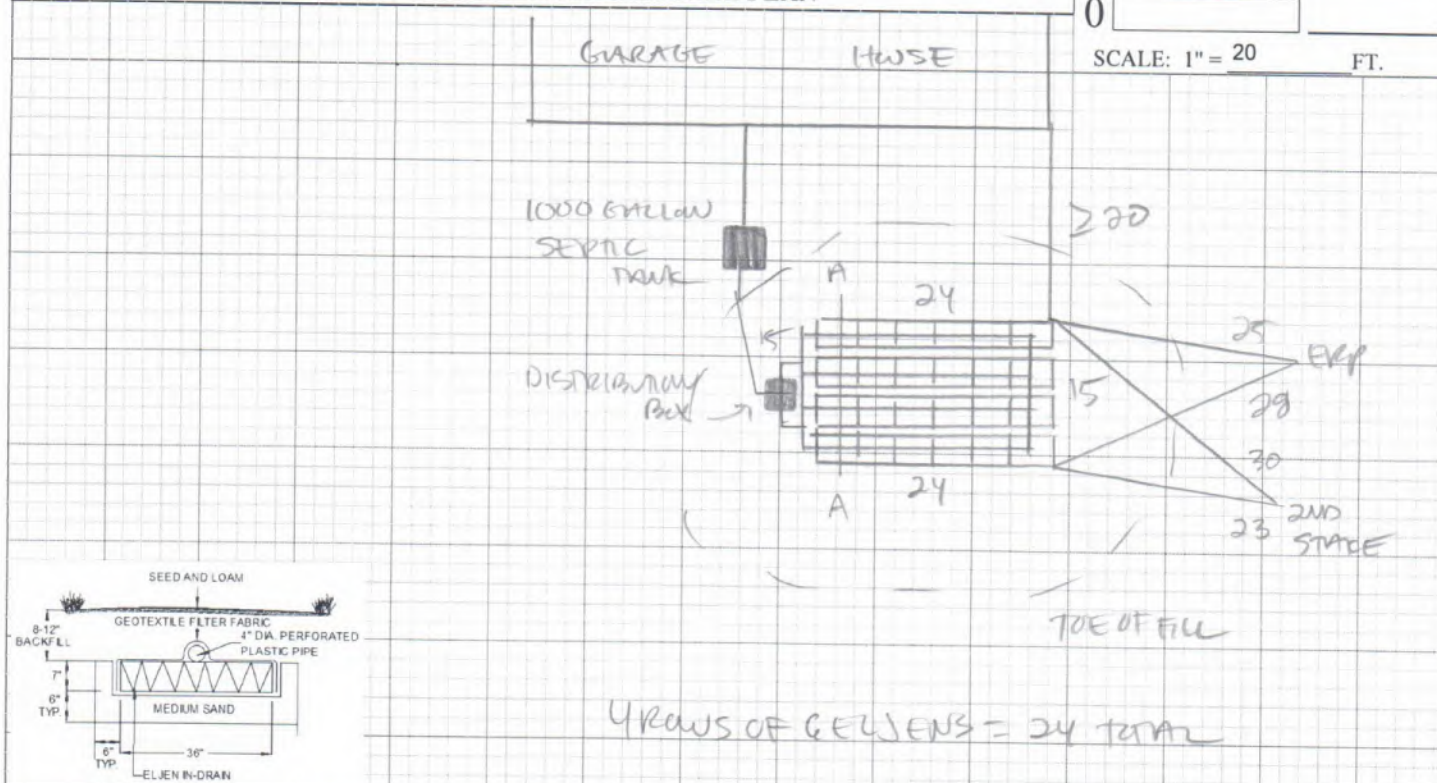
Town, City, Plantation
Biddeford

Street, Road, Subdivision
Leeward Meadows

Lot 4

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN



FILL REQUIREMENTS

Depth of Fill (Upslope) **27**

Depth of Fill (Downslope) **27**

CONSTRUCTION ELEVATIONS

Finished Grade Elevation **-14**

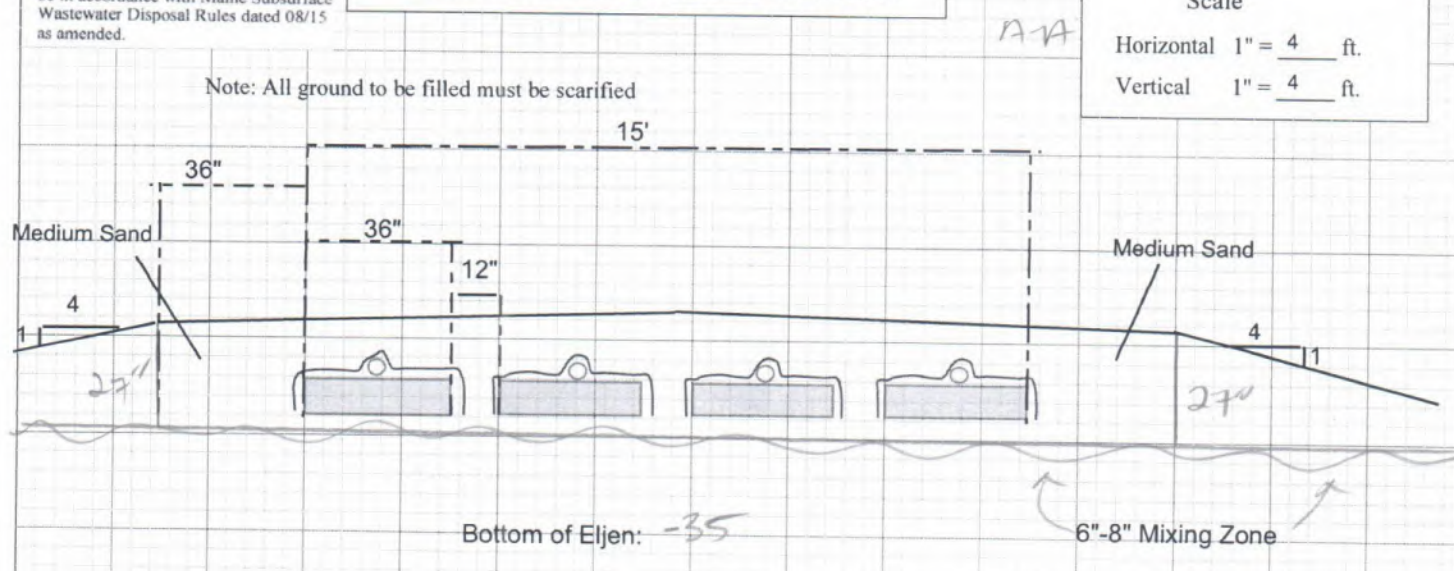
Top of Distribution Pipe or Proprietary Device **-24**

Bottom of Disposal Area **-35**

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40" above grade
Reference Elevation: **0**

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION



Scale
Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.

Handwritten Signature
Site Evaluator Signature

263 SE #

8/25/21 Date

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

6518

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City	Permit #
Street or Road	Leeward Meadows	Date Permit Issued	Fee: \$ Double Fee Charged []
Subdivision, Lot #	Lot 5	Local Plumbing Inspector Signature	L.P.I. #
OWNER/APPLICANT INFORMATION		Fee: \$ state min fee \$ Locally adopted fee Copy: [] Owner [] Town [] State	
Name (last, first, MI)	Ginger Hill Design & Build	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	Municipal Tax Map # Lot #	
Daytime Tel. #	229-0280		
OWNER OR APPLICANT STATEMENT I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		CAUTION: INSPECTION REQUIRED I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant		Local Plumbing Inspector Signature	
Date		(1st) date approved	
PERMIT INFORMATION			
TYPE OF APPLICATION 1. First Time System 2. Replacement System Type replaced: Year installed: 3. Expanded System a. <25% Expansion b. ≥25% Expansion 4. Experimental System 5. Seasonal Conversion		THIS APPLICATION REQUIRES 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	
SIZE OF PROPERTY 1 SQ. FT. ACRES		DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling Unit No. of Bedrooms: 3 2. Multiple Family Dwelling, No. of Units: 3. Other: (specify) Current Use Seasonal Year Round Undeveloped	
SHORELAND ZONING Yes No		DISPOSAL SYSTEM COMPONENTS 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: 4. Non-engineered Treatment Tank (only) 5. Holding Tank, gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: 12. Miscellaneous Components	
		TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other	
DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)			
TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: CAPACITY: 1000 GAL.		DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array c. Linear b. regular load d. H-20 load 4. Other: SIZE: 1152 sq. ft. in. ft.	
SOIL DATA & DESIGN CLASS PROFILE CONDITION 8 / D at Observation Hole # TP1 Depth 12" of Most Limiting Soil Factor		DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	
		GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. tanks in series c. increase in tank capacity d. Filter on Tank Outlet	
		EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: gallons	
		DESIGN FLOW 270 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities 3. Section 4G (meter readings) ATTACH WATER METER DATA	
		LATITUDE AND LONGITUDE at center of disposal area Lat. 43 d 25 m 35 s Lon. 70 d 24 m 52 s if g.p.s. state margin of error: 15	
SITE EVALUATOR STATEMENT			
I certify that on 8/25/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature Mark J Hampton		263 SE # 207-756-2900	
Site Evaluator Name Printed		Date 8/25/21 Telephone Number E-mail Address	
Note : Changes to or deviations from the n should be confirmed with the Site Evaluator.			

6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Leeward Meadows

Lot 5

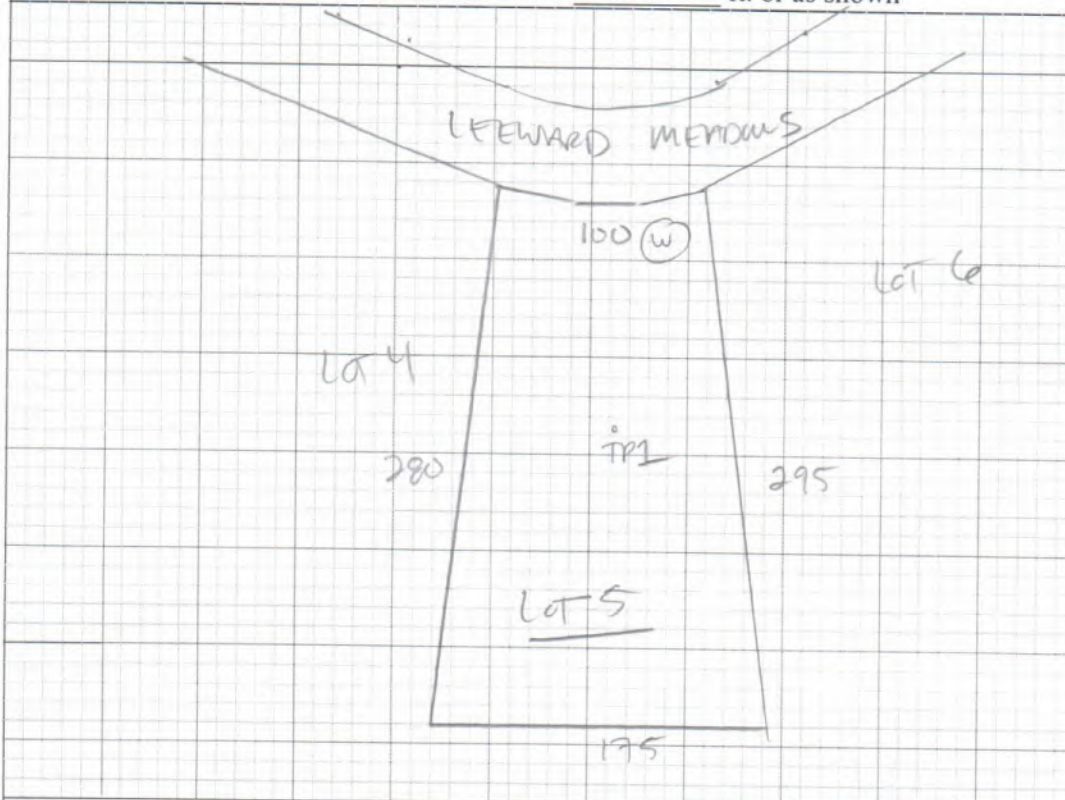
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy Loam	Friable	Dark Brown	
10	Fine Sandy Loam	Friable	Brown	
20	Silty Clay Loam	Firm	Gray	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☒ Ground Water
8 D	0 %	12 "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
			☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Site Evaluator Signature

263

SE #

8/25/21

Date

C6518

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

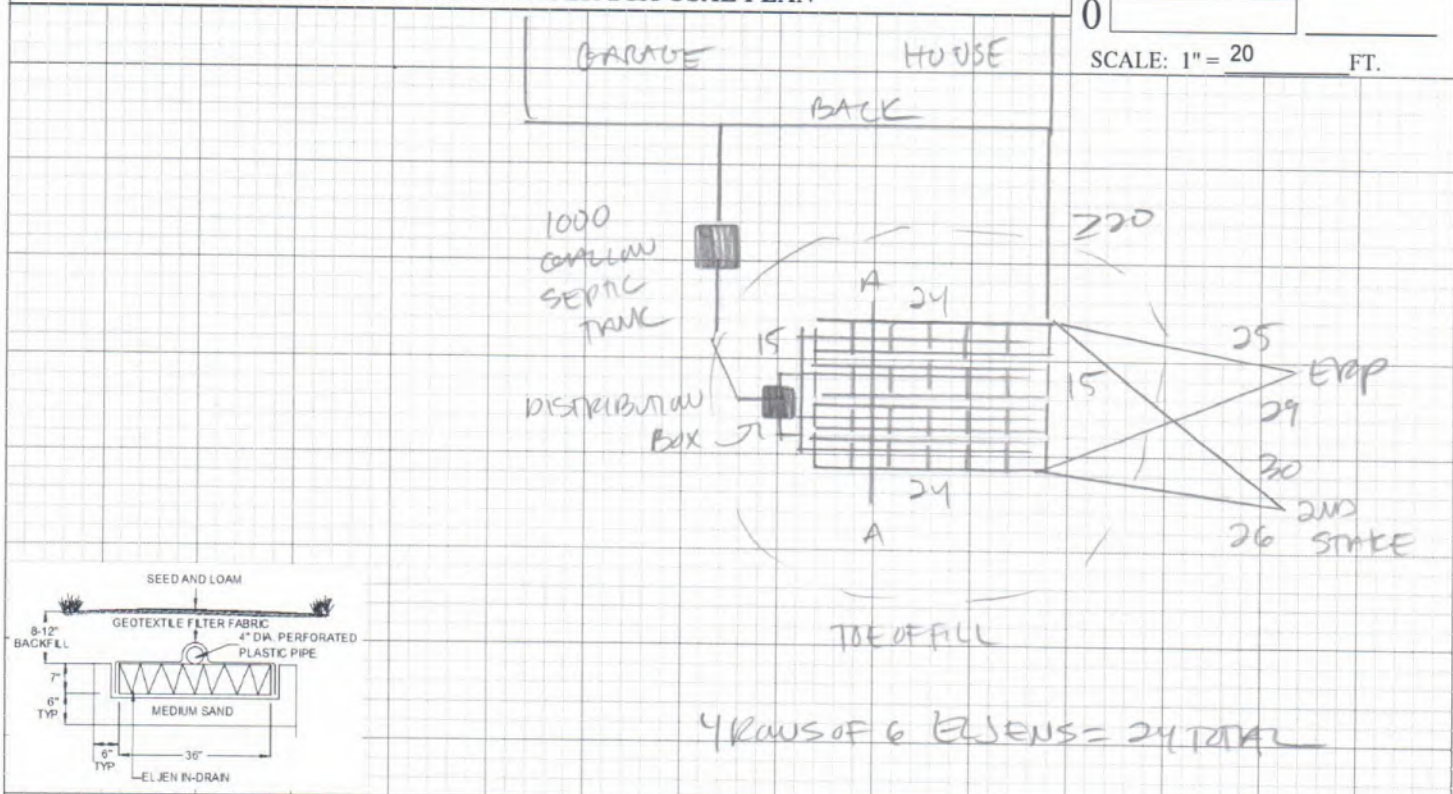
Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation
Biddeford

Street, Road, Subdivision
Leeward Meadows Lot 5

Owner's Name
Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN



FILL REQUIREMENTS

Depth of Fill (Upslope) 28
Depth of Fill (Downslope) 28

CONSTRUCTION ELEVATIONS

Finished Grade Elevation -11
Top of Distribution Pipe or Proprietary Device -21
Bottom of Disposal Area -32

ELEVATION REFERENCE POINT
Location & Description: Top of grade stake, 40\"/>

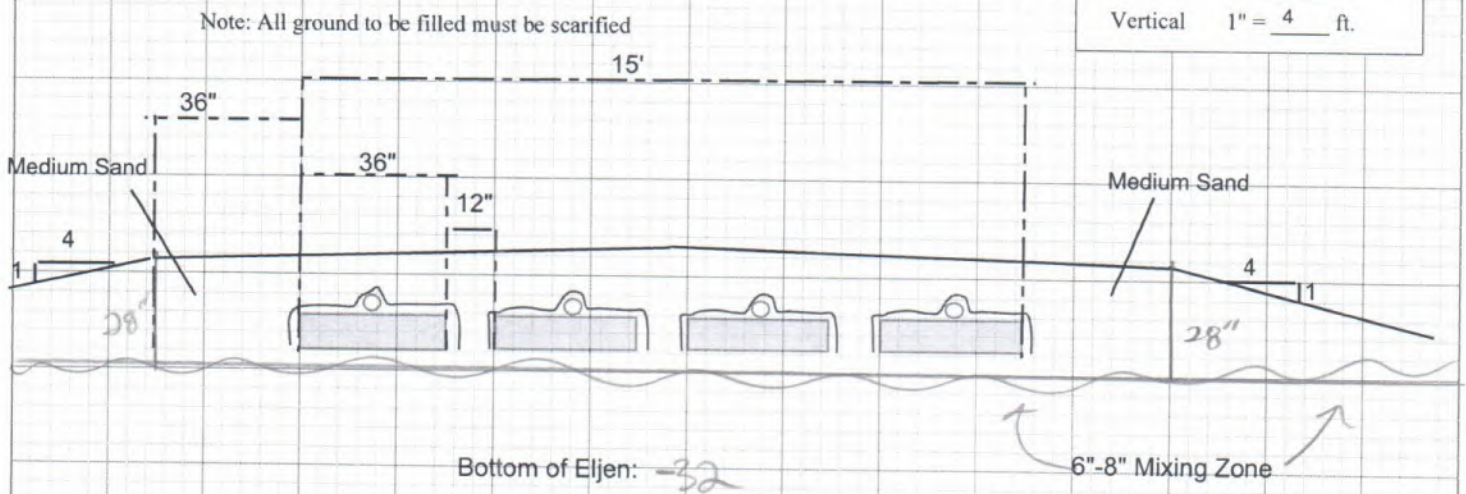
Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

DISPOSAL AREA CROSS SECTION

A-A

Scale

Horizontal 1" = 4 ft.
Vertical 1" = 4 ft.



Matthew
Site Evaluator Signature

263

SE #

8/25/21

Date

Page 3 of 3
HHE-200 Rev. 02/11

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

6510
Maine Dept. Health & Human Services
Div. Environmental Health, 11SHS
(207) 287-2070 Fax: (207) 287-4172

PROPERTY LOCATION		>> CAUTION: LPI APPROVAL REQUIRED <<	
City, Town, or Plantation	Biddeford	Town/City _____	Permit # _____
Street or Road	Leeward Meadows	Date Permit Issued: ___/___/___	Fee: \$ _____ Double Fee Charged []
Subdivision, Lot #	Lot 6	Local Plumbing Inspector Signature _____ L.P.I. # _____	
OWNER/APPLICANT INFORMATION		Fee: \$ _____ state min fee \$ _____ Locally adopted fee _____	
Name (last, first, MI)	Ginger Hill Design & Build	Copy: [] Owner [] Town [] State	
Mailing Address of Owner/Applicant	18 Ginger Hill Lane Arundel 04046	The Subsurface Wastewater Disposal System shall not be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.	
Daytime Tel. #	229-0280	Municipal Tax Map # _____ Lot # _____	
OWNER OR APPLICANT STATEMENT		CAUTION: INSPECTION REQUIRED	
I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant _____ Date _____		(1st) date approved _____	
		Local Plumbing Inspector Signature _____ (2nd) date approved _____	
PERMIT INFORMATION			
TYPE OF APPLICATION 1. First Time System 2. Replacement System Type replaced: _____ Year installed: _____ 3. Expanded System a. <25% Expansion b. >25% Expansion 4. Experimental System 5. Seasonal Conversion	THIS APPLICATION REQUIRES 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit	DISPOSAL SYSTEM COMPONENTS 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: _____ 4. Non-engineered Treatment Tank (only) 5. Holding Tank, _____ gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: _____ 12. Miscellaneous Components	
SIZE OF PROPERTY 1 _____ SQ. FT. _____ ACRES	DISPOSAL SYSTEM TO SERVE 1. Single Family Dwelling Unit No. of Bedrooms: <u>3</u> 2. Multiple Family Dwelling, No. of Units: _____ 3. Other: _____ (specify) Current Use Seasonal Year Round <u>Undeveloped</u>		
SHORELAND ZONING Yes _____ No _____	TYPE OF WATER SUPPLY 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other _____		
DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)			
TREATMENT TANK 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: _____ CAPACITY: <u>1000</u> GAL.	DISPOSAL FIELD TYPE & SIZE 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array b. regular load c. Linear d. H-20 load 4. Other: _____ SIZE: <u>1152</u> sq. ft. lin. ft.	GARBAGE DISPOSAL UNIT 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. _____ tanks in series c. increase in tank capacity d. Filter on Tank Outlet	DESIGN FLOW <u>270</u> gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities
SOIL DATA & DESIGN CLASS PROFILE CONDITION <u>8 / D</u> at Observation Hole # <u>TP1</u> Depth <u>14</u> " of Most Limiting Soil Factor	DISPOSAL FIELD SIZING 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	EFFLUENT/EJECTOR PUMP 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: _____ gallons	3. Section 4G (meter readings) ATTACH WATER METER DATA LATITUDE AND LONGITUDE at center of disposal area Lat. <u>43</u> d <u>25</u> m <u>36</u> s Lon. <u>70</u> d <u>24</u> m <u>50</u> s if g.p.s, state margin of error: <u>15</u>
SITE EVALUATOR STATEMENT			
I certify that on <u>8/25/21</u> (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature <u>Mark J Hampton</u>		SE # <u>263</u>	Date <u>8/25/21</u>
Site Evaluator Name Printed <u>Mark J Hampton</u>		Telephone Number <u>207-756-2900</u>	E-mail Address _____
Note: Changes to or deviations from the _____ n should be confirmed with the Site Evaluator.			

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Leeward Meadows

Lot 6

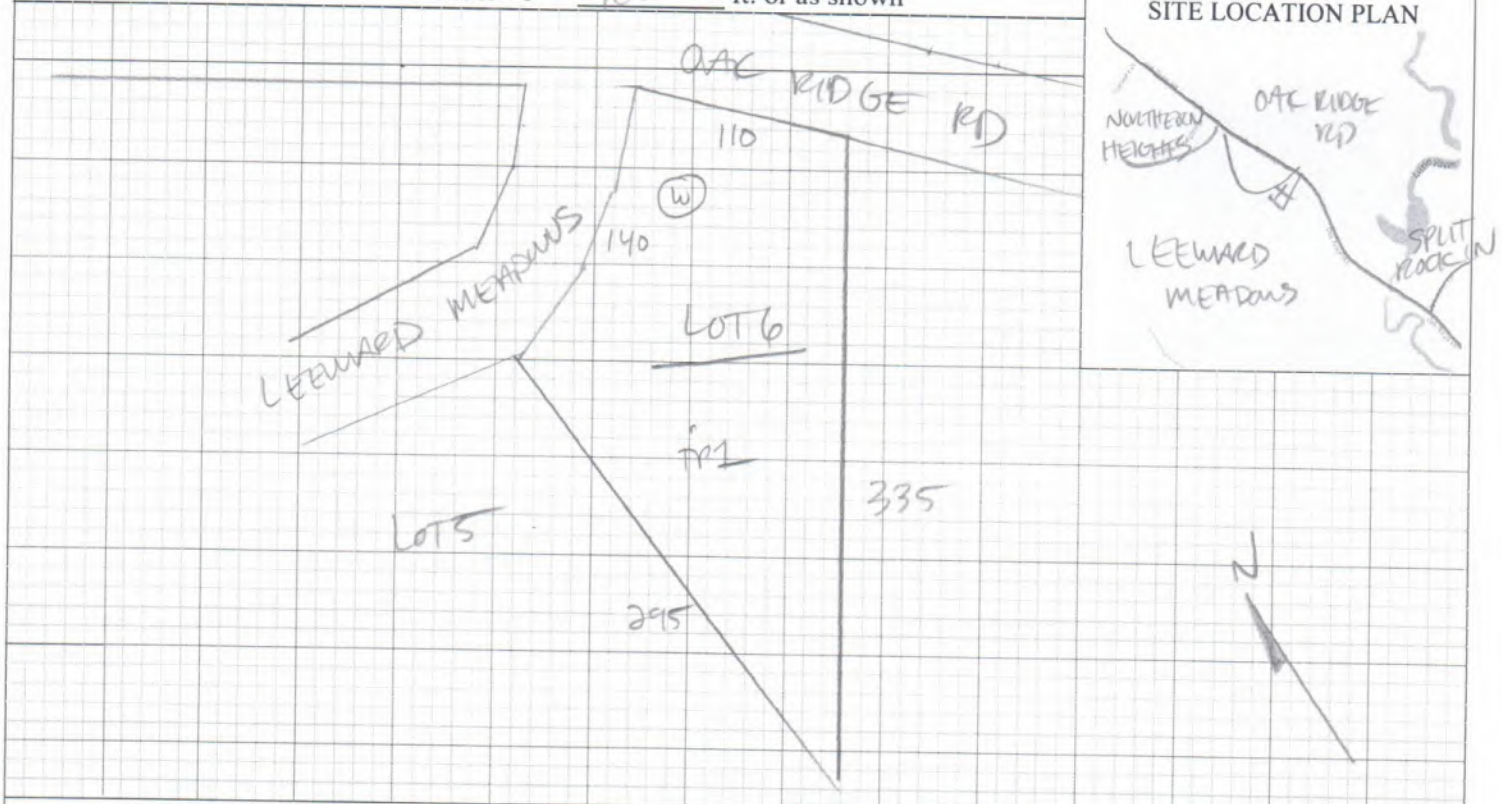
Owner's Name

Ginger Hill Design & Build

SITE PLAN

Scale 1" = 100 ft. or as shown

SITE LOCATION PLAN



SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP1 ☒ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy Loam	Friable	Dark Brown	
10	Fine Sandy Loam	Friable	Brown	
20	Silty Clay Loam	Firm	Gray	Common and Distinct
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☒ Ground Water
8 D	3 %	14 "	☐ Restrictive Layer
Profile Condition			☐ Bedrock
			☐ Pit Depth

Observation Hole ☐ Test Pit ☐ Boring ☐
" Depth of Organic Horizon Above Mineral Soil

Depth Below Mineral Soil Surface (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	☐ Ground Water
Profile Condition	%	"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

[Signature]
Site Evaluator Signature

263

SE #

8/25/21

Date

Department of Health & Human Services
Division of Environmental Health
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation

Street, Road, Subdivision

Biddeford

Leeward Meadows

Lot 6

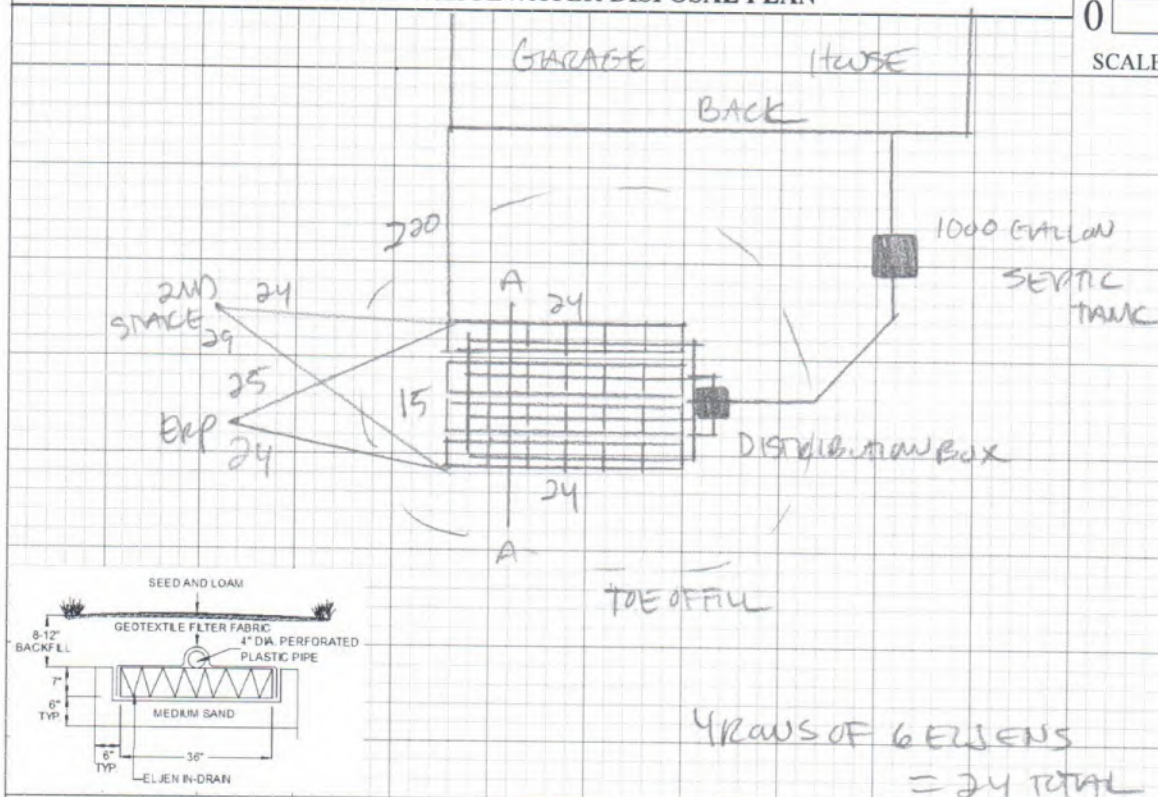
Owner's Name

Ginger Hill Design & Build

SUBSURFACE WASTEWATER DISPOSAL PLAN

0

SCALE: 1" = 20 FT.



FILL REQUIREMENTS

Depth of Fill (Upslope) 26

Depth of Fill (Downslope) 31

CONSTRUCTION ELEVATIONS

Finished Grade Elevation

-13

Top of Distribution Pipe or Proprietary Device

-23

Bottom of Disposal Area

-34

ELEVATION REFERENCE POINT

Location & Description: Top of grade stake, 40" above grade

Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

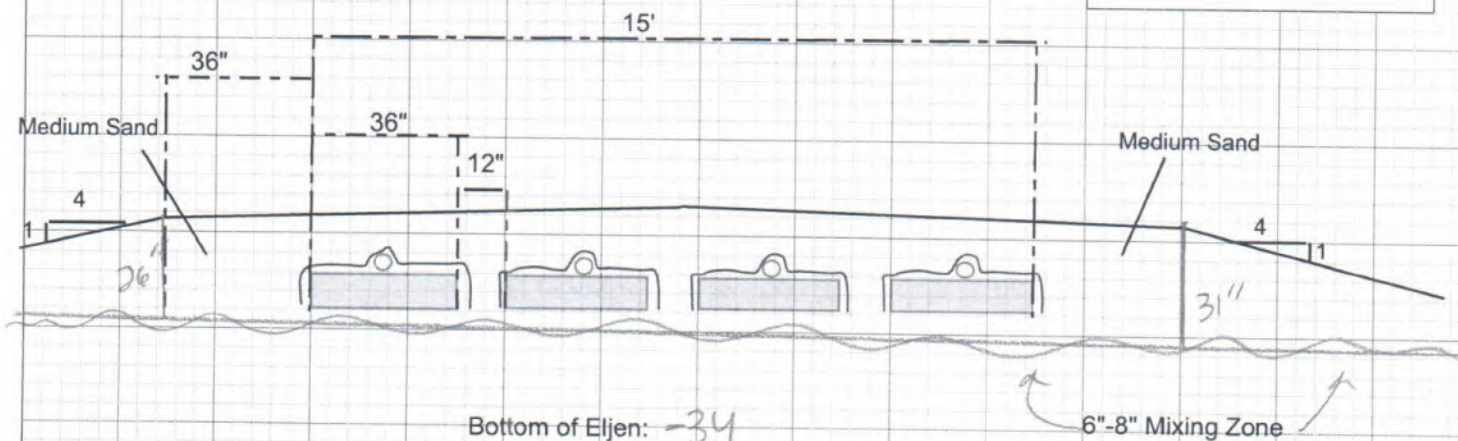
DISPOSAL AREA CROSS SECTION

Scale

Horizontal 1" = 4 ft.

Vertical $1" = 4$ ft.

Note: All ground to be filled must be scarified



Site Evaluator Signature

263

SE #

8/25/21

Date _____

Page 3 of 3
HHE-200 Rev. 02/11

JONES ASSOCIATES

Foresters, Surveyors and
Environmental Consultants



WILDLIFE EVALUATION REPORT

OAK RIDGE ROAD

BIDDEFORD, MAINE 04005

<u>Prepared for:</u> Emily Ingwersen Ginger Hill Design + Build Arundel, Maine	<u>Prepared by:</u> Jason Tome Wildlife Biologist Jones Associates, Inc. 280 Poland Spring Road Auburn, Maine 04210
---	--

JA Job #21-035BI
May 2021

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INTRODUCTION

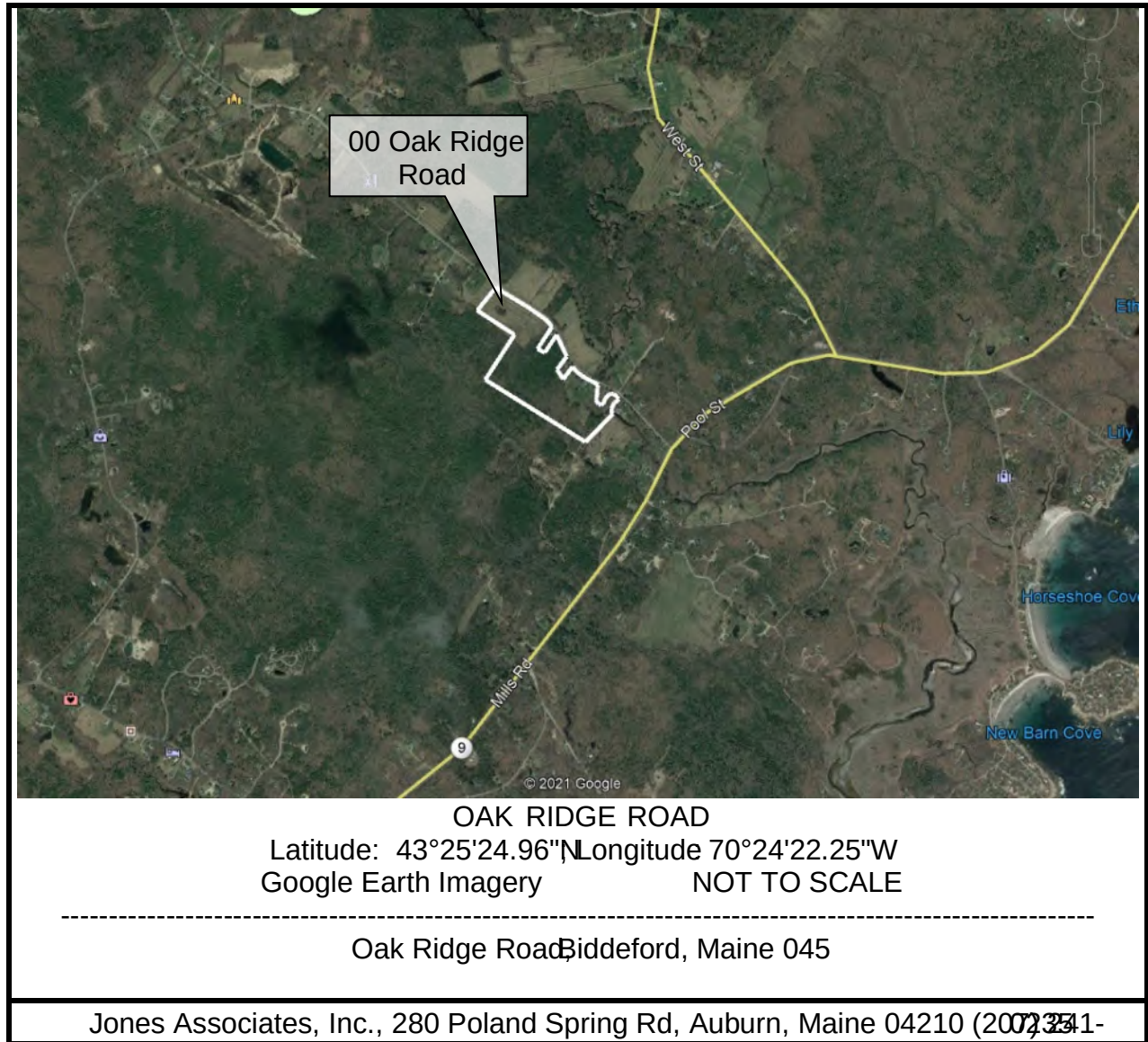
Jones Associates Inc. (JAI) was contracted to provide a habitat evaluation report for Ginger Hill Design + Build on a +/- 43-acre property located along Oak Ridge Road (Tax Map 4, Lot 57) in Biddeford, Maine

The purpose of wildlife habitat assessments is to determine how a property functions ecologically within its boundaries and at the landscape level. Understanding the ecology and sensitive areas at these different levels helps during the planning phase of development to minimize and avoid impacts to the fullest extent possible.

Wildlife habitat assessments are accomplished by utilizing online databases from Maine Inland Fisheries and Wildlife (ME IFW), Maine Natural Areas Program (MNAP), Information for Planning and Consultation (IPAC), and Beginning with Habitat (BwH) as preliminary research

A site visit was also conducted to determine the accuracy of the information on the databases shown within the property boundaries and to field identify other important wildlife and habitat features that may have not been mapped by these databases. The following report summarizes findings obtained from these databases and an on-site analysis by a Wildlife Biologist/Wetland Scientist which occurred in early May of 2021.

LOCATION MAP



PRELIMINARY DATA REVIEW

JAI reviewed available databases, aerial imagery, and topographic maps to focus efforts during the site visit. Databases are not always correct; they are sometimes not field confirmed. Database boundaries are often mapped on a computer or just assumed to be present based on topography, aerial imagery, or other metrics. Also, over time habitats change as a result of forest management activities, development, or natural succession. Wildlife habitat that existed a number of years ago may not be present anymore, and habitats may have established that did not previously exist.

Although databases do not always accurately represent what is occurring on site, they are a valuable tool for determining what to focus on while in the field. It is important to look for these mapped habitats in the field to confirm whether they are occurring or not. Described below is the preliminary analysis of the sites using a variety of databases.

GOOGLE EARTH REVIEW

Property Level Review

Prior to the site visit aerial photography was analyzed. This is a preliminary step to gather information on property level habitat composition. Imagery taken during absent foliage indicates that the site is a mix of scrub/shrub vegetation, hardwoods, and softwoods. Evidence of wetland areas such as saturation, stunted vegetation, adjacent streams, and scrub/shrub wetlands can be seen on aerial imagery.

Topographic maps were used to gauge the slope of the site. This information indicated that the site is relatively flat or gently sloping. This further indicated that wetlands were likely to be occurring onsite.

Landscape Level Review

Using the same methods as the property level review, a broader look at the landscape review is conducted. This is helpful for understanding how the property functions as a subset of the larger surrounding environment.

At the landscape level the site is located in a rural area of Biddeford. There are residential homes along Oak Ridge Road and Pool Street but there is limited development away from the roads allowing for open areas which is beneficial for wildlife passage.

From aerial imagery it is clear that the majority of habitat is a mix of about equal parts forested and scrub/shrub vegetation. The majority of the forest is softwood to the west and hardwoods to the east. Topographic information indicates that the landscape is moderately flat to gently rolling. Within the forested/scrub/shrub vegetation there are visible hydrological features. For these reasons, it is expected that at the landscape level there are many wetlands within both softwood and hardwood stands.

Little River is found bordering the property and enters into the Ocean. The ocean is located about 1.25 miles to the east of this property. Little River is not considered a tidal wetland at the location of the project property. However, according to MNAP Little River is mapped as tidal on the opposite side of Pool Street to the east.

BEGINNING WITH HABITAT PRELIMINARY REVIEW

Beginning with Habitat databases were also used to determine information that should be more carefully observed in the field. These databases included animal habitats, plant and animal habitats, and Conserved Land and Undeveloped Habitats.

Riparian Habitats

Beginning with Habitat's Riparian Habitat Database was used for research prior to the site visit. However, a wetland delineation was completed by Mark Hampton Associates, which more accurately describes the wetlands on site. The wetland report is attached as Attachment G.

Based on the database information wetlands located within the property to the west. It also shows Little River abutting the property.

High Value Plant and Animal Habitats

The Beginning with Habitat High Value Plant and Animal Habitats Database was used to look for potential sensitive habitats within the project area (Attachment B). The database search included habitats for endangered fish species, Maine listed plants, significant vernal pools, deer wintering areas, essential plover and tern habitat, exemplary natural communities, state listed animal habitats, inland wading bird and waterfowl habitat, shorebird habitat, seabird nesting islands, shellfish beds, tidal wading bird and waterfowl habitat, Atlantic salmon spawning habitat, Atlantic salmon rearing habitat, and wild brook trout habitat.

None of these habitats were found residing on the property. Tidal waterfowl/wading bird habitat was mapped downstream of the property. This habitat is mapped as following Little River towards the property from the Ocean but stopped 0.35 miles downstream of the property. Inland waterfowl/wading bird habitat and deer wintering areas were also found approximately 1 mile from the property. There is a significant vernal pool located approximately 0.20 miles to the southeast of the property.

Conserved Land and Undeveloped Habitat

According to the Beginning with Habitat Conserved Land and Undeveloped Habitat Map, the property is within a 976-acre undeveloped habitat block (Attachment A). Additionally, there are more large undeveloped habitat blocks surrounding the block that the property resides on. There is an 832-acre block to the north, 422-acre block to the west, and a 289-acre block to the south. Development remains in close proximity to the property, this is shown by the gray on Attachment

A. The space between development is situated far enough apart to have minimal impact on wildlife crossing over the roads into the other habitat blocks. In other words, it is little barrier for wildlife to pass from block to block.

The purpose of the Undeveloped Habitat map is to minimize loss of connectivity. Connectivity is important for wildlife. Without connectivity, habitat fragmentation can occur and hinder genetic diversity. When species are faced with new challenges and have a high genetic diversity, they will lack genes that help species persist through the changing environments and stressors.

INFORMATION FOR PLANNING AND CONSULTATION (IPAC)

There were no critical habitats within the project area based on the IPAC database results. However, it was noted that Northern Long Eared Bat should be considered during the development phase. That being said, the Maine Inland Fisheries and Wildlife Database (below) indicated that they do not anticipate any significant impacts to any bat species as a result of the project.

Threatened Species

The United States Fish and Wildlife Service listed the Northern Long Eared Bat (NLEB) (*Myotis septentrionalis*) as threatened with Interim 4(d) Rule. This listing affects development occurring within the range of the NLEB (www.fws.gov/midwest/endangered/mammals/nleb/nlebRangeMap.html) and within the White Nose Syndrome Buffer Zone (<http://www.fws.gov/midwest/nleb/WNSBuffer.pdf>) that could cause purposeful or incidental take (n, kill or otherwise harass). This includes the clearing of trees beneficial to the NLEB. Tree clearing is discouraged near maternity roost trees during puprearing season (June 1 to July 31).

MAINE NATURAL AREAS PROGRAM (MNAP) DATABASE REVIEW

Based on the MNAP database review no rare botanical features documented within the project area. Although there was nothing within the project area, MNAP mentions that Salt Marsh (*Spartina* Saltmarsh) is mapped within close proximity and should be kept in mind during field assessments. They also recommended no clearing within 75' of Little River to protect these species downstream (Attachment).

MAINE INLAND FISHERIES & WILDLIFE (ME IFW) DATABASE REVIEW

JAI has reached out to Maine Inland Fisheries and Wildlife to inquire about any known locations of Endangered, Threatened, and Special concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of this property.

Based on the preliminary database review ME IFW has not mapped Essential Habitats that would directly be affected by a project on this property. That being said, there are known occurrences of spotted turtles in the region, and it would be best practice to leave a 250 ft buffer from Little River that borders the property.

FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE

The site is within a 16,035-acre Focus Area of Ecological Significance for vernal pools. This large area is mapped by Beginning with Habitat in the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). No vernal pools were observed on site during the habitat review. That being said, an official vernal pool search was not conducted by JAI. Mark Hampton Associates delineated the wetlands on site and conducted the official vernal pool search who also determined that no vernal pools within the property.

WILDLIFE HABITAT/ ON-SITE REVIEW

The information in this section summarizes site conditions observed during a site visit in early May of 2021. Jones Associates, Inc. did not delineate the wetlands on site or conduct an official vernal pool investigation. Wetland delineations and vernal pools investigations were officially conducted by Mark Hampton Associates, Inc and are shown on Attachment G and Attachment H.

FIELD HABITAT

Large Field

There is one +/-10.5-acre field located in the northwest corner of the property. It appears this field contains agricultural drains commonly found in developed fields. Underdrains throughout the field divert hydrology into a primary underdrain that is drained north to the road, under a culvert where it empties into a tributary of Little River.

It is likely that the field will have many flowering plants throughout the spring and summer. Historical Google Street View images confirm that long grasses and flowers are in the field. This means that there is opportunity for insects and field loving birds to use this field habitat. It also appears that a section of the field remains mowed. Field areas are beneficial to wildlife as they are able to utilize the much more palatable and nutritious fresh green vegetation.

Lawn

Additionally, the lawn is +/-4.6-acres which is large enough to provide similar benefits as the larger field to the northwest. However, there is likely less disturbance to wildlife in the larger field which is better for wildlife which prefers less intrusiveness.

FORESTED HABITAT

Softwood Stand

The majority of the site is forested. The center of the property primarily consists of hemlock (Tsuga Canadensis) and balsam fir (Abies balsamea). Most of this area is located at higher elevation and consist primarily of pit and mound upland. Percent cover in the softwood portion of the site forested areas was approximately 100% with a dense overstory and open understory.

Forested Wetland

The western portion of the property has the most wetlands and consists of a mix of forested and scrub-shrub vegetation. Much of this portion of the area is forested wetland with some scrub-shrub wetlands mixed in. Percent cover in this area was also high, around 80%. The majority of hydrology likely comes from Beaver Pond Brook located off the property to the south. Hydrology runs south to north until it reaches the field. Once at the field hydrology is directed by drainage swales to a culvert at the north boundary of the property.

Forested Upland

The east portion of the property is higher in elevation, thus does not have as much hydrology. This area consists mostly of broadleaved upland vegetation, consisting primarily of northern red oak (*Quercus rubra*) and some young white pine (*Pinus strobus*) in the mix until Little River's riparian zone. As you get closer to the riparian zone scrub vegetation becomes dense, consisting mostly of Morrow's honeysuckle (*Lonicera morrowi*). Overall, this upland area was fairly open with a percent cover of about 35%.

WETLAND HABITAT

Scrub-shrub and forested wetlands were observed on this property. Wetlands are important features because they provide many beneficial functions for fish, wildlife, and humans. Food, cover, and standing water are often associated with wetlands, making them excellent habitat components. The variation in wetland types helps maintain biodiversity by providing habitat to a wide range of species.

Vernal Pools

Vernal pools are essential breeding grounds for certain species of wildlife. These species heavily rely on vernal pools and often return to the same pool year after year. Disruption of vernal pools causes local declines in amphibian numbers which overall affects the biodiversity of the local ecosystem. Vernal pools become active in early spring when most food resources are low from winter and provide a much needed food source for predators during this time of year.

The site is within a 16,035-acre Focus Area of Ecological Significance for vernal pools. This large area is mapped by Beginning with Habitat as the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). Based on Mark Hampton Associate's vernal pool investigations in 2021, no vernal pools were observed.

Rivers, Streams, and Brooks

Little River bounds the eastern portion of the property. This river had a very dense riparian area along the property. This dense cover provides food and shelter on an otherwise fairly open understory property. Much of the dense riparian area consists of Morrow's honeysuckle which is an invasive species. Little River also is hydrologically connected to Little River Marsh, so this river contributes to the overall health of the marsh below. This marsh is also known to have rare plant species. For this reason, MNAP states that salt marsh may reside within the property. Based on the field visit, salt marsh was not observed within the property.

OBSERVED WILDLIFE

Most of the wildlife that was observed directly on-site consisted of squirrels, chipmunks, songbirds, and insects. Other wildlife sign that was observed included deer and turkey. The number of oak trees located within the property and at the landscape level is likely a big factor as to why many of these species frequent the area. Acorns that the oaks drop in the fall is a great source of fat. Fat is an essential diet component for wildlife because it is the most energy dense macronutrient which helps animals get through harsh winters.

CONCLUSION

Based on the database information provided by Maine Natural Areas Program (MNAP), Information for Planning and Consultation (IPAC), Maine Inland Fisheries and Wildlife (ME IFW), and Beginning with Habitat (BwH), the only important habitat previously documented to occur within the site is the 16,035-acre Focus Area of Ecological Significance for vernal pools (which the site does not contain). This large Focus Area is mapped by Beginning with Habitat as the Biddeford/Kennebunk Vernal Pool Complex (Attachment C). Previously conducted vernal pool investigations by Mark Hampton Associates Inc. concluded that no vernal pools were within the property.

The property's habitat characteristics reflect the typical landscape level habitats. Habitats found within the property are commonly found throughout this region of Maine. No species of concern were directly observed during the site evaluation.

Based on the onsite findings and the results from the databases JAI has a few recommendations to retain as much wildlife habitat integrity as possible during development. First, it is recommended that cutting occur outside the Northern Long-eared Bat pupping season in areas where trees are occurring. It is also recommended that at least a 75 ft offset be used from Little River per MNAP's request. ME IFW also recommends a 250 ft buffer from Little River to avoid potential impacts to spotted turtles. Although no spotted turtles were observed, this buffer would be considered a best practice. And lastly, avoiding and minimizing impacts to wetlands to the furthest extent possible during the design phase of construction.

PHOTOGRAPHS



Scrubshrub wetlands along stream (Taken: August 2021)



Little River bordering property (Taken: May 2021)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045

Jones Associates Inc.

Photographer: Jason Tomlin & Google Street View



Wetland habitat characteristics to the west (Taken: May 2021)



Wetland habitat characteristics to the west (Taken: May 2021)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045
Jones Associates Inc. Photographer: Jason Tome



Characteristic Softwood Stand of Pit and Mound Hemlock Upland (Taken: May 2021)



Minimal understory in a large portion of the upland (Taken: May 2021)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045
Jones Associates Inc. Photographer: Jason Tome



Field drainage under Oak Ridge Road (Taken: May 2021)



Field drainage from aerial perspective (Taken: May 2018)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045

Jones Associates Inc.

Photographer: Jason Torrey & Google Earth



Large lawn acts as a field area for wildlife (Taken: May 2021)



Dense habitat near Little River & apple tree providing foraging opportunity (Taken: May 2021)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045
Jones Associates Inc. Photographer: Jason Tome



Large Field Mowed Providing Palatable Forage Opportunities (Taken 10/20/2011)



Large field not mowed providing flowers and seeds for birds and insects (Taken 10/20/2011)

OAK RIDGE ROAD, BIDDEFORD, MAINE 045
Jones Associates Inc. Photographer: Google Street View

ATTACHMENTS

ATTACHMENT A - UNDEVELOPED HABITAT/CONNECTIVITY DATABASE
ATTACHMENT B - HIGH VALUE PLANT AND ANIMAL HABITATS DATABASE
ATTACHMENT C – FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE DATABASE
ATTACHMENT D – INFORMATION FOR PLANNING AND CONSULTATION (IPAC)
ATTACHMENT E – MAINE NATURAL AREAS PROGRAM DATABASE (MNAP)
ATTACHMENT F – MAINE INLAND FISHERIES AND WILDLIFE DATABASE
ATTACHMENT G – MARK HAMPTON ASSOCIATES INC WETLAND REPORT
ATTACHMENT H – MARK HAMPTON ASSOCIATES INC VERNAL POOL REPORT

ATTACHMENT A - UNDEVELOPED HABITAT/CONNECTIVITY

Conserved Land and Undeveloped Habitat

Welcome **Layers** Legend

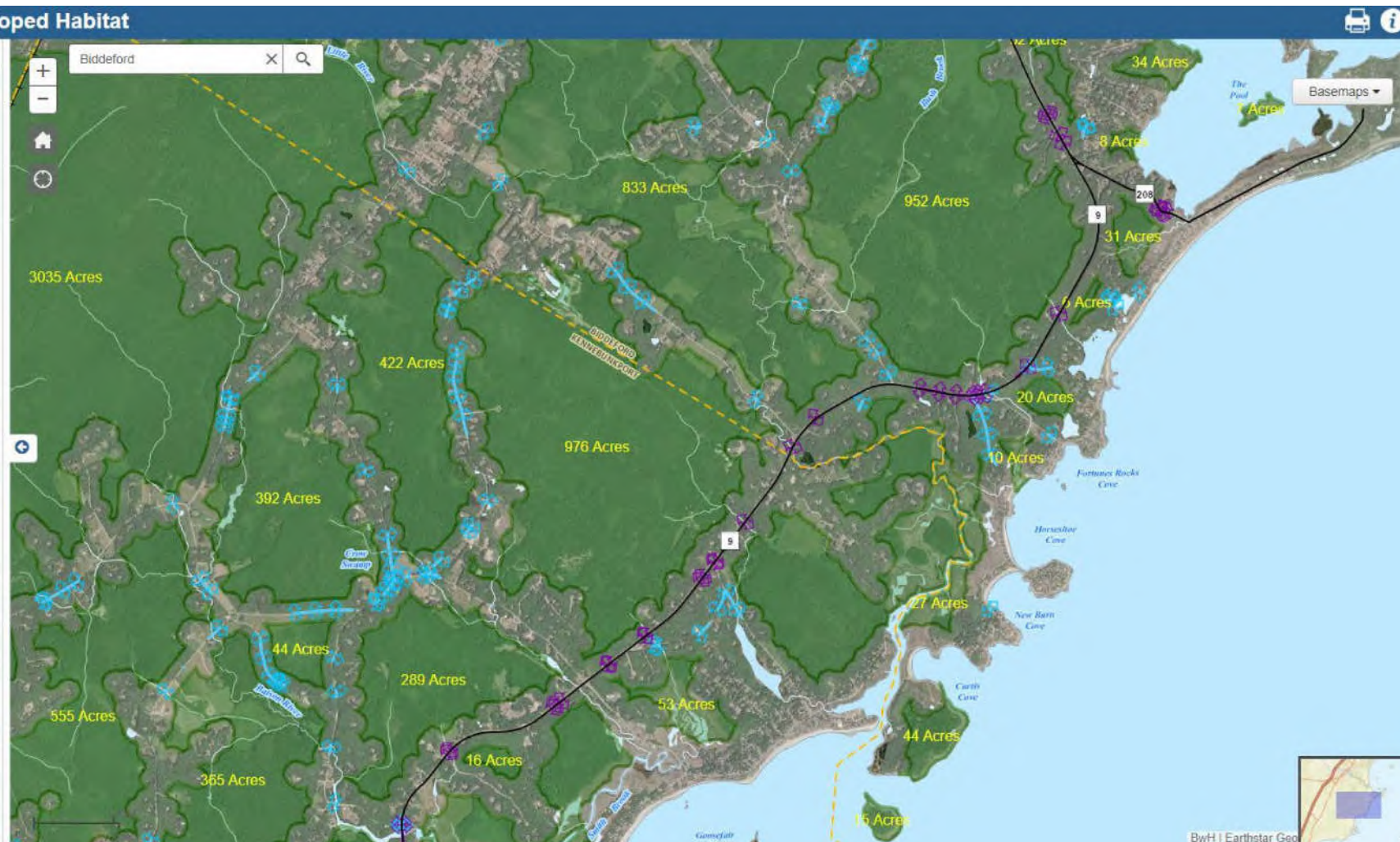
Layer Details:
Toggle layers on and off. Layers with gray checkbox will appear once zoomed to visible scale.

☒ Maine Conserved Lands ☐ Conserved Lands Ownerships

☐ Federal
☐ Municipal
☐ Water Dist., etc.
☐ Private
☐ State

☐ Conserved Lands Easements
☒ Focus Areas
☒ Undeveloped Blocks
☒ Block Connectors
☒ Riparian Connectors
☒ Highway Bridge Connectors
☒ Developed Land

Hover:
☒ Check this box to enable your mouse to hover over features on the map. Click on the feature to identify more information.



ATTACHMENT B - HIGH VALUE PLANT AND ANIMAL HABITATS

Plant and Animal Habitats



Welcome Layers Legend

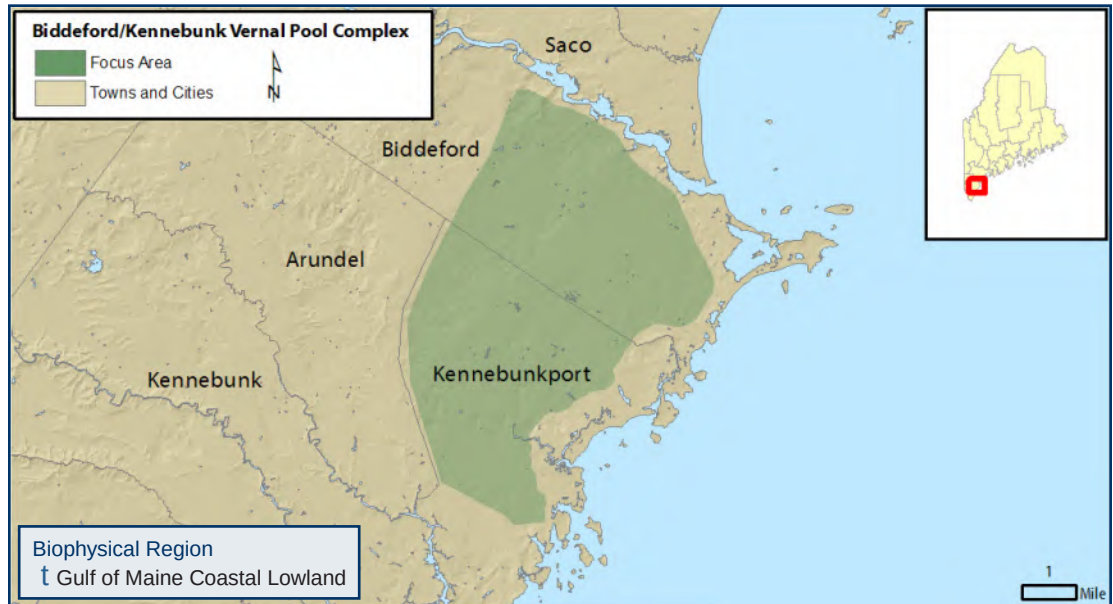
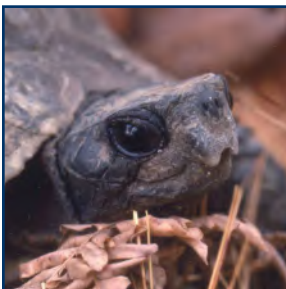
- Layer Details:**
Toggle layers on and off. Layers with gray checkbox will appear once zoomed to visible scale.
- ☒ Endangered Fish Species
 - ☒ Maine State Listed Plants
 - ☒ Significant Vernal Pools
 - ☒ Deer Wintering Areas
 - ☒ Essential Plover and Tern Habitat
 - ☒ Exemplary Natural Communities
 - ☒ State Listed Animal Habitats
 - ☒ Inland Wading Bird and Waterfowl Habitat
 - ☒ Shorebird Habitat
 - ☒ Seabird Nesting Islands
 - ☒ Shellfish Beds
 - ☒ Tidal Wading Bird and Waterfowl Habitat
 - ☒ Atlantic Salmon Spawning Habitat
 - ☒ Atlantic Salmon Rearing Habitat
 - ☒ Wild Brook Trout Habitat

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☒ Check this box to enable your mouse to hover over features on the map. Click on the feature to identify more information.



ATTACHMENT C – FOCUS AREAS OF ECOLOGICAL SIGNIFICANCE

Biddeford/Kennebunkport Vernal Pool Complex



WHY IS THIS AREA SIGNIFICANT?

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area includes thousands of acres of undeveloped forest and wetlands in Biddeford and Kennebunkport. The biological significance of this area is primarily a result of the high concentration of pocket swamps and vernal pools in an undeveloped landscape, an increasingly rare occurrence in Maine. The swamps and vernal pools provide habitat to rare species, most notably to Blanding's and spotted turtles, both species found primarily in the southern most part of the state where increasing development is contributing to fragmentation and loss of habitat.

OPPORTUNITIES FOR CONSERVATION

- » Work with willing landowners to permanently protect remaining undeveloped areas and significant features.
- » Encourage towns to improve approaches to development that may impact focus area functions, including approaches to limit roads and habitat fragmentation.
- » Encourage enhanced riparian buffers and best management practices for forestry, vegetation clearing, and soil disturbance activities near wetlands and other significant features.

For more conservation opportunities, visit the Beginning with Habitat Online Toolbox www.beginningwithhabitat.org/toolbox/about_toolbox.html.

Rare Animals
Saltmarsh Sharp-tailed Sparrow
Spotted Turtle
Blanding's Turtle
Wood Turtle
Eastern Ribbon Snake

Rare Plants
Small Reed-grass
Button Sedge

Rare and Exemplary Natural Communities
Salt-hay Saltmarsh

Significant Wildlife Habitats
Inland Waterfowl and Wading Bird Habitat
Deer Wintering Area
Significant Vernal Pool

Public Access Opportunities

- » Kennebunk Greenbelt
- » Rachel Carson NWR, USFWS



Vernal Pool, Maine Department of Inland Fisheries and Wildlife

FOCUS AREA OVERVIEW

The Biddeford/Kennebunkport Focus Area covers 16,000 acres and includes thousands of acres of undeveloped forest and wetlands located in eastern Biddeford and northern Kennebunkport. The biological significance of this area is due to the high concentration of pocket swamps and vernal pools. The area is underlain by glacial till including moraine formations and by glacio-marine deposits including clay, both of which impede drainage and help create this unusual high density of swamps, vernal pools, and small streams. Concentrations of pocket swamps and vernal pools in undeveloped landscapes are becoming increasingly rare in Maine.

Although the focus area is bisected by a number of roads, it is likely that the interior of each of the remaining unfragmented forested blocks has never been cleared for farming due to the poor quality of the soils. The forest through much of the area is dominated by oak and pine, and the wetlands are largely dominated by red maple. Timber harvesting has probably been the primary historical use of these lands.

CHARACTERISTIC SPECIES

Vernal pools are ephemeral wetlands that typically fill with water from snow melt and spring runoff and often dry out over the course of the summer. They offer critical breeding

habitat for some species of amphibians and invertebrates such as wood frogs, spotted and blue salamanders, and fairy shrimp. The seasonal nature of the temporary pools maintains a sheltered environment conducive to the successful breeding of these animals. Vernal pools are also used as feeding and breeding habitat by many other animals such as spring peepers, grey tree frogs, and other common amphibians, as well as by several rare species. The amphibians and aquatic invertebrates that are dependent on these ponds for survival are an important food resource for forest dwellers such as turtles, snakes, birds, and small mammals. The vegetated condition of vernal pools varies from completely vegetated, usually with sedges, grasses, ferns, and scattered shrubs, to non-vegetated, with only dead leaves on the pool bottom.

The vernal pools, wetlands and uplands in this focus area support the state Threatened spotted turtle (*Clemmys guttata*) and the state Endangered Blanding's turtle (*Emys blandingii*). Spotted and Blanding's turtles are generally found only in the southernmost part of the state where increasing development contributes to loss of habitat, habitat fragmentation, and loss of individuals at road crossings. Spotted and Blanding's turtles are most frequently associated with complexes of small, acidic wetlands and vernal pools in large, intact forested landscapes.

They also use small streams, shrub swamps, and wet meadows. Although these turtles spend most of their time in the water, they readily travel overland between wetlands during the spring and summer months. Upland habitats are critical for basking, aestivating (a period of late summer inactivity), nesting, and as travel corridors between wetlands.

Spotted and Blanding's turtles have evolved relatively long adult life spans to offset the long time it takes to reach reproductive maturity and to offset high levels of nest mortality. Because of this unusual life history, spotted and Blanding's turtle populations are at low densities, and thus populations are extremely vulnerable to any human sources of adult mortality. Road mortality and collecting for pets, for example, can be deleterious as the attrition of just a few individuals every year can lead to the long-term decline and extinction of a local population. The secondary effects of human development – increased predator populations (i.e., domestic cats, and raccoons), pollution, filling of small wetlands, and blocking upland travel corridors – also limit populations. Spotted and Blanding's turtles are strictly protected from take (collecting, killing or possession) by the Maine Endangered Species Act.

Vernal pools and pocket swamps are sometimes habitat for rare plant species in the southern most part of the state; however there has only been limited rare plant inventory within this focus area. Two rare plants, small reed grass (*Calamagrostis cinnoides*) and button sedge (*Carex bullata*), have been documented from specific locations within the focus area.

The Biddeford/Kennebunkport Vernal Pool Complex Focus Area also supports Deer Wintering Areas including those mapped along portions of the upper Batson River, Little River, north of Lord's Pond, the Round Swamps area, and the largest that extends northwest from Tattle Corner and includes the upper watershed of Dungeon Brook. High to moderate value



Spotted Turtle, Maine Department of Inland Fisheries and Wildlife

Ecological Services of the Focus Area

- † Retains sediments and nutrients
- † Stores and conveys floodwaters
- † Contributes to regional biodiversity by providing high quality habitat for rare species
- † Protects water quality

Economic Contributions of the Focus Area

- † Provides recreational opportunities such as hunting, fishing, hiking, and wildlife watching
- † Recharges groundwater
- † Provides forest products

Inland Waterfowl and Wading Bird Habitats have been mapped along portions of the Batson River and Bush Brook as well. Both Deer Wintering Areas and Inland Waterfowl and Wading Bird Habitats are Significant Wildlife Habitat identified under the Natural Resources Protection Act.

CONSERVATION CONSIDERATIONS

- » Further fragmentation of the large forested blocks that make up this site will gradually lead to a decline in habitat suitability for certain area-sensitive species, and will increase road mortality for rare turtles.
- » Coastal towns in southern Maine have experienced rapid growth in the last decade, and many upland areas near the coast are under increasing threat. Unmanaged growth and sprawl can contribute to habitat fragmentation, introduction of invasive plant populations, and water quality degradation through pollution from storm water runoff and private sewage systems.
- » Inappropriate off-road vehicle (ORV) use can degrade wetlands and directly contribute to reptile and amphibian mortality. Existing roads and trails should be reviewed with particular recreation and access needs in mind, and trails closed if they run counter to protection needs. Fragmenting features should be minimized where possible.
- » Avoid road improvement projects (e.g. paving, widening) that may lead to increased traffic volume and speed within ¼ mile of known turtle wetlands. Water crossing structure repair, maintenance and installation projects should follow guidelines for aquatic species passage in order to avoid further fragmentation of aquatic and riparian habitats.
- » No activities should be permitted that could lead to the loss

or degradation of wetlands, regardless of size, including filling, dredging, sedimentation, or changing hydrology unless the activity is reviewed by MDIFW.

- » A minimum 250-foot forested buffer zone should be maintained around wetlands hosting known rare animal locations.
- » Impervious surfaces, yards, buildings and roads should comprise no more than 20% of the landscape within ¼ mile of rare animal wetlands. Natural forest habitat should dominate the landscape around these wetlands. Intensive developments, including subdivisions and service centers, that concentrate human populations within ¼ mile of turtle wetlands should be avoided.
- » Towns should strive to maintain important habitat areas identified by MDIFW in low density, rural settings by identifying these habitat areas in comprehensive plans and zoning accordingly.
- » Low-intensity cutting (single tree or small group selection, rewood harvest) within riparian buffers is compatible as long as operators avoid wetlands. Winter harvests are recommended to minimize impacts to turtles, amphibian prey, and wetland condition. Close adherence to Best Manage

ment Practices for forestry activities near vernal pools (available from Maine Audubon Society at 207-781-6180 ext. 222) will generally ensure the protection of all major wetland habitats.

- » Invasive plants and aquatic organisms have become an increasing problem in Maine and a threat to the state's natural communities. Disturbances to soils and natural vegetation and introductions of non-native species to terrestrial and aquatic habitats can create opportunities for colonization. Landowners and local conservation groups should be made aware of the potential threat of invasive species, of methods to limit establishment, and/or of appropriate techniques for removal. For more information on invasive plants visit: <http://www.maine.gov/doc/nrimc/mnap/features/invasives.htm>.
- » With expected changes in climate over the next century, plant and wildlife species will shift their ranges. Maintaining landscape connections between undeveloped habitats will provide an important safety net for biodiversity as species adjust their ranges to future climate conditions.



Blanding's Turtle, Maine Department of Inland Fisheries and Wildlife

RARE SPECIES AND EXEMPLARY NATURAL COMMUNITIES OF THE FOCUS AREA

	Common Name	Scientific Name	State Status*	State Rarity Rank	Global Rarity Rank
Animals	Saltmarsh Sharp-tailed Sparrow	<i>Ammodramus caudacutus</i>	SC	S3B	G4
	Spotted Turtle	<i>Clemmys guttata</i>	T	S3	G5
	Blanding's Turtle	<i>Emys blandingii</i>	E	S2	G4
	Wood Turtle	<i>Glyptemys insculpta</i>	SC	S4	G4
	Eastern or Northern Ribbon Snake	<i>Thamnophis sauritus</i>	SC	S3	G5
Plants	Small Reed-grass	<i>Calamagrostis cinnoides</i>	SC	S3	G5
	Button Sedge	<i>Carex bullata</i>	SC	S2	G5
Natural Communities	Salt-hay Saltmarsh	<i>Spartina saltmarsh</i>		S3	G5

State Status*

E	EndangeredRare and in danger of being lost from the state in the foreseeable future, or federally listed as Endangered.
T	ThreatenedRare and, with further decline, could become endangered; or federally listed as Threatened.
SC	Special ConcernRare in Maine, based on available information, but not sufficiently rare to be Threatened or Endangered.

*State status rankings are not assigned to natural communities.

State Rarity Rank

S1	Critically imperiled in Maine because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres).
S2	Imperiled in Maine because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3	Rare in Maine (on the order of 20–100 occurrences).
S4	Apparently secure in Maine.
S5	Demonstrably secure in Maine.

Global Rarity Rank

G1	Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation.
G2	Globally imperiled because of rarity (6–20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3	Globally rare (on the order of 20–100 occurrences).
G4	Apparently secure globally.
G5	Demonstrably secure globally.

ATTACHMENT D – INFORMATION FOR PLANNING AND CONSULTATION (IPAC)



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Official Species List

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Maine Ecological Services Field Office

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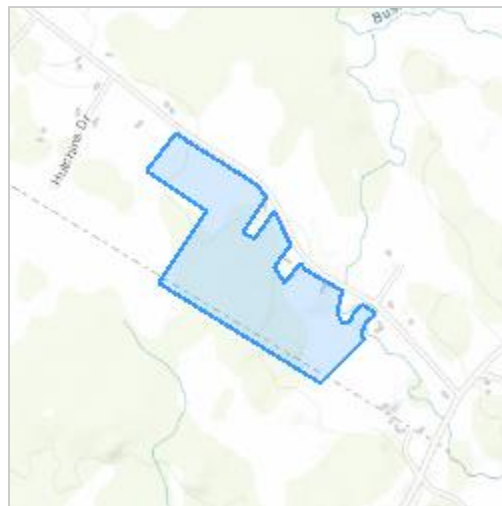
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Critical habitats

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ATTACHMENT E – MAINE NATURAL AREAS PROGRAM DATABASE (MNA~~P~~)



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

AMANDA E. BEAL
COMMISSIONER

May 4, 2021

Josie Ray
Jones Associates
280 Poland Spring Road
Auburn, ME 04210

Via email: jgriffen@jonesai.com

Re: Rare and exemplary botanical features in proximity to Oak Ridge Road, Tax Map 4 Lot 57, Biddeford, Maine

Dear Ms. Ray

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received April 28, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Biddeford, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

Though the MNAP has no features mapped at the project location itself, the site abuts the Little River, which is hydrologically connected to the Little River Marsh. There is a rare Sallow Saltmarsh mapped and also a rare plant species. MNAP recommends no clearing within 75 feet of the Little River and all associated perennial and intermittent streams on the property, and the use of standard best management practices for erosion control to help prevent downstream impacts to this rare freshwater wetland. If clearing is planned within 75 feet of streams, please contact the MNAP for further guidance. Please see the table below and attached map and factsheets for more information about these features.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING



PHONE: (207)287-8044
WWW.MAINE.GOV/DACF/MNAP

Feature	State Status	State Rank	Global Rank	Notes
Salthay Saltmarsh Spartina Saltmarsh	N/A	S3	G5	Occurrence Rank B Little River Marsh
Saltmarsh False Foxglove Agalinis maritima	Special Concern	S3	G5	Occurrence Rank C Little River Marsh

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The information includes information on features that have been known to occur historically in the area as well as recently verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of \$75.00 to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

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Conservation Status Ranks

State and Global Ranks This ranking system facilitates a quick assessment of a species' or habitat rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of 1 to 5. Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 G1	Critically Imperiled— At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 G2	Imperiled— At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 G3	Vulnerable— At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 G4	Apparently Secure— At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 G5	Secure— At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX GX	Presumed Extinct— Not located despite intensive searches and virtually no likelihood of rediscovery.
SH GH	Possibly Extinct— Known from only historical occurrences but still some hope of rediscovery.
S#S# G#G#	Range Rank A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range uncertainty about the status of the species or ecosystem.
SU GU	Unrankable— Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR SNR	Unranked— Global or subnational conservation status not yet assessed.
SNA GNA	Not Applicable— A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., native species or ecosystems).
Qualifier	Definition
S#? G#?	Inexact Numeric Rank Denotes inexact numeric rank.
Q	Questionable taxonomy that may reduce conservation priority. Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	Intraspecific Taxon (trinomial)— The status of intraspecific taxa (subspecies or varieties) are indicated by a "T" rank following the species' global rank.

State Status Endangered and Threatened are legal status designations authorized by statute. Please refer to MRS A Title 12, §544A and §544B.

Status	Definition
E	Endangered– Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	Threatened– Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	Special Concern– A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	Potentially Extirpated– A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (§§31 as well as exemplary common natural community types (§§5 with EO ranks A/B).

Rank	Definition
A	Excellent– Excellent estimated viability/ecological integrity.
B	Good– Good estimated viability/ecological integrity.
C	Fair– Fair estimated viability/ecological integrity.
D	Poor– Poor estimated viability/ecological integrity.
E	Extant– Verified extant, but viability/ecological integrity not assessed.
H	Historical– Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	Extirpated– Documented loss of population or destruction of habitat.
U	Unrankable– Occurrence unable to be ranked due to lack of sufficient information (e. possible mistaken identification).
NR	Not Ranked– An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
<http://www.maine.gov/dacf/mnap>



ATTACHMENT F – MAINE INLAND FISHERIES AND WILDLIFE DATABASE



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Endangered, Threatened, and Special Concern Species

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Significant Wildlife Habitat2

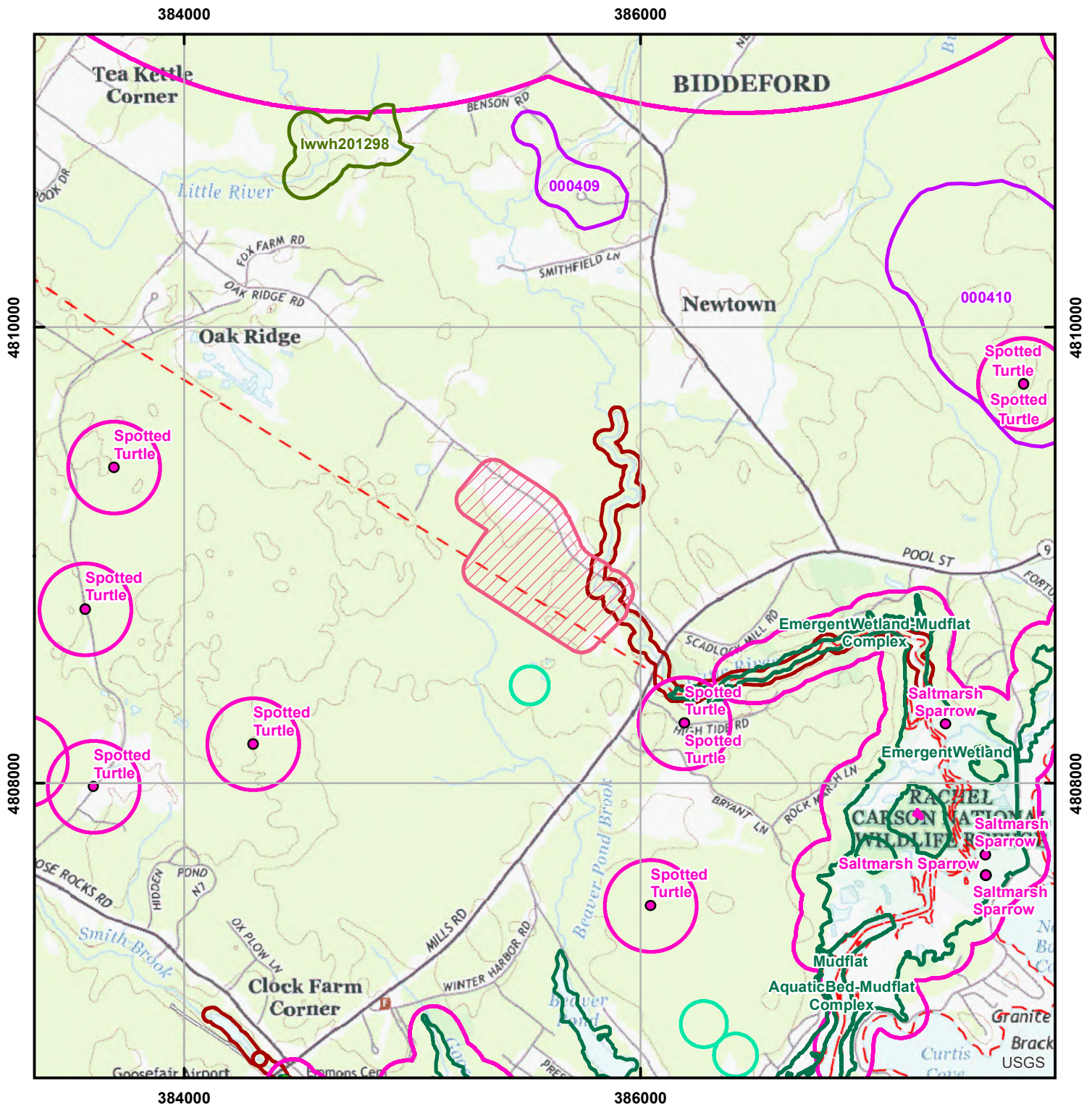
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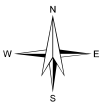
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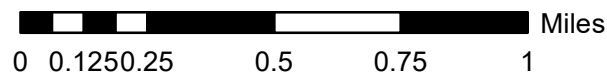
Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name:

00 Oak Ridge Road, Biddeford
(Version 1)



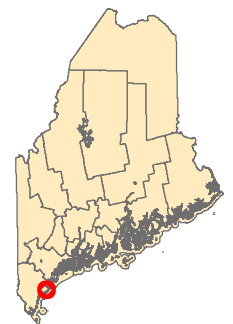
Maine Department of
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 5/11/2021

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| Project Search Areas - All Versions | Deer Winter Area | Roseate Tern |
| Maine Cliff and Talus Areas | LUPC p-fw | Piping Plover and Least Tern |
| | Cooperative DWAs | Aquatic ETSc - 2.5 mi review |
| | Seabird Nesting Islands | Rare Mussels - 5 mi review |
| | Shorebird Areas | Maine Heritage Fish Waters |
| | Inland Waterfowl and Wading Bird | Arctic Charr Habitat |
| | 2008 lwwh - Shoreland Zoning | Redfin Pickerel and Swamp Darter Habitats - buffer100ft |
| | Tidal Waterfowl and Wading Bird | Special Concern occupied habitats - 100ft buffer |
| | Significant Vernal Pools | Wild Lake Trout Habitats |
| | Environmental Review Polygons | |



ATTACHMENT G – MARK HAMPTON ASSOCIATES INC WETLAND REPORT



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518
May 17, 2021

Emily and Rob Ingwerson
Ginger Hill Design and Build
18 Ginger Hill Lane
Arundel, ME 04046

Re: Wetland Delineation on 13+ acre parcel on Oak Ridge Road Biddeford, ME.

Dear Emily and Rob,

I have completed a delineation of wetlands on an 13+ acre parcel located on Oak Ridge Road Biddeford, ME. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands I found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by GPS equipment capable of locating a point to within three feet. The wetland data has been forwarded to Walsh Engineering. The wetlands found onsite are forested wetlands and wet meadow wetlands and do not meet the definition of wetlands of special significance as defined by Maine Department of Environmental Protection.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton C.S.S, L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

ATTACHMENT H – MARK HAMPTON ASSOCIATES INC VERNAL POOL REPORT



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518
May 17, 2021

Emily and Rob Ingwerson
Ginger Hill Design and Build
18 Ginger Hill Lane
Arundel, ME 04046

Re: Vernal Pool Assessment on a 13+ acre parcel on Oak Ridge Road Biddeford, ME.

Dear Emily and Rob,

I have completed a vernal pool assessment on a 13+ acre parcel located on Oak Ridge Road Biddeford, ME. The vernal pool assessment was conducted in accordance with Chapter 335 Significant Wildlife Habitat, Section 9 Significant Vernal Pools for the Maine Department of Environmental Protection. This section outlines the definition of a vernal pool as well as the requirements of a vernal pool to meet the definition of significance as related to the number of amphibian egg masses counted during the breeding season.

Two site visits were made to the property over the course of six weeks beginning the first week in April. I found no vernal pools on the property.

If you have any questions or require additional information, please contact me.

Sincerely,

Mark J. Hampton C.S.S., L.S.E.
Certified Soil Scientist #216
Licensed Site Evaluator #263

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ENGINEERING ASSOCIATES, INC. P

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ENGINEERING ASSOCIATES, INC. P

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STORMWATER MANAGEMENT REPORT

LEEWARD MEADOWS
Oak Ridge Road
Biddeford, Maine 04005

Introduction

[illegible]

Methodology

[illegible]

Pre-Development Conditions

[illegible]

Conclusions

Calculations show that the peak rate of runoff from the 2-, 10-, and 25-year storm events will not exceed the pre-development rate as required by the City of Biddeford.

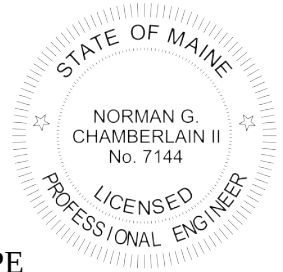
Respectfully,



Connor A. Ritter, EIT
Walsh Engineering Associates, Inc.



Norman G. Chamberlain II, PE
Walsh Engineering Associates, Inc.



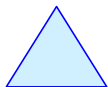
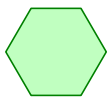
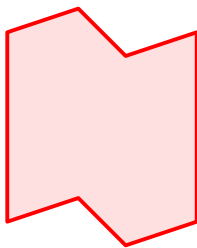
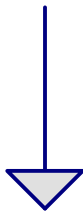
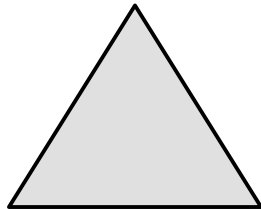
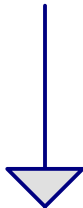
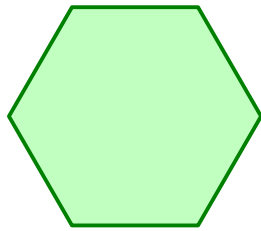
Supporting Data and Calculations

The following material presents calculations and copies of source material used during the analysis for this study.

- Appendix A: Pre-Development HydroCAD Report
- Appendix B: Post-Development HydroCAD Report
- Appendix C: High Intensity Soil Survey
Web Soil Survey Map
- Appendix D: Inspection & Maintenance Plan
- Appendix E: Drainage Plans
 - D1.0 – Pre-Development Drainage Plan
 - D2.0 – Post-Development Drainage Plan

Appendix A

Pre-DevelopmentHydroCAD Report



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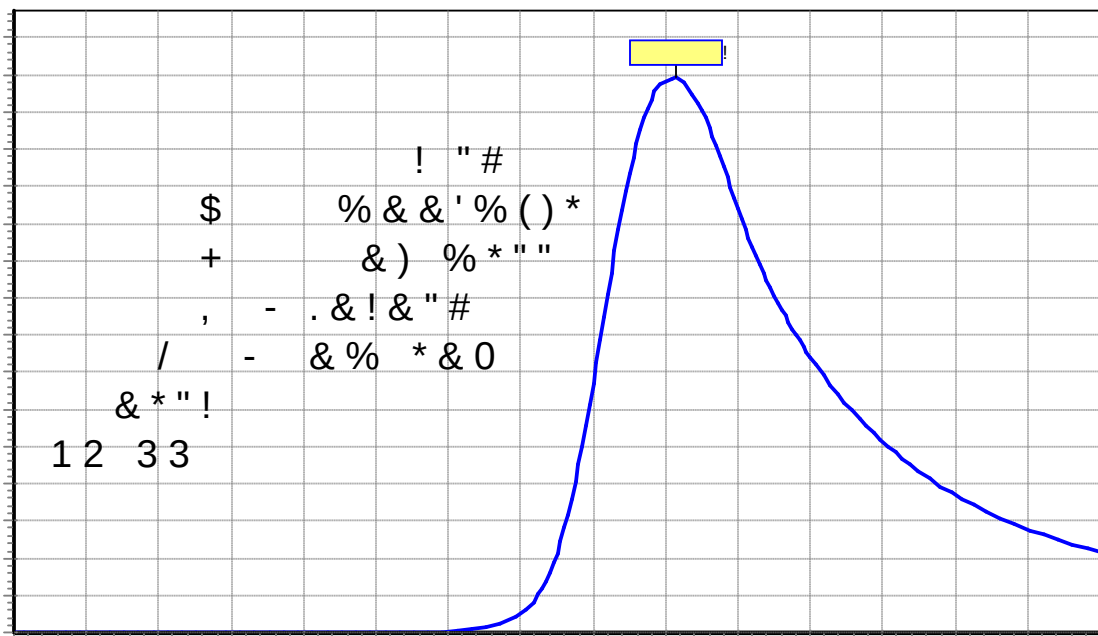
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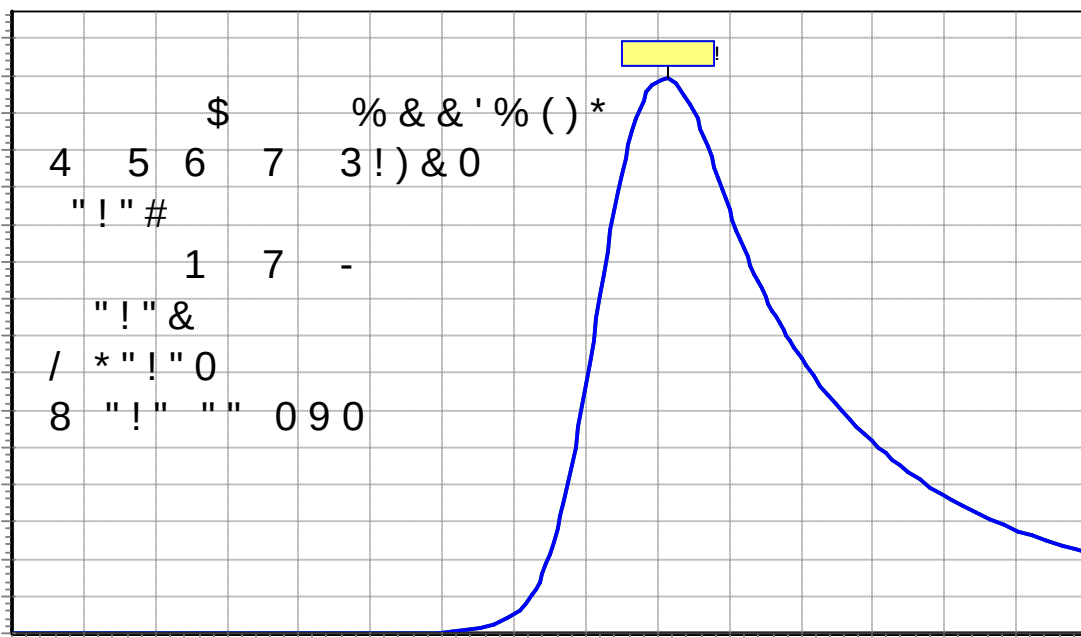
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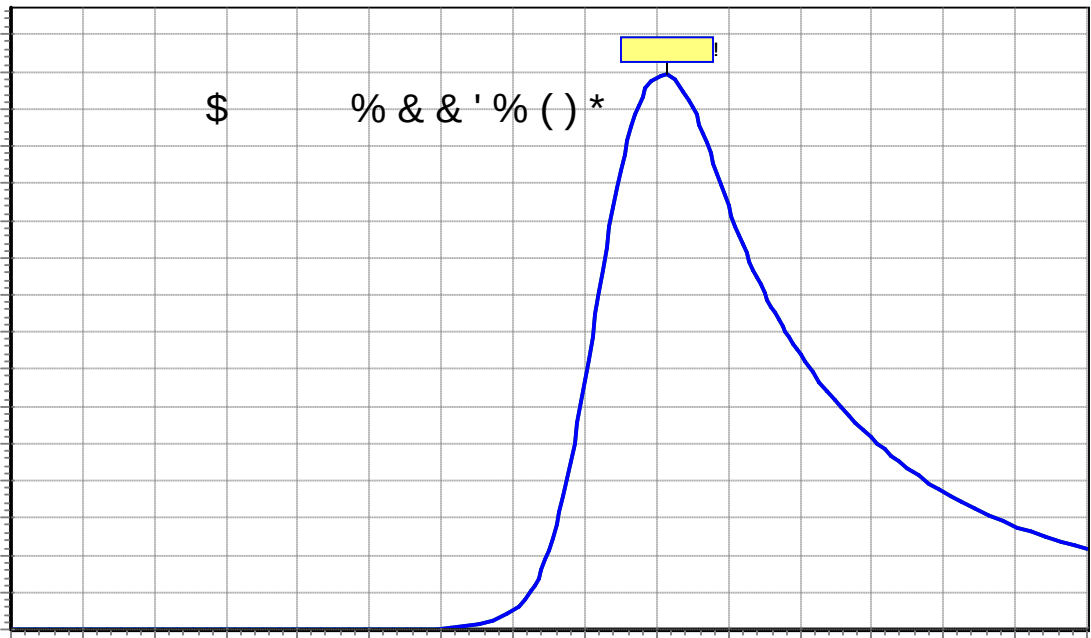
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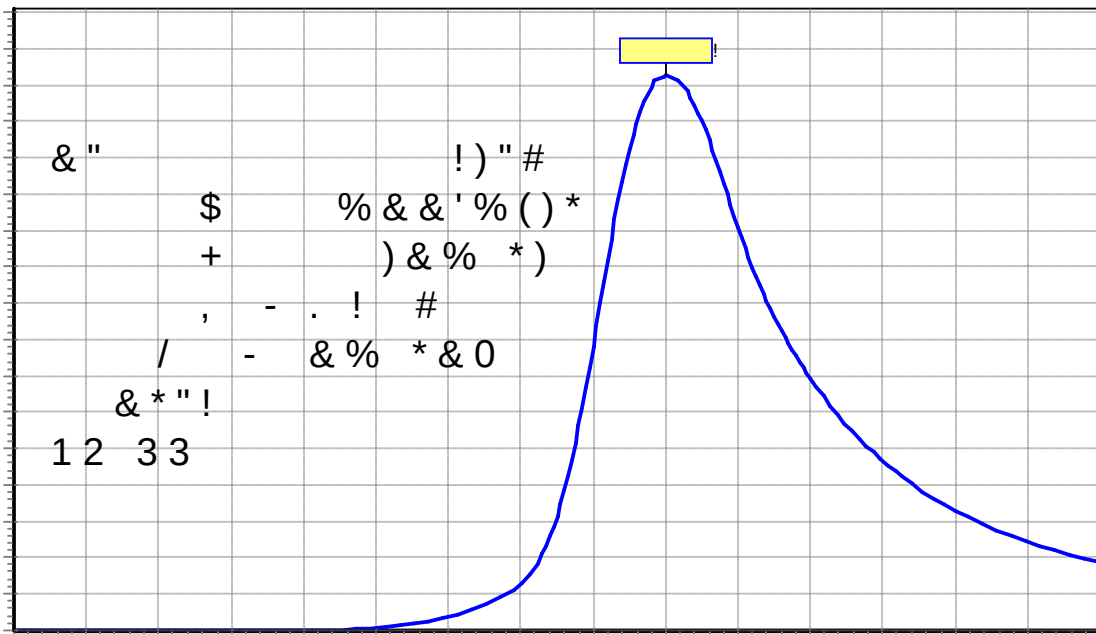
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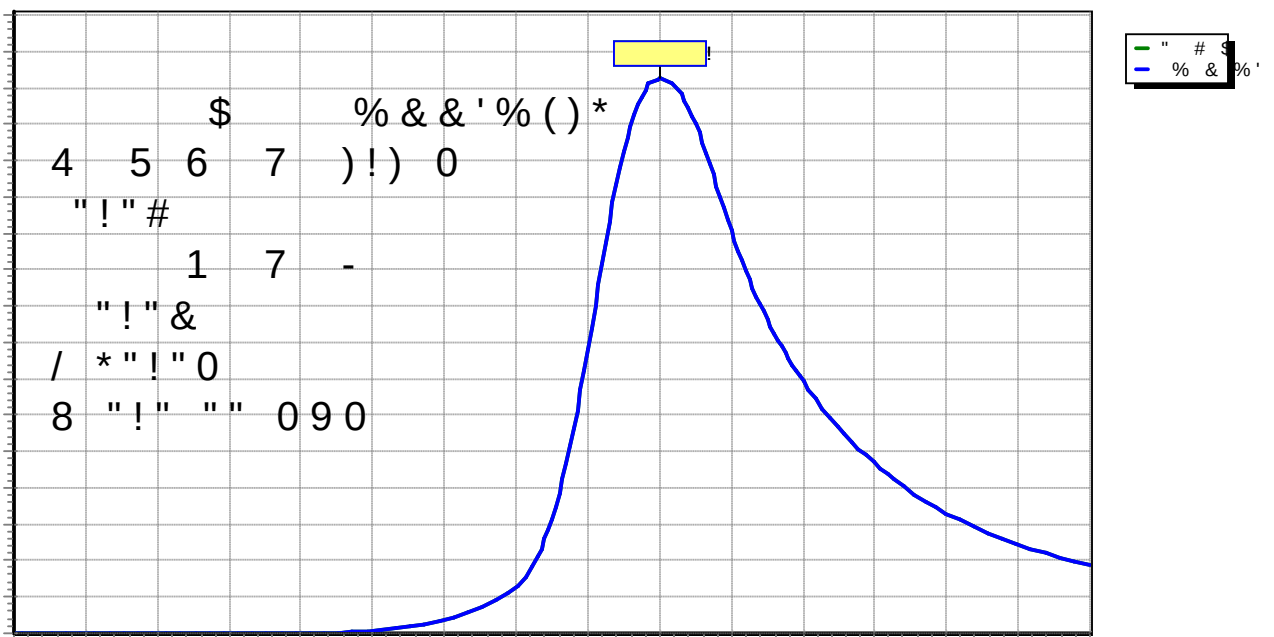
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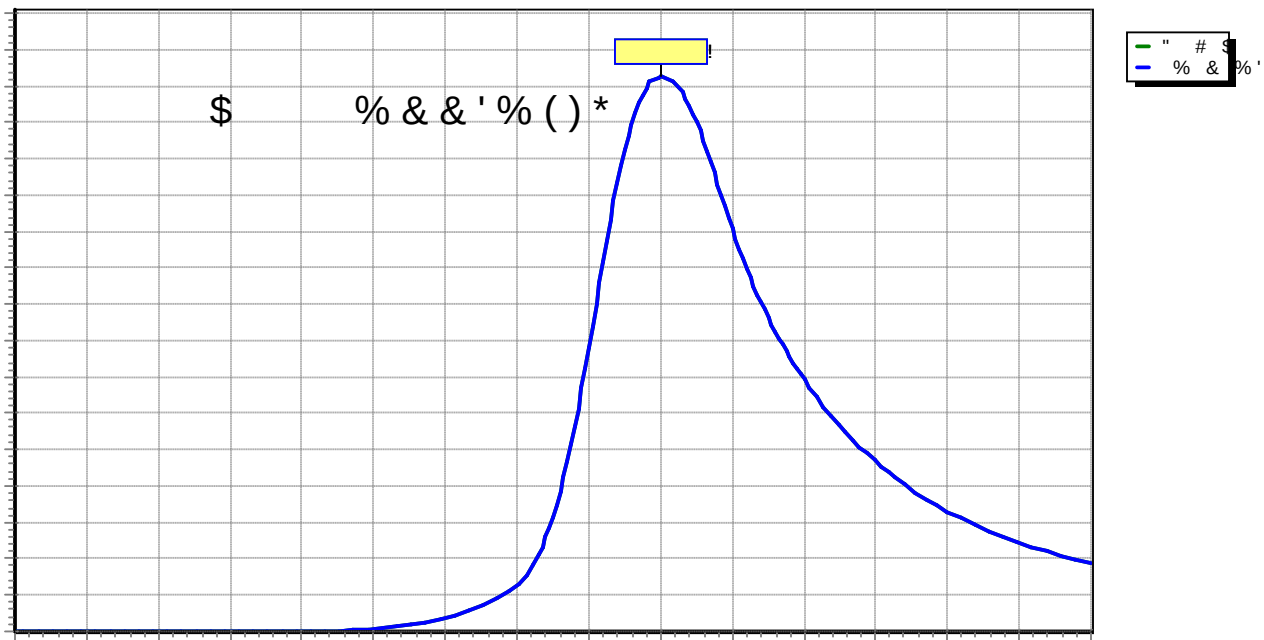
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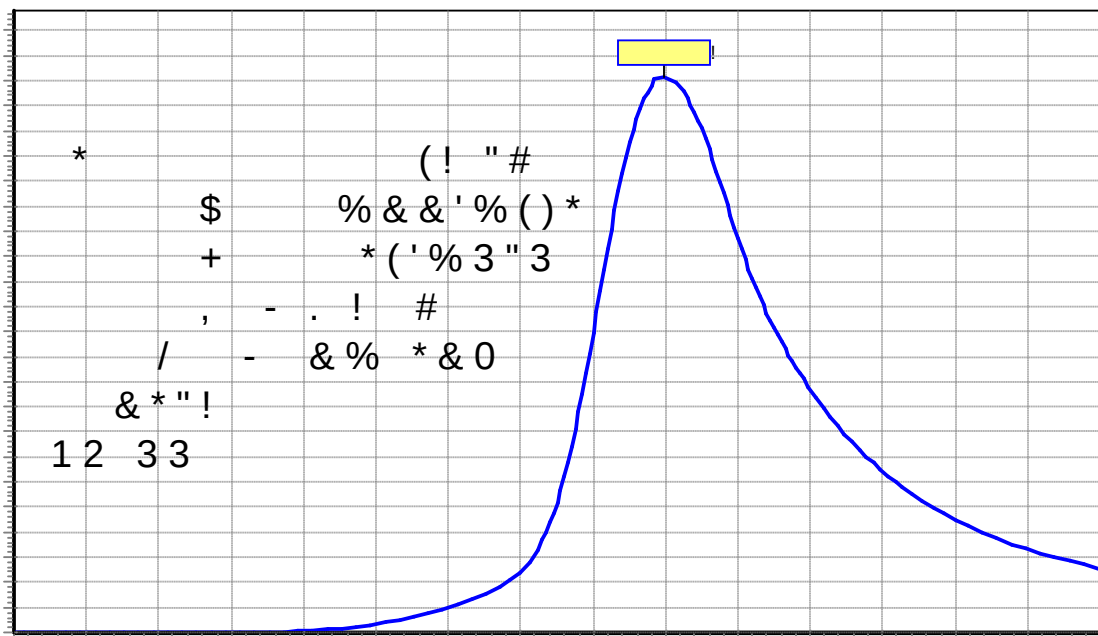
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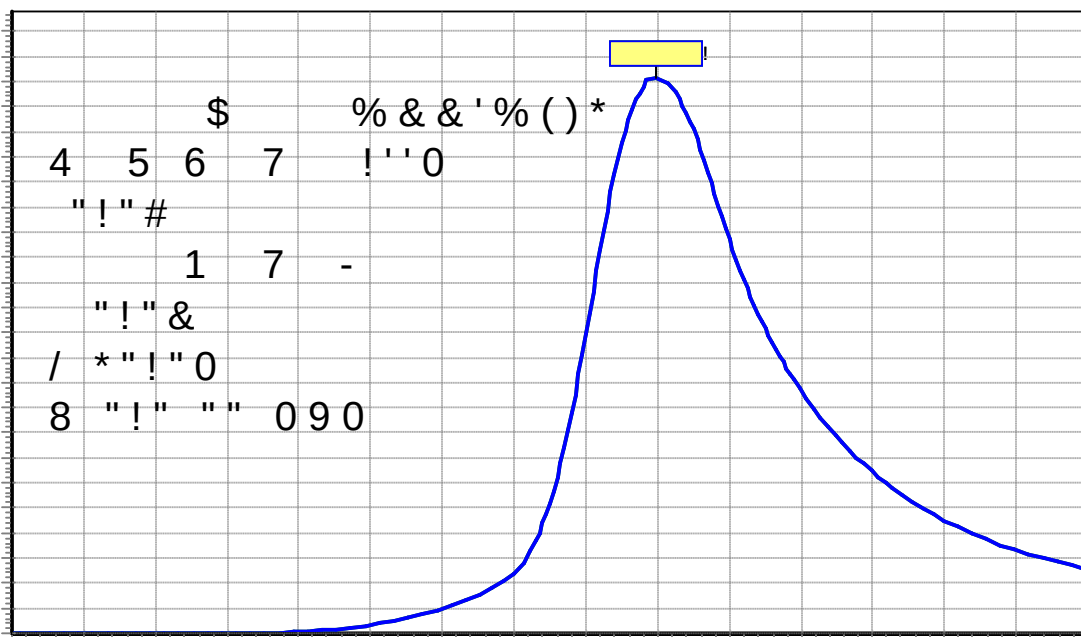
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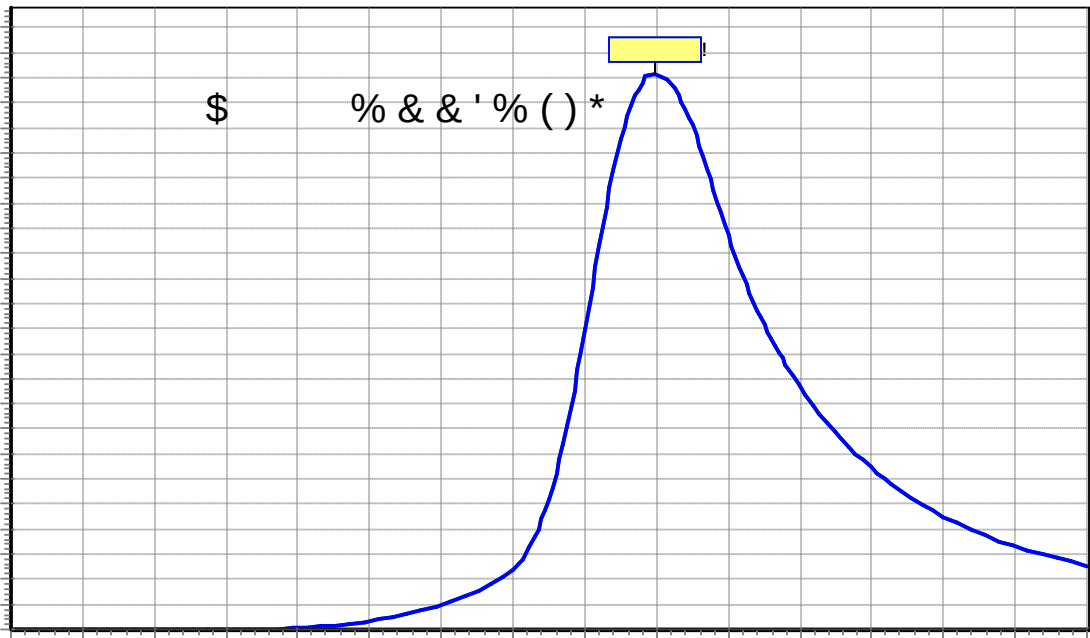


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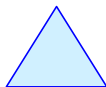
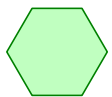
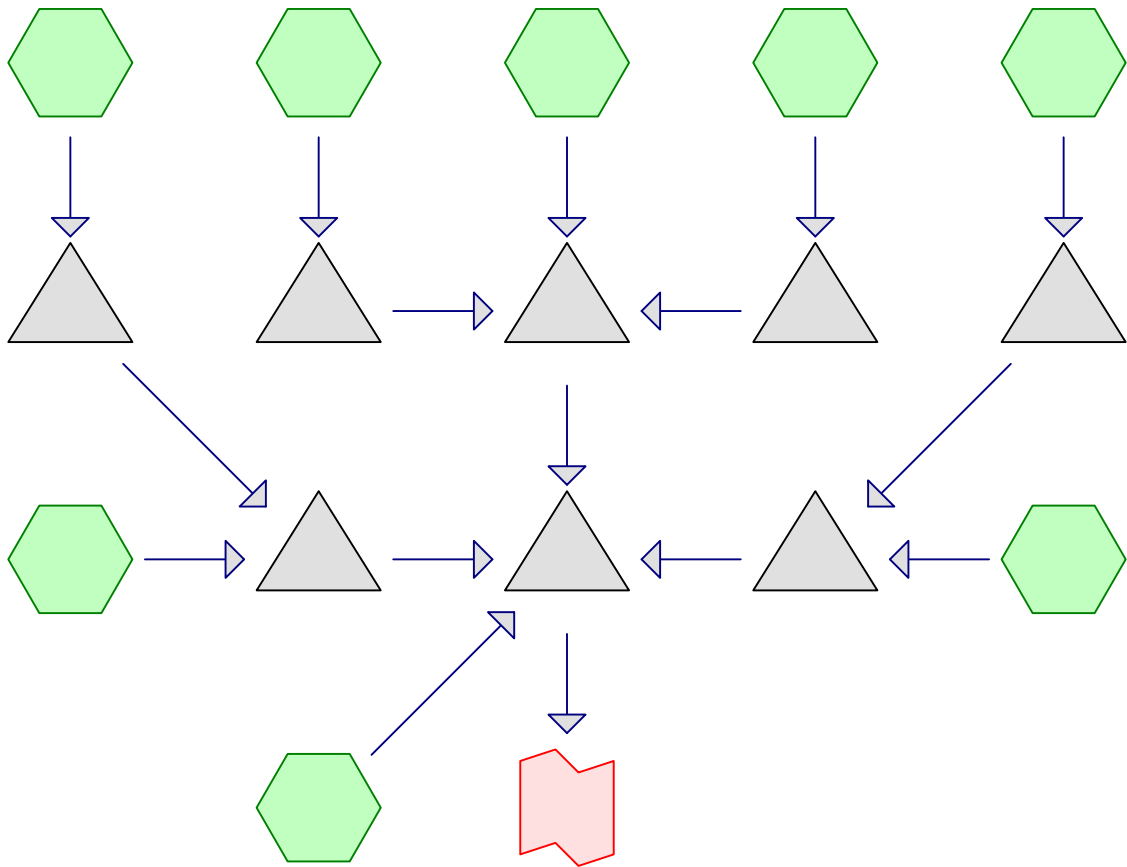
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Appendix B

PostDevelopment HydroCAD Report



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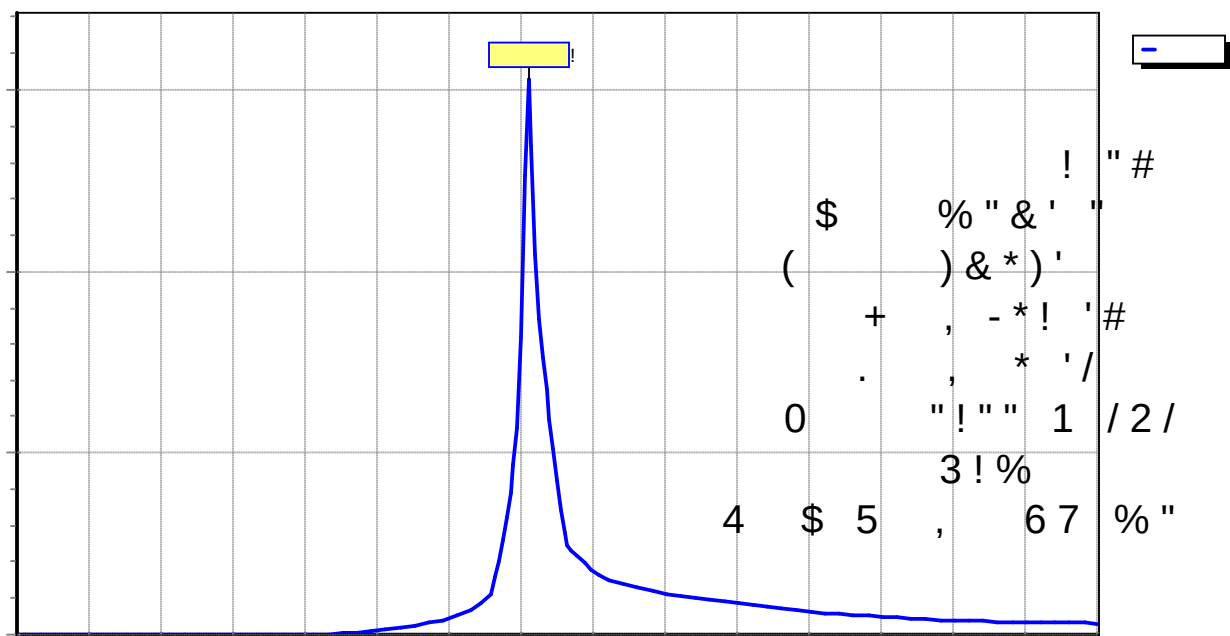
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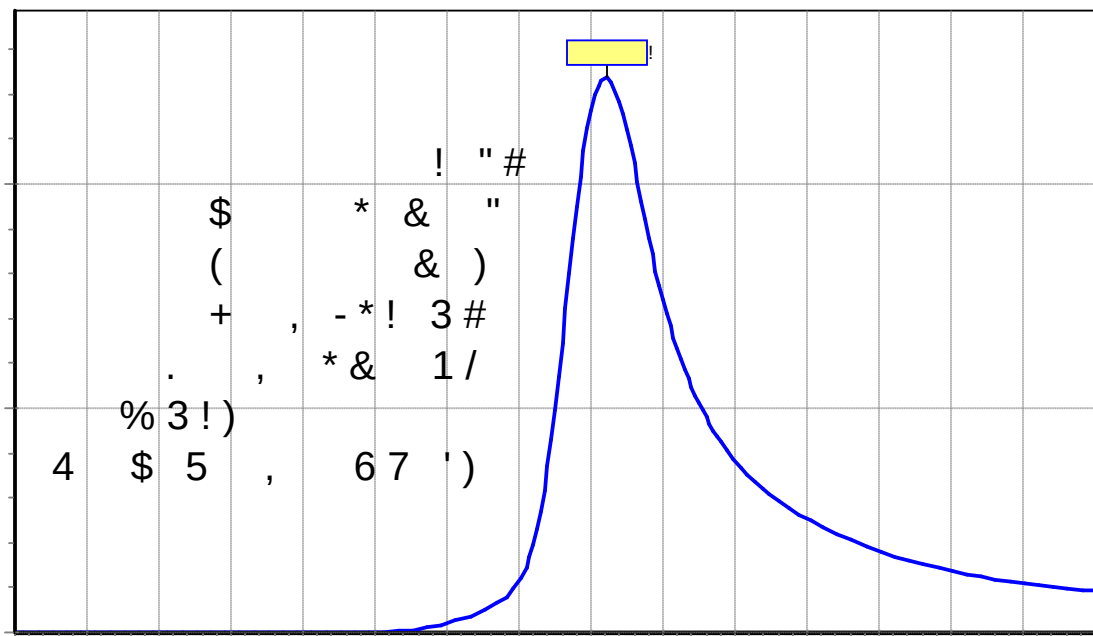


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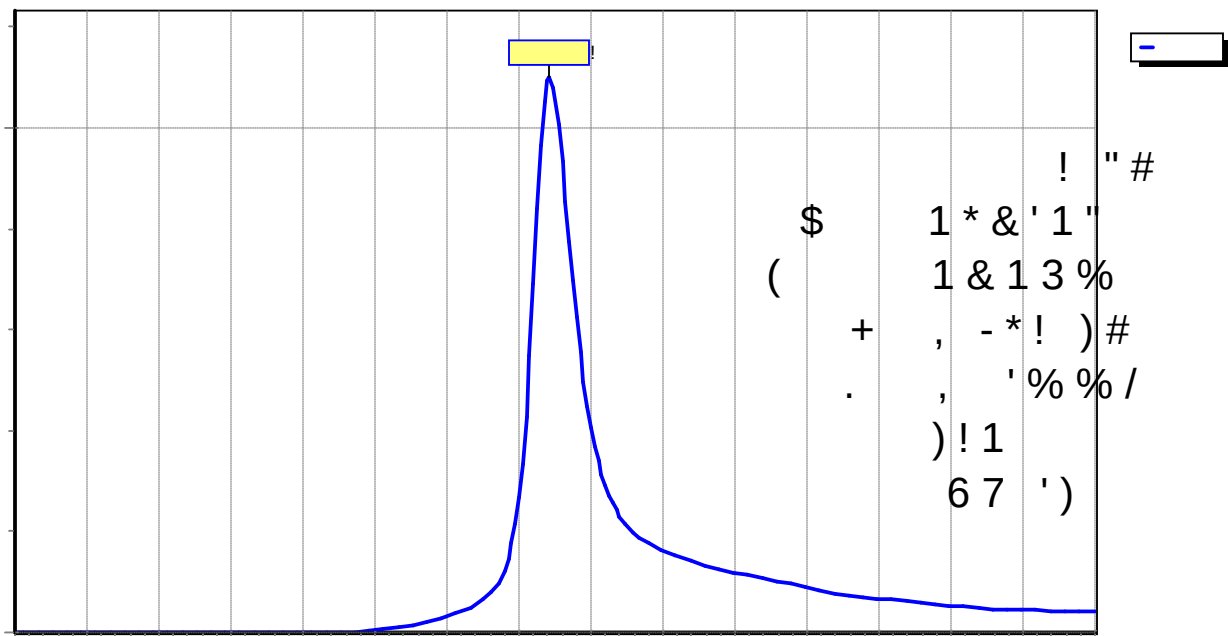
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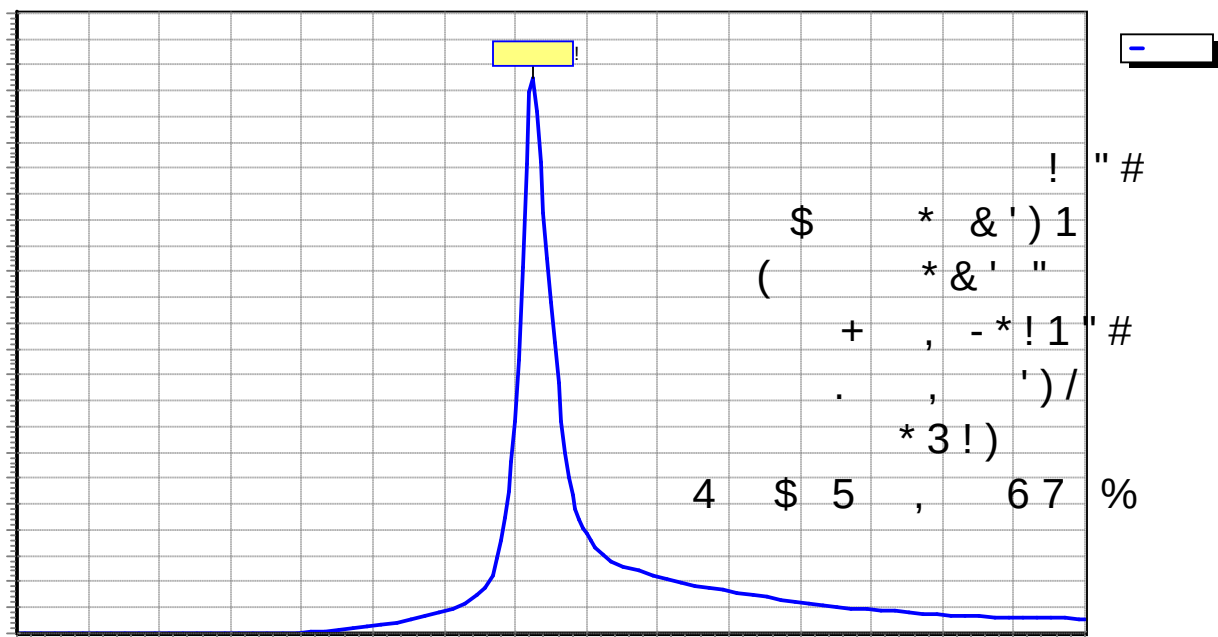
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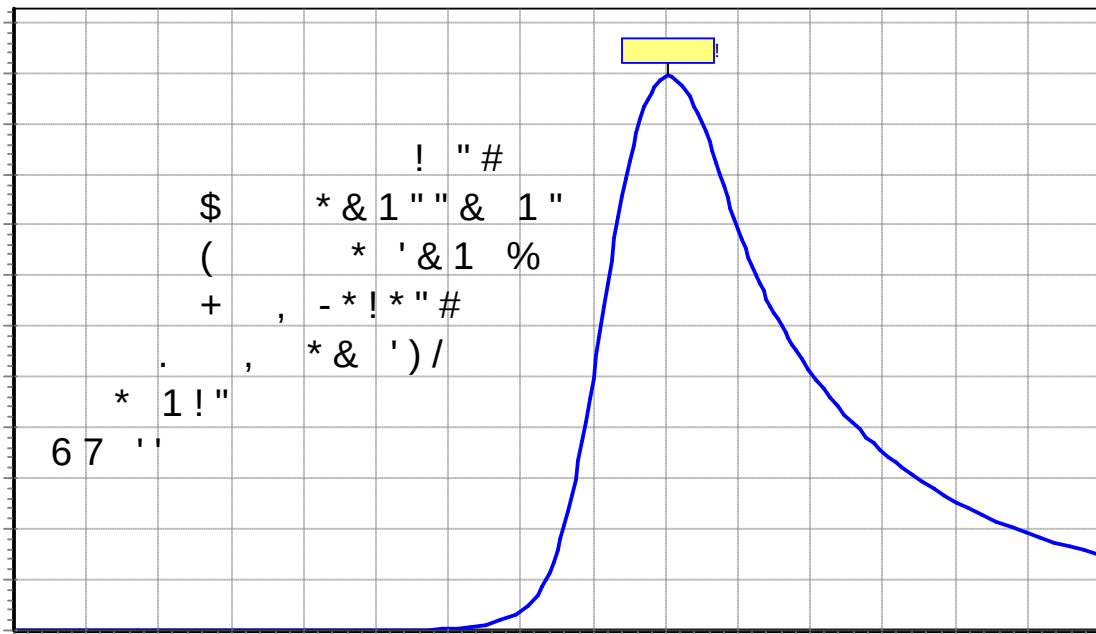
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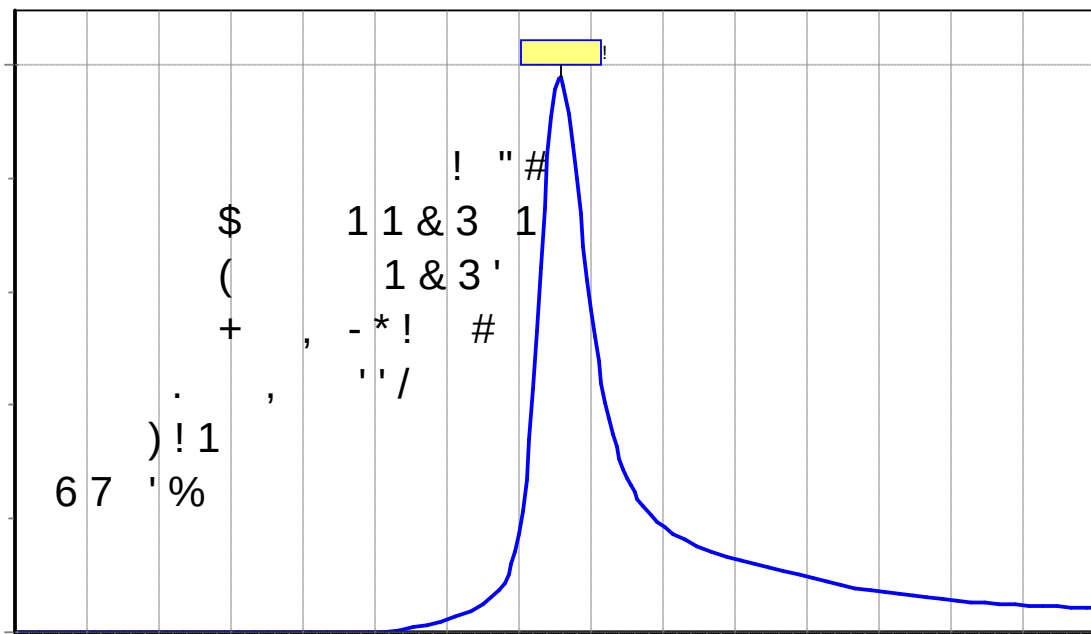
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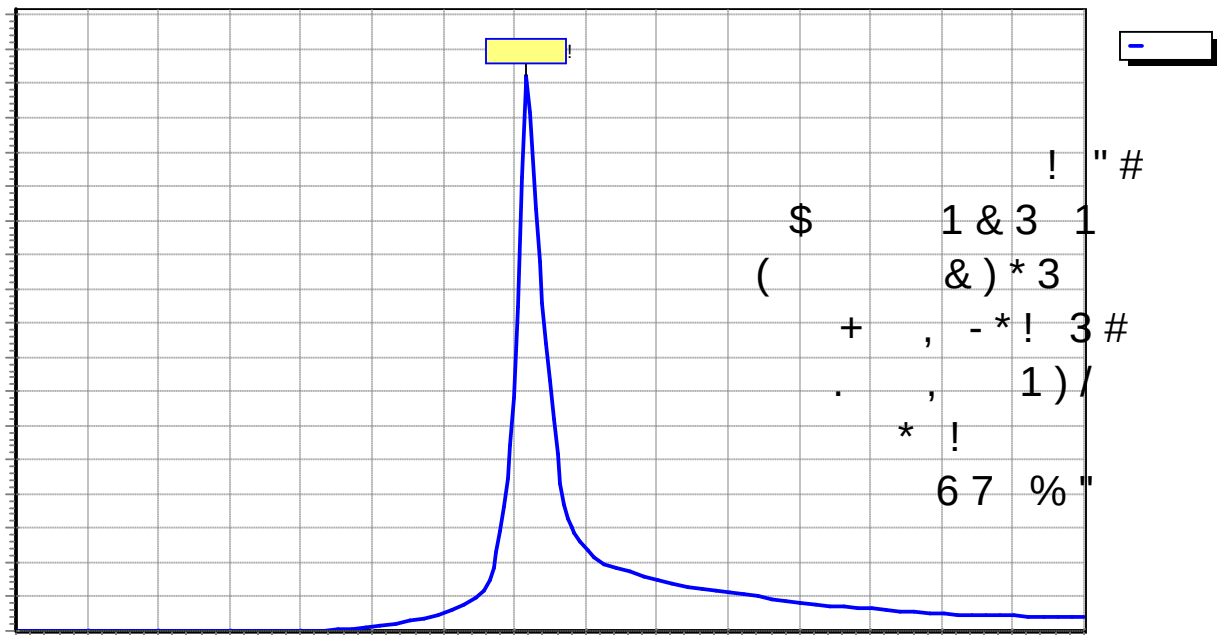
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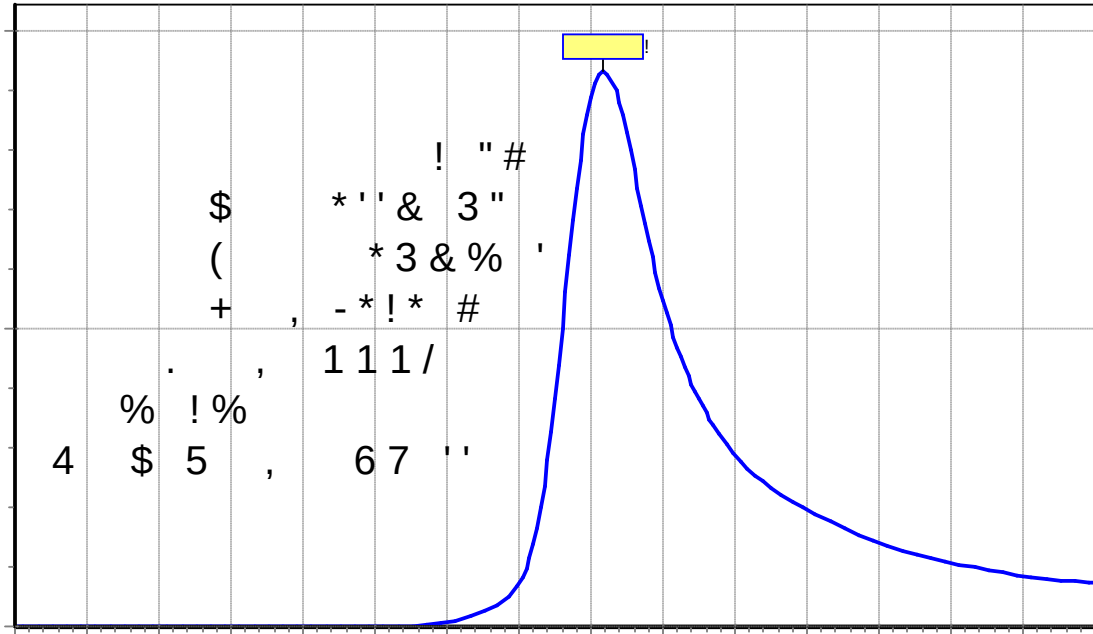
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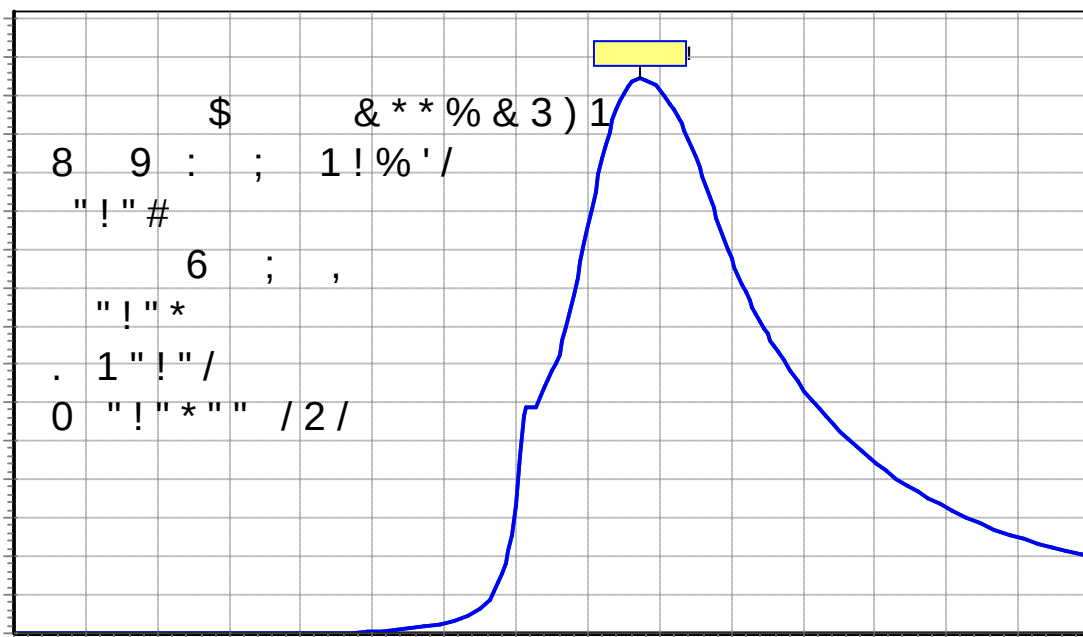
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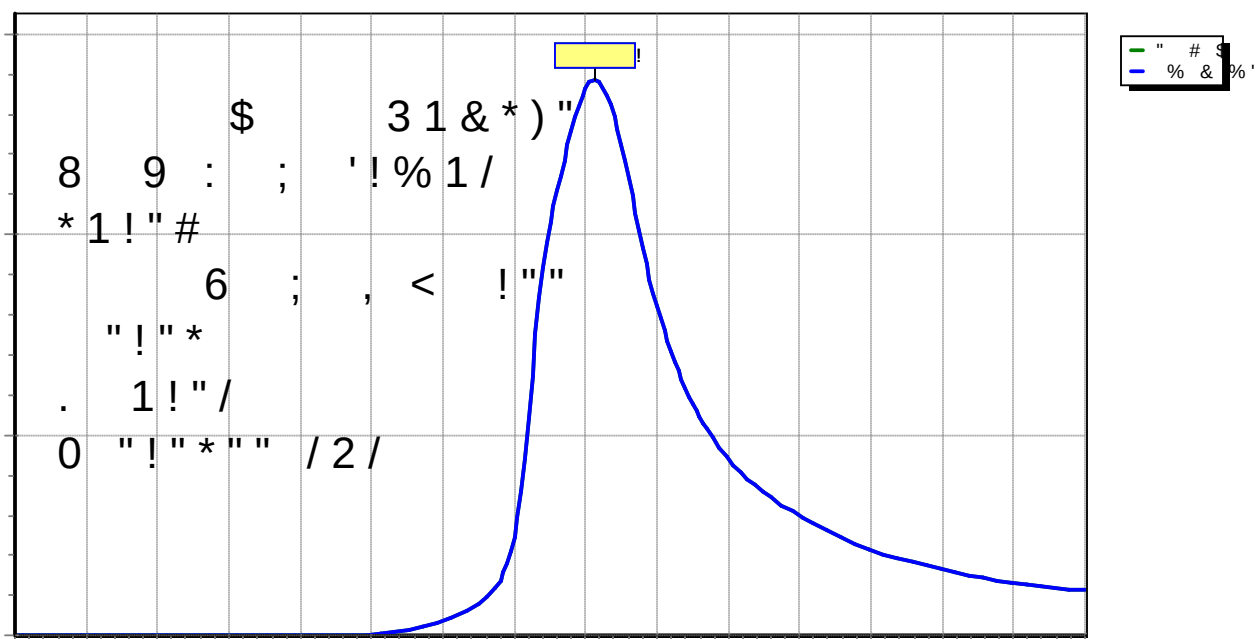
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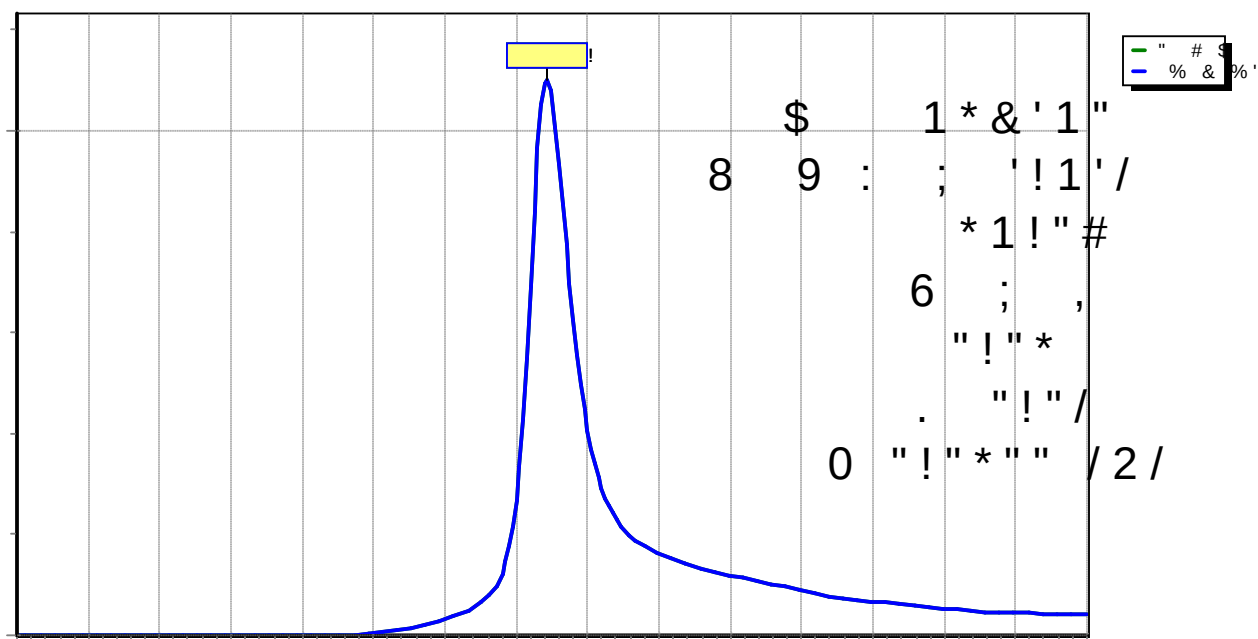
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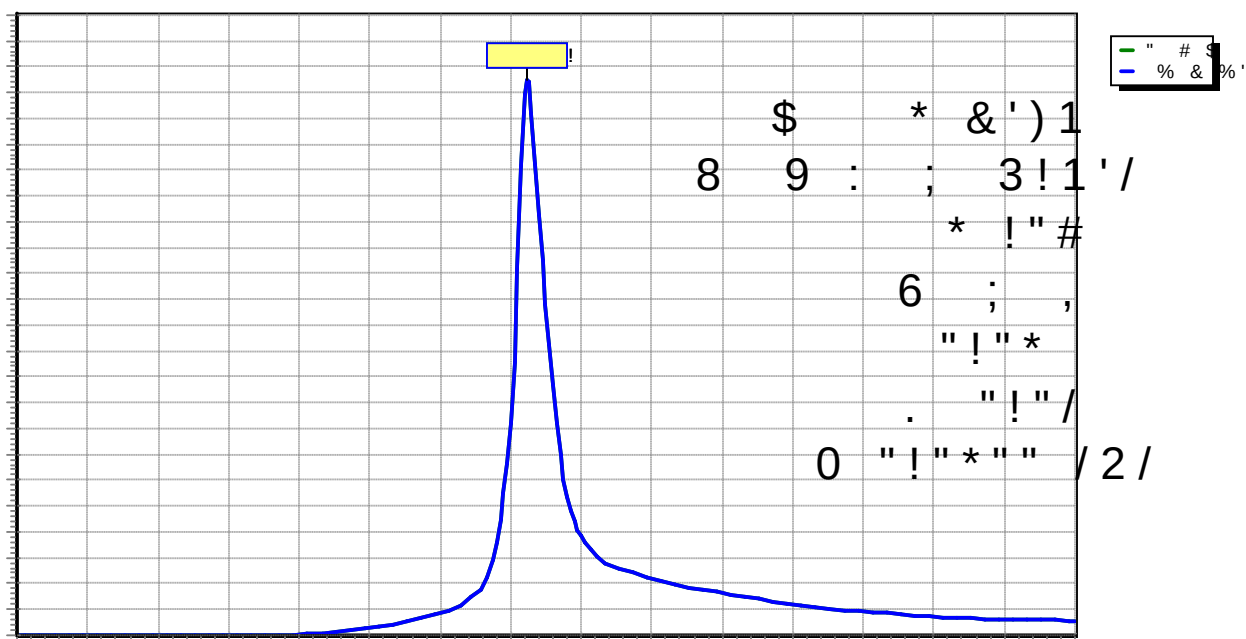
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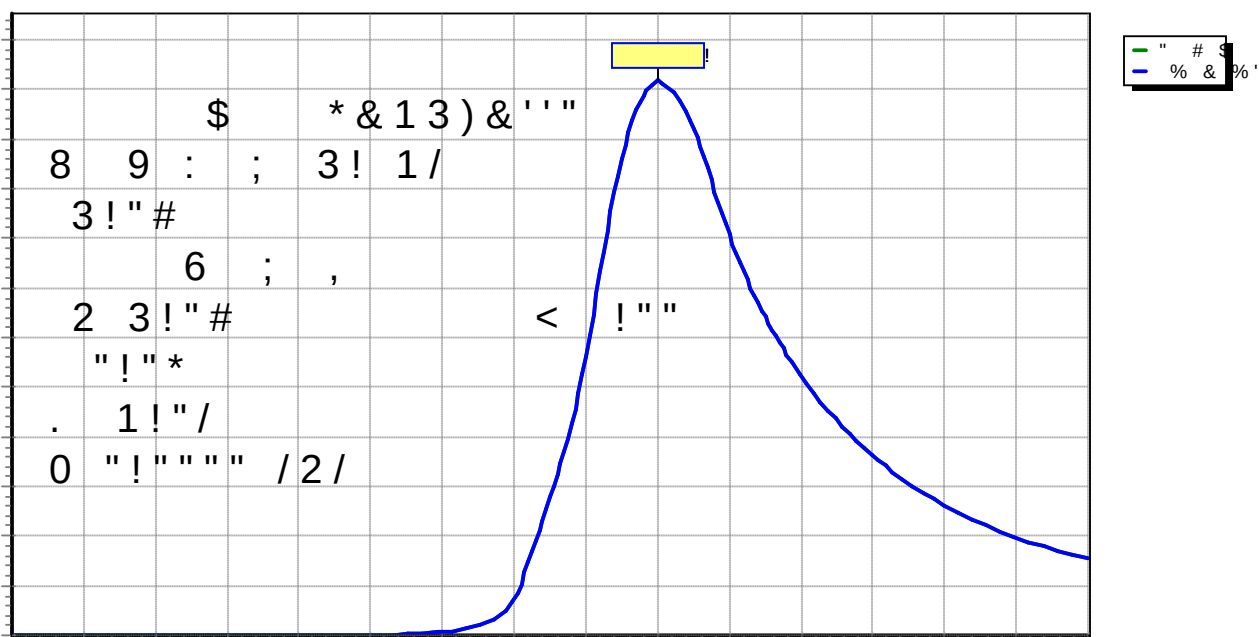
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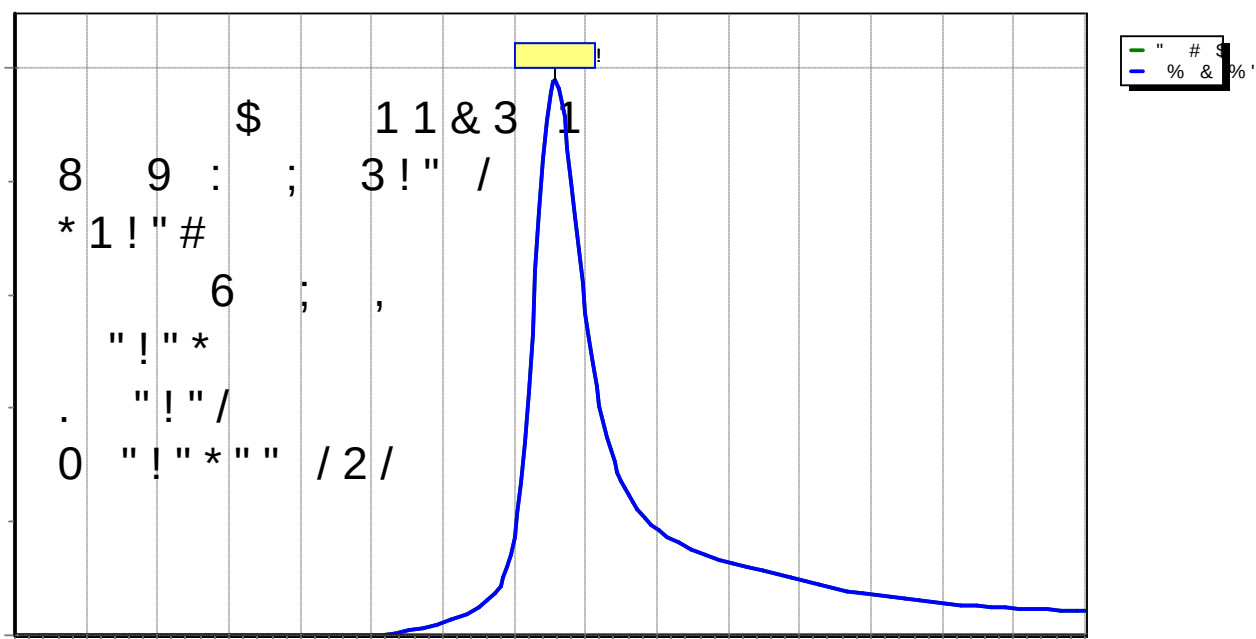
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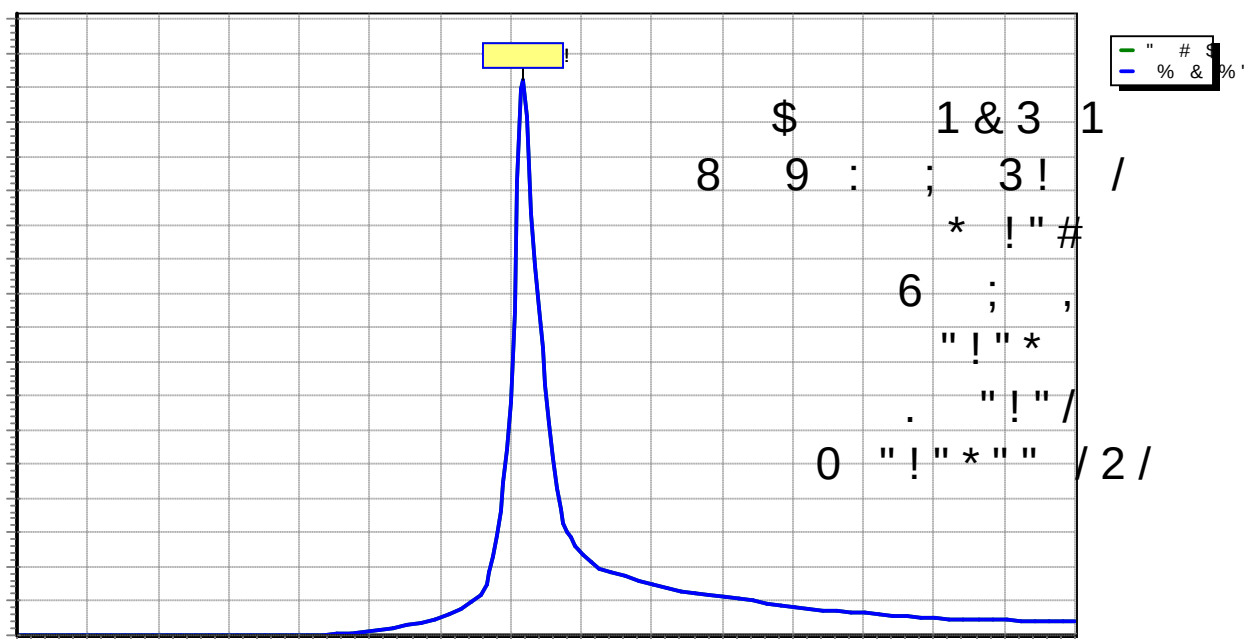
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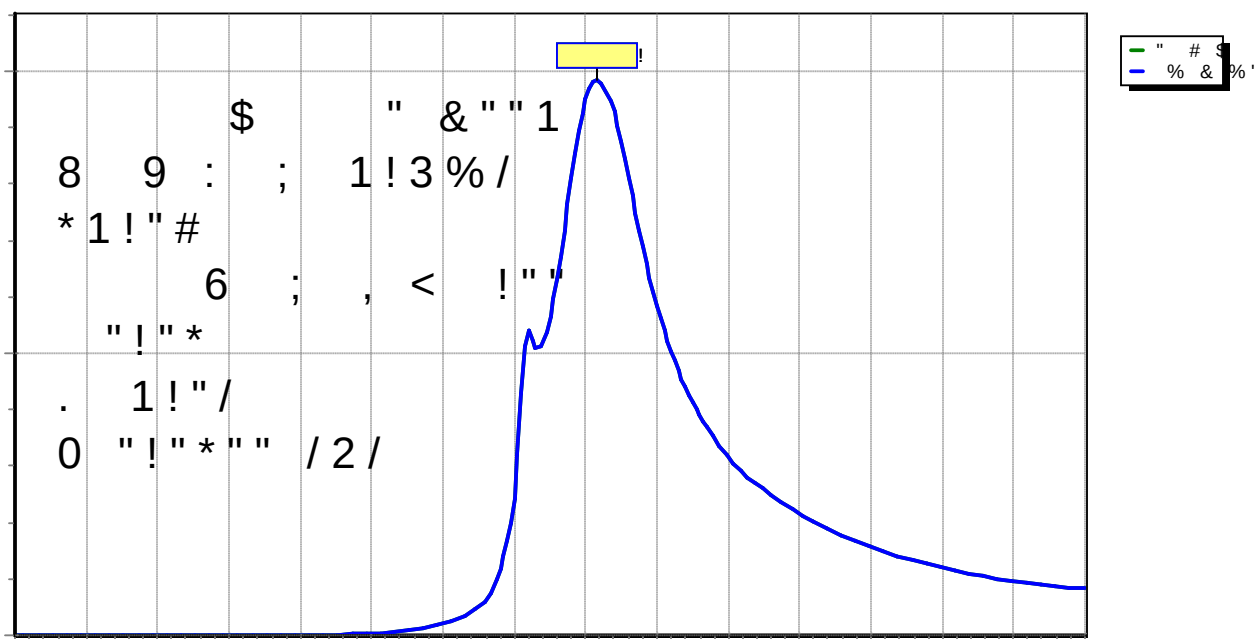
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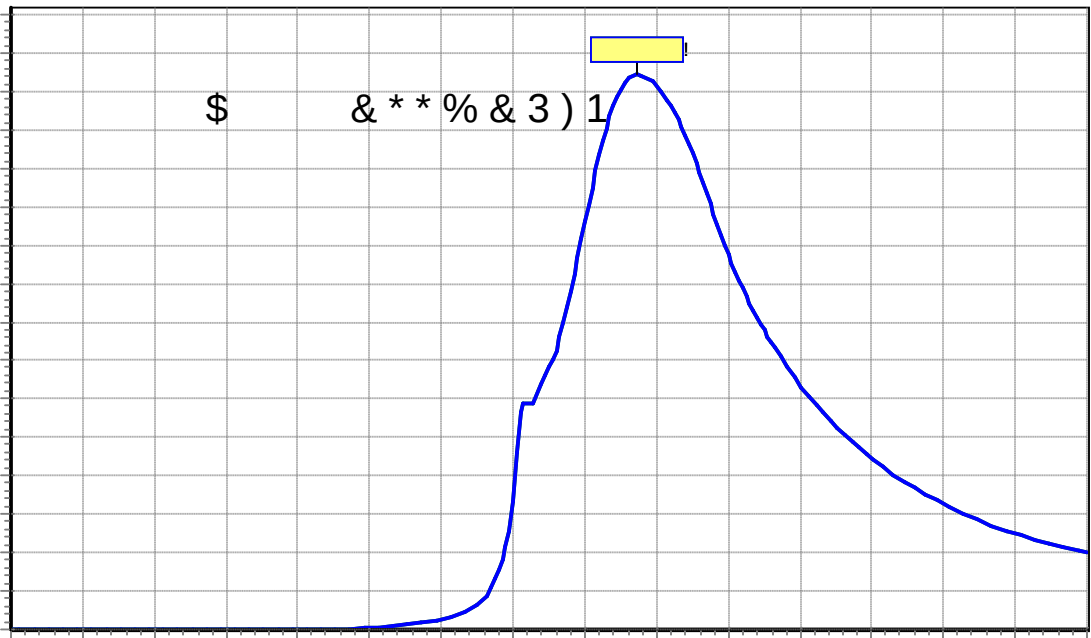


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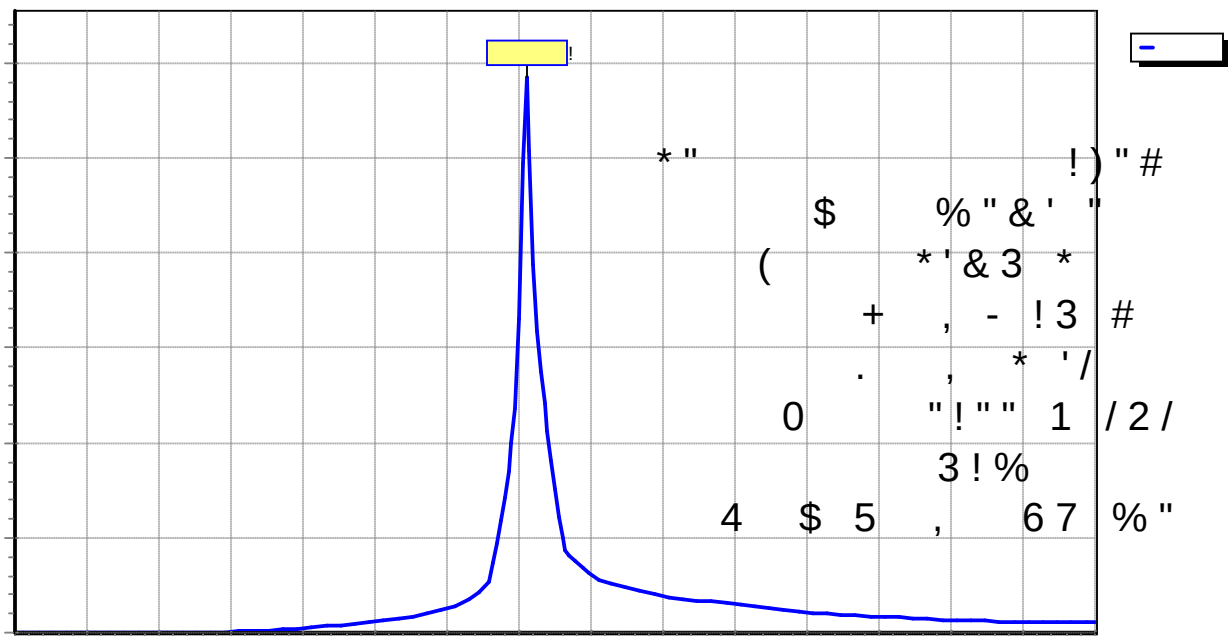
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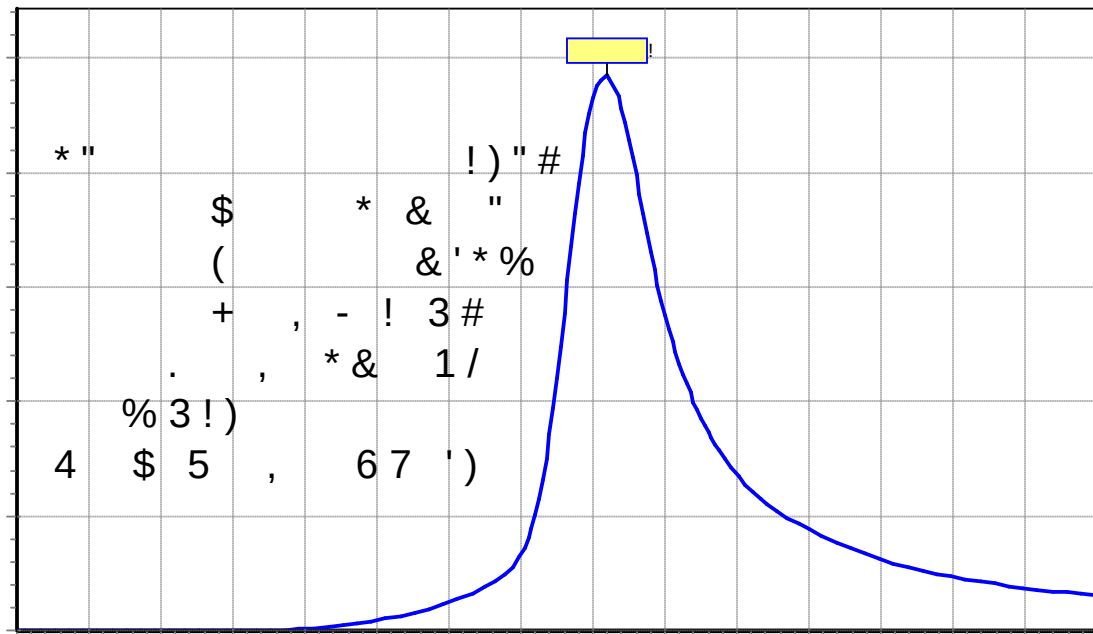
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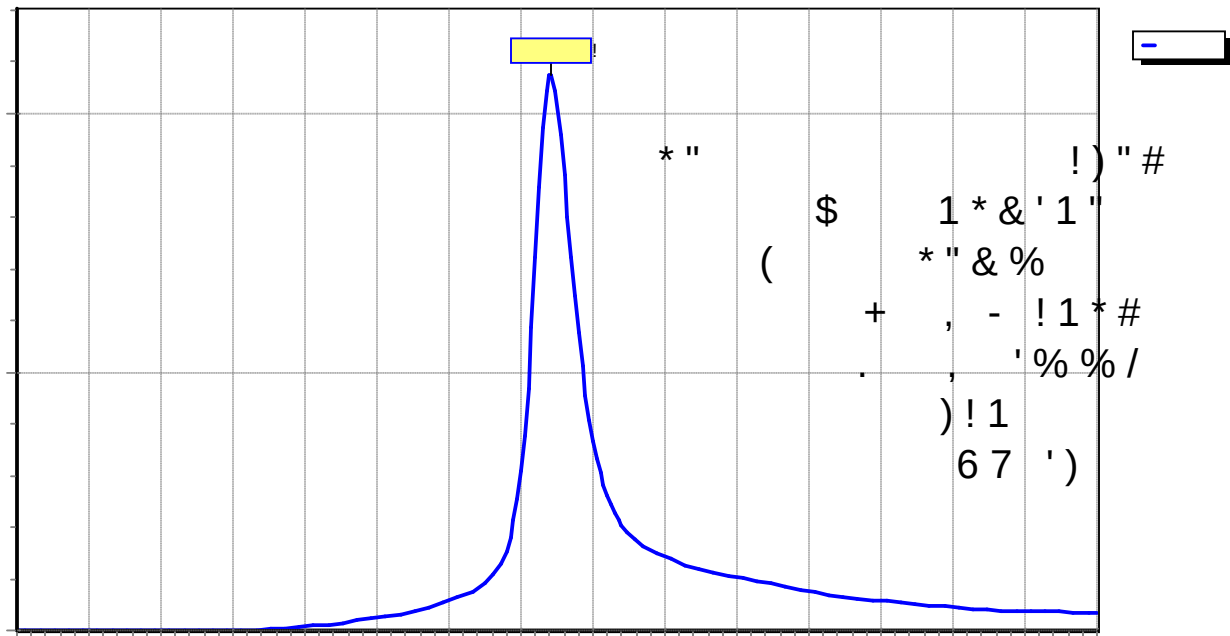
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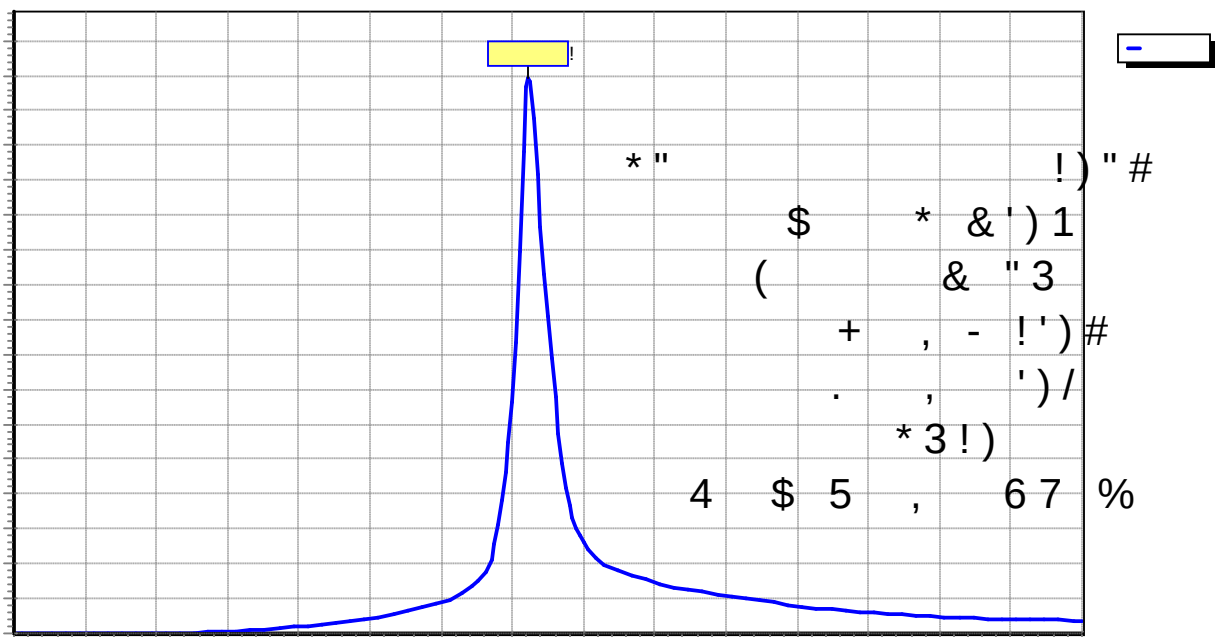
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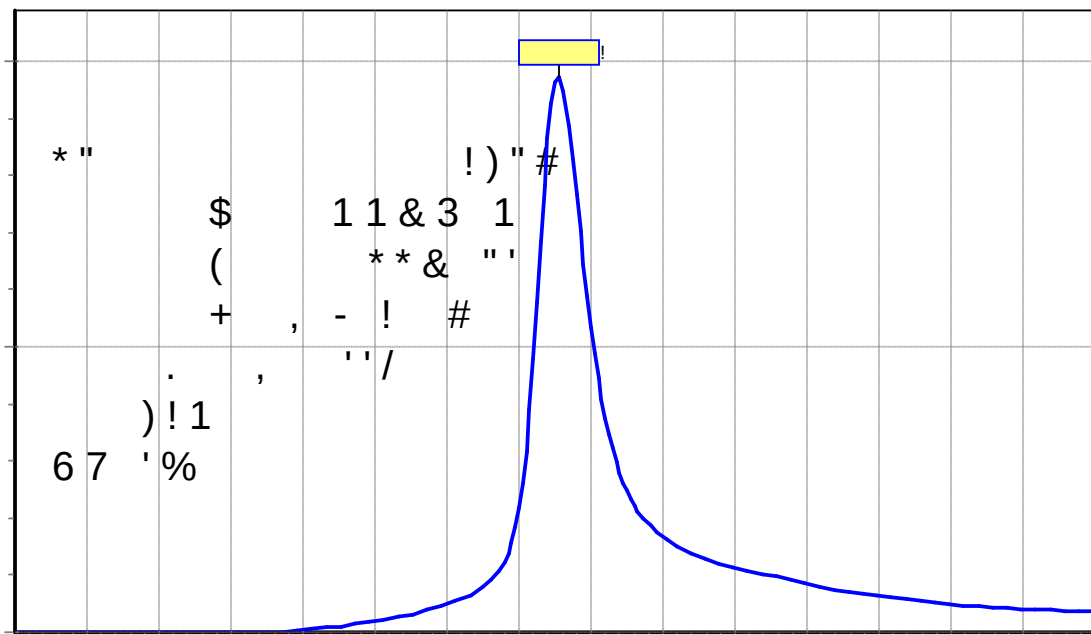
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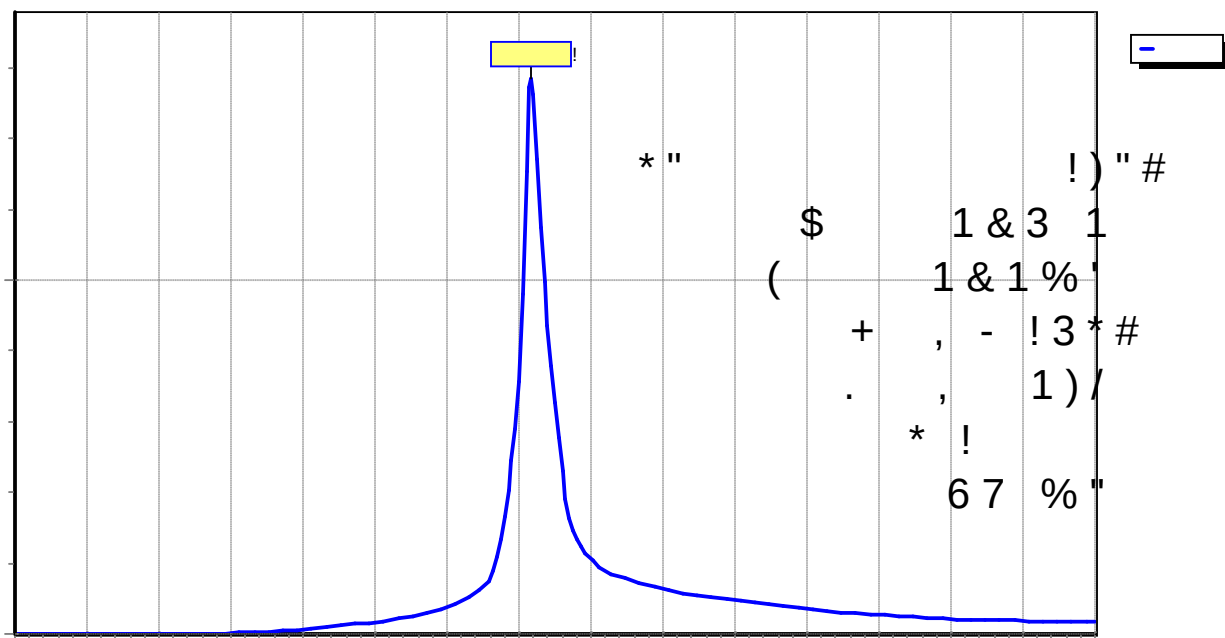
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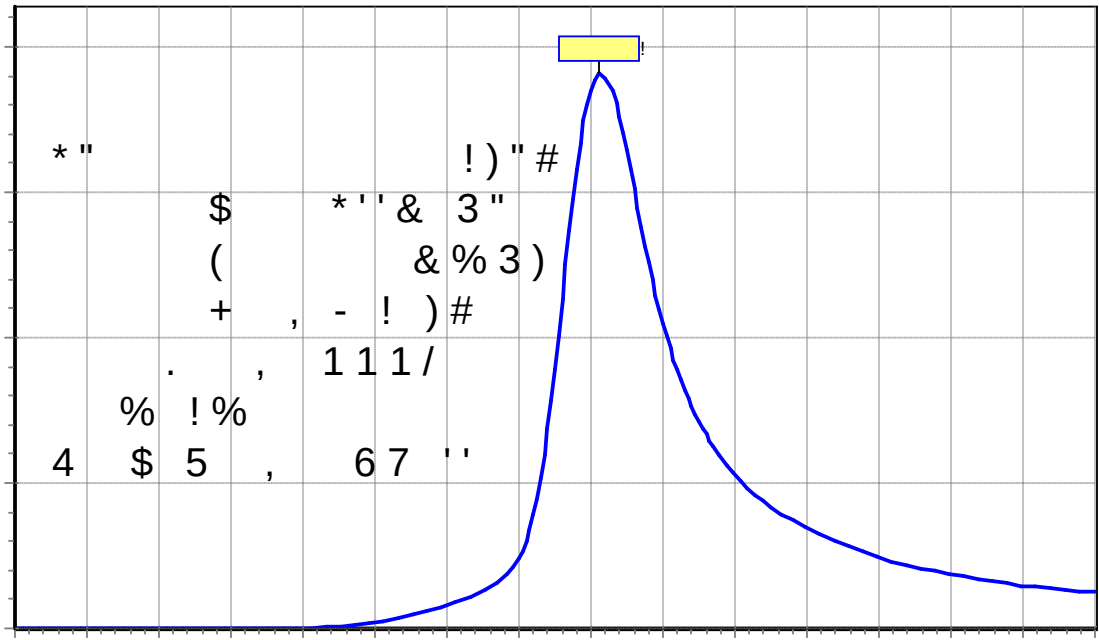
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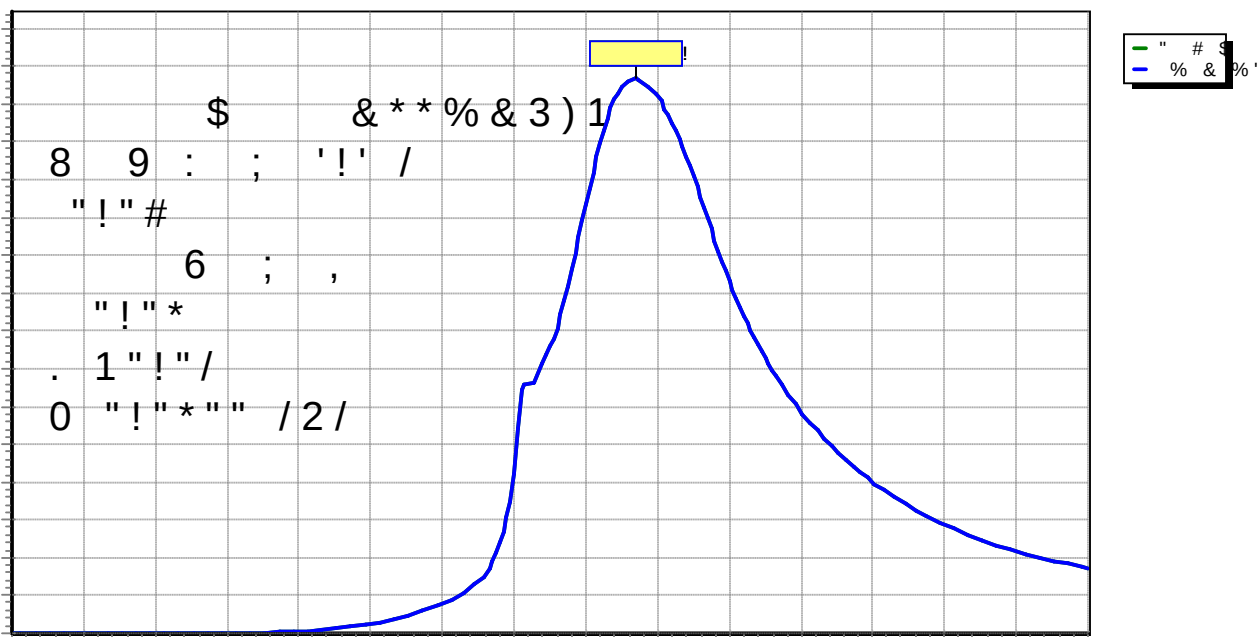
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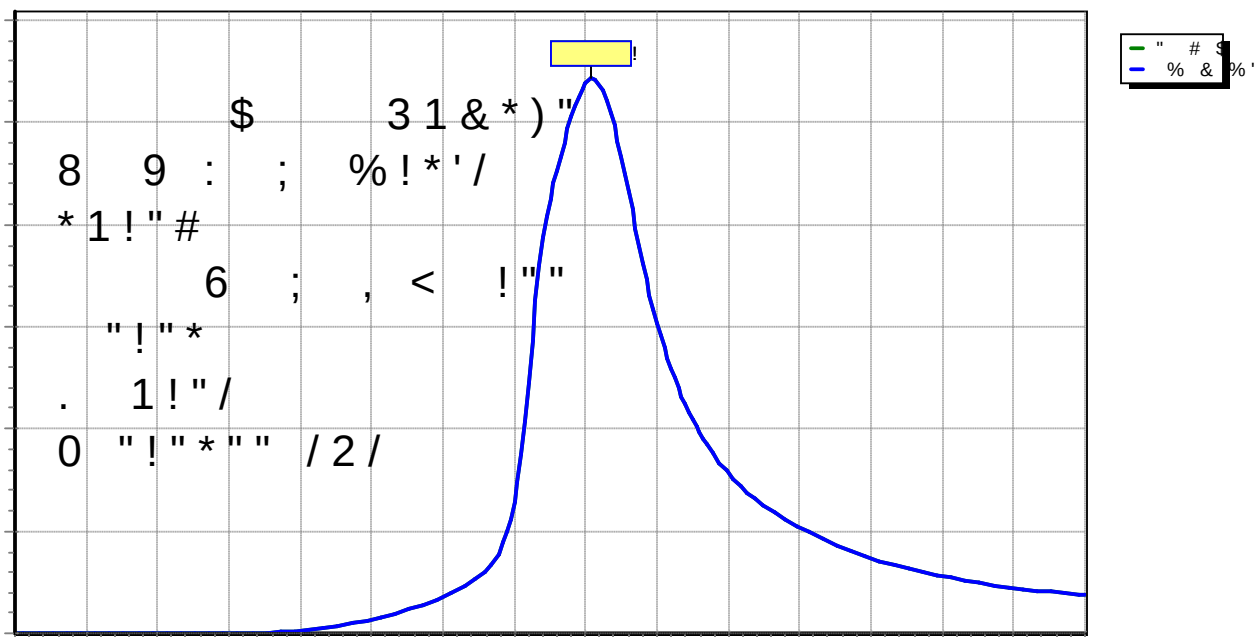
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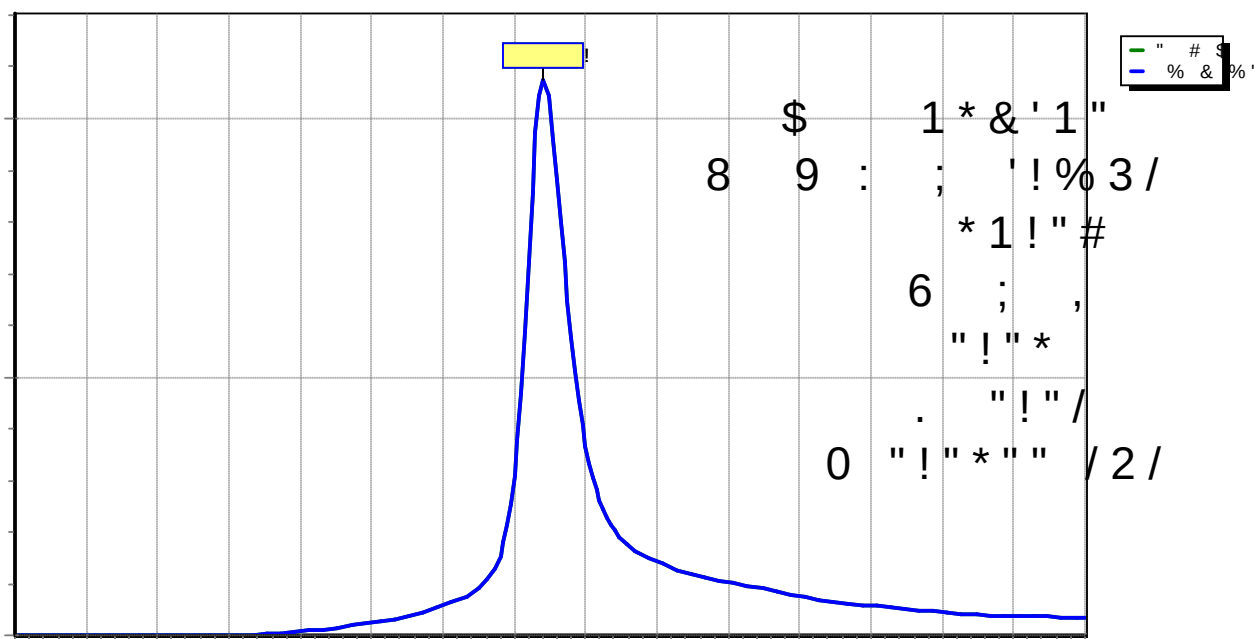
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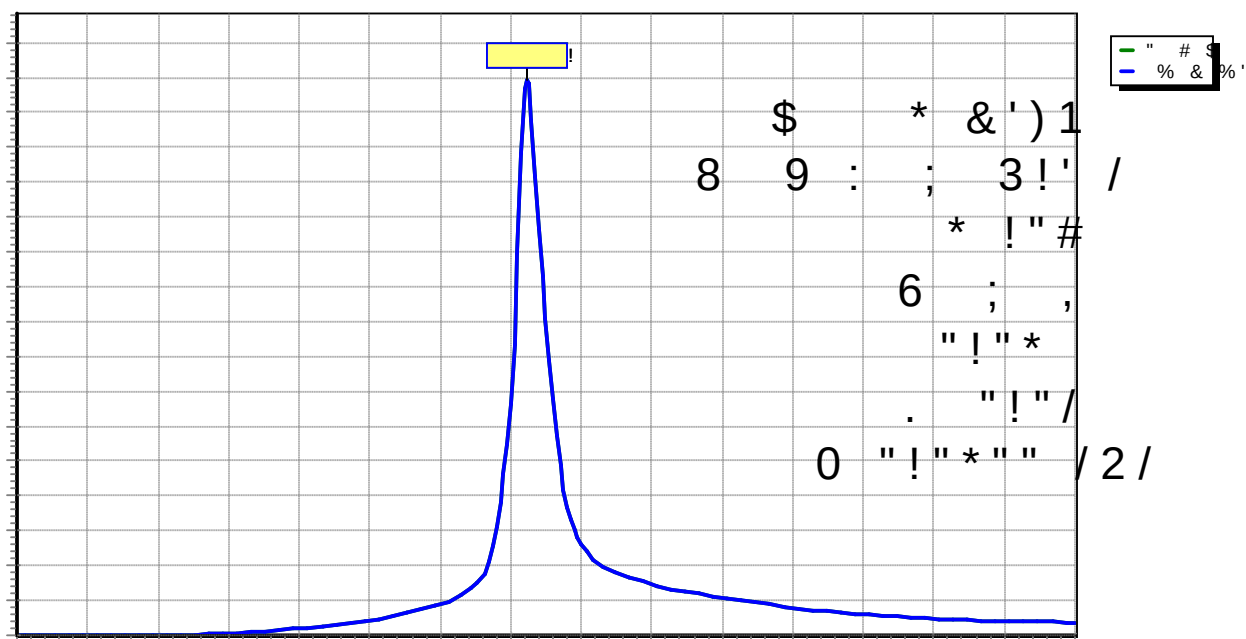
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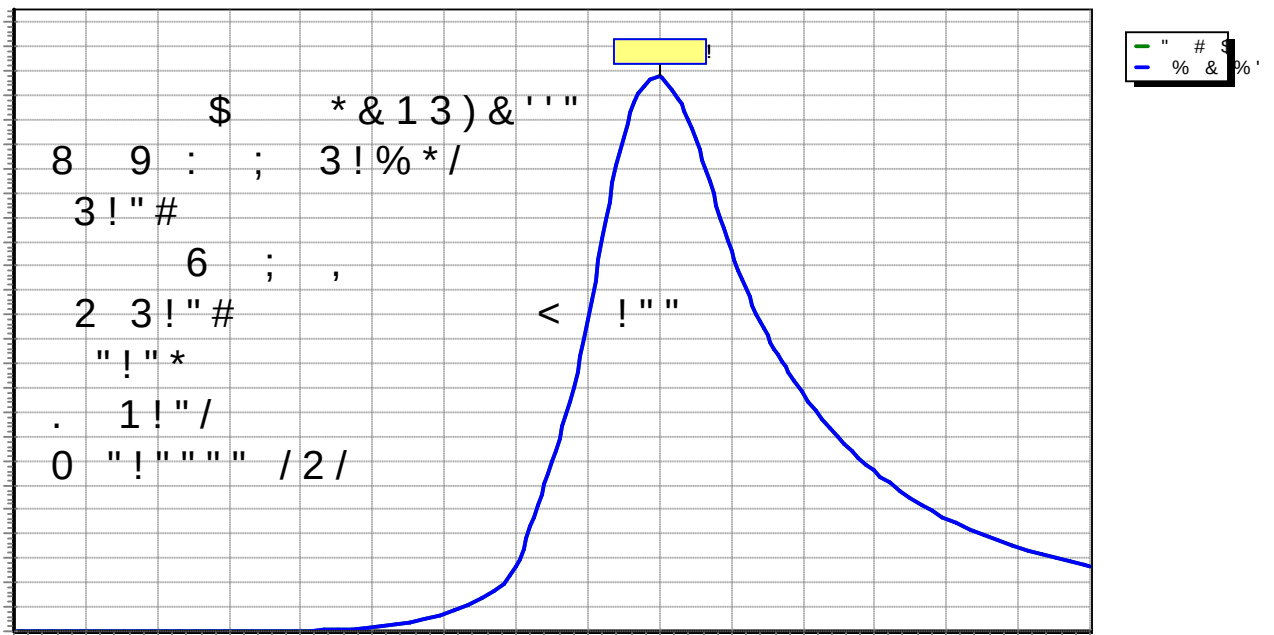
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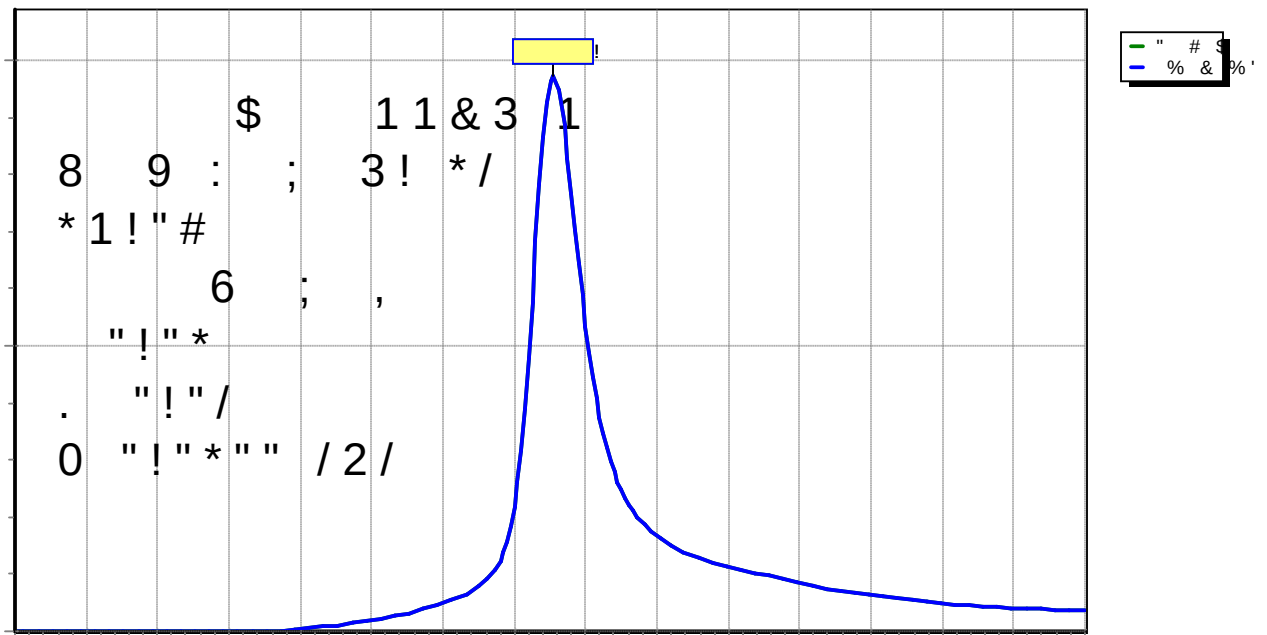
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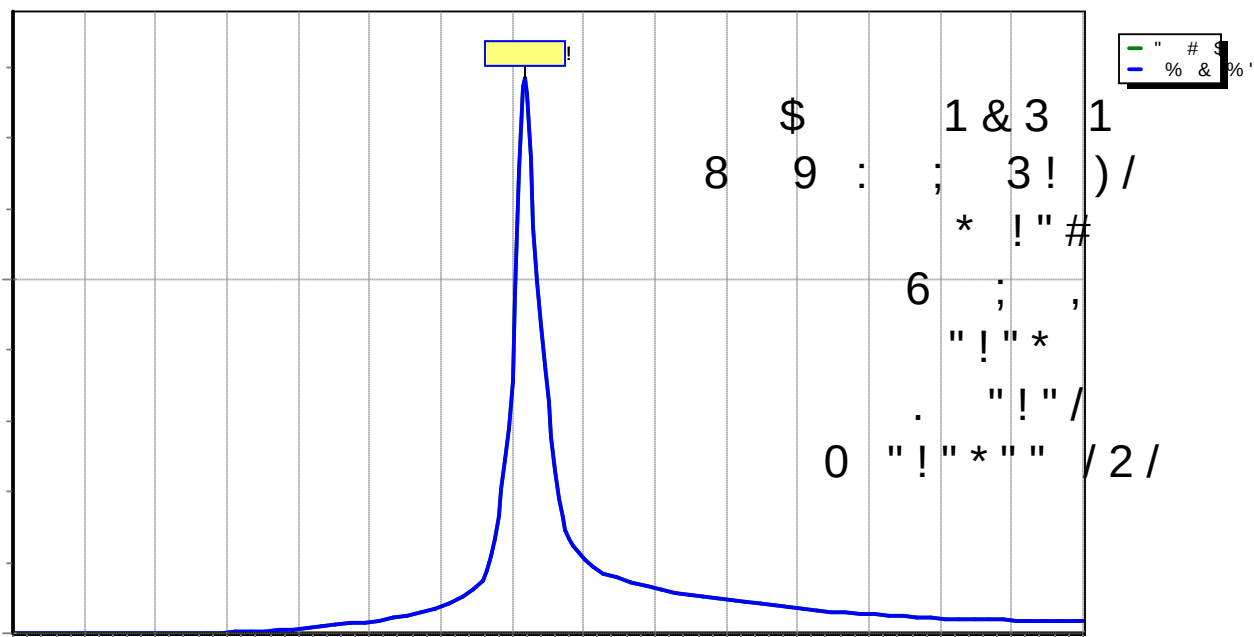
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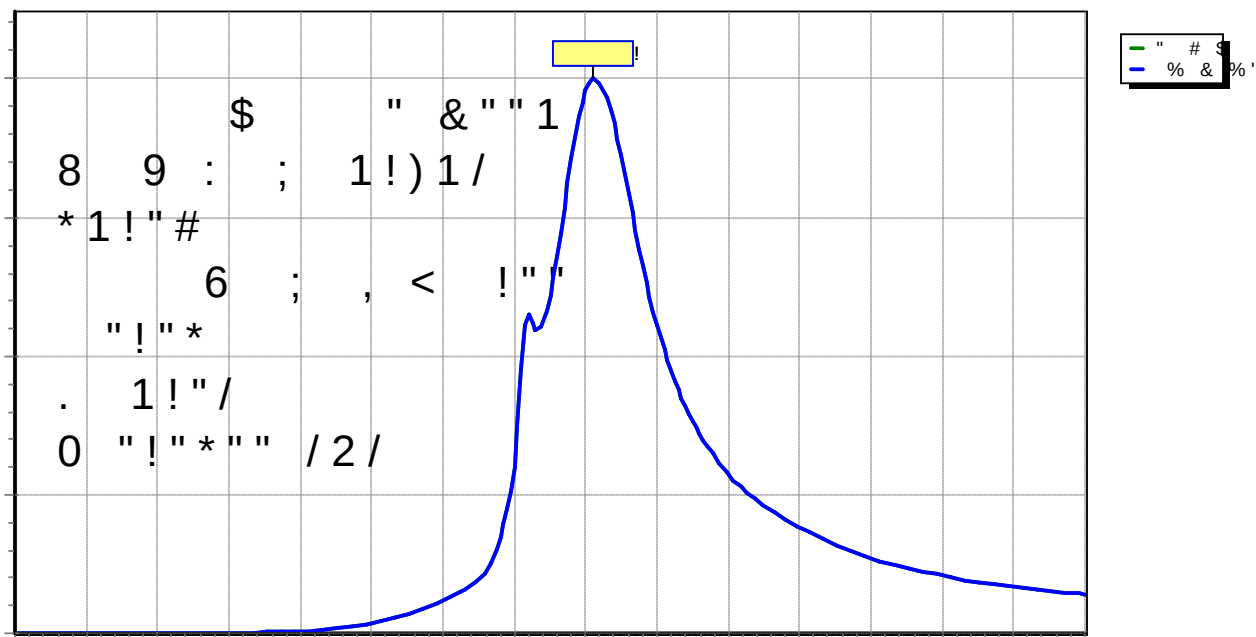
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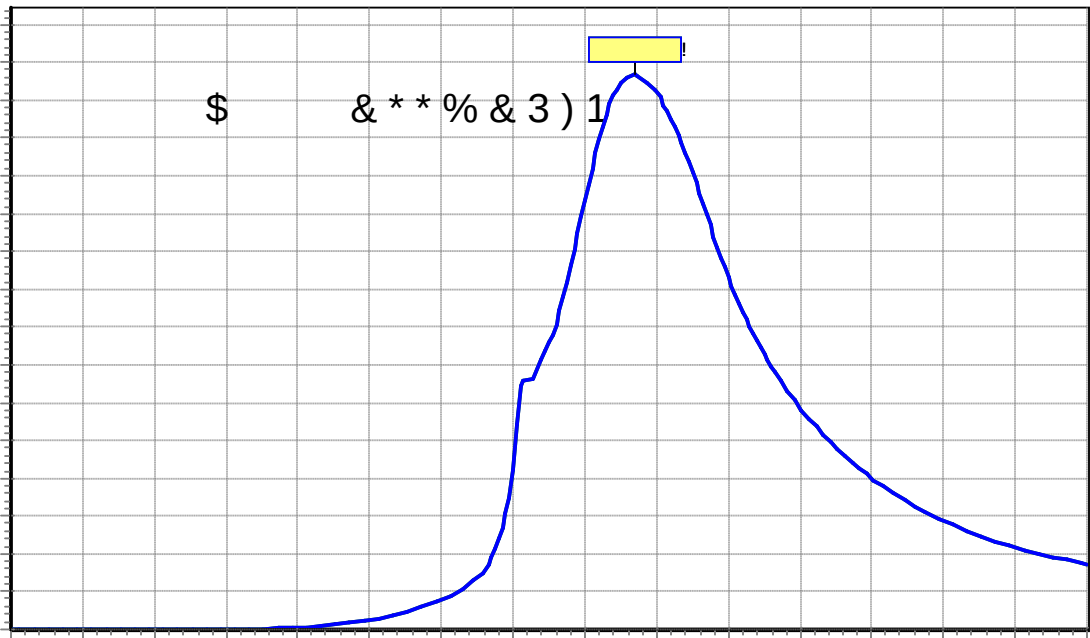


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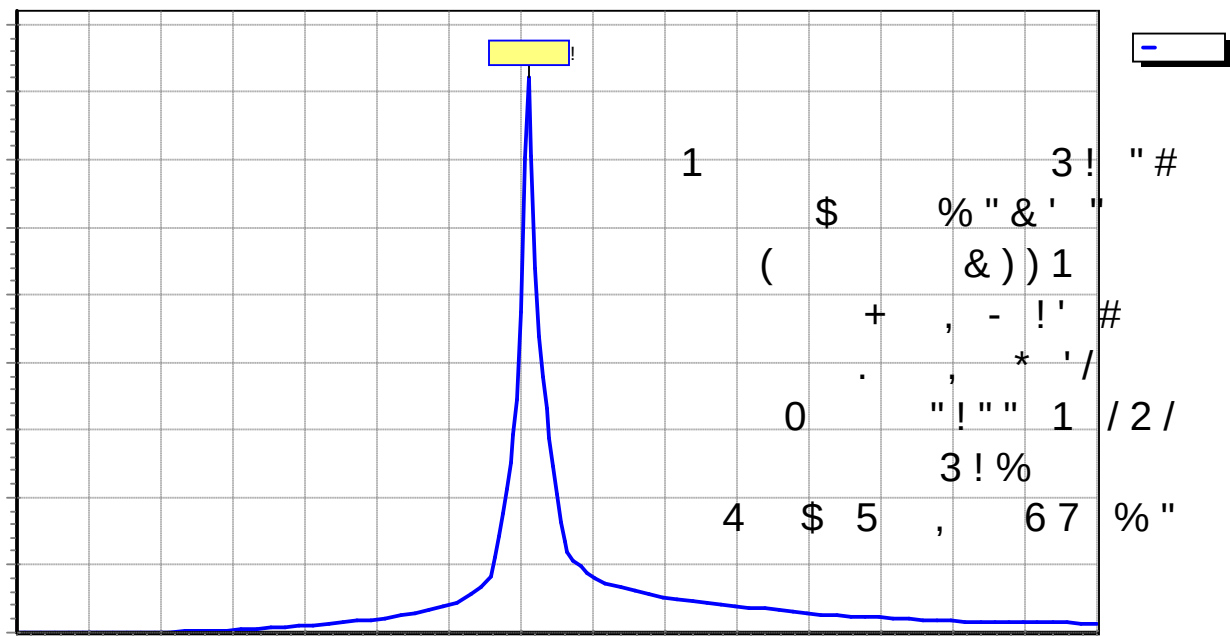
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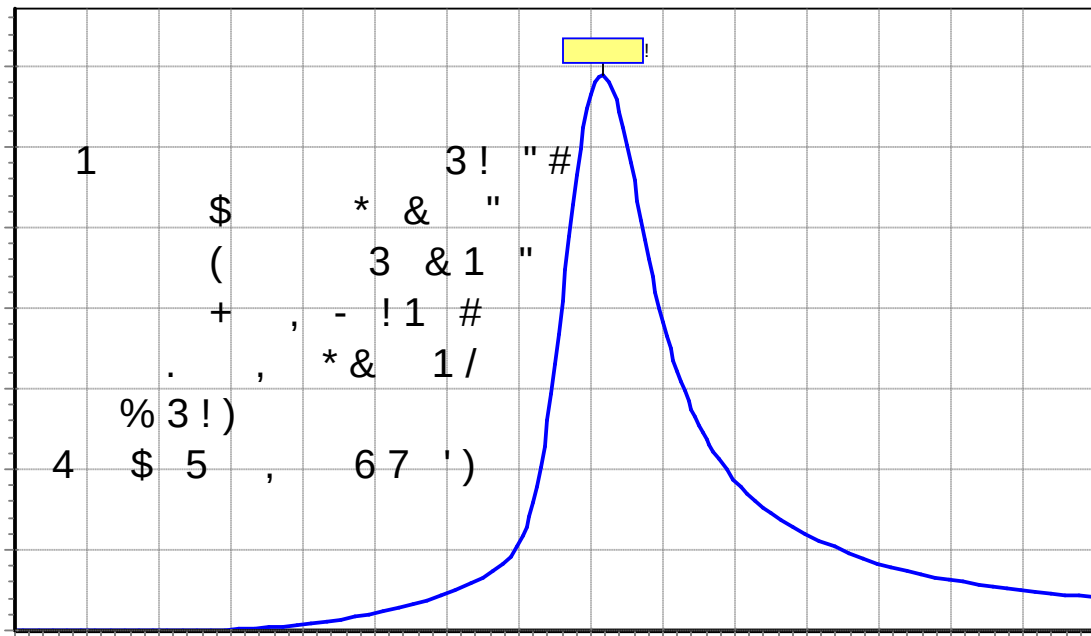
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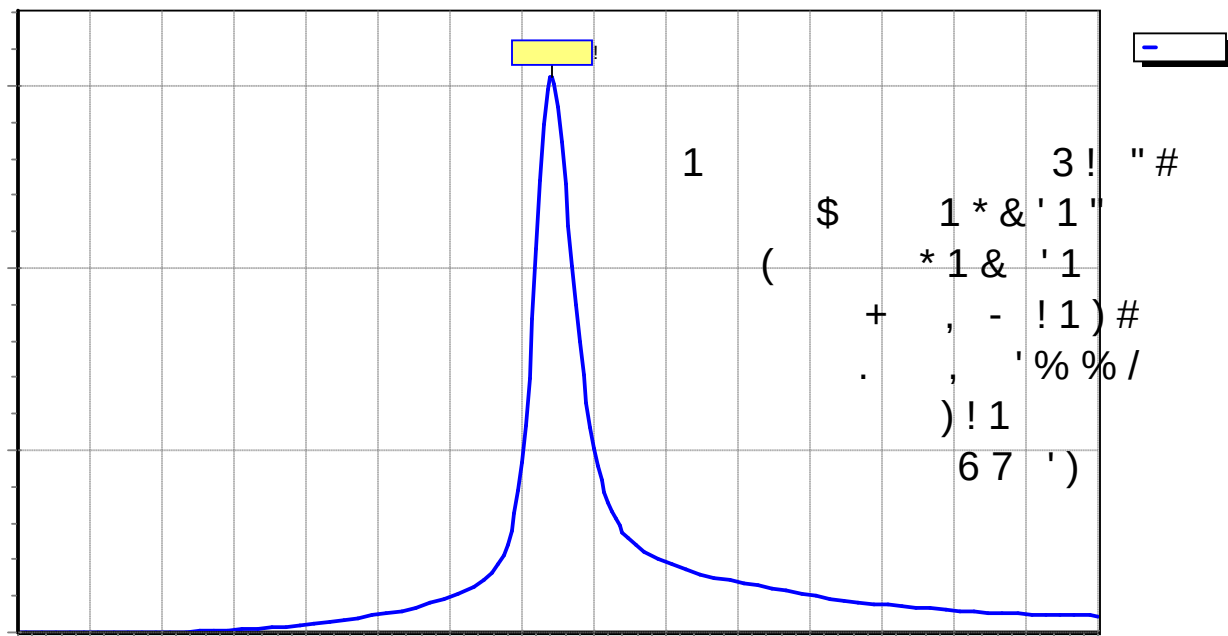
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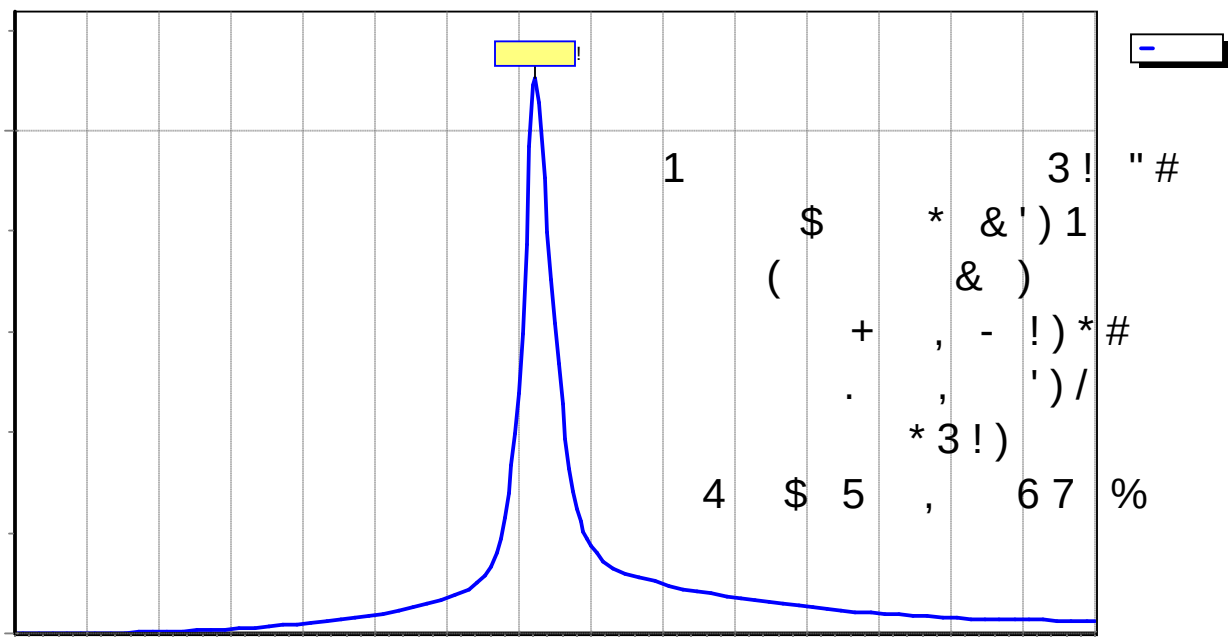
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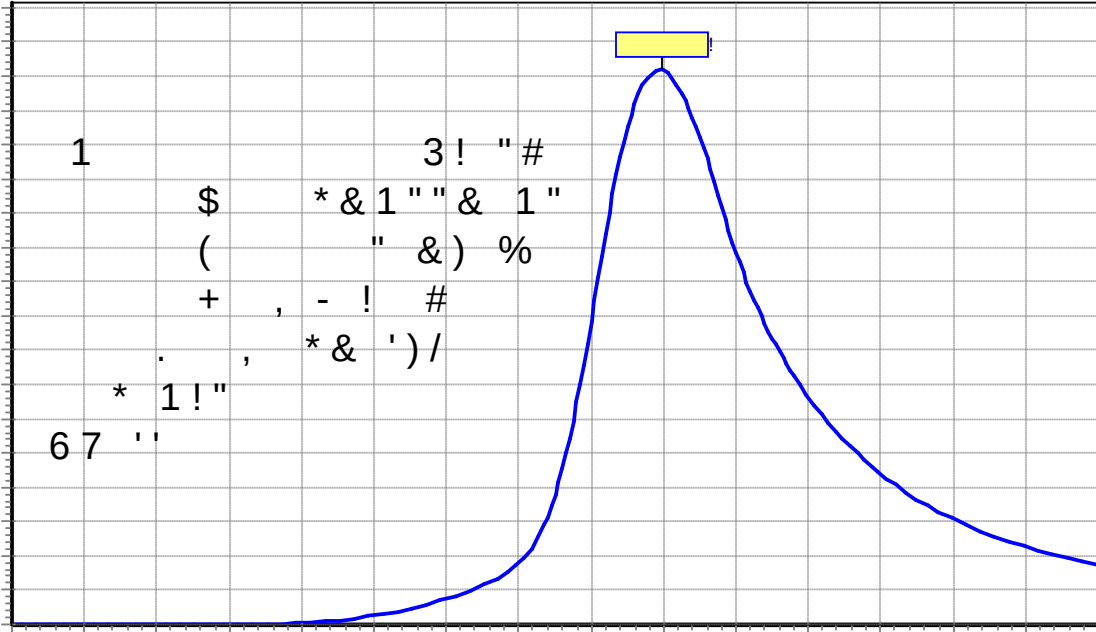
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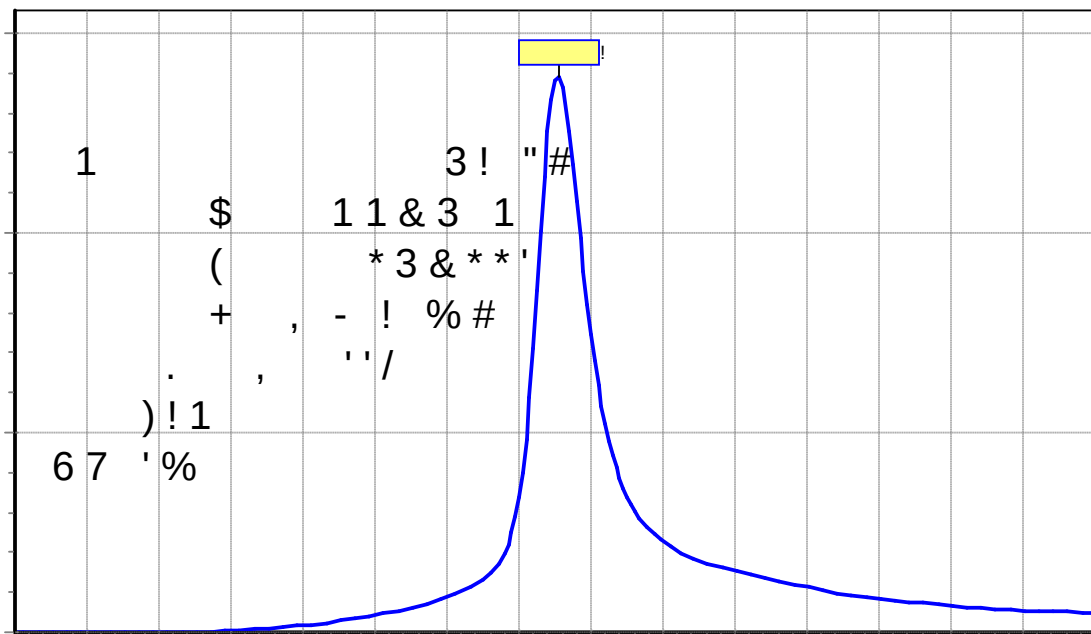
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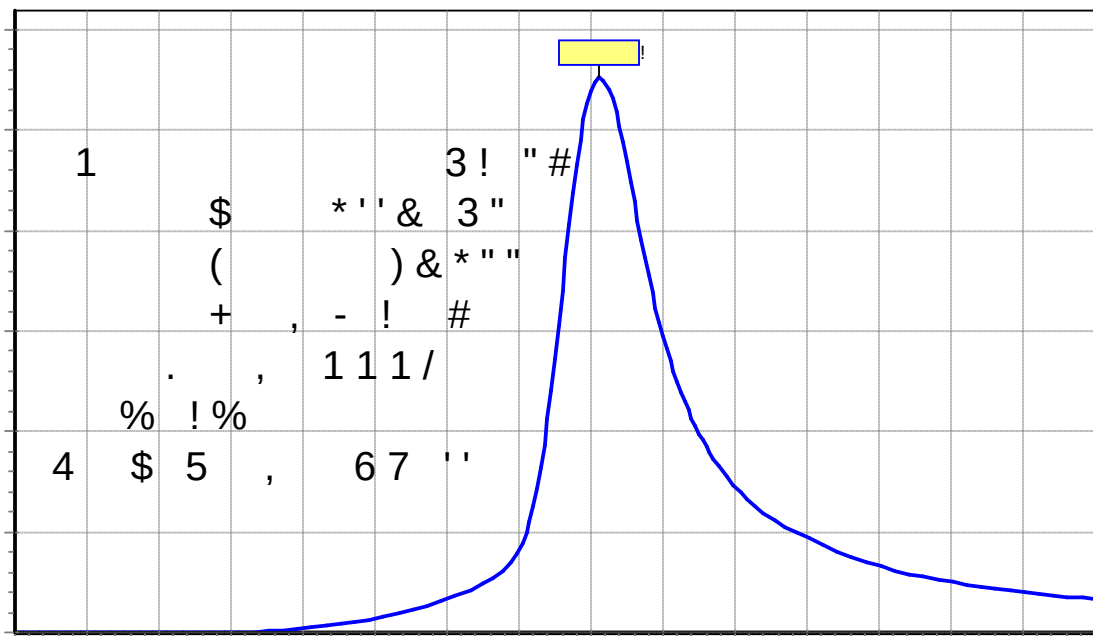


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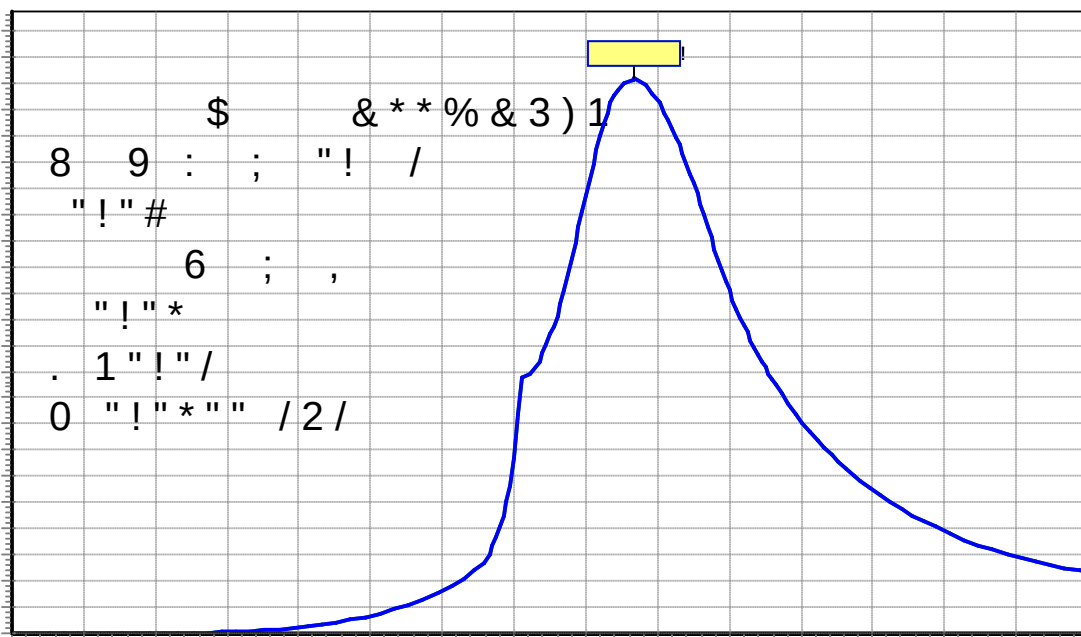
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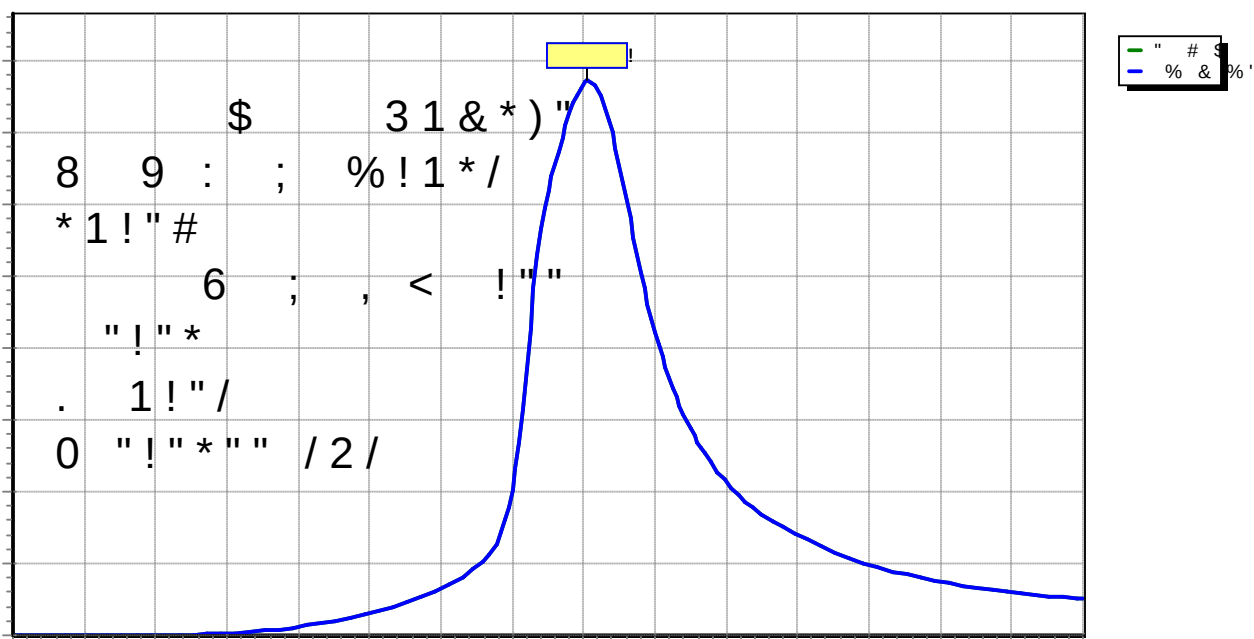
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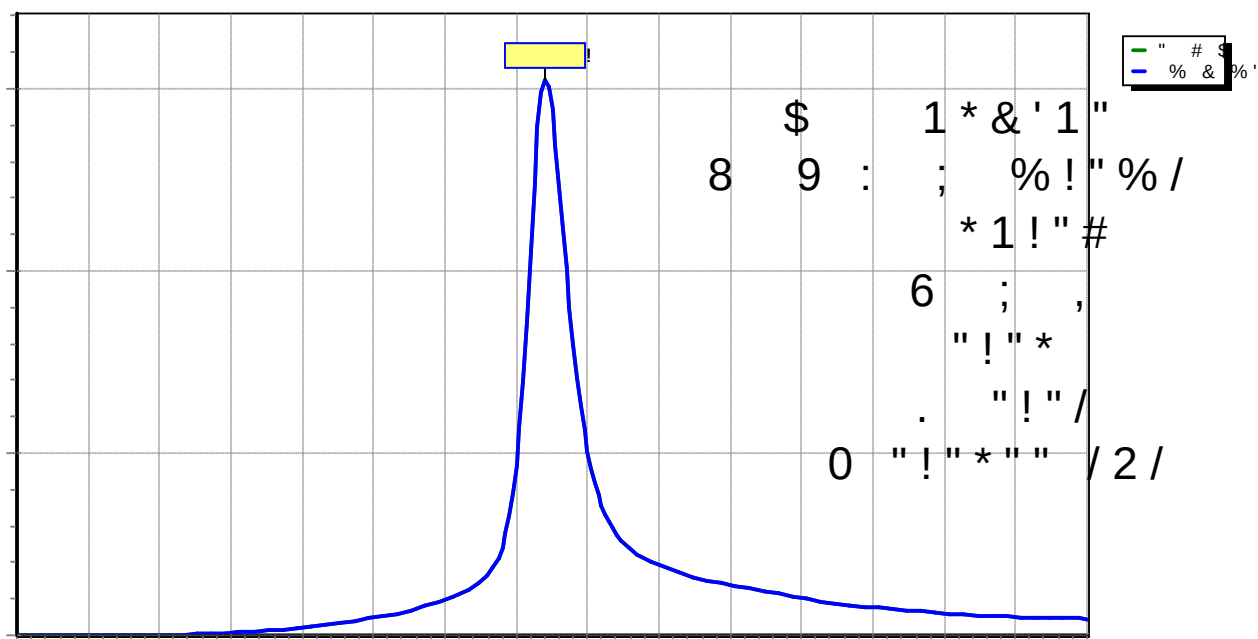
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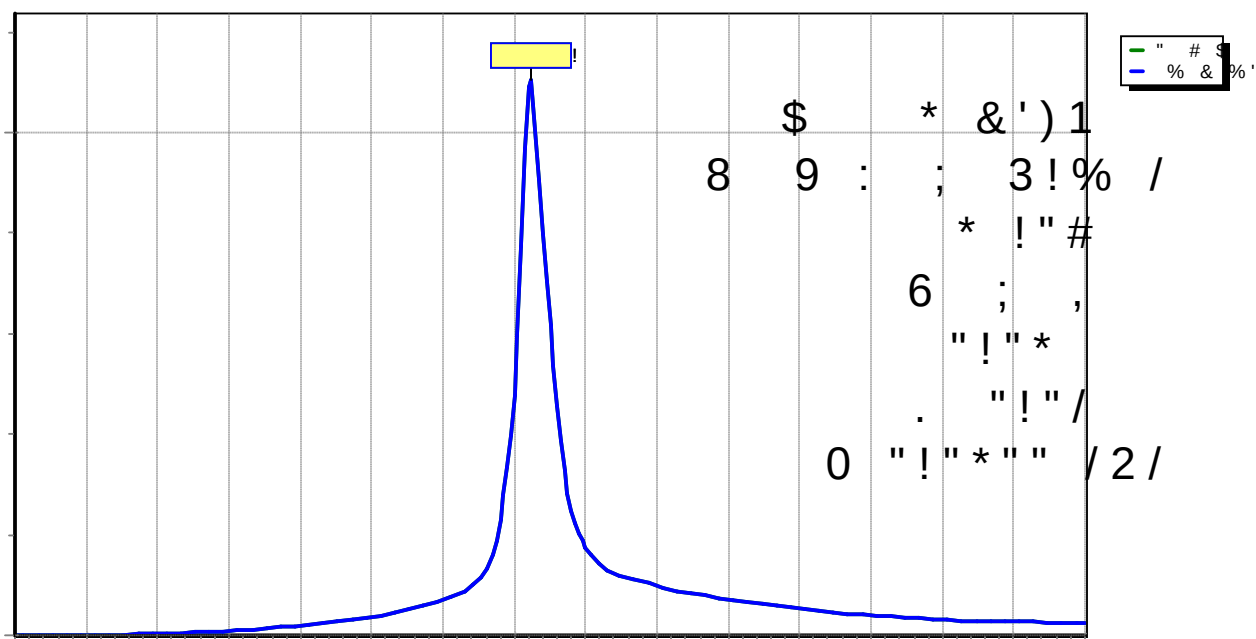
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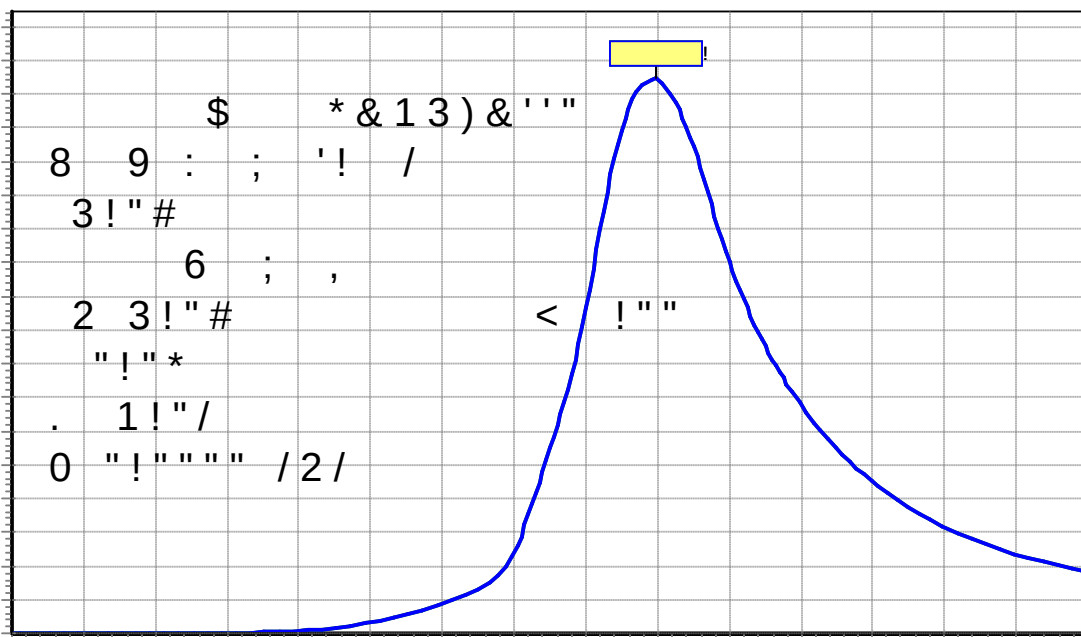
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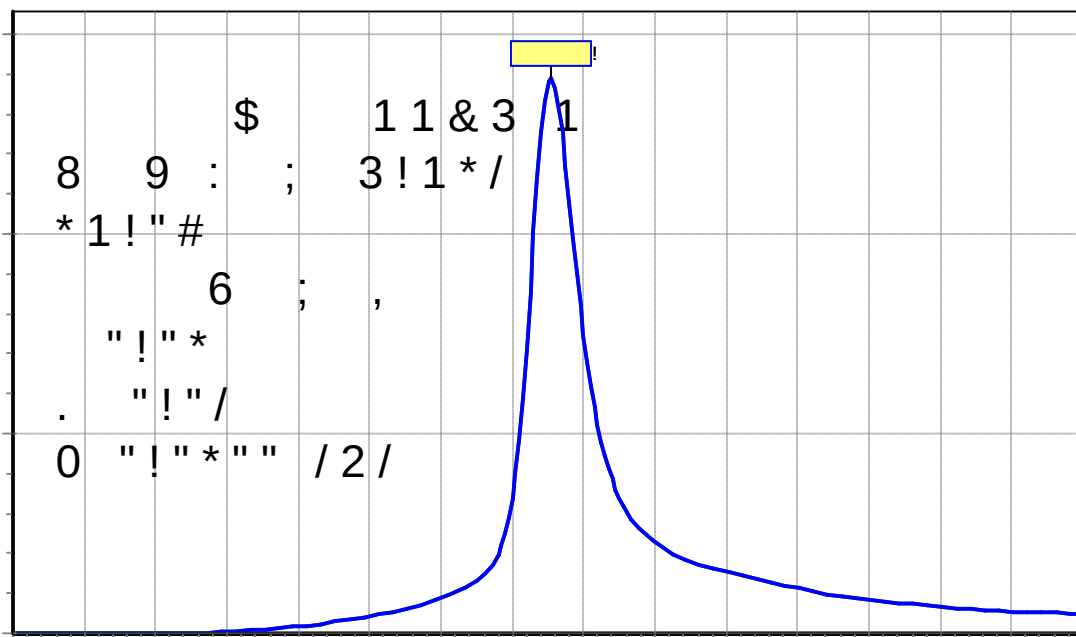
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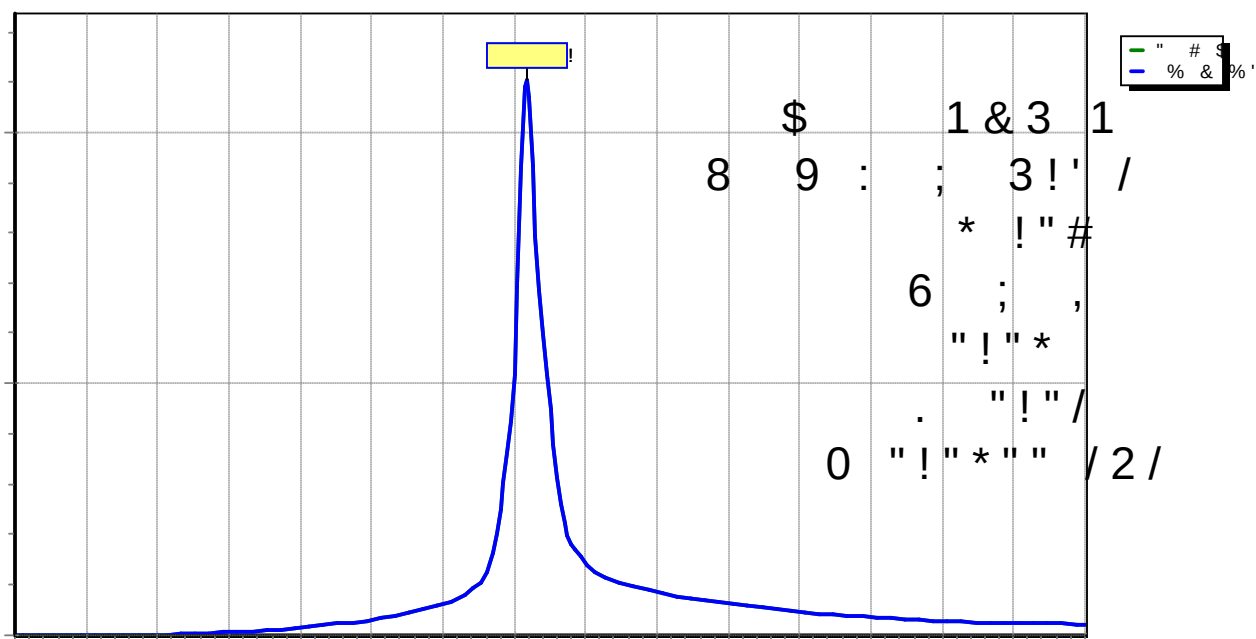
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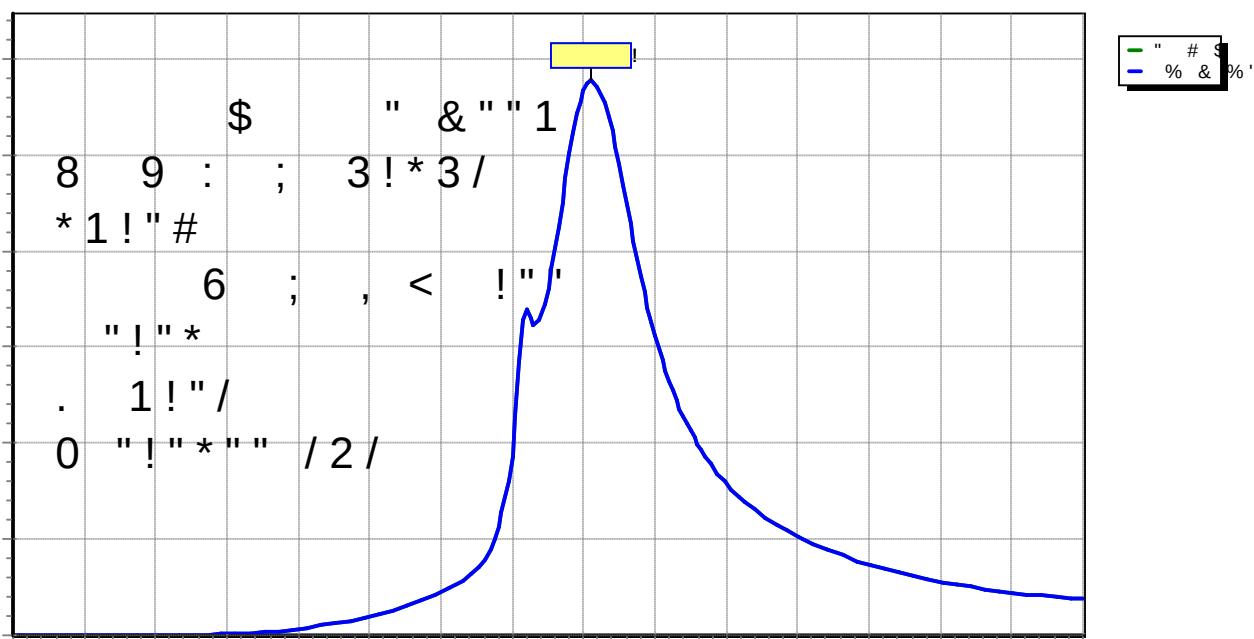
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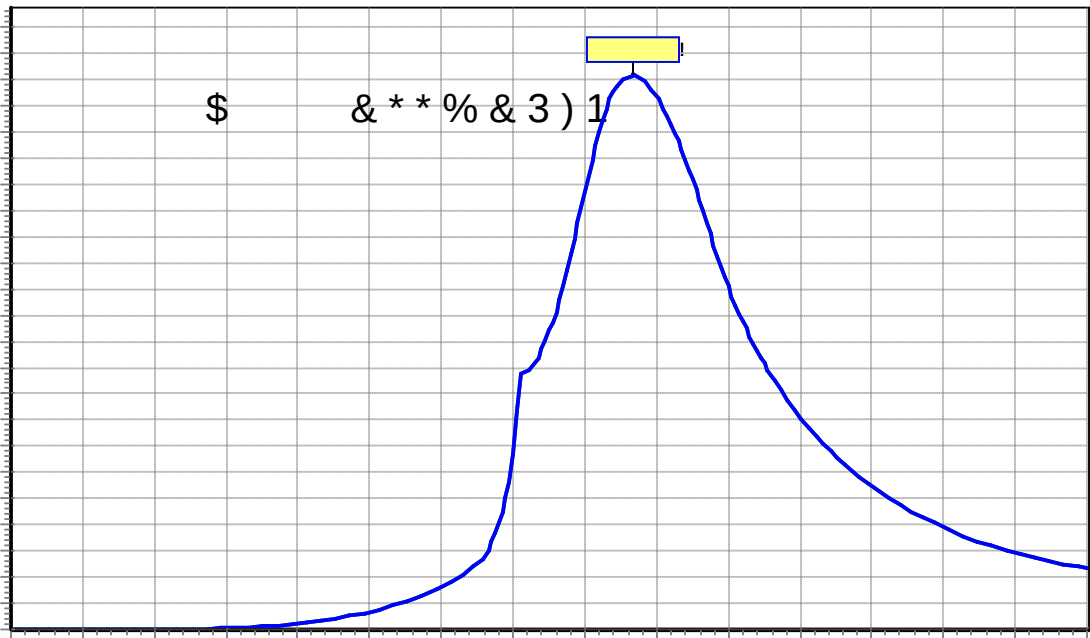


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Appendix C

High Intensity Soil Survey Web Soil Survey Map



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Soil Narrative Report

DATE: Soil Profiles observed on April 20, 2021

BASE MAP: Base plan provided by Walsh Engineering Associates scale 1 inch equals 60 feet and one foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates, Inc. for Class B Soil Survey

Class B-High Intensity Soil Survey (Minimum Standards)

Mapping units of 1 acre or less.
Scale of 1"= 200 feet or larger.
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.
Ground Control – test pits located by means of compass by chaining, pacing or taping from known control points
Base Map –2 foot contour intervals

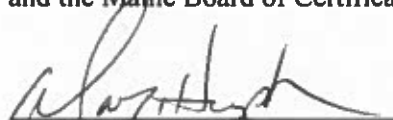
Provided:

Mapping units of 1 acre or less
Base map scale of 1"= 60 feet.
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.
Baseline information and test pits located by gps equipment with accuracy to less than 3 feet.
Ground topographic survey with one foot contours and ground control provided.

P.O. BOX 1981 • PORTLAND, ME 04104 • 1931 • 207-756-2900 • mhampto1@maine.rr.com

Quality services that meet your deadline

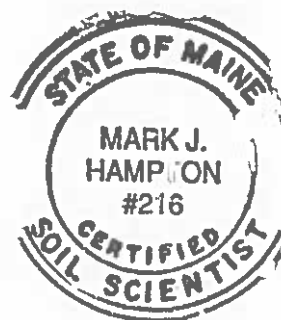
The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.


Mark J. Hampton

C.S.S. #216, L.S.E. #263

May 3, 2021

Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

LYMAN-TUNBRIDGE COMPLEX

SETTING

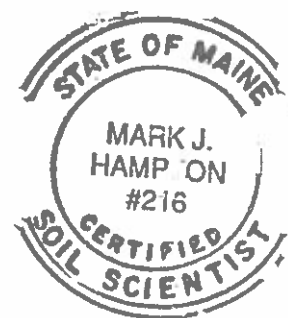
PARENT MATERIAL:	Loamy glacial till
LANDFORM:	Glaciated uplands
POSITION IN LANDSCAPE:	Uppermost locations, sideslopes, shoulders and crests
SLOPE GRADIENT RANGES:	(B) 3-8%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS:	Excessively well drained Lyman (10-20 inches to bedrock) and Tunbridge (20-40 inches to bedrock) These soils occur in a nonrepeating pattern with exposed bedrock outcrops and cannot be separated.	
TYPICAL PROFILE:	<u>Surface Layer:</u>	Reddish brown fine sandy loam, 0-4 inches
	<u>Subsurface Layer:</u>	Red brown fine sandy loam 4-12"
	<u>Subsoil Layer:</u>	Dark red fine sandy loam 12-18"
	<u>Substratum:</u>	Brown fine sandy loam 18-36"
HYDROLOGIC GROUP:	Group C/D	
PERMEABILITY:	Slow to rapid, depending on slope and bedrock outcrops.	
DEPTH TO BEDROCK:	Shallow (Lyman 10-20 inches) to moderately deep (Tunbridge 20-40 inches).	
HAZARD TO FLOODING:	None	

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Buxton, Lamoine, Scantic



USE AND MANAGEMENT

Development: The limiting factor for building site development is depth to bedrock which ranges from 0 to 40 inches within this complex. Tunbridge and Lyman (deeper than 11 inches) soils may be suitable for subsurface wastewater disposal.



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6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Lamoine
(Aeric Haplaquepts)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Intermediate positions on landform
SLOPE GRADIENT RANGES: (A) 0-3 %

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Somewhat poorly drained with a perched watertable from 0.5 to 2.0 feet below the surface at some time from November to June or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark Brown, fine sandy loam 0-7"
<u>Subsurface Layer:</u>	Lt. Olive brown silt loam, 7-14"
<u>Subsoil Layer:</u>	Olive silty clay loam, 14-21"
<u>Substratum:</u>	Olive, silty clay loam, 21-65"

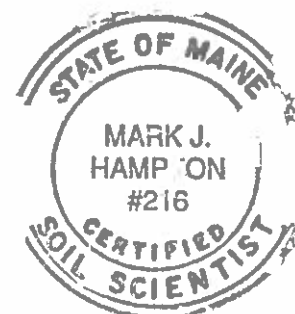
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS (Within Mapping Unit)

CONTRASTING: Buxton, Scantic

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.





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6518

Oak Ridge Road
Biddeford, ME
Ginger Hill Design & Build

Scantic
(Aquic Haplorthod)

SETTING

PARENT MATERIAL: Derived from glaciomarine or glaciolaucustrine sediments
LANDFORM: Coastal lowlands and river valleys
POSITION IN LANDSCAPE: Lower positions on landform
SLOPE GRADIENT RANGES: (A) 0-3%

COMPOSITION AND SOIL CHARACTERISTICS

DRAINAGE CLASS: Poorly drained with a perched watertable from 0.0 to 1.0 feet below the surface at some time from October to May or during periods of heavy precipitation.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Dark grayish brown, silt loam 0-9"
<u>Subsurface Layer:</u>	Olive gray silt loam, 9-16"
<u>Substratum:</u>	Gray silty clay loam, 16"+

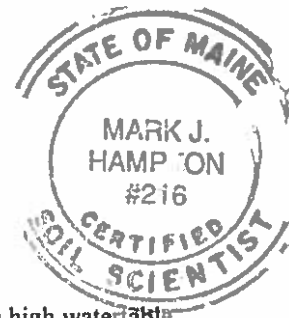
HYDROLOGIC GROUP: Group D
SURFACE RUNOFF: Moderate to moderately slow
PERMEABILITY: Slow to very slow
DEPTH TO BEDROCK: Greater than 65 inches
HAZARD TO FLOODING: None

INCLUSIONS
(Within Mapping Unit)

CONTRASTING: Buxton, Lamoine

USE AND MANAGEMENT

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-1 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
Sandy Loam	Friable	Dark Brown	
Sandy Loam	Friable	Brown	
ΛΛ	Ledge	ΛΛ	

Depth below mineral soil surface (inches)

Soil Details by S.E. 2 AIII 4 18 " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
 S.S. Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-2 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
Fine Sandy Loam	Friable	Dark Brown	
Fine Sandy Loam	Friable	Brown	
Silty Clay Loam	Firm	Gray	Common and Distinct

Depth below mineral soil surface (inches)

Soil Details by S.E. 8 D 2 14 " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
 S.S. Lamoine SPD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-3 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Texture	Consistency	Color	Mottling
Fine Sandy Loam	Friable	Dark Brown	
Fine Sandy Loam	Friable	Brown	
Silty Clay Loam	Firm	Gray	Common and Distinct

Depth below mineral soil surface (inches)

Soil Details by S.E. 8 D 2 13 " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
 S.S. Lamoine SPD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

Exploration Symbol # SS-4 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

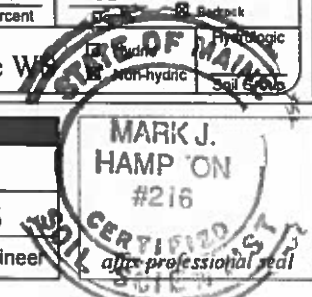
Texture	Consistency	Color	Mottling
Fine Sandy Loam	Friable	Dark Brown	
Fine Sandy Loam	Friable	Brown	
ΛΛ	Ledge	ΛΛ	

Depth below mineral soil surface (inches)

Soil Details by S.E. 2 AIII 4 15 " ☐ Groundwater ☐ Restrictive Layer ☐ Bedrock
 S.S. Lyman-Tunbridge WD ☐ Hydric ☒ Non-hydric Hydrologic Soil Group

INVESTIGATOR INFORMATION AND SIGNATURE

Signature <u>Mark J Hampton</u>	Date <u>5/3/21</u>
Name Printed/typed <u>Mark J Hampton</u>	Cert/Lic/Reg. # <u>263/216</u>
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



SOIL PROFILE / CLASSIFICATION INFORMATION

DETAILED DESCRIPTION OF
SUBSURFACE CONDITIONS AT PROJECT SITES

Project Name: Oak Ridge Road	Applicant Name: Ginger Hill Design & Build	Project Location (municipality): Biddeford
--	--	--

Exploration Symbol # SS-5 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Fine Sandy	Friable	Black	
6	Loam			
12	Silty Clay	Firm	Gray	Common and Distinct
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☒ Groundwater
 S.S. ☒ Restrictive Layer
☐ Bedrock
☒ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 8 Condition E Slope 2 Percent
 Limiting Factor 6 Depth
 Soil series/phase name: **Scantic PD**

Exploration Symbol # SS-6 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown	
6	Loam			
12	Sandy	Friable	Brown	
18	Loam			
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 2 Condition AIII Slope 4 Percent
 Limiting Factor 15 Depth
 Soil series/phase name: **Lyman-Tunbridge WD**

Exploration Symbol # SS-7 ☒ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	Sandy	Friable	Dark Brown	
6	Loam			
12	Sandy	Friable	Brown	
18	Loam			
24		Ledge		
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile 2 Condition AIII Slope 6 Percent
 Limiting Factor 15 Depth
 Soil series/phase name: **Lyman-Tunbridge WD**

Exploration Symbol # _____ ☐ Test Pit ☐ Boring
 " Organic horizon thickness _____ Ground surface elev. _____
 " Depth of exploration or to refusal _____

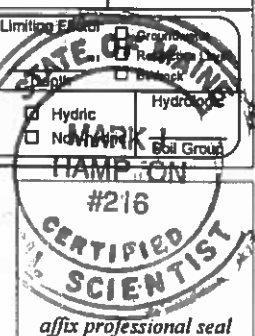
Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0				
6				
12				
18				
24				
30				
36				
42				
48				
54				
60				

Soil Details by S.E. ☐ Groundwater
 S.S. ☐ Restrictive Layer
☐ Bedrock
☐ Hydric
☐ Non-hydric
☐ Hydrologic
☐ Soil Group

Soil Classification: Profile _____ Condition _____ Slope _____ Percent
 Limiting Factor _____ Depth
 Soil series/phase name: _____

INVESTIGATOR INFORMATION AND SIGNATURE

Signature <i>Mark J Hampton</i>	Date 5/3/21
Name Printed/typed Mark J Hampton	Cert/Lic/Reg. # 263/216
Title ☒ Licensed Site Evaluator ☒ Certified Soil Scientist ☐ Certified Geologist ☐ Professional Engineer	



Legend for Soil Maps

1. Drainage Class

Excessively Well Drained	EWD
Well Drained	WD
Moderately Well Drained	MWD
Somewhat Poorly Drained	SPD
Poorly Drained	PD
Very Poorly Drained	VPD

2. Slope Designation

0-3%	A
3-8%	B
8-15%	C
15-25%	D
>25%	E

3. Note: High Intensity Soil Survey has been prepared by Mark Hampton Associates, Inc. in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

- SOIL SURVEY GENERAL NOTES**
1. SOILS AND WETLANDS MAPPING BY MARK HAMPTON ASSOCIATES, P.O. BOX 1931, PORTLAND, MAINE.
 2. FOR ACCOMPANYING SOIL SURVEY REPORT SEE "SOIL NARRATIVE REPORT" SIGNED AND SEALED APRIL 20, 2021.
 3. THE SOILS SURVEY WAS CONDUCTED IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.
 4. THE SURVEY IS CLASS B-HIGH INTENSITY SOIL SURVEY.

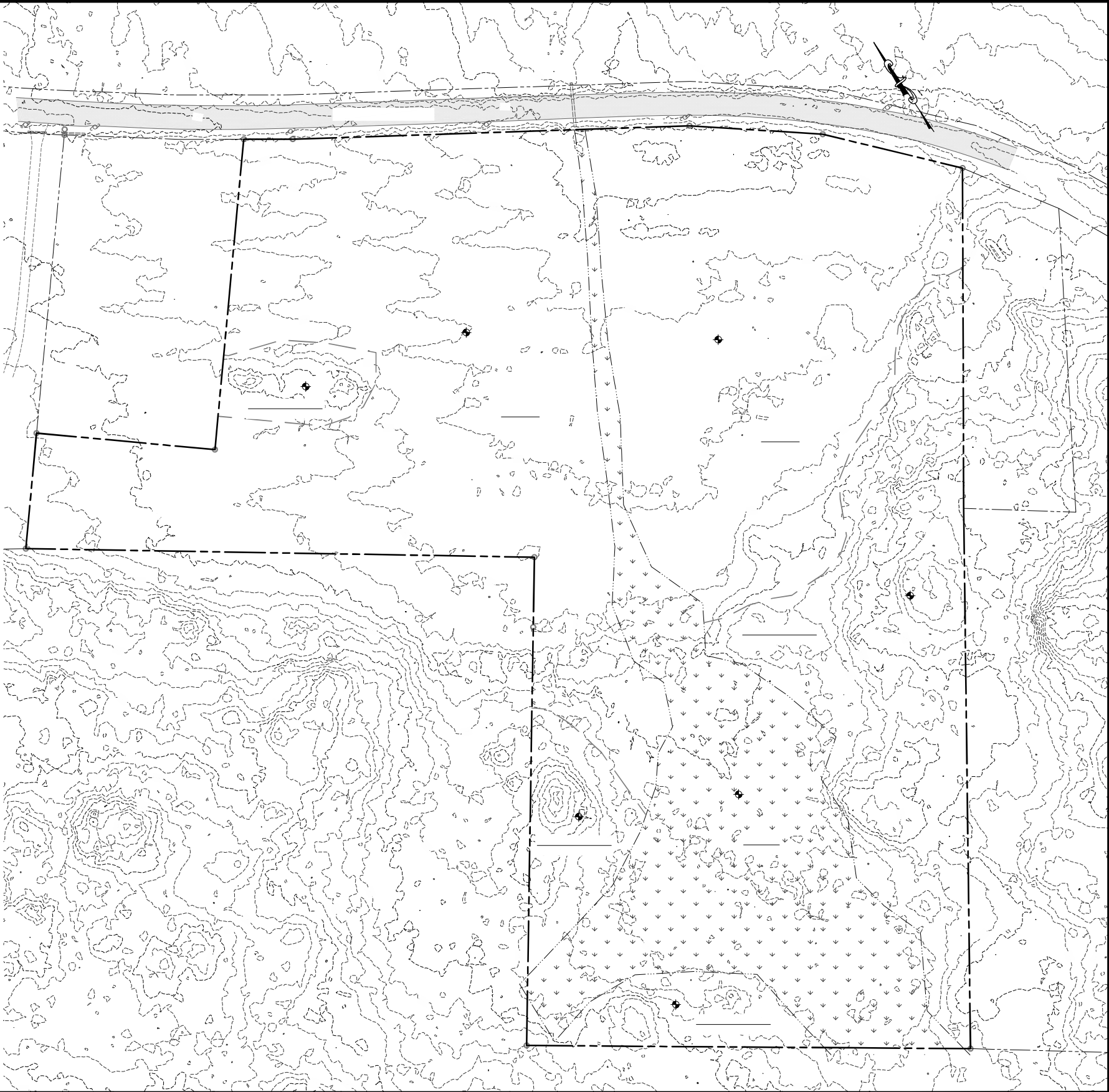
SOIL LEGEND

DRAINAGE CLASS	
EXCESSIVELY WELL DRAINED	EWD
WELL DRAINED	WD
MODERATELY WELL DRAINED	MWD
SOMEWHAT POORLY DRAINED	SPD
POORLY DRAINED	PD
VERY POORLY DRAINED	VPD

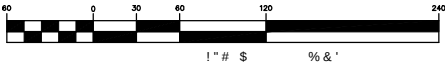
SLOPE DESIGNATION

0-3%	A
3-8%	B
8-15%	C
15-25%	D
> 25%	E

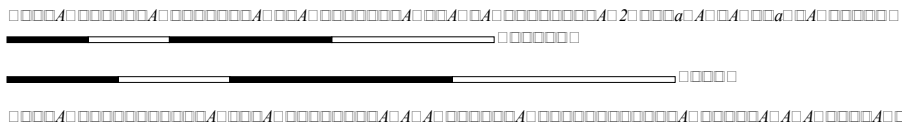
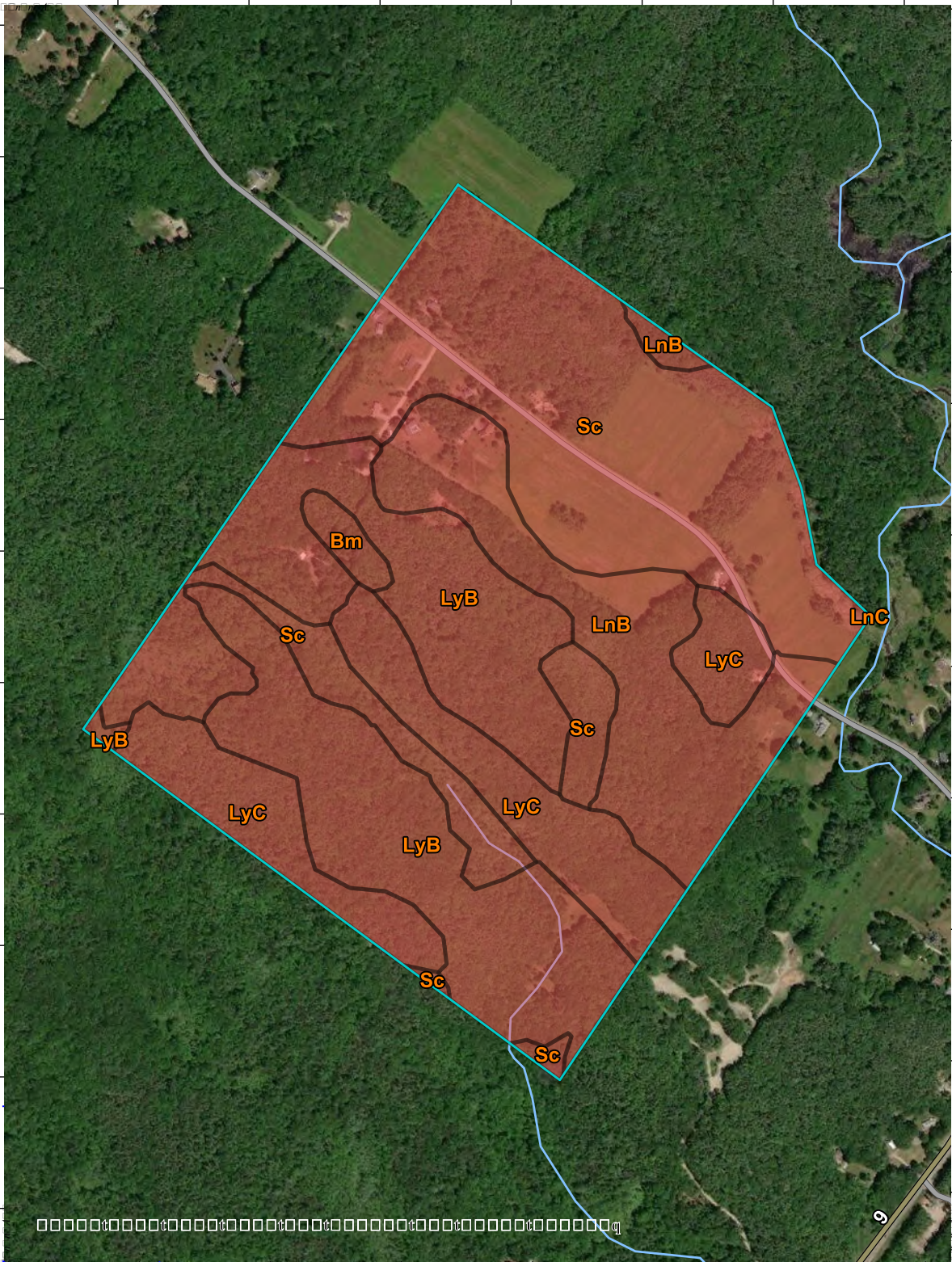
NOTE: HIGH INTENSITY SOIL SURVEY HAS BEEN PREPARED BY MARK HAMPTON ASSOCIATES, INC. IN ACCORDANCE WITH THE STANDARDS ADOPTED BY THE MAINE ASSOCIATION OF PROFESSIONAL SOIL SCIENTISTS, AND THE MAINE BOARD OF CERTIFICATION OF GEOLOGISTS AND SOIL SCIENTISTS.



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*URXS & 6RLOV KDYLQJ D VORZ LQILOWUDWLRQ UDWL ZKHQ WK
FKLHIO\ RI VRLOV KDYLQJ D OD\HU WKDW LPSHGHV WKH GRZQZD
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ZDWHU WUDQVPLVLRQ

*URXS ' 6RLOV KDYLQJ D YHU\ VORZ LQILOWUDWLRQ UDWL KLJ
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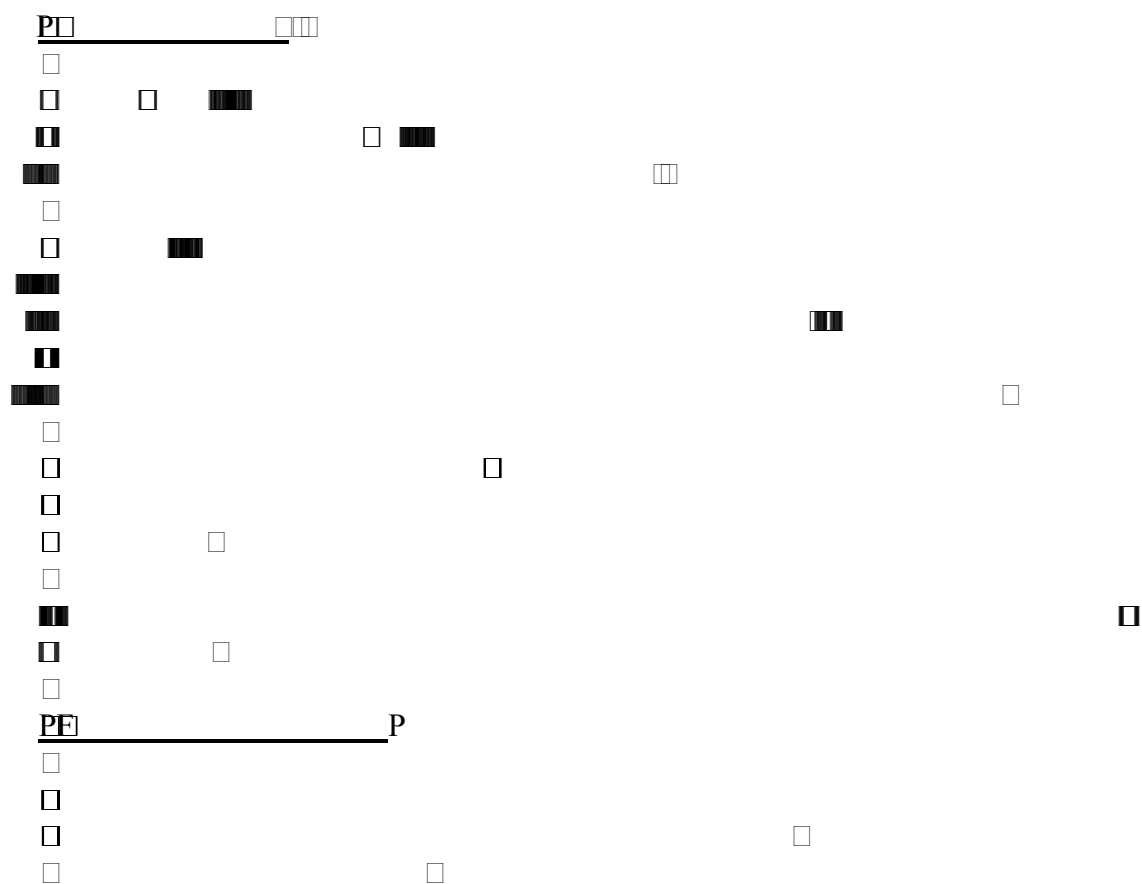
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Appendix D

Inspection and Maintenance Plan

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Appendix E

Drainage Plans

D1.0 ±Pre-Development Drainage Plan
D2.0 ±PostDevelopment Drainage Plan
(See Attachment 10 for Drainage Plans)



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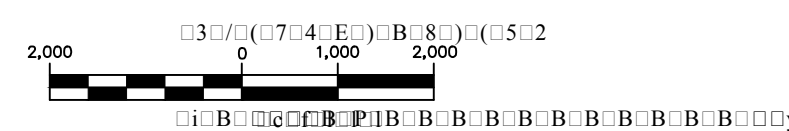
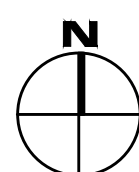
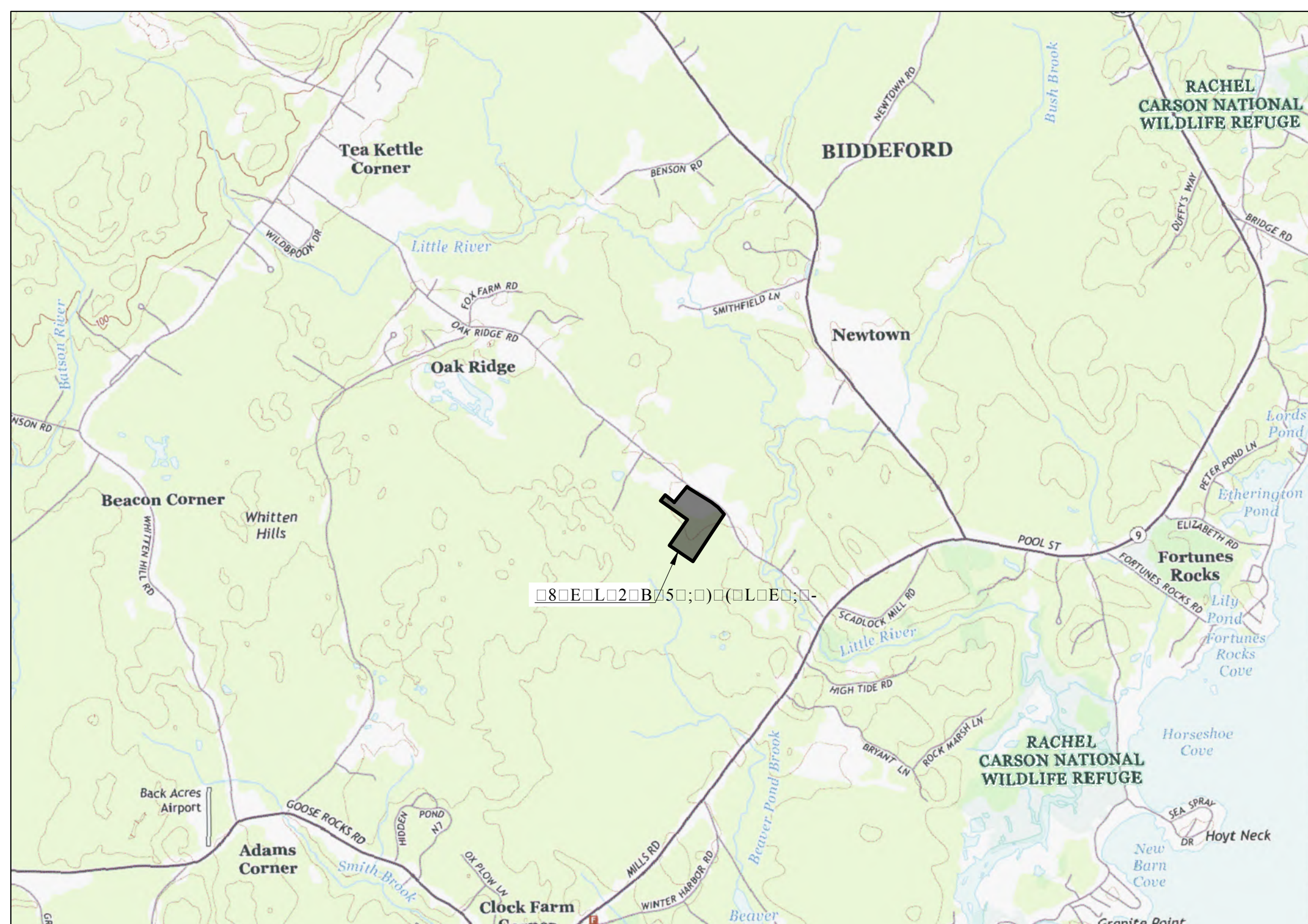
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ENGINEERING ASSOCIATES, INC.



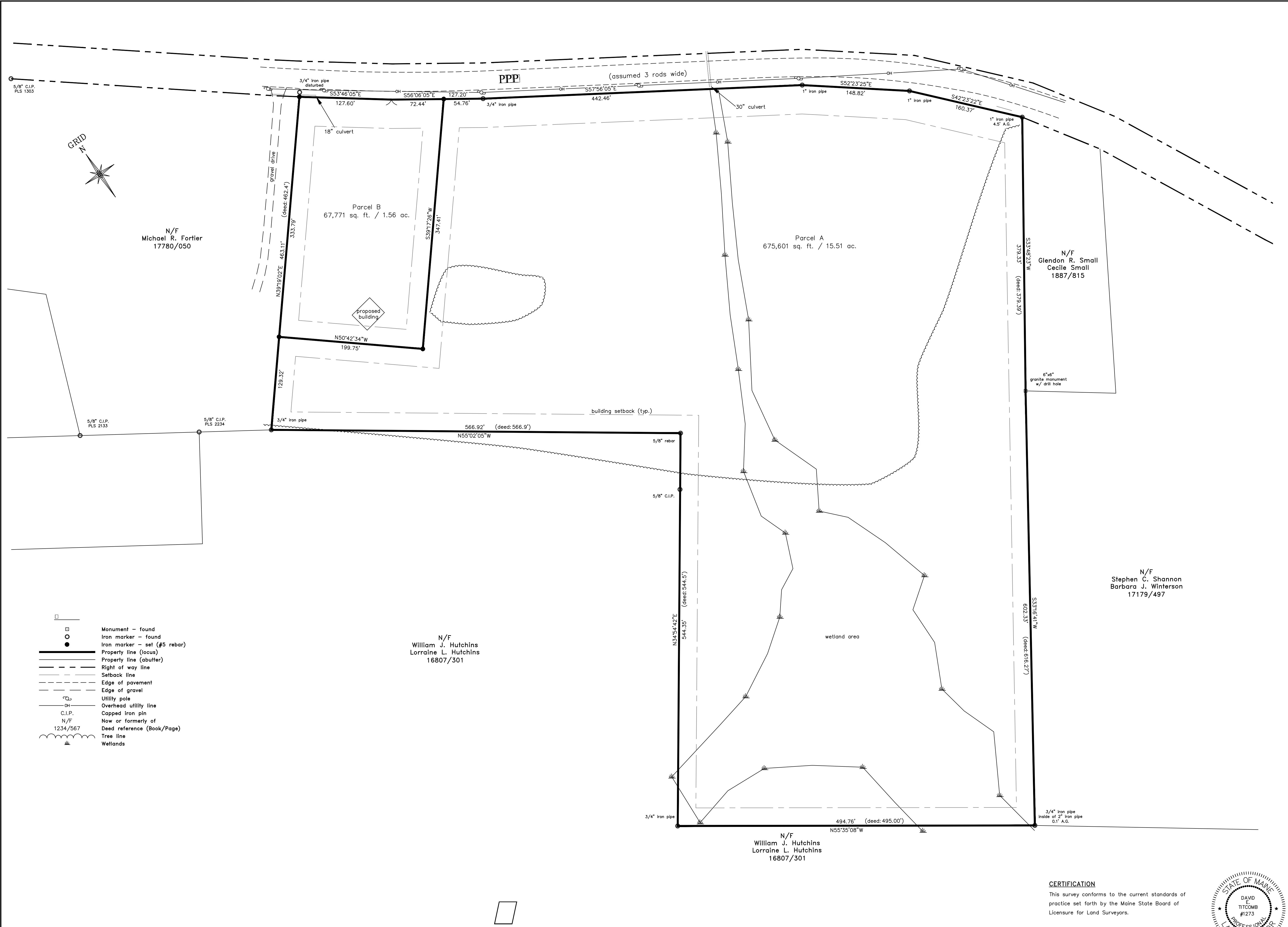
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VICINITY MAP

No Scale

1)

Book and Page references are to the York County Registry of Deeds, unless otherwise noted.

2) Bearings are referenced to grid north, Maine State Plane Coordinate System, West Zone, NAD83.

3) Utility information on this plan is approximate, based on location of visible features. DigSafe and/or the appropriate utilities should be contacted prior to any construction.

4) Property lies within Zone C based on FIRM Community #230145 Panel #0010B, effective date May 15, 1984. Area of minimal flooding.

5) Wetlands delineated and located by Mark Hampton Associates, Inc.

PI

1) Plan showing Standard Boundary Survey made for James L. Thomson II & Nancy P. Thomson, by Dow & Coulombe, Inc., dated May 10, 1999 revised through March 31, 2011, recorded in Plan Book 356, Page 015.

2) Plan of land made for James L. Thomson II & Nancy P. Thomson, by Dow & Coulombe, Inc., dated January 13, 1995, recorded in Plan Book 222, Page 44.

Rural Farm (RF)

Minimum lot size	40,000 sq. ft.
Street frontage	200'
Setbacks:	
Front	40'
Side	25'
Rear	25'

Parcel A

675,601 square feet / 15.51 acres

Parcel B

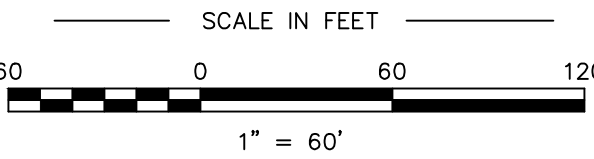
67,771 square feet / 1.56 acres

Total

743,372 square feet / 17.07

PPP

Clover Leaf Investment Properties, LLC.
c/o Labrie Realty Group, LLC
56 Portland Road,
Kennebunk, Maine 04043
Book 16437, Page 645
Tax Map 4, Lot 57



PLAN OF

158 Oak Ridge Road Biddeford, Maine

MADE FOR

18 Early Way Arundel, Maine

JOB #21337

DATE: April 14, 2021

SCALE: 1" = 60'

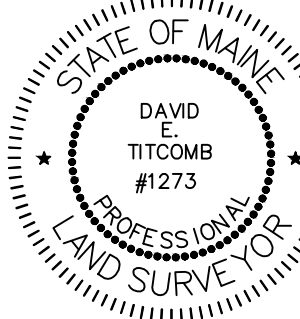
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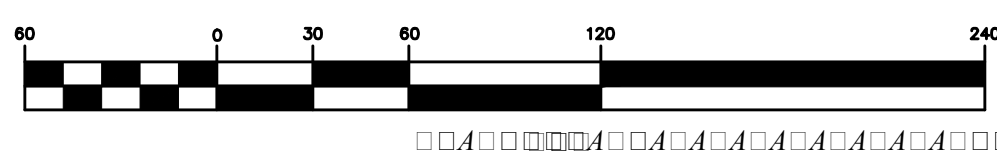
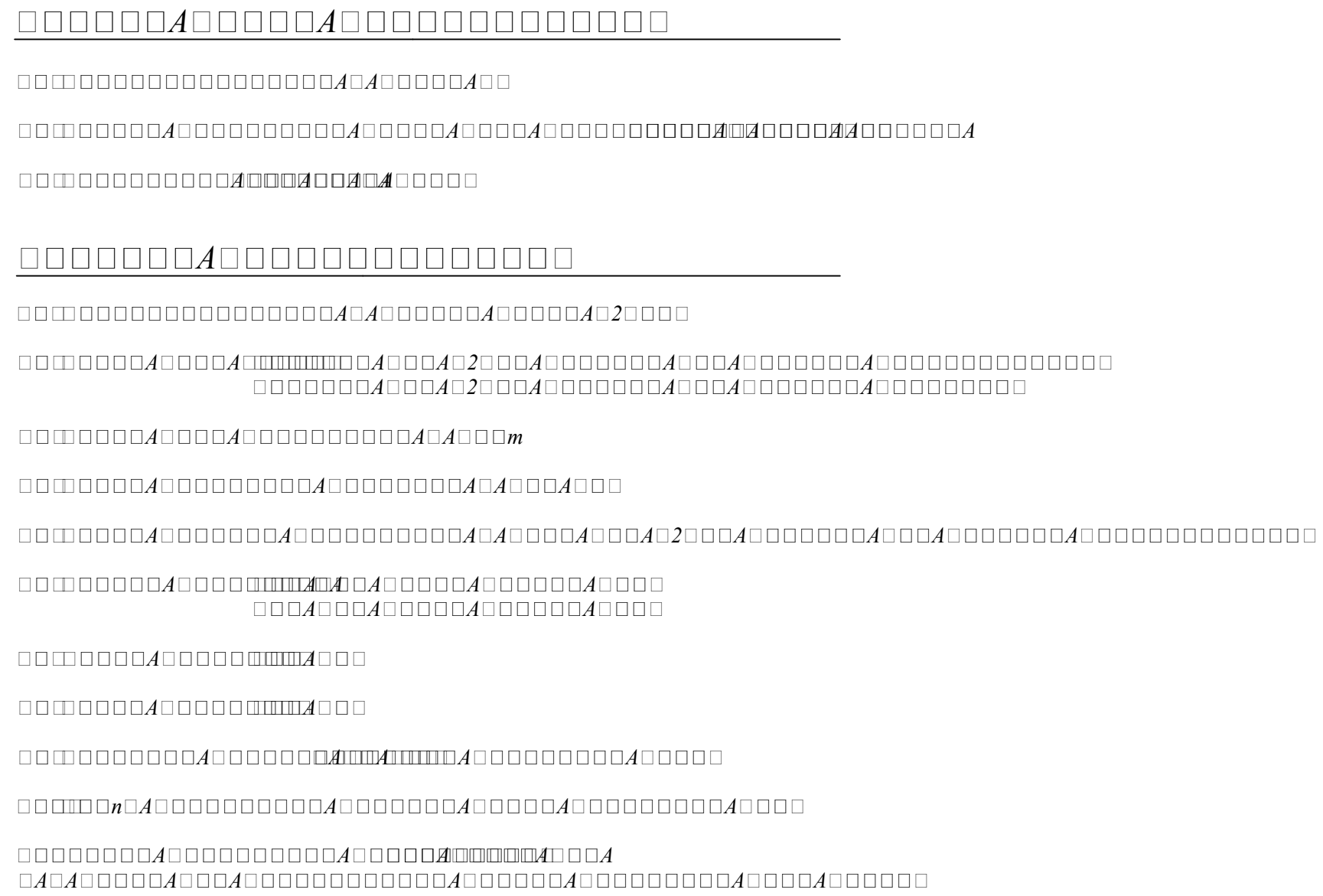
Titcomb Associates

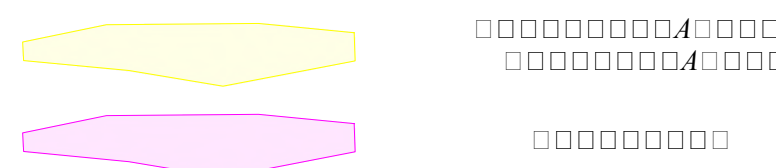
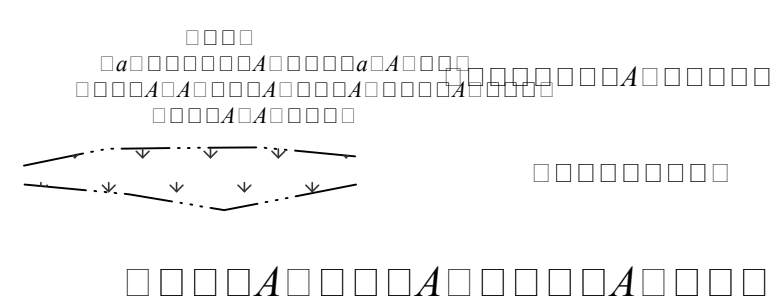
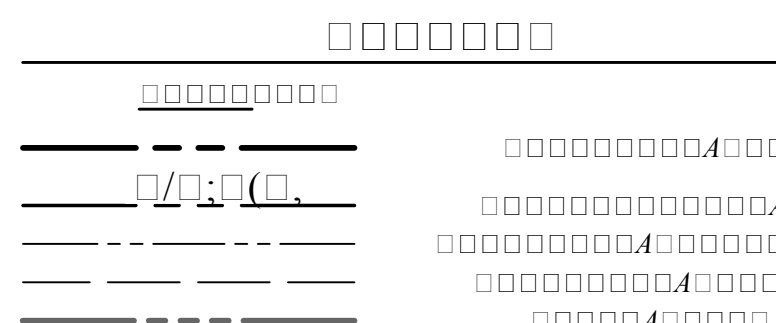
CERTIFICATION

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.

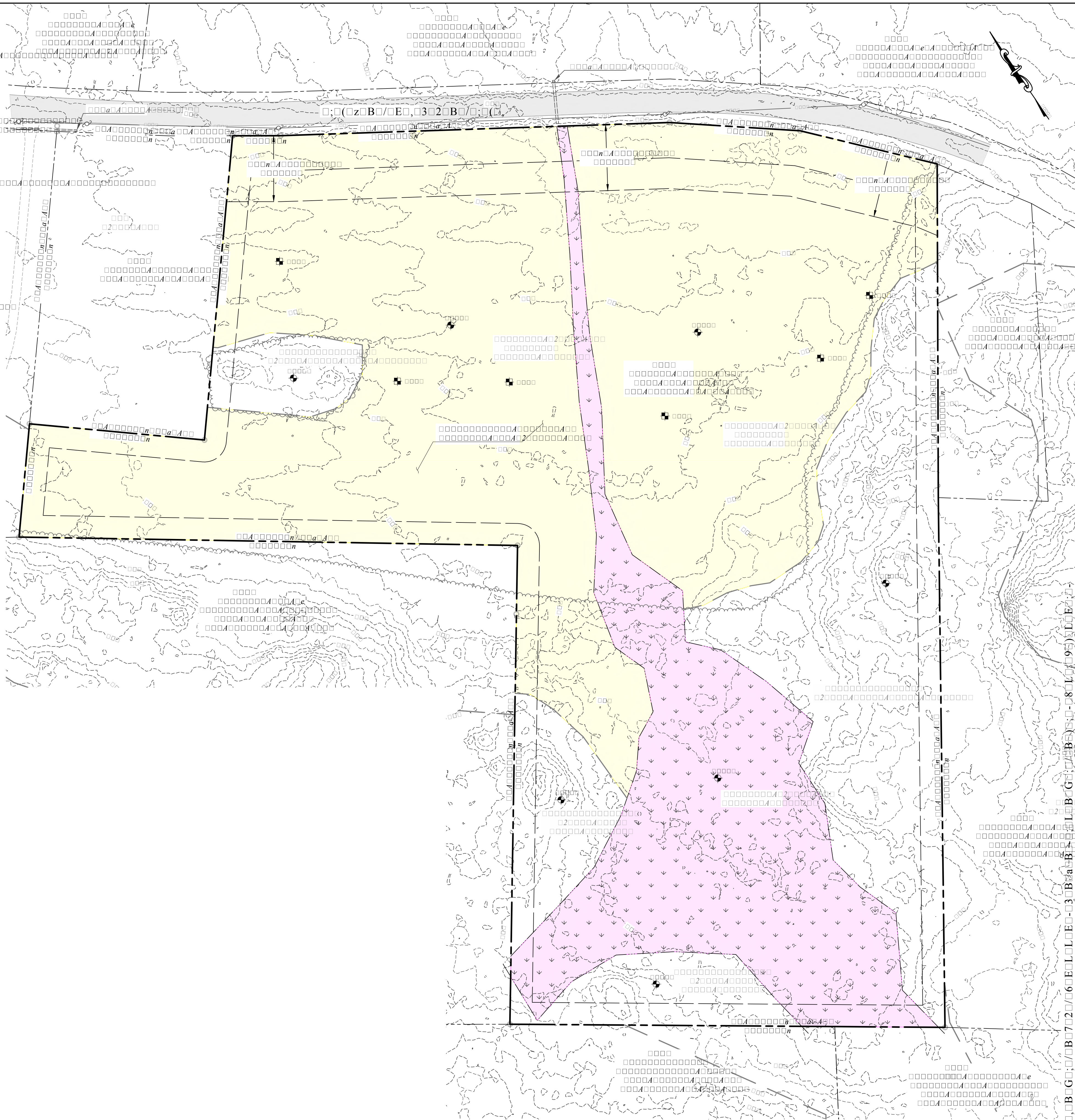


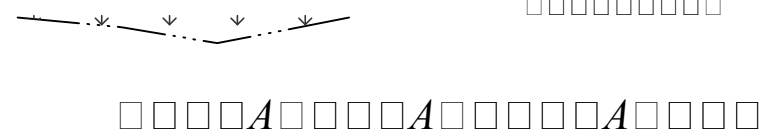
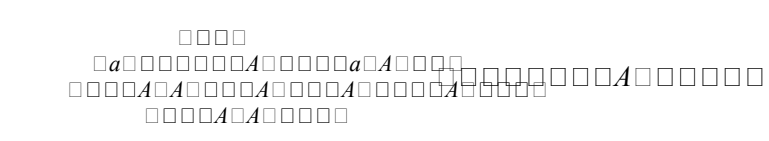
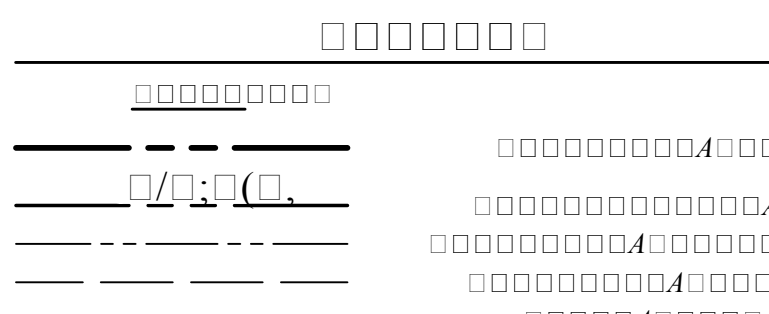
David E. Titcomb, P.L.S. #1273

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Net Residential Density Calculation	
	Area (sf)
Gross Lot Area	675,530
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	195,097
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	120,635
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	359,799
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	8

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Net Residential Density Calculation	
	Area (sf)
Gross Lot Area	675,530
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	195,097
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	120,635
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	359,799
Minimum Conventional Lot Area (RF Zone)	40,000
Total Allowable Lots	8

Cluster Open Space Area Calculations			
Lot	Conventional Subdivision Minimum Lot Area (sf)	Net Lot Area (sf)	Cluster Subdivision Lot Area Reduction (sf)
1	40,000	23,661	16,339
2	40,000	20,909	19,091
3	40,000	20,374	19,626
4	40,000	20,799	19,201
5	40,000	24,605	15,395
6	40,000	22,495	17,505
Required Open Space Area			107,157
Provided Open Space Area			353,007
% of Required Open Space Provided			329.4%

Net Residential Density Calculation (Lot 1)	
	Area (sf)
Gross Lot Area	39,829
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	16,168
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	23,661
Minimum Cluster Lot Area (RF Zone)	20,000

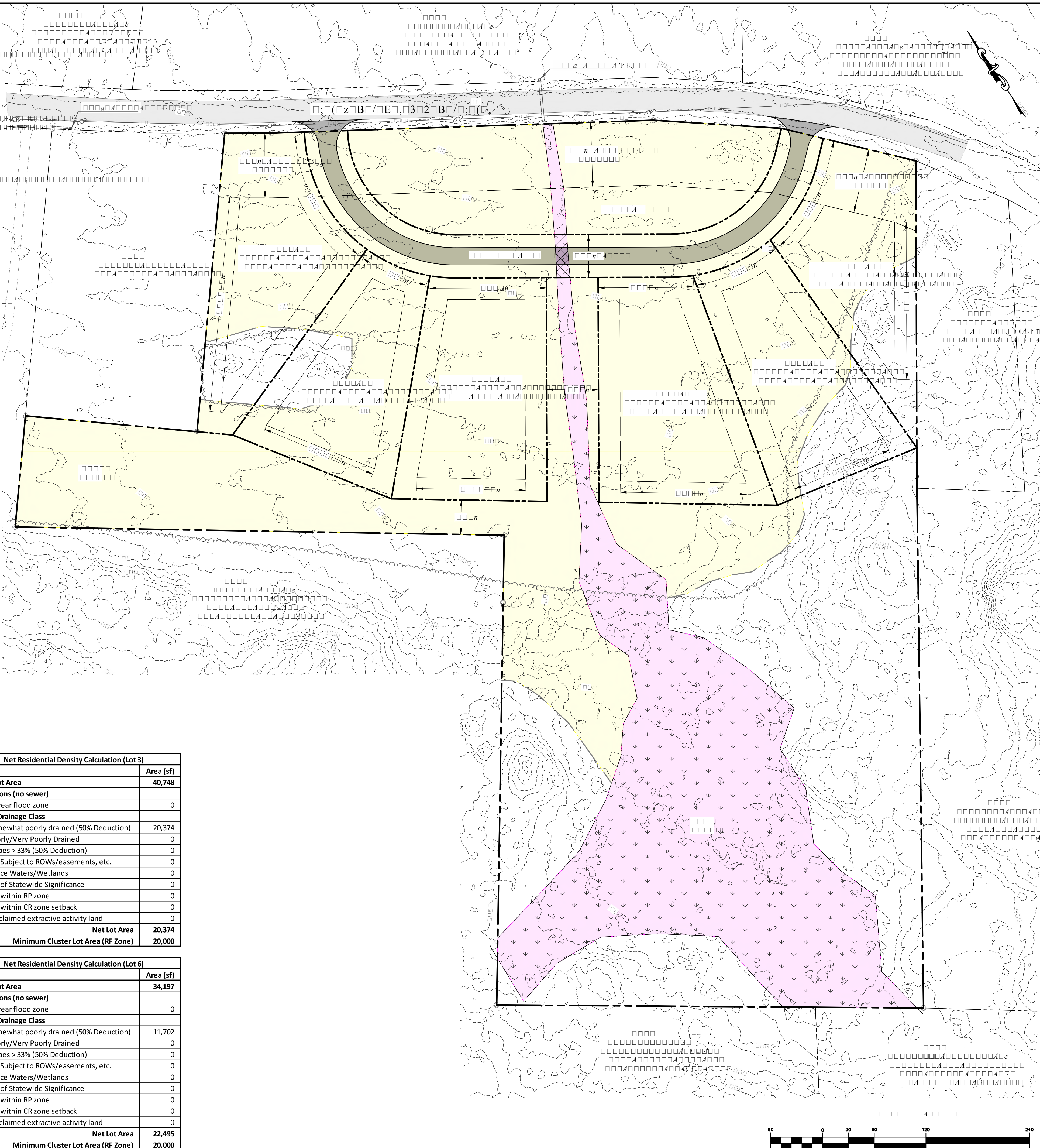
Net Residential Density Calculation (Lot 4)	
	Area (sf)
Gross Lot Area	41,598
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	20,799
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,799
Minimum Cluster Lot Area (RF Zone)	20,000

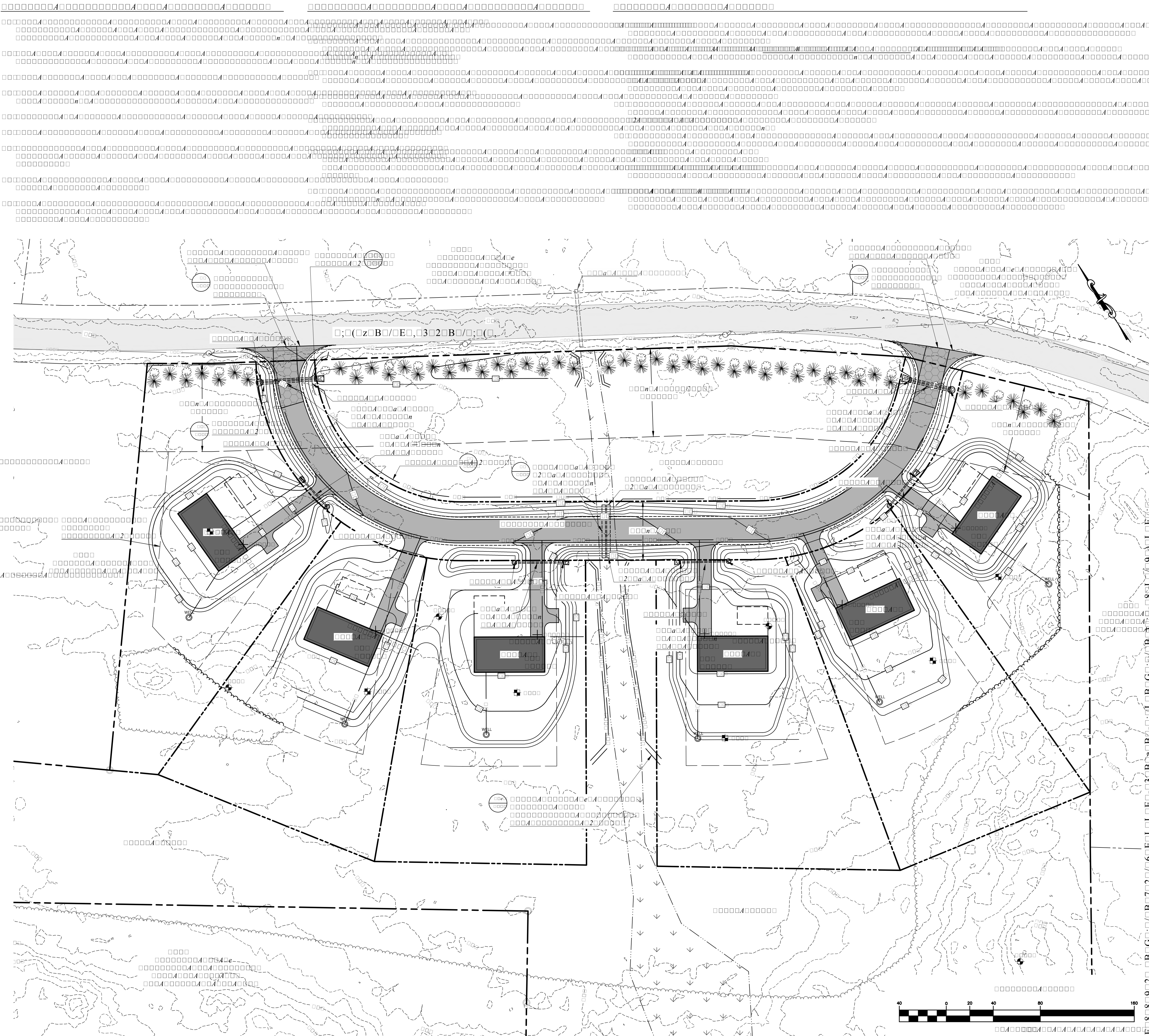
Net Residential Density Calculation (Lot 2)	
	Area (sf)
Gross Lot Area	35,448
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	14,539
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed/Inactive activity land	0
Net Lot Area	20,909
Minimum Cluster Lot Area (RF Zone)	20,000

Net Residential Density Calculation (Lot 5)	
	Area (sf)
Gross Lot Area	38,594
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	13,989
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	24,605
Minimum Cluster Lot Area (RF Zone)	20,000

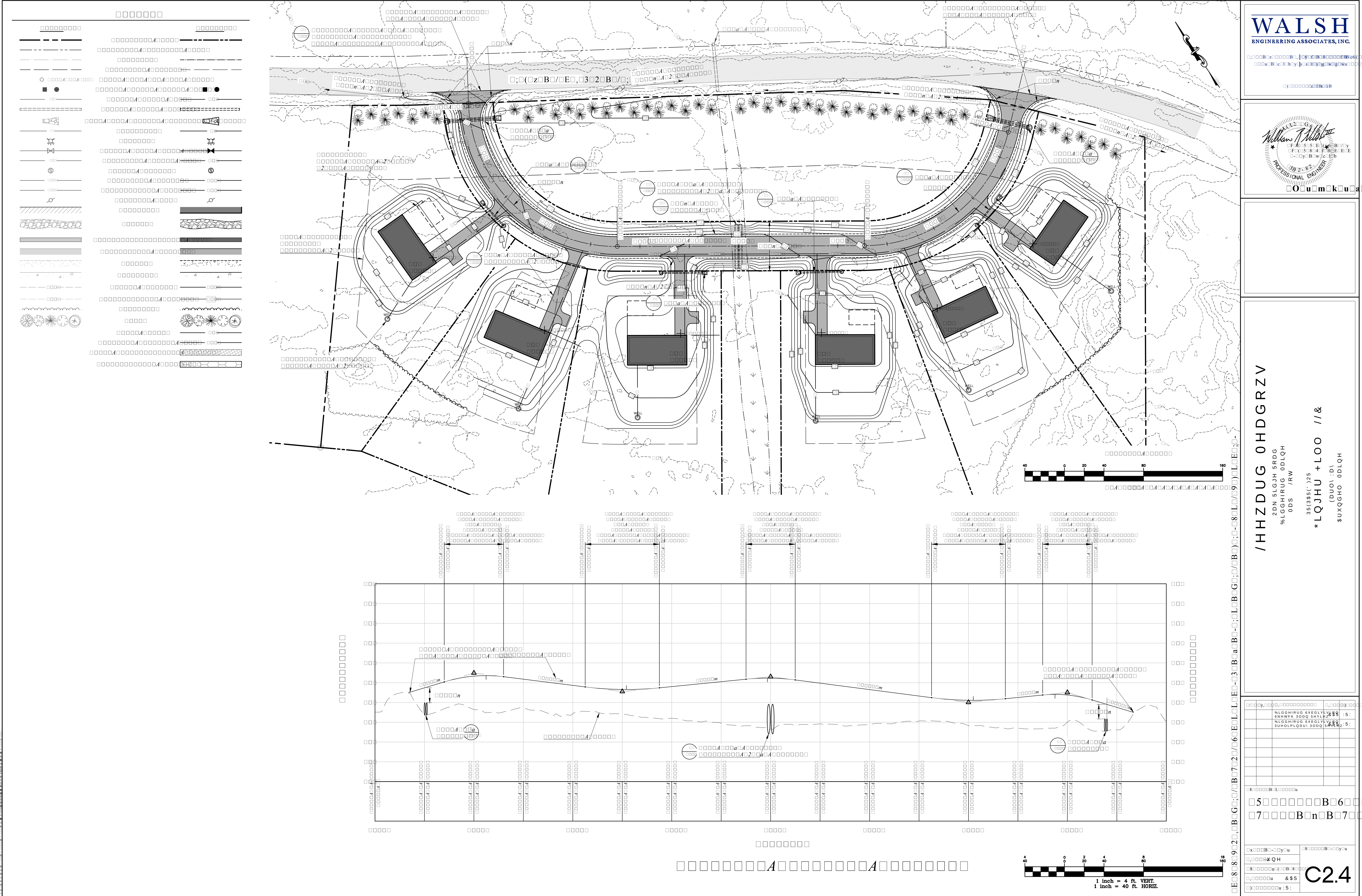
Net Residential Density Calculation (Lot 3)	
	Area (sf)
Gross Lot Area	40,748
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	20,374
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	20,374
Minimum Cluster Lot Area (RF Zone)	20,000

Net Residential Density Calculation (Lot 6)	
	Area (sf)
Gross Lot Area	34,197
Deductions (no sewer)	
100-year flood zone	0
Soil Drainage Class	
Somewhat poorly drained (50% Deduction)	11,702
Poorly/Very Poorly Drained	0
Slopes > 33% (50% Deduction)	0
Area Subject to ROWs/easements, etc.	0
Surface Waters/Wetlands	0
Soils of Statewide Significance	0
Land within RP zone	0
Land within CR zone setback	0
Unreclaimed extractive activity land	0
Net Lot Area	22,495
Minimum Cluster Lot Area (RF Zone)	20,000

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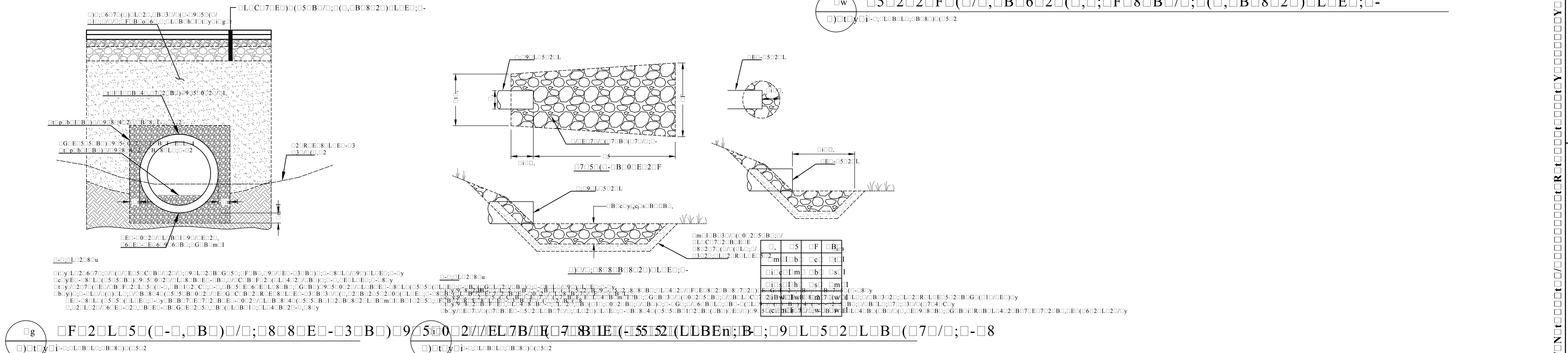
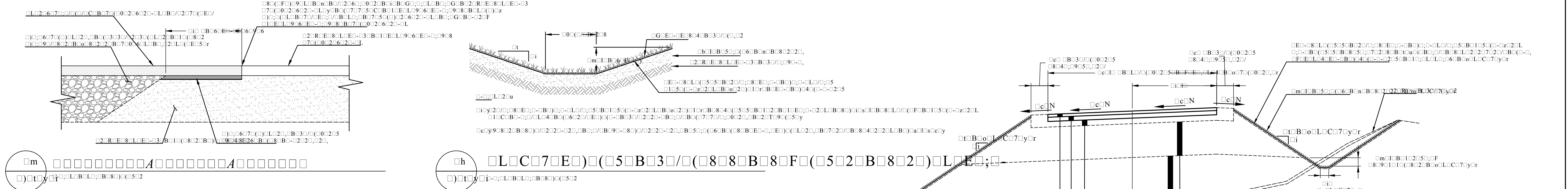
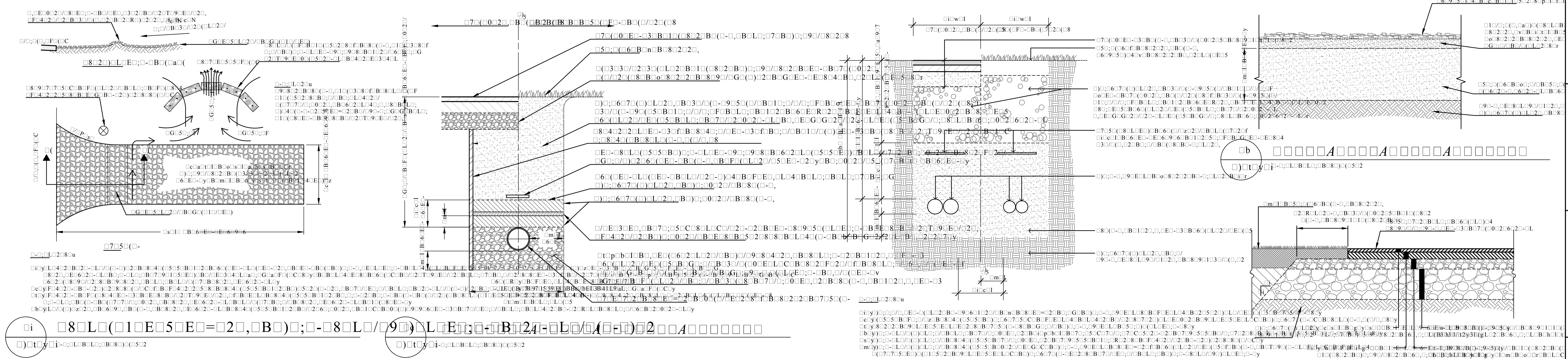
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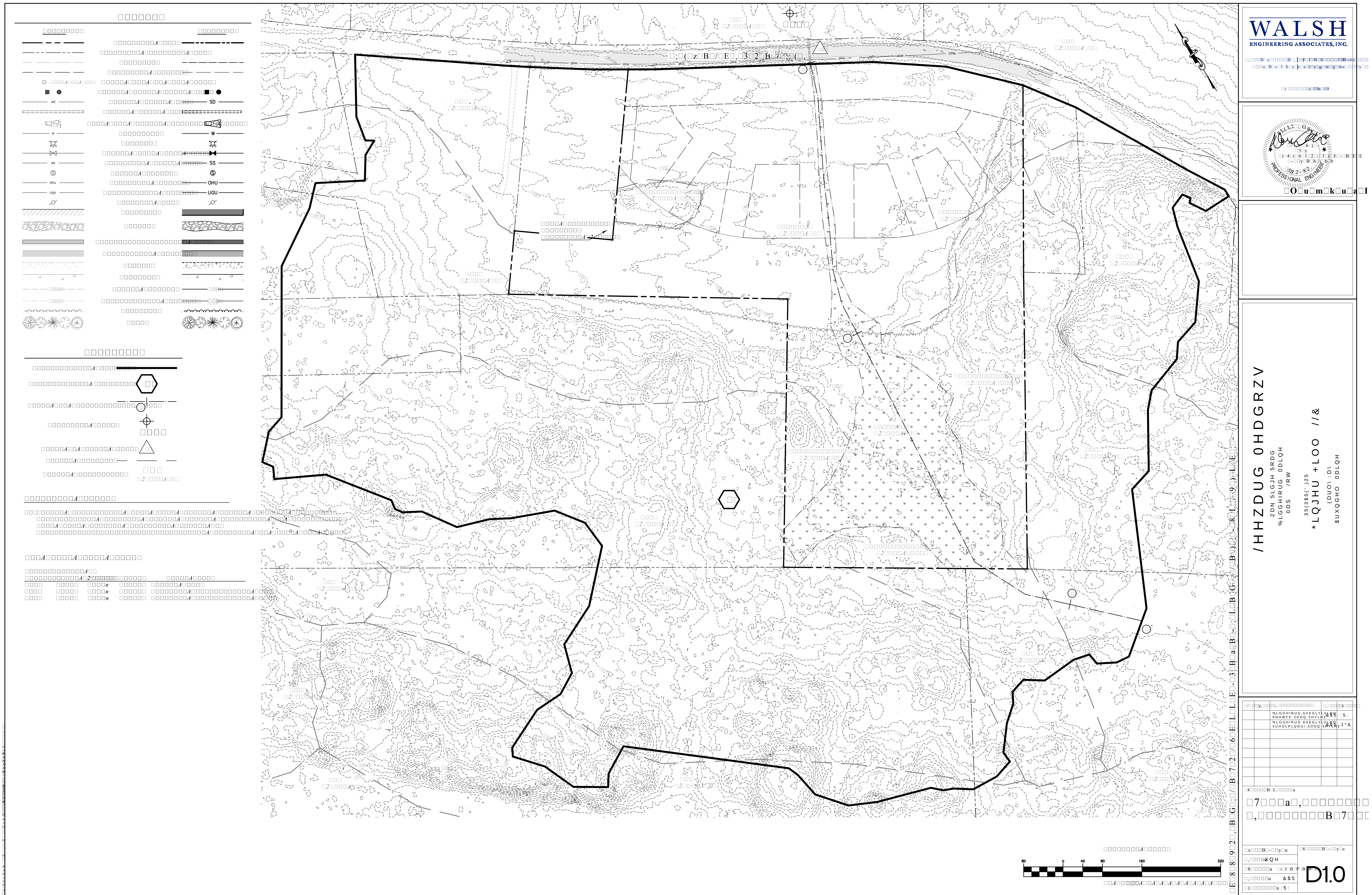
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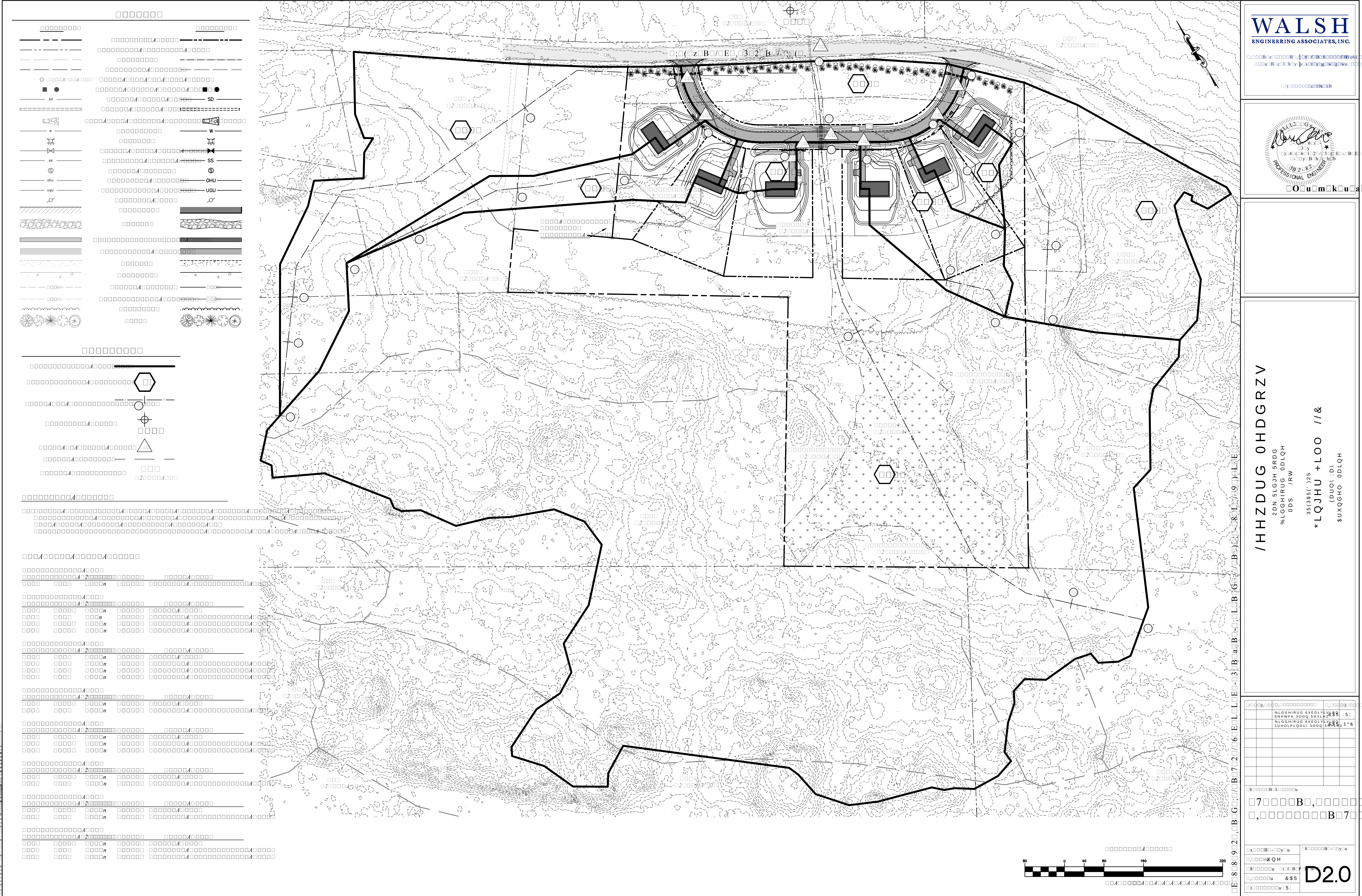
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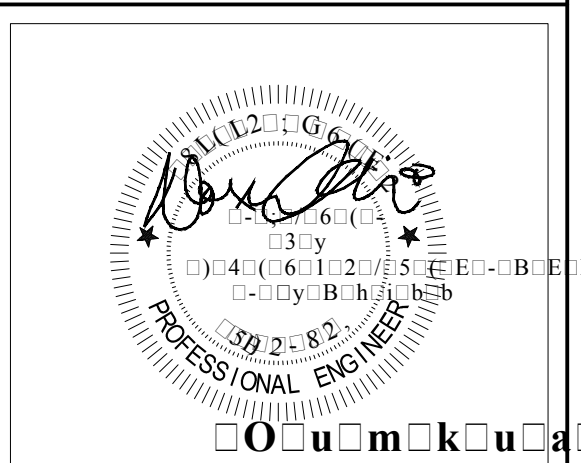




WALSH
ENGINEERING ASSOCIATES, INC.

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From: [Chrystina Gastelum](#)
To: [Bill Southwick \(southwick@maine.rr.com\)](mailto:southwick@maine.rr.com)
Cc: [Tansley, Greg](#)
Subject: Ginger Hill Applications
Date: Friday, July 16, 2021 9:29:06 AM

Hello Bill,

Last evening the BCC reviewed the two Ginger Hill applications, and we agree with Chris DiMatteo's assessments that the plans need work to meet the intent of the ordinance -- that is, to maximize conserved land and wildlife habitat. Clustering, potential for shared septic, preservation & management of open space, as well as understanding the needs of current inhabitants (particularly any rare species) are all listed concerns and we agree that these need to be better defined/designed in the plans.

I talked with Nan yesterday, and she will be copying us in the distribution of the PB Agenda Packet in the future, so we hope to have more timely feedback to you soon. We are getting the hang of the various cycles. That being said, Mr. DiMatteo's assessment also recommended consulting with the conservation commission, and I'm not sure how that's being done other than us proactively jumping in. We can do that, and now we have better alert systems, but I'm just letting you know that we are more than happy to consult, but sometimes we may need a nudge.

Thanks,
Chrystina Gastelum
Chair, Biddeford Conservation Commission

Bcc: Biddeford Conservation Commission

--

Chrystina Gastelum (gas-TELL-um) - she/her

CITY OF BIDDEFORD, MAINE
PLANNING BOARD
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

APPLICATION FORM

Type of Application:

- | | | |
|--|--|--------------------------------------|
| ☐ Shoreland Zoning Permit | ☒ Site Plan Review | ☐ Extraction |
| ☒ Conditional Use Permit | ☐ Subdivision | ☐ Private Way |
| ☐ Other: _____ | | |

Applicant Information:

Applicant's Name: Central Maine Power Company

Applicant's Mailing Address: 83 Edison Drive Augusta, ME 04336

Applicant's Telephone: 207-530-1977 c/o Jeremy Pettengill

What is Applicant's legal interest in the property?

- ☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: Central Maine Power Company

Owner's Address: 83 Edison Drive, Augusta, ME 04336

Owner's Telephone: 207-530-1977 Jeremy Pettengill

Agent's Name: TRC Companies, LLC

Agent's Address: 14 Gabriel Drive, Augusta, ME 04330

Telephone: 207-441-4225 c/o Mark Christopher

Engineer/Surveyor: Maine Line Energy Consultants, LLC

Engineer/Surveyor's Address: 11272 86th Ave N, Maple grove, MN 55369

Telephone: 585-368-8892 c/o Peter Nice

Project Location and Lot Information:

Street Address: 466-468 South Street

Tax Map: 2 Lot: 40-1

Current Zoning: SR-1 Shoreland Zoning: No

Size of lot: 1.87 ☒ acres ☐ s.f. Lot Frontage: _____

Existing Use of Property: Undeveloped

Property currently serviced by:

☒ City Road	☒ Private Road
☐ Public Sewer	☐ Septic System
☐ Public Water	☐ Private Well
☐ Public Trash	☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☐ Flat (0-3 % slope) ☒ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15% + slope)

Are there any wetlands or waterbodies on the site? ☐ Yes ☒ No If yes, attach information

Do you plan to bring fill onto the lot? ☒ Yes ☐ No If yes, attach information

Description of proposed use of property:

Project/Proposed Use Description: Development of a new electrical substation to serve the new
MWC facility, The substation will connect to 1-4 distribution lines and the existing 34.5 kV transmission line.

Property to be serviced by:

☒ City Road	☒ Private Road
☐ Public Sewer N/A	☐ Septic System N/A
☐ Public Water N/A	☐ Private Well N/A
☐ Public Trash N/A	☐ Private Hauler N/A

Is this project part of a larger project? ☐ Yes ☒ No

☐ If in a Shoreland Zone: N/A

Percent of residential lot coverage (Max. 20%): _____

Percent of structure expansion (Max. 30%): _____

☐ If Subdivision Review, number of lots proposed: _____ N/A

☐ If a Private Way is proposed, number of lots served: Existing MWC gravel road will serve as driveway

☐ **If Site Plan Review, you must provide the following information:**

Total new square feet footprint of structures: Cumulative foundations 770 ft²

Total new square feet paving/parking: None

Waiver Requests (attach details): None

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

- ☐ Fire Department - Contact Chief or Deputy Chief - 282-9986
- ☐ Ability to Serve for Water Service – Maine Water - 282-1543
- ☐ Ability to Serve for Sewer Service- Engineering Dept (Sewer) - Tom Milligan 284-9118
- ☐ Police Department - E-911 Road Name Designation - Contact Joanne Fisk - 282-5127

B. Letter to Planning Board describing project, waiver requests, proposed improvements, addressing permit requirements, etc.

C. Photographs of site.

D. Architectural renderings/drawings of proposed buildings, as required.

E. Engineered Plans, as required.

Fees (due at time of application):

Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

☒ Project proposed to have 1 acre or more of site disturbance: Project requires Chapter 500 PBR

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of applicant:

Jack Wu

Digitally signed by: Jack Wu
DN: CN = Jack Wu email = en2.
wu2@cmpco.com C = US
Date: 2021.10.12 09:57:33 -0400

Date: 10/12/2021

Signature of owner of property:

Date: _____

**IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE).
CHECK WITH PLANNING STAFF FOR CLARIFICATION.**

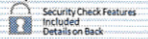


21 Griffin Road North
Windsor, CT 06095
860.298.9692

Citizens Bank
CONNECTICUT
51-7011/2111

CHECK DATE

October 6, 2021



AMOUNT

\$ 825.00

PAY Eight Hundred Twenty Five and 00/100 Dollars

PAY TO THE ORDER OF
City Of Biddeford

P.O. Box 586
205 Main Street
Biddeford, ME 04005

BY

VOID AFTER 90 DAYS

AUTHORIZED SIGNATURE

⑈ 1224702 ⑈ ⑆ 211170114 ⑆ 2232037104 ⑈



21 Griffin Road North
Windsor, CT 06095
860.289.9692

EMILY BUSINESS FORMS 800.392.6018 DELTEK VISION

1224702

Check Date: 10/6/2021

Invoice Number	Date	Voucher	Amount	Discounts	Previous Pay	Net Amount
SITE PLAN REVIEW FEE	10/6/2021	007757362728	825.00			825.00
City Of Biddeford		TOTAL	825.00			825.00
Citizen Bank - Disbursement	3	100980				

Central Maine Power Company Biddeford Pump Substation

Project Location

CMP proposes to rebuild the Biddeford Pump Substation on a greenfield site of 466-468 South Street, map 2, block 40-1 at the Maine Water Company current site. CMP has obtained the property for the new substation from the Maine Water Company (MWC) as part of its efforts to rebuild and expand its water treatment facility.

The new substation parcel is located 100 feet west of the driveway to the existing water treatment facility, 80 feet southwest of the existing substation, and 120 feet east of a single-family residence on South Street. Other single-family residences range from 320 to 700 feet from the Project.

Construction of the substation will include, but is not limited to, the installation of two 14-mega volt ampere (MVA) transformers, four 12-kilovolt (kV) distribution circuits, control house, indoor switchgear, protection and control system, areas for temporary mobile substation hookup and space for a future capacitor bank, stormwater management swales and detention, and erosion controls.

Project Purpose and Objectives

The re-build of the Biddeford Pump Substation is important and necessary for maintaining and improving reliability of electrical services within the region. CMP plans to replace and upgrade the functions of the existing substation to support the new and expanded MWC facility and to provide significant improvements to the electrical distribution system in the westerly portion of the City.

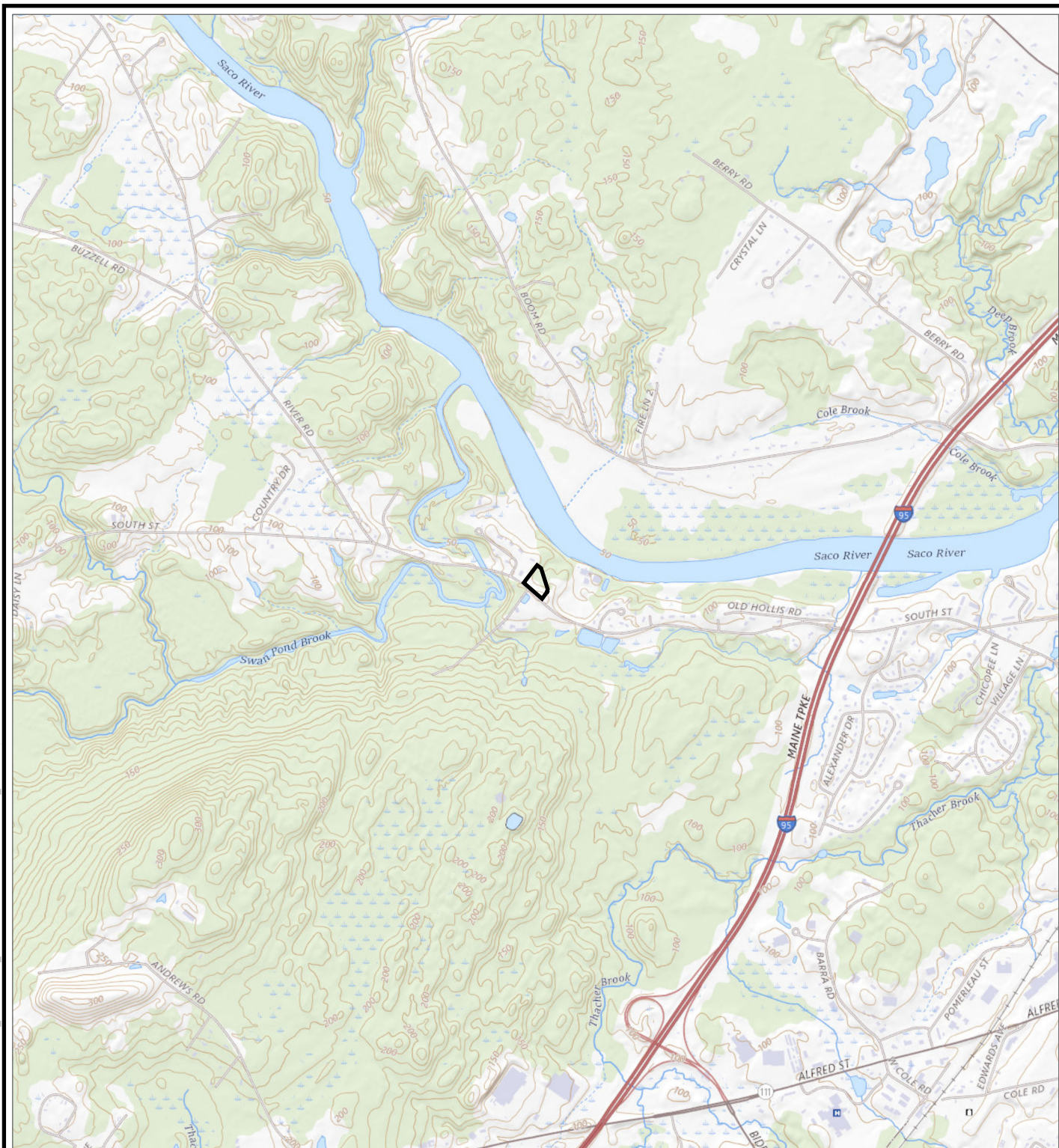
The existing substation is substantially below electrical reliability standards and the age and condition of its facilities do not adequately support the community and potential growth. The transformer at the existing substation is historically overloaded during peak load times of the year, as such CMP operations division installed a mobile transformer during the summer of 2021 to bypass the old transformer due to this chronic system overloading.

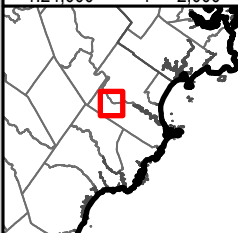
The additional electrical load required by the commissioning of the new MWC facility will not be supported by the existing transformer and as an emergency measure CMP has placed a temporary transformer at the site, hence the necessity of the proposed Project. Furthermore, the existing substation does not provide sufficient capacity to support the growing energy demand.

The infrastructure of the existing substation also does not conform to stormwater management, drainage, and containment standards of the State of Maine Chapter 500 Stormwater Management Regulations. The existing substation site does not have subsurface oil containment for the transformer, only a gravel berm around the perimeter of the foundation slab. The Project's new transformers will have internal secondary containment as well as a concrete oil containment foundation/pit system that will meet State water quality standards.

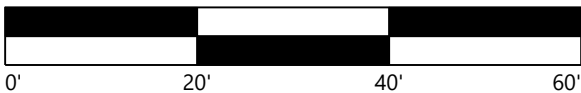
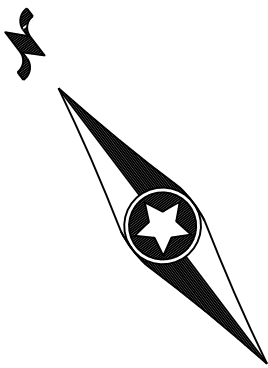
The existing substation provides a rudimentary transmission and distribution system with one 34.5 kV transmission line and one distribution circuit that serves the local community, in addition to the service connection to the existing MWC facility. The Project will continue to support the 34.5 kV transmission circuit and will initially add up to three distribution circuits, one of which will provide service to the new MWC facility with the others serving the greater community. The Project is designed to add up to one additional distribution circuit to support local demands.

COORDINATE SYSTEM: NAD 1983 STATEPLANE MAINE WEST FIPS 1802 FEET; MAP ROTATION: 0
- SAVED BY: R.JORDAN ON 9/17/2021, 12:14:52 PM; FILE PATH: T:\PROJECTS\CMP358110 BIDDEFORD SUBSTATION\2-APR\BIDDEFORD_SS SITE LOCATION USGS 8X11P



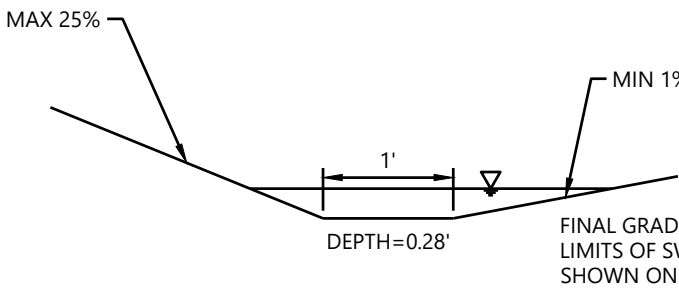
 PROJECT BOUNDARY	 0 1,000 2,000 FEET 1:24,000 1" = 2,000'	PROJECT: CMP	
		SOUTH STREET BIDDEFORD, ME	
	TITLE: BIDDEFORD SUBSTATION REBUILD		
	DRAWN BY: R. JORDAN	PROJ. NO.: 358110.1000	
	CHECKED BY: P. JACQUES	SITE LOCATION	
	APPROVED BY: M. CHRISTOPHER		
DATE: SEPTEMBER 2021			
			
6 ASHLEY DRIVE 1ST FLOOR SCARBOROUGH, ME 04074			
FILE: BIDDEFORD			

BASE MAP: USGS TOPO
DATA SOURCES: TRC, ESRI



LEGEND:

- RIGHT-OF-WAY LINES
- EX. PARCEL LINES
- EX. EASEMENT LINES
- EX. INDEX CONTOUR
- EX. INTERVAL CONTOUR
- EX. PUBLIC ROAD
- EX. FENCE
- EX. CULVERT
- EX. OVERHEAD POWER
- EX. GAS PIPELINE
- EX. TELEPHONE LINE
- EX. WATER LINE
- STORM DRAIN
- UNDERGROUND POWER
- PROP. INDEX CONTOUR
- PROP. INTERVAL CONTOUR
- DRAINAGE SWALE
- NATIVE TREES AND SHRUBS LINE
- PROP. LANDSCAPED BUFFER



GENERAL NOTES:

- TOPOGRAPHIC DATA ARE FROM INPUT PROVIDED BY AVANGRID. THE PROPERTY LINE INFORMATION SHOWN ARE FROM SURVEY CONDUCTED BY JONES ASSOCIATES ON FEBRUARY 13, 2018.
- HORIZONTAL CONTROL: NAD83, WEST ZONE
- VERTICAL CONTROL: NAVD88 (FT).
- PAD GRADING TO BE 2.00% MAX. FIELD ADJUST IF NECESSARY AND CONTACT ENGINEER OR OWNER IF ANY ELEVATIONS HAVE CHANGED.

CONTROL POINTS:

- MAG NAIL, N: 242074.1840 E: 2862755.0930, EL: 90.65'
- FIRE HYDRANT TOP NUT, N: 242202.9710 E: 2862600.6450, EL: 90.65'
- 6" SPIKE, N: 242323.3640 E: 2862478.6730, EL: 90.47'

NOT FOR CONSTRUCTION

CAUTION!!!
EXISTING UTILITIES IN THE AREA. UTILITIES LOCATION SHOWN ARE SCHEMATIC IN NATURE AND MAY NOT ACCURATELY REFLECT SIZE, HORIZONTAL, AND/OR VERTICAL LOCATION. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION PRIOR TO BEGINNING CONSTRUCTION. CONTACT AFFECTED UTILITIES AT LEAST 48 HOURS PRIOR TO CONSTRUCTION IN THIS AREA. (1-800-242-8511)

PE STAMP

AVANGRID ENGINEERING
CONFIDENTIAL, PROPRIETARY and
TRADE SECRET INFORMATION
Property of AVANGRID



FACILITY GRADING
PLAN

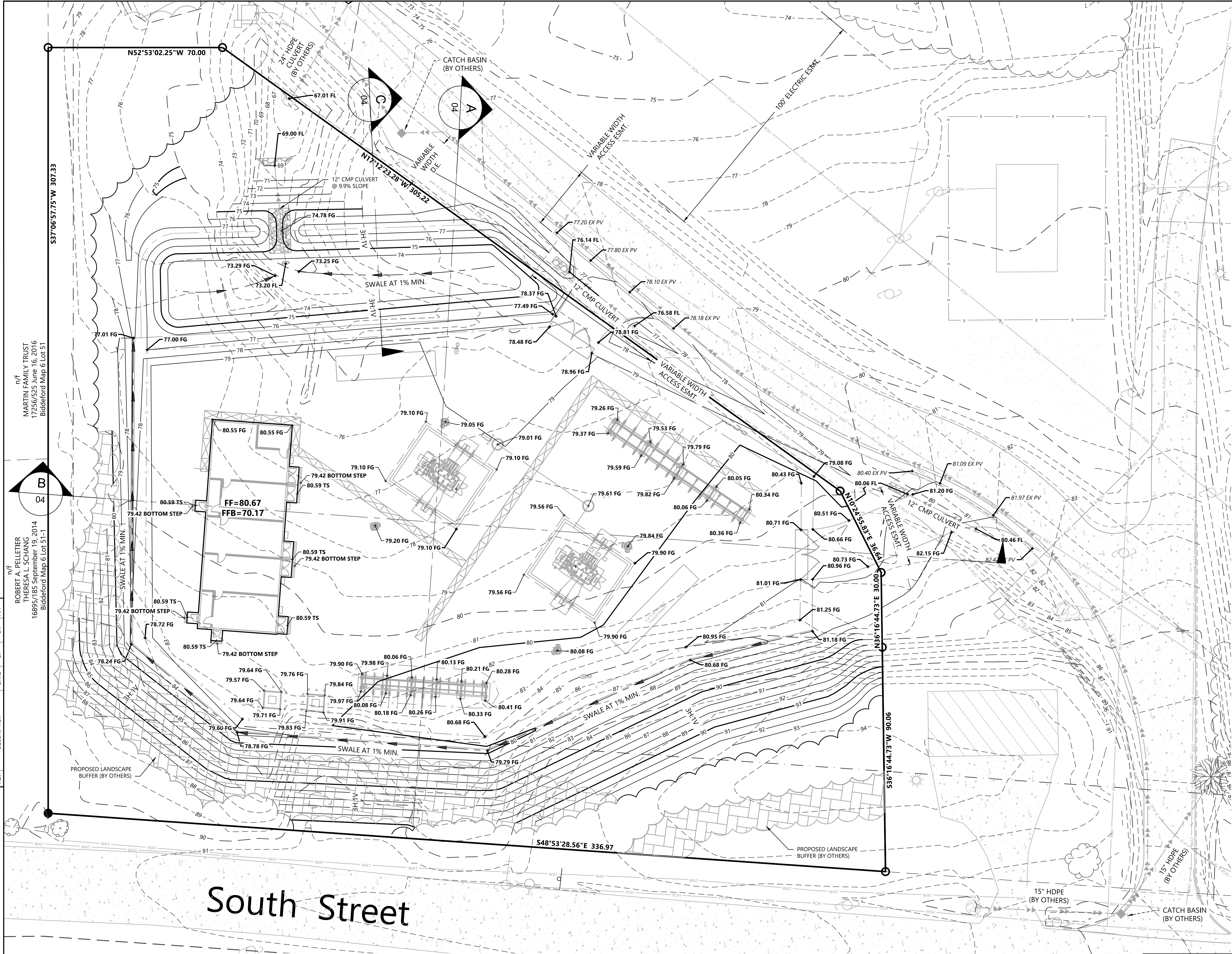
BIDDEFORD PUMP S/S BIDDEFORD, ME

REV	DESCRIPTION	DATE	BY	CK	APP

BY	BSM	NO	SCALE	SEE SHEET	FILE
CK	AA				
APP	AA				
DATE	09/08/2021				

1050-0003-004 SH001

0-00



South Street

REV	DESCRIPTION	DATE	BY	CK	APP
0-00	IFR2 - 95% ISSUED FOR REVIEW	09/08/2021	BSM	RAF	RAF
0-00	00% IFB - ISSUED FOR BID	01/28/2021	BSM	AA	AA
0-00	10% IFB - ISSUED FOR BID	02/20/2021	BSM	AA	AA
0-00	30% SUBMITTAL	11/20/2020			

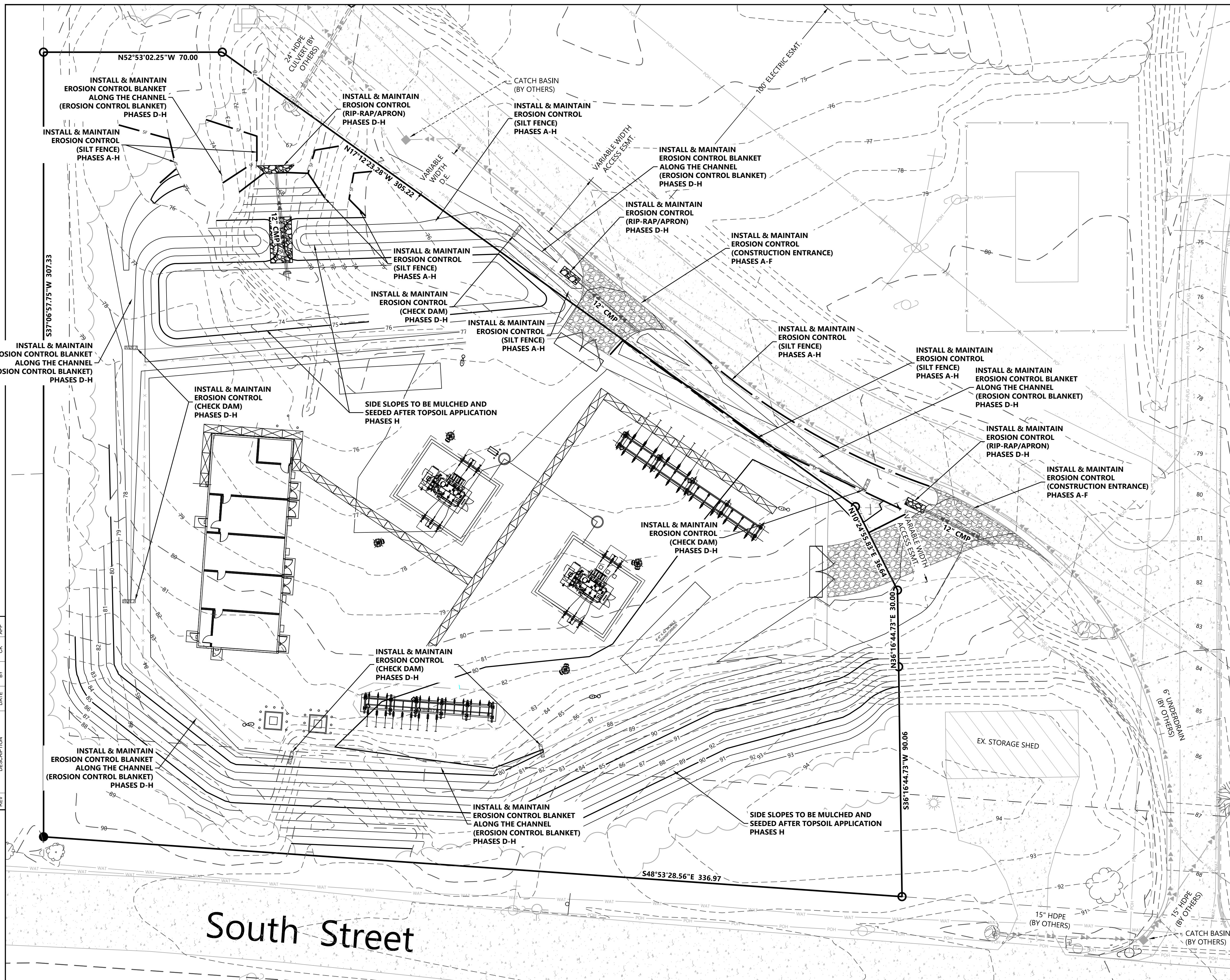
LOGO

MAINLINE
MAINLINE ENERGY CONSULTANTS LLC
1240 S. BROAD STREET, LANSDALE, PA 19446
PH: 610-855-7477 FAX: 610-855-7477

n/f
ROBERT A. PELLETIER
THERESA L. SCHANG
16895/185 September 19, 2014
Biddeford Map 6 Lot 51-1

n/f
MARTIN FAMILY TRUST
17256/525 June 16, 2016
Biddeford Map 6 Lot 51

ANSI D 12/30/2020 10:22 AM



DISTURBED AREA = 1.46 ACRES

EROSION CONTROL GENERAL NOTES:

1. REFER TO SHEET 1050-0003-005 SH002 FOR THE EROSION CONTROL DETAILS AND POLLUTION PREVENTION PLAN NOTES/SPECIFICATIONS/ REQUIREMENTS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL MEASURES OF THIS EROSION CONTROL PLAN (SWPPP) AND COMPLYING WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS REGARDING THE SWPPP.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING THESE MEASURES INCLUDING WATERING, MOWING AND GENERAL MAINTENANCE UNLESS OTHERWISE RELIEVED OF THESE DUTIES BY THE OWNER.

VEGETATION NOTES:

1. ALL DISTURBED AREAS NOT BEING RE-DISTURBED WITHIN A MINIMUM OF 14 DAYS MUST BE COVERED AND STABILIZED.
2. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS IMMEDIATELY UPON COMPLETION OF FINAL GRADING.
3. NO PUBLIC ACCEPTANCE UNTIL (FINAL STABILIZATION) VEGETATION IS ESTABLISHED ON ALL DISTURBED AREAS.
4. FINAL STABILIZATION IS DEFINED AS A UNIFORM PERENNIAL VEGETATIVE COVER AT A MINIMUM OF 70% RESTORATION OF THE NATIVE OR NATURAL PREEXISTING BACKGROUND COVER FOR THE AREA.

CONSTRUCTION ACTIVITIES:
THE CONSTRUCTION ACTIVITY INCLUDED IN THIS PLAN
WILL INCLUDE THE FOLLOWING CONSTRUCTION PHASES:

- A. CLEARING AND GRUBBING
- B. STOCK PILING
- C. ROUGH GRADING
- D. UTILITY INSTALLATION/EXCAVATION OF TRENCHES
- E. FINAL OR FINISH GRADING
- F. PAVEMENT INSTALLATION
- G. BUILDING CONSTRUCTION
- H. PREPARATION OF SEEDING AND PLANTING

GENERAL NOTES:

1. TOPOGRAPHIC DATA ARE FROM INPUT PROVIDED BY AVANGRID. THE PROPERTY LINE INFORMATION SHOWN ARE FROM SURVEY CONDUCTED BY JONES ASSOCIATES ON FEBRUARY 13, 2018.
2. HORIZONTAL CONTROL: NAD83, WEST ZONE
3. VERTICAL CONTROL: NAVD88 (FT).

CONTROL POINTS:

1. MAG NAIL, N: 242074.1840 E: 2862755.0930, EL: 90.65'
2. FIRE HYDRANT TOP NUT, N: 242202.9710 E: 2862600.6450, EL: 90.65'
3. 6" SPIKE, N: 242323.3640 E: 2862478.6730, EL: 90.47'

NOT FOR
CONSTRUCTION

CAUTION!!!
EXISTING UTILITIES IN THE AREA. UTILITIES
LOCATION SHOWN ARE SCHEMATIC IN NATURE
AND MAY NOT ACCURATELY REFLECT SIZE,
HORIZONTAL, AND/OR VERTICAL LOCATION.
THE CONTRACTOR SHALL VERIFY THE EXACT
LOCATION PRIOR TO BEGINNING CONSTRUCTION.
CONTACT AFFECTED UTILITIES AT LEAST 48
HOURS PRIOR TO CONSTRUCTION IN THIS AREA.
(1-800-242-8511)

PE STAMP	AVANGRID ENGINEERING CONFIDENTIAL, PROPRIETARY and TRADE SECRET INFORMATION Property of AVANGRID  AVANGRID					EROSION CONTROL PLAN BIDDEFORD PUMP S/S BIDDEFORD, ME BY: BSM CK: AA SCALE: SEE SHEET FILE: NO. 1050-0003-005 SH001 APP: AA DATE: 09/08/2021 REV: 0-00			
REV	DESCRIPTION	DATE	BY	CK	APP				

PLANNING BOARD
REPORT

October 29, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: New Electrical Substation– CMPCO
466-468 South Street (Tax Map 2 Lot 401)

Sketch Plan Review

Review Status: New application.

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Application form dated 10/12/2021.
2. Project narrative; *Central Maine Power Company Biddeford Pump Substation*, prepared by TRC Companies, LLC.
3. Plan entitled: *Facility Grading Plan, Biddeford Pump S/S, Biddeford ME*. Prepared for Avangrid, prepared by Main Line Energy Consultants, LLC. REV Date: 9/8/2021.
4. Plan set entitled: *Biddeford Pump Biddeford, Maine*, Landscape Buffer Screening Plan. Prepared for Avangrid, prepared by Westwood Professional Services. Date: 10/12/2021. (Includes *Overall Landscape Screening Plan* and *Landscape Screening Notes & Details*)

With review of the above information and the Land Development Regulations, I offer the following comments on compliance with the City's ordinances.

PROJECT DESCRIPTION

The project site, located on a new lot, portion of the Maine Water Company (MWC) property on South Street. The site is located in the SR-1 Zone and is outside the shoreland overlay zones associated with the Saco River and nearby Swamp Pond Brook, though falls within the 1,000-foot SRCC (Saco River Corridor Commission) Buffer. The proposal is to construct a new electrical substation, replacing an existing substation that is inadequate for MWC's new and expanded facility.

REVIEW PROCESS

The proposed development is before the Planning Board as required by Article XI Site Plan Review of the City's Land Development Regulations. Per Section 4.B.II.G any development subject to a conditional use permit that will result in 5,000 SF or greater of impervious surface is subject to Major Site Plan Review. Per the Table of Land Uses in Article V, the proposed use, *Essential Services*, is a conditional use in the SR-1 Zone.

As outlined in Part II Procedure for Site Development, Sec. 3 requires major project review to be conducted in two steps; sketch plan and final plan.

COMPLIANCE WITH THE CITY'S ORDINANCES

The proposed development is a public utility that is defined in the ordinance as *Essential Services*. In addition to Site Plan Review there are two primary regulatory provisions that this use and development are subject to: *Conditional Uses* (Art. VII) and Sec. 27 under Performance Standards (Art. VI) *Essential services and water supply systems*. Below are some, not all, the provisions the applicant will need to review and address in subsequent submissions.

CONDITIONAL USES (ART. VII)

1. Sec. 6. Standards. The applicant should review these standards and identify those that are not applicable and demonstrate compliance to those that are applicable.

PERFORMANCE STANDARDS (ART. VI)

2. Essential services and water supply systems (SEC. 27). The applicant and Planning Board should discuss and determine if an environmental assessment (Sec. 27.E) will be required, and if so, the expectations from the Board.

SITE PLAN REVIEW (ART. XI)

3. Sec. 5.B. Site design criteria. The applicant should review these standards and identify those that are not applicable, determine any waiver requests and demonstrate compliance to those that are applicable.
4. Sec. 5.B.4.d Landscaping. The applicant has submitted a landscape screening plan. Initial comments are:
 - a. Considering there is a fair amount of mature trees being removed, the plant palette includes only vegetation that will mature to fairly low heights. It is understood that there are specific setback requirements for tall vegetation from the substation equipment and lines, however, there appears to be opportunities outside these setbacks.

5. Utility connections. The applicant should identify and new/upgraded utility connections required by the proposed development. Will the new building require water and sanitary connections?

WAIVER REQUESTS

None requested. The applicant should review compliance with standards and provide a list of those standards they seek a waiver from along with a rationale for the Board to grant it.

CONCLUSION

The submitted application provides sufficient amount of information for the Planning Board to comment on and ask questions as to familiarize itself with the project. The Board should share its expectations for addressing comments by staff, board members or the public in the subsequent submissions, as well as determining if there is specific information in addition to the required application submittals that it will need to make a final determination.

Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245

PLANNING BOARD
REPORT

October 29, 2021

Biddeford Planning Board
Greg Tansley, City Planner
City of Biddeford
205 Main Street
Biddeford, Maine 04005

Application: 5 Points Culinary School– BVH Biddeford, LLC
424 Alfred Street (Tax Map 20 Lot 26-1)

Sketch Plan Review

Review Status: New plan application.

Board members and Mr. Tansley,

The following application information has been provided for review:

1. Application form dated 10/12/2021.
2. Cover letter dated 10/12/2021 and project narrative; *Re: 5 Points – Proposed Biddeford Regional College of Technology* prepared by Trillium Engineering Group.
3. Contract Zone Request: letter dated 9/24/2021 from Barrett Made Architecture + Construction.
4. Graphic renderings of plans and proposed building elevations: *Site Plan Review, BRCOT @ 5 Points, Biddeford, Maine, submitted 2021.10.13.* Prepared by Barrett Made Architecture + Construction
5. Plan set entitled: *5 Points, Biddeford, Maine, October 13, 2021.* Prepared by Trillium Engineering Group.
6. Architectural Plan set entitled: *5 Points BRCOT 420 Alfred Street Biddeford, Maine, 04005, Issued for Site Plan Review Date of Issue: 10/13/2021.* Prepared by Barrett Made Architecture + Construction.
7. Landscape Plan: *5 Points BRCOT 420 Alfred Street Biddeford, Maine, 04005.* Prepared by Sebago Technics, REV date 10/13/21.
8. Traffic Trip Analysis Memorandum prepared by Sebago Technics, dated 10/13/2021.

With review of the above information and the Land Development Regulations, I offer the following comments on compliance with the City's ordinances.

PROJECT DESCRIPTION

The project site, located in the Industrial-3 Zone, is the existing 5 Points Shopping Center commercial. The proposal is to establish a culinary school for the Biddeford Regional College of Technology (BRCOT) through the adaptive re-use of the former Smitty's Cinema movie theater. In addition there is an adult education center proposed next door in the former Planet Fitness gym. In total, approximately 40,000 SF of commercial space is planned to be utilized for the new institutional use. Changes to this portion of the building's exterior elevation is proposed. The remaining existing shopping center uses will remain. New parking lot islands along the frontage of the entire building is planned to be landscaped. Other than this there are no significant changes to the site proposed.

REVIEW PROCESS

The proposed development is before the Planning Board as required by Article XI Site Plan Review of the City's Land Development Regulations. Per Section 4.B.II.D any changes of use affecting 10,000 SF or more of floor area is subject to Major Site Plan Review.

As outlined in Part II Procedure for Site Development, Sec. 3 requires major project review to be conducted in two steps; sketch plan and final plan.

COMPLIANCE WITH THE CITY'S ORDINANCES

1. Gateway Zone. Article V, Section 2.e. identifies the Industrial -3 base zone as a Gateway and major entrance to the City, whereby requiring more consideration by the Planning Board as to the development's design and landscaping and building facades.
 - a. The proposed building façade renovation does appear to use masonry materials, brick, among other materials, as required in the Industrial-3 zone, Section 5.B.4.a.2 of the Article XI Site Plan Review (Part II). Building elevation, renderings and siding information has been submitted.
2. Site Design. With the proposed development being primarily a change of use and renovations to the exterior façade of the existing building, there are no substantial changes to the site. The addition of trees and new landscaped islands at the end of the parking banks are proposed. The islands appear to be curbed, though the material is not specified.

In consideration of this change it may be prudent for the applicant, City Staff and the Planning Board to determine if the current travel lane and the pedestrian walkway at the front of the building is sufficient space for the intended long-term use.

- a. Consultation with the Fire Department should be done prior to subsequent submittals to determine if the travel lane is sufficient for their needs with regard to emergency access and fire lane requirements.
 - b. Consideration should be given to expanding the pedestrian area in front of the building to provide a more conducive environment for spontaneous limited sized gatherings and seating. The extra space can likely be accommodated by eliminating some of the parking.
 - c. ADA accessible routes between the building and accessible parking spaces should be reviewed and determine if there are upgrades/improvements warranted. From an initial review there does appear to be some opportunities for improvement.
3. Landscape Design. The plant pallet appears to be a mix of attractive and hardy species. The applicant and the Board may want to consider large street trees along the property's frontage of Alfred Street. Perhaps upright tall species such as American Elm, would provide a welcomed presence along the street while being upright and tall enough to not screen the building facades and signage. This would contribute to advancing the property's conformance to City's landscaping standards as well as to the Gateway Zone.
4. City Engineering: Initial comments include the following:
 - a. Verify and locate the storm drains on the lot and remove any roof drains that are connected to the sewer system and connect to the storm system. This is especially prudent where the utilities may be located under the proposed islands.
 - b. Provide information on grease trap location and sizing. IPP and fog permits will be part of the approval process, especially for the cosmetology portion of the building relative to the IPP.
 - c. Provide information on proposed flows for sanitary sewer, which will be required for final permitting of sewer with the City.
 - d. All existing catch basins on the site must be fitted with Casco Bay traps. Review all existing CBs and identify where Casco traps are needed.

WAIVER REQUESTS

None requested. The application is part of a Contract Zone request; however, the applicant should review compliance with standards and provide a list of those standards they seek a waiver from along with a rationale for the Board to grant it.

CONCLUSION

The submitted application provides sufficient amount of information for the Planning Board to comment on and ask questions as to familiarize itself with the project. The Board should share its expectations for addressing comments by staff, board members or the public in the subsequent submissions, as well as determining if there is specific information in addition to the required application submittals that it will need to make a final determination.

Feel free to contact me with questions.

Best regards,



Christopher Di Matteo
City of Biddeford Contract Planner.
cdimatteo@longmeadowpla.com
207.604.4245



189 Main Street, Suite 200
Yarmouth, ME 04096

October 12, 2021

City of Biddeford
Attn: Greg Tansley
205 Main Street
Biddeford, ME 04005

Re: 5 Points – Proposed Biddeford Regional College of Technology
Site Plan Application

Dear Greg:

Trillium Engineering Group is providing this project narrative for the proposed renovations to the existing 5 Points shopping center (Tax Map 20, Lot 26-1). This project proposes converting a portion of the existing shopping plaza into a 37,500 ± culinary school.

The immediate site surrounding the proposed area of work features a relatively flat terrain with the existing sloped parking lot grading towards an existing catch basin network. This overall grading layout is to remain, however, existing striped "no parking" areas of the parking lot are to be removed and replaced with proposed vegetated islands. Additionally, this project also proposes removing (5) parking spaces to create an extended walkway area with an associated vegetated island.

This project will be served by the existing water, sewer, and gas lines connected to the building. Trillium Engineering Group is still in the process of obtaining approval from the Fire Department, Water Service, and Sewer Service. Note that police department approval is not required, as this project does not propose a road name designation.

Thank you for taking the time to review this. An architectural narrative prepared by Barrett Made has also been included in this application. Should you have any further questions or require any additional information, please do not hesitate to ask.

Sincerely,

A handwritten signature in black ink, appearing to read 'Eric Dube', with a stylized flourish at the end.

Eric Dube, P.E.
Trillium Engineering Group

3.6 Architectural Approach

Architectural design plans have been provided and reflect the approach described below.

3.6.1 Building Organization

Description of Spaces

The Proposed School use is the only proposed change of use within the building that requires interior modifications. The location of the school is at the Southwest Corner of the building and utilizes the end cap and adjacent space. The Biddeford Regional College of Technology (BRCOT) space includes the Culinary Program, Hospitality Program, and Cosmetology Program. The adaptive re-use of the former Smitty's Cinema provides significant existing infrastructure to augment the proposed BRCOT programs.

The largest piece of existing infrastructure is the commercial kitchen located in the rear of the building which will be cleaned, reused, and integrated in the teachings of both Culinary and Hospitality programs. The Culinary program's classroom is located directly adjacent to the Kitchen and includes a tiered space with moveable seating for students to view the kitchen in use for demonstrations.

Directly across the Hall from The Culinary Classroom is the Hospitality Classroom. This Classroom includes a mock hotel front desk space as well as a mock Hotel room for demonstration and teaching. This space will not function as nor accommodate sleeping or dwelling on site.

In the heart of the building are Faculty offices, meeting rooms, study nooks, restrooms, student locker rooms, and general storage and Utility spaces. The restrooms are another piece of infrastructure that exists and will be re-used with minor refurbishment.

The front of the building contains the Cosmetology classroom and Cosmetology demo space, Conference Room, Lobby/Lounge, Café, meeting rooms, and additional offices. Each of these programs share the ability to be utilized as public uses.

The cosmetology demo space will be a fully functioning studio that could be opened to the public for students to gain real time experience.

The conference room is sized for meetings of up to 100 people depending on layout of furniture and the space. This is intended to serve the greater BRCOT community as well as Conferences.

The Café and Lounge that abuts the exterior entrance façade is intended to serve the student population, but like the Cosmetology Studio, will act as a classroom where students can gain real time experience.

The other Educational Program that will be included is the Adult Education program that will utilize the former Planet Fitness space and end cap of the building. Within this space will be 8 classrooms, 2 of which will be computer labs, staff offices, and re-use of existing restrooms. There is a smaller entrance/lobby space that is adjacent to the BRCOT Café and Lobby. Depending on Staffing and Operations, the café and lounge could be opened to this population of students as well. This is an exciting opportunity for the space and site establish a collaborative educational core of different programs with a community gathering space.

Heights, Grades

In general, the existing building is intended to be re-clad utilizing much of the existing architectural forms. The largest interventions in regard to height will be the Gable Ends utilized at specific major entry points. The exterior of the building outside of the school is provided as a basis of design, but with on going tenant negotiations, corporate branding and tenant requirements could modify what is shown. Grading in general will remain the same.

Entrances and Egresses

Buildings entrances and Egresses will be oriented towards the existing sidewalk that runs parallel with the façade of the building. Planting and vegetated buffers will be added to the site to provide traffic calming and re-integrate natural features into the site to make a safer pedestrian and student space.

Materials and Design

The design intent to the exterior is update the existing EFIS and Brick building with contemporary materials, colors, and forms while creating a clear Identity for the school and utilizing similar materials elsewhere to create a cohesive mixed-use campus. Natural Wood look materials have been juxtaposed with darker composite materials and colors that is referential to Hospitality and Culinary development in the region. The intent is to create similar characteristics of feel and scale where students might end up working in the future. Although not part of this approval process, there is an anticipated residential development on the northeast portion of the site that has also influenced some of the depicted materials to create a dialogue between residential, commercial, and the educational aesthetics.

CITY OF BIDDEFORD, MAINE
PLANNING BOARD
P.O. Box 586, 205 Main Street Biddeford, Maine 04005
207-284-9115

APPLICATION FORM

Type of Application:

- | | | |
|--|--|--------------------------------------|
| ☐ Shoreland Zoning Permit | ☒ Site Plan Review | ☐ Extraction |
| ☐ Conditional Use Permit | ☐ Subdivision | ☐ Private Way |
| ☐ Other: _____ | | |

Applicant Information:

Applicant's Name: BVH Biddeford, LLC

Applicant's Mailing Address: 2 Livewell Drive, Suite 201, Kennebunk, ME 04043

Applicant's Telephone: 207-985-5132

What is Applicant's legal interest in the property?

- ☒ Owner ☐ Potential Buyer with Contract ☐ Lease/Rental Agreement

Owner's Name: Tim Harrington

Owner's Address: 2 Livewell Drive, Suite 201, Kennebunk, ME 04043

Owner's Telephone: 207-985-5132

Agent's Name: Eric Dube, P.E. - Trillium Engineering Group

Agent's Address: 189 Main Street, Yarmouth ME 04096

Telephone: 207-307-0872

Engineer/Surveyor: Eric Dube, P.E. - Trillium Engineering Group

Engineer/Surveyor's Address: 189 Main Street, Yarmouth ME 04096

Telephone: 207-307-0872

Project Location and Lot Information:

Street Address: 424 Alfred Street

Tax Map: 20 Lot: 26-1

Current Zoning: I-3 Shoreland Zoning: N/A

Size of lot: 23.10 ☒ acres ☐ s.f. Lot Frontage: 1,334'

Existing Use of Property: Multi-business strip mall

Property currently serviced by:

☒ City Road	☐ Private Road
☒ Public Sewer	☐ Septic System
☒ Public Water	☐ Private Well
☐ Public Trash	☐ Private Hauler

Slope Conditions in Area of Construction (if applicable):

☒ Flat (0-3 % slope) ☐ Rolling (3-8% slope) ☐ Hilly (8-15% slope) ☐ Steep (15% + slope)

Are there any wetlands or waterbodies on the site? ☒ Yes ☐ No If yes, attach information

Do you plan to bring fill onto the lot? ☐ Yes ☒ No If yes, attach information

Description of proposed use of property:

Project/Proposed Use Description: A proposed culinary school to occupy a portion of the existing strip mall. Additionally, a portion of the parking lot shall be re-designed to include landscaped islands.

Property to be serviced by:

☒ City Road	☐ Private Road
☒ Public Sewer	☐ Septic System
☒ Public Water	☐ Private Well
☐ Public Trash	☐ Private Hauler

Is this project part of a larger project? ☐ Yes ☒ No

☐ If in a Shoreland Zone: N/A

Percent of residential lot coverage (Max. 20%): _____

Percent of structure expansion (Max. 30%): _____

☐ If Subdivision Review, number of lots proposed: N/A

☐ If a Private Way is proposed, number of lots served: N/A

☐ **If Site Plan Review, you must provide the following information:**

Total new square feet footprint of structures: 0

Total new square feet paving/parking: 0

Waiver Requests (attach details):

1. _____
2. _____
3. _____
4. _____
5. _____

Attachments:

A. Letters of Approval

- ☐ Fire Department - Contact Chief or Deputy Chief - 282-9986
- ☐ Ability to Serve for Water Service – Maine Water - 282-1543
- ☐ Ability to Serve for Sewer Service- Engineering Dept (Sewer) - Tom Milligan 284-9118
- ☐ Police Department - E-911 Road Name Designation - Contact Joanne Fisk - 282-5127

B. Letter to Planning Board describing project, waiver requests, proposed improvements, addressing permit requirements, etc.

C. Photographs of site.

D. Architectural renderings/drawings of proposed buildings, as required.

E. Engineered Plans, as required.

Fees (due at time of application):

Refer to "Attachment A Fees and Charges" of the Land Development Regulations for more information. Consult with Planning Staff if you have questions.

Required Signatures:

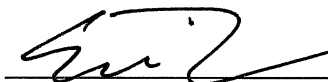
By signing this application, as the foresaid applicant or authorized agent:

- I certify that I have read and completely understand the application;
- I certify that the information contained in this application and it's attachments are true and correct;
- I understand that all information provided on this form and all other documents submitted as part of my proposal is a matter of public record;
- I understand that copies of this information may be supplied upon request to an interested party.
- I understand that additional funds may be required through the course of review for special studies, legal review costs, and/or engineering review.
- I understand that by submitting this application I am not guaranteed a place on any particular agenda. I further understand that the City Planner will place me on an agenda for review when the application is deemed substantially complete.

☐ Project proposed to have 1 acre or more of site disturbance:

-Project may need to apply for a Maine Construction General Permit and shall comply with the requirements of DEP Chapter 500 Stormwater Regulations, as they apply.

Signature of applicant:



Date: 10/12/2021

Signature of owner of property:

Date: _____

**IF PLAN APPROVAL IS ANTICIPATED, PROVIDE 2 FULL SIZE MYLARS & 2 FULL SIZE PAPER COPIES FOR BOARD SIGNATURE (AS APPLICABLE).
CHECK WITH PLANNING STAFF FOR CLARIFICATION.**

**CHECKLIST FOR
SITE PLAN
REQUIREMENTS**

YES **NO**

- | | | |
|-------------------------------------|-------------------------------------|--|
| ☒ | ☐ | Be on sheet size of 24 by 36 inches. |
| ☒ | ☐ | The scale of said plan shall be not less than one inch equals 50 feet and shall be indicated on the plat by use of a bar scale. |
| ☒ | ☐ | The plan shall bear the date, title, north point. |
| ☒ | ☐ | The plan shall contain a location or vicinity sketch (suggested scale one inch equals 800 feet). |
| ☒ | ☐ | The plan shall contain the name and address of the developer and applicant. |
| ☒ | ☐ | All appropriate dimensional requirements. |
| ☒ | ☐ | Existing and proposed easements. |
| ☒ | ☐ | Plan of the site showing existing watercourses and water bodies, seasonal wet areas. |
| ☐ | ☒ | Plan of the site showing soil type and location of test borings. |
| ☒ | ☐ | Location of all existing and proposed utilities. |
| ☒ | ☐ | Topographic contours (every five percent for zero to three percent slope; or every two feet for steeper areas). |
| ☒ | ☐ | Plan should include preservation and supplementation of existing dominant vegetation. |
| ☒ | ☐ | Plan shall indicate which features are to be retained and which are to be removed or altered. |
| ☒ | ☐ | Location of stonewalls, graveyards, fences, stands of trees, and other important unique natural areas and site features, including but not limited to floodplains, deer wintering areas, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, sand and gravel aquifers, and historic and/or archaeological resources, together with description of such features. |
| ☒ | ☐ | Plan view of all buildings with their use, size, location, and first-floor elevation in respect to grade. |
| ☒ | ☐ | Standard elevation view of existing and proposed buildings or structures on-site. |

YES NO

- | | | |
|-------------------------------------|-------------------------------------|---|
| ☒ | ☐ | Outline of any buildings located within 200 feet of such existing or proposed buildings or structures indicating their shape, size, location, heights and volume. |
| ☒ | ☐ | Existing use of abutting properties shall be identified with approximate location of any structures thereon including access roads. |
| ☒ | ☐ | Location, width, curbing, and paving of access ways, egress ways, and streets within the site for both pedestrian and vehicular use. |
| ☒ | ☐ | The location of off-street parking and loading spaces with a layout of the parking indicated. |
| ☒ | ☐ | The size and proposed location of water mains and sanitary sewerage facilities will all necessary engineering data. |
| ☒ | ☐ | The size and location of all other existing and proposed public service connections including, without limitation, gas lines, power lines, telephone lines, and fire alarm connections and locations, indicating whether above or below ground. |
| ☒ | ☐ | The type, nature, and composition of all solid, liquid, and gaseous waste, industrial or otherwise, and the location, type, and design criteria of the storage and disposal facilities dealing with such waste. |
| ☒ | ☐ | A landscape plan and open space areas indicating grade change, vegetation to be preserved, new plantings used to stabilize areas of cut and fill, screening; plus size, location, purpose and type of vegetation. |
| ☐ | ☒ | A drainage plan including location, elevation, layout of catch basins and other surface and subsurface drainage features. |
| ☐ | ☒ | Location, size and design of proposed signs and other advertising or instructional devices. |
| ☒ | ☐ | Existing and proposed contours and finished grade elevations as well as the type, extent, and location of existing and proposed landscaping and open space areas which will be retained. |
| ☐ | ☐ | Location and type of lighting for outdoor facilities. |
| ☒ | ☐ | Lines of existing and proposed abutting streets showing width. |
| ☒ | ☐ | Surveyed property lines showing their bearing and distances and monument locations. |
| ☐ | ☐ | If subdivision is involved, the lines and names of all proposed streets, lanes, ways, or easements intended to be dedicated for public or private use. |

YES **NO**

- | | | |
|-------------------------------------|--------------------------|---|
| ☐ | ☐ | Provide copies of any covenants or restrictions that are intended to cover all or part of the land area to be developed. |
| ☒ | ☐ | Indicate limits of the wetland areas on the property. |
| ☒ | ☐ | Delineate existing zoning boundaries within 1,000 feet of the site. |
| ☒ | ☐ | Stamp and signature of either a Maine licensed land surveyor, professional engineer, or architect responsible for said plan. |
| ☐ | ☐ | Any other exhibits or data deemed necessary by the Planning Board to evaluate the proposed development for site plan review purposes. |



BK 17272 PGS 839 - 842
INSTR # 2016026756
RECEIVED YORK SS

07/11/2016 03:48:58 PM
DEBRA ANDERSON
REGISTER OF DEEDS

Space above for recording information

**QUITCLAIM DEED
(With Covenant)**

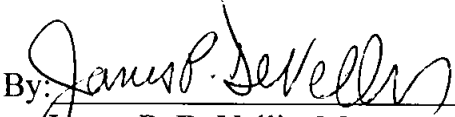
KNOW ALL PERSONS BY THESE PRESENTS, that **BIDDEFORD REALTY HOLDINGS, LLC**, a Maine limited liability company with a principal place of business in Charlestown, Suffolk County and Commonwealth of Massachusetts, in consideration of One Dollar and other valuable considerations, hereby grants to **HD LAWRENCE REALTY, LLC**, a Massachusetts limited liability company, with a principal place of business in Kennebunk, York County, State of Maine (with a mailing address of 2 Livewell Drive, Suite 201, Kennebunk, Maine 04043) with **QUITCLAIM COVENANTS**, the following described real estate, situated in the City of Biddeford, in the County of York and State of Maine:

A thirty-seven percent (37%) interest in and to that certain lot or parcel of land, together with the buildings and improvements thereon, located at 416-420 Alfred Street, in Biddeford, York County, Maine, said lot or parcel of land being more particularly described in Exhibit A attached hereto and incorporated herein by reference.

IN WITNESS WHEREOF the said BIDDEFORD REALTY HOLDINGS, LLC has caused this instrument to be executed by James P. DeVellis, its Manager, duly authorized, this 6th, day of June, 2016.

Biddeford Realty Holdings, LLC


WITNESS

By: 
James P. DeVellis, Manager

Maine R.E. Transfer Tax Paid

COMMONWEALTH OF MASSACHUSETTS

Suffolk, ss.

July 6, 2016

Then personally appeared the above-named James P. DeVellis, Manager of Biddeford Realty Holdings, LLC and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Company, before me,

Before me,



Notary Public/Attorney at Law

Print Name: _____

My commission expires: _____



TODD H. WHILTON
Notary Public
Commonwealth of Massachusetts
My Commission Expires
January 27, 2023

Exhibit A
(416-420 Alfred Street, Biddeford)

A certain lot or parcel of land with all buildings and improvements situated on the northerly side of Alfred Road in the City of Biddeford, County of York and State of Maine, and is bounded and described as follows:

Beginning at a concrete monument situated 70.00 feet northerly of and perpendicular to p.c. station 818+22.01, as shown on Maine State Highway Commission Right of Way Map State Highway "U" Biddeford, York County, Federal Aid Project No. F6360(2) June 1948 scale 1—50 file no. 16-71;

Thence running S 89° 58' 00" W along the northerly street line of Alfred Road for a distance of 109.23 more or less feet to a corner in the southerly line of property now or formerly belonging to Boston and Maine Railroad;

Thence running northeasterly bounding northwesterly by property now or formerly belonging to Boston and Maine Railroad, curving to the left along the arc of a circle having a radius of 9204.62 feet, a central angle of 2° 30' 48" for an arc distance of 403.76 feet to a point of tangency, the chord of said arc forming an interior angle of 41° 21' 53" with the previously described line;

Thence running N 47° 20' 43" E bounded northwesterly by said Boston and Maine Railroad property for a distance of 614.94 feet to a point of curvature;

Thence running northeasterly bounding northwesterly by said Boston and Maine Railroad property, curving to the right along the arc of a circle having a radius of 8013.63 feet, a central angle of 04° 55' 15" for an arc distance of 688.25 feet to the point of tangency;

Thence running N 52° 15' 58" E bounding northwesterly by said Boston and Maine Railroad property for a distance of 237.04 feet to an iron pipe at a corner;

Thence running S 39° 00' 32" E bounding northeasterly in part by property now or formerly belonging to the Central Maine Power Company, in part by property now or formerly belonging to Richard P. and Joan A. Camire and in part by property now or formerly belonging to Leo P. and Gertrude L. Michaud for a distance of 581.20 feet more or less to a concrete monument at a corner;

Thence running S 50° 58' 35" W bounding southeasterly in part by property now or formerly belonging to owners unknown, in part by property now or formerly belonging to Pauline C. Berry or owner unknown, in part by property now or formerly belonging to Michael J. and Deidre Donovan, in part by property now or formerly belonging to Sandra A. Girard and in part

by property now or formerly belonging to Albert F. and Rowena F. Gardella for a distance of 565.99 feet to an angle;

Thence running S 20° 48' 01" W bounding southeasterly by property now or formerly belonging to Richard E. and Mary Moore for a distance of 169.69 feet to an iron pipe at an angle.

Thence running S 00° 30' 55" E bounding easterly by said Moore property for a distance of 300.28 feet to remains of an iron pipe at a corner in the northerly street line of Alfred Road;

Thence running S 87° 23' 33" W along the northerly street line of Alfred Road for a distance of 301.99 feet to a corner;

Thence running N 02° 59' 00" W along the northerly street line of Alfred Road for a distance of 4.00 feet to a corner;

Thence running S 87° 01' 00" W along the northerly street line of Alfred Road for a distance of 337.99 feet to a corner;

Thence running S 87° 40' 00" W along the northerly street line of Alfred Road for a distance of 258.00 feet to a corner;

Thence running N 48° 51' 26" E along the northerly street line of Alfred Road for a distance of 55.83 feet to a corner;

Thence running S 89° 16' 30" W along the northerly street line of Alfred Road for a distance of 372.34 feet to the point and place of beginning;

Said parcel being further shown on a plan entitled "ALTA/ACSM Land Title Survey, 5 Points Shopping Center, Route 111, Biddeford, Maine, made for Picerne Real Estate" dated August 13, 2002, prepared by Owen Haskell, Inc.

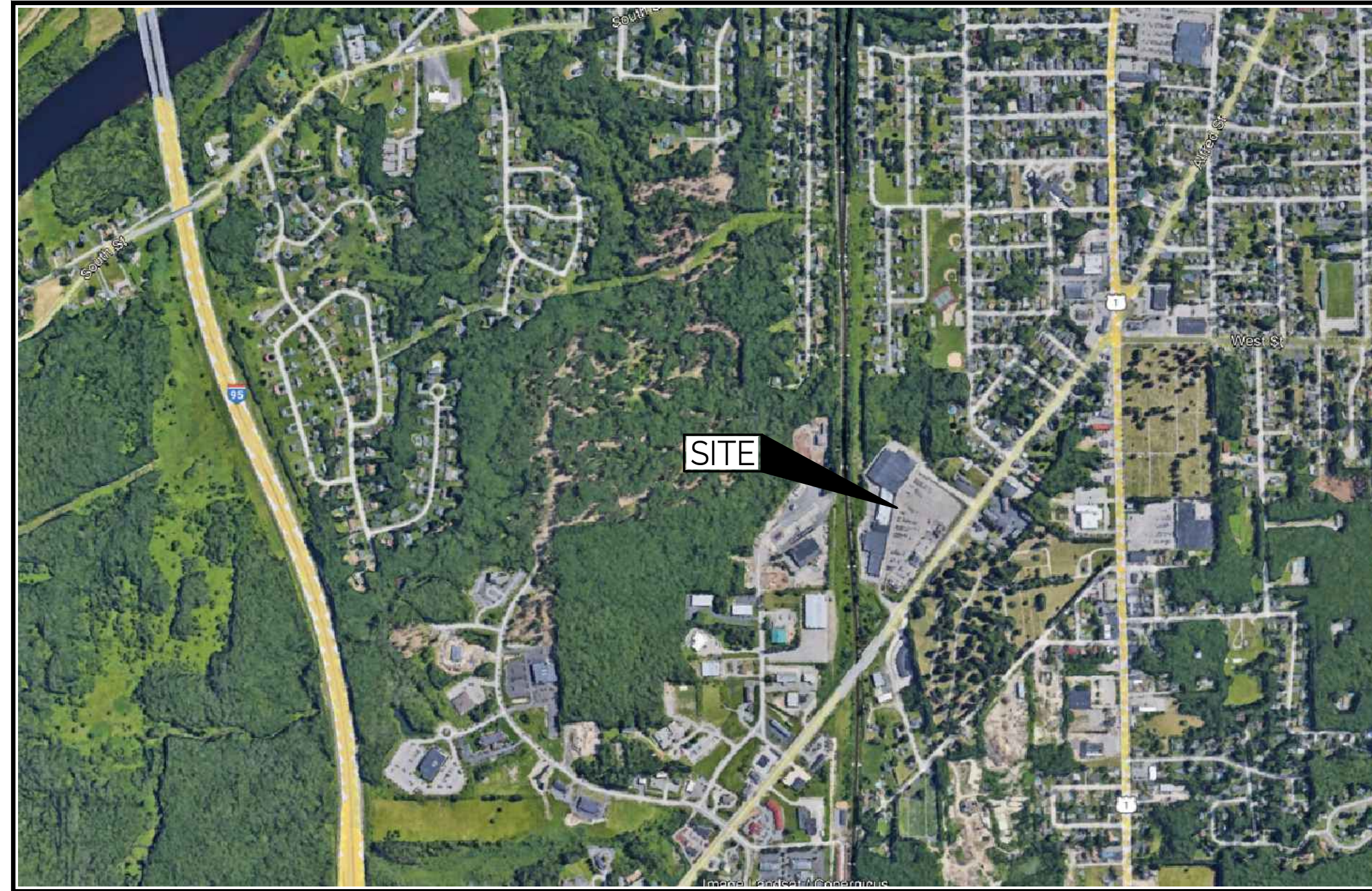
EXCEPTING such portion of the above premises as was taken by the State of Maine, Department of Transportation pursuant to a Notice of Layout and Taking, dated February 24, 2003 and recorded in the York County Registry of Deeds in Book 12616, Page 54.

Being the same premises conveyed to Biddeford Realty Holdings, LLC by deed from BVH Biddeford, LLC dated May 27, 2016 and recorded in the York County Registry of Deeds in Book 17257, Page 561.

WOODMAN EDMANDS DANYLIK AUSTIN
SMITH & JACQUES, P.A.
P.O. BOX 468
BIDDEFORD, ME 04005-0468
(207) 284-4581

5 POINTS

BIDDEFORD, MAINE
OCTOBER 13, 2021



LOCUS MAP
NOT TO SCALE

DRAWING LIST

C100	EXISTING SITE PLAN
C101	PROPOSED SITE PLAN
C200	EROSION CONTROL DETAILS

OWNER:

BVH BIDDEFORD, LLC
2 LIVEWELL DRIVE
SUITE 201
KENNEBUNK, ME 04043

CONSULTANTS:

TRILLIUM ENGINEERING GROUP
189 MAIN STREET
YARMOUTH, ME 04096

BARRETT MADE
65 HANOVER STREET
PORTLAND, ME 04101



CLIENT:

BARRETT MADE

65 HANOVER STREET
PORTLAND, ME 04101

PRELIMINARY
NOT FOR CONSTRUCTION

5 POINTS

BIDEFORD, ME

PROPOSED DEVELOPMENT

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SHEET TITLE:

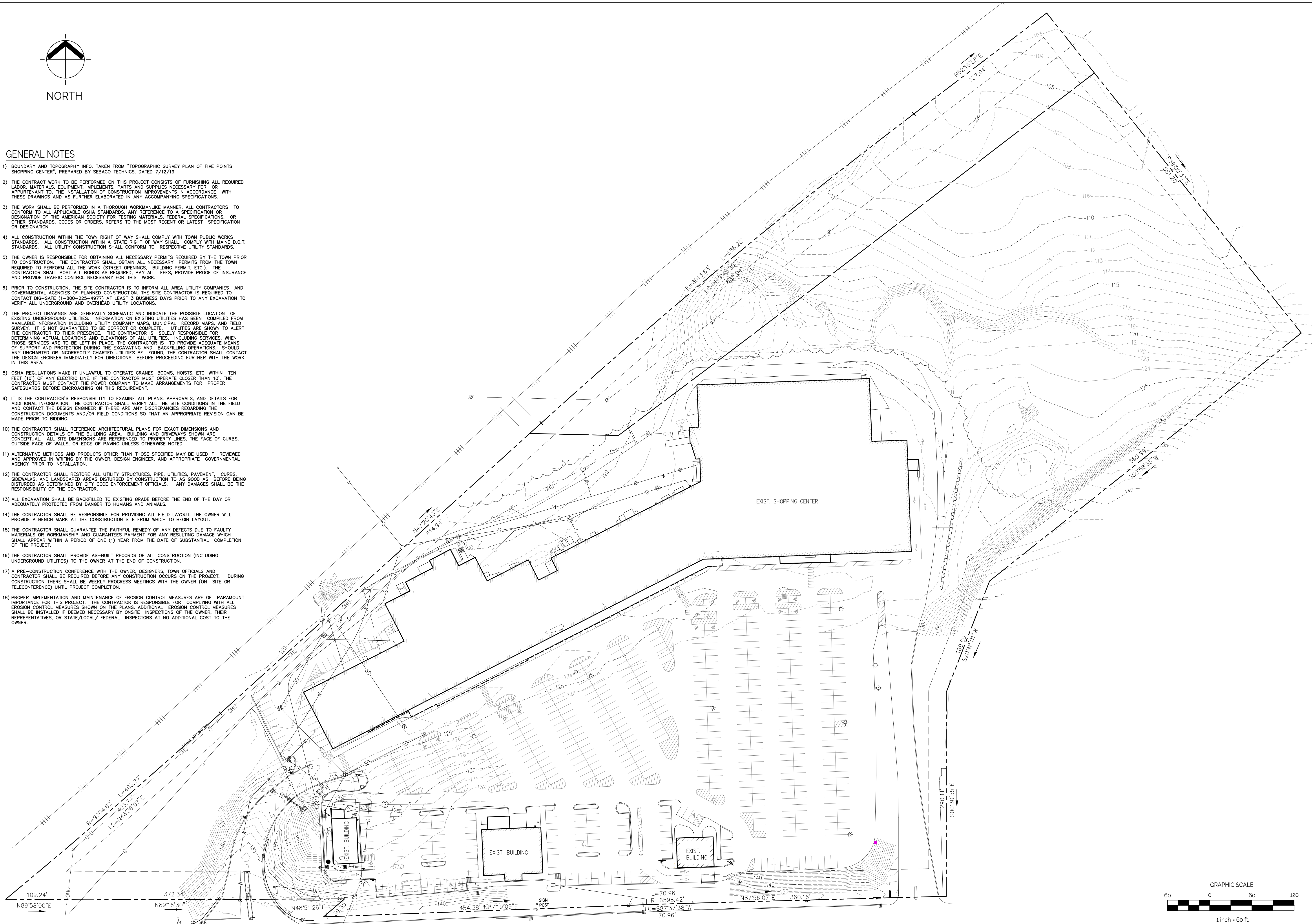
COVER SHEET

DESIGNED:	DL
DRAWN:	DL
DATE:	10-13-21
PROJECT NUMBER:	21-050

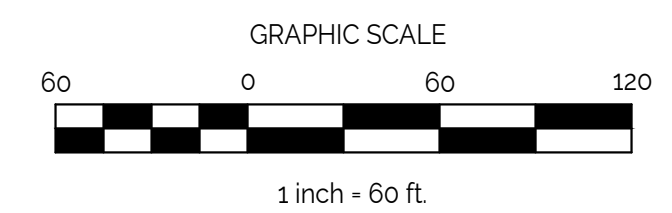
Co



- 1) BOUNDARY AND TOPOGRAPHY INFO. TAKEN FROM "TOPOGRAPHIC SURVEY PLAN OF FIVE POINTS SHOPPING CENTER", PREPARED BY SEBAGO TECHNICS, DATED 7/12/1993.
- 2) THE CONTRACT WORK TO BE PERFORMED ON THIS PROJECT CONSISTS OF FURNISHING ALL REQUIRED LABOR, MATERIALS, EQUIPMENT, IMPLEMENTS, PARTS AND SUPPLIES NECESSARY FOR, OR ASSOCIATED WITH, THE INSTALLATION OF THE WORK IN ACCORDANCE WITH THESE DRAWINGS AND AS FURTHER ELABORATED IN ANY ACCOMPANYING SPECIFICATIONS.
- 3) THE WORK SHALL BE PERFORMED IN A THOROUGH WORKMANLIKE MANNER. ALL CONTRACTORS TO CONFORM TO ALL APPLICABLE OSHA STANDARDS. ANY REFERENCE TO A SPECIFICATION OR STANDARD OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, FEDERAL SPECIFICATIONS, OR OTHER STANDARDS, CODES OR ORDINANCES, REFERS TO THE MOST RECENT OR LATEST SPECIFICATION OR DESIGNATION.
- 4) ALL CONSTRUCTION WITHIN THE TOWN RIGHT OF WAY SHALL COMPLY WITH TOWN PUBLIC WORKS STANDARD SPECIFICATIONS WITHIN A TOWN RIGHT OF WAY. COMPLY WITH MAINE D.O.T. STANDARDS. ALL UTILITY CONSTRUCTION SHALL CONFORM TO RESPECTIVE UTILITY STANDARDS.
- 5) THE OWNER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS REQUIRED BY THE TOWN PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FROM THE TOWN REQUIRED TO PERFORM ALL THE WORK (STREET OPENINGS, BUILDING PERMIT, ETC.). THE CONTRACTOR OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, FEDERAL SPECIFICATIONS, OR OTHER STANDARDS, CODES OR ORDINANCES, REFERS TO THE MOST RECENT OR LATEST SPECIFICATION OR DESIGNATION.
- 6) PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR IS TO INFORM ALL AREA UTILITY COMPANIES AND GOVERNMENTAL AGENCIES OF PLANNED CONSTRUCTION. THE SITE CONTRACTOR IS REQUIRED TO NOTIFY EACH AGENCY (1-800-225-4977) AT LEAST 3 BUSINESS DAYS PRIOR TO ANY EXCAVATION TO VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY LOCATIONS.
- 7) THE PROJECT DRAWINGS ARE GENERALLY SCHEMATIC AND INDICATE THE POSSIBLE LOCATION OF EXISTING UNDERGROUND UTILITIES. INFORMATION ON EXISTING UTILITIES HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY COMPANY MAPS, MUNICIPAL RECORD MAPS, AND FIELD SURVEYS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL UTILITIES ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL UTILITIES, INCLUDING SERVICES. WHERE SERVICES ARE TO BE LEFT IN PLACE, THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THE EXCAVATING AND BACKFILLING OPERATIONS. SHOULD THE CONTRACTOR BE REQUIRED TO REMOVE OR RELOCATE ANY UTILITIES, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH THE WORK IN THIS AREA.
- 8) OSHA REGULATIONS MAKE IT UNLAWFUL TO OPERATE CRANES, BOOMS, HOISTS, ETC. WITHIN "TEN FEET" OF ANY ELECTRIFICATION. IF THE CONTRACTOR MUST OPERATE CLOSER THAN 10' TO THE ELECTRIFICATION, THE CONTRACTOR MUST CONTACT THE POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS BEFORE ENCOACHING ON THIS REQUIREMENT.
- 9) IT IS THE CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLANS, APPROVALS, AND DETAILS FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL THE SITE CONDITIONS IN THE FIELD PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DISCREPANCIES REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT AN APPROPRIATE REVISION CAN BE MADE PRIOR TO BIDDING.
- 10) THE CONTRACTOR SHALL REFERENCE ARCHITECTURAL PLANS FOR EXACT DIMENSIONS AND LOCATIONS OF THE BUILDING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL UTILITIES ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION AND MAINTENANCE OF ALL UTILITIES, INCLUDING SERVICES. WHERE SERVICES ARE TO BE LEFT IN PLACE, THE CONTRACTOR IS TO PROVIDE ADEQUATE MEANS OF SUPPORT AND PROTECTION DURING THE EXCAVATING AND BACKFILLING OPERATIONS. SHOULD THE CONTRACTOR BE REQUIRED TO REMOVE OR RELOCATE ANY UTILITIES, THE CONTRACTOR SHALL CONTACT THE DESIGN ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH THE WORK IN THIS AREA.
- 11) ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED IN WRITING BY THE OWNER, DESIGN ENGINEER, AND APPROPRIATE GOVERNMENTAL AGENCIES PRIOR TO CONSTRUCTION.
- 12) THE CONTRACTOR SHALL RESTORE ALL UTILITY STRUCTURES, PIPE, UTILITIES, PAVEMENT, CURBS, SIDEWALKS, AND LANDSCAPED AREAS DISTURBED BY CONSTRUCTION TO AS GOOD AS BEFORE BEING DISTURBED AS DETERMINED BY CITY CODE ENFORCEMENT OFFICIALS. ANY DAMAGES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 13) EXCAVATION SHALL BE BACKFILLED TO EXISTING GRADE BEFORE THE END OF THE DAY OR ADEQUATELY PROTECTED FROM DANGER TO TRAVELERS AND ADJACENT PROPERTIES.
- 14) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL FIELD LAYOUT. THE OWNER WILL PROVIDE A BENCH MARK AT THE CONSTRUCTION SITE FROM WHICH TO BEGIN LAYOUT.
- 15) THE CONTRACTOR SHALL GUARANTEE THE FAITHFUL REMEDY OF ANY DEFECTS DUE TO FAULTY MATERIALS OR WORKSMANSHIP AND GUARANTEES PAYMENT FOR ANY RESULTING DAMAGE WHICH SHALL APPEAR WITHIN A PERIOD OF ONE (1) YEAR FROM THE DATE OF SUBSTANTIAL COMPLETION OF THE PROJECT.
- 16) THE CONTRACTOR SHALL GUARANTEE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE OWNER AT THE END OF CONSTRUCTION.
- 17) A PRE-CONSTRUCTION MEETING WITH THE OWNER, DESIGNERS, TOWN OFFICIALS AND UNDERGROUND UTILITIES REPRESENTATIVES REQUIRED BEFORE ANY CONSTRUCTION OCCURS ON THE PROJECT. DURING CONSTRUCTION THERE SHALL BE WEEKLY PROGRESS MEETINGS WITH THE OWNER (ON SITE OR TELECONFERENCE) UNTIL PROJECT COMPLETION.
- 18) PROPER IMPLEMENTATION AND MAINTENANCE OF EROSION CONTROL MEASURES ARE OF PARAMOUNT IMPORTANCE TO THE PROJECT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY ON SITE. INSPECTIONS OF THE OWNER, THEIR REPRESENTATIVES, OR STATE/LOCAL/FEDERAL INSPECTORS AT NO ADDITIONAL COST TO THE OWNER.



EXISTING SITE PLAN



SCALE: 1" = 60'-0"



BARRETT MADE

65 HANOVER STREET
PORTLAND, ME 04101

PRELIMINARY
NOT FOR CONSTRUCTION

BIDDEFORD, ME

5 POINTS

PROPOSED DEVELOPMENT

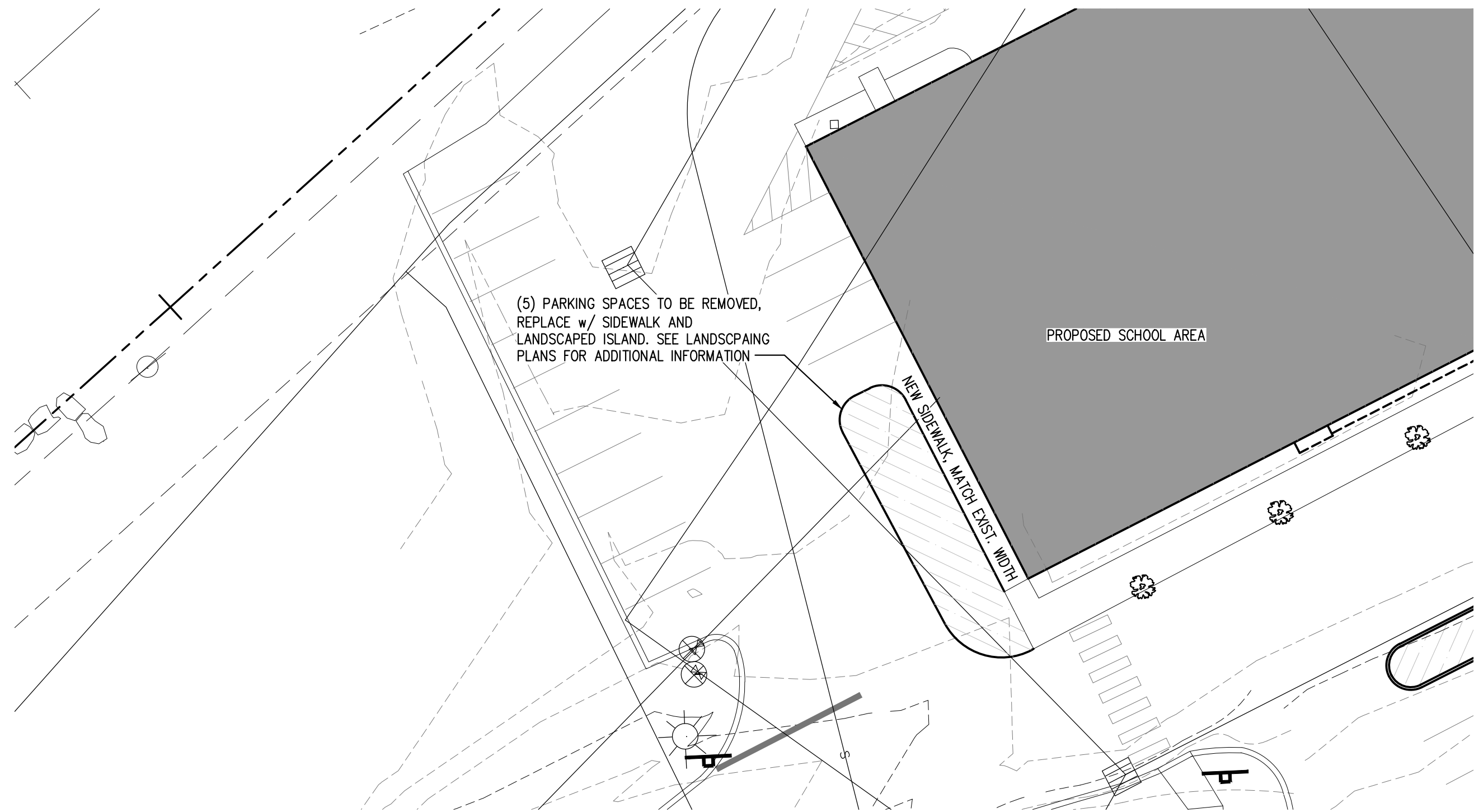
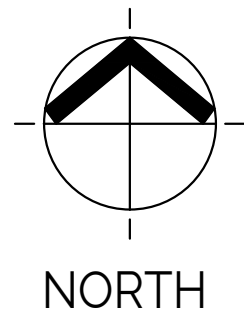
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SHEET TITLE:

EXISTING SITE PLAN

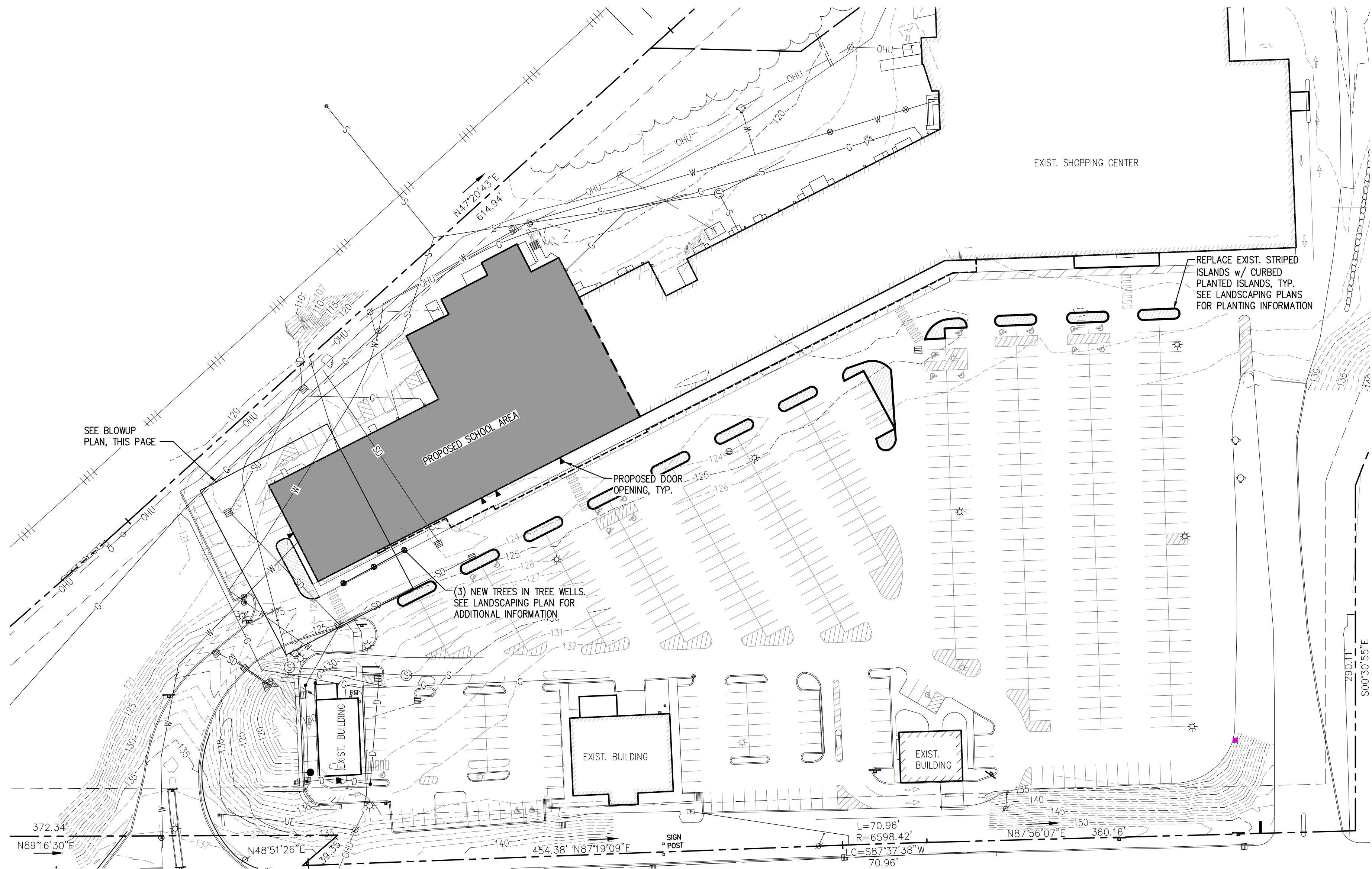
DESIGNED:	DL
DRAWN:	DL
DATE:	10-13-21
PROJECT NUMBER:	21-050

C100



PROPOSED BLOWUP PLAN - SIDE ENTRANCE

SCALE: 1" = 20'-0"



PROPOSED GRADING & DRAINAGE PLAN

SCALE: 1" = 60'-0"

ZONE: 1-3	REQUIRED:	PROPOSED:
MIN. FRONTAGE	50'	1336.70'
MAJOR R.O.W. SETBACK	40'	213.31'
SIDE SETBACK	25'	119.02'
REAR SETBACK	25'	38.13'



CLIENT:
BARRETT MADE
65 HANOVER STREET
PORTLAND, ME 04101

PRELIMINARY
NOT FOR CONSTRUCTION

BIDDEFORD, ME

5 POINTS

PROPOSED DEVELOPMENT

LEGEND		
EXISTING	DESCRIPTION	PROPOSED
	GRANITE MONUMENT - 3' OFFSET	
	IRON PIN FOUND/SET	
	IRON ROD FOUND	
	CAPED IRON ROD FOUND	
	DRILL HOLE FOUND	
	GRANITE MONUMENT FOUND	
	STREET LINE	
	LOT SETBACKS	
	PROPERTY LINE	
	ABUTTOR LINE	
	"NO CUT" BUFFER	
	WETLANDS	
	EDGE OF ROAD/TRAVELLED WAY	
	SOIL TEST PIT	
	CONTOUR	
	SPOT GRADE	
	GAS SHUT-OFF	
	UTILITY POLE	
	OVERHEAD ELECTRICAL	
	UNDERGROUND ELECTRICAL	
	ELECTRICAL TRANSFORMER	
	FIRE HYDRANT	
	WATER LINE	
	WATER GATE	
	SEWER LINE	
	SEWER MANHOLE	
	DRAINAGE MANHOLE	
	CATCH BASIN	
	UNDERDRAIN/STORMDRAIN	
	UNDERDRAIN	
	SILT FENCE	
	TEMP. STONE CHECK DAM	
	GRADING AND FLOW DIRECTION	
	HAY BALES	
	EROSION CONTROL BLANKET	
	STORMWATER BOUNDARY	
	STORMWATER FLOW (Tg)	
	FACE OF LEDGE OUTCROP	
	BIRCH	
	MAPLE	
	TREE LINE	
	SITE LIGHTING (BAYSIDE FIXTURE)	
	STONE WALL	

ISSUED	DESCRIPTION	DATE	BY	ED
	SITE PLAN SUBMISSION	10-13-21		
No.	A			

SHEET TITLE:

PROPOSED SITE PLAN

DESIGNED: DL
DRAWN: DL
DATE: 10-13-21
PROJECT NUMBER: 21-050

C101

EROSION AND SEDIMENTATION NOTES

1. THIS PLAN HAS BEEN DEVELOPED TO PROVIDE A STRATEGY FOR DEALING WITH SOIL EROSION AND SEDIMENTATION DURING AND AFTER PROJECT CONSTRUCTION. THIS PLAN IS BASED ON THE STANDARD AND SPECIFICATIONS FOR EROSION PREVENTION AS CONTAINED IN THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: "MAINE EROSION AND SEDIMENT CONTROL BMPs" PUBLISHED BY THE MAINE DEP, LATEST EDITION.

GENERAL EROSION AND SEDIMENTATION CONTROL PRACTICES

1. EROSION/SEDIMENT CONTROL DEVICES
- THE FOLLOWING EROSION SEDIMENTATION CONTROL DEVICES ARE PROPOSED FOR CONSTRUCTION ON THIS PROJECT. INSTALL THESE DEVICES AS INDICATED ON THE PLANS.
- 1.1 SILT FENCE: SILT FENCE WILL BE INSTALLED ALONG THE DOWN GRADING EDGES OF DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL THE SITE IS STABILIZED. IN AREAS WHERE STORMWATER DISCHARGES THE SILT FENCE WILL BE REINFORCED WITH HAY BALES TO HELP MAINTAIN THE INTEGRITY OF THE SILT FENCE AND TO PROVIDE ADDITIONAL TREATMENT.
- 1.2 HAY BALES TO BE PLACED IN LOW FLOW DRAINAGE SWALES AND PATHS TO TRAP SEDIMENTS AND REDUCE RUNOFF VELOCITIES. DO NOT PLACE HAY BALES IN FLOWING WATER OR STREAMS.
- 1.3 RIPRAP: PROVIDE RIPRAP IN AREAS WHERE CULVERTS DISCHARGE OR AS SHOWN ON THE PLANS.
- 1.4 LOAM, SEED, & MULCH: ALL DISTURBED AREAS, WHICH ARE NOT OTHERWISE TREATED, SHALL RECEIVE PERMANENT SEEDING AND MULCH TO STABILIZE THE DISTURBED AREAS. THE DISTURBED AREAS WILL BE REVEGETATED WITHIN 5 DAYS OF FINAL GRADING. SEEDING REQUIREMENTS ARE PROVIDED AT THE END OF THIS SPECIFICATION.
- 1.5 STRAW AND HAY MULCH: USED TO COVER DENUDED AREAS UNTIL PERMANENT SEED OR EROSION CONTROL MEASURES ARE IN PLACE. MULCH BY ITSELF CAN BE USED ON SLOPES LESS THAN 15% IN SUMMER AND 8% IN WINTER. ALL OTHER SLOPES MUST BE COVERED WITH JUTE MESH OVER MULCH, OR CURLEX II OR EXCELSIOR MAY BE USED IN PLACE OF JUTE MESH AND MULCH OVER LOAM AND SEED.
- 1.6 MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8%. VEGETATED DRAINAGE SWALES SHALL BE LINED WITH EXCELSIOR OR CURLEX.
2. TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES
- PROVIDE THE FOLLOWING TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES DURING CONSTRUCTION OF THE DEVELOPMENT:
- 2.1 SILTATION FENCE ALONG THE DOWNGRADIENT SIDE OF THE PARKING AREAS AND OF ALL FILL SECTIONS. THE SILTATION FENCE WILL REMAIN IN PLACE UNTIL THE SITE IS 85% REVEGETATED.
- 2.2 HAY BALES PLACED AT KEY LOCATIONS TO SUPPLEMENT THE SILT FENCE.
- 2.3 PROTECT TEMPORARY STOCKPILES OF STUMPS, GRUBBINGS, OR COMMON EXCAVATION AS FOLLOWS:
- A. SOIL STOCKPILE SIDE SLOPES SHALL NOT EXCEED 2:1.
- B. AVOID PLACING TEMPORARY STOCKPILES IN AREAS WITH SLOPES OVER 10 PERCENT, OR NEAR DRAINAGE SWALES. SEE ITEM 3 IN CONSTRUCTION PHASE NOTES BELOW.
- C. STABILIZE STOCKPILES WITHIN 15 DAYS BY TEMPORARILY SEEDING WITH A HYDROSEED METHOD CONTAINING AN EMULSIFIED MULCH TACKIFIER OR BY COVERING THE STOCKPILE WITH MULCH.
- D. SURROUND STOCKPILE SOIL WITH SILTATION FENCE AT BASE OF PILE.
- 2.4 ALL DENUDED AREAS WHICH HAVE BEEN ROUGH GRADED AND ARE NOT LOCATED WITHIN THE BUILDING PAD, OR PARKING AND DRIVEWAY SUBBASE AREA SHALL RECEIVE MULCH WITHIN 30 DAYS OF INITIAL DISTURBANCE OF SOIL OR WITHIN 15 DAYS AFTER COMPLETING THE ROUGH GRADING OPERATIONS. IN THE EVENT THE CONTRACTOR COMPLETES FINAL GRADING AND INSTALLATION OF LOAM AND SOD WITHIN THE TIME PERIODS PRESENTED ABOVE, INSTALLATION OF MULCH AND NETTING, WHERE APPLICABLE, IS NOT REQUIRED.
- 2.5 IF WORK IS CONDUCTED BETWEEN OCTOBER 15 AND APRIL 15, ALL DENUDED AREAS ARE TO BE COVERED WITH HAY MULCH, APPLIED AT TWICE THE NORMAL APPLICATION RATE, AND ANCHORED WITH FABRIC NETTING. THE PERIOD BETWEEN FINAL GRADING AND MULCHING SHALL BE REDUCED TO A 15 DAY MAXIMUM.
- 2.6 TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE THE SITE HAS BEEN STABILIZED OR IN AREAS WHERE PERMANENT EROSION CONTROL MEASURES HAVE BEEN INSTALLED.
3. PERMANENT EROSION CONTROL MEASURES
- THE FOLLOWING PERMANENT CONTROL MEASURES ARE REQUIRED BY THIS EROSION/SEDIMENTATION CONTROL PLAN:
- 3.1 ALL AREAS DISTURBED DURING CONSTRUCTION, BUT NOT SUBJECT TO OTHER RESTORATION (PAVING, RIPRAP, ETC.), WILL BE LOAMED, LIMED, FERTILIZED AND SEEDED. NATIVE TOPSOIL SHALL BE STOCKPILED AND REUSED FOR FINAL RESTORATION WHEN IT IS OF SUFFICIENT QUALITY.
- 3.2 SLOPES GREATER THAN 2:1 WILL RECEIVE RIPRAP.

CONSTRUCTION PHASE

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION DURING CONSTRUCTION OF THIS PROJECT.

1. ONLY THOSE AREAS UNDER ACTIVE CONSTRUCTION WILL BE CLEARED AND LEFT IN AN UNTREATED OR UNVEGETATED CONDITION. IF FINAL GRADING, LOAMING AND SEEDING WILL NOT OCCUR WITHIN 15 DAYS, SEE ITEM NO. 4.
2. PRIOR TO THE START OF CONSTRUCTION IN A SPECIFIC AREA, SILT FENCING AND/OR HAY BALES WILL BE INSTALLED AT THE TOE OF SLOPE AND IN AREAS AS LOCATED ON THE PLANS TO PROTECT AGAINST ANY CONSTRUCTION RELATED EROSION. IMMEDIATELY FOLLOWING CONSTRUCTION OF CULVERTS AND SWALES, RIP RAP APRONS SHALL BE INSTALLED, AS SHOWN ON THE PLANS.
3. TOPSOIL WILL BE STOCKPILED WHEN NECESSARY IN AREAS WHICH HAVE MINIMUM POTENTIAL FOR EROSION AND WILL BE KEPT AS FAR AS POSSIBLE FROM THE EXISTING DRAINAGE COURSE. NO STOCKPILE SHALL BE CLOSER THEN 100' OF A RESOURCE INCLUDING, BUT NOT LIMITED TO, WETLANDS, STREAMS, AND OPEN WATER BODIES. ALL STOCKPILES SHALL HAVE A SILTATION FENCE BELOW THEM REGARDLESS OF TIME OF PRESENCE. ALL STOCKPILES EXPECTED TO REMAIN LONGER THAN 15 DAYS SHALL BE:
- A. TREATED WITH ANCHORED MULCH (WITHIN 5 DAYS OF THE LAST DEPOSIT OF STOCKPILED SOIL).
- B. SEEDED WITH CONSERVATION MIX AND MULCHED IMMEDIATELY.
- C. INSTALL SILT FENCE AROUND STOCKPILE AT BASE OF PILE.
- STOCKPILES TO HAVE SILT FENCE INSTALLED AT TIME OF ESTABLISHMENT AT BASE OF PILE.
4. ALL DISTURBED AREAS EXPECTED TO REMAIN LONGER THAN 30 DAYS SHALL BE EITHER:
- A. TREATED WITH ANCHORED MULCH IMMEDIATELY, OR
- B. SEEDED WITH CONSERVATION MIX OF ANNUAL RYE GRASS (0.9 LBS/1000 SQ. FT) AND MULCHED IMMEDIATELY.
5. ALL GRADING WILL BE HELD TO A MAXIMUM 2:1 SLOPE WHERE PRACTICAL. ALL SLOPES WILL BE STABILIZED WITH PERMANENT SEEDING, OR WITH STONE, WITHIN 5 DAYS AFTER FINAL GRADING IS COMPLETE. (SEE POST-CONSTRUCTION REVEGETATION FOR SEEDING SPECIFICATION.)
6. ALL CULVERTS WILL BE PROTECTED WITH STONE RIPRAP (D50 = 6" UNLESS OTHERWISE SPECIFIED) AT INLETS AND OUTLETS.

POST-CONSTRUCTION REVEGETATION

THE FOLLOWING GENERAL PRACTICES WILL BE USED TO PREVENT EROSION AS SOON AS AN AREA IS READY TO UNDERGO FINAL GRADING.

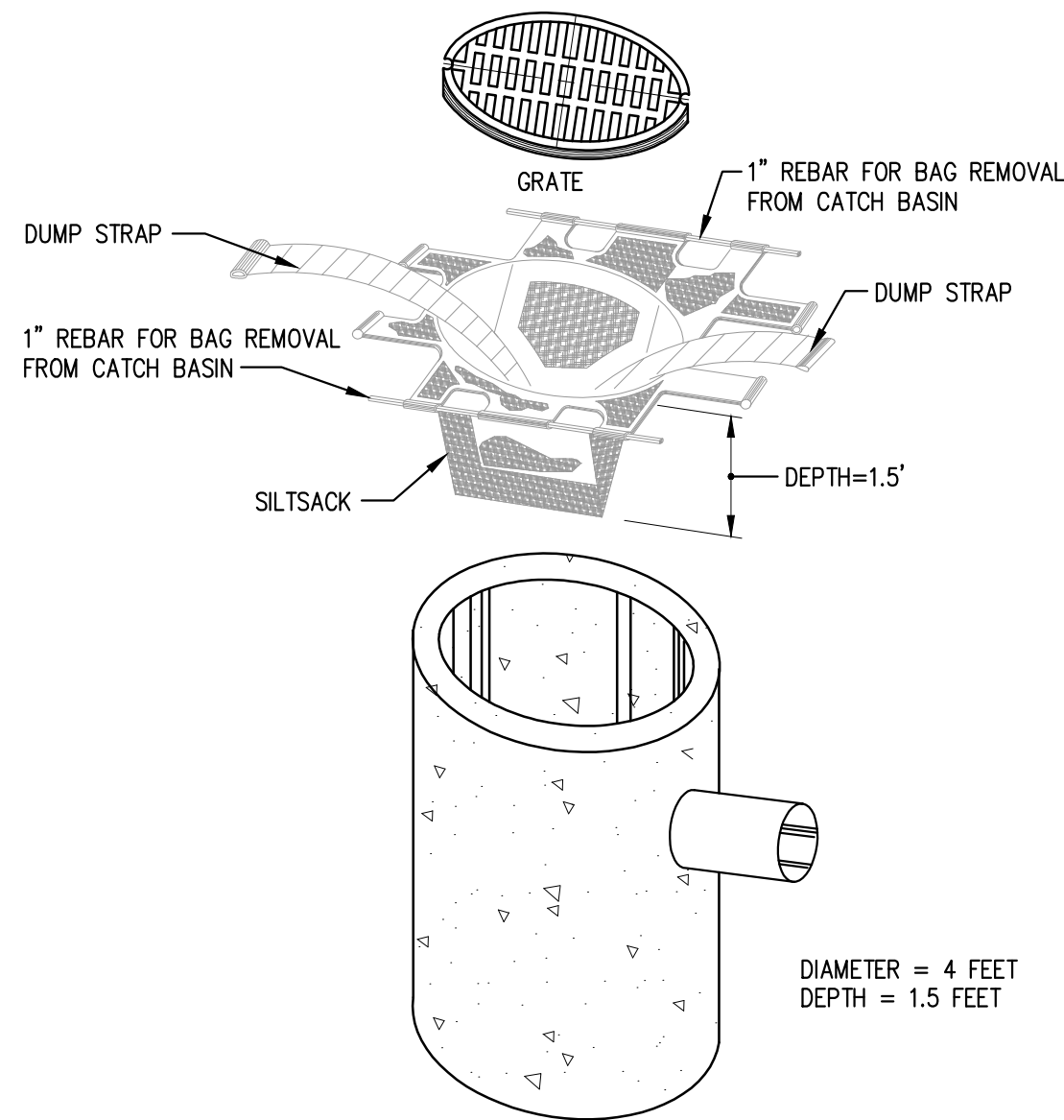
1. A MINIMUM OF 4" OF LOAM WILL BE SPREAD OVER DISTURBED AREAS AND GRADED TO A UNIFORM DEPTH AND NATURAL APPEARANCE, OR STONE WILL BE PLACED ON SLOPES TO STABILIZE SURFACES.
2. IF FINAL GRADING IS REACHED DURING THE NORMAL GROWING SEASON (4/15 TO 9/15), PERMANENT SEEDING WILL BE DONE AS SPECIFIED BELOW. PRIOR TO SEEDING, LIMESTONE SHALL BE APPLIED AT A RATE OF 138 LBS/1000 SQ. FT. AND 10:20:20 FERTILIZER AT A RATE OF 18.4 LBS/1000 SQ.FT WILL BE APPLIED. BROADCAST SEEDING AT THE FOLLOWING RATES:
- | LAWNS | SWALES |
|---------------------------------------|-------------------------------|
| KENTUCKY BLUEGRASS 0.46 LBS/1000 SF. | RED TOP 0.05 LBS/1000 SF. |
| CREeping RED FESCUE 0.46 LBS/1000 SF. | TALL FESCUE 0.46 LBS/1000 SF. |
| PERENNIAL RYE GRASS 0.11 LB/1000 SF. | |
3. AN AREA SHALL BE MULCHED IMMEDIATELY AFTER IS HAS BEEN SEEDED. MULCHING SHALL CONSIST OF HAY MULCH, HYDRO-MULCH, JUTE NET OVER MULCH, PRE-MANUFACTURED EROSION MATS OR ANY SUITABLE SUBSTITUTE DEEMED ACCEPTABLE BY THE DESIGNER.
- A. HAY MULCH SHALL BE APPLIED AT THE RATE OF 2 TONS PER ACRE. HAY MULCH SHALL BE SECURED BY EITHER: (NOTE: SOIL SHALL NOT BE VISIBLE)
- I. BEING DRIVEN OVER BY TRACKED CONSTRUCTION EQUIPMENT ON GRADES OF 5% AND LESS.
- II. BLANKETED BY TACKED PHOTODEGRADABLE/BIODEGRADABLE NETTING, OR WITH SPRAY, ON GRADES GREATER THAN 5%.
- III. SEE NOTE 6, GENERAL NOTES, AND NOTE 8, WINTER CONSTRUCTION.
- B. HYDRO-MULCH SHALL CONSIST OF A MIXTURE OF EITHER ASPHALT, WOOD FIBER OR PAPER FIBER AND WATER SPRAYED OVER A SEEDED AREA. HYDRO-MULCH SHALL NOT BE USED BETWEEN 9/15 AND 4/15.
4. CONSTRUCTION SHALL BE PLANNED TO ELIMINATE THE NEED FOR SEEDING BETWEEN SEPTEMBER 15 AND APRIL 15. SHOULD SEEDING BE NECESSARY BETWEEN SEPTEMBER 15 AND APRIL 15 THE FOLLOWING PROCEDURE SHALL BE FOLLOWED. ALSO REFER TO NOTE 9 OF WINTER CONSTRUCTION.
- A. ONLY UNFROZEN LOAM SHALL BE USED.
- B. LOAMING, SEEDING AND MULCHING WILL NOT BE DONE OVER SNOW OR ICE COVER. IF SNOW EXISTS, IT MUST BE REMOVED PRIOR TO PLACEMENT OF SEED.
- C. WHERE PERMANENT SEEDING IS NECESSARY, ANNUAL WINTER RYE (1.2 LBS/1000 SQ.FT) SHALL BE ADDED TO THE PREVIOUSLY NOTED AREAS.
- D. WHERE TEMPORARY SEEDING IS REQUIRED, ANNUAL WINTER RYE (2.6 LBS/1000 SQ. FT.) SHALL BE SOWN INSTEAD OF THE PREVIOUSLY NOTED SEEDING RATE.
- E. FERTILIZING, SEEDING AND MULCHING SHALL BE APPLIED TO LOAM THE DAY THE LOAM IS SPREAD BY MACHINERY.
- F. ALTERNATIVE HAY MULCH SHALL BE SECURED WITH PHOTODEGRADABLE/BIODEGRADABLE NETTING. TRACKING BY MACHINERY ALONE WILL NOT SUFFICE.
5. FOLLOWING FINAL SEEDING, THE SITE WILL BE INSPECTED EVERY 30 DAYS UNTIL 85% COVER HAS BEEN ESTABLISHED. RESEEDING WILL BE CARRIED OUT BY THE CONTRACTOR WITHIN 10 DAYS OF NOTIFICATION BY THE ENGINEER THAT THE EXISTING CATCH IS INADEQUATE.

MONITORING SCHEDULE

THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MONITORING, MAINTAINING, REPAIRING, REPLACING AND REMOVING ALL OF THE EROSION AND SEDIMENTATION CONTROLS OR APPOINTING A QUALIFIED SUBCONTRACTOR TO DO SO.

MAINTENANCE MEASURES WILL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, A VISUAL INSPECTION WILL BE MADE OF ALL EROSION AND SEDIMENTATION CONTROLS AS FOLLOWS:

1. HAY BALE BARRIERS, SILT FENCE, AND STONE CHECK DAMS SHALL BE INSPECTED AND REPAIRED ONCE A WEEK OR IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL. SEDIMENT TRAPPED BEHIND THESE BARRIERS SHALL BE EXCAVATED WHEN IT REACHES A DEPTH OF 6" AND REDISTRIBUTED TO AREAS UNDERGOING FINAL GRADING. SHOULD THE HAY BALE BARRIERS PROVE TO BE INEFFECTIVE, THE CONTRACTOR SHALL INSTALL SILT FENCE BEHIND THE HAY BALES.
2. VISUALLY INSPECT RIPRAP ONCE A WEEK OR AFTER EACH SIGNIFICANT RAINFALL AND REPAIR AS NEEDED. REMOVE SEDIMENT TRAPPED BEHIND THESE DEVICES ONCE IT ATTAINS A DEPTH EQUAL TO 1/2 THE HEIGHT OF THE DAM OR RISER. DISTRIBUTE REMOVED SEDIMENT OFF-SITE OR TO AN AREA UNDERGOING FINAL GRADING.
3. REVEGETATION OF DISTURBED AREAS WITHIN 25' OF DRAINAGE-COURSE/STREAM WILL BE SEEDED WITH THE "MEADOW AREA MIX" AND INSPECTED ON A WEEKLY BASIS OR AFTER EACH SIGNIFICANT RAINFALL AND RESEEDED AS NEEDED. EXPOSED AREAS WILL BE RESEEDED AS NEEDED UNTIL THE AREA HAS OBTAINED 100% GROWTH RATE. PROVIDE PERMANENT RIPRAP FOR SLOPES IN EXCESS OF 3:1 AND WITHIN 25' OF DRAINAGE COURSE.



"SILTSACK" INSTALLATION INSTRUCTION

1. REMOVE THE CATCH BASIN GRATE AND PLACE THE SACK INTO THE OPENING. HOLD OUT APPROXIMATELY SIX (6) INCHES OF THE SACK BEYOND THE BASIN FRAME TO ALLOW ACCESS TO THE "SILTSACK" LIFTING STRAPS. REPLACING THE GRATE BACK INSIDE OF ITS FRAME WILL HOLD THE SACK IN PLACE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MONITORING AND MAINTAINING THIS SEDIMENT CONTROL DEVICE. THE SACK IS CONSIDERED FULL AND READY TO EMPTY WHEN THE THE "RESTRAINT CORD" IS NO LONGER VISIBLE.
3. THE "SILTSACK" IS REMOVED BY PLACING TWO (2) PIECES IF 1 INCH DIAMETER REBAR THROUGH THE LIFTING LOOPS LOCATED ON EACH SIDE OF THE SACK AND LIFTING WITH AN APPROPRIATE PIECE OF CONSTRUCTION EQUIPMENT. THE LIFTING STRAPS ARE CONNECTED TO THE BOTTOM OF THE SACK AND THE LIFTING ACTION WILL CAUSE THE SACK TO TURN INSIDE OUT, AND EMPTYING THE CONTENTS. THE SACK SHOULD THEN BE CLEANED, RINSED AND RETURNED TO ITS ORIGINAL SHAPE AND PLACED BACK IN THE BASIN.
4. THE "SILTSACK" IS REUSABLE, THEREFORE, ONCE THE CONSTRUCTION CYCLE IS COMPLETE, REMOVE THE SACK FROM THE BASIN, CLEAN AND STORE OUT OF DIRECT SUNLIGHT UNTIL ITS NEXT USE.
5. THE "SILTSACK" SEDIMENT CONTROL DEVICE IS MANUFACTURED BY: ACF ENVIRONMENTAL

EROSION CONTROL DURING WINTER CONSTRUCTION

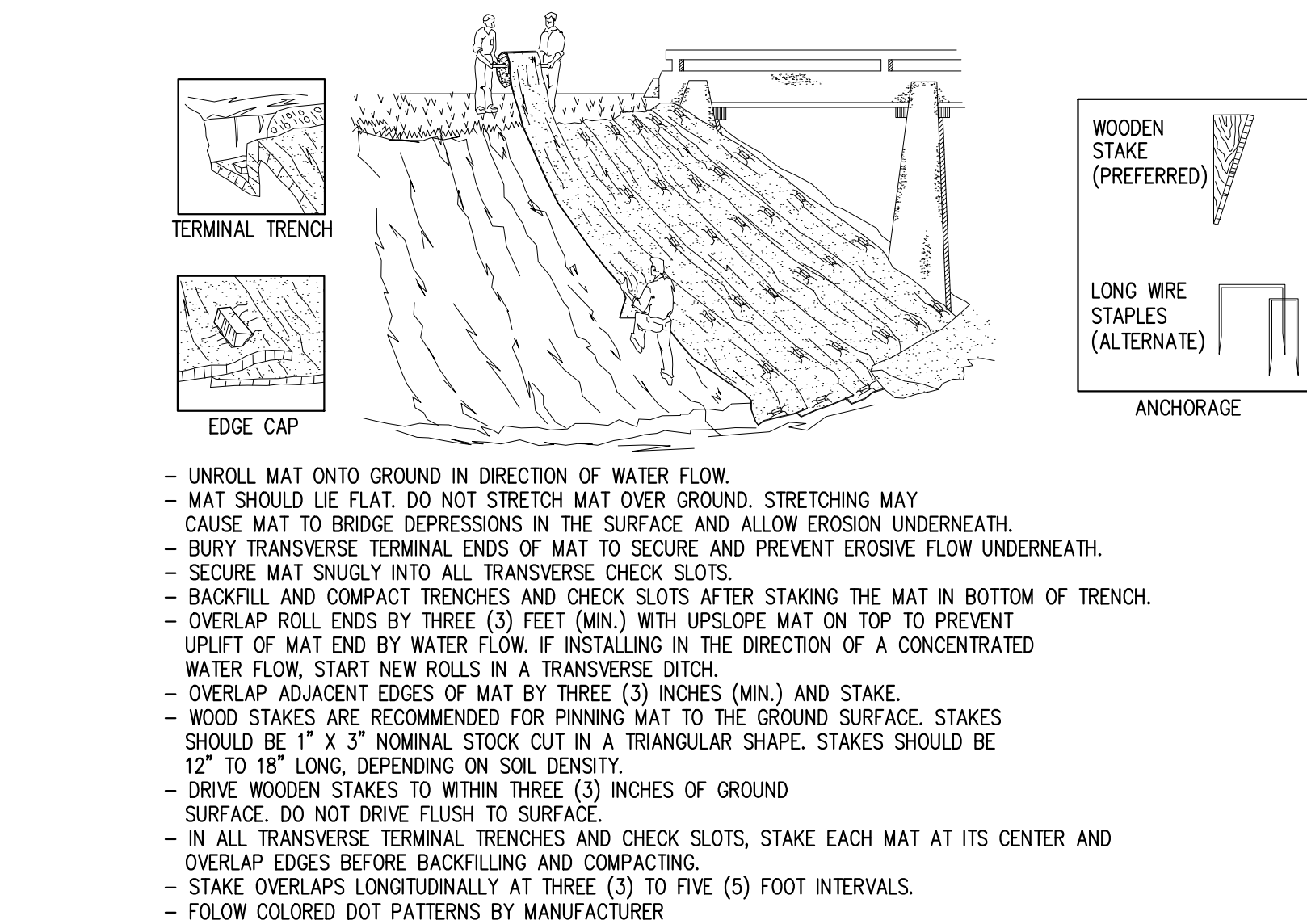
1. WINTER CONSTRUCTION PERIOD: NOVEMBER 1 THROUGH APRIL 15.
2. WINTER EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME.
3. EXPOSED AREA SHALL BE LIMITED TO THOSE AREAS TO BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. AT THE END OF EACH WORK WEEK NO AREAS MAY BE LEFT UNSTABILIZED OVER THE WEEKEND.
4. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, SUCH THAT NO LARGER AREA OF THE SITE IS WITHOUT EROSION CONTROL PROTECTION AS LISTED IN ITEM 2 ABOVE.
5. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED WITH STRAW OR HAY AT A RATE OF 150 LB. PER 1000 S.F. (WITH OR WITHOUT SEEDING) OR DORMANT SEEDED, MULCHED AND ANCHORED SUCH THAT SOIL SURFACE IS NOT VISIBLE THROUGH THE MULCH. NOTE: AN AREA IS ALSO CONSIDERED STABLE IF SODDED, COVERED WITH GRAVEL (PARKING LOTS) OR STRUCTURAL SAND.
6. BETWEEN THE DATES OF OCTOBER 15 AND APRIL 1, LOAM OR SEED WILL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES THE SLOPES SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1 AND IF THE EXPOSED AREA HAS BEEN LOAMED, FINAL GRADED WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED AND THEN MULCHED. IF CONSTRUCTION CONTINUES DURING FREEZING WEATHER, ALL EXPOSED AREAS SHALL BE CONTINUOUSLY GRADED BEFORE FREEZING AND THE SURFACE TEMPORARILY PROTECTED FROM EROSION BY THE APPLICATION OF MULCH. SLOPES SHALL NOT BE LEFT UNEXPOSED OVER THE WINTER OR ANY OTHER EXTENDED TIME OF WORK SUSPENSION UNLESS TREATED IN THE ABOVE MANNER. UNTIL SUCH TIME AS WEATHER CONDITIONS ALLOW, DITCHES TO BE FINISHED WITH THE PERMANENT SURFACE TREATMENT; EROSION SHALL BE CONTROLLED BY THE INSTALLATION OF BALES OF HAY, SILT FENCE OR STONE CHECK DAMS IN ACCORDANCE WITH THE STANDARD DETAILS SHOWN ON THE NOTE DRAWINGS. NOTE: DORMANT SEEDING SHOULD NOT BE ATTEMPTED UNLESS SOIL TEMPERATURE REMAINS BELOW 50 DEGREES AND DAY TIME TEMPERATURES REMAIN IN THE 30'S.
7. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH A SLOPE GREATER THAN 3% FOR SLOPES EXPOSED TO DIRECT WINDS AND FOR ALL OTHER SLOPES GREATER THAN 8% VEGETATED DRAINAGE SWALES SHALL BE LINED WITH EXCELSIOR OR CURLEX.
8. MULCH NETTING SHALL BE USED TO ANCHOR MULCH IN ALL DRAINAGE WAYS WITH SLOPES GREATER THAN 15%. AFTER OCTOBER 1 THE SAME APPLIES FOR ALL SLOPES GREATER THAN 8%.
9. BETWEEN THE DATES OF OCTOBER 15 TO NOVEMBER 1, WINTER RYE IS RECOMMENDED FOR STABILIZATION. AFTER NOVEMBER 1, WINTER RYE IS NOT EFFECTIVE. AROUND NOVEMBER 15 OR LATER, ONCE TEMPERATURES OF THE AIR AND SOIL PERMIT, DORMANT SEEDING IS EFFECTIVE.
10. IN THE EVENT OF SNOWFALL (FRESH OR CUMULATIVE) GREATER THAN 1 INCH DURING WINTER CONSTRUCTION PERIOD ALL SNOW SHALL BE REMOVED FROM THE AREAS OF SEEDING AND MULCHING PRIOR TO PLACEMENT.

SITE INSPECTION AND MAINTENANCE

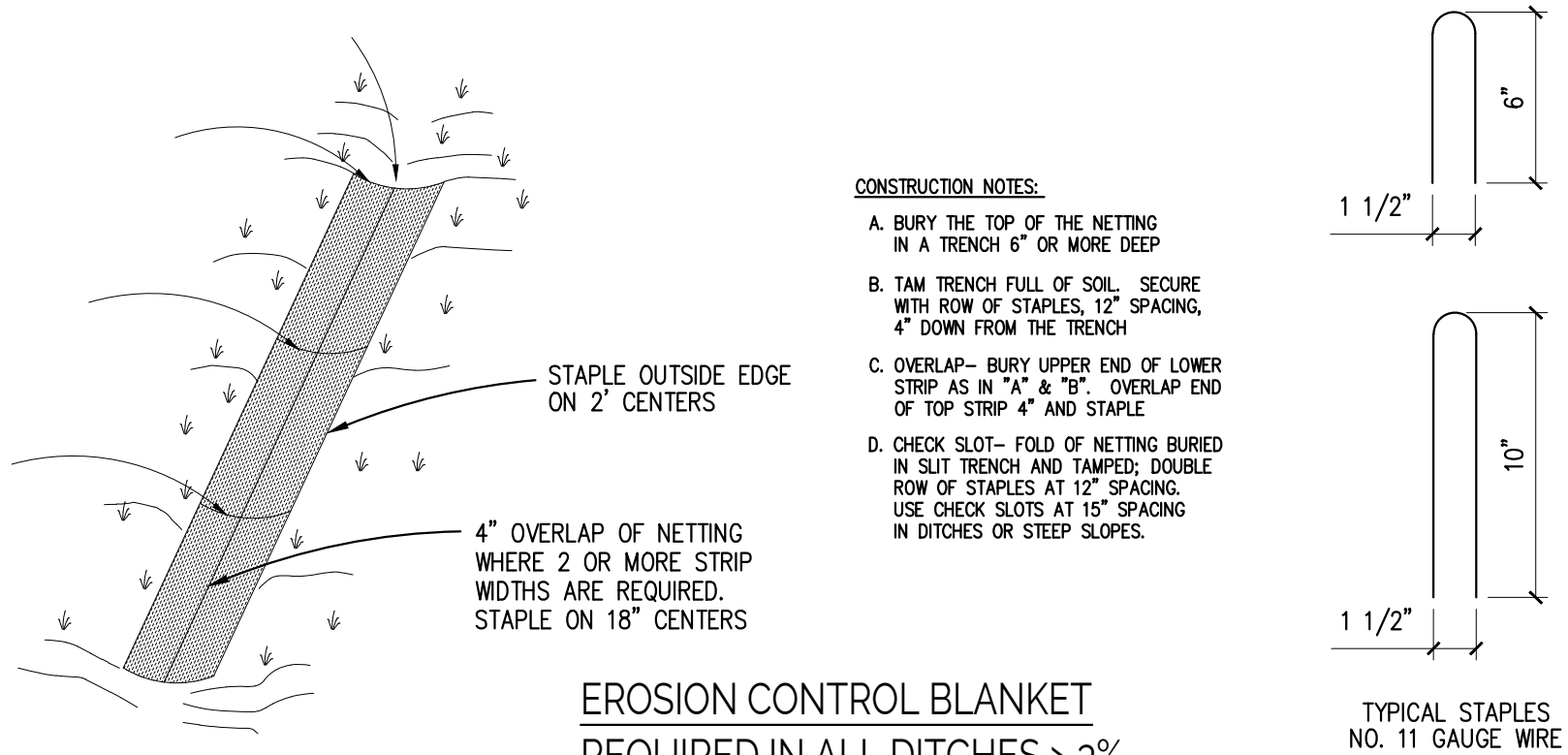
1. WEEKLY INSPECTIONS, AS WELL AS ROUTINE INSPECTIONS FOLLOWING RAIN FALLS, SHALL BE CONDUCTED BY THE GENERAL CONTRACTOR OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE OF THE PROJECT (85% GRASS CATCH). NECESSARY REPAIRS SHALL BE MADE TO CORRECT UNDERMINING OR DETERIORATION. FINAL ACCEPTANCE SHALL INCLUDE A SITE INSPECTION TO VERIFY THE STABILITY OF ALL DISTURBED AREAS AND SLOPES. UNTIL FINAL INSPECTION, ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL IMMEDIATELY BE CLEANED, AND REPAIRED BY THE GENERAL CONTRACTOR AS REQUIRED. DISPOSAL OF ALL TEMPORARY EROSION AND CONTROL DEVICES SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
- IT IS RECOMMENDED THAT THE OWNER HIRE THE SERVICES OF THE DESIGN ENGINEER TO PROVIDE COMPLIANCE INSPECTIONS (DURING ACTIVE CONSTRUCTION) RELATIVE TO IMPLEMENTATION OF THE STORMWATER AND EROSION CONTROL PLANS. SUCH INSPECTIONS SHOULD BE LIMITED TO ONCE A WEEK OR AS NECESSARY AND BE REPORTABLE TO THE OWNER, TOWN AND DEP.
2. SHORT-TERM SEDIMENTATION MAINTENANCE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CLEAN OUT ALL SWALES AND STRUCTURES PRIOR TO TURNING PROJECT OVER TO THE CITY.

MAINTENANCE AFTER CONSTRUCTION

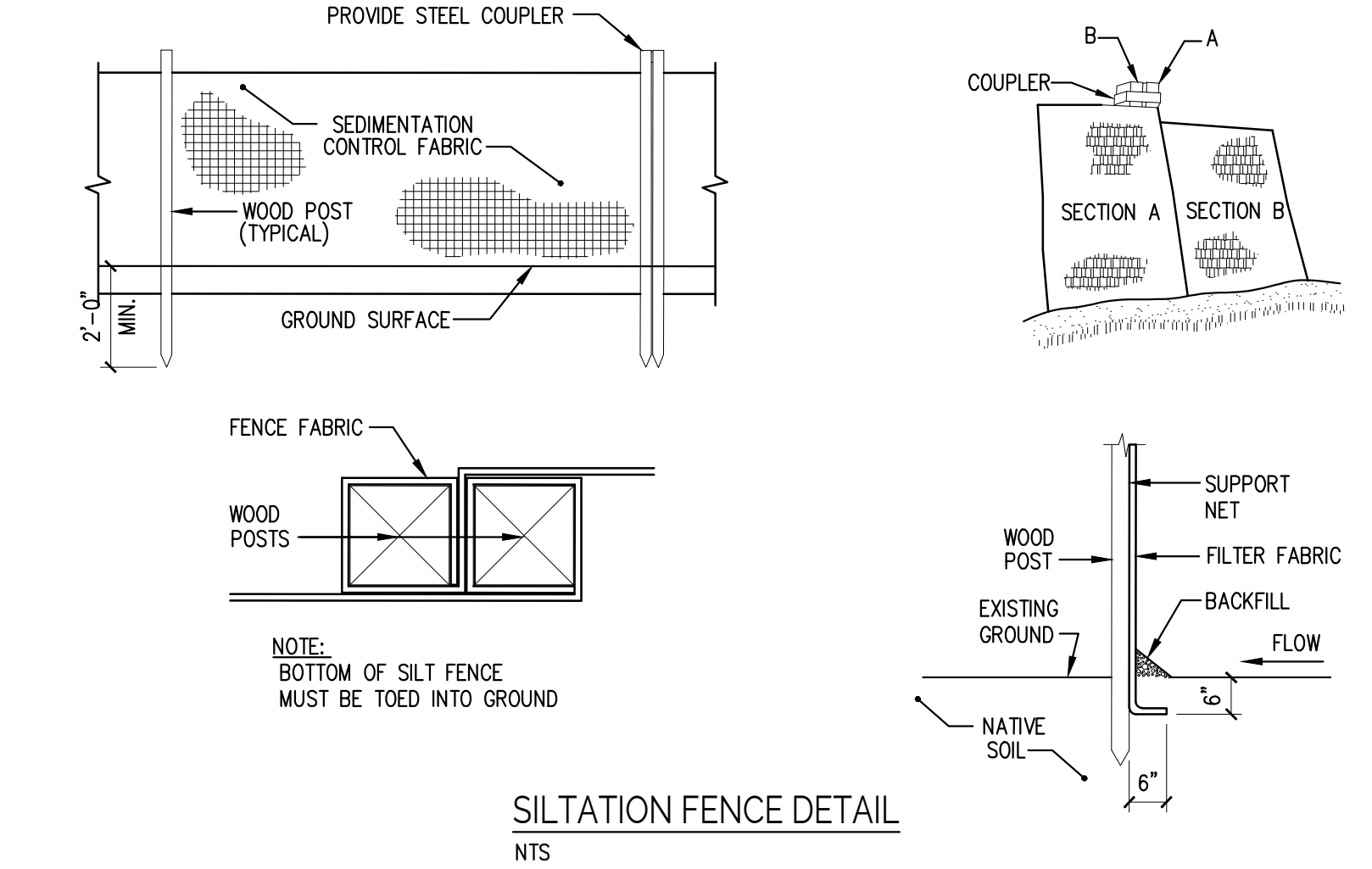
1. LONG-TERM PROVISIONS FOR PERMANENT MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROL FACILITIES AFTER ACCEPTANCE OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE OWNER OR THEIR DESIGNEE. SUCH RESPONSIBILITIES INCLUDE BUT ARE NOT LIMITED TO THOSE DETAILED AS FOLLOWS:
- A. PARKING LOT SHALL BE MECHANICALLY SWEEP TWICE PER YEAR. THE FIRST SHALL TAKE PLACE IN THE MID WINTER (JANUARY THRU) TO REMOVE ACCUMULATED SANDS FROM WINTER SANDING TO THIS POINT. THE SECOND SWEEPING SHALL TAKE PLACE AFTER WINTER SANDING OPERATIONS TERMINATE BUT PRIOR TO MAY 1.
- B. INSPECTION OF STORMWATER OUTLET STRUCTURE SHOULD BE CONDUCTED TWICE PER YEAR. ACCESS TO THE STRUCTURE IS THROUGH THE TOP. THE OIL/WATER SEPARATOR UNIT SHALL BE PUMPED DOWN AND THE SEDIMENT AND TRASH SHALL BE REMOVED AT THE TIME OF THE INSPECTION. THE REMOVAL OF ALL SEDIMENT AND TRASH WILL HELP MINIMIZE VOLUME LOSS.
2. THE OWNER SHALL FILE A YEARLY MAINTENANCE REPORT TO THE CITY DOCUMENTING THE REQUIRED MAINTENANCE FOR THE STORMWATER SYSTEM.



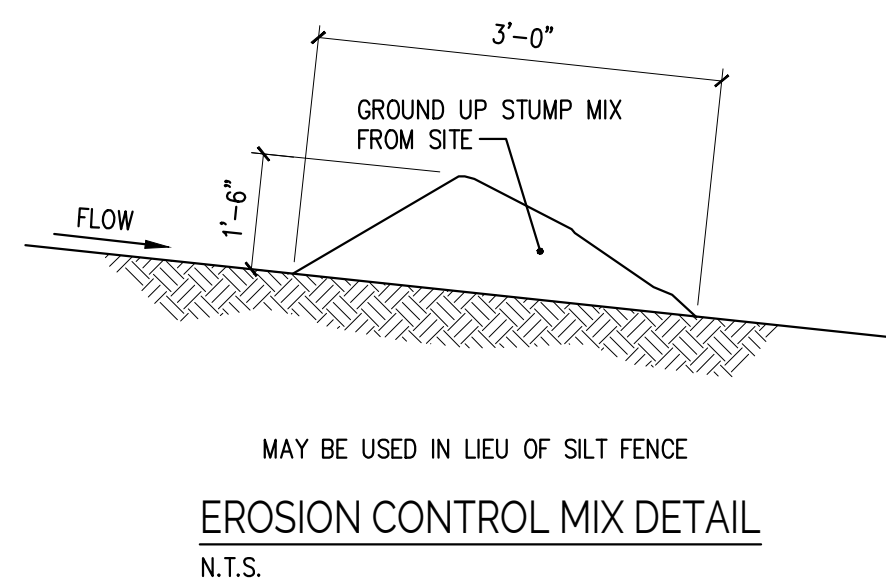
EROSION CONTROL BLANKET
GENERAL INSTALLATION GUIDELINES ON SLOPES
NTS



EROSION CONTROL BLANKET
REQUIRED IN ALL DITCHES > 3%
NOTE: GRADING PLAN GOVERNS IN ALL LOCATIONS



SILTATION FENCE DETAIL
NTS



MAY BE USED IN LIEU OF SILT FENCE

EROSION CONTROL MIX DETAIL
N.T.S.



BARRETT MADE

65 HANOVER STREET
PORTLAND, ME 04101

PRELIMINARY
NOT FOR CONSTRUCTION

5 POINTS
PROPOSED DEVELOPMENT

ISSUED	DESCRIPTION	DR	CHKD BY	DATE
	SITE PLAN SUBMISSION			10-13-21
No.	A			

SHEET TITLE:

EROSION
CONTROL
DETAILS

DESIGNED:	DL
DRAWN:	DL
DATE:	10-13-21
PROJECT NUMBER:	21-050

C200

5 POINTS BRCOT

420 ALFRED STREET
BIDDEFORD, MAINE, 04005

ISSUED FOR SITE PLAN REVIEW
DATE OF ISSUE: 10/13/2021

PROJECT TEAM:

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CO OWNER: HD LAWRENCE REALY, LLC
CONTACT: TIM HARRINGTON
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KENNEBUNK, ME 04043
PHONE: 207-985-5132
E-MAIL: timharrington@atlanticholdings.net

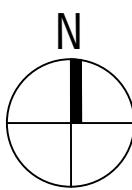
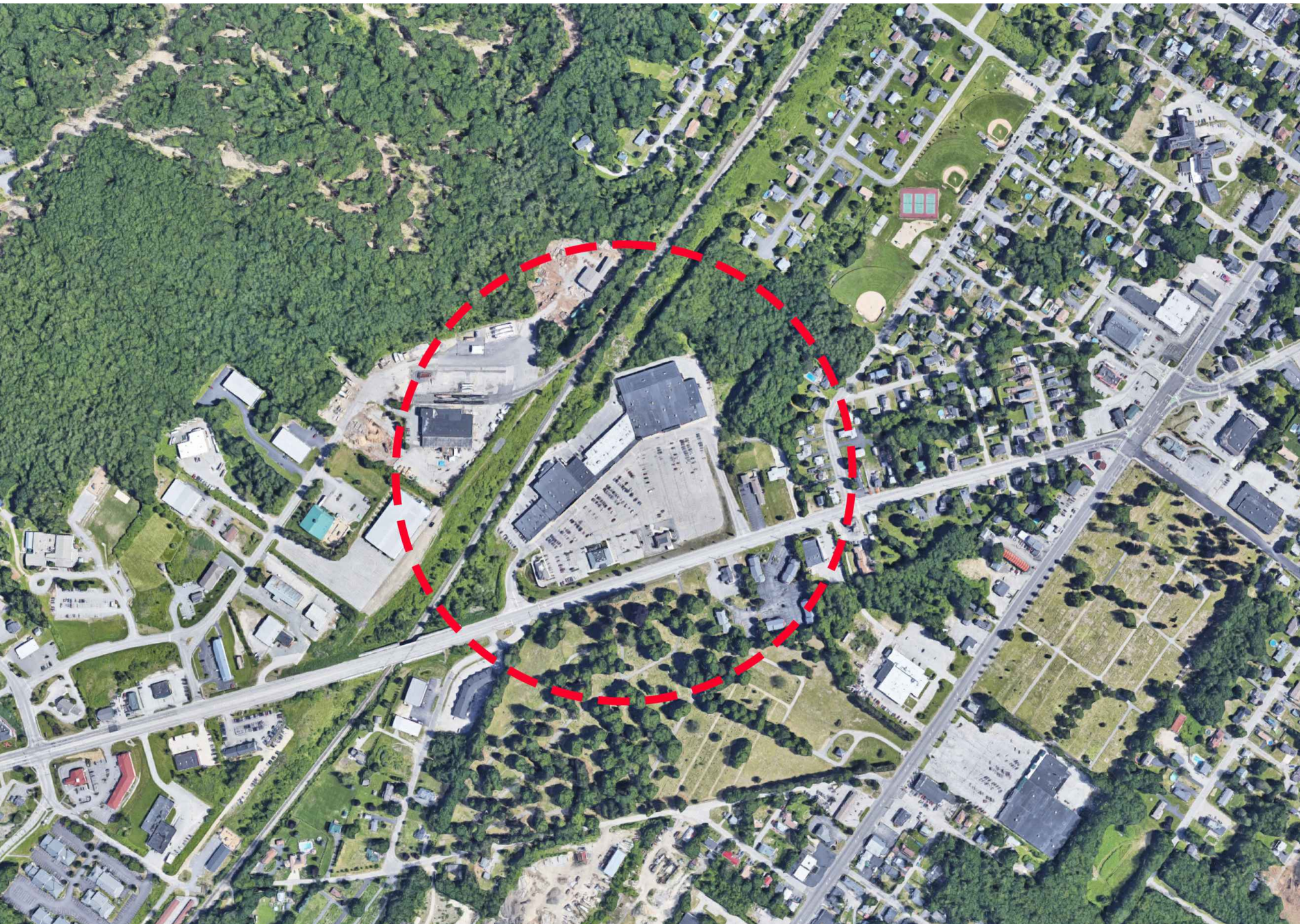
CLIENT:

BRCOT
CONTACT: PAULETTE BONNEAU
10 MAPLEWOOD AVE
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PHONE 207.282.1501
E-MAIL paulette.b@biddefordschools.me

ARCHITECT + GENERAL CONTRACTOR:

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PORTLAND, ME 04101
PHONE 207.210.4421
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SITE PLAN:



DRAWING LIST:

GENERAL	
G.001	COVER SHEET
ARCHITECTURAL	
AD.101	DEMOLITION FLOOR PLAN
E.201	EXISTING ELEVATIONS
E.202	EXISTING ELEVATIONS
E.203	EXISTING ELEVATIONS
A.101	OVERALL FLOOR PLAN
A.102	ADULT EDUCATION FLOOR PLAN
A.103	BRCOT FLOOR PLAN
A.201	EXTERIOR ELEVATIONS
A.202	EXTERIOR ELEVATIONS
A.203	EXTERIOR ELEVATIONS
A.301	BUILDING SECTIONS

MATERIAL KEY: ARCHITECTURAL ABBREVIATIONS:

COURSE GRAVEL		AB	ANCHOR BOLT	D	DRYER	GA	GAUGE	MTRL	MATERIAL	QT	QUART	T	TREAD/TOILET
CONRETE		ACT	ACOUSTICAL CEILING TILE	DBL	DOUBLE	GAL	GALLON	MAS	MASONRY	R	RADIUS/RISER/RANGE	TEL	TELEPHONE
STONE		ADDL	ADDITIONAL	DEFL	DEFLECTION	GALV	GALVANIZED	MAX	MAXIMUM	RD	ROOF DRAIN	TEMP	TEMPERATURE/TEMPERED
EARTH/COMPACT FILL		ADMIN	ADMINISTRATION	DEMO	DEMOLITION	GC	GENERAL CONTRACTOR	MECH	MECHANICAL	REC	RECREATION	T&G	TONGUE & GROOVE
GYPSUM/PLASTER		AFF	ABOVE FINISH FLOOR	DF	DRINKING FOUNTAIN	GL	GLASS	MED	MEDICAL	RECT	RECTANGLE	TH	THICKNESS
PLYWOOD		ALUM	ALUMINUM	DIA	DIAMETER	GR	GRANITE	MFR	MANUFACTURER	REF	REFERENCE	T.O.	TOP OF
BATT INSULATION		AP	ACCESS PANEL	DIAG	DIAGONAL	GWB	GYPSUM WALL BOARD	MGR	MANAGER	REQD	REQUIRED	TV	TELEVISION
FINISH WOOD		APV	ASPHALT PAVER	DIM	DIMENSION	GYP	GYPSUM	MH	MANHOLE	REFR	REFRIGERATOR	TYP	TYPICAL
ROUGH WOOD		ARCH	ARCHITECT	DR	DIRECTOR/DOOR			MIN	MINIMUM	REINF		UL	UNDERWRITERS
BLOCKING WOOD		BD	BOARD	DIV	DIVISION	HD	HIGH DENSITY	MISC	MISCELLANEOUS	RESIL	RESILIENT	UNO	UNLESS NOTED
CONCRETE MASONRY		BIT	BITUMINOUS	DN	DOWN	HR	HOUR	MO	MASONRY OPENING	REV	REVISE/REVISION	UTIL	UTILITIES
BRICK MASONRY		BLDG	BUILDING	DWG	DRAWING	HC	HOLLOW CORE	MOLD	MOLDING	RFG	ROOFING	VAR	VARIES
SAND/FINE GRAVEL		BLKG	BLOCKING	E	EAST	HDSWR	HALF FULL SCALE	MR	MOISTURE RESISTANT	RM	ROOM	VB	VAPOR BARRIER
RIGID INSULATION		BM	BENCHMARK	EA	EACH	HFS	HEIGHT	MTD	MOUNTED	RO	ROUGH OPENING	VCT	VINYL COMPOSITE TILE
GLASS		BRG	BEARING	EF	EXHAUST FAN	HTG	HOLLOW METAL	MTG	MOUNTING	S	SOUTH/SINK	VENT	VENTILATOR/VENTILATION
		BTW	BETWEEN	EJ	EXPANSION JOINT	HVAC	HOLD OPEN	MTL	METAL	SAN	SANITARY		
				EL	ELEVATION		HORIZONTAL	N	NORTH	S.A.F.B.	SOUND		
				ELEV	ELEVATOR	HW	HEATING	NATL	NATURAL	ATTENUATION FIRE			
				ELEV	ELECTRIC/ELECTRICAL	HYD	HEATING, VENTILATION & AIR CONDITIONING	NIC	NOT IN CONTRACT	SC	BATTS (BRACKET)		
				EQ	EQUAL	INCL	INCLUDE/INCLUDING	NL	NIGHT LIGHT	SD	SOLID CORE		
				EWC	ELECTRIC WATER	ID	INSIDE DIAMETER	NO	NUMBER	SECT	SECTION		
				EXAM	EXAMINATION	INSUL	INSULATE/INSULATION	NTS	NOT TO SCALE	SHT	SHEET		
				EXIST	EXISTING	INT	INTERIOR	O.C.	ON CENTER	SIM	SIMILAR		
				EXT	EXTERIOR	INV	INVERT	OFCl	OWNER FURNISHED CONTRACTOR	SPEC	SPECIFICATION(S)		
								INSTALLED		SPC	SWIMMING POOL		
								OZ	OUNCE	STC	SOUND TRANSMISSION COEFFICIENT		
								PART BD	PARTIAL BOARD	STD	STANDARD		
								PC	PIECE	STL	STEEL		
								PL	PLATE	STOR	STORAGE		
								PLAS	PLASTIC	ST ST	STAINLESS STEEL		
								PLAM	PLASTIC LAMINATE	SUSP	SUPSENDED		
								PLYWD	PLYWOOD				
								PNT	PAINT				
								POLY	POLYURETHANE				
								PREP	PREPARATION				
								PSF	POUNDS/SQUARE FOOT				
								PSI	POUNDS/SQUARE INCH				
								PT	PRESERVATIVE TREATED				
								PTD	PAINTED				
								PVMT	PAVEMENT				

ARCHITECTURAL SYMBOLS:

CEILING HEIGHT		BUILDING SECTION	
ROOM NUMBER		BUILDING ELEVATION	
DOOR NUMBER		WALL SECTION	
WINDOW TYPE		INTERIOR ELEVATION	
PARTITION TYPE		COLUMN REFERENCE LINE	
REVISION REFERENCE		PROPOSED ELEVATION	
DETAIL		BREAKLINE	
DEMOLITION KEYNOTE			
KEYNOTE			

REVISIONS:

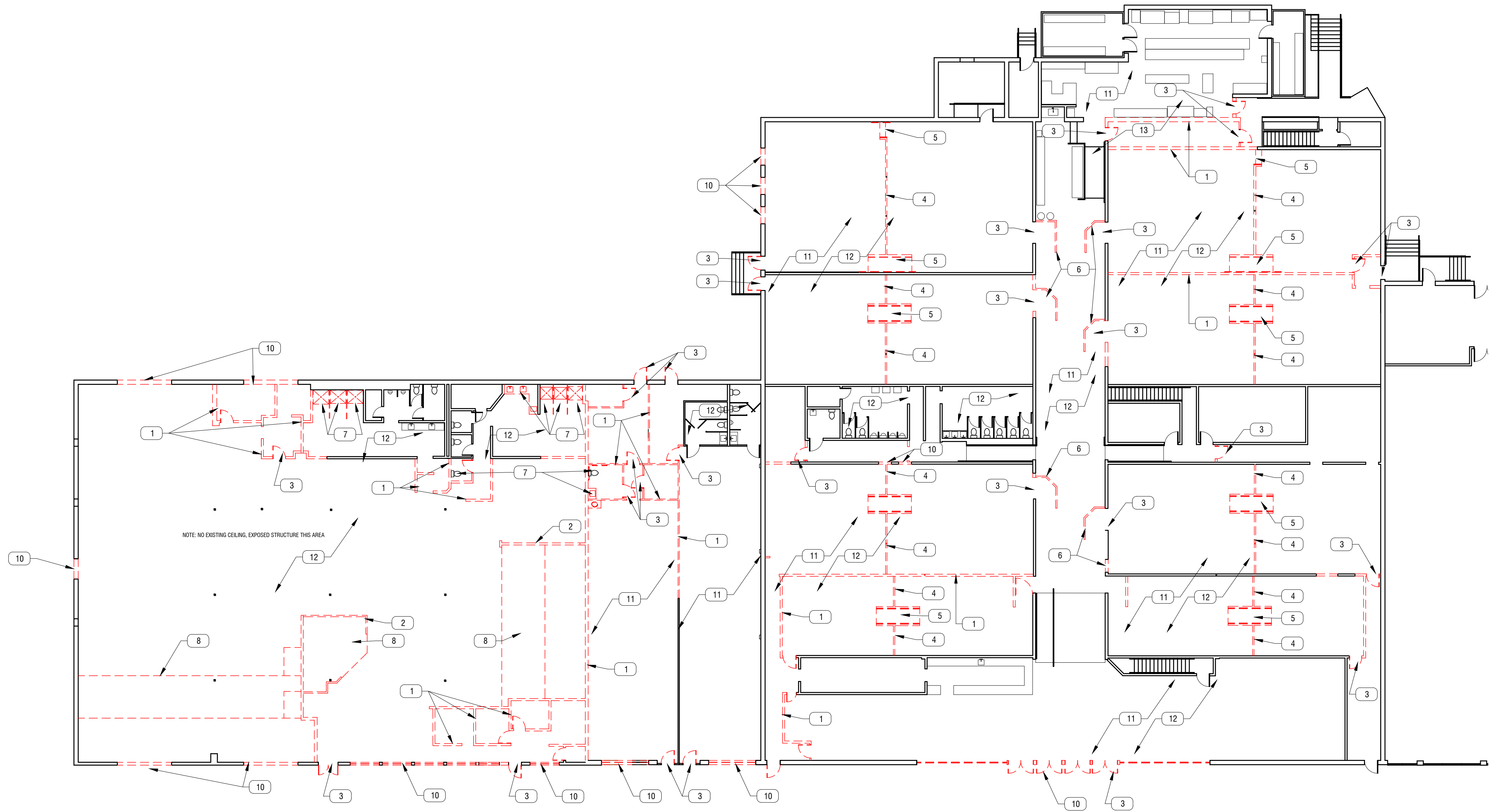
DRAWING TITLE: G.001 COVER SHEET

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:
10.13.2021
ISSUED FOR:
SITE PLAN REVIEW
SCALE:
AS NOTED

BARRETT MADE
ARCHITECTURE + CONSTRUCTION

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LEGEND:

- EXISTING WALL TO REMAIN
- WALL/ITEM TO BE REMOVED

GENERAL NOTES:

- VERIFY ALL CONDITIONS IN FIELD. COORDINATE WITH OTHER WORK TO BE PERFORMED.
- ALL ELECTRICAL, PLUMBING, AND MECHANICAL LOCATED IN WALLS, FLOORS AND CEILINGS NOTED TO BE REMOVED SHALL BE EITHER REMOVED BACK TO THE SOURCE OR LOCATED OUT OF HARMS WAY, CAPPED AND/OR PROTECTED.

DEMOLITION KEYED NOTES:

- 1 REMOVE WALL
- 2 REMOVE PARTIAL HEIGHT WALL
- 3 REMOVE DOOR
- 4 REMOVE GUARDRAIL
- 5 REMOVE RAMP AND HANDRAILS
- 6 REMOVE CMU WALL
- 7 REMOVE EXISTING PLUMBING FIXTURE
- 8 REMOVE TIERED FLOOR
- 9 REMOVE EXISTING WINDOWS
- 10 REMOVE WALL & PREP FOR NEW OPENING
- 11 REMOVE EXISTING CIELINGS
- 12 REMOVE EXISTING FLOOR FINISHES
- 13 REMOVE EXISTING FRP WALL FINISH

DRAWING TITLE:

AD.101 DEMOLITION FLOOR PLAN

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

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AS NOTED

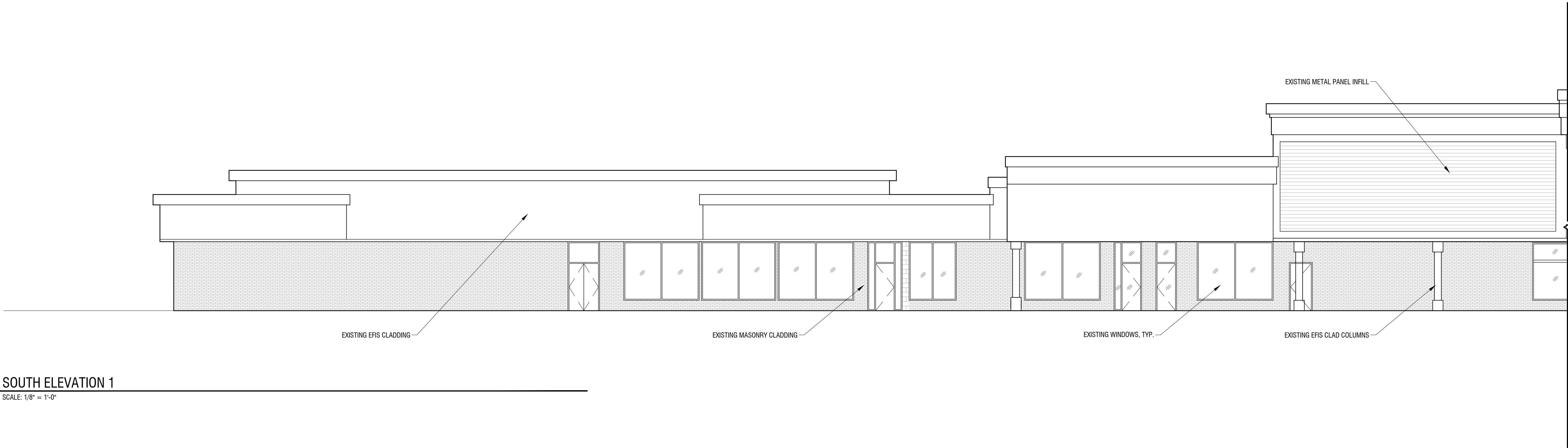
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

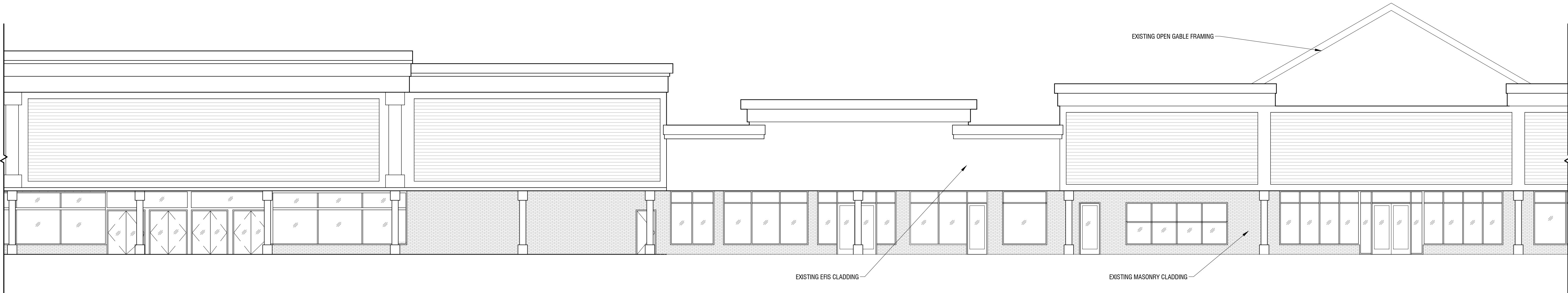
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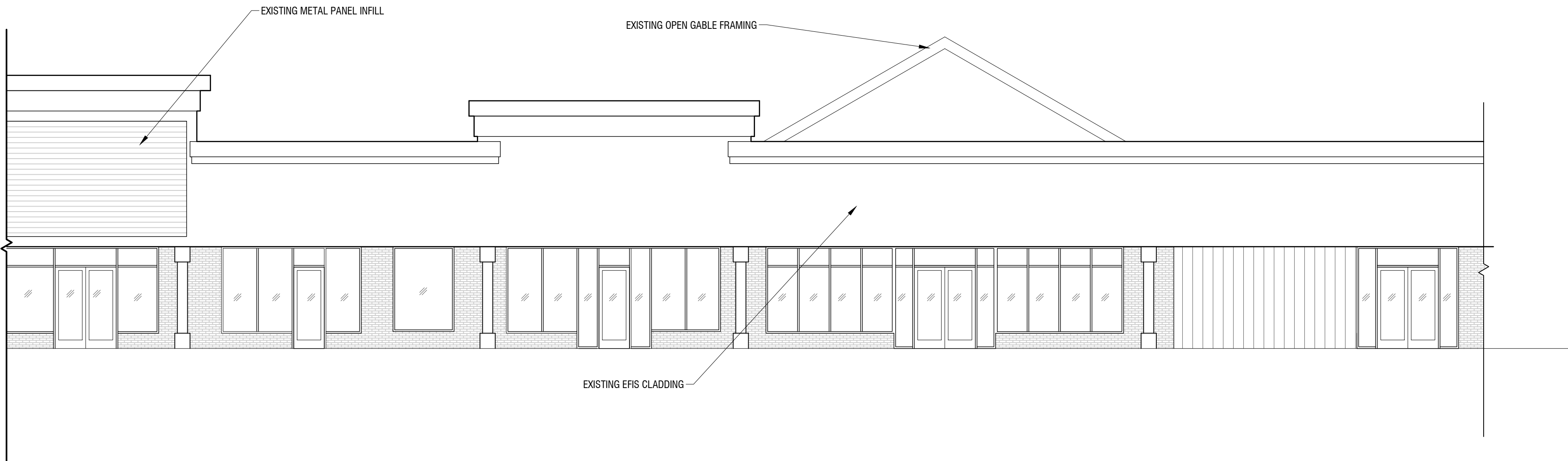
REVISIONS:



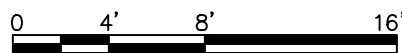
1 SOUTH ELEVATION 1
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 2
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION 3
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE

E.201 EXISTING EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

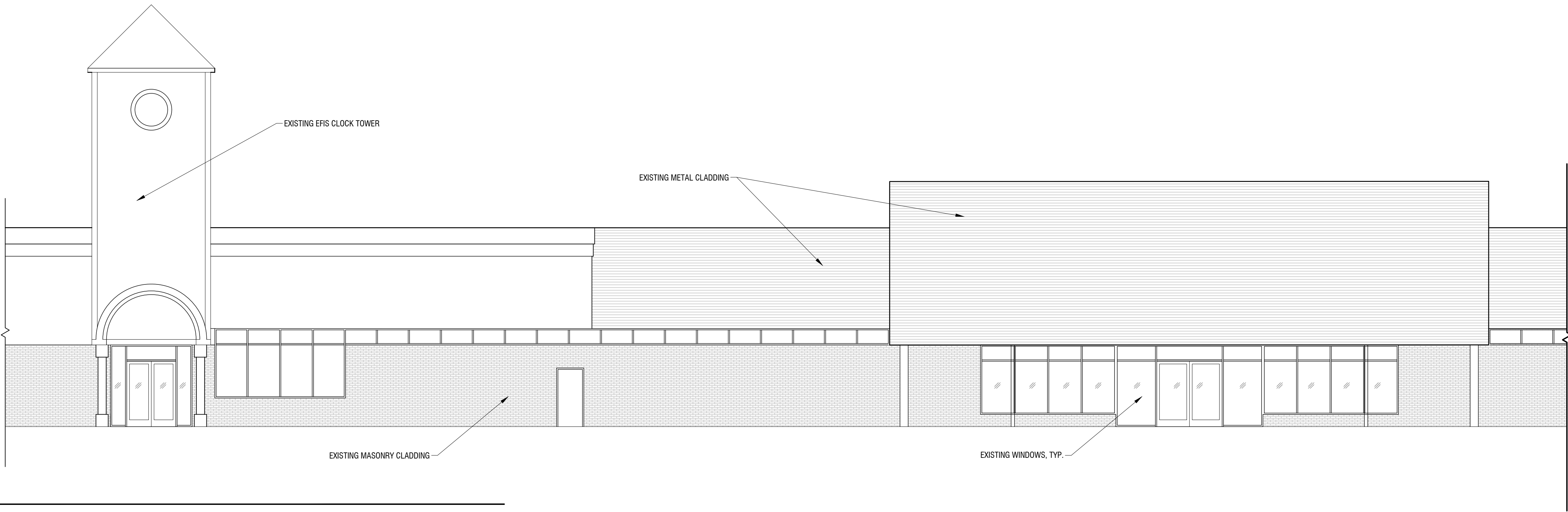
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

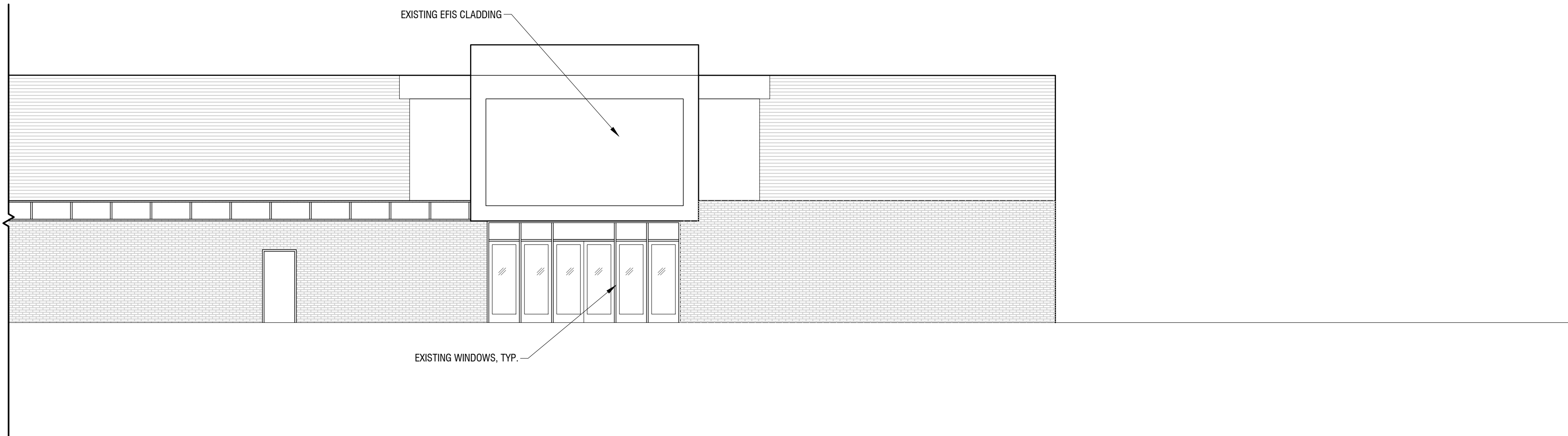
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ARCHITECTURE + CONSTRUCTION

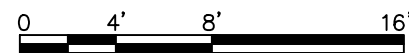
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1 SOUTH ELEVATION 4
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 5
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE

E.202 EXISTING EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

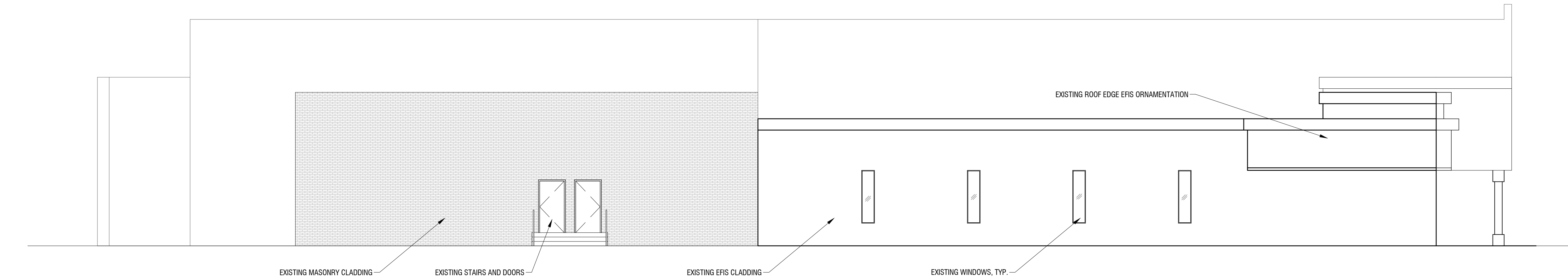
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

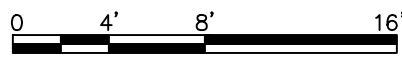
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1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

DRAWING TITLE:

E.203 EXISTING EXTERIOR ELEVATIONS

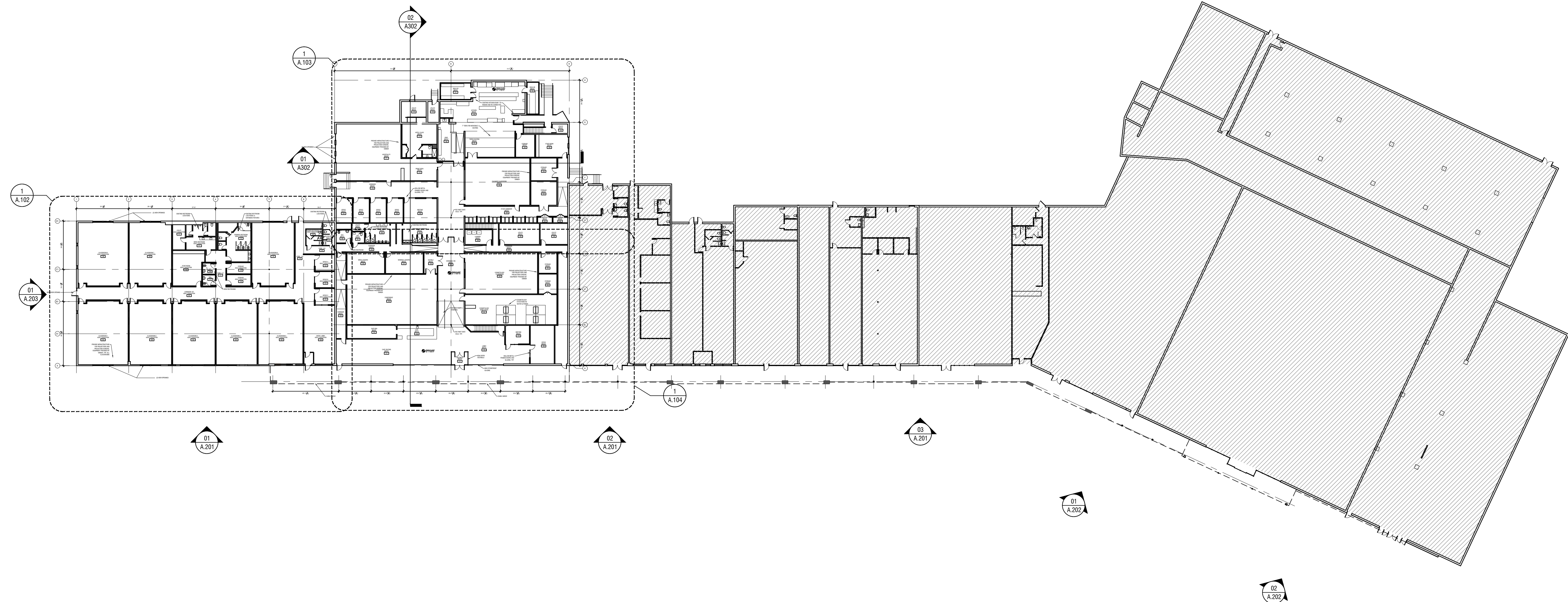
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE 04005

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ARCHITECTURE • CONSTRUCTION

REVISIONS:



LEGEND:

- EXISTING WALL TO REMAIN
- NEW WALL
- EXISTING AREA NOT IN PROJECT SCOPE

GENERAL NOTES:

- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
- ALL DIMENSIONS TO BE VERIFIED IN FIELD
- EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
- PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.

DRAWING TITLE:

A.101 OVERALL BUILDING PLAN

REVISIONS:

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

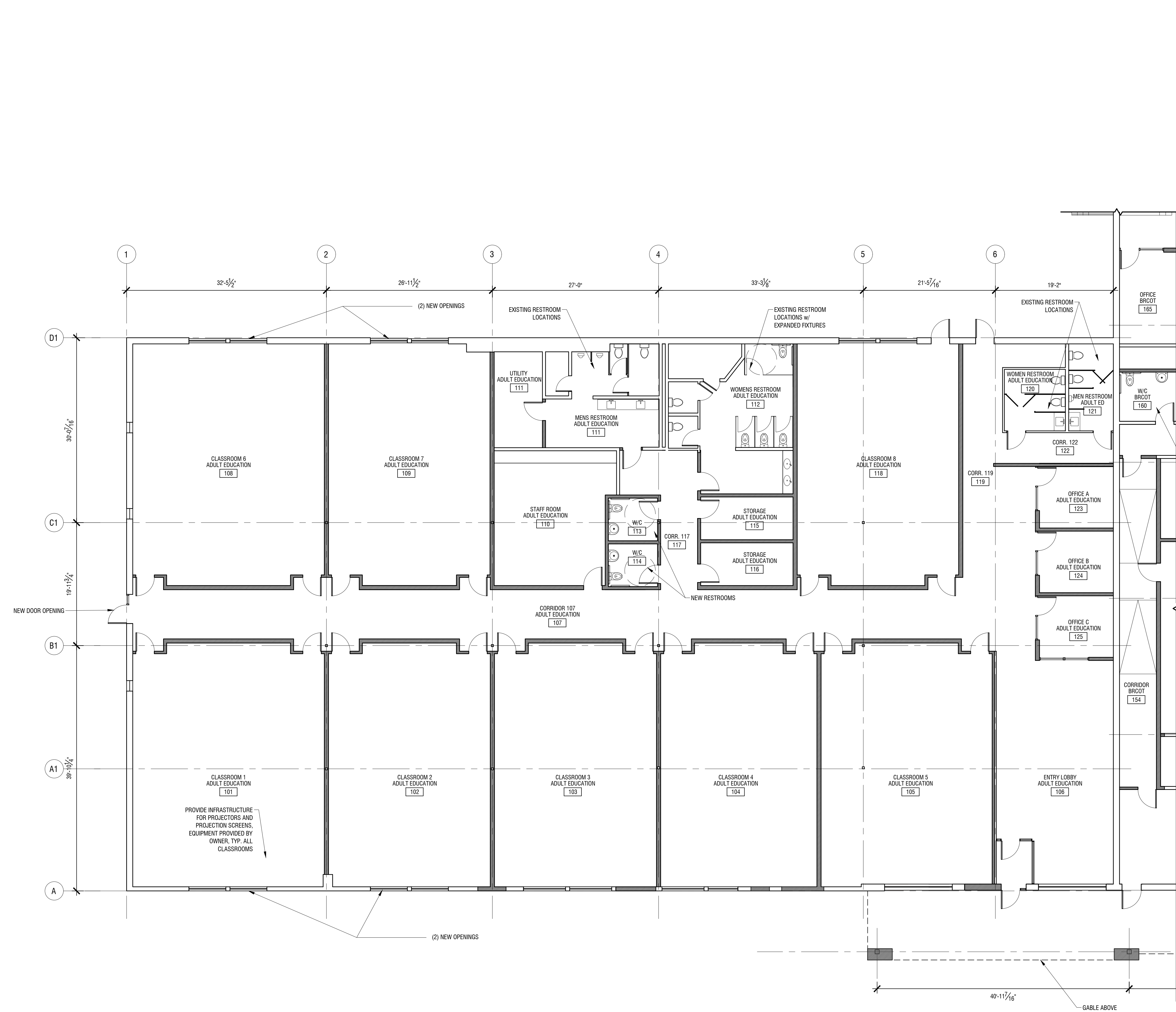
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

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REVISIONS:

DRAWING TITLE:

A.102 ADULT EDUCATION WING

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

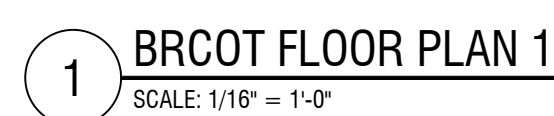
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 EXISTING WALL TO REMAIN
 NEW WALL
 EXISTING AREA NOT IN PROJECT SCOPE

1. SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
2. ALL DIMENSIONS TO BE VERIFIED IN FIELD
3. EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
4. PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.



DRAWING TITLE:

A.103 BRCOT FLOOR PLAN

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

DATE OF ISSUE:
10.13.2021

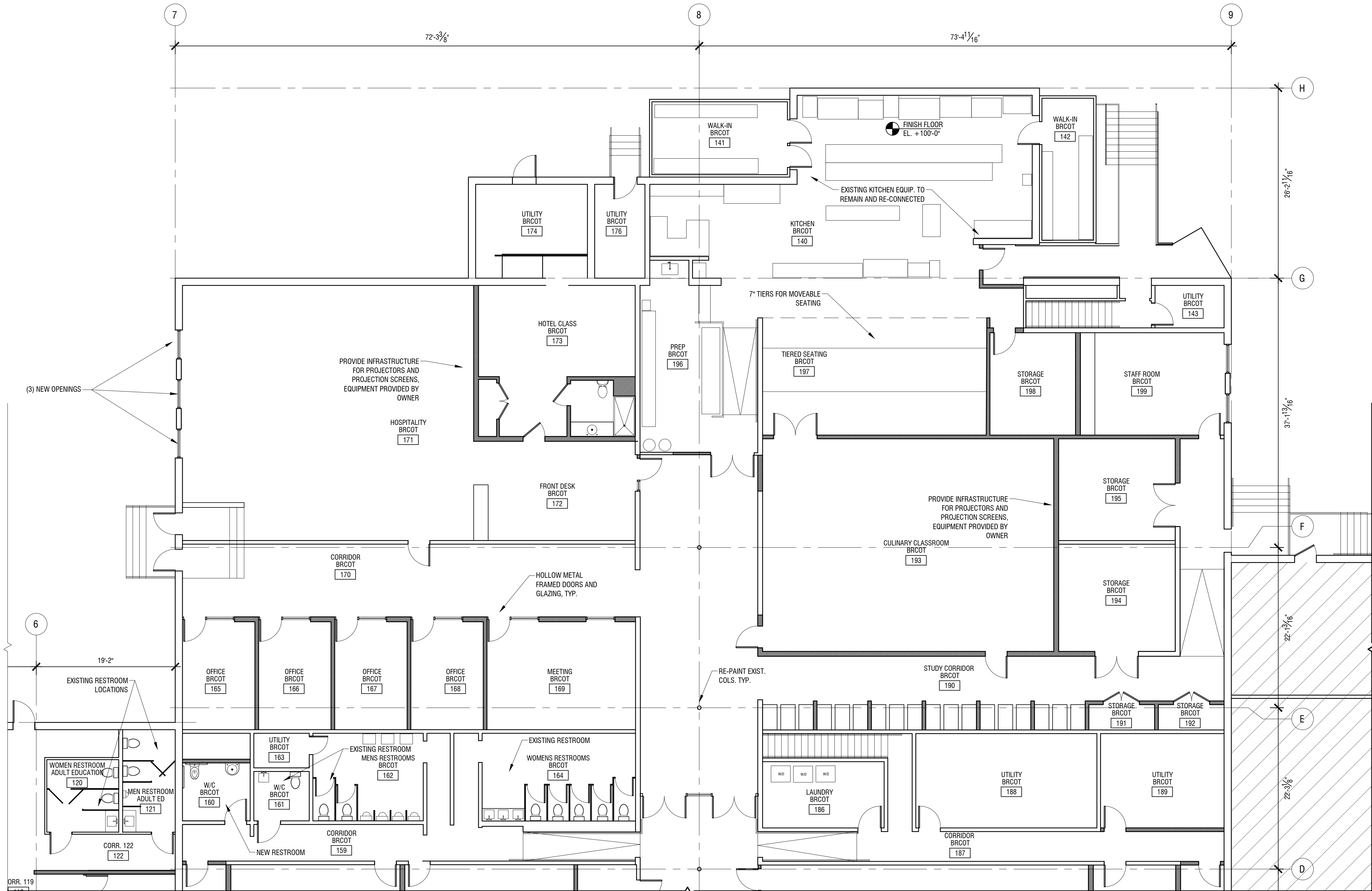
SITE PLAN REVIEW

SCALE:

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1 BRCOT FLOOR PLAN 2
SCALE: 1/16" = 1'-0"



- LEGEND:
- EXISTING WALL TO REMAIN
 - NEW WALL
 - EXISTING AREA NOT IN PROJECT SCOPE

- GENERAL NOTES:
- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
 - ALL DIMENSIONS TO BE VERIFIED IN FIELD
 - EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
 - PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.

REVISIONS:

DRAWING TITLE:

A.104 BRCOT FLOOR PLAN

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

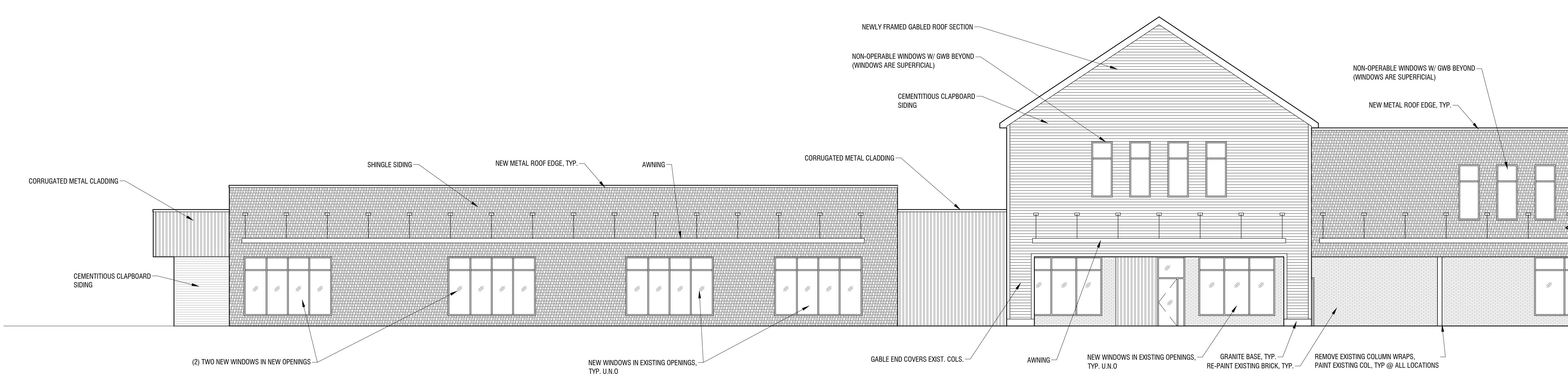
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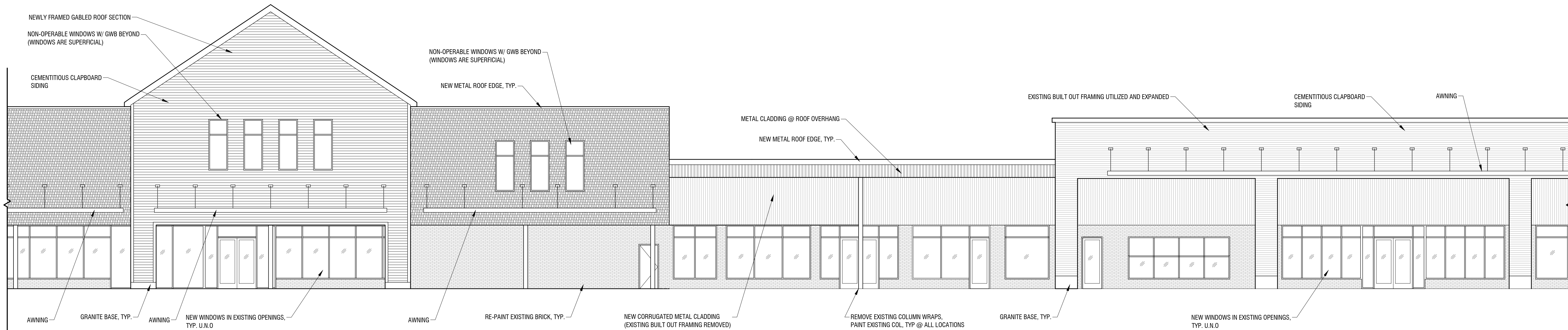
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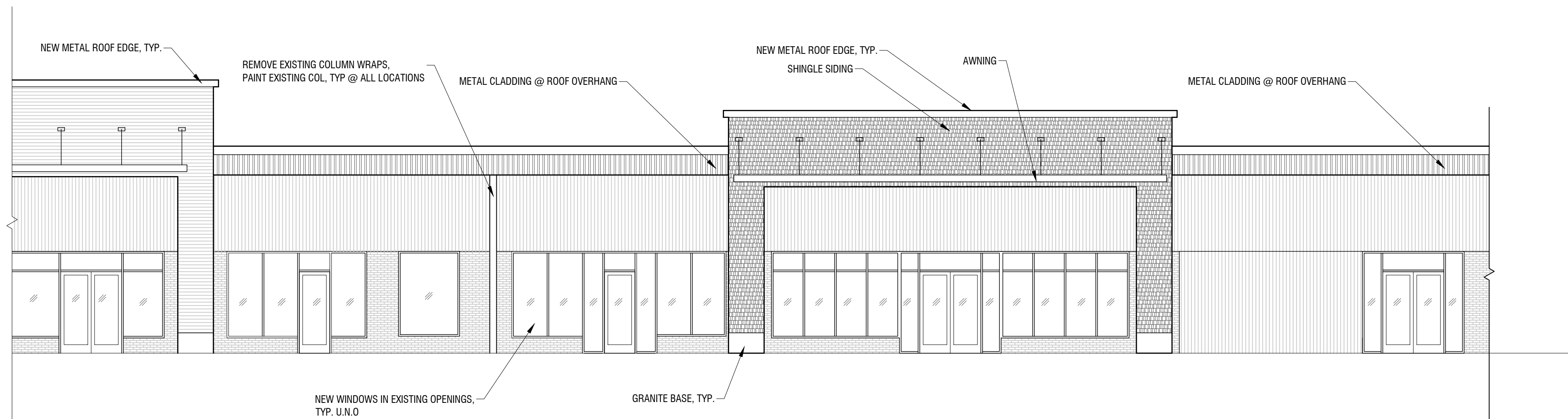
ARCHITECTURE + CONSTRUCTION



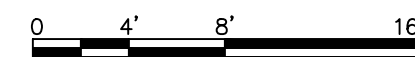
1 SOUTH ELEVATION 1
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 2
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION 3
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE:

A.201 EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

PROJECT NAME:

BRCOT - 5 POINTS

420 ALFRED STREET

BIDDEFORD, MAINE, 04005

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NEWLY FRAMED GABLED ROOF SECTION
NON-OPERABLE WINDOWS W/ GWB BEYOND
(WINDOWS ARE SUPERFICIAL)

CEMENTITIOUS CLAPBOARD
SIDING

NEW METAL ROOF EDGE, TYP.
NEW ROOF OVERHANG

NEW COLUMNS

CORRUGATED METAL CLADDING

NEW METAL ROOF EDGE, TYP.

AWNING

NEW WINDOWS IN EXISTING OPENINGS,
TYP. U.N.O

GRANITE BASE, TYP.

RE-PAINT EXISTING BRICK, TYP.

CORRUGATED METAL CLADDING

METAL CLADDING @ ROOF OVERHANG

NEW WINDOWS IN EXISTING OPENINGS,
TYP. U.N.O

1 SOUTH ELEVATION 4
SCALE: 1/8" = 1'-0"

AWNING

SHINGLE SIDING

CORRUGATED METAL CLADDING,
RETURN ALONG EASTERN FACADE

RE-PAINT EXISTING BRICK, TYP.
RETURN ALONG EASTERN FACADE

RE-PAINT EXISTING BRICK, TYP.

NEW WINDOWS IN EXISTING OPENINGS,
TYP. U.N.O

2 SOUTH ELEVATION 5
SCALE: 1/8" = 1'-0"

0 4' 8' 16'

REVISIONS:

DRAWING TITLE

A.202 EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

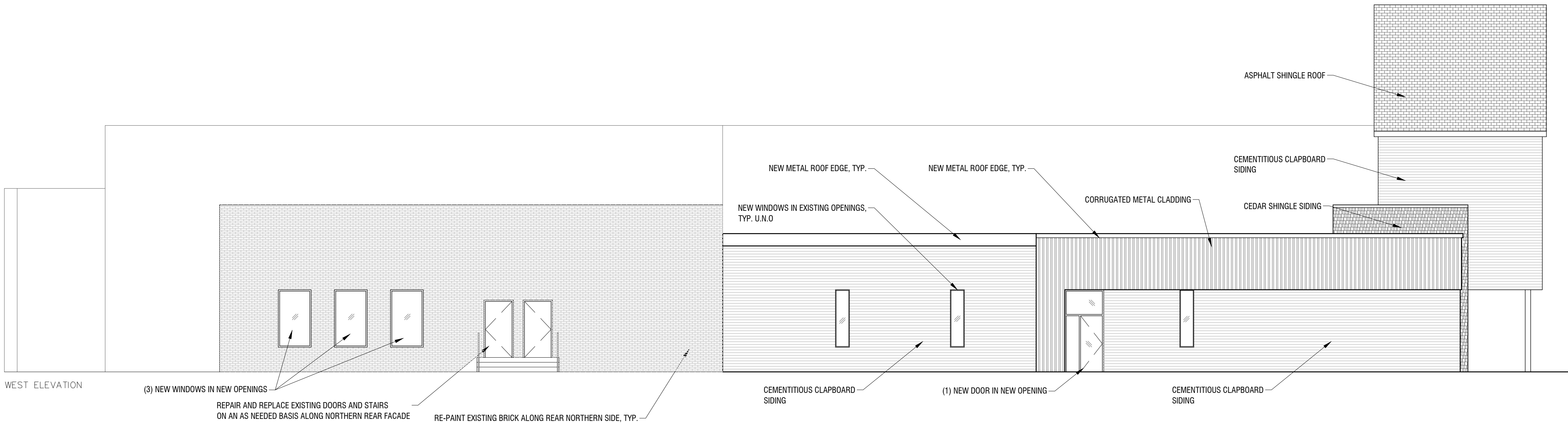
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

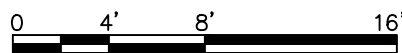
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1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

DRAWING TITLE:

A.203 EXTERIOR ELEVATIONS

PROJECT NAME:

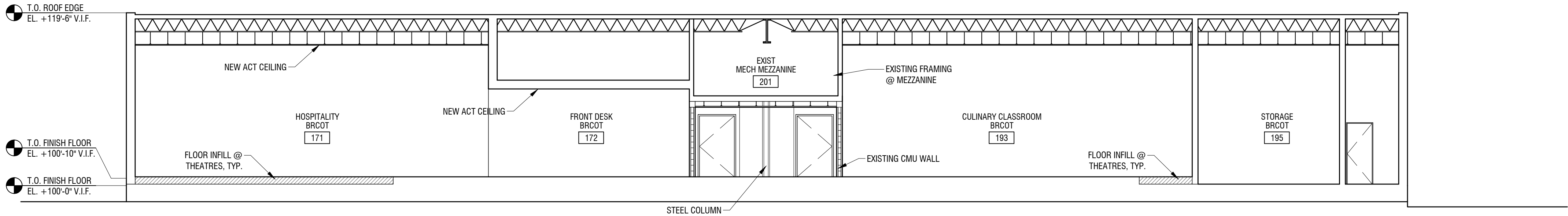
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

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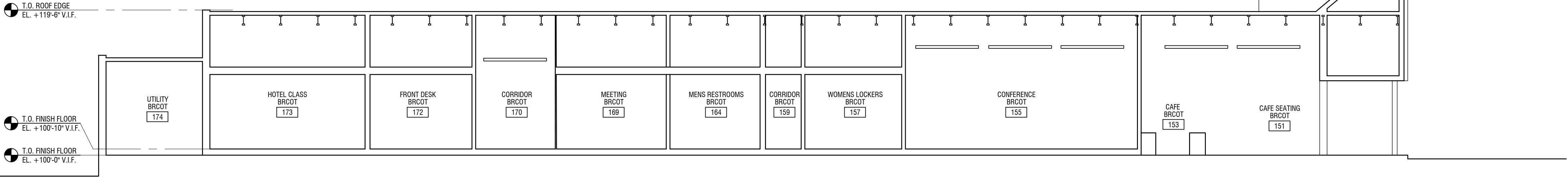
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REVISIONS:



- GENERAL NOTES:
- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION

1 BUILDING SECTION
SCALE: 1/8" = 1'-0"



2 BUILDING SECTION
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE:

A.301 BUILDING SECTIONS

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

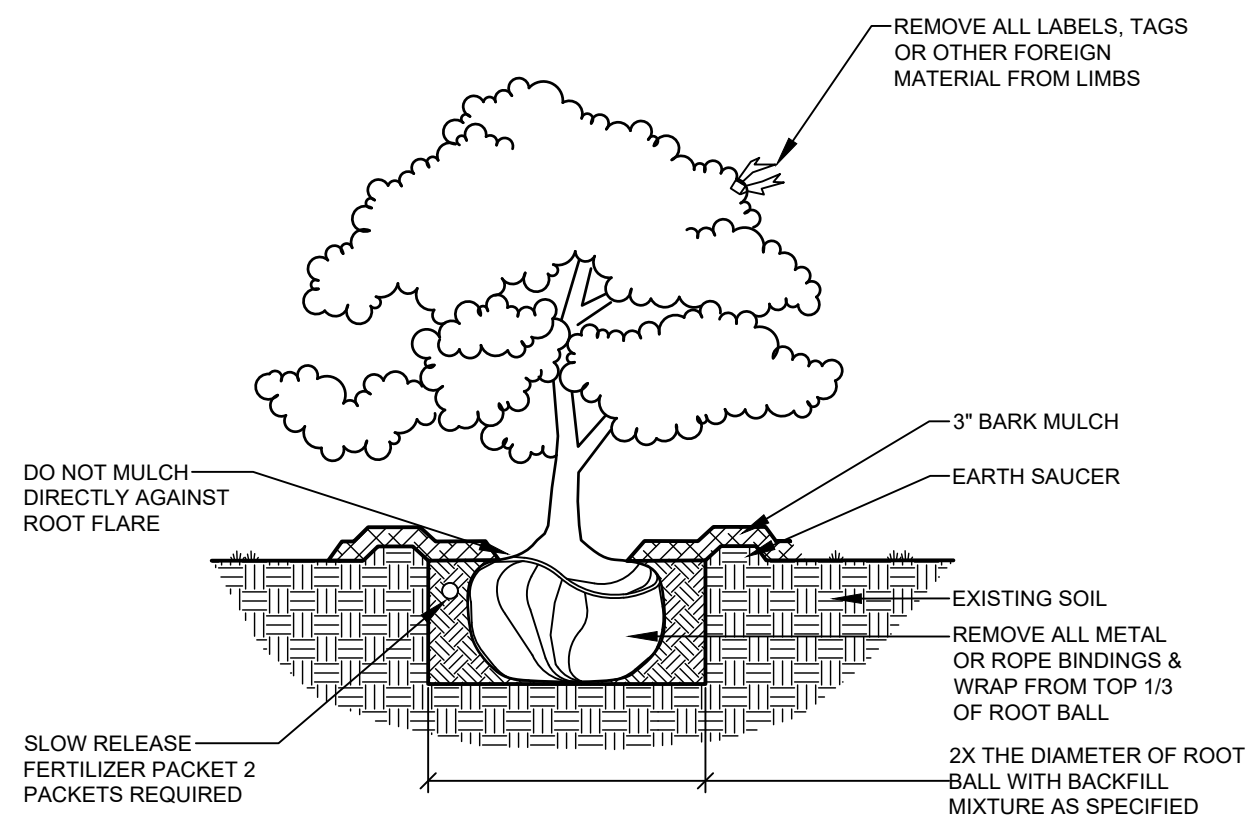
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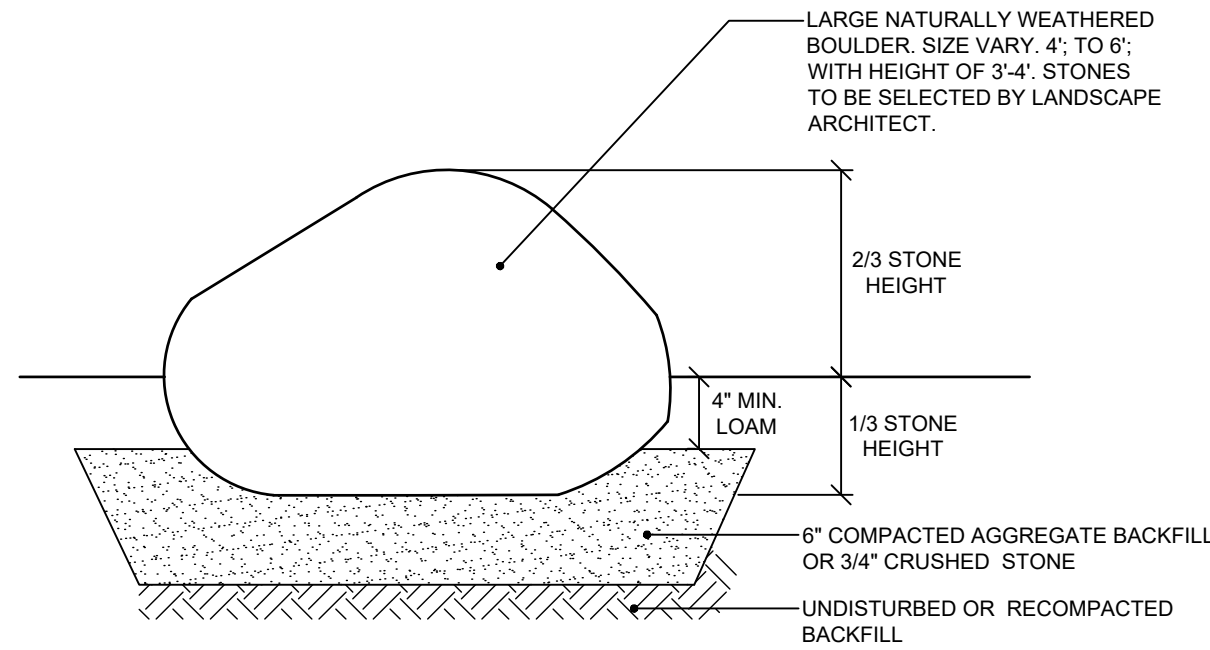
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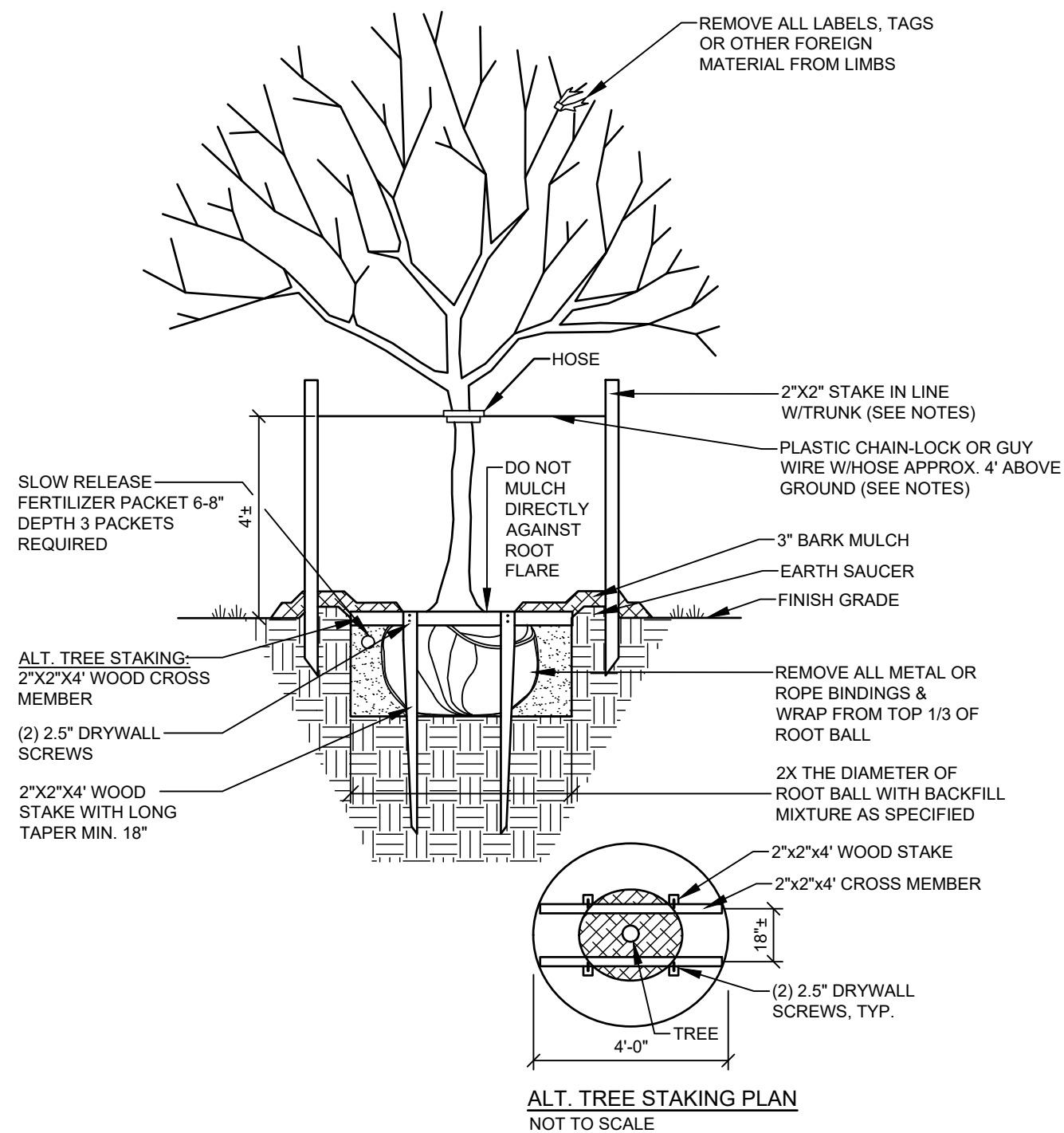
ARCHITECTURE + CONSTRUCTION



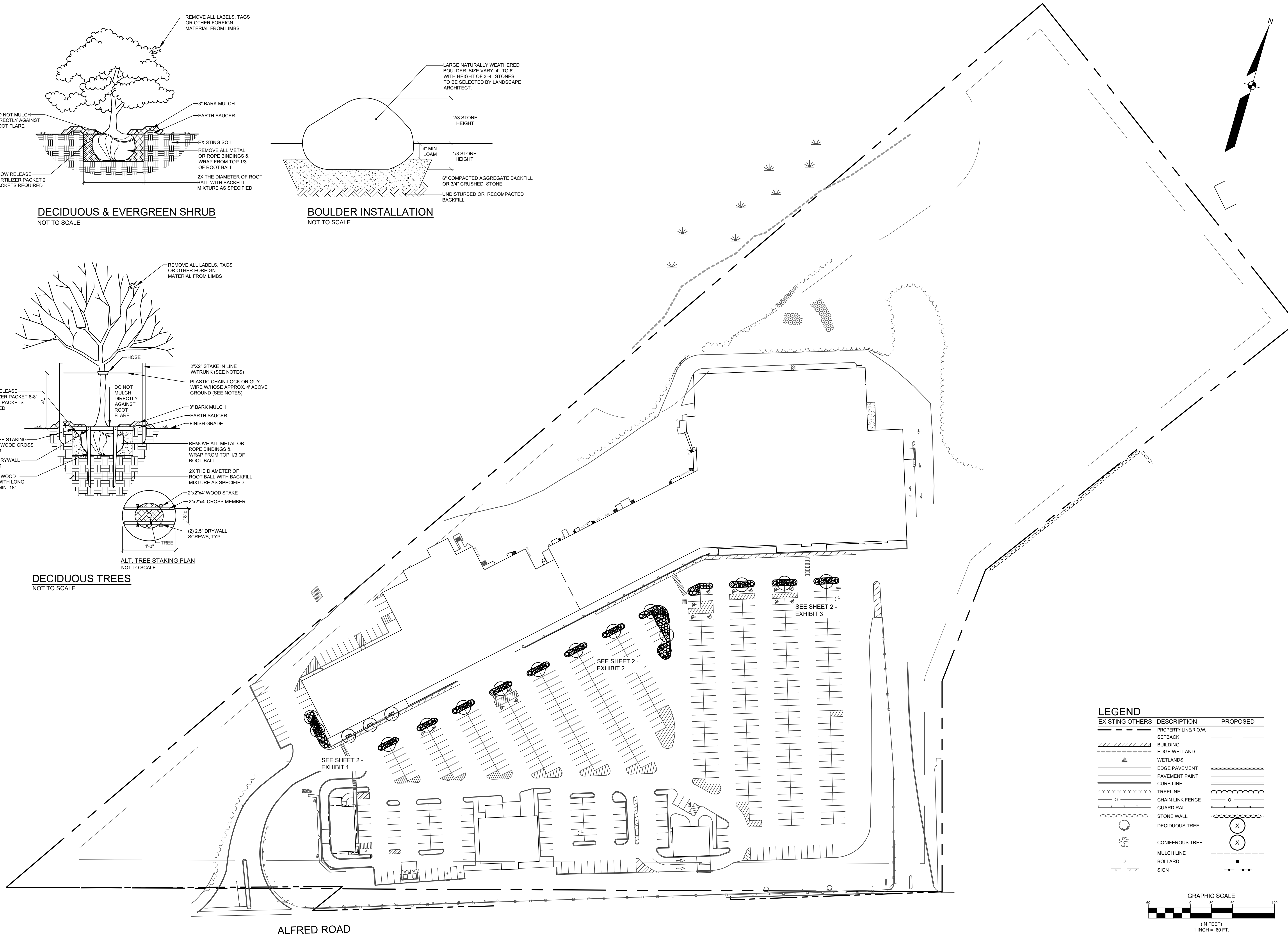
DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE



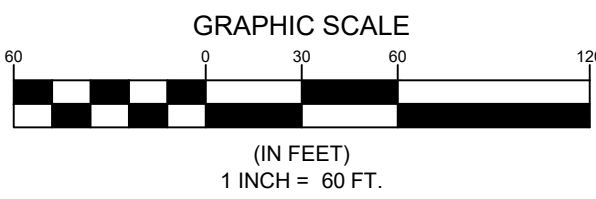
BOULDER INSTALLATION
NOT TO SCALE



DECIDUOUS TREES
NOT TO SCALE



LEGEND		
EXISTING OTHERS	DESCRIPTION	PROPOSED
	PROPERTY LINE, O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	PAVEMENT PAINT	
	CURB LINE	
	TREELINE	
	CHAIN LINK FENCE	
	GUARD RAIL	
	STONE WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	MULCH LINE	
	BOLLARD	
	SIGN	



REV.	BY	DATE	STATUS
A	SGD	10/13/21	ISSUED FOR CITY REVIEW
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SEBAGO
TECHNICS
www.sebagotechnics.com
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-260-2100

OVERALL LANDSCAPE PLAN
OF:
5 POINTS
420 ALFRED ROAD
BIDDEFORD, MAINE
FOR:
BVH BIDDEFORD, LLC
2 LIVEWELL DRIVE, SUITE 201
KENNEBUNK, ME 04043

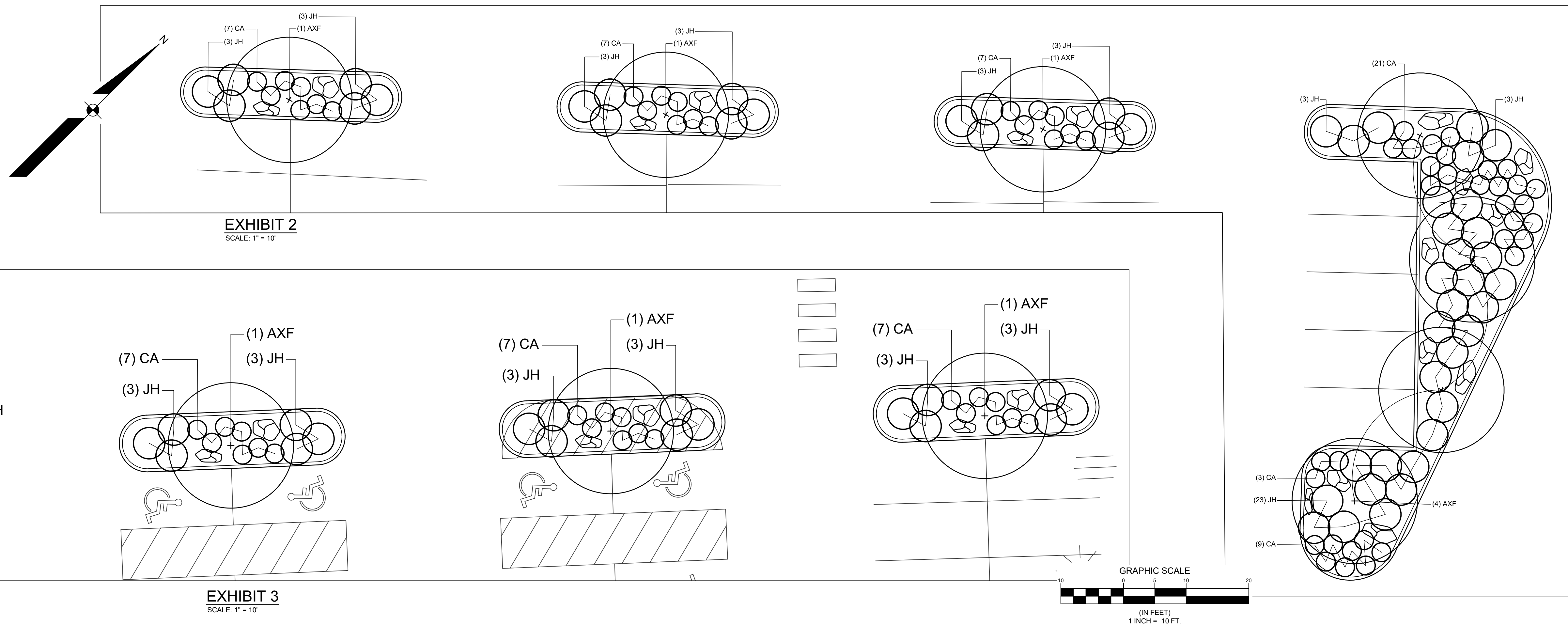
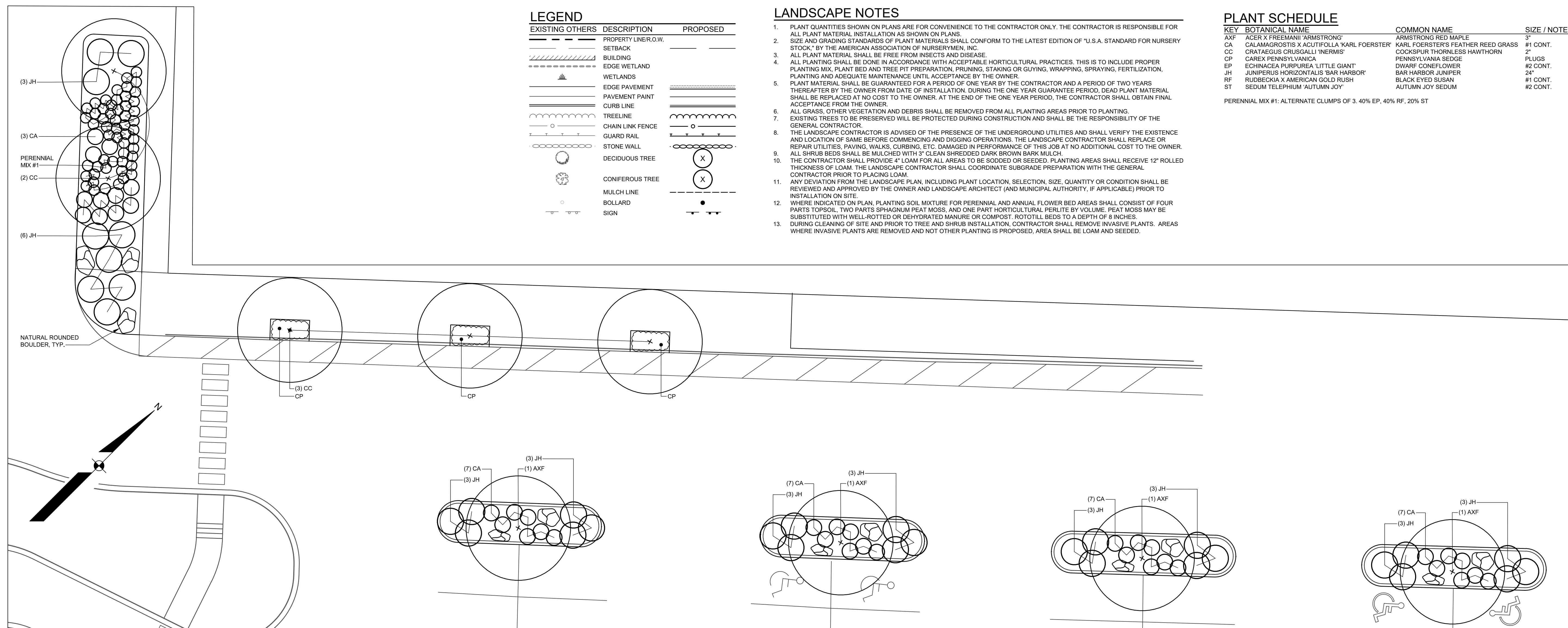
DESIGNED	AKT
DRAWN	SRC
CHECKED	SGD
DATE	10/12/21
SCALE	1" = 60'
PROJECT	05142

SHEET 1 OF 2

NOT FOR CONSTRUCTION

STEPHEN G. DOE, RLA 131

REGISTERED LANDSCAPE ARCHITECT
STEPHEN G. DOE
No. 131
STATE OF MAINE



LEGEND		
EXISTING OTHERS	DESCRIPTION	PROPOSED
	PROPERTY LINE R.O.W.	
	SETBACK	
	BUILDING	
	EDGE WETLAND	
	WETLANDS	
	EDGE PAVEMENT	
	PAVEMENT PAINT	
	CURB LINE	
	TREELINE	
	CHAIN LINK FENCE	
	GUARD RAIL	
	STONE WALL	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	MULCH LINE	
	BOLLARD	
	SIGN	

- LANDSCAPE NOTES

1. PLANT QUANTITIES SHOWN ON PLANS ARE FOR CONVENIENCE TO THE CONTRACTOR ONLY. THE CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL INSTALLATION AS SHOWN ON PLANS.
2. PLANTING AND MAINTENANCE STANDARDS OF PLANT MATERIAL SHALL CONFORM TO THE LATEST EDITION OF "U.S.A. STANDARD FOR NURSERY STOCK;" BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC.
3. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
4. PLANTING SHALL BE DONE USING THE MOST AVAILABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE BY THE OWNER.
5. THE CONTRACTOR SHALL GUARANTEE THE GROWTH OF ALL PLANT MATERIAL FOR ONE YEAR. THE CONTRACTOR AND A PERIOD OF TWO YEARS THEREAFTER BY THE OWNER FROM DATE OF INSTALLATION, DURING THE ONE YEAR GUARANTEE PERIOD, DEAD PLANT MATERIAL SHALL BE REPLACED AT NO COST TO THE OWNER. AT THE END OF THE ONE YEAR PERIOD, THE CONTRACTOR SHALL OBTAIN FINAL ACCEPTANCE FROM THE OWNER.
6. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
7. EXISTING TREES TO BE PRESERVED WILL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
8. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF THE UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR ALL UTILITIES, PRIOR TO ANY CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE OWNER. ALL SHRUB BEDS SHALL BE MULCHED WITH 3" CLEAN SHREDED DARK BROWN BARK MULCH.
9. THE CONTRACTOR SHALL PROVIDE 4" LOAM FOR ALL AREAS TO BE SODDED OR SEEDED. PLANTING AREAS SHALL RECEIVE 12" ROLLED TOP SOIL. LOAM AND TOP SOIL SHALL BE LAID DOWN AND COMPACTED TO THE SATISFACTION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
10. THE CONTRACTOR SHALL SUBMIT A LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY OR CONDITION SHALL ANY DEVIATION FROM THE LANDSCAPE PLAN, AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT (IF APPLICABLE) PRIOR TO INSTALLATION ON SITE.
11. WHERE INDICATED ON PLANS, PLANTING SOIL MIXTURE FOR PERENNIAL AND ANNUAL FLOWER BED AREAS SHALL CONSIST OF: FOUR PARTS TOP SOIL, TWO PARTS SPAGNUM PEAT MIXTURE, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
12. WHERE PLANTING AREAS ARE NOT SPECIFICALLY IDENTIFIED, THE CONTRACTOR SHALL REMOVE ALL WEEDS AND INVASIVE PLANTS, WHERE INVASIVE PLANTS ARE REMOVED AND NOT OTHER PLANTING IS PROPOSED, AREAS SHALL BE LOAM AND SEEDED.

PLANT SCHEDULE

KEY	BOTANICAL NAME	COMMON NAME	SIZE / NOTES
AXF	ACER X FREEMANII 'ARMSTRONG'	ARMSTRONG RED MAPLE	3"
CA	CALAMAGROSTIS X ACUTIFOLIA 'KARL FORSTER'	KARL FORSTER'S FEATHER REED GRASS	#1 CONT.
CC	CRATEGEUS CRUGSALLI 'NERMIS'	COCKSPUR THORNLESS HAWTHORN	2"
CP	CAREX PENNSYLVANICA	PENNSYLVANIA SEDGE	PLUGS
EP	ECHINACEA PURPUREA 'LITTLE GIAN'	DIARY CONEFLOWER	#2 CONT.
JH	JUNIPERUS HORIZONTALIS 'BAR HARBOR'	BAR HARBOR JUNIPER	#1 CONT.
RF	RUDEBECKIA X AMERICANA GOLD RUSH	BLACK EYED SUSAN	#1 CONT.
ST	SEDUM TELEPHORI 'AUTUMN JOY'	AUTUMN JOY SEDUM	#2 CONT.

PERENNIAL MIX #1: ALTERNATE CLUMPS OF 3. 40% EP, 40% RF, 20% ST

05142 LS.dwg, TAB:L - 10 scale

STEPHEN G. DOE, RLA 131

10 SCALE LANDSCAPE EXHIBITS

OF:
5 POINTS

420 ALFRED ROAD
BIDDEFORD, MAINE

FOR:
BVH BIDDEFORD, LLC
22 LIVEWELL DRIVE, SUITE 201
KENNERTOWN, ME 04042

DESIGNED	AKT
DRAWN	SRC
CHECKED	SGD
DATE	10/12/21
SCALE	1" = 10'
PROJECT	05142

SHEET 2 OF 2

A	SGD	10/13/21			ISSUED FOR CITY REVIEW

REV: BY: DATE: STATUS: THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, REVISIONS, OR CORRECTIONS SHALL BE AT THE USER'S SOLE RISK, AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

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TECHNICS
WWW.SEBAGOTECHNICS.COM

NOT FOR
CONSTRUCTION

Professional Seal of Stephen G. Doe, Registered Landscape Architect, No. 131, State of Maine.

5 POINTS BRCOT

420 ALFRED STREET
BIDDEFORD, MAINE, 04005

ISSUED FOR SITE PLAN REVIEW
DATE OF ISSUE: 10/13/2021

PROJECT TEAM:

OWNER:
BVH BIDDEFORD LLC
CO OWNER: HD LAWRENCE REALY, LLC
CONTACT: TIM HARRINGTON
2 LIVEWELL DRIVE, SUITE 201
KENNEBUNK, ME 04043
PHONE: 207-985-5132
E-MAIL: timharrington@atlanticholdings.net

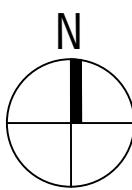
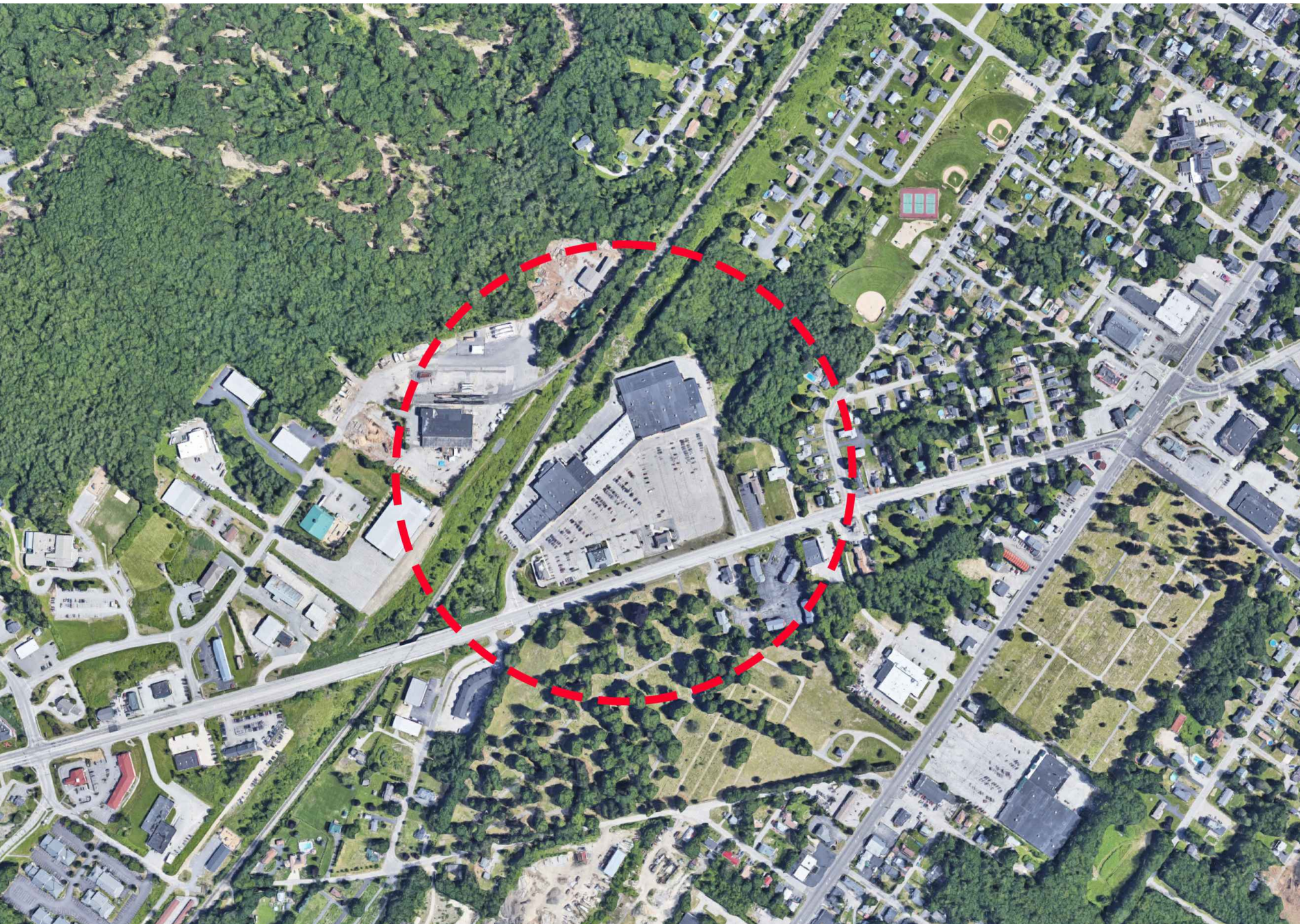
CLIENT:

BRCOT
CONTACT: PAULETTE BONNEAU
10 MAPLEWOOD AVE
BIDDEFORD, MAINE, 04005
PHONE 207.282.1501
E-MAIL paulette.b@biddefordschools.me

ARCHITECT + GENERAL CONTRACTOR:

BARRETT MADE
CONTACT: MATTHEW AHLBERG, AIA
65 HANOVER STREET
PORTLAND, ME 04101
PHONE 207.210.4421
E-MAIL matthew.ahlberg@barrettmade.com

SITE PLAN:



DRAWING LIST:

GENERAL	
G.001	COVER SHEET
ARCHITECTURAL	
AD.101	DEMOLITION FLOOR PLAN
E.201	EXISTING ELEVATIONS
E.202	EXISTING ELEVATIONS
E.203	EXISTING ELEVATIONS
A.101	OVERALL FLOOR PLAN
A.102	ADULT EDUCATION FLOOR PLAN
A.103	BRCOT FLOOR PLAN
A.201	EXTERIOR ELEVATIONS
A.202	EXTERIOR ELEVATIONS
A.203	EXTERIOR ELEVATIONS
A.301	BUILDING SECTIONS

MATERIAL KEY: ARCHITECTURAL ABBREVIATIONS:

COURSE GRAVEL		AB	ANCHOR BOLT	D	DRYER	GA	GAUGE	MTRL	MATERIAL	QT	QUART	T	TREAD/TOILET
CONRETE		ACT	ACOUSTICAL CEILING TILE	DBL	DOUBLE	GAL	GALLON	MAS	MASONRY	R	RADIUS/RISER/RANGE	TEL	TELEPHONE
STONE		ADDL	ADDITIONAL	DEFL	DEFLECTION	GALV	GALVANIZED	MAX	MAXIMUM	RD	ROOF DRAIN	TEMP	TEMPERATURE/TEMPERED
EARTH/COMPACT FILL		ADMIN	ADMINISTRATION	DEMO	DEMOLITION	GC	GENERAL CONTRACTOR	MECH	MECHANICAL	REC	RECREATION	T&G	TONGUE & GROOVE
GYPSUM/PLASTER		AFF	ABOVE FINISH FLOOR	DF	DRINKING FOUNTAIN	GL	GLASS	MED	MEDICAL	RECT	RECTANGLE	TH	THICKNESS
PLYWOOD		ALUM	ALUMINUM	DIA	DIAMETER	GR	GRANITE	MFR	MANUFACTURER	REF	REFERENCE	T.O.	TOP OF
BATT INSULATION		AP	ACCESS PANEL	DIAG	DIAGONAL	GWB	GYPSUM WALL BOARD	MGR	MANAGER	REQD	REQUIRED	TV	TELEVISION
FINISH WOOD		APV	ASPHALT PAVER	DIM	DIMENSION	GYP	GYPSUM	MH	MANHOLE	REFR	REFRIGERATOR	TYP	TYPICAL
ROUGH WOOD		ARCH	ARCHITECT	DR	DIRECTOR/DOOR			MIN	MINIMUM	REINF		UL	UNDERWRITERS
BLOCKING WOOD		BD	BOARD	DIV	DIVISION	HD	HIGH DENSITY	MISC	MISCELLANEOUS	RESIL	RESILIENT	UNO	UNLESS NOTED
CONCRETE MASONRY		BIT	BITUMINOUS	DN	DOWN	HR	HOUR	MO	MASONRY OPENING	REV	REVISE/REVISION	UTIL	UTILITIES
BRICK MASONRY		BLDG	BUILDING	DWG	DRAWING	HC	HOLLOW CORE	MOLD	MOLDING	RFG	ROOFING	VAR	VARIES
SAND/FINE GRAVEL		BLKG	BLOCKING	E	EAST	HDSWR	HALF FULL SCALE	MR	MOISTURE RESISTANT	RM	ROOM	VB	VAPOR BARRIER
RIGID INSULATION		BM	BENCHMARK	EA	EACH	HFS	HEIGHT	MTD	MOUNTED	RO	ROUGH OPENING	VCT	VINYL COMPOSITE TILE
GLASS		BRG	BEARING	EF	EXHAUST FAN	HTG	HOLLOW METAL	MTG	MOUNTING	S	SOUTH/SINK	VENT	VENTILATOR/VENTILATION
		BTW	BETWEEN	EJ	EXPANSION JOINT	HVAC	HOLD OPEN	MTL	METAL	SAN	SANITARY		
				EL	ELEVATION		HORIZONTAL	N	NORTH	S.A.F.B.	SOUND		
				ELEV	ELEVATOR	HW	HEATING	NATL	NATURAL	ATTENUATION FIRE			
				ELEV	ELECTRIC/ELECTRICAL	HYD	HEATING, VENTILATION & AIR CONDITIONING	NIC	NOT IN CONTRACT	SC	BATTS (BRACKET)		
				EQ	EQUAL	INCL	INCLUDE/INCLUDING	NL	NIGHT LIGHT	SD	SOLID CORE		
				EWC	ELECTRIC WATER	ID	INSIDE DIAMETER	NO	NUMBER	SECT	SECTION		
				EXAM	EXAMINATION	INSUL	INSULATE/INSULATION	NTS	NOT TO SCALE	SHT	SHEET		
				EXIST	EXISTING	INT	INTERIOR	O.C.	ON CENTER	SIM	SIMILAR		
				EXT	EXTERIOR	INV	INVERT	OFCl	OWNER FURNISHED CONTRACTOR	SPEC	SPECIFICATION(S)		
								INSTALLED		SPC	SWIMMING POOL		
								OZ	OUNCE	STC	SOUND TRANSMISSION COEFFICIENT		
								PART BD	PARTIAL BOARD	STD	STANDARD		
								PC	PIECE	STL	STEEL		
								PL	PLATE	STOR	STORAGE		
								PLAS	PLASTIC	ST ST	STAINLESS STEEL		
								PLAM	PLASTIC LAMINATE	SUSP	SUPSENDED		
								PLYWD	PLYWOOD				
								PNT	PAINT				
								POLY	POLYURETHANE				
								PREP	PREPARATION				
								PSF	POUNDS/SQUARE FOOT				
								PSI	POUNDS/SQUARE INCH				
								PT	PRESERVATIVE TREATED				
								PTD	PAINTED				
								PVMT	PAVEMENT				

ARCHITECTURAL SYMBOLS:

CEILING HEIGHT		BUILDING SECTION	
ROOM NUMBER		BUILDING ELEVATION	
DOOR NUMBER		WALL SECTION	
WINDOW TYPE		INTERIOR ELEVATION	
PARTITION TYPE		COLUMN REFERENCE LINE	
REVISION REFERENCE		PROPOSED ELEVATION	
DETAIL		BREAKLINE	
DEMOLITION KEYNOTE			
KEYNOTE			

REVISIONS:

DRAWING TITLE:
G.001 COVER SHEET

DATE OF ISSUE:
10.13.2021

ISSUED FOR:
SITE PLAN REVIEW

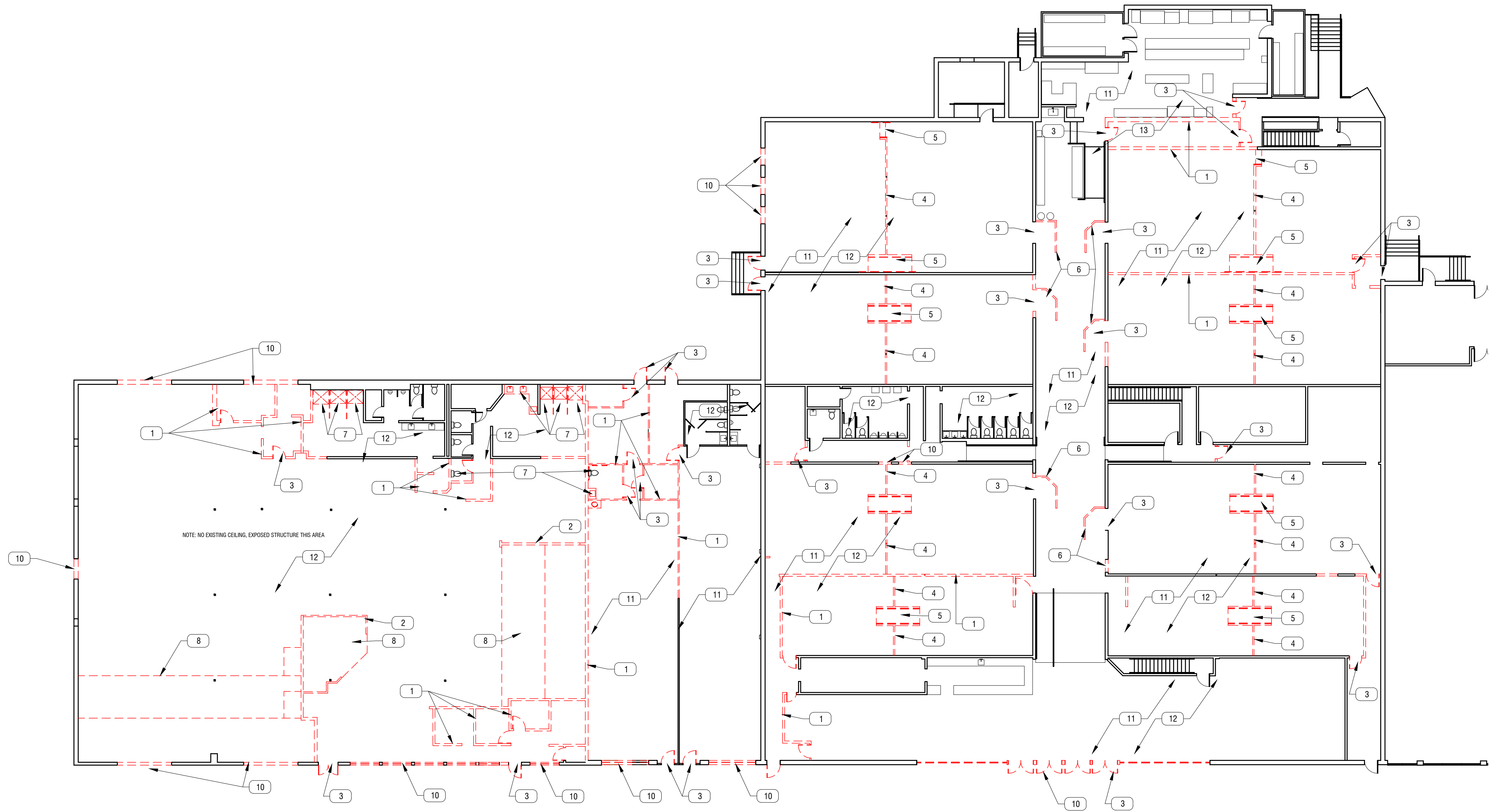
SCALE:
AS NOTED

PROJECT NAME:
BRCOT - 5 POINTS

420 ALFRED STREET
BIDDEFORD, MAINE, 04005

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MADE**
ARCHITECTURE + CONSTRUCTION

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LEGEND:

— EXISTING WALL TO REMAIN

- - - WALL/ITEM TO BE REMOVED

- GENERAL NOTES:
1. VERIFY ALL CONDITIONS IN FIELD. COORDINATE WITH OTHER WORK TO BE PERFORMED.
 2. ALL ELECTRICAL, PLUMBING, AND MECHANICAL LOCATED IN WALLS, FLOORS AND CEILINGS NOTED TO BE REMOVED SHALL BE EITHER REMOVED BACK TO THE SOURCE OR LOCATED OUT OF HARMS WAY, CAPPED AND/OR PROTECTED.

- DEMOLITION KEYED NOTES:
- 1 REMOVE WALL
 - 2 REMOVE PARTIAL HEIGHT WALL
 - 3 REMOVE DOOR
 - 4 REMOVE GUARDRAIL
 - 5 REMOVE RAMP AND HANDRAILS
 - 6 REMOVE CMU WALL
 - 7 REMOVE EXISTING PLUMBING FIXTURE
 - 8 REMOVE TIERED FLOOR
 - 9 REMOVE EXISTING WINDOWS
 - 10 REMOVE WALL & PREP FOR NEW OPENING
 - 11 REMOVE EXISTING CIELINGS
 - 12 REMOVE EXISTING FLOOR FINISHES
 - 13 REMOVE EXISTING FRP WALL FINISH

DRAWING TITLE:

AD.101 DEMOLITION FLOOR PLAN

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

PROJECT NAME:

BRCOT - 5 POINTS

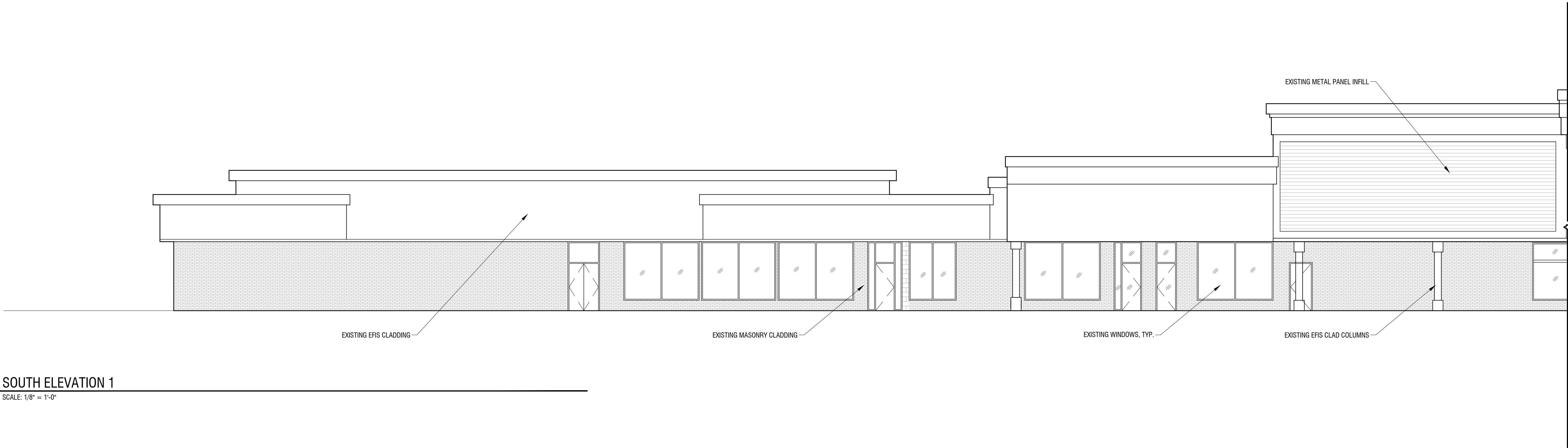
420 ALFRED STREET

BIDDEFORD, MAINE, 04005

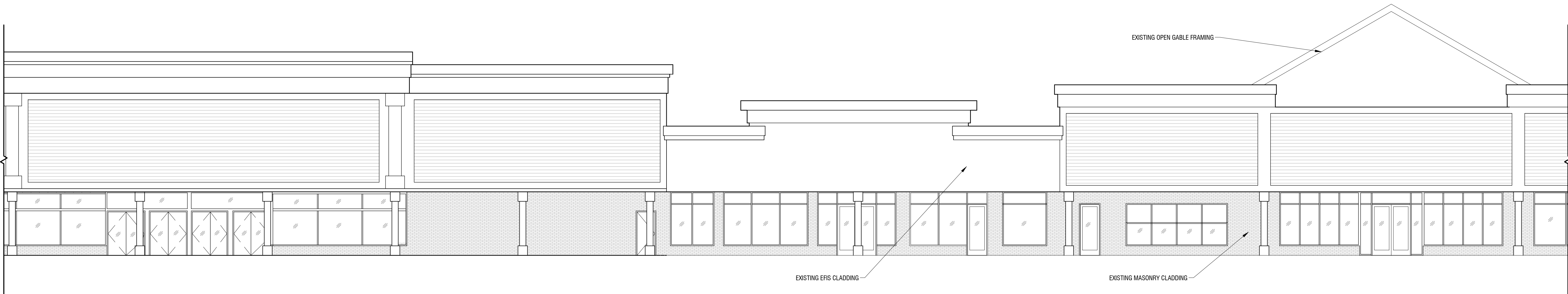
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ARCHITECTURE + CONSTRUCTION

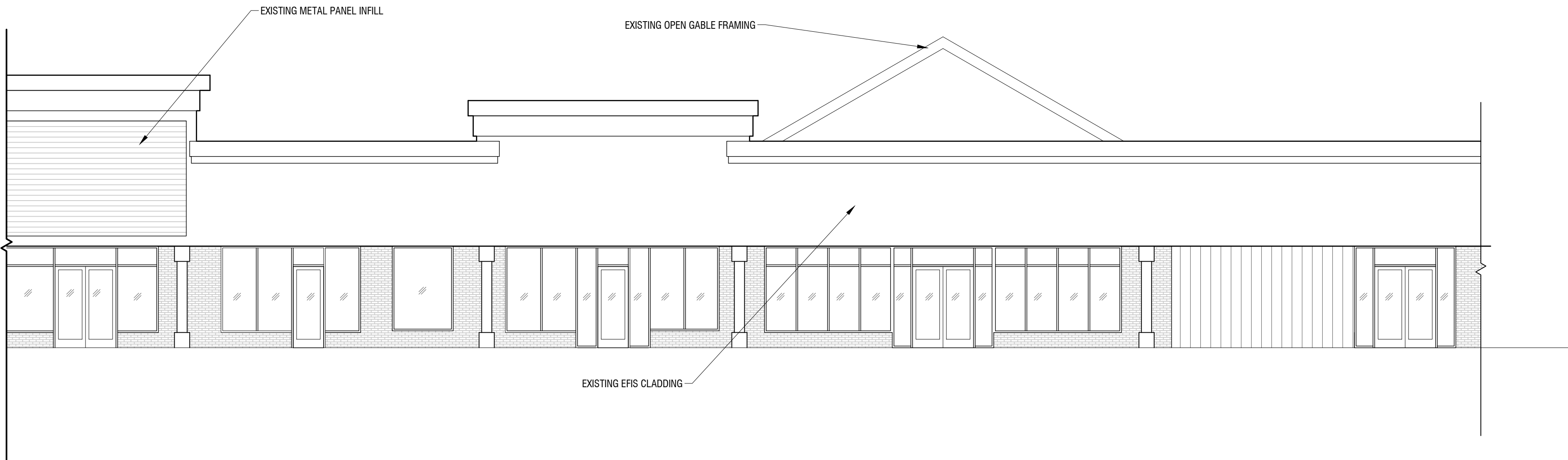
REVISIONS:



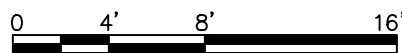
1 SOUTH ELEVATION 1
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 2
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION 3
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE

E.201 EXISTING EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

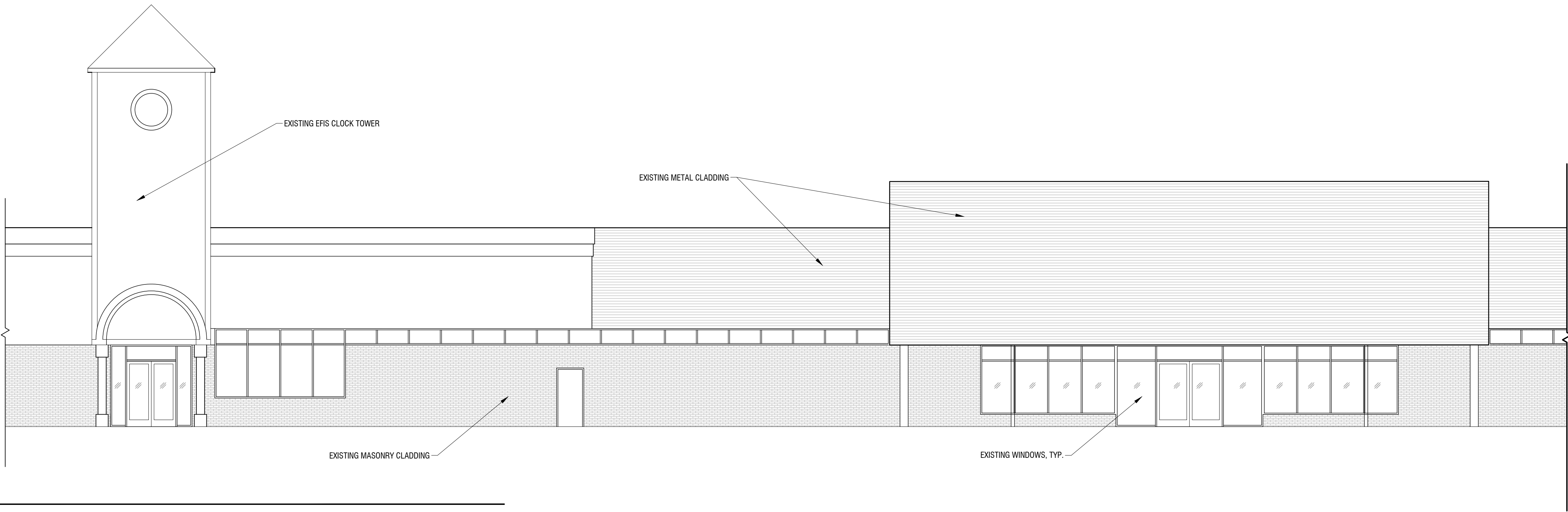
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

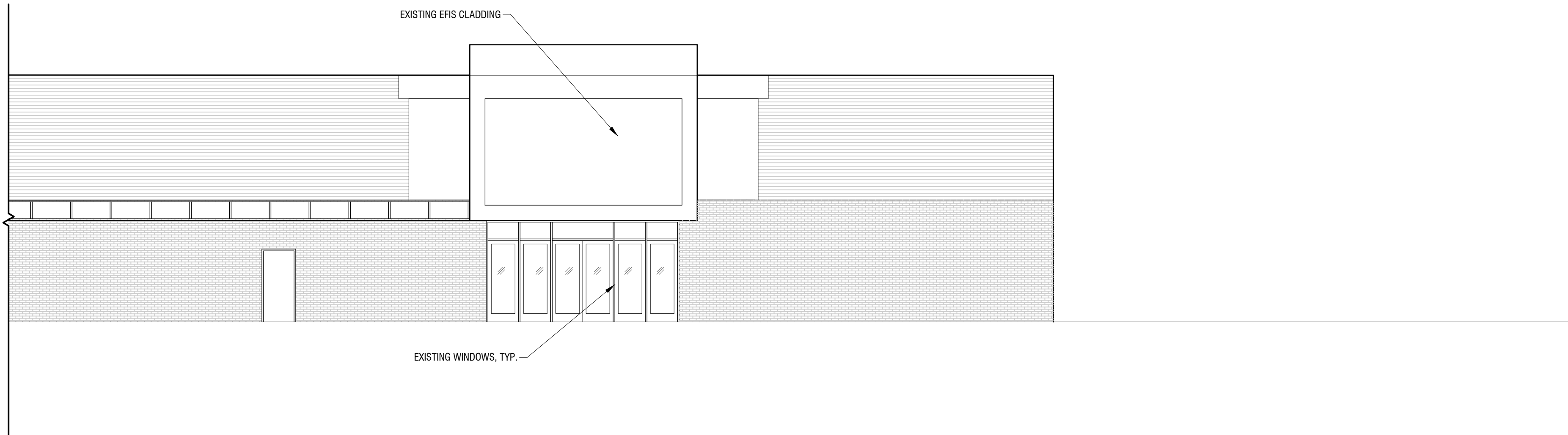
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ARCHITECTURE + CONSTRUCTION

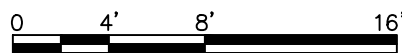
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1 SOUTH ELEVATION 4
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 5
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE

E.202 EXISTING EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

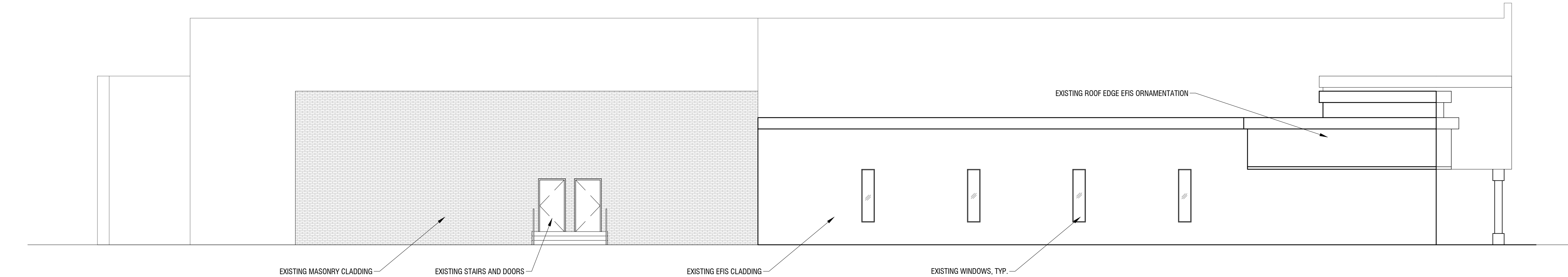
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

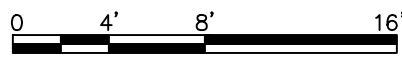
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1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

DRAWING TITLE:

E.203 EXISTING EXTERIOR ELEVATIONS

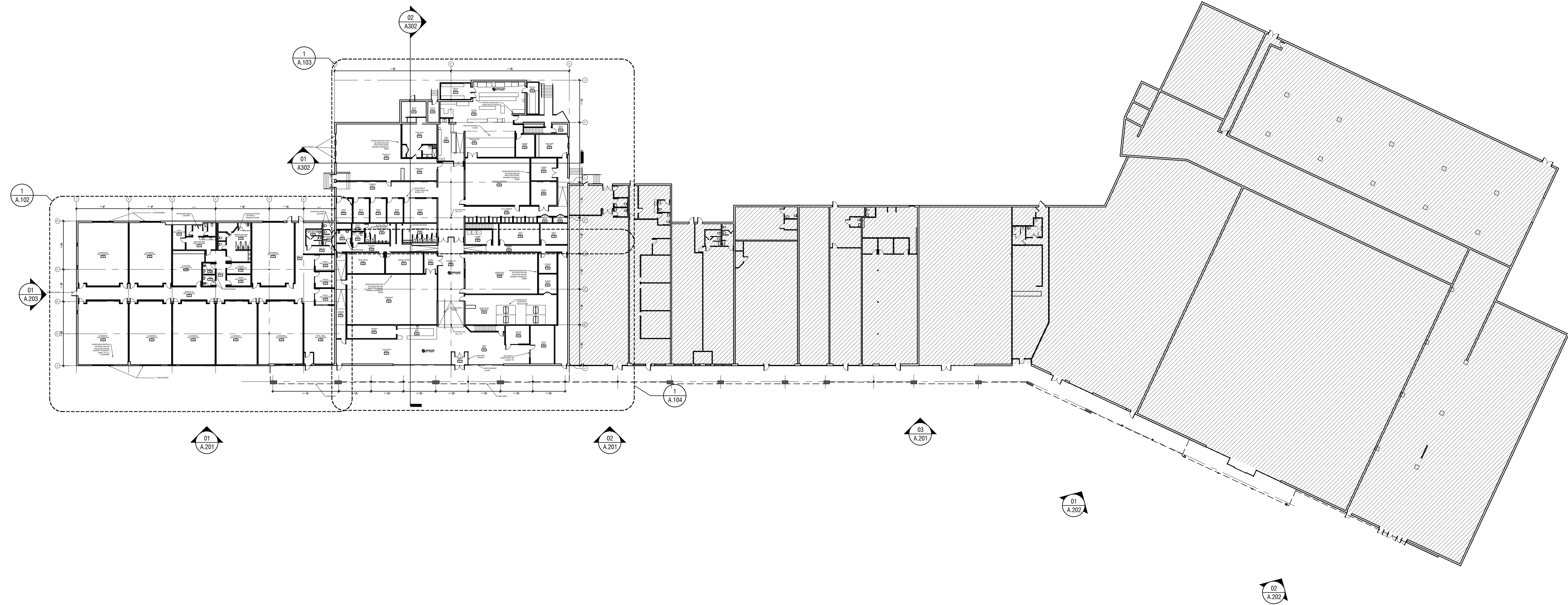
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

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ARCHITECTURE • CONSTRUCTION

REVISIONS:



LEGEND:

- EXISTING WALL TO REMAIN
- NEW WALL
- EXISTING AREA NOT IN PROJECT SCOPE

GENERAL NOTES:

- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
- ALL DIMENSIONS TO BE VERIFIED IN FIELD
- EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
- PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.

DATE OF ISSUE:
10.13.2021

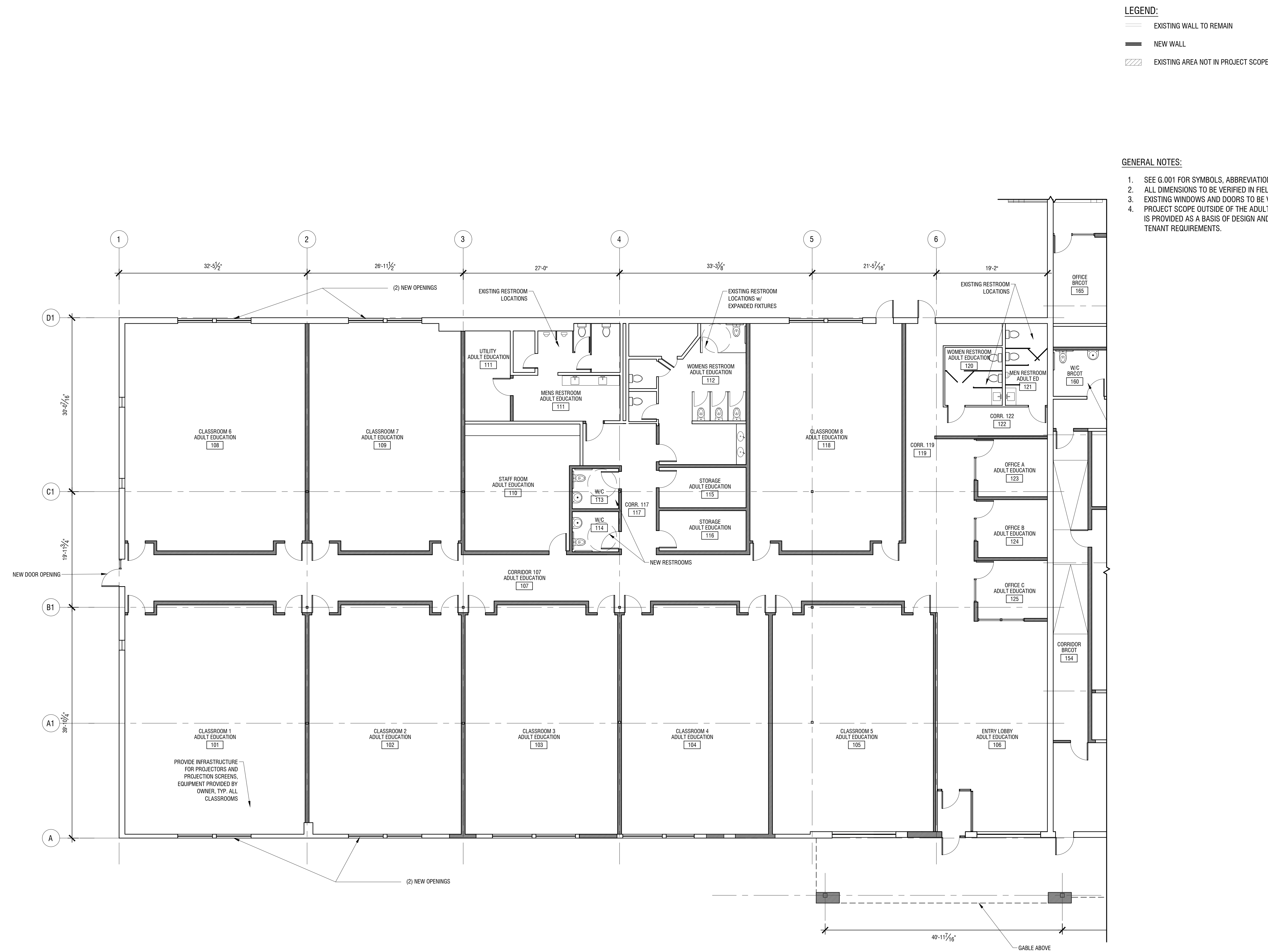
ISSUED FOR:
SITE PLAN REVIEW

SCALE:
AS NOTED

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DRAWING TITLE:
A.101 OVERALL BUILDING PLAN

REVISIONS:



REVISIONS:

DRAWING TITLE:

A.102 ADULT EDUCATION WING

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

PROJECT NAME:

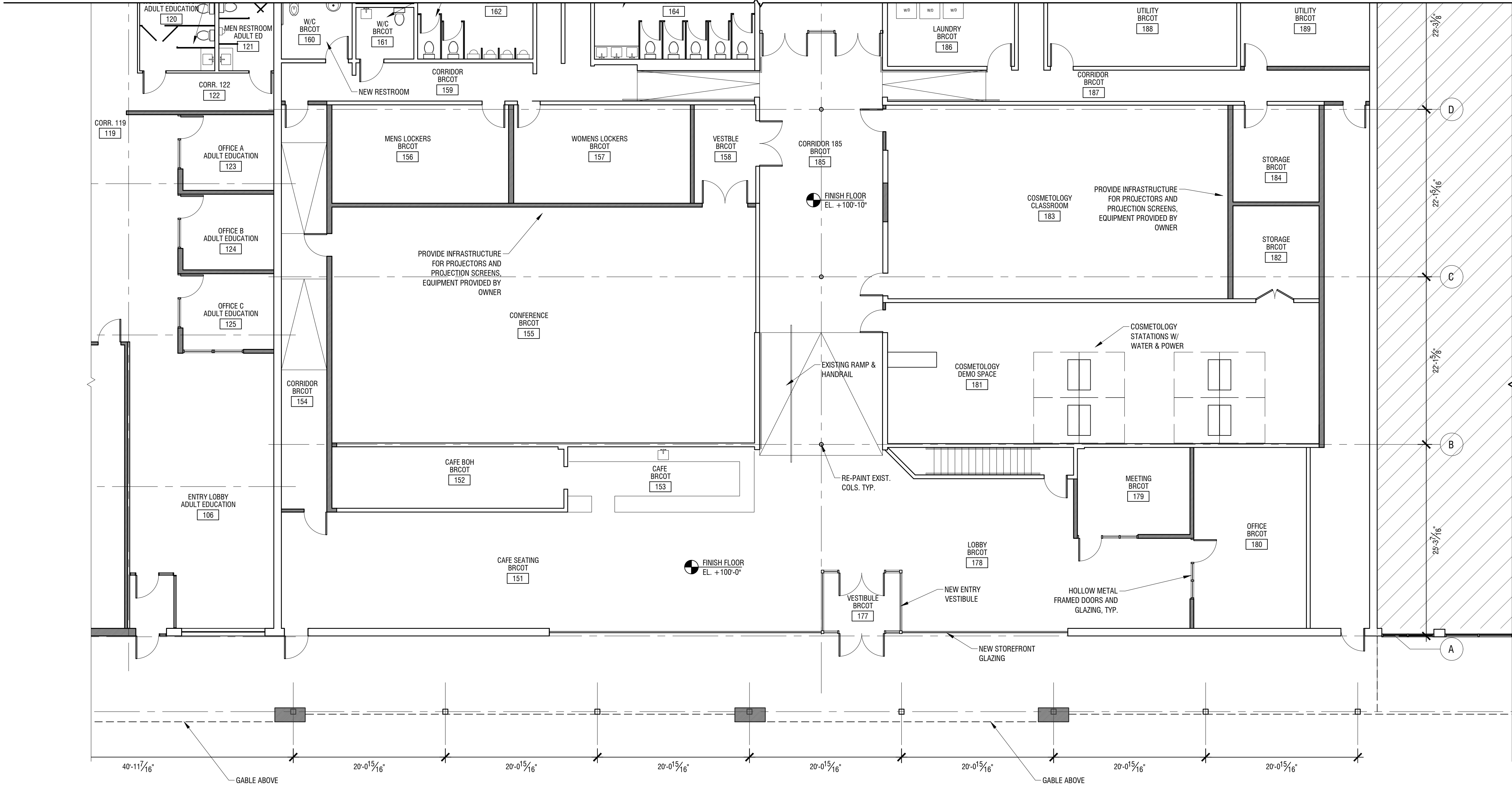
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

BARRETT
MADE

ARCHITECTURE + CONSTRUCTION

- LEGEND:
- EXISTING WALL TO REMAIN
 - NEW WALL
 - EXISTING AREA NOT IN PROJECT SCOPE

- GENERAL NOTES:
- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
 - ALL DIMENSIONS TO BE VERIFIED IN FIELD
 - EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
 - PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.



1 BRCOT FLOOR PLAN 1
SCALE: 1/16" = 1'-0"



REVISIONS:

DRAWING TITLE:

A.103 BRCOT FLOOR PLAN

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

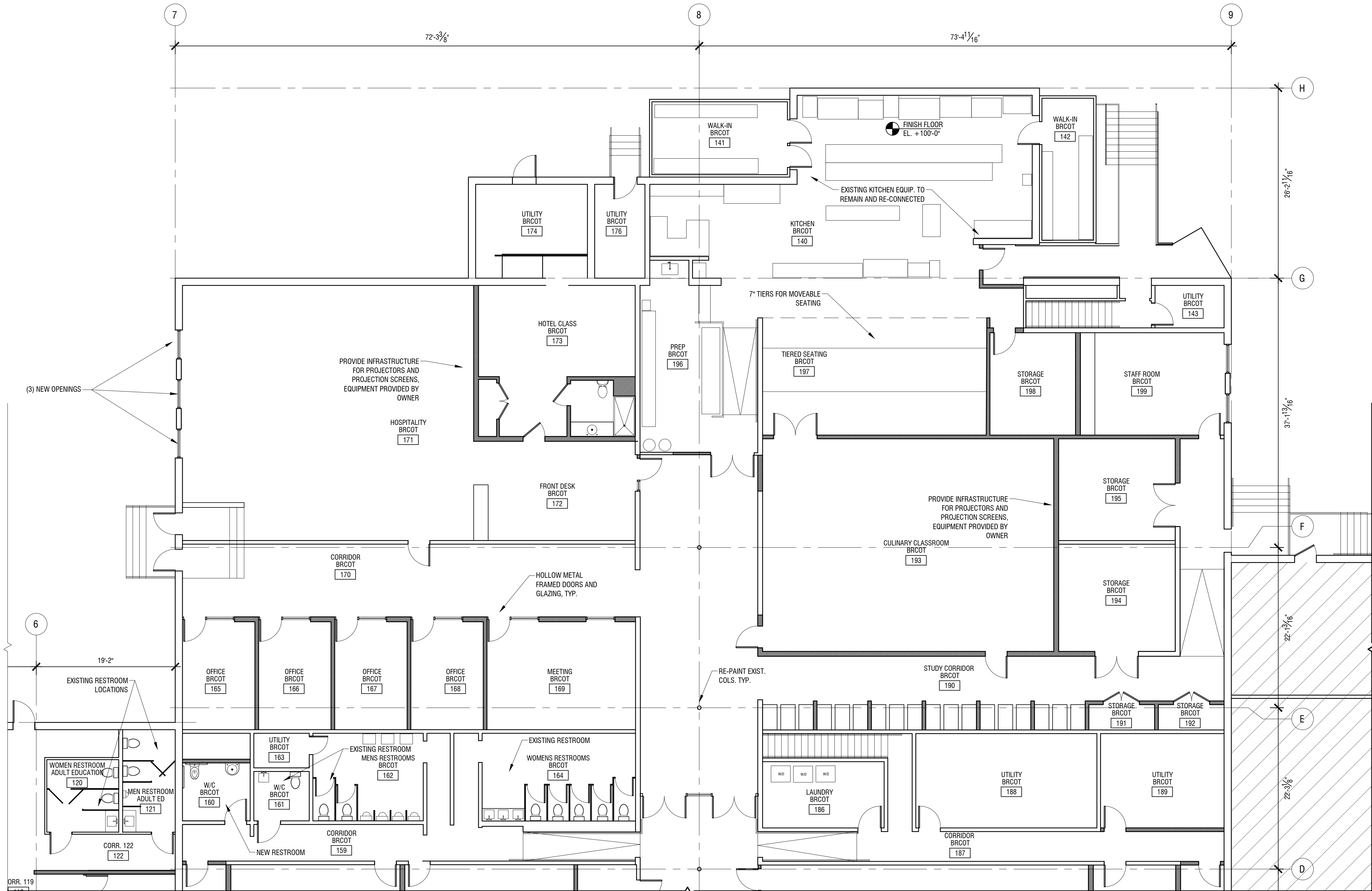
SCALE:

AS NOTED

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1 BRCOT FLOOR PLAN 2
SCALE: 1/16" = 1'-0"



- LEGEND:
- EXISTING WALL TO REMAIN
 - NEW WALL
 - EXISTING AREA NOT IN PROJECT SCOPE

- GENERAL NOTES:
- SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION
 - ALL DIMENSIONS TO BE VERIFIED IN FIELD
 - EXISTING WINDOWS AND DOORS TO BE VERIFIED IN FIELD
 - PROJECT SCOPE OUTSIDE OF THE ADULT EDUCATION AND BRCOT SPACES IS PROVIDED AS A BASIS OF DESIGN AND COULD BE MODIFIED DUE TO TENANT REQUIREMENTS.

REVISIONS:

DRAWING TITLE:

A.104 BRCOT FLOOR PLAN

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

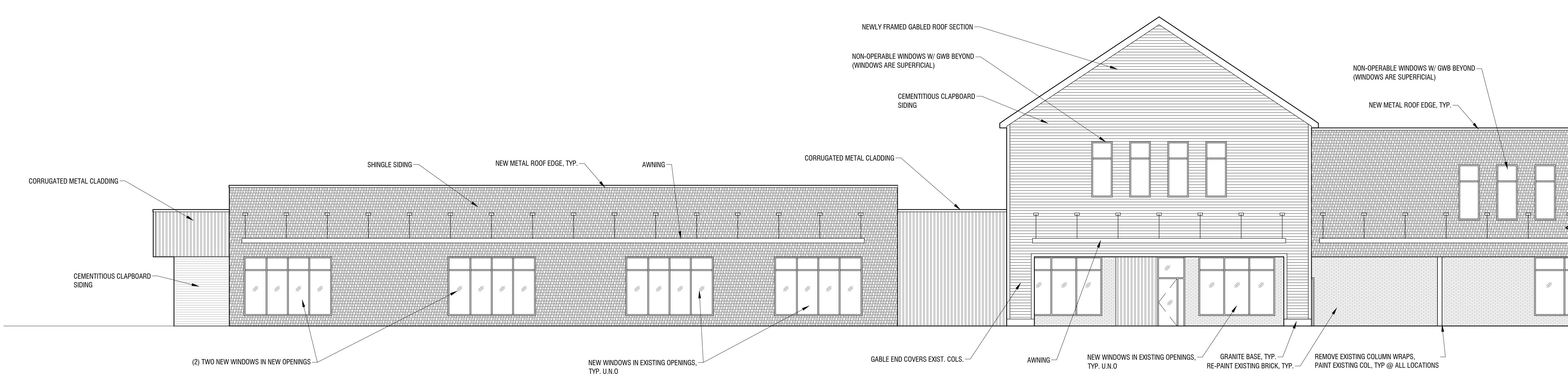
SCALE:

AS NOTED

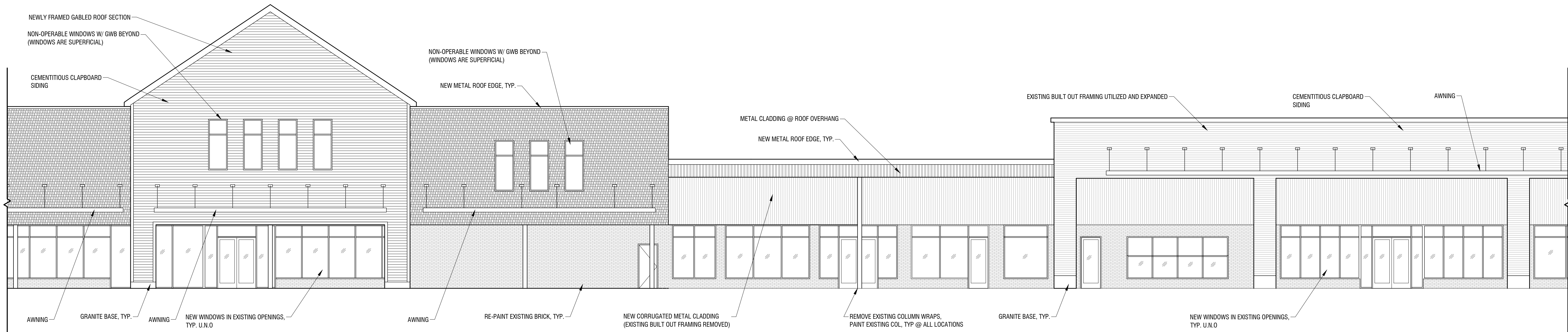
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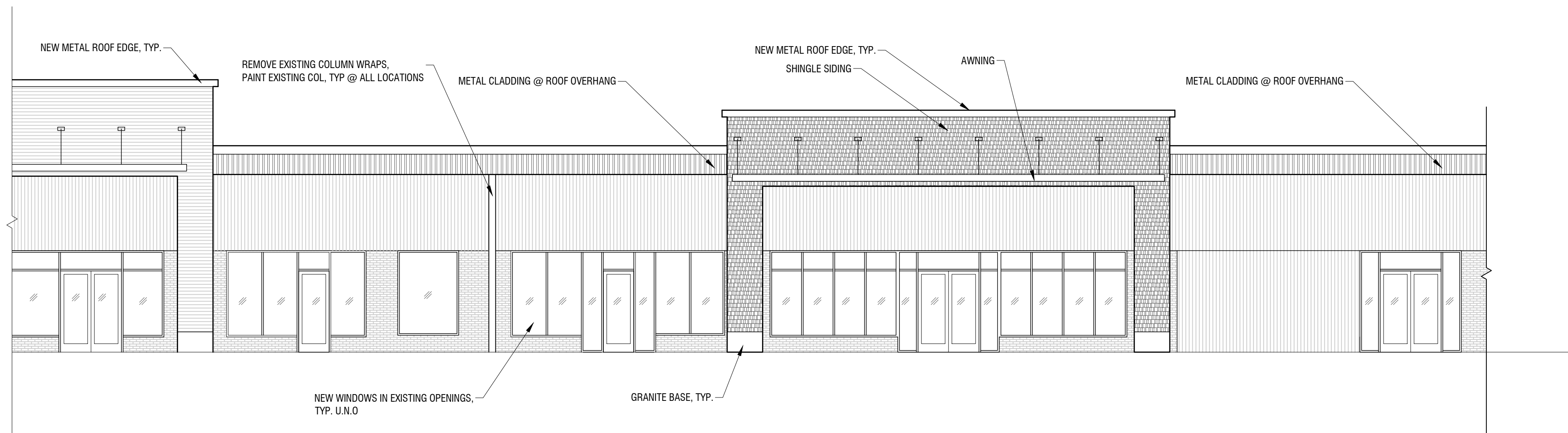
ARCHITECTURE + CONSTRUCTION



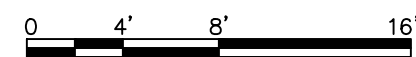
1 SOUTH ELEVATION 1
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 2
SCALE: 1/8" = 1'-0"



3 SOUTH ELEVATION 3
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE:

A.201 EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

PROJECT NAME:

BRCOT - 5 POINTS

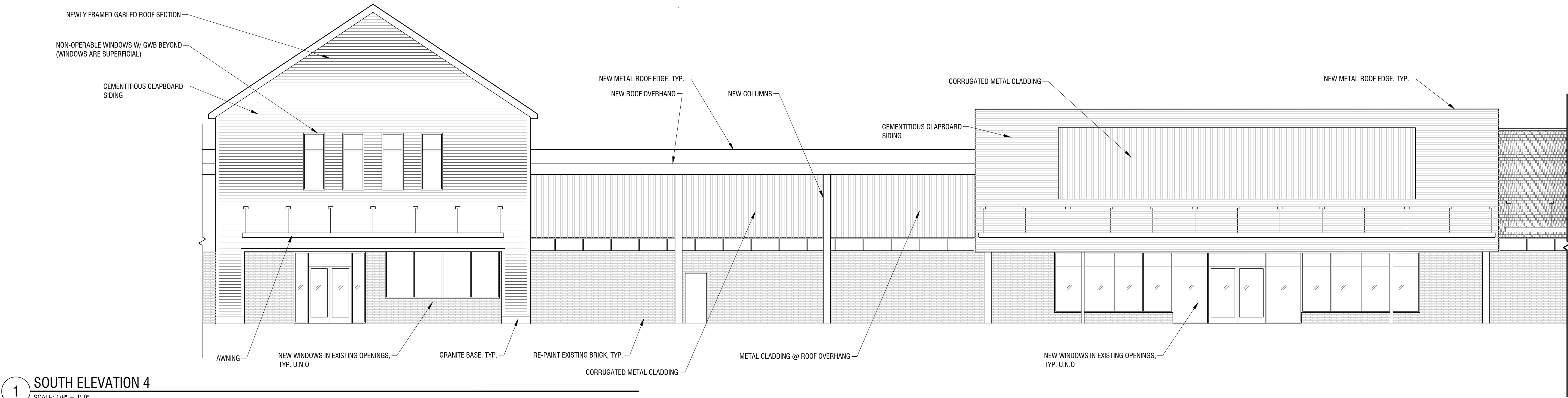
420 ALFRED STREET

BIDDEFORD, MAINE, 04005

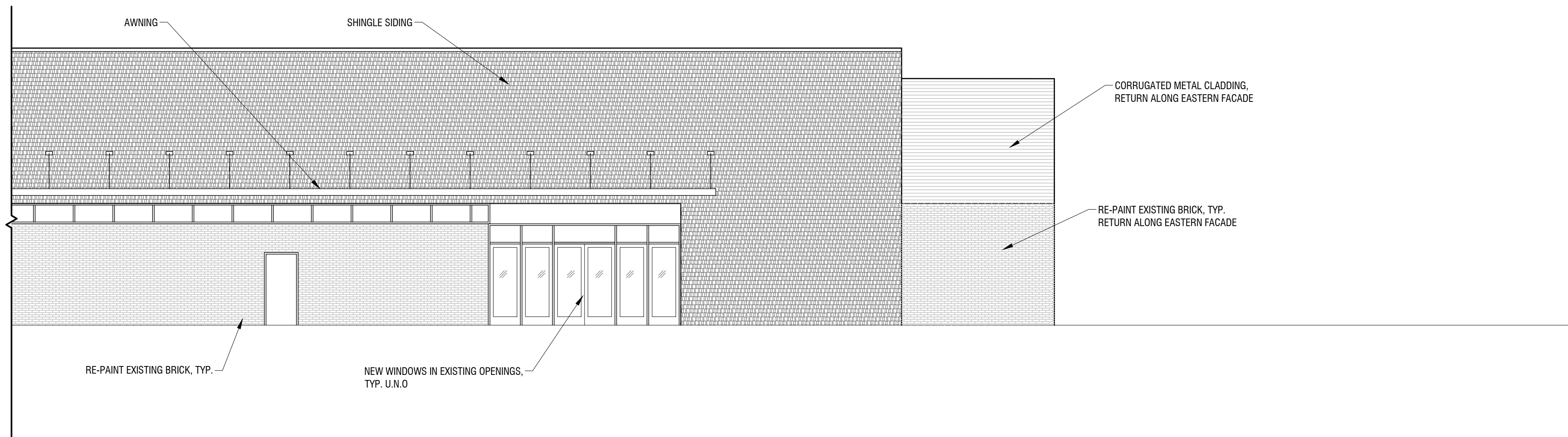
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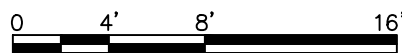
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1 SOUTH ELEVATION 4
SCALE: 1/8" = 1'-0"



2 SOUTH ELEVATION 5
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE

A.202 EXTERIOR ELEVATIONS

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

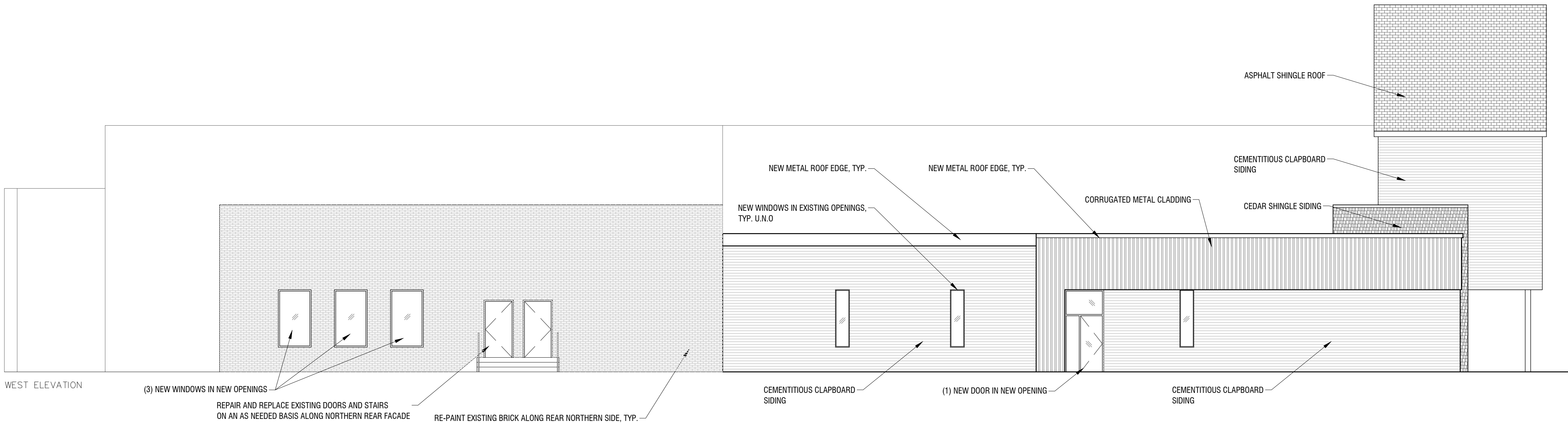
PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

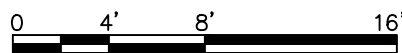
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1 WEST ELEVATION
SCALE: 1/8" = 1'-0"



DATE OF ISSUE:

10.13.2021

ISSUED FOR:

SITE PLAN REVIEW

SCALE:

AS NOTED

DRAWING TITLE:

A.203 EXTERIOR ELEVATIONS

PROJECT NAME:

BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

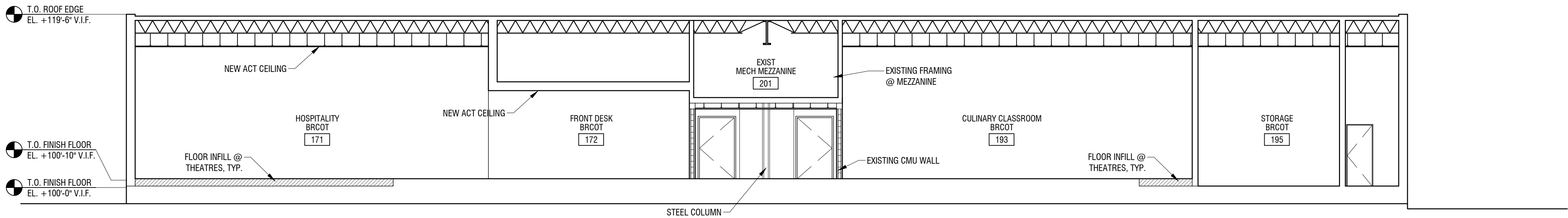
BARRETT
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ARCHITECTURE • CONSTRUCTION

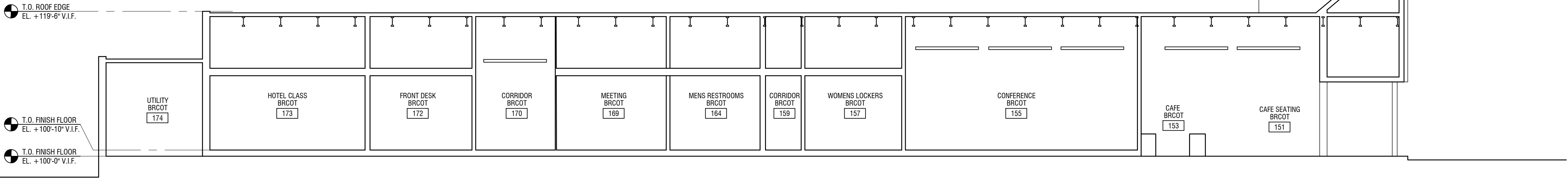
REVISIONS:

GENERAL NOTES:

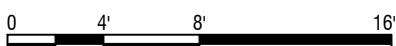
1. SEE G.001 FOR SYMBOLS, ABBREVIATIONS AND GENERAL INFORMATION



1 BUILDING SECTION
SCALE: 1/8" = 1'-0"



2 BUILDING SECTION
SCALE: 1/8" = 1'-0"



REVISIONS:

DRAWING TITLE:

A.301 BUILDING SECTIONS

PROJECT NAME:
BRCOT - 5 POINTS
420 ALFRED STREET
BIDDEFORD, MAINE, 04005

DATE OF ISSUE:

10.13.2021

ISSUED FOR:

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SCALE:

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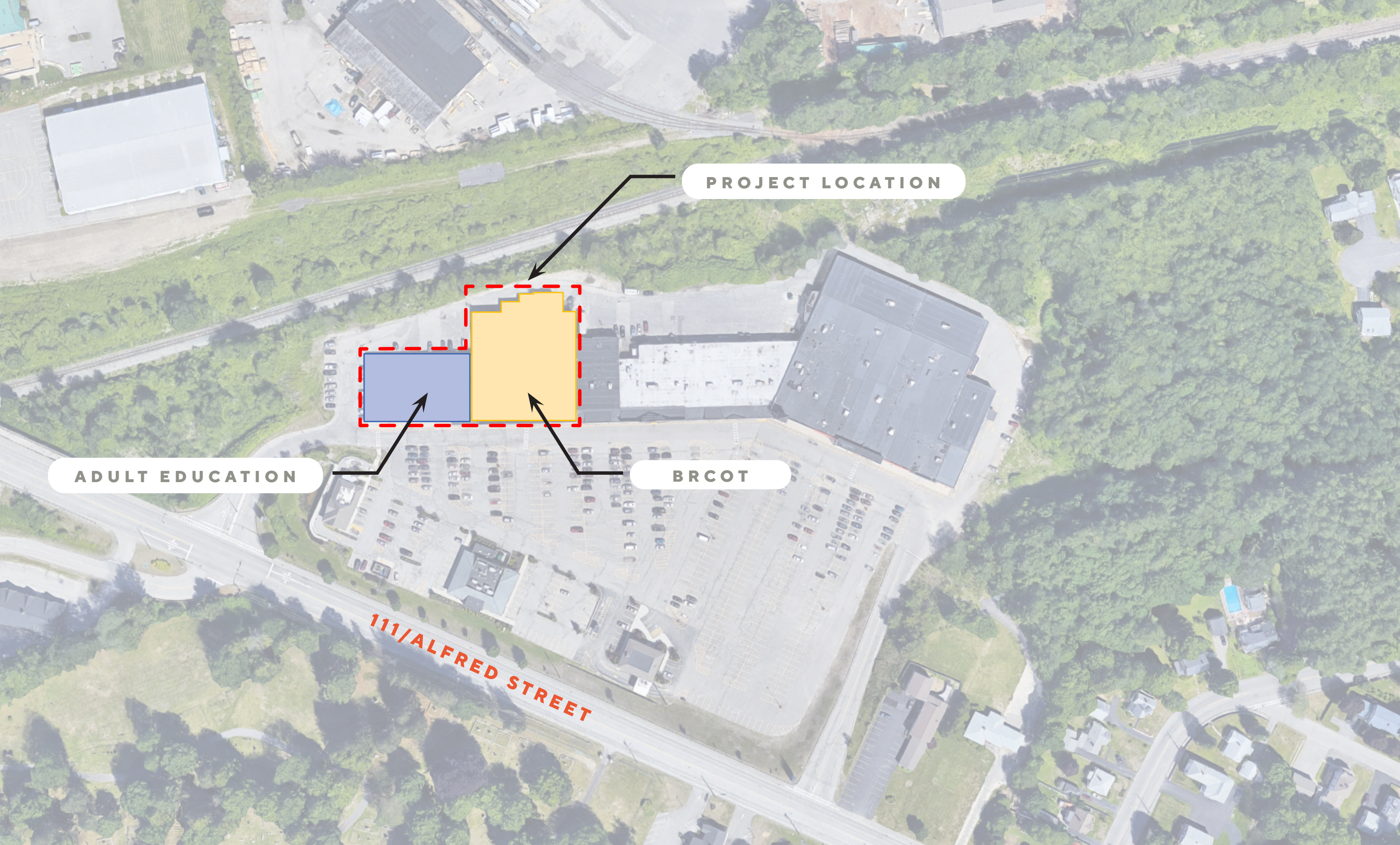
ARCHITECTURE + CONSTRUCTION



SITE PLAN REVIEW

BRCOT @ 5 Points
Biddeford, MAINE

SUBMITTED 2021.10.13 FOR REVIEW ON 2021.11.03

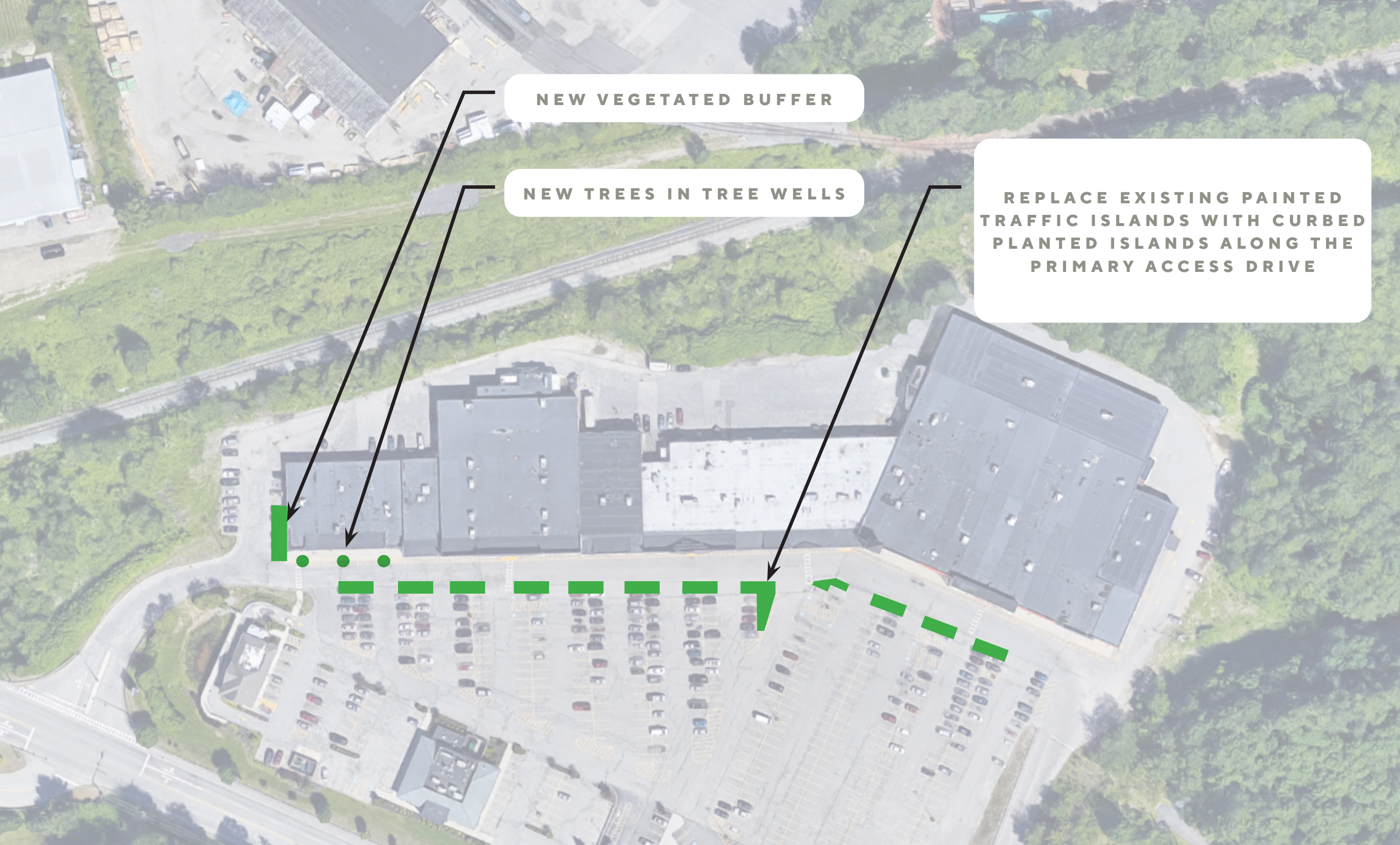


ADULT EDUCATION

PROJECT LOCATION

BRCOT

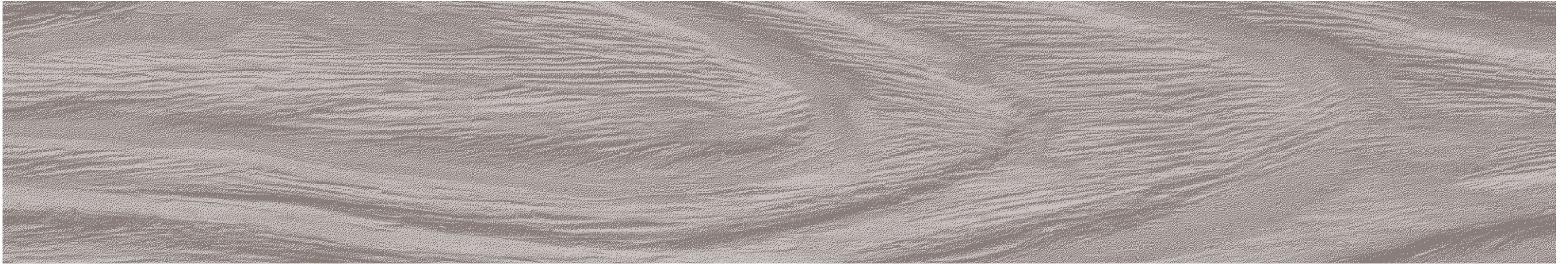
111/ALFRED STREET



NEW VEGETATED BUFFER

NEW TREES IN TREE WELLS

REPLACE EXISTING PAINTED TRAFFIC ISLANDS WITH CURBED PLANTED ISLANDS ALONG THE PRIMARY ACCESS DRIVE



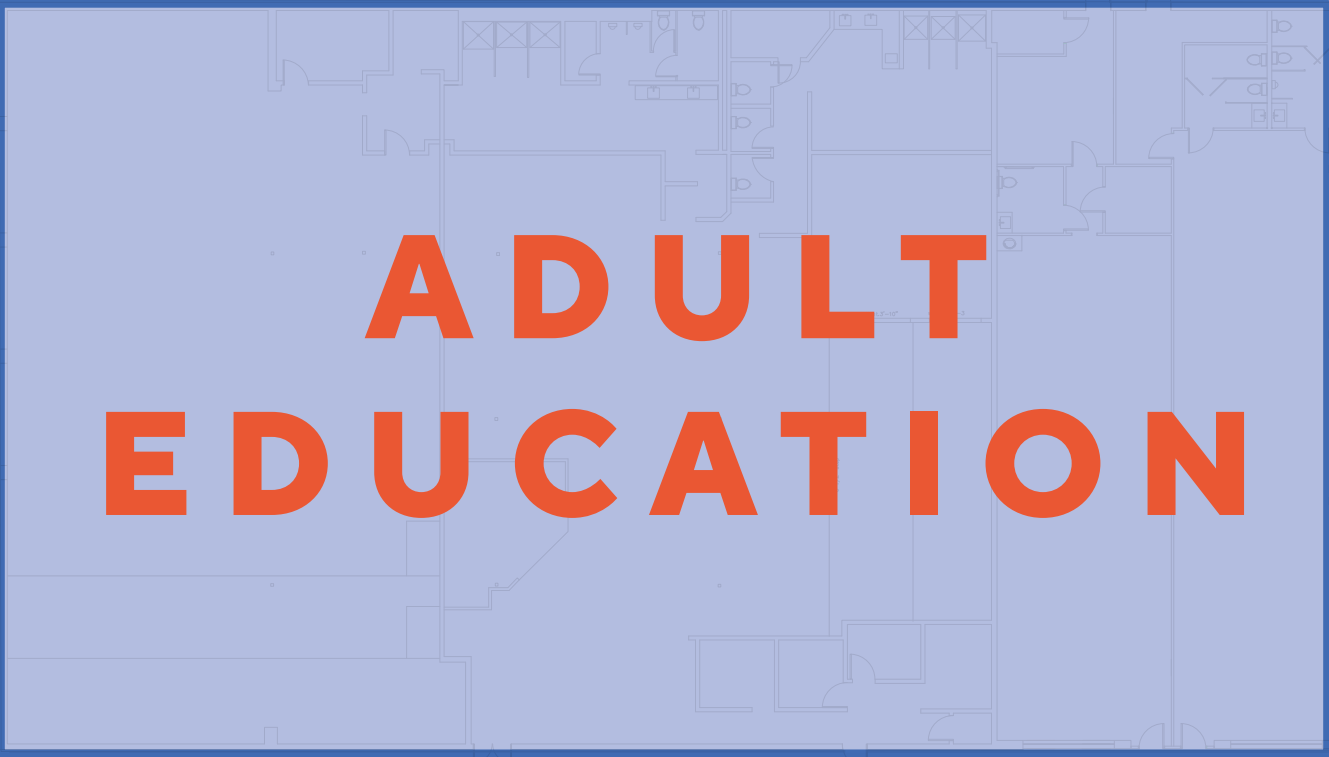
Building Plans

PROJECT SIZE

BRCOT: 25,000 SQFT

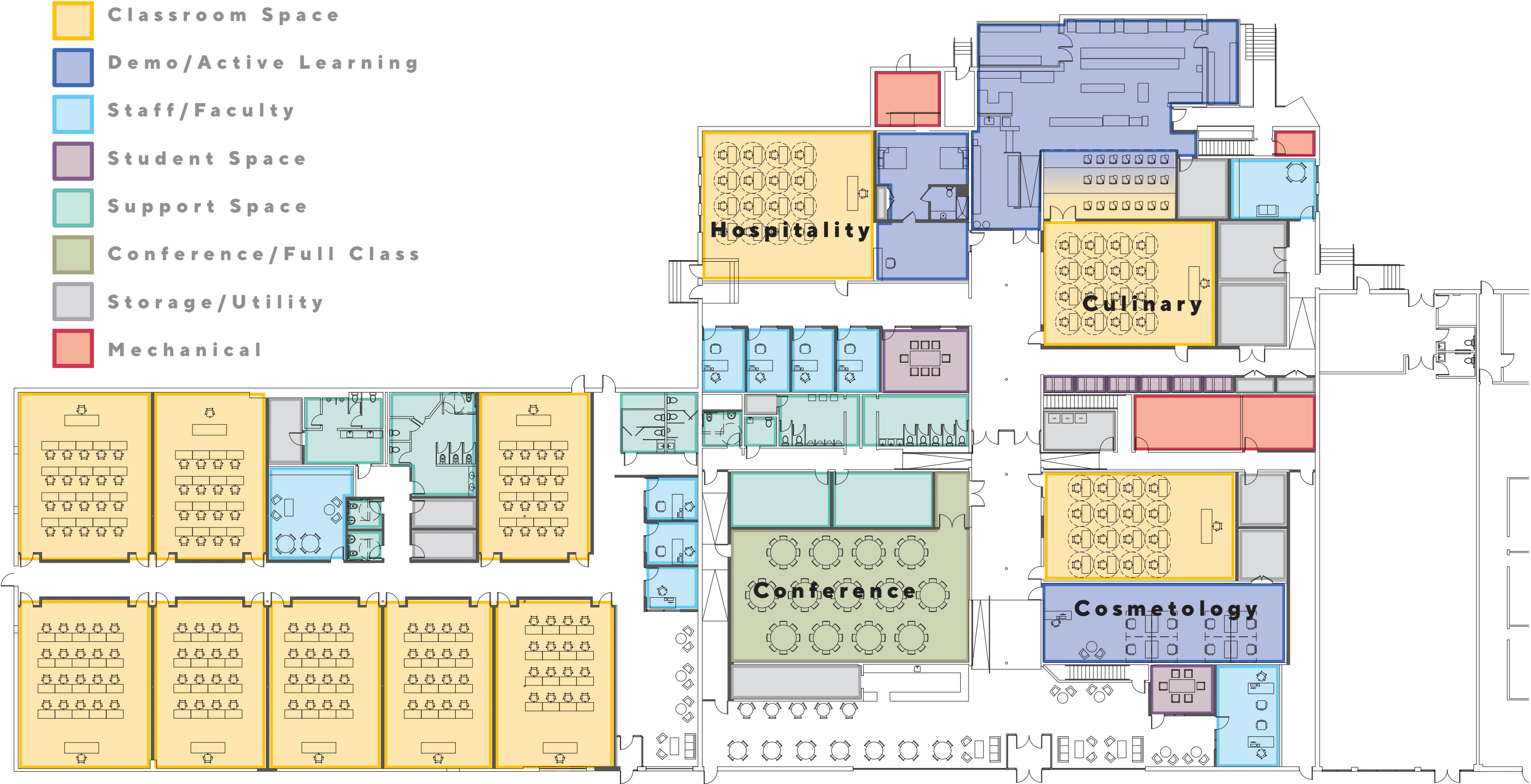
ADULT ED: 15,000 SQFT

TOTAL SQFT: 40,000 SQFT



Program Legend

- Classroom Space
- Demo/Active Learning
- Staff/Faculty
- Student Space
- Support Space
- Conference/Full Class
- Storage/Utility
- Mechanical



Adult Education

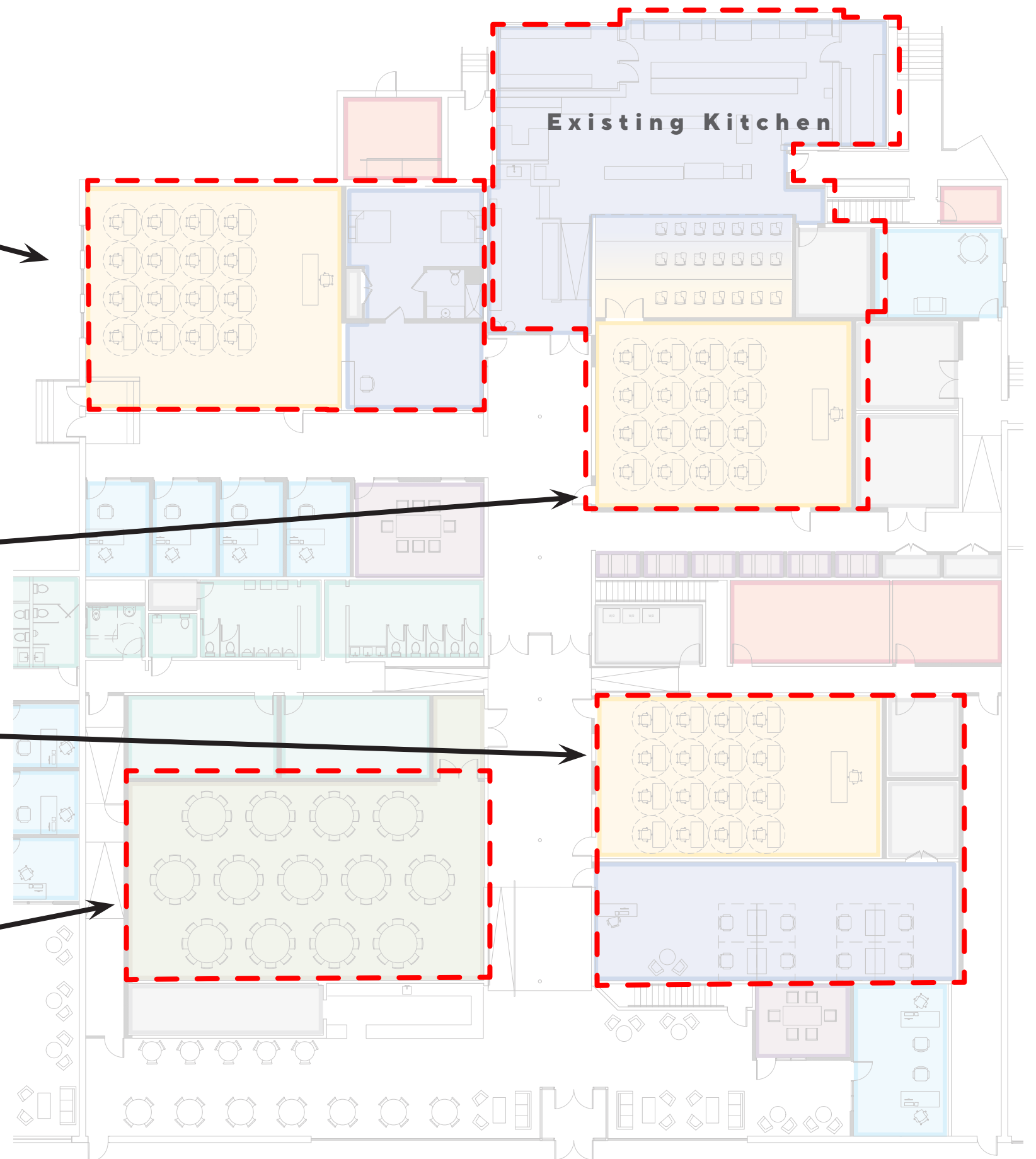
BRCOT

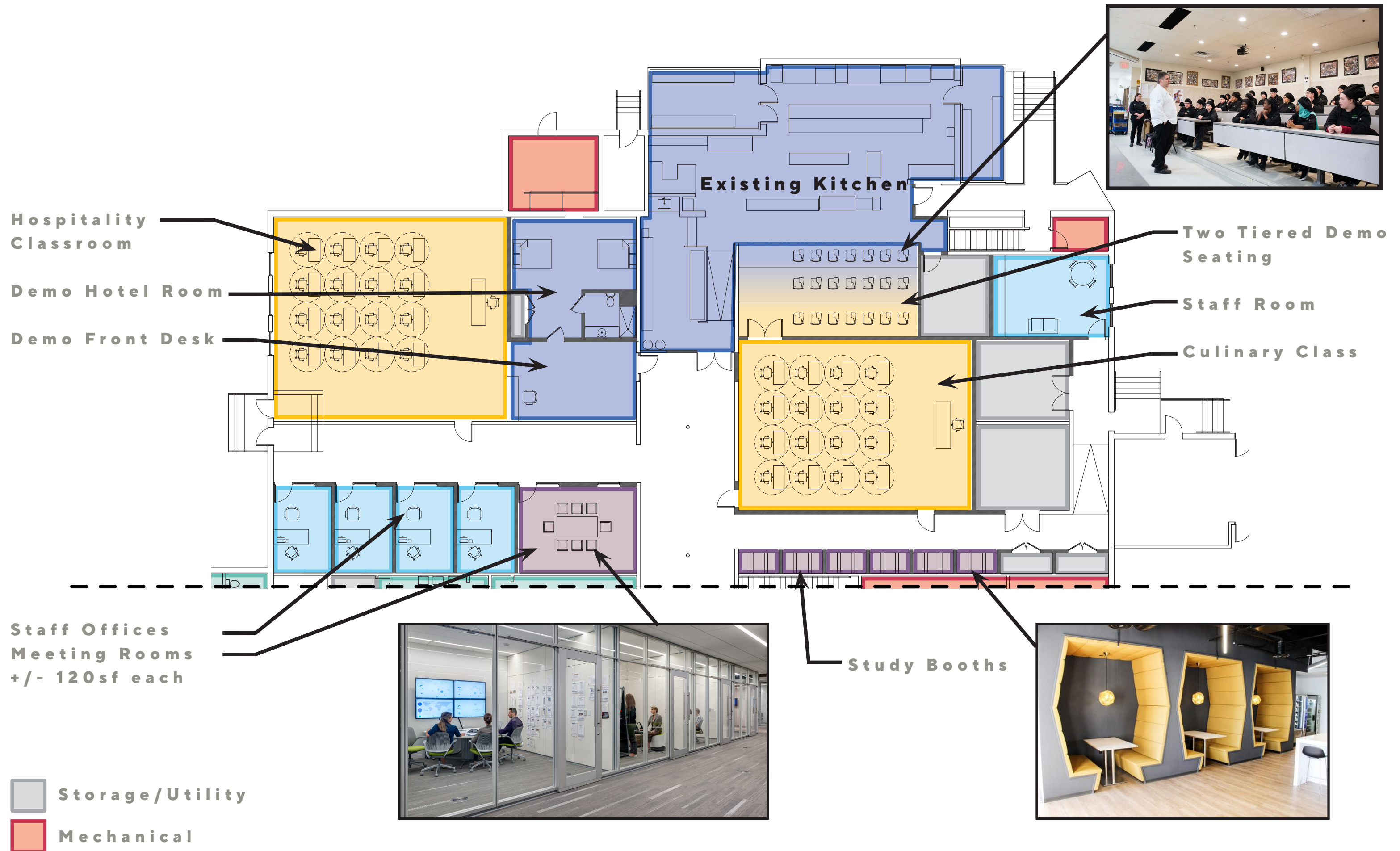
**Hospitality Classroom
and Demo Space**

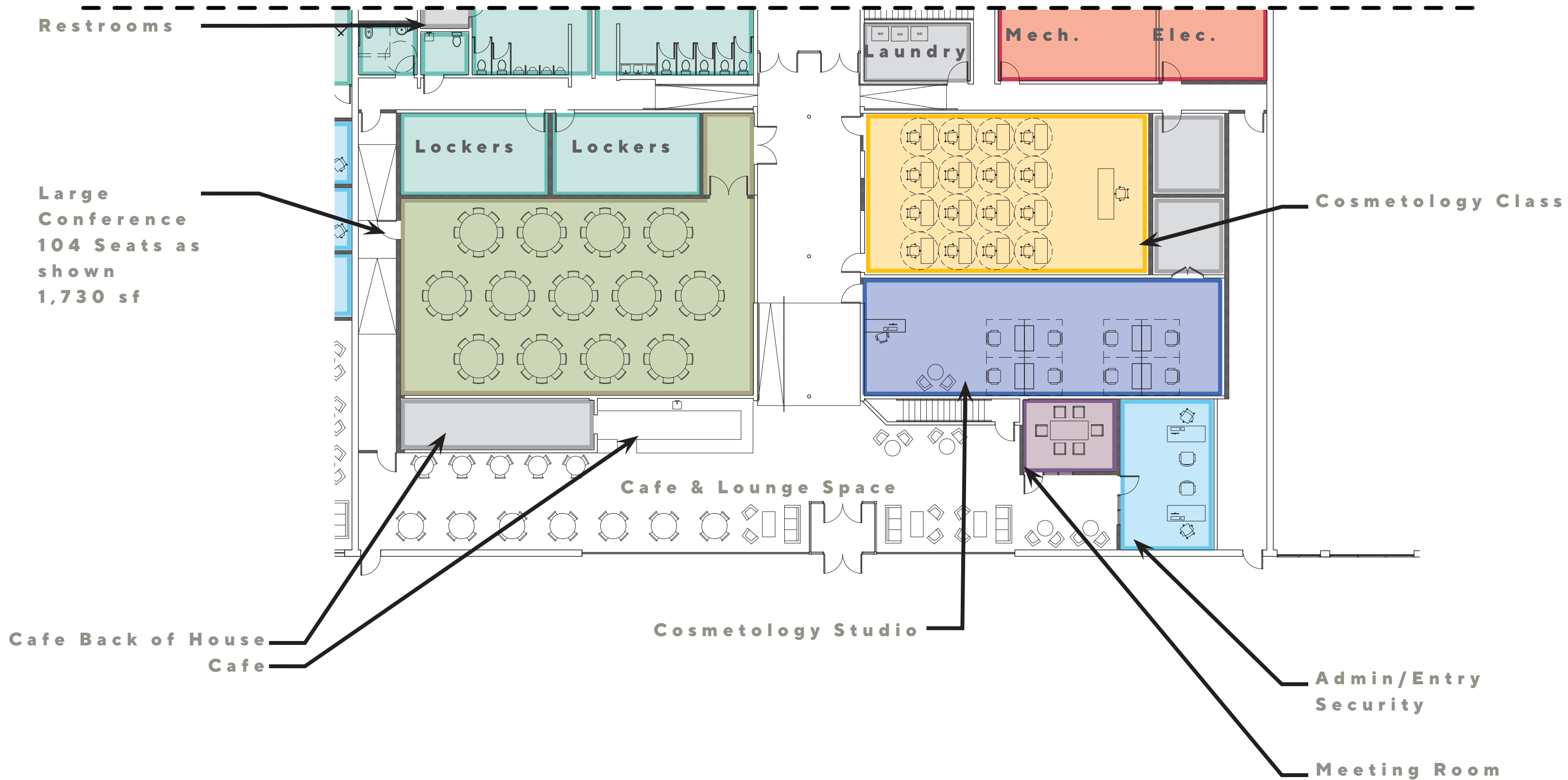
**Culinary Classroom,
Demo Space & Kitchen**

**Cosmetology Classroom,
Demo Space**

**Conference Space
& Full Class Capacity
Classroom**





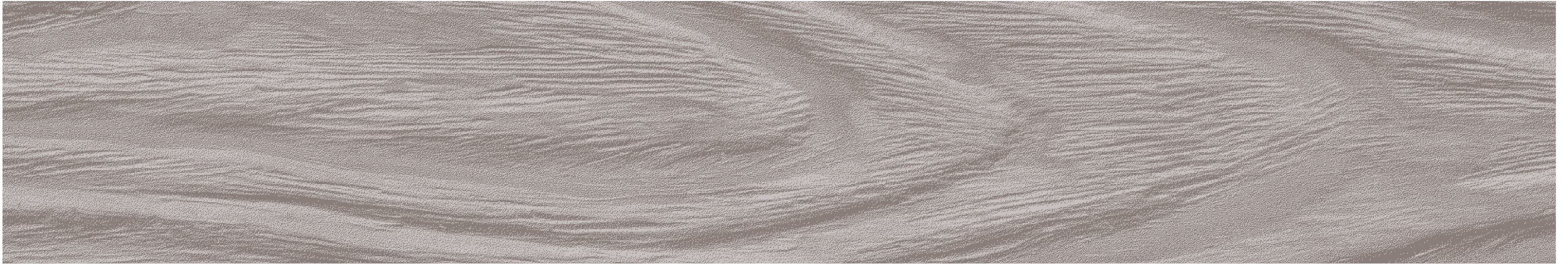


- Storage/Utility**
- Mechanical**



Classrooms;
6 Standard Classrooms
2 Computer Labs

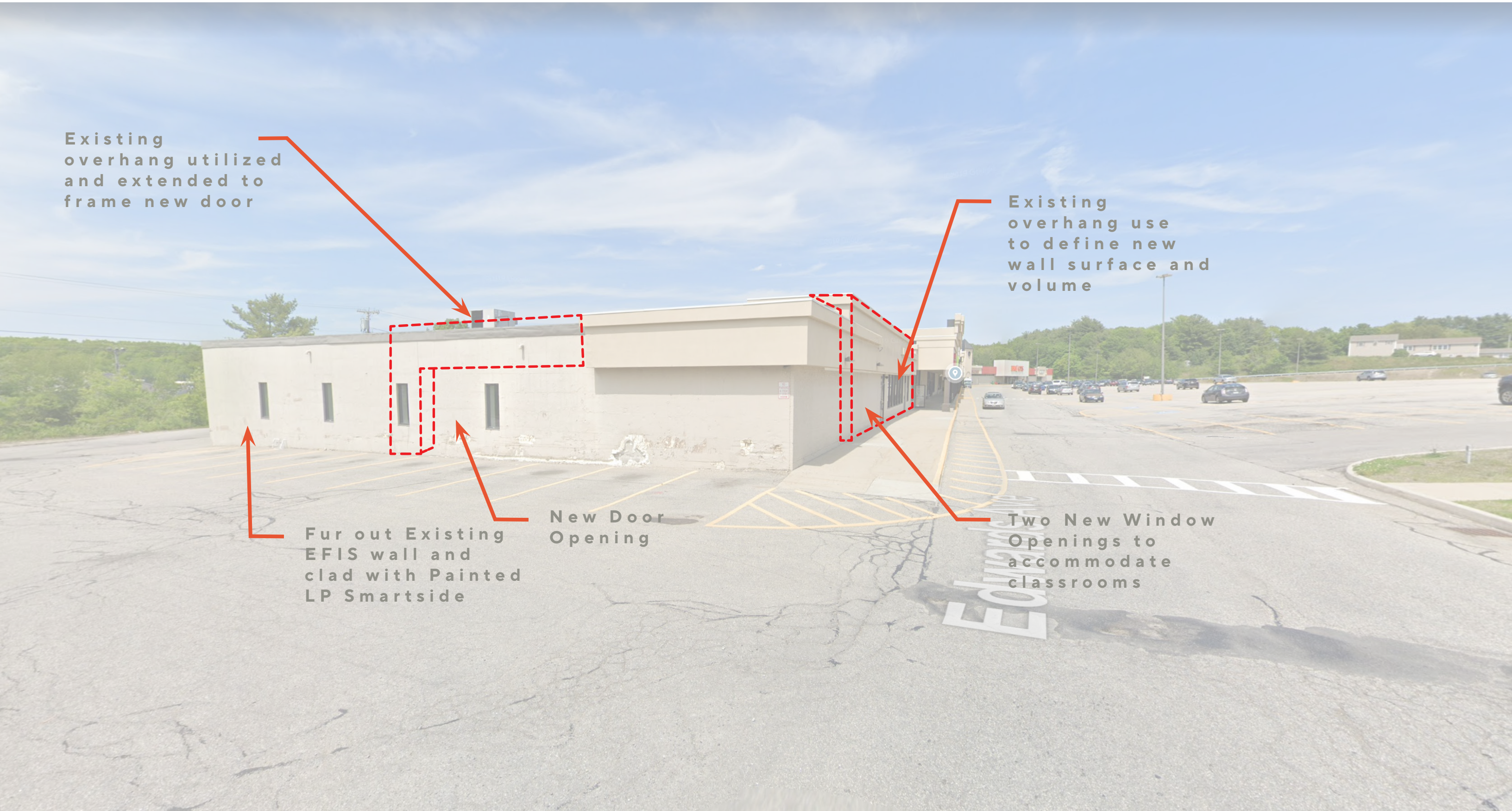
AV & Storage in Each



Exterior Massing







Existing
overhang utilized
and extended to
frame new door

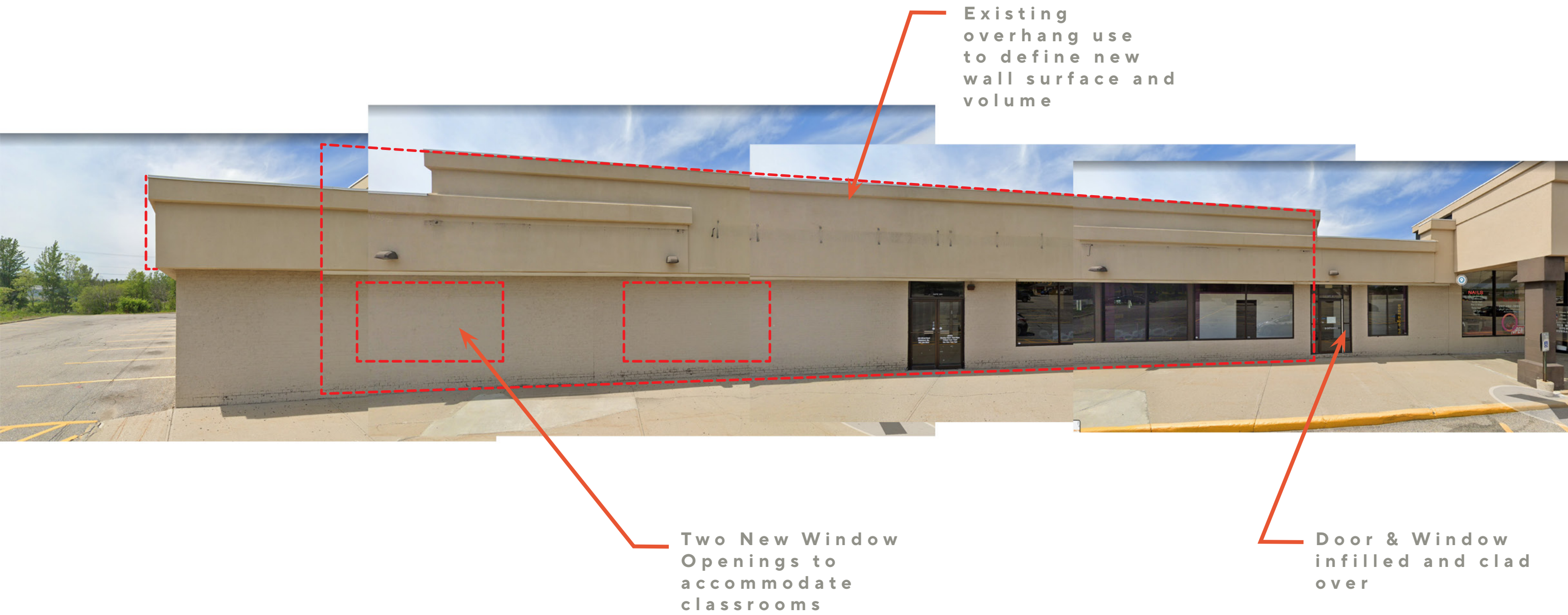
Existing
overhang use
to define new
wall surface and
volume

Fur out Existing
EFIS wall and
clad with Painted
LP Smartside

New Door
Opening

Two New Window
Openings to
accommodate
classrooms





Existing
overhang use
to define new
wall surface and
volume

Two New Window
Openings to
accommodate
classrooms

Door & Window
infilled and clad
over



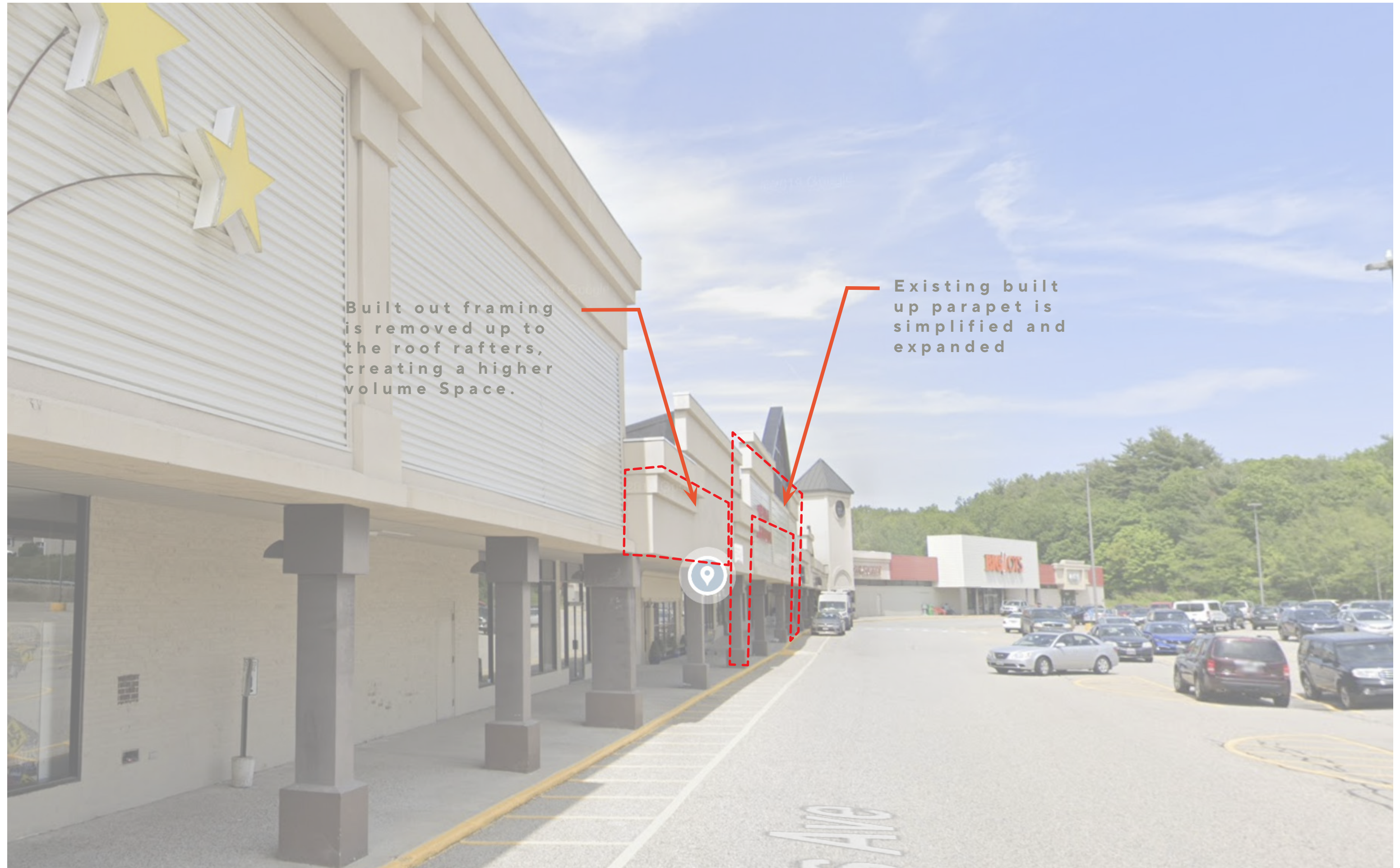
Roof Edge
from Smitty's
is reduced and
extend over the
new adult Ed
Entrance

Gables Added







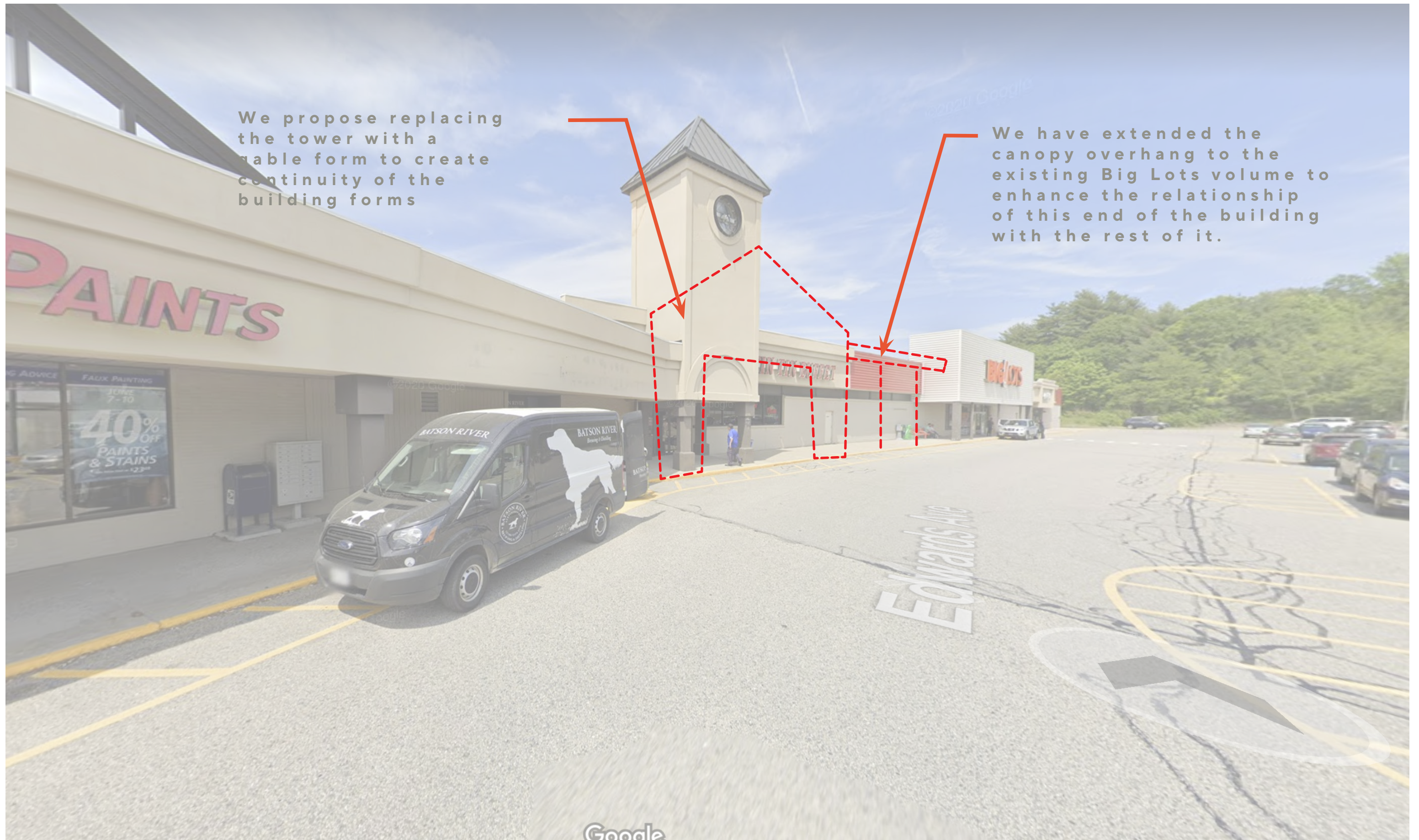


Built out framing is removed up to the roof rafters, creating a higher volume Space.

Existing built up parapet is simplified and expanded



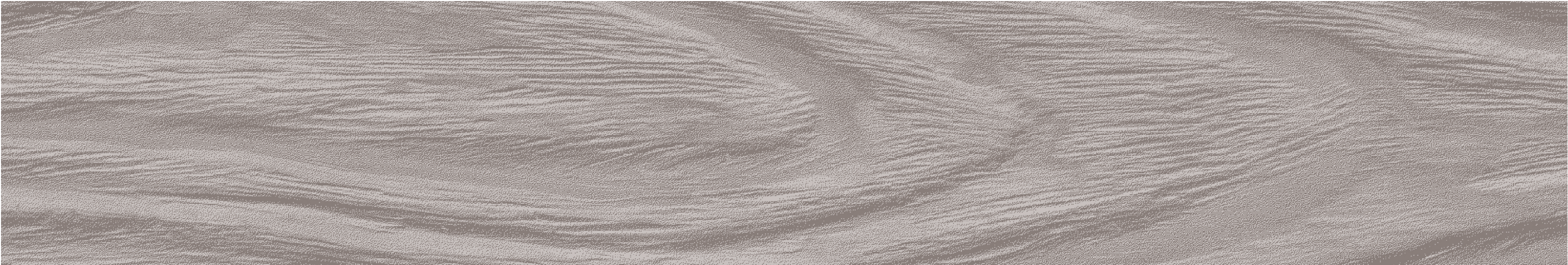




We propose replacing the tower with a gabled form to create continuity of the building forms

We have extended the canopy overhang to the existing Big Lots volume to enhance the relationship of this end of the building with the rest of it.





ARCHITECTURE + CONSTRUCTION





September 24, 2021

To: Biddeford City Council
C/O Gregory Tansley, Planner
City of Biddeford, Maine

5 Points Shopping Center Contract Zone Request

Dear Mr. Tansley

This letter is written to request the approval of a Contract Zone pursuant to the provisions of Article V, Section 9 of the City's Code of Ordinances. The location of the property in question is the 5 Points Shopping Center located at 420 Alfred Street and is bound on the northeastern side by Edwards Avenue. The current use of the property is generally mercantile, business, or food service which are permitted within the I-3 zone where the parcel resides.

The Contract zone is requested to provide relief to the allowed uses within the I-3 Zone at this parcel. Public and Private schools are not permitted whereas College and Universities are allowed as conditional uses. The intended use will be by Biddeford Regional College of Technology (BRCOT) which identifies itself as part of the public school system, hence the requested relief to allow public schools at this location.

The Parcel defines the end of the I-3 zone and is bound on the north and east by the R1-B Zone, to the South by the R1-A Zone and the Greenwood Cemetery, and it is separated by the remainder of the I-3 zone to the west by the existing Train Tracks. Its location and adjacencies support the programs intended by BRCOT and will be an asset to the surrounding neighborhoods. There is nothing of great significance that would be detrimental to this use at this location, in our opinion.

This proposed use is in concert with another contract zone, pending review, for a residential housing development that is proposed at the northern end of this parcel. This requested Contract Zone does not pertain to said residential development, but these proposals go hand in hand to demonstrate the changing context of this site and support the requested uses.

I would like to thank you in advance for review and consideration of this contract zone request. Please let me know if there is any additional information the City needs in order to process this application. We will continue to progress a submission for review by the Planning Board as required.

Sincerely,

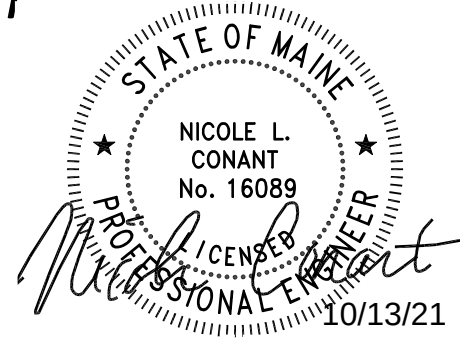
Philip Chaney

Project Architect
Barret Made Architecture + Construction

Memorandum

05142

To: Steve Doe, RLA, Sebago Technics
From: Nikki Conant, P.E., Sebago Technics
Date: October 13, 2021



Subject: Trip Generation Analysis, Five Points Shopping Center Renovation, Biddeford

Introduction

The purpose of this memorandum is to provide a trip generation comparison analysis for a renovation of the Five Points Shopping Center on Route 111 (Alfred Road) in Biddeford, Maine. A portion of the existing commercial space is being converted from a number of uses to approximately 25,000 square feet (SF) for the Biddeford Regional Center of Technology (BRCOT) and approximately 15,000 SF for an adult education program. The existing space is made up of the following uses with approximate sizes:

- 23,250 square foot (SF) Smitty's Cinema
- 1,800 SF office space
- 1,800 SF nail salon
- 11,000 SF gym

The proposed school space for BRCOT will encompass the square footage of the previous cinema space and will provide classes for hospitality, culinary, and cosmetology. There is expected to be 32 students in the hospitality group, 32 students in the culinary group, and 32 students in the cosmetology group for a total of 96 students in the day program. These groups are split into classes of 16 students, with one class for each discipline occurring in the morning and one in the afternoon.

Additionally, the remaining spaces will be renovated to host adult-education classes two to three evenings during the week and occasionally on Saturdays. It is estimated there will be 128 students enrolled in the adult-education program.

Trip Generation

The 11th Edition of the Institute of Transportation Engineer's (ITE) *Trip Generation Manual* was utilized to estimate the trip generation for existing conditions. The following land use codes (LUCs) were utilized:

- LUC 445 – Movie Theatre on the basis of eight (8) screens
- LUC 492 – Health and Fitness Club on the basis of 11,000 SF
- LUC 712 – Small Office Building on the basis of 1,800 SF
- LUC 918 – Hair Salon (which is described as “a facility that specializes in cosmetic and beauty services including hair cutting and styling, skin and nail care...”) on the basis of 1,800 SF

Trip generation calculations, utilizing the above land use codes, are attached to this memorandum and are summarized in Table 1.

**Table 1 – Existing ITE Trip Generation
5 Points Shopping**

<i>Time Period</i>	<i>LUC 445</i>	<i>LUC 492</i>	<i>LUC 712</i>	<i>LUC 918</i>	<i>Total</i>
AM Peak Hour – Adjacent Street	0	14	3	2	19 trips
AM Peak Hour - Generator	0	15	5	3	22 trips
PM Peak Hour – Adjacent Street	112	38	4	3	157 trips
PM Peak Hour – Generator	217	43	6	3	269 trips
Saturday Peak Hour (Mid-Day)	149	35	0	9	193 trips

As demonstrated in Table 1, the existing commercial space within the Five Points Shopping Center is estimated to have generated 22 trips, 269 trips, and 193 trips during the AM, PM, and Saturday peak hour of the generator, respectively.

Trip generation for the proposed school space was estimated utilizing LUC 540 – Junior Community College on the basis of 224 total students between both programs. Per ITE this land use “includes 2-year junior, community, and technical colleges. A junior/community college may also have a sizeable evening program.” As such, this LUC was deemed representative of the proposed space and was utilized for trip generation as shown in Table 2.

**Table 2 – ITE Proposed Trip Generation
Land Use Code 540 – Junior/Community College**

<i>Time Period</i>	<i>Rate</i>	<i>Trips</i>	<i>Entering</i>	<i>Exiting</i>
AM Peak Hour – Adjacent Street	0.11	25	20 (81%)	5 (19%)
AM Peak Hour – Generator	0.12	27	17 (64%)	10 (36%)
PM Peak Hour – Adjacent Street	0.11	25	14 (56%)	11 (44%)
PM Peak Hour – Generator	0.13	29	15 (52%)	14 (48%)
Saturday Peak Hour	0.05	11	6 (57%)	5 (43%)

As demonstrated in Table 2, the proposed technical school space is estimated to generate 27 trips, 29 trips, and 11 trips during the AM, PM, and Saturday peak hour periods, respectively. Given this level of trip generation, no traffic permit modifications would be expected to be necessary based on trip generation for the existing commercial space during the peak hours of the generators.

It is also important to note, the trip generation comparison during the peak hour of the adjacent street period (7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM). The generator of the existing uses would likely not peak simultaneously or at the same time as that of the proposed school. The peak of the adjacent street provides a better comparison for traffic impacts between existing and proposed. As such, the net difference from the existing to the proposed use is estimated as +6 trips and -132 trips during the AM and PM of the adjacent street, respectively. Given these trip levels, no new traffic impacts would be anticipated to the adjacent roadway system during the peak of the adjacent street and therefore, no additional analysis would be recommended for this change of use.

Conclusion

A review of trip generation for the existing Five Points Shopping Center commercial space renovation to BRCOT and adult education space resulted in the following:

- The existing movie theatre, gym, office space, and nail salon are estimated to generate 22 trips, 269 trips, and 193 trips during the AM, PM, and Saturday peak hours of the generator, respectively. The proposed technical school and adult education space are estimated to generate 27, 29, and 11 trips during the same respective periods. Given these trip levels, no modifications to traffic permits would be anticipated.
- The existing space is estimated to generate 19 trips and 157 trips during the AM (7:00 AM – 9:00 AM) and PM (4:00 PM – 6:00 PM) peak hours of the adjacent street. The proposed technical school space is estimated to generate 25 trips during both the AM and PM peak hours of the adjacent street. This results in a net difference of +6 trips and -132 trips during each period. Given the technical school space is expected to generate similar trips during the AM and less during the PM, no new traffic impacts would be anticipated to the adjacent roadway system and therefore no additional analysis would be recommended.

Trip Generation						
LUC 445 - Movie Theatre						
Time Period	Rate	Trips	Entering %	Exiting %	Entering	Exiting
AM Peak Hour - Adjacent Street	0	0	0	0	0	0
AM Peak Hour - Generator	0	0	0	0	0	0
PM Peak Hour - Adjacent Street	13.96	112	0.49	0.51	55	57
PM Peak Hour - Generator	27.11	217	0.49	0.51	106	111
Saturday Peak Hour (Mid-Day)	18.67	149	0.72	0.28	107	42

Trip Generation						
LUC 492 - Health and Fitness Club						
Time Period	Rate	Trips	Entering %	Exiting %	Entering	Exiting
AM Peak Hour - Adjacent Street	1.31	14	0.51	0.49	7	7
AM Peak Hour - Generator	1.40	15	0.46	0.54	7	8
PM Peak Hour - Adjacent Street	3.45	38	0.57	0.43	22	16
PM Peak Hour - Generator	3.92	43	0.52	0.48	22	21
Saturday Peak Hour	3.19	35	0.49	0.51	17	18

Trip Generation						
LUC 712 - Small Office Building						
Time Period	Rate	Trips	Entering %	Exiting %	Entering	Exiting
AM Peak Hour - Adjacent Street	1.67	3	0.82	0.18	2	1
AM Peak Hour - Generator	2.61	5	0.6	0.4	3	2
PM Peak Hour - Adjacent Street	2.16	4	0.34	0.66	1	3
PM Peak Hour - Generator	3.15	6	0.42	0.58	2	4

Trip Generation						
LUC 918 - Hair Salon						
Time Period	Rate	Trips	Entering %	Exiting %	Entering	Exiting
AM Peak Hour - Adjacent Street	1.21	2	0.5	0.5	1	1
AM Peak Hour - Generator	1.21	2	0.5	0.5	1	1
PM Peak Hour - Adjacent Street	1.45	3	0.17	0.83	0	3
PM Peak Hour - Generator	1.94	3	0.38	0.62	1	2
Saturday Peak Hour	5.08	9	0.36	0.64	3	6