DM ROMA
CONSULTING ENGINEERS

July 14, 2021

Alex Sirois, Code Enforcement Officer
Town of Raymond
401 Webbs Mills Road
Raymond, ME 04071

Re: Major Subdivision Application
Raymond Hills Village – An 18-Unit Condominium
Raymond Hills LLC - Applicant

Dear Alex and Planning Board Members:

On behalf of Raymond Hills LLC we are pleased to submit the enclosed application for Subdivision Plan review of a proposed residential condominium development to create 18 residential dwellings in 9 duplex buildings on an 8.8-acre parcel identified on Tax Map 51 as Lot 22-A. The property is located in the Village Residential Zoning District and has access from a 50-foot right-of-way to Webbs Mill Road (Route 85). A driveway will be constructed within the 50-ft right-of-way and through the subject parcel with a cul-de-sac turnaround, with a road section that is designed to be in conformance with the Town standards for a Private Street with a 20-ft wide pavement surface with shoulders. Some portions of the roadway will be curbed and some will have roadside ditches.

An 8-inch public water main will be installed in the new driveway and all new dwellings will be served by public water. There is an existing fire hydrant on Route 85 at the project entrance and a new hydrant will be installed at roadway station 7+50. A right-of-way will be provided to the Water District over the driveway and will extend to the southerly property line so that the main could be extended in the future if the Town or an adjacent landowner wanted to extend water service. The Portland Water District is currently reviewing our design plans and an Ability to Serve letter will be provided to the Town once it is received by the District.

Electrical service will be installed underground from Route 85. Transformers and pull box locations have been proposed and will be coordinated with Central Maine Power Company.

The project will include the construction of multiple septic tanks to collect wastewater and a central collection system that will collect and pump the wastewater to a single disposal field. The disposal field is a concrete chamber system designed for 3,960 gallons per day and will include advanced treatment. The system is considered an Engineered System and requires approval by the State. The application to the State will include a hydraulic mounding and transmissivity analysis prepared by a Certified Geologist. A copy of the wastewater disposal system application will be provided to the Town for review once it is submitted to the State.

Stormwater Management will be provided by the construction of a storm drain collection system and multiple devices that will provide treatment and peak flow attenuation. A Stormwater Permit Application has been filed with the Maine Department of Environmental Protection and is currently under review. Stormwater management features will include two Filterra tree-box filters, a subsurface StormTech stormwater detention system and an underdrained soil filter basin. Roofline drip edges will be constructed on each of the buildings to treat roof runoff. A stormwater management report has been prepared and is included for review.

A Driveway Entrance Permit Application has been filed with the Maine Department of Transportation to review sight distance at the proposed driveway intersection with Route 85 and to approve the design and

location of the driveway. The Maine DOT will also review the stormwater collection and conveyance design calculations to approve connection into the subsurface storm drain system that exists in Route 85.

We have proposed two different building styles that will be constructed. Ten of the proposed dwelling units will have 2 bedrooms each and 8 of the units will have 3-bedrooms. We have alternated the building styles to provide variety and character to the neighborhood. Each unit will have an attached garage and attractive architecture. We have provided building elevations showing the intended building design for the Board's review.

We would like to be placed on the next available agenda with the Planning Board to discuss this proposed subdivision as a sketch plan and to hear any preliminary concerns that the Board may have with our request. Upon your review of this information, please let us know if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

Dustin Roma

Dustin M. Roma, P.E.
President

Town of Raymond Planning Board
Application for Subdivision and Site Review

rev 1-25-17

Property Information

Map 51 Lot 22-A
Zoning District VR
Street Address: 0 WEBBS MILL ROAD
Deed Reference
Book 37806 Page 72
Parcel Size 8.8 ACRES

Office Use Only

Filing Fee$_____Abutter notices $_____

Legal ad fee$_____Fire Department$_____

Escrow $_____Total fees $_____

Applicant Information

Name: RAYMOND HILLS, LLC Telephone:_____
Address: 9 DAVIS FARM ROAD Fax:_____
RAYMOND, ME 04071 email: TCLINTON01@COMCAST.NET

Note: Attach permission from owner if application not signed by owner.

Agent Information X check here if correspondence should be directed to agent

Name: DUSTIN ROMA, DM ROMA CONSULTING ENGINEERS Telephone: 310 - 0506
Address: PO BOX 1116 Fax:_____
WINDHAM, ME 04062 email: DUSTIN@DMROMA.COM

Owner Information:

Name: TIMOTHY CLINTON Telephone:_____
Address: 9 DAVIS FARM ROAD Fax:_____
RAYMOND, ME 04071 email: TCLINTON01@COMCAST.NET

Proposed Development (check all that apply)

X Subdivision _____ Site Plan
_____ Pre-Application Conference
X Preliminary Plan Review
_____ Final Plan Review
_____ Other: _____

Project Type:

_____ Single Family Subdivision
X - DUPLEX Multi-family Development
_____ Commercial
_____ Industrial
_____ Other: _____

Town of Raymond Planning Board
Application for Subdivision and Site Review

rev 1-25-17

Proposed Development Name: RAYMOND HILLS VILLAGE

_____ Number of Lots

18 Number of Units

_____ Total Square Footage of Comm./Ind. Bldgs.

Proposed Road Name(s):

ROSIE LANE

Other Approvals Required:

_____ Zoning Board of Appeals: ____ Variance ____ Special Exception

X ME Dept. of Environmental Protection

The undersigned, being the applicant, owner or legal representative of the property, hereby certifies that all information contained in this application is true and correct to the best of his/her knowledge and submits such information for review by the Town for conformance with all applicable regulations, ordinances, and codes of the town, state and federal government.

The undersigned, by their signature below authorizes any member of or authorized agent of the Town of Raymond or other review agency to enter the property for the purposes of review of this application.

_____
Print Name of Property Owner

_____ _____
Signature of Property Owner Date

DUSTIN ROMA
Print Name of Owner's Agent

Dustin Roma
_____ 7-14-21
Signature of Owner's Agent Date

July 8, 2021

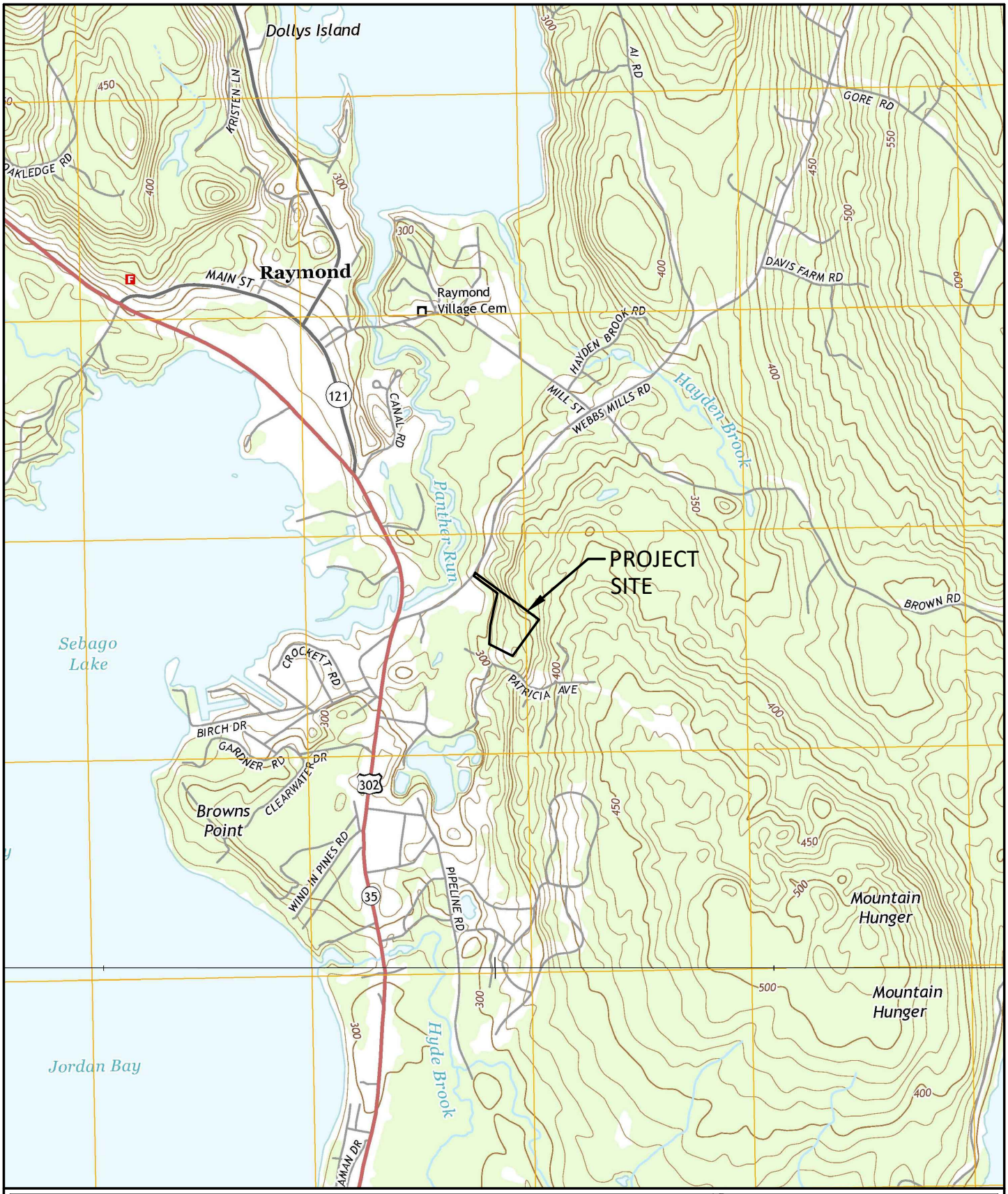
Re: Webbs Mill Road Property, Raymond

I am the owner of property located off Webbs Mill Road in Raymond more particularly described as Lot 22-A on the Town of Raymond Tax Map 51. I have formed the Limited Liability Company Raymond Hills, LLC and I am writing this letter to state my intentions to transfer ownership of my land to Raymond Hills, LLC within the next few weeks. I am applying for Land Use Permits for a proposed 18-unit residential project on the property and am submitting all permit applications with Raymond Hills, LLC as the project applicant since they will be the owner and developer. I have also retained the services of DM Roma Consulting Engineers to act as authorized agent to apply for land use permits associated with development of the land.

Sincerely,

7/8/2021

Timothy Clinton
Member, Raymond Hills LLC



SITE LOCATION MAP

RAYMOND HILLS APARTMENTS
RAYMOND, MAINE

FOR:
RAYMOND HILLS, LLC
9 DAVIS FARM ROAD
RAYMOND, MAINE 04071

USGS QUADRANGLES
NORTH WINDHAM
RAYMOND

SCALE: 1"=2,000'
DATE: 6-23-2021
JOB NUMBER: 21006

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506

MAINE REAL ESTATE TAX-Paid

Return to:
Timothy Clinton
Carol Clinton
224 Lakewood Road
Casco, Maine 04015

DLN:1002140131814

WARRANTY DEED

KNOW ALL PERSONS BY THESE PRESENTS: That **Peter Moreshead and Colleen Moreshead,** of 15 Brookhaven Drive, Windham, ME 04062, for consideration paid grant to **Timothy Clinton,** of 224 Lakewood Road, Casco, ME 04015, with WARRANTY COVENANTS:

A certain lot or parcel of land, together with the buildings thereon, situated in the Town of Raymond, County of Cumberland and State of Maine, and bounded and described as follows:

Commencing on the easterly side of the County Road leading from the Panther's River Bridge to East Raymond at an iron pipe where formerly stood an apple tree, and running thence South 37° East as the compass ran in 1877 thirty-four (34) rods to two maple trees standing between the field and the wood lot which was formerly a pasture; thence South 23° West as the compass ran in 1877; to a pile of rocks and land formerly of O.G. Chipman, now of Henry Thomas; thence in a general Southeasterly direction by said Thomas land to a corner in said Thomas land; thence northeasterly by said Thomas land, formerly that of Joseph T. Sawyer, and by land of Willard Libby, to the range line between ranges two and three; thence in a general northwesterly direction on said range line to the County Road aforesaid; thence southwesterly by said County Road twelve (12) rods twenty-one and one half (21.5) links to the point of beginning.

Excepting and reserving herefrom all of that certain lot or parcel of land described in a deed of Abbie E. Knight and Bessie E. Thurlow and Jean F. Thurlow dated October 10, 1973 and duly recorded in the Cumberland County Registry of Deeds in Book 3600, Page 73.

Also conveyed herewith is a certain right of way for the purpose of laying a water pipe to and taking water from a well as more particularly set forth in an instrument dated November 21, 1962 and duly recorded in the said Registry in Book 2719, Page 39.

Also an easement from Peter J. Busque to Carolyn Kline and Earl Kline recorded in Book 27985, Page 262, and to be re-recorded.

Excepting and reserving, however, from this conveyance the following land, with the improvements thereon, in Raymond, County of Cumberland and State of Maine, bounded and described as follows:

Beginning at a 1-1/2" iron pipe located on the apparent southeasterly sideline of Webbs Mills Road marking the westerly corner of land now or formerly of Busque as described in deed recorded Cumberland County Registry of Deeds (CCRD) Book 23003, Page 55; thence South 38° 40 ' 52" East along land of Busque, one hundred seventy-nine and sixty-eight hundredths (179.68) feet to an axle; thence South 38° 24' 48" East continuing along land of Busque, two hundred fifty-nine and fifty-three hundredths (259.53) feet to a 5/8" rebar marked PLS 2390; thence South 28° 50' 07" West across land of Kline, two hundred sixty-four and ninety-six hundredths (264.96) feet to a 30" maple tree at land now or formerly Thurlow & Libby as described in Book 20247, Page 313; thence North 35° 18' 19" West along land of Thurlow & Libby, two hundred sixty-seven and fifty-four hundredths (267.54) feet to a 5/8" rebar marked PLS 2390 at land now or formerly Thurlow & Libby as described in Book 20247, Page 315; thence North 62° 23' 23" East along land of Thurlow & Libby, thirty-eight and no/hundredths (38.00) feet to a 2" iron pipe; thence North 35° 16' 45" West continuing along land of Thurlow & Libby, two hundred eighty and thirty-seven hundredths (280.37) feet to a 5/8" rebar located on the apparent southeasterly sideline of Webbs Mills Road; thence North 65° 31' 39" East along the apparent southeasterly sideline of Webbs Mills Road, fifty-six and thirty-eight hundredths (56.38) feet; thence North 44° 25' 48" East continuing along the apparent southeasterly sideline of Webbs Mills Road, one hundred twenty-two and fifty-eight hundredths (122.58) feet to the point of beginning.

Bearings herein are magnetic of the year 2003.

Also hereby conveying as an appurtenance to the herein conveyed land a fifty (50) foot wide easement in common with others as is described in the Easement Deed from Peter J. Busque and Gorham Savings Bank to Carolyn R. Kline and Earl J. Kline of near or even date recorded in Cumberland County Registry of Deeds Book 28109, Page 207 and subject to the terms and conditions contained therein.

Meaning and intending to describe and convey the same premises conveyed to Peter Moreshead and Colleen Moreshead by virtue of a deed of Earl J. Kline and Carolyn R. Kline dated August 17, 2010 and recorded in the Cumberland County Registry of Deeds at Book 28109, Page 214.

DOC :10226 BK:37806 PG:74
RECEIVED - RECORDED, CUMBERLAND COUNTY REGISTER OF DEEDS
02/11/2021, 10:27:14A
Register of Deeds Nancy A. Lane E-RECORDED

Executed this 10 day of February, 2021.

Peter Moreshead

Colleen Moreshead

State of Maine
County of Cumberland

Then personally appeared before me on this 10 day of February, 2021 the said Peter Moreshead and Colleen Moreshead and acknowledged the foregoing to be their voluntary act and deed.

Notary Public
Commission expiration: 02-08-2025

KIMBERLY J. CHILTON
My Commission Expires
02-08-2025
NOTARY PUBLIC

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Wed Jul 07 2021 14:41:19. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
RAYMOND HILLS LLC	20222267DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
06/29/2021	N/A	MAINE

Other Names **(A=Assumed ; F=Former)**

NONE

Clerk/Registered Agent

CAROL J. CLINTON
224 LAKEWOOD ROAD
CASCO, ME 04071

Back to previous screen | New Search

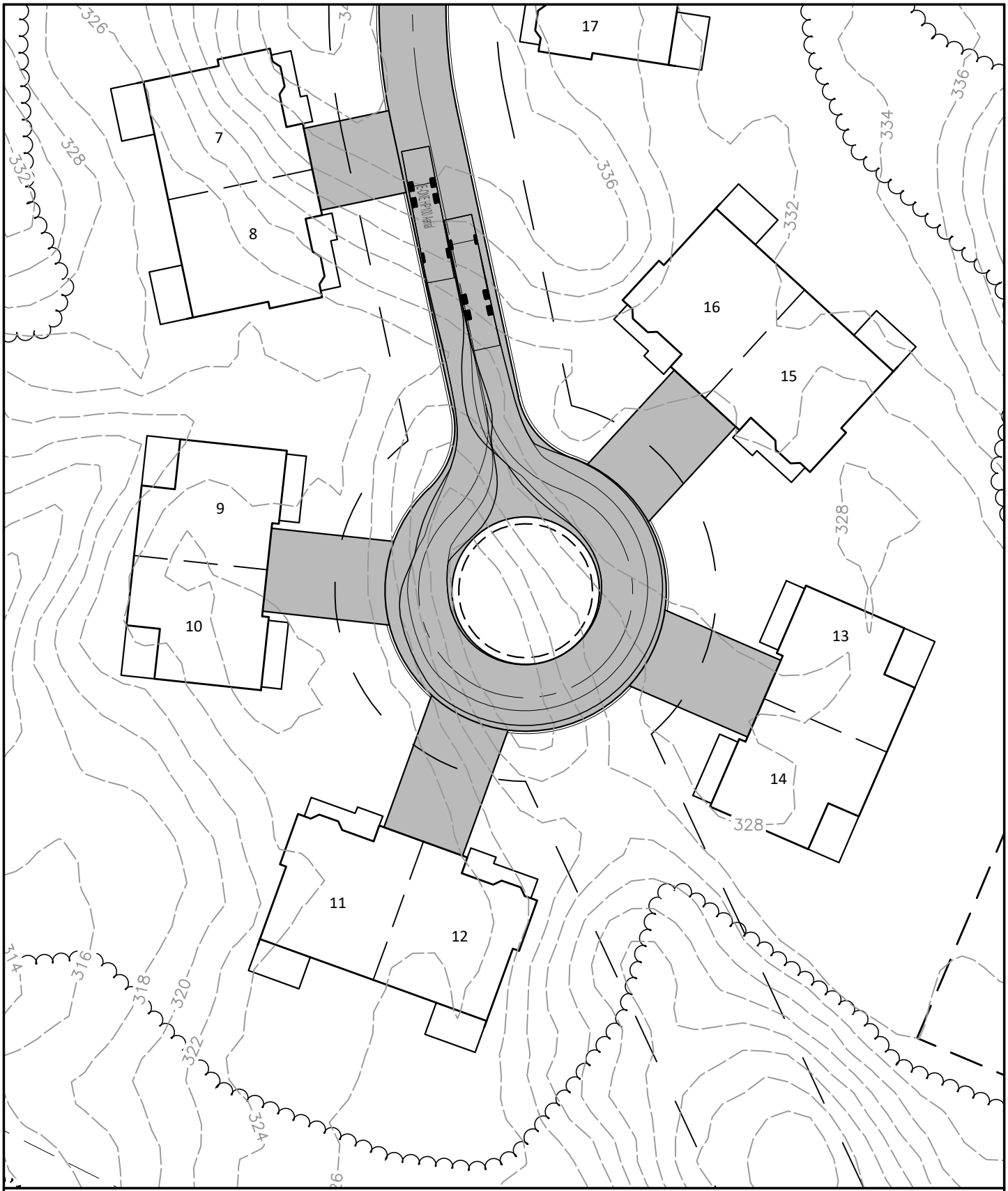
Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
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.

Get Acrobat Reader

If you encounter technical difficulties while using these services, please contact the Webmaster. If you are unable to find the information you need through the resources provided on this web site, please contact the Bureau's Reporting and Information Section at 207-624-7752 or e-mail or visit



TURNING TEMPLATE EXHIBIT

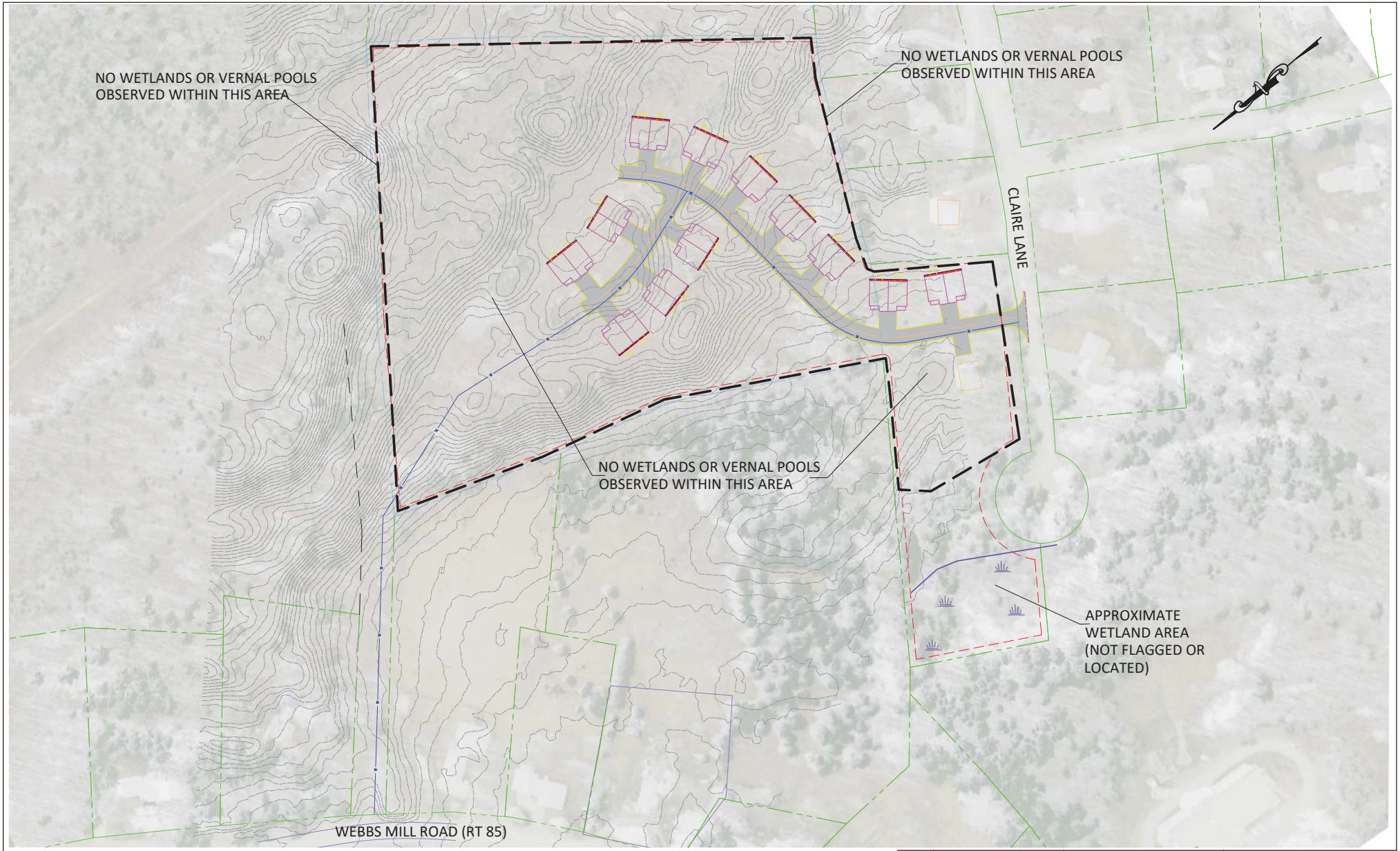
RAYMOND HILLS VILLAGE
RAYMOND, MAINE

FOR:
RAYMOND HILL, LLC
9 DAVIS ROAD
RAYMOND, MAINE 04071

*TRUCK DIMENSIONS BASED ON E-ONE HP-100 AERIAL TRUCK
LENGTH=40' WIDTH=8.33'
TANDEM REAR AXLE

SCALE: 1"=40'
DATE: 7-14-2021
JOB NUMBER: 21006

DM ROMA
CONSULTING ENGINEERS
P.O. BOX 1116
WINDHAM, ME 04062
(207) 310 - 0506



GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

FOR PLANNING PURPOSES ONLY

DATE:	REVISIONS:

SKETCH PLAN
PREPARED FOR
DM ROMA
WEBBS MILL ROAD &
CLAIRE LANE
RAYMOND, MAINE

Albert Frick Associates, Inc.
Environmental Consultants
Gorham, Maine

Drawn By: B.J.	Checked By: B.F.
Date: 4/12/21	Scale: 1" = 000'

Town, City, Plantation	Street, Road Subdivision	PREPARED FOR Owner's Name
RAYMOND	WEBBS MILL ROAD	DM ROMA (N/F CLINTON)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0			DARK BROWN	
10	LOAMY SAND	FRIABLE	YELLOW BROWN	
20			OLIVE BROWN	
30	SAND			COMMON, DISTINCT
40	FINE LOAMY SAND	FIRM		
50				

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	____ %	36"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name: _____ Drainage Class: _____ Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 2 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM		BROWN	
10	LOAMY SAND	FRIABLE	YELLOW BROWN	
20	LOAMY FINE SAND	FIRM	OLIVE BROWN	COMMON, DISTINCT
30	COARSE SAND AND GRAVEL		LIGHT GRAY	
40	LOAMY FINE SAND TO SAND		LIGHT GRAYISH BROWN	
50		LIMIT OF EXCAVATION		

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	____ %	27"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name: _____ Drainage Class: _____ Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 3 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
10	LOAMY SAND	FRIABLE	YELLOW BROWN	
20	SAND		LIGHT YELLOW BROWN	
30	LOAMY FINE SAND		LIGHT GRAY	FEW, FAINT
40	COARSE SAND AND LOAMY FINE SAND	FIRM		
50		LIMIT OF EXCAVATION @54"		

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	____ %	29"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name: _____ Drainage Class: _____ Hydrologic Group: _____

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 4 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	LOAMY FINE SAND		BROWN	
10	SANDY LOAM	FRIABLE	YELLOW BROWN	
20	SAND		LIGHT OLIVE BROWN	FEW, FAINT
30	LOAMY FINE SAND AND LOAMY VERY FINE SAND	FIRM		
40	COARSE SAND WITH GRAVEL		LIGHT GRAY	
50		REFUSAL IN BOULDER OR BEDROCK		

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	____ %	28"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name: _____ Drainage Class: _____ Hydrologic Group: _____

BAR — 352 — 7/1/21

Site Evaluator / Soil Scientist Signature — SE/CSS # — Date

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

Town, City, Plantation	Street, Road Subdivision	PREPARED FOR Owner's Name
RAYMOND	WEBBS MILL ROAD	DM ROMA (N/F CLINTON)

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 5 ■ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–10	LOAMY SAND	FRIABLE	BROWN	
10–20			YELLOW BROWN	
20–30	LOAMY FINE SAND		LIGHT YELLOW BROWN	
30–40	FINE SAND	FIRM	LIGHT OLIVE BROWN	FEW, FAINT
40–50	GRAVELLY COARSE SAND		LIGHT GRAY	

LIMIT OF EXCAVATION @58"

Soil Classification	Slope	Limiting Factor	
3 (Profile) C (Condition)	____ %	37 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

Soil Classification	Slope	Limiting Factor	
____ (Profile) ____ (Condition)	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

Texture	Consistency	Color	Mottling

Soil Classification	Slope	Limiting Factor	
____ (Profile) ____ (Condition)	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

FOR SOILS MAPPING →

Soil Series Name:	Drainage Class:	Hydrologic Group:

BA

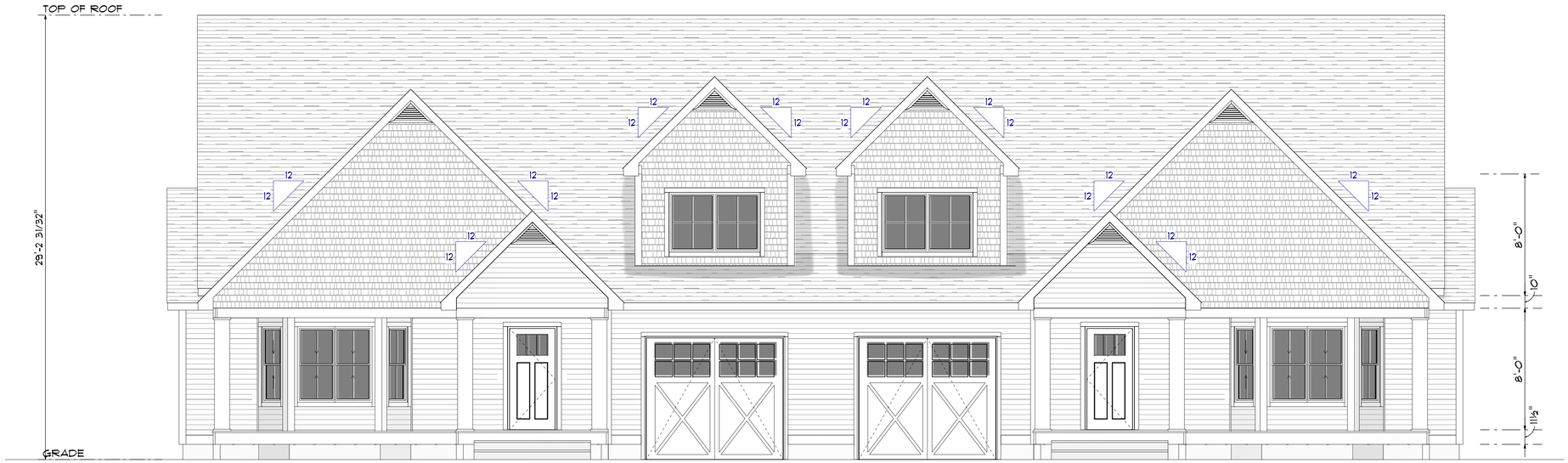
352 — SE/CSS #

7/1/24 — Date

Site Evaluator / Soil Scientist Signature

ALBERT FRICK ASSOCIATES – 380-B MAIN STREET GORHAM, MAINE 04038 – (207) 839-5563

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION



FRONT ELEVATION
SCALE: 1/4" = 1'-0"

RIGHT ELEVATION
SCALE: 1/4" = 1'-0"

Hammond Lumber Company
21 LOCATIONS ACROSS MAINE
Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Bucksport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan
WWW.HAMMONDLUMBER.COM

DU210835
2 OF 7

TIM CLINTON

COHASSET	LCR	5/27/21	
DUPLEX	JMC	FOR	
RAYMOND	Tuesday, June 8, 2021	SCALE = AS NOTED	

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

REAR ELEVATION
SCALE: 1/4" = 1'-0"

LEFT ELEVATION
SCALE: 1/4" = 1'-0"

Hammond Lumber Company
21 LOCATIONS ACROSS MAINE
Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Bucksport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan
WWW.HAMMONDLUMBER.COM

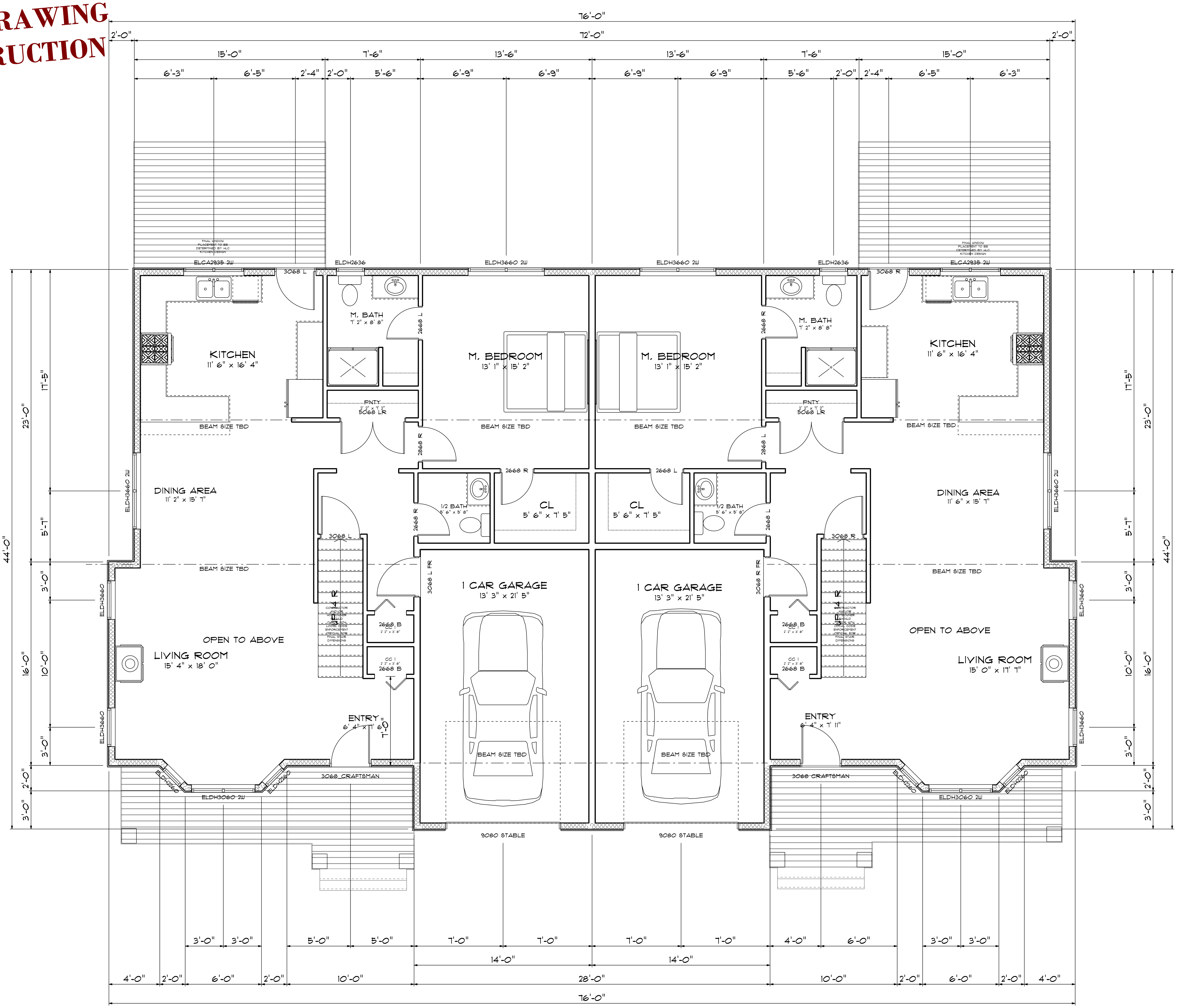
DU210835
3 OF 7

TIM CLINTON

COHASSET	LCR	FOR	5/27/21
DUPLEX	JMC	Tuesday, June 8, 2021	
RAYMOND	SCALE = AS NOTED		

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION



FIRST FLOOR
SCALE: 1/4" = 1'-0"

21 LOCATIONS ACROSS MAINE
Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Bucksport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan
WWW.HAMMONDLUMBER.COM

Hammond Lumber Company

DU210895
4 OF 7

TIM CLINTON

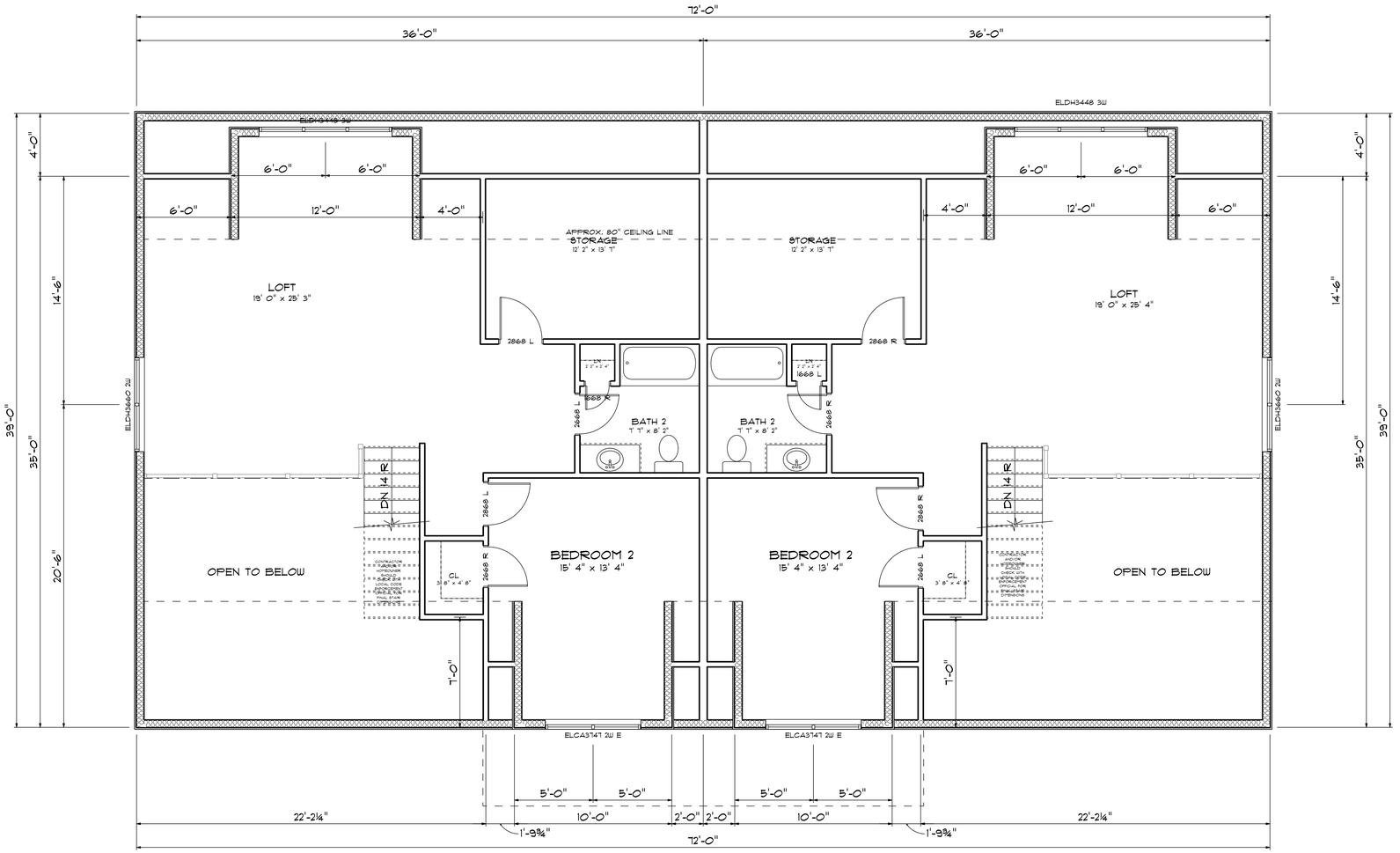
LCR	JMC	FOR	5/27/21

Tuesday, June 8, 2021
SCALE = AS NOTED

COHASSET
DUPLEX
RAYMOND

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION



SECOND FLOOR

SCALE: 1/4" = 1'-0"

TIM CLINTON

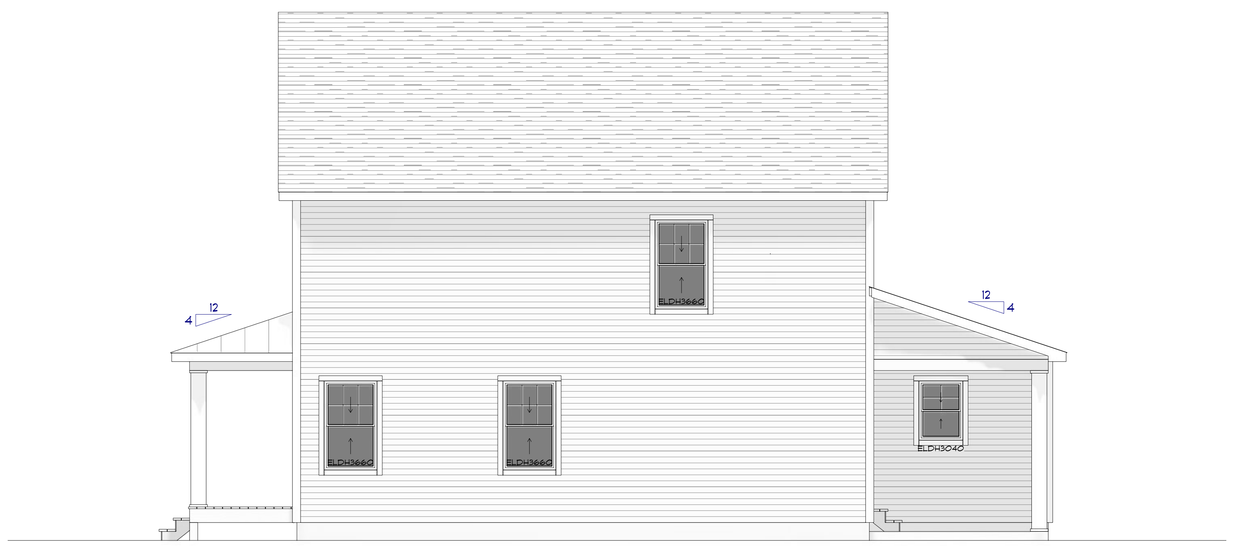
COHASSET	LCR	JMC	FOR	5/27/21
DUPLEX	Tuesday, June 8, 2021			
RAYMOND	SCALE = AS NOTED			

DU210835 5 OF 7

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

FRONT ELEVATION
SCALE: 1/4" = 1'-0"



RIGHT ELEVATION
SCALE: 1/4" = 1'-0"

Hammond Lumber Company
21 LOCATIONS ACROSS MAINE
Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Bucksport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan
WWW.HAMMONDLUMBER.COM

DU210834
2 OF 7

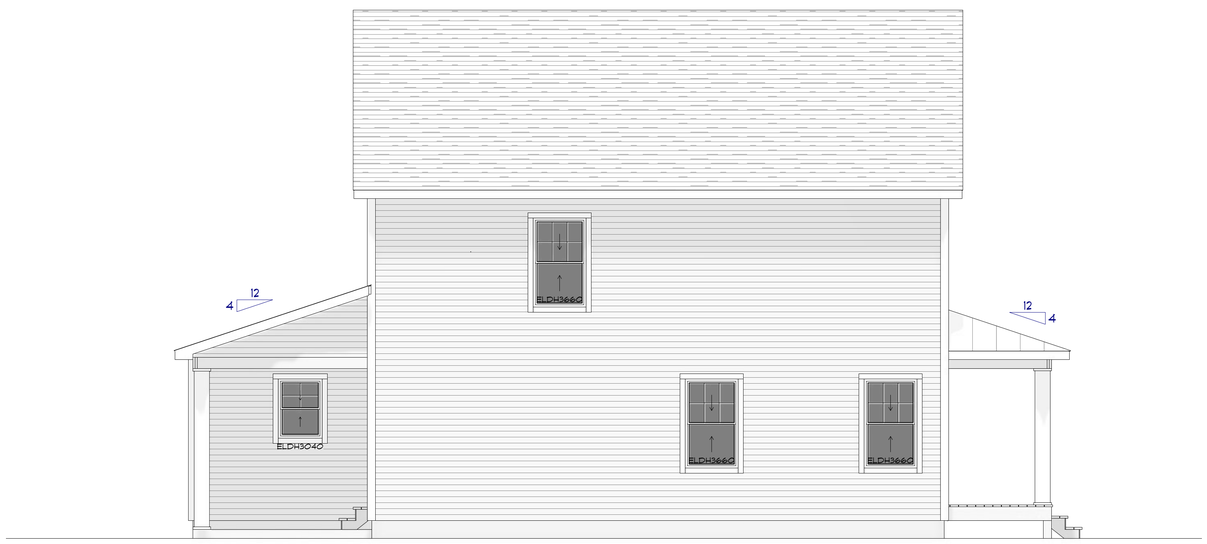
TIM CLINTON

THE BEACON	LCR	POR	JMC	5/27/21
DUPLEX	Sunday, June 6, 2021			
TBD	SCALE = AS NOTED			

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION

REAR ELEVATION
SCALE: 1/4" = 1'-0"



LEFT ELEVATION
SCALE: 1/4" = 1'-0"

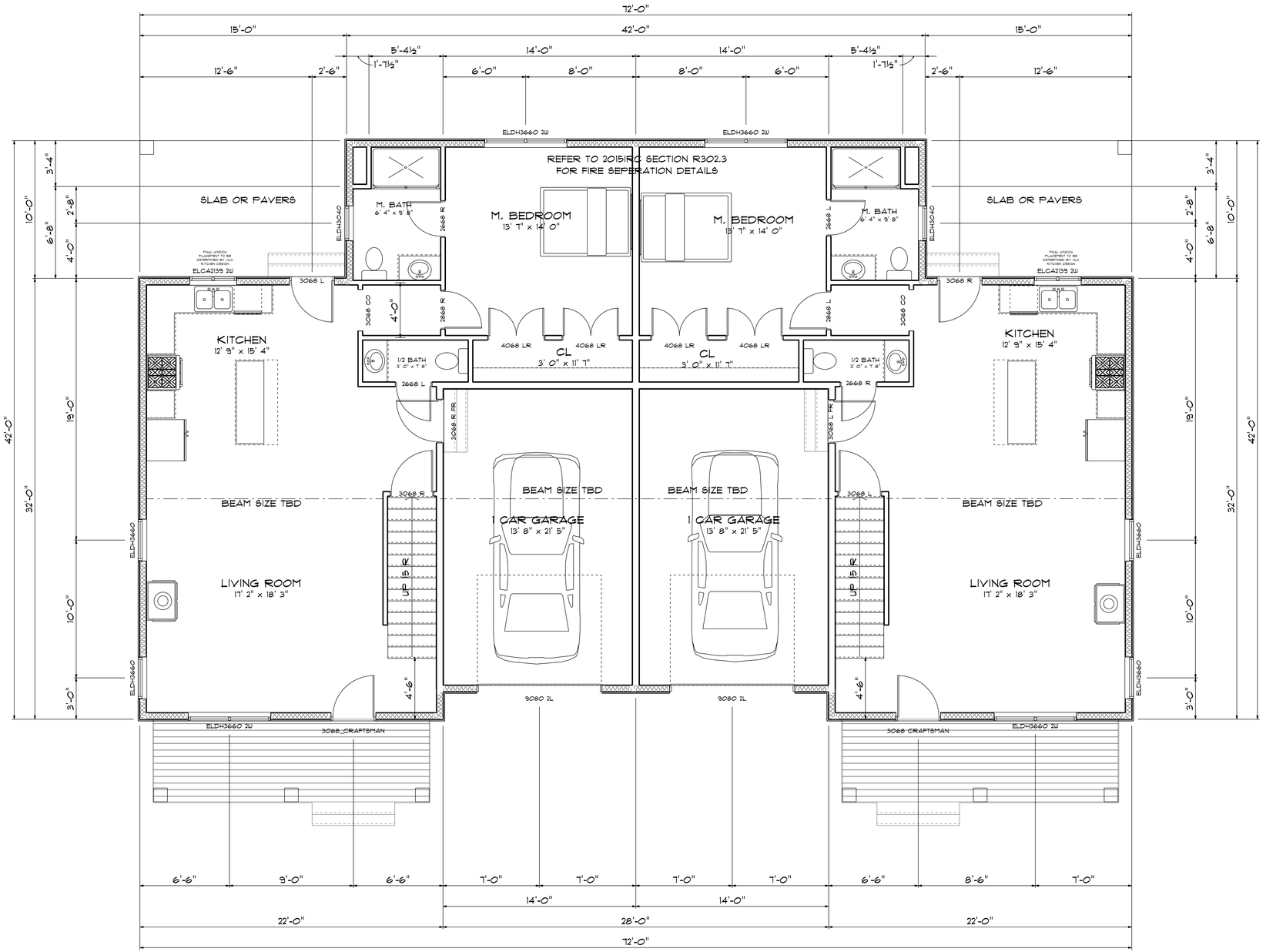
DU210834
3 OF 7

TIM CLINTON

THE BEACON	LCR	POR	JMC
DUPLEX	Sunday, June 6, 2021		
TBD	SCALE = AS NOTED		

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION



FIRST FLOOR

SCALE: 1/4" = 1'-0"

Hammond Lumber Company

21 LOCATIONS ACROSS MAINE

Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Bucksport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan

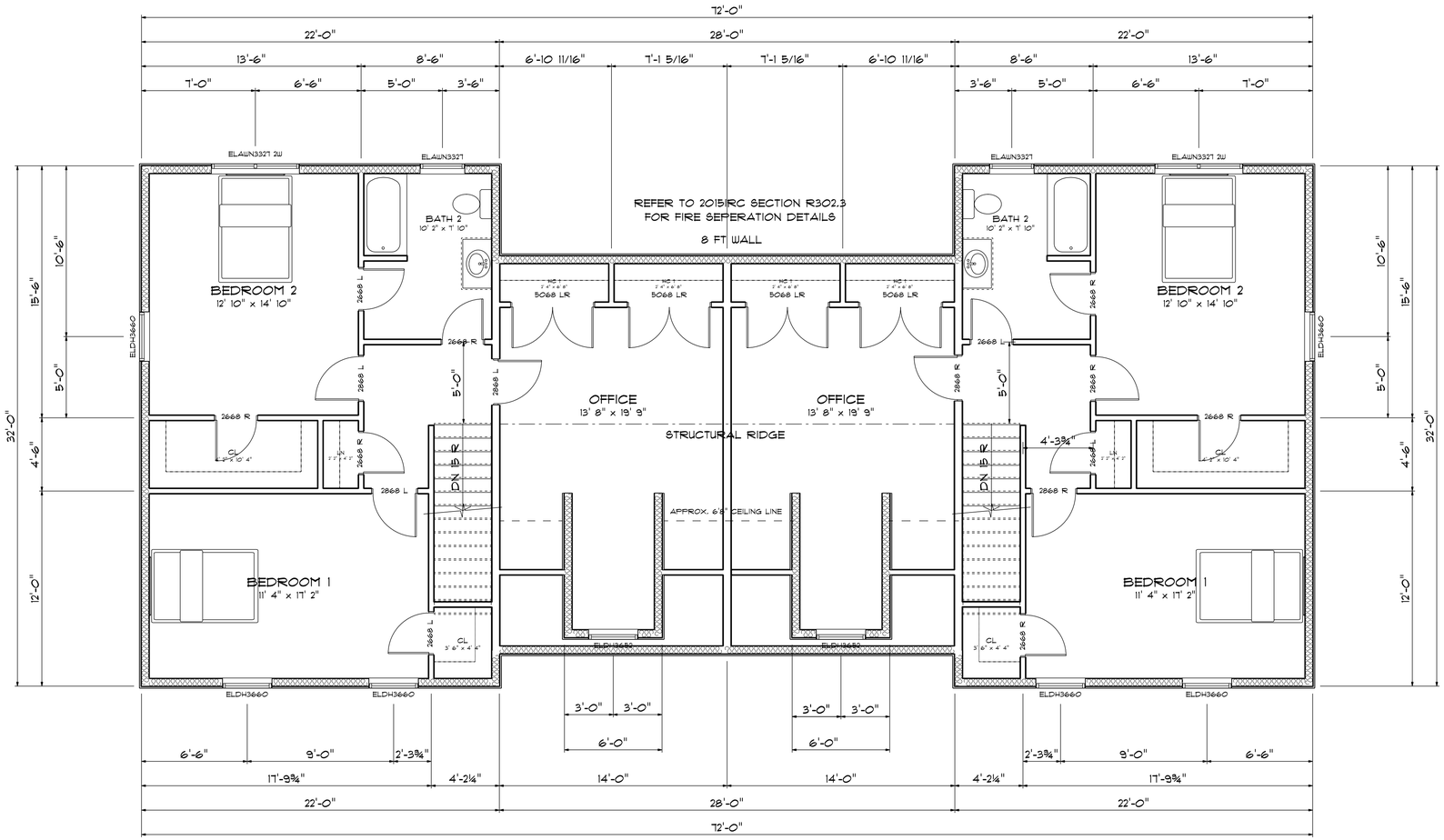
WWW.HAMMONDLUMBER.COM

TIM CLINTON

THE BEACON	LCR	FOR	JMC	5/27/21	DU210834
DUPLEX		Sunday, June 6, 2021			4 OF 7
TBD		SCALE = AS NOTED			

HOME PLANNING CENTER
A Division of Hammond Lumber Company

PRELIMINARY DRAWING
NOT FOR CONSTRUCTION



SECOND FLOOR

SCALE: 1/4" = 1'-0"

Hammond Lumber Company

21 LOCATIONS ACROSS MAINE

Auburn • Bangor • Bar Harbor • Belfast • Belgrade • Blue Hill • Boothbay Harbor
Brunswick • Buckport • Calais • Camden • Cherryfield • Damariscotta • Ellsworth
Fairfield • Farmington • Greenville • Machias • Portland • Rockland • Skowhegan

WWW.HAMMONDLUMBER.COM

DU210834

5 OF 7

TIM CLINTON

THE BEACON	LCR	FOR	JMC
DUPLEX	Sunday, June 6, 2021		5/27/21
TBD	SCALE = AS NOTED		

HOME PLANNING CENTER
A Division of Hammond Lumber Company

DM ROMA
CONSULTING ENGINEERS

STORMWATER MANAGEMENT REPORT

RAYMOND HILLS VILLAGE
WEBBS MILLS ROAD
RAYMOND, MAINE

A. Narrative

Raymond Hills, LLC, the applicant, is proposing to develop an 8.8-acre parcel on Webbs Mills Road in Raymond, Maine. The project site is identified as Lot 22A on the Town of Raymond Assessor's Map 51 and is located in the Village Residential Zoning District. Access to the project site will be from Webbs Mills Road through an existing access easement on the adjacent property, which currently contains a substandard gravel road. The remaining site is primarily undeveloped woodland.

The development will include the construction of nine (9) duplex style buildings, creating 18 residential apartment units. The project will also include the construction of an approximately 1,200 linear foot driveway to access the units. The project will be served by public water, common subsurface wastewater disposal system and underground electrical, communication and cable.

In general, the property drains to the west, toward Webbs Mills Road. The flow is directed to a closed drainage system within the roadway and directly discharges into the end of Panther Run and into Sebago Lake. The Sebago Lake watershed is indicated as a Lake Watershed Most at Risk from Development by the Maine Department of Environmental Protection (MDEP).

B. Alterations to Land Cover

Based on the proposed design, the applicant will be responsible for creating approximately 68,437 square feet (1.57± acres) of impervious surface consisting of the proposed buildings and driveway pavement and approximately 131,551 square feet (3.02± acres) of landscaped area associated with lawn and landscaping, totaling approximately 199,988 square feet (4.59± acres) of developed area.

As this project is located within a Watershed of a Lake Most at Risk from Development and is generating over 20,000 square feet of impervious surface, a Stormwater Permit from the MDEP will need to be obtained. The stormwater design will be required to meet the Basic and Phosphorous Standards of the Chapter 500 Stormwater Management rules. Included in Section 4D(1) Phosphorous Standard of the MDEP Chapter 500, if the waterbody is not severely blooming and the total impervious surface generated by the project is less than 3 acres or less than 5 acres of total developed area, the General Standards can be met as an alternative to producing the phosphorous export calculations. As a result, the project will be required to meet the Basic and General Standards of MDEP Chapter 500.

In addition, the Town of Raymond Land Use Ordinance requires that the post-development stormwater runoff does not exceed the pre-development stormwater runoff for the 24-hour duration, 2-, 10- and 25-year frequency storm events.

The site is moderately sloped (5-13%) in the area where the buildings will be constructed with steeper slopes to the west adjacent to the property boundary. Soils on the property were determined utilizing the Medium Intensity Soil Maps for Cumberland County, Maine published by the Natural Resources Conservation Service. The soils boundaries and hydrologic soils group (HSG) designations are indicated on the watershed maps within the design plan set and a Soils Map has been included as Attachment 1 of this report. Test pits were also excavated in the location of the proposed BMPs. The test pit logs are also included in Attachment 1 of this report.

C. Methodology and Modeling Assumptions

The proposed stormwater management system has been designed utilizing Best Management Practices to maintain existing drainage patterns while providing stormwater quality improvement measures. The goal of the storm drainage system design is to remove potential stormwater pollutants from runoff generated by the development while providing attenuation of the peak rates of runoff leaving the site. The method utilized to predict the surface water runoff rates in this analysis is a computer program entitled HydroCAD, which is based on the same methods that were originally developed by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service, and utilized in the TR-20 modeling program. Peak rates of runoff are forecasted based upon land use, hydrologic soil conditions, vegetative cover, contributing watershed area, time of concentration, rainfall data, storage volumes of detention basins and the hydraulic capacity of structures. The computer model predicts the amount of runoff as a function of time, with the ability to include the attenuation effect due to dams, lakes, large wetlands, floodplains and constructed stormwater management basins. The input data for rainfalls with statistical recurrence frequencies of 2-, 10- and 25 years was obtained from Appendix H of the MDEP, Chapter 500 Stormwater Management, last revised in 2015. The National Weather Service developed four synthetic storm types to simulate rainfall patterns around the country. For analysis in Cumberland County, Maine, the type III rainfall pattern with a 24-hour duration is appropriate.

D. Basic Standards

The project is required by the MDEP to provide permanent and temporary Erosion Control Best Management Practices. These methods are outlined in detail in the plan set.

E. General Standard

The proposed project is required to meet the General Standards of Chapter 500 to provide water quality treatment of at least 95% of the project's new impervious surface and at least 80% of the project's total developed area. To meet this standard, an underdrained soil filter basin, two Filterra Bioretention Units and the requirement of installing roofline drip edge filters around each building have been incorporated into the stormwater infrastructure.

As a result of the stormwater infrastructure, approximately 96% of the entire project's projected new impervious surface and approximately 81% of the project's new developed area will be treated. The watershed map has been included in the design plan set and the calculations related to the General Standard have been included in this report as Attachment 2.

The sizing calculations for the underdrained soil filter basin have been included as Attachment 3 of this report. To demonstrate that the emergency overflow of the grassed underdrained soil filter basin has the required 1 foot of freeboard between the emergency spillway and the top of berm during the 25-year storm

event assuming failure of the other discharge devices and evidence of the drain down time of the basin is between 24 to 48 hours have been included in this section. The sizing calculations for the required channel protection volume storage, achieved by the subsurface chamber system, after the Filterra units has been included in Attachment 4 of this report. The sizing calculations for the Filterra units as prepared by Contech are also included in this section.

F. Flooding Analysis

As a requirement of the Town of Raymond Land Use Ordinance, the project will need to limit the peak rates of runoff to the pre-development condition during the 24-hour, 2-, 10- and 25-year frequency storm events. The project's stormwater design incorporates the integration of an underdrained filter basin and a subsurface chamber system to provide the required stormwater attenuation during the design storm events. Three study points were chosen to demonstrate the site design's compliance with the Town's standard.

The first study point (SP-1) is located at the intersection of the site's driveway and Webbs Mills Road. There is an existing catch basin that will be connected into by the subsurface chamber system. The flow that enters the basin is conveyed via storm drain southwesterly within Webbs Mills Road and eventually discharges into Panther Run and ultimately Sebago Lake.

The second study point (SP-2) is the location where runoff from both on and offsite drains across the western and northwestern property boundary onto the abutting property, now or formerly owned by Sharon Kitchens. Primarily, the flow onto this property isn't channelized and sheets across the parcel boundary. Drainage from this study point flows across the property, discharging into the closed drainage system within Webbs Mills Road and eventually into Panther Run and Sebago Lake.

The third study point (SP-3) is located along the southwestern property boundary where drainage from both on and offsite is collected in a natural drainage swale, onsite, and then flows across the property boundary, now or formerly owned by Jean Thurlow, Deborah Libby and Esther Small. Drainage from this study point flows across the property, discharging into the closed drainage system within Webbs Mills Road and eventually into Panther Run and Sebago Lake.

The following table summarizes the analysis:

Table 1 – Peak Rates of Stormwater Runoff

Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP1	0.53	0.67	1.32	2.03	2.05	4.66
SP2	<0.01	<0.01	0.06	0.01	0.35	0.07
SP3	<0.01	0.04	0.04	0.14	0.38	0.38

As illustrated in Table 1, the project reduces or maintains the existing flow conditions at Study Point 2 in all storm events and in the larger storm at Study Point 3. There are increases at Study Point 1 due to the proposed driveway construction and re-direction of offsite runoff from Study Point 2 & 3 to Study Point 1. This flow discharges into the existing closed drainage system within Webbs Mills Road. The Town of Raymond will need to provide approval of these increases into their drainage system. There are also slight increases in the 2- and 10-year storm event at Study Point 3. We do not anticipate these increases in flow

to create any additional flooding conditions or increased erosion problems downstream as a result of this project.

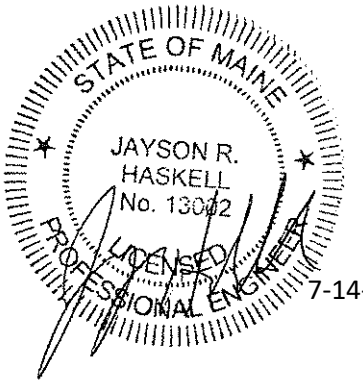
The watershed maps showing pre-development and post-development drainage patterns are included in the plan set. The pre-development and post-development drainage computations performed with the HydroCAD software program are included as Attachment 5 of this report.

G. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities and an Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in as Attachment 6 of this report.

Prepared by:

DM ROMA CONSULTING ENGINEERS



Jayson R. Haskell

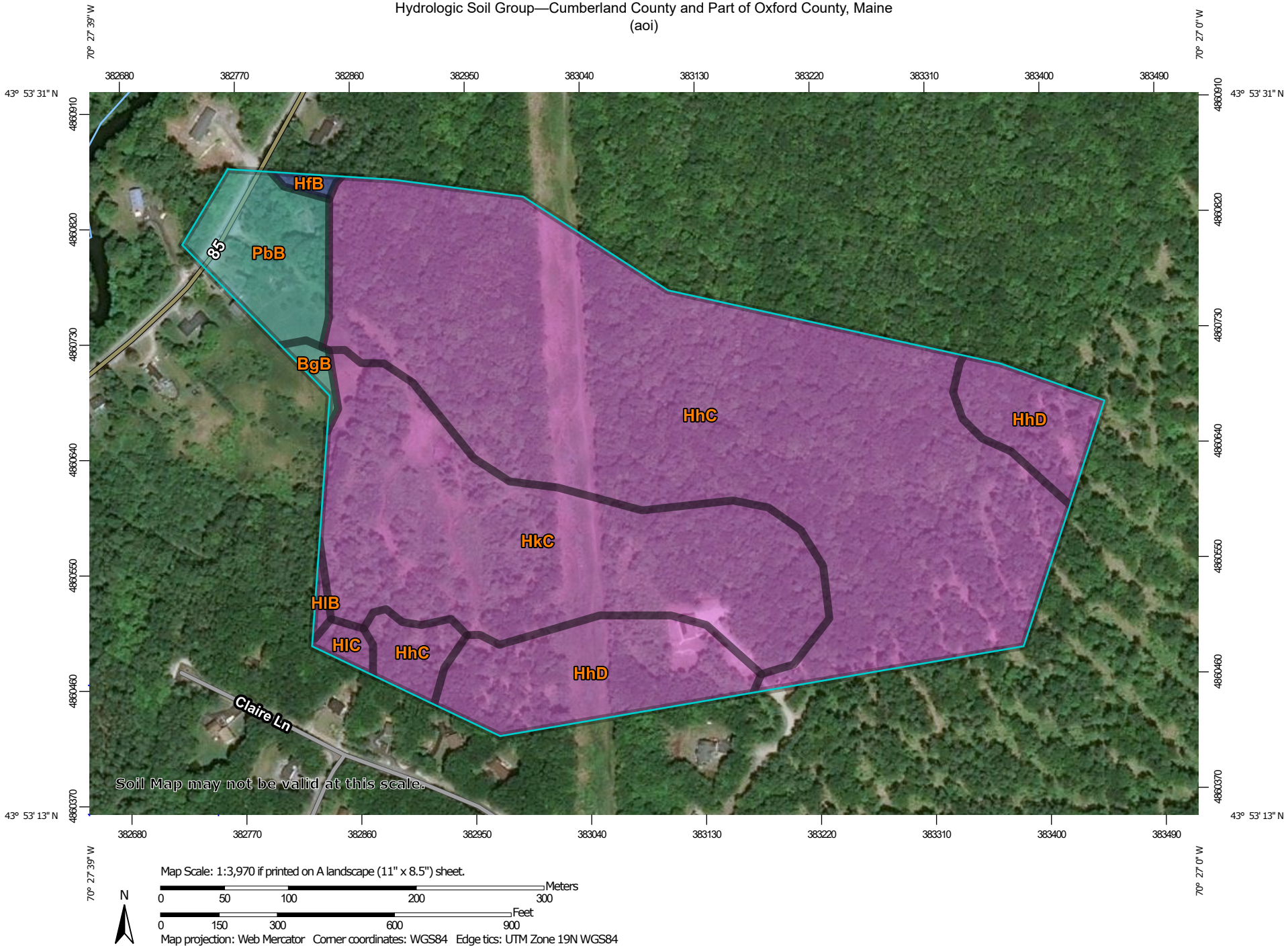
Jayson R. Haskell P.E.
Southern Maine Regional Manager

7-14-2021

ATTACHMENT 1

SOILS MAP & BMP TEST PIT LOGS

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(aoi)



Map Scale: 1:3,970 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

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

MAP LEGEND

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

Soils

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 17, Jun 5, 2020

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

Date(s) aerial images were photographed: Jun 7, 2019—Jul 2, 2019

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
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	C	0.2	0.5%
HfB	Hartland very fine sandy loam, 3 to 8 percent slopes	B	0.2	0.3%
HhC	Hermon sandy loam, 8 to 15 percent slopes, very stony	A	27.6	55.9%
HhD	Hermon sandy loam, 15 to 35 percent slopes, very stony	A	5.9	11.9%
HkC	Hermon sandy loam, 8 to 20 percent slopes, extremely stony	A	12.3	25.0%
HlB	Hinckley loamy sand, 3 to 8 percent slopes	A	0.1	0.3%
HlC	Hinckley loamy sand, 8 to 15 percent slopes	A	0.3	0.6%
PbB	Paxton fine sandy loam, 3 to 8 percent slopes	C	2.7	5.5%
Totals for Area of Interest			**49.4**	**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

Town, City, Plantation	Street, Road Subdivision	PREPARED FOR Owner's Name
RAYMOND	WEBBS MILL ROAD	DMROMA

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-6 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	LOAMY SAND	FRIABLE	DK BROWN	
10	COBBLY LOAMY SAND		YELLOW BROWN	
20				
30	COBBLY SAND		LIGHT YELLOW BROWN	
40	LOAMY SAND & COARSE SAND AND GRAVELL	FIRM	LIGHT GRAY	FEW DISTINCT
50				

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: ____ Condition: ____	____ %	36 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:
WAUMBECK (VARIANT)	MODERATELY WELL DRAINED	B

FOR SOILS MAPPING →

Observation Hole TP-7 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
40	LIMIT OF EXCAVATION 60"			
50				

Existing Grade at TP-6 = 307.00+/-
Limiting Factor=36"
Approx. Ground Water Elev.=304.00+/-
Bottom of FB1 Filter Section=307.50
Separation from GW = 3.5' >1.5' and not excessively well drained or well drained soils. An impermeable liner has not been proposed for this system.

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: ____ Condition: ____	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP-8 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
30	LIMIT OF EXCAVATION			
40				
50				

Existing Grade at TP-9 = 298.00+/-
Limiting Factor=32"
Approx. Ground Water Elev.=295.33+/-
Bottom of Stormtech System=290.65
Separation from GW = 4.68' below groundwater. An impermeable liner has been proposed for this system.

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: ____ Condition: ____	____ %	____ "	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL →

Soil Series Name:	Drainage Class:	Hydrologic Group:

FOR SOILS MAPPING →

Observation Hole TP-9 ■ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	FINE AND MEDIUM SAND	SOMEWHAT FRIABLE	BROWN	
10			YELLOW BROWN	
20	VERY COBBLY AND STONY LOAMY SAND AND SANDY LOAM	FIRM	LIGHT OLIVE BROWN	
30				
40			OLIVE GRAY	FEW FAINT
50	LIMIT OF EXCAVATION 60"			

Soil Classification	Slope	Limiting Factor	Ground Water / Restrictive Layer / Bedrock / Pit Depth
Profile: ____ Condition: ____	____ %	32 "	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Soil Series Name:	Drainage Class:	Hydrologic Group:
SKERRY (VARIANT)	MODERATLEY WELL DRAINED	C

Christopher J. Coppi — Site Evaluator / Soil Scientist Signature

403/631 — SE/CSS #

7/1/21 — Date

ALBERT FRICK ASSOCIATES – 731 FOSS ROAD, LIMERICK, MAINE 04048– (207) 839-5563

ATTACHMENT 2

GENERAL STANDARD CALCULATIONS

Raymond Hills Apartments
Calculated by: JRH
Printed 7/14/2021
Job #21006

Stormwater Treatment Table

	Total Watershed Area (SF)	New Road and Driveway Area (SF)	New Roof Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)*	Existing/Offsite Landscaping Area (SF)*	Existing Undeveloped Area (SF)	Treatment Provided	New Paved Area Treated (SF)	New Landscaped Area Treated (SF)	Treatment Device
WS-10	41,523	2,737	0	2,922	8,666	4,980	22,219	No	0	0	None
WS-11	33,980	8,779	0	4,744	0	0	20,457	Yes	8,779	4,744	Filterra F1
WS-12	12,904	7,530	1,336	4,038	0	0	0	Yes	7,530	4,038	Filterra F2
WS-20	171,977	0	0	5,783	0	0	166,194	No	0	0	None
WS-21	30,252	0	1,872	6,433	0	0	21,947	No	0	0	None
WS-30	799,120	0	0	6,936	0	0	792,184	No	0	0	None
WS-31	211,666	0	4,905	18,449	4,546	2,594	181,172	Yes	0	18,449	Filter Basin 1
WS-32	64,143	0	8,098	41,279	0	0	14,766	Yes	0	41,279	Filter Basin 1
WS-33	80,394	0	1,976	13,014	0	0	65,404	No	0	0	None
WS-34	25,400	7,464	5,157	12,780	0	0	0	Yes	7,464	12,780	Filter Basin 1
WS-35	33,756	10,957	7,627	15,173	0	0	0	Yes	10,957	15,173	Filter Basin 1
Total		**37,466**	**30,971**	**131,551**					**34,729**	**96,463**	

* The project is not taking credit for the Existing / Offsite impervious and landscaped areas, but are included in the BMP sizing calculations for each treatment device.

** All new buildings are required to install a roofline drip edge to provide treatment for rooftop impervious surface.

These areas in the watershed are treated in the dripedges and bypass the treatment devices downstream of the building.

New Impervious Area =	68,437	
New Impervious Area Requiring Treatment (95%)	65,016	
Provided New Impervious Treatment=	65,700	
	96%	New Impervious Area Treated

New Developed Area =	199,988	
New Developed Area Requiring Treatment (80%)=	159,991	
New Developed Area Treated=	162,163	
	81%	New Developed Area Treated

ATTACHMENT 3

UNDERDRAINED FILTER BASIN SIZING CALCULATIONS

Raymond Hills Village
Calculated by: JRH
Printed 7/14/2021
Job #21006

Filter Basin FB-1

Tributary Impervious Area=	22,966	sf	(WS-31, 32, 34 & 35 Impervious Area)
Tributary Landscaped Area=	90,275	sf	(WS-31, 32, 34 & 35 Landscaped Area)

Water Quality Volume (WQV) Calculation

WQV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area

WQV (Required) = 4,923 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
310	3,000	0
312	4,881	7,805
313	5,836	13,156

Outlet Elevation = 311.50

Storage Volume Provided= 5,494 cf > Required

Filter Bottom Calculation

Filter Area (Required) = 5%xImpervious Area + 2%xLandscaped Area

Filter Area (Required) = 2,954 sf

Filter Area Provided = 3,000 sf > Required

Underdrain Orifice Calculation

Max Orifice Diameter (inches) = 0.035x^0.4599 (X=Filter Area (sf))

Max Orifice Diameter (Required)= 1.39 inches

Orifice Diameter (Provided)= 1.00 inch

SPILLWAY RUN - FILTER BASIN FB1

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Runoff Area=41,523 sf 16.11% Impervious Runoff Depth=2.56"
Flow Length=520' Tc=17.4 min CN=69 Runoff=2.00 cfs 8,849 cf

Subcatchment11: Runoff Area=33,980 sf 24.54% Impervious Runoff Depth=2.21"
Flow Length=410' Tc=14.4 min CN=65 Runoff=1.50 cfs 6,249 cf

Subcatchment12: Runoff Area=12,904 sf 64.60% Impervious Runoff Depth=3.50"
Flow Length=333' Tc=6.0 min CN=79 Runoff=1.19 cfs 3,765 cf

Subcatchment20: Runoff Area=171,977 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=628' Tc=21.4 min CN=32 Runoff=0.05 cfs 1,510 cf

Subcatchment21: Runoff Area=30,252 sf 6.19% Impervious Runoff Depth=0.34"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.07 cfs 861 cf

Subcatchment30: Runoff Area=799,120 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=2,316' Tc=41.8 min CN=32 Runoff=0.25 cfs 7,017 cf

Subcatchment31: Runoff Area=211,666 sf 4.47% Impervious Runoff Depth=0.25"
Flow Length=1,036' Tc=22.0 min CN=36 Runoff=0.20 cfs 4,438 cf

Subcatchment32: Runoff Area=64,143 sf 12.62% Impervious Runoff Depth=0.72"
Flow Length=497' Tc=20.0 min CN=45 Runoff=0.51 cfs 3,864 cf

Subcatchment33: Runoff Area=80,394 sf 2.46% Impervious Runoff Depth=0.21"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.05 cfs 1,411 cf

Subcatchment34: Runoff Area=25,400 sf 49.69% Impervious Runoff Depth=2.47"
Flow Length=176' Tc=6.6 min CN=68 Runoff=1.61 cfs 5,224 cf

Subcatchment35: Runoff Area=33,757 sf 54.27% Impervious Runoff Depth=2.74"
Flow Length=224' Tc=12.7 min CN=71 Runoff=1.97 cfs 7,704 cf

Reach R1: Avg. Flow Depth=0.06' Max Vel=2.01 fps Inflow=0.25 cfs 7,017 cf
n=0.030 L=394.0' S=0.0799 '/' Capacity=208.12 cfs Outflow=0.25 cfs 7,017 cf

Pond CB1: Peak Elev=293.19' Inflow=2.31 cfs 18,542 cf
15.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=2.31 cfs 18,542 cf

Pond CB2: Peak Elev=304.16' Inflow=1.19 cfs 3,765 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=1.19 cfs 3,765 cf

Pond CB3: Peak Elev=321.79' Inflow=1.61 cfs 9,662 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=1.61 cfs 9,662 cf

Pond CB4: Peak Elev=321.60' Inflow=3.33 cfs 17,366 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0050 '/' Outflow=3.33 cfs 17,366 cf

Pond DMH1: Peak Elev=296.91' Inflow=1.19 cfs 12,293 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=1.19 cfs 12,293 cf

Pond FB1: Peak Elev=313.09' Storage=13,686 cf Inflow=3.46 cfs 21,229 cf
Primary=0.00 cfs 0 cf Secondary=0.42 cfs 8,073 cf Outflow=0.42 cfs 8,073 cf

Pond FI1: Peak Elev=323.41' Inflow=0.20 cfs 4,438 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.20 cfs 4,438 cf

Pond SD5: Peak Elev=297.33' Inflow=0.30 cfs 8,527 cf
12.0" Round Culvert n=0.013 L=34.0' S=0.0079 '/' Outflow=0.30 cfs 8,527 cf

Pond ST: StormTech Peak Elev=293.00' Storage=1,869 cf Inflow=2.31 cfs 18,542 cf
Outflow=2.69 cfs 18,541 cf

Link SP1: Ex. CB Inflow=4.66 cfs 27,390 cf
Primary=4.66 cfs 27,390 cf

Link SP2: Inflow=0.07 cfs 861 cf
Primary=0.07 cfs 861 cf

Link SP3: Inflow=0.46 cfs 9,484 cf
Primary=0.46 cfs 9,484 cf

No flow from 12" stormdrain - only spillway.
Peak Elev. = 313.09
Top of Berm=314.10 = 1.01' > 1' required

DRAIN DOWN CALCULATION - FILTER BASIN FB1

Hydrograph for Pond FB1: (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
13.25	0.26	3,391	310.99	0.05	0.05	0.00
13.50	0.24	3,574	311.04	0.05	0.05	0.00
13.75	0.23	3,742	311.08	0.05	0.05	0.00
14.00	0.21	3,895	311.12	0.05	0.05	0.00
14.25	0.19	4,031	311.15	0.05	0.05	0.00
14.50	0.18	4,157	311.18	0.05	0.05	0.00
14.75	0.17	4,275	311.21	0.05	0.05	0.00
15.00	0.16	4,384	311.24	0.05	0.05	0.00
15.25	0.15	4,485	311.26	0.05	0.05	0.00
15.50	0.14	4,576	311.28	0.05	0.05	0.00
15.75	0.13	4,657	311.30	0.05	0.05	0.00
16.00	0.12	4,729	311.32	0.05	0.05	0.00
16.25	0.11	4,791	311.34	0.05	0.05	0.00
16.50	0.11	4,848	311.35	0.05	0.05	0.00
16.75	0.11	4,901	311.36	0.05	0.05	0.00
17.00	0.10	4,951	311.37	0.05	0.05	0.00
17.25	0.10	4,997	311.38	0.05	0.05	0.00
17.50	0.09	5,039	311.39	0.05	0.05	0.00
17.75	0.09	5,077	311.40	0.05	0.05	0.00
18.00	0.08	5,110	311.41	0.05	0.05	0.00
18.25	0.08	5,139	311.42	0.05	0.05	0.00
18.50	0.08	5,166	311.42	0.05	0.05	0.00
18.75	0.08	5,192	311.43	0.05	0.05	0.00
19.00	0.08	5,217	311.44	0.05	0.05	0.00
19.25	0.08	5,240	311.44	0.05	0.05	0.00
19.50	0.07	5,263	311.45	0.05	0.05	0.00
19.75	0.07	5,284	311.45	0.05	0.05	0.00
20.00	0.07	5,304	311.46	0.05	0.05	0.00
20.25	0.07	5,323	311.46	0.05	0.05	0.00
20.50	0.07	5,341	311.46	0.05	0.05	0.00
20.75	0.07	5,358	311.47	0.05	0.05	0.00
21.00	0.07	5,373	311.47	0.05	0.05	0.00
21.25	0.07	5,388	311.48	0.05	0.05	0.00
21.50	0.06	5,402	311.48	0.05	0.05	0.00
21.75	0.06	5,415	311.48	0.05	0.05	0.00
22.00	0.06	5,427	311.48	0.05	0.05	0.00
22.25	0.06	5,438	311.49	0.05	0.05	0.00
22.50	0.06	5,447	311.49	0.05	0.05	0.00
22.75	0.06	5,456	311.49	0.05	0.05	0.00
23.00	0.06	5,463	311.49	0.05	0.05	0.00
23.25	0.06	5,469	311.49	0.05	0.05	0.00
23.50	0.05	5,474	311.50	0.05	0.05	0.00
23.75	0.05	5,478	311.50	0.05	0.05	0.00
24.00	0.05	**5,480**	**311.50**	**0.05**	**0.05**	0.00
24.25	0.02	**5,468**	**311.49**	**0.05**	**0.05**	0.00
24.50	0.00	5,430	311.49	0.05	0.05	0.00
24.75	0.00	5,386	311.48	0.05	0.05	0.00
25.00	0.00	5,342	311.46	0.05	0.05	0.00
25.25	0.00	5,297	311.45	0.05	0.05	0.00
25.50	0.00	5,252	311.44	0.05	0.05	0.00
25.75	0.00	5,208	311.43	0.05	0.05	0.00
26.00	0.00	5,163	311.42	0.05	0.05	0.00
26.25	0.00	5,118	311.41	0.05	0.05	0.00

Storm event that generates enough stormwater flow to meet channel protection volume

Start Time when water surface elevation is at treatment volume elevation 311.50

DRAIN DOWN CALCULATION - FILTER BASIN FB1

Hydrograph for Pond FB1: (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
53.00	0.00	769	310.25	0.04	0.04	0.00
53.25	0.00	733	310.24	0.04	0.04	0.00
53.50	0.00	696	310.23	0.04	0.04	0.00
53.75	0.00	660	310.21	0.04	0.04	0.00
54.00	0.00	624	310.20	0.04	0.04	0.00
54.25	0.00	588	310.19	0.04	0.04	0.00
54.50	0.00	552	310.18	0.04	0.04	0.00
54.75	0.00	516	310.17	0.04	0.04	0.00
55.00	0.00	480	310.16	0.04	0.04	0.00
55.25	0.00	445	310.15	0.04	0.04	0.00
55.50	0.00	409	310.13	0.04	0.04	0.00
55.75	0.00	374	310.12	0.04	0.04	0.00
56.00	0.00	338	310.11	0.04	0.04	0.00
56.25	0.00	303	310.10	0.04	0.04	0.00
56.50	0.00	268	310.09	0.04	0.04	0.00
56.75	0.00	232	310.08	0.04	0.04	0.00
57.00	0.00	197	310.07	0.04	0.04	0.00
57.25	0.00	162	310.05	0.04	0.04	0.00
57.50	0.00	128	310.04	0.04	0.04	0.00
57.75	0.00	93	310.03	0.04	0.04	0.00
58.00	0.00	58	310.02	0.04	0.04	0.00
58.25	0.00	23	310.01	0.04	0.04	0.00
58.50	0.00	0	310.00	0.00	0.00	0.00
58.75	0.00	0	310.00	0.00	0.00	0.00
59.00	0.00	0	310.00	0.00	0.00	0.00
59.25	0.00	0	310.00	0.00	0.00	0.00
59.50	0.00	0	310.00	0.00	0.00	0.00
59.75	0.00	0	310.00	0.00	0.00	0.00
60.00	0.00	0	310.00	0.00	0.00	0.00
60.25	0.00	0	310.00	0.00	0.00	0.00
60.50	0.00	0	310.00	0.00	0.00	0.00
60.75	0.00	0	310.00	0.00	0.00	0.00
61.00	0.00	0	310.00	0.00	0.00	0.00
61.25	0.00	0	310.00	0.00	0.00	0.00
61.50	0.00	0	310.00	0.00	0.00	0.00
61.75	0.00	0	310.00	0.00	0.00	0.00
62.00	0.00	0	310.00	0.00	0.00	0.00
62.25	0.00	0	310.00	0.00	0.00	0.00
62.50	0.00	0	310.00	0.00	0.00	0.00
62.75	0.00	0	310.00	0.00	0.00	0.00
63.00	0.00	0	310.00	0.00	0.00	0.00
63.25	0.00	0	310.00	0.00	0.00	0.00
63.50	0.00	0	310.00	0.00	0.00	0.00
63.75	0.00	0	310.00	0.00	0.00	0.00
64.00	0.00	0	310.00	0.00	0.00	0.00
64.25	0.00	0	310.00	0.00	0.00	0.00
64.50	0.00	0	310.00	0.00	0.00	0.00
64.75	0.00	0	310.00	0.00	0.00	0.00
65.00	0.00	0	310.00	0.00	0.00	0.00
65.25	0.00	0	310.00	0.00	0.00	0.00
65.50	0.00	0	310.00	0.00	0.00	0.00
65.75	0.00	0	310.00	0.00	0.00	0.00
66.00	0.00	0	310.00	0.00	0.00	0.00

End time when pond is empty

Goal = Drain down between 24 hrs & 48 hrs
58.50hrs - 24.00 hrs = 34.5 hrs

ATTACHMENT 4

FILTERRAS & STORMTECH CHAMBER SIZING CALCULATIONS

Raymond Hills Village
Calculated by: JRH
Printed 7/14/2021
Job #21006

Channel Protection Volume Sizing - Filterras

Subsurface Stormwater System

CPV (Required) = 1.0"xImpervious Area + 0.4"xLandscaped Area
CPV=Channel Protection Volume

Tributary Watersheds =	WS-11 & 12	
Tributary Impervious Area=	16,309	sf
Tributary Landscaped Area=	8,782	sf
CPV (Required)=	**1,652**	**cf**

Specified Chamber= Stormtech SC-310
CPV (Provided)=
See Stage Storage Table from HydroCAD

Hydrograph for Pond ST: StormTech (continued)

Storm event that generates enough stormwater flow to meet channel protection volume

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.40	0.01	31	290.70	0.01
10.50	0.02	34	290.71	0.01
10.60	0.02	38	290.71	0.01
10.70	0.02	41	290.72	0.01
10.80	0.02	45	290.73	0.01
10.90	0.02	48	290.73	0.01
11.00	0.03	52	290.74	0.02
11.10	0.03	56	290.74	0.02
11.20	0.03	60	290.75	0.02
11.30	0.04	65	290.76	0.02
11.40	0.05	72	290.77	0.03
11.50	0.06	80	290.79	0.03
11.60	0.08	91	290.80	0.04
11.70	0.14	113	290.84	0.06
11.80	0.23	152	290.91	0.09
11.90	0.35	220	291.02	0.12
12.00	0.63	340	291.19	0.15
12.10	**1.19**	614	291.43	0.19
12.20	**1.16**	968	291.76	0.23
12.30	0.98	1,266	292.06	0.27
12.40	0.79	1,483	292.34	0.30
12.50	0.61	1,626	292.57	0.32
12.60	0.44	1,698	292.70	0.33
12.70	0.34	**1,718**	**292.73**	**0.33**
12.80	0.28	1,710	292.71	0.33
12.90	0.25	1,686	292.68	0.33
13.00	0.22	1,654	292.62	0.32
13.10	0.20	1,616	292.56	0.32
13.20	0.19	1,573	292.48	0.31
13.30	0.18	1,529	292.41	0.30
13.40	0.17	1,485	292.34	0.30
13.50	0.17	1,441	292.28	0.29
13.60	0.16	1,397	292.22	0.28
13.70	0.16	1,353	292.16	0.28
13.80	0.15	1,309	292.11	0.27
13.90	0.15	1,265	292.06	0.27
14.00	0.14	1,221	292.01	0.26
14.10	0.13	1,177	291.97	0.26
14.20	0.13	1,132	291.92	0.25
14.30	0.13	1,089	291.88	0.25
14.40	0.12	1,045	291.83	0.24
14.50	0.12	1,003	291.79	0.24
14.60	0.12	962	291.75	0.23
14.70	0.12	921	291.71	0.23
14.80	0.11	881	291.67	0.22
14.90	0.11	841	291.64	0.22
15.00	0.11	803	291.60	0.21
15.10	0.11	765	291.56	0.21
15.20	0.10	727	291.53	0.21
15.30	0.10	690	291.50	0.20
15.40	0.10	654	291.46	0.20
15.50	0.09	619	291.43	0.19

Required Channel Protection Volume = 1,652 cf
Top of overflow weir in OCS-1 = 292.73
Provided CPV=1,718 cf > 1,652 cf
Start Time of Drain Down Calc=12.70 hrs

Hydrograph for Pond ST: StormTech (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
36.40	0.00	3	290.66	0.00
36.50	0.00	3	290.66	0.00
36.60	0.00	3	290.66	0.00
36.70	0.00	3	290.66	0.00
36.80	0.00	3	290.66	0.00
36.90	0.00	3	290.66	0.00
37.00	0.00	3	290.66	0.00
37.10	0.00	3	290.66	0.00
37.20	0.00	3	290.66	0.00
37.30	0.00	3	290.66	0.00
37.40	0.00	3	290.66	0.00
37.50	0.00	3	290.66	0.00
37.60	0.00	3	290.66	0.00
37.70	0.00	3	290.66	0.00
37.80	0.00	3	290.66	0.00
37.90	0.00	3	290.66	0.00
38.00	0.00	3	290.66	0.00
38.10	0.00	3	290.66	0.00
38.20	0.00	3	290.66	0.00
38.30	0.00	3	290.66	0.00
38.40	0.00	3	290.65	0.00
38.50	0.00	3	290.65	0.00
38.60	0.00	3	290.65	0.00
38.70	0.00	3	290.65	0.00
38.80	0.00	3	290.65	0.00
38.90	0.00	3	290.65	0.00
39.00	0.00	3	290.65	0.00
39.10	0.00	3	290.65	0.00
39.20	0.00	3	290.65	0.00
39.30	0.00	3	290.65	0.00
39.40	0.00	3	290.65	0.00
39.50	0.00	3	290.65	0.00
39.60	0.00	3	290.65	0.00
39.70	0.00	3	290.65	0.00
39.80	0.00	3	290.65	0.00
39.90	0.00	3	290.65	0.00
40.00	0.00	3	290.65	0.00
40.10	0.00	3	290.65	0.00
40.20	0.00	3	290.65	0.00
40.30	0.00	3	290.65	0.00
40.40	0.00	3	290.65	0.00
40.50	0.00	3	290.65	0.00
40.60	0.00	3	290.65	0.00
40.70	0.00	3	290.65	0.00
40.80	0.00	3	290.65	0.00
40.90	0.00	3	290.65	0.00
41.00	0.00	3	290.65	0.00
41.10	0.00	2	290.65	0.00
41.20	0.00	2	290.65	0.00
41.30	0.00	2	290.65	0.00
41.40	0.00	2	290.65	0.00
41.50	0.00	2	290.65	0.00

Goal = Drain down between 24 hrs & 48 hrs
38.40hrs - 12.70 hrs = 25.7 hrs

7/13/2021

Filterra Sizing Summary

Raymond Hills Apartments, Raymond, ME

Design Parameters:

- MEDEP WQ Design Storm = 0.95” of Rainfall
- Filterra Media Flow Rate = 140 in/hr
- Allowable Ponding in Filterra = 9 inches

Design Summary:

Utilizing HydroCAD software, a hydrograph can be derived to represent the MEDEP’s WQ design storm by modelling a 0.95” Type III – 24 hour rain event (Figure 1 for each system). This storm can then be routed through an appropriately sized Filterra unit. Because the Filterra system can provide up to 9 inches of ponding, some flow attenuation is possible, and the Filterra system is able to accommodate a portion of the water quality volume in the head space above the media and release it at the system’s design flow rate. The hydrograph in Figure 2 for each system illustrates this concept.

Unit	Area Impervious (sf)	CN	Area Pervious (sf)	CN	MEDEP Treatment Flow (cfs)	Filterra Media Bed (ft x ft)	Vault Size (ft x ft)	Filterra Model	Ponding Depth (inches)
Filterra #1	8,338	98	25,642	39	0.13	8x4	8x4	FT0804 - Offline	4.08
Filterra #2	8,336	98	4,568	39	0.16	8x4	8x4	FT0804 - Offline	9.00

The following are the hydrographs for each unit:

Filterra #1:

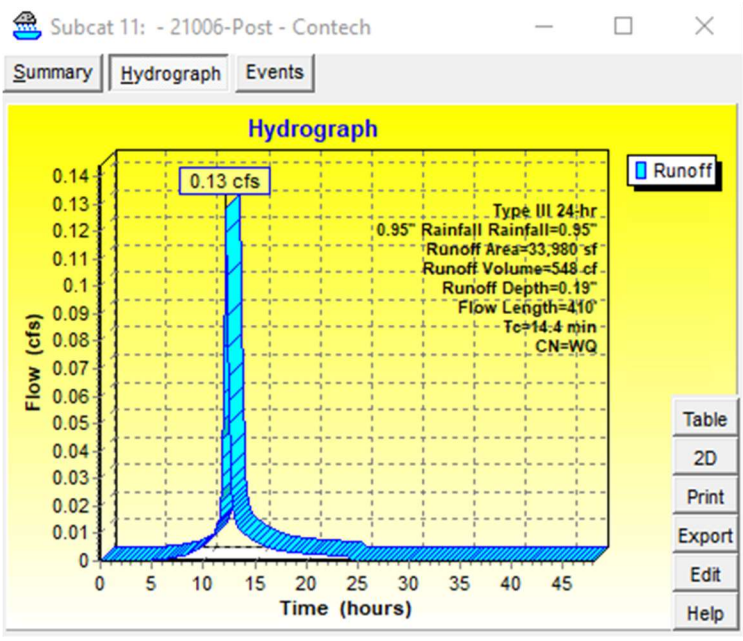


Figure 1. Inflow rate during the WQ Event.

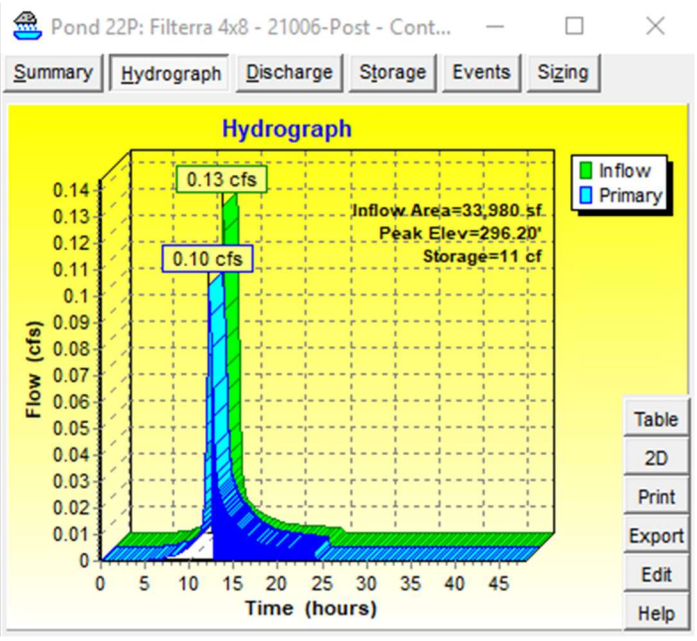


Figure 2. Inflow rate during WQ storm event compared with the Filterra outflow rate, accounting for 9” maximum ponding depth within the unit.

Filterra #2:

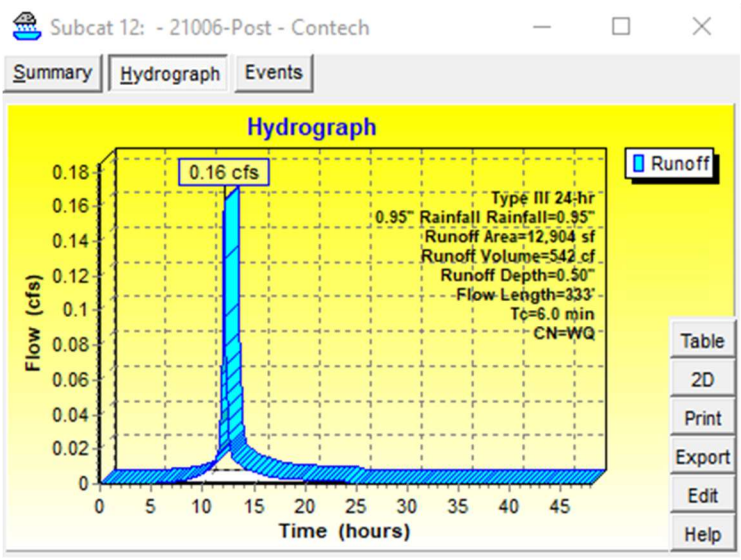


Figure 1. Inflow rate during the WQ Event.

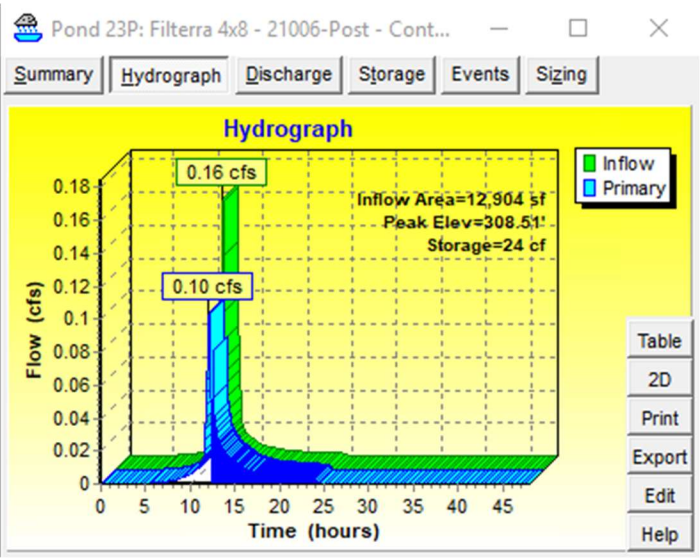


Figure 2. Inflow rate during WQ storm event compared with the Filterra outflow rate, accounting for 9" maximum ponding depth within the unit.

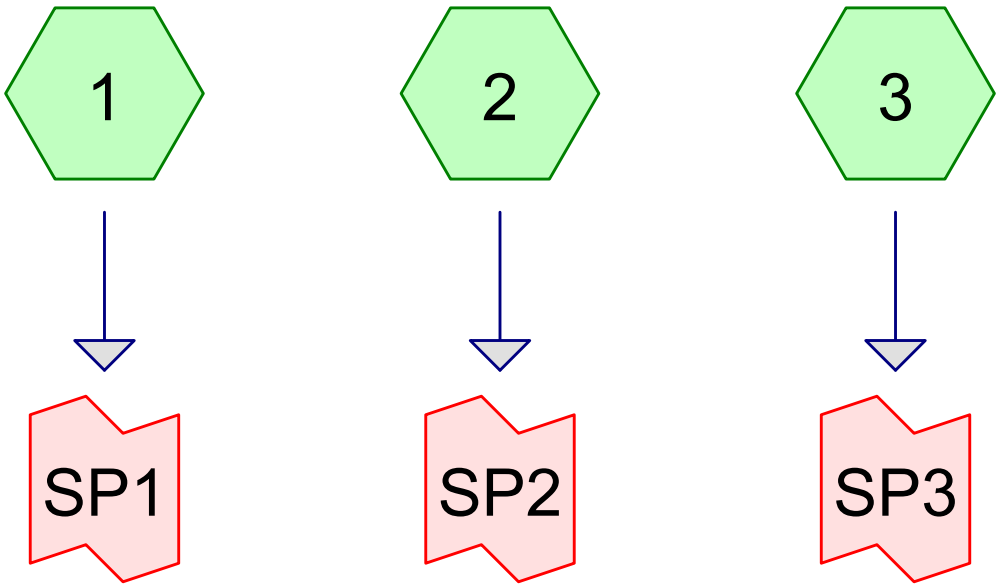
Thank you for the opportunity to present this to you and your client. This letter provides confirmation that each Filterra system is appropriately sized to comply with the Filterra approval letter issued by Maine Department of Environmental Protection. Please do not hesitate to contact me should you have any additional questions.

Sincerely,

Joshua Stackhouse
Contech Engineered Solutions, LLC.
(207) 219-9110
jstackhouse@conteches.com

ATTACHMENT 5

HYDROCAD OUTPUT



Ex. CB

Subcat Reach Pond Link

Routing Diagram for 21006-Pre
Prepared by DM Roma Consulting Engineers, Printed 7/14/2021

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=40,985 sf 9.91% Impervious Runoff Depth=2.65"
Flow Length=520' Tc=17.4 min CN=70 Runoff=2.05 cfs 9,042 cf

Subcatchment 2: Runoff Area=243,110 sf 0.00% Impervious Runoff Depth=0.30"
Flow Length=642' Tc=21.8 min CN=37 Runoff=0.35 cfs 5,981 cf

Subcatchment 3: Runoff Area=1,220,978 sf 0.37% Impervious Runoff Depth=0.11"
Flow Length=2,497' Tc=41.8 min CN=32 Runoff=0.38 cfs 10,721 cf

Link SP1: Ex. CB Inflow=2.05 cfs 9,042 cf
Primary=2.05 cfs 9,042 cf

Link SP2: Inflow=0.35 cfs 5,981 cf
Primary=0.35 cfs 5,981 cf

Link SP3: Inflow=0.38 cfs 10,721 cf
Primary=0.38 cfs 10,721 cf

Summary for Subcatchment 1:

Runoff = 2.05 cfs @ 12.25 hrs, Volume= 9,042 cf, Depth= 2.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	8,427	32	Woods/grass comb., Good, HSG A
	14,283	72	Woods/grass comb., Good, HSG C
	0	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	7,781	74	Existing >75% Grass cover, Good, HSG C
*	0	98	Proposed paved roads & driveways
*	2,833	98	Existing paved road
*	0	96	Proposed gravel surface
*	6,433	96	Existing gravel surface
*	0	98	Proposed walls
*	0	98	Proposed roofs
*	1,228	98	Existing roofs
	40,985	70	Weighted Average
	36,924		90.09% Pervious Area
	4,061		9.91% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	150	0.1167	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.7	76	0.1449	1.90		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.3	72	0.0629	4.04		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.3	129	0.1087	1.65		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	9	0.1300	5.80		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.2	84	0.0344	8.27	71.33	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=2.00' D=1.50' Z= 2.0 & 3.0 '/' Top.W=9.50' n= 0.030 Earth, grassed & winding
17.4	520	Total			

Summary for Subcatchment 2:

Runoff = 0.35 cfs @ 12.67 hrs, Volume= 5,981 cf, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	6,574	96	Existing Gravel Surface
	5,028	39	>75% Grass cover, Good, HSG A
	3,113	74	>75% Grass cover, Good, HSG C
	214,964	32	Woods/grass comb., Good, HSG A
	13,431	72	Woods/grass comb., Good, HSG C
	243,110	37	Weighted Average
	243,110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	87	0.0800	0.13		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
5.6	63	0.2400	0.19		**Sheet Flow, B TO C** Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	154	0.0486	1.10		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.5	178	0.1500	1.94		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.8	122	0.2500	2.50		**Shallow Concentrated Flow, E TO F** Woodland Kv= 5.0 fps
0.1	15	0.0200	2.28		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
0.3	23	0.0500	1.12		**Shallow Concentrated Flow, G TO H** Woodland Kv= 5.0 fps
21.8	642	Total			

Summary for Subcatchment 3:

Runoff = 0.38 cfs @ 15.64 hrs, Volume= 10,721 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	1,213,837	32	Woods/grass comb., Good, HSG A
	2,595	39	>75% Grass cover, Good, HSG A
*	4,546	98	Existing House and Driveway
	1,220,978	32	Weighted Average
	1,216,432		99.63% Pervious Area
	4,546		0.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1500	0.19		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
5.1	264	0.0303	0.87		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
6.9	296	0.0203	0.71		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
7.4	310	0.0193	0.69		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
6.9	575	0.0766	1.38		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.3	102	0.1569	6.38		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
1.1	338	0.0402	5.34	343.04	**Channel Flow, Seg G to H** Area= 64.3 sf Perim= 129.6' r= 0.50' n= 0.035 Earth, dense weeds
0.4	242	0.0400	8.96	141.19	**Trap/Vee/Rect Channel Flow, Seg H to I** Bot.W=3.00' D=1.50' Z= 5.0 '/' Top.W=18.00' n= 0.030 Earth, grassed & winding
0.2	220	0.1000	21.04	504.96	**Trap/Vee/Rect Channel Flow, Seg I to J** Bot.W=2.00' D=3.00' Z= 2.0 '/' Top.W=14.00' n= 0.030 Earth, grassed & winding
41.8	2,497	Total			

Summary for Link SP1: Ex. CB

Inflow Area = 40,985 sf, 9.91% Impervious, Inflow Depth = 2.65" for 25-Year event
Inflow = 2.05 cfs @ 12.25 hrs, Volume= 9,042 cf
Primary = 2.05 cfs @ 12.25 hrs, Volume= 9,042 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 243,110 sf, 0.00% Impervious, Inflow Depth = 0.30" for 25-Year event
Inflow = 0.35 cfs @ 12.67 hrs, Volume= 5,981 cf
Primary = 0.35 cfs @ 12.67 hrs, Volume= 5,981 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 1,220,978 sf, 0.37% Impervious, Inflow Depth = 0.11" for 25-Year event
Inflow = 0.38 cfs @ 15.64 hrs, Volume= 10,721 cf
Primary = 0.38 cfs @ 15.64 hrs, Volume= 10,721 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=40,985 sf 9.91% Impervious Runoff Depth=0.77"
Flow Length=520' Tc=17.4 min CN=70 Runoff=0.53 cfs 2,632 cf

Subcatchment 2: Runoff Area=243,110 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=642' Tc=21.8 min CN=37 Runoff=0.00 cfs 0 cf

Subcatchment 3: Runoff Area=1,220,978 sf 0.37% Impervious Runoff Depth=0.00"
Flow Length=2,497' Tc=41.8 min CN=32 Runoff=0.00 cfs 0 cf

Link SP1: Ex. CB Inflow=0.53 cfs 2,632 cf
Primary=0.53 cfs 2,632 cf

Link SP2: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link SP3: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment 1: Runoff Area=40,985 sf 9.91% Impervious Runoff Depth=1.74"
Flow Length=520' Tc=17.4 min CN=70 Runoff=1.32 cfs 5,960 cf

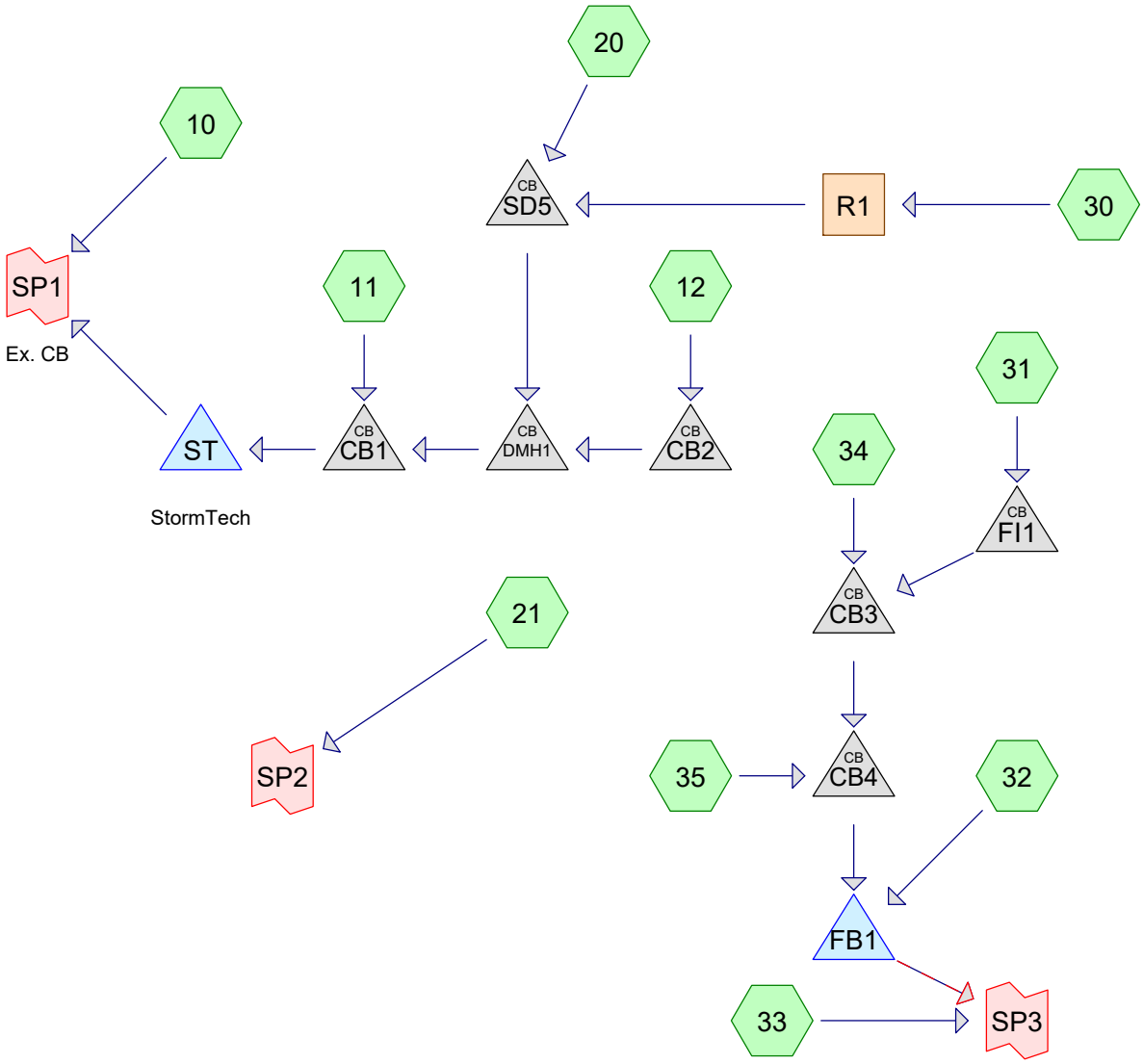
Subcatchment 2: Runoff Area=243,110 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=642' Tc=21.8 min CN=37 Runoff=0.06 cfs 1,587 cf

Subcatchment 3: Runoff Area=1,220,978 sf 0.37% Impervious Runoff Depth=0.01"
Flow Length=2,497' Tc=41.8 min CN=32 Runoff=0.04 cfs 577 cf

Link SP1: Ex. CB Inflow=1.32 cfs 5,960 cf
Primary=1.32 cfs 5,960 cf

Link SP2: Inflow=0.06 cfs 1,587 cf
Primary=0.06 cfs 1,587 cf

Link SP3: Inflow=0.04 cfs 577 cf
Primary=0.04 cfs 577 cf



Subcat Reach Pond Link

Routing Diagram for 21006-Post

Prepared by DM Roma Consulting Engineers, Printed 7/14/2021

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Runoff Area=41,523 sf 16.11% Impervious Runoff Depth=2.56"
Flow Length=520' Tc=17.4 min CN=69 Runoff=2.00 cfs 8,849 cf

Subcatchment11: Runoff Area=33,980 sf 24.54% Impervious Runoff Depth=2.21"
Flow Length=410' Tc=14.4 min CN=65 Runoff=1.50 cfs 6,249 cf

Subcatchment12: Runoff Area=12,904 sf 64.60% Impervious Runoff Depth=3.50"
Flow Length=333' Tc=6.0 min CN=79 Runoff=1.19 cfs 3,765 cf

Subcatchment20: Runoff Area=171,977 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=628' Tc=21.4 min CN=32 Runoff=0.05 cfs 1,510 cf

Subcatchment21: Runoff Area=30,252 sf 6.19% Impervious Runoff Depth=0.34"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.07 cfs 861 cf

Subcatchment30: Runoff Area=799,120 sf 0.00% Impervious Runoff Depth=0.11"
Flow Length=2,316' Tc=41.8 min CN=32 Runoff=0.25 cfs 7,017 cf

Subcatchment31: Runoff Area=211,666 sf 4.47% Impervious Runoff Depth=0.25"
Flow Length=1,036' Tc=22.0 min CN=36 Runoff=0.20 cfs 4,438 cf

Subcatchment32: Runoff Area=64,143 sf 12.62% Impervious Runoff Depth=0.72"
Flow Length=497' Tc=20.0 min CN=45 Runoff=0.51 cfs 3,864 cf

Subcatchment33: Runoff Area=80,394 sf 2.46% Impervious Runoff Depth=0.21"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.05 cfs 1,411 cf

Subcatchment34: Runoff Area=25,400 sf 49.69% Impervious Runoff Depth=2.47"
Flow Length=176' Tc=6.6 min CN=68 Runoff=1.61 cfs 5,224 cf

Subcatchment35: Runoff Area=33,757 sf 54.27% Impervious Runoff Depth=2.74"
Flow Length=224' Tc=12.7 min CN=71 Runoff=1.97 cfs 7,704 cf

Reach R1: Avg. Flow Depth=0.06' Max Vel=2.01 fps Inflow=0.25 cfs 7,017 cf
n=0.030 L=394.0' S=0.0799 '/' Capacity=208.12 cfs Outflow=0.25 cfs 7,017 cf

Pond CB1: Peak Elev=293.19' Inflow=2.31 cfs 18,542 cf
15.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=2.31 cfs 18,542 cf

Pond CB2: Peak Elev=304.16' Inflow=1.19 cfs 3,765 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=1.19 cfs 3,765 cf

Pond CB3: Peak Elev=321.79' Inflow=1.61 cfs 9,662 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=1.61 cfs 9,662 cf

Pond CB4: Peak Elev=321.60' Inflow=3.33 cfs 17,366 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0050 '/' Outflow=3.33 cfs 17,366 cf

Pond DMH1: Peak Elev=296.91' Inflow=1.19 cfs 12,293 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=1.19 cfs 12,293 cf

Pond FB1: Peak Elev=312.81' Storage=12,071 cf Inflow=3.46 cfs 21,229 cf
Primary=0.34 cfs 21,231 cf Secondary=0.00 cfs 0 cf Outflow=0.34 cfs 21,231 cf

Pond FI1: Peak Elev=323.41' Inflow=0.20 cfs 4,438 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.20 cfs 4,438 cf

Pond SD5: Peak Elev=297.33' Inflow=0.30 cfs 8,527 cf
12.0" Round Culvert n=0.013 L=34.0' S=0.0079 '/' Outflow=0.30 cfs 8,527 cf

Pond ST: StormTech Peak Elev=293.00' Storage=1,869 cf Inflow=2.31 cfs 18,542 cf
Outflow=2.69 cfs 18,541 cf

Link SP1: Ex. CB Inflow=4.66 cfs 27,390 cf
Primary=4.66 cfs 27,390 cf

Link SP2: Inflow=0.07 cfs 861 cf
Primary=0.07 cfs 861 cf

Link SP3: Inflow=0.38 cfs 22,642 cf
Primary=0.38 cfs 22,642 cf

Summary for Subcatchment 10:

Runoff = 2.00 cfs @ 12.25 hrs, Volume= 8,849 cf, Depth= 2.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	8,090	32	Woods/grass comb., Good, HSG A
	14,129	72	Woods/grass comb., Good, HSG C
	2,922	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	4,980	74	Existing >75% Grass cover, Good, HSG C
*	2,737	98	Proposed paved roads & driveways
*	2,726	98	Existing paved road
*	0	96	Proposed gravel surface
*	4,711	96	Existing gravel surface
*	0	98	Proposed walls
*	0	98	Proposed roofs
*	1,228	98	Existing roofs
	41,523	69	Weighted Average
	34,832		83.89% Pervious Area
	6,691		16.11% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.9	150	0.1167	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.7	76	0.1449	1.90		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.3	72	0.0629	4.04		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
1.3	129	0.1087	1.65		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
0.0	9	0.1300	5.80		**Shallow Concentrated Flow, Seg E to F** Unpaved Kv= 16.1 fps
0.2	84	0.0344	8.27	71.33	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=2.00' D=1.50' Z= 2.0 & 3.0 '/' Top.W=9.50' n= 0.030 Earth, grassed & winding
17.4	520	Total			

Summary for Subcatchment 11:

Runoff = 1.50 cfs @ 12.21 hrs, Volume= 6,249 cf, Depth= 2.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	10,757	32	Woods/grass comb., Good, HSG A
	9,700	72	Woods/grass comb., Good, HSG C
	1,168	39	>75% Grass cover, Good, HSG A
	3,576	74	>75% Grass cover, Good, HSG C
*	7,549	98	Proposed paved roads w/curbs & sewers
*	441	96	Proposed gravel surface
*	789	98	Proposed walls
	33,980	65	Weighted Average
	25,642		75.46% Pervious Area
	8,338		24.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	150	0.1567	0.19		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.7	85	0.1679	2.05		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.0	18	0.4697	11.03		**Shallow Concentrated Flow, Seg C to D** Unpaved Kv= 16.1 fps
0.2	47	0.0365	3.88		**Shallow Concentrated Flow, Seg D to E** Paved Kv= 20.3 fps
0.3	110	0.0219	6.64	41.67	**Trap/Vee/Rect Channel Flow, Seg E to F** Bot.W=0.00' D=0.50' Z= 50.0 & 0.2 '/' Top.W=25.10' n= 0.013 Asphalt, smooth
14.4	410	Total			

Summary for Subcatchment 12:

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 3,765 cf, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	4,038	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	6,757	98	Proposed paved roads w/curbs & sewers
*	530	96	Proposed gravel surface
*	243	98	Proposed walls
*	1,336	98	Proposed roofs
	12,904	79	Weighted Average
	4,568		35.40% Pervious Area
	8,336		64.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.0	90	0.0248	1.44		**Sheet Flow, Seg A to B** Smooth surfaces n= 0.011 P2= 3.10"
0.3	243	0.0895	13.42	84.23	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=0.00' D=0.50' Z= 50.0 & 0.2 '/' Top.W=25.10' n= 0.013 Asphalt, smooth
1.3	333	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 20:

Runoff = 0.05 cfs @ 15.29 hrs, Volume= 1,510 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	5,783	39	New Grass A
	166,194	32	Woods/grass comb., Good, HSG A
	171,977	32	Weighted Average
	171,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	87	0.0800	0.13		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
5.6	63	0.2400	0.19		**Sheet Flow, B TO C** Woods: Light underbrush n= 0.400 P2= 3.10"
2.3	154	0.0486	1.10		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.5	178	0.1500	1.94		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.7	99	0.2500	2.50		**Shallow Concentrated Flow, E TO F** Woodland Kv= 5.0 fps
0.1	47	0.0800	14.88	208.25	**Trap/Vee/Rect Channel Flow, F TO G** Bot.W=2.00' D=2.00' Z= 3.0 & 2.0 '/' Top.W=12.00' n= 0.030
21.4	628	Total			

Summary for Subcatchment 21:

Runoff = 0.07 cfs @ 12.50 hrs, Volume= 861 cf, Depth= 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	21,947	32	Woods/grass comb., Good, HSG A
	6,433	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	0	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	1,872	98	Proposed roofs
	30,252	38	Weighted Average
	28,380		93.81% Pervious Area
	1,872		6.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	42	0.0475	0.14		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
7.5	100	0.2900	0.22		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.10"
12.6	142	Total			

Summary for Subcatchment 30:

Runoff = 0.25 cfs @ 15.64 hrs, Volume= 7,017 cf, Depth= 0.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	792,184	32	Woods/grass comb., Good, HSG A
	6,936	39	>75% Grass cover, Good, HSG A
*	0	98	Proposed paved roads w/curbs & sewers
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	0	98	Proposed roofs
	799,120	32	Weighted Average
	799,120		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.5	150	0.1500	0.19		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
5.1	264	0.0303	0.87		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
6.9	296	0.0203	0.71		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
7.4	310	0.0193	0.69		**Shallow Concentrated Flow, Seg D to E** Woodland Kv= 5.0 fps
6.9	575	0.0766	1.38		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.3	102	0.1569	6.38		**Shallow Concentrated Flow, Seg F to G** Unpaved Kv= 16.1 fps
0.7	236	0.0402	5.34	343.04	**Channel Flow, Seg G to H** Area= 64.3 sf Perim= 129.6' r= 0.50' n= 0.035 Earth, dense weeds
0.5	196	0.0206	6.40	55.20	**Trap/Vee/Rect Channel Flow, Seg H to I** Bot.W=2.00' D=1.50' Z= 2.0 & 3.0 '/' Top.W=9.50' n= 0.030 Earth, grassed & winding
0.5	187	0.0190	6.15	53.01	**Trap/Vee/Rect Channel Flow, Seg I to J** Bot.W=2.00' D=1.50' Z= 2.0 & 3.0 '/' Top.W=9.50' n= 0.030 Earth, grassed & winding
41.8	2,316	Total			

Summary for Subcatchment 31:

Runoff = 0.20 cfs @ 12.76 hrs, Volume= 4,438 cf, Depth= 0.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	181,172	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	18,449	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	2,594	74	Existing >75% Grass cover, Good, HSG C
*	0	98	Proposed paved roads & driveways
*	4,546	98	Existing paved driveway
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	4,905	98	Proposed roofs
	211,666	36	Weighted Average
	202,215		95.53% Pervious Area
	9,451		4.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.9	150	0.1400	0.18		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
4.3	284	0.0493	1.11		**Shallow Concentrated Flow, Seg B to C** Woodland Kv= 5.0 fps
0.8	124	0.2576	2.54		**Shallow Concentrated Flow, Seg C to D** Woodland Kv= 5.0 fps
0.4	134	0.1045	5.20		**Shallow Concentrated Flow, Seg D to E** Unpaved Kv= 16.1 fps
2.1	160	0.0624	1.25		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.5	184	0.0218	6.58	56.79	**Trap/Vee/Rect Channel Flow, Seg F to G** Bot.W=2.00' D=1.50' Z= 2.0 & 3.0 '/' Top.W=9.50' n= 0.030 Earth, grassed & winding
22.0	1,036	Total			

Summary for Subcatchment 32:

Runoff = 0.51 cfs @ 12.43 hrs, Volume= 3,864 cf, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	14,766	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	41,279	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	0	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	8,098	98	Proposed roofs
	64,143	45	Weighted Average
	56,045		87.38% Pervious Area
	8,098		12.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.7	76	0.0170	0.07		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.3	421	0.0149	5.42	52.85	**Trap/Vee/Rect Channel Flow, Seg B to C** Bot.W=2.00' D=1.50' Z= 3.0 '/' Top.W=11.00' n= 0.030
20.0	497	Total			

Summary for Subcatchment 33:

Runoff = 0.05 cfs @ 13.85 hrs, Volume= 1,411 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	65,404	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	13,014	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	0	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	1,976	98	Proposed roofs
	80,394	35	Weighted Average
	78,418		97.54% Pervious Area
	1,976		2.46% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	80	0.1750	0.17		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
12.4	70	0.0400	0.09		**Sheet Flow, Seg B to C** Woods: Light underbrush n= 0.400 P2= 3.10"
2.9	259	0.0880	1.48		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
23.0	409	Total			

Summary for Subcatchment 34:

Runoff = 1.61 cfs @ 12.10 hrs, Volume= 5,224 cf, Depth= 2.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	12,780	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	7,463	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	0	96	Proposed gravel surface
*	0	98	Proposed walls
*	5,157	98	Proposed roofs
	25,400	68	Weighted Average
	12,780		50.31% Pervious Area
	12,620		49.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.2	28	0.0200	0.09		**Sheet Flow, Seg B to C** Grass: Dense n= 0.240 P2= 3.10"
1.4	148	0.0084	1.78	11.18	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=0.00' D=0.50' Z= 0.2 & 50.0 '/' Top.W=25.10' n= 0.030 Earth, grassed & winding
6.6	176	Total			

Summary for Subcatchment 35:

Runoff = 1.97 cfs @ 12.18 hrs, Volume= 7,704 cf, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
	0	72	Woods/grass comb., Good, HSG C
	15,173	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	10,693	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	264	96	Proposed gravel surface
*	0	98	Proposed walls
*	7,627	98	Proposed roofs
	33,757	71	Weighted Average
	15,437		45.73% Pervious Area
	18,320		54.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	74	0.0200	0.11		**Sheet Flow, Seg A to B** Grass: Dense n= 0.240 P2= 3.10"
1.3	150	0.0100	1.94	12.20	**Trap/Vee/Rect Channel Flow, Seg C to D** Bot.W=0.00' D=0.50' Z= 50.0 & 0.2 '/' Top.W=25.10' n= 0.030 Earth, grassed & winding
12.7	224	Total			

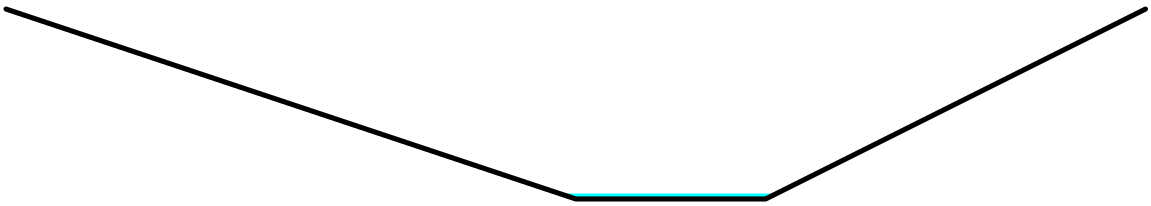
Summary for Reach R1:

Inflow Area = 799,120 sf, 0.00% Impervious, Inflow Depth = 0.11" for 25-Year event
Inflow = 0.25 cfs @ 15.64 hrs, Volume= 7,017 cf
Outflow = 0.25 cfs @ 15.65 hrs, Volume= 7,017 cf, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.01 fps, Min. Travel Time= 3.3 min
Avg. Velocity = 1.63 fps, Avg. Travel Time= 4.0 min

Peak Storage= 49 cf @ 15.65 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 14.0 sf, Capacity= 208.12 cfs

2.00' x 2.00' deep channel, n= 0.030
Side Slope Z-value= 3.0 2.0 '/' Top Width= 12.00'
Length= 394.0' Slope= 0.0799 '/'
Inlet Invert= 328.50', Outlet Invert= 297.02'



Summary for Pond CB1:

Inflow Area = 1,017,981 sf, 1.64% Impervious, Inflow Depth = 0.22" for 25-Year event
Inflow = 2.31 cfs @ 12.15 hrs, Volume= 18,542 cf
Outflow = 2.31 cfs @ 12.15 hrs, Volume= 18,542 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.31 cfs @ 12.15 hrs, Volume= 18,542 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.19' @ 12.26 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	291.40'	**15.0" Round SD-3** L= 4.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 291.40' / 291.16' S= 0.0600 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.00 cfs @ 12.15 hrs HW=292.46' TW=292.70' (Dynamic Tailwater)
1=SD-3 (Controls 0.00 cfs)

Summary for Pond CB2:

Inflow Area = 12,904 sf, 64.60% Impervious, Inflow Depth = 3.50" for 25-Year event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 3,765 cf
Outflow = 1.19 cfs @ 12.09 hrs, Volume= 3,765 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.09 hrs, Volume= 3,765 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 304.16' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	303.50'	**12.0" Round SD-6** L= 110.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 303.50' / 296.50' S= 0.0636 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.09 hrs HW=304.15' TW=296.90' (Dynamic Tailwater)
1=SD-6 (Inlet Controls 1.17 cfs @ 2.16 fps)

Summary for Pond CB3:

Inflow Area = 237,066 sf, 9.31% Impervious, Inflow Depth = 0.49" for 25-Year event
Inflow = 1.61 cfs @ 12.10 hrs, Volume= 9,662 cf
Outflow = 1.61 cfs @ 12.10 hrs, Volume= 9,662 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.61 cfs @ 12.10 hrs, Volume= 9,662 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 321.79' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	320.75'	**12.0" Round SD-8** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.75' / 320.55' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.08 cfs @ 12.10 hrs HW=321.70' TW=321.57' (Dynamic Tailwater)
1=SD-8 (Inlet Controls 1.08 cfs @ 1.39 fps)

Summary for Pond CB4:

Inflow Area = 270,823 sf, 14.91% Impervious, Inflow Depth = 0.77" for 25-Year event
Inflow = 3.33 cfs @ 12.14 hrs, Volume= 17,366 cf
Outflow = 3.33 cfs @ 12.14 hrs, Volume= 17,366 cf, Atten= 0%, Lag= 0.0 min
Primary = 3.33 cfs @ 12.14 hrs, Volume= 17,366 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Peak Elev= 321.60' @ 12.14 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	320.45'	**15.0" Round SD-9** L= 111.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.45' / 319.90' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=3.30 cfs @ 12.14 hrs HW=321.59' TW=310.84' (Dynamic Tailwater)
↑—**1=SD-9** (Barrel Controls 3.30 cfs @ 3.68 fps)

Summary for Pond DMH1:

Inflow Area = 984,001 sf, 0.85% Impervious, Inflow Depth = 0.15" for 25-Year event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 12,293 cf
Outflow = 1.19 cfs @ 12.09 hrs, Volume= 12,293 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.19 cfs @ 12.09 hrs, Volume= 12,293 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 296.91' @ 12.09 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	296.25'	**12.0" Round SD-4** L= 198.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 296.25' / 292.39' S= 0.0195 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.17 cfs @ 12.09 hrs HW=296.90' TW=292.25' (Dynamic Tailwater)
↑—**1=SD-4** (Inlet Controls 1.17 cfs @ 2.16 fps)

Summary for Pond FB1:

Inflow Area = 334,966 sf, 14.48% Impervious, Inflow Depth = 0.76" for 25-Year event
Inflow = 3.46 cfs @ 12.15 hrs, Volume= 21,229 cf
Outflow = 0.34 cfs @ 16.39 hrs, Volume= 21,231 cf, Atten= 90%, Lag= 254.1 min
Primary = 0.34 cfs @ 16.39 hrs, Volume= 21,231 cf
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 312.81' @ 16.39 hrs Surf.Area= 5,649 sf Storage= 12,071 cf

Plug-Flow detention time= 871.1 min calculated for 21,216 cf (100% of inflow)
Center-of-Mass det. time= 872.5 min (1,769.7 - 897.2)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	19,505 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
310.00	3,000	294.3	0	0	3,000
312.00	4,881	332.0	7,805	7,805	4,981
314.00	6,876	367.9	11,700	19,505	7,099

Device	Routing	Invert	Outlet Devices
#1	Primary	305.83'	**12.0" Round 12" SD** L= 47.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.83' / 302.00' S= 0.0815 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	307.83'	**1.0" Vert. 1" Orifice at end of 4"UD** C= 0.600
#3	Device 2	310.00'	**2.410 in/hr Exfiltration over Surface area**
#4	Device 1	311.50'	**2.5" Vert. Orifice/Grate** C= 0.600
#5	Device 1	312.80'	**Neenah R4345 Beehive Grate Light Duty-req. structure** Head (feet) 0.00 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.50 0.60 0.70 0.80 0.90 1.00 Disch. (cfs) 0.000 0.900 1.600 2.500 3.500 4.000 4.600 5.300 6.800 7.500 8.100 8.600 9.100 9.600
#6	Secondary	313.00'	**6.0' long x 12.0' 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) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=0.34 cfs @ 16.39 hrs HW=312.81' TW=0.00' (Dynamic Tailwater)
- **1=12" SD** (Passes 0.34 cfs of 7.60 cfs potential flow)
  - **2=1" Orifice at end of 4"UD** (Orifice Controls 0.06 cfs @ 10.70 fps)
    - **3=Exfiltration** (Passes 0.06 cfs of 0.32 cfs potential flow)
  - **4=Orifice/Grate** (Orifice Controls 0.18 cfs @ 5.29 fps)
  - **5=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 0.10 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=310.00' TW=0.00' (Dynamic Tailwater)
- **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond FI1:

Inflow Area = 211,666 sf, 4.47% Impervious, Inflow Depth = 0.25" for 25-Year event
Inflow = 0.20 cfs @ 12.76 hrs, Volume= 4,438 cf
Outflow = 0.20 cfs @ 12.76 hrs, Volume= 4,438 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.20 cfs @ 12.76 hrs, Volume= 4,438 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.41' @ 12.76 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	323.15'	**12.0" Round SD-7** L= 123.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 323.15' / 322.55' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.20 cfs @ 12.76 hrs HW=323.41' TW=321.16' (Dynamic Tailwater)
- **1=SD-7** (Barrel Controls 0.20 cfs @ 1.86 fps)

Summary for Pond SD5:

Inflow Area = 971,097 sf, 0.00% Impervious, Inflow Depth = 0.11" for 25-Year event
Inflow = 0.30 cfs @ 15.59 hrs, Volume= 8,527 cf
Outflow = 0.30 cfs @ 15.59 hrs, Volume= 8,527 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.30 cfs @ 15.59 hrs, Volume= 8,527 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 297.33' @ 15.59 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	297.02'	**12.0" Round SD-5** L= 34.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 297.02' / 296.75' S= 0.0079 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.30 cfs @ 15.59 hrs HW=297.33' TW=296.58' (Dynamic Tailwater)
1=SD-5 (Inlet Controls 0.30 cfs @ 1.49 fps)

Summary for Pond ST: StormTech

Inflow Area = 1,017,981 sf, 1.64% Impervious, Inflow Depth = 0.22" for 25-Year event
Inflow = 2.31 cfs @ 12.15 hrs, Volume= 18,542 cf
Outflow = 2.69 cfs @ 12.21 hrs, Volume= 18,541 cf, Atten= 0%, Lag= 4.1 min
Primary = 2.69 cfs @ 12.21 hrs, Volume= 18,541 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.00' @ 12.22 hrs Surf.Area= 1,481 sf Storage= 1,869 cf

Plug-Flow detention time= 64.7 min calculated for 18,528 cf (100% of inflow)
Center-of-Mass det. time= 65.0 min (1,033.5 - 968.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	290.65'	1,058 cf	**18.17'W x 81.52'L x 2.33'H Field A** 3,456 cf Overall - 811 cf Embedded = 2,645 cf x 40.0% Voids
#2A	291.15'	811 cf	**ADS_StormTech SC-310 +Cap** x 55 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 55 Chambers in 5 Rows
		1,869 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	289.65'	**12.0" Round Culvert** L= 6.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 289.65' / 289.15' S= 0.0833 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Device 1	292.73'	**6.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

#3 Device 1 290.65' **3.0" Vert. Orifice/Grate** C= 0.600

Primary OutFlow Max=2.40 cfs @ 12.21 hrs HW=292.97' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 2.40 cfs of 6.36 cfs potential flow)
2=Broad-Crested Rectangular Weir (Weir Controls 2.05 cfs @ 1.40 fps)
3=Orifice/Grate (Orifice Controls 0.35 cfs @ 7.14 fps)

Summary for Link SP1: Ex. CB

Inflow Area = 1,059,504 sf, 2.21% Impervious, Inflow Depth = 0.31" for 25-Year event
Inflow = 4.66 cfs @ 12.22 hrs, Volume= 27,390 cf
Primary = 4.66 cfs @ 12.22 hrs, Volume= 27,390 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP2:

Inflow Area = 30,252 sf, 6.19% Impervious, Inflow Depth = 0.34" for 25-Year event
Inflow = 0.07 cfs @ 12.50 hrs, Volume= 861 cf
Primary = 0.07 cfs @ 12.50 hrs, Volume= 861 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Summary for Link SP3:

Inflow Area = 415,360 sf, 12.15% Impervious, Inflow Depth = 0.65" for 25-Year event
Inflow = 0.38 cfs @ 16.37 hrs, Volume= 22,642 cf
Primary = 0.38 cfs @ 16.37 hrs, Volume= 22,642 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Runoff Area=41,523 sf 16.11% Impervious Runoff Depth=0.72"
Flow Length=520' Tc=17.4 min CN=69 Runoff=0.49 cfs 2,505 cf

Subcatchment11: Runoff Area=33,980 sf 24.54% Impervious Runoff Depth=0.55"
Flow Length=410' Tc=14.4 min CN=65 Runoff=0.29 cfs 1,565 cf

Subcatchment12: Runoff Area=12,904 sf 64.60% Impervious Runoff Depth=1.26"
Flow Length=333' Tc=6.0 min CN=79 Runoff=0.42 cfs 1,357 cf

Subcatchment20: Runoff Area=171,977 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=628' Tc=21.4 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment21: Runoff Area=30,252 sf 6.19% Impervious Runoff Depth=0.00"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.00 cfs 0 cf

Subcatchment30: Runoff Area=799,120 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=2,316' Tc=41.8 min CN=32 Runoff=0.00 cfs 0 cf

Subcatchment31: Runoff Area=211,666 sf 4.47% Impervious Runoff Depth=0.00"
Flow Length=1,036' Tc=22.0 min CN=36 Runoff=0.00 cfs 0 cf

Subcatchment32: Runoff Area=64,143 sf 12.62% Impervious Runoff Depth=0.03"
Flow Length=497' Tc=20.0 min CN=45 Runoff=0.01 cfs 178 cf

Subcatchment33: Runoff Area=80,394 sf 2.46% Impervious Runoff Depth=0.00"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.00 cfs 0 cf

Subcatchment34: Runoff Area=25,400 sf 49.69% Impervious Runoff Depth=0.68"
Flow Length=176' Tc=6.6 min CN=68 Runoff=0.38 cfs 1,437 cf

Subcatchment35: Runoff Area=33,757 sf 54.27% Impervious Runoff Depth=0.82"
Flow Length=224' Tc=12.7 min CN=71 Runoff=0.53 cfs 2,303 cf

Reach R1: Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0 cf
n=0.030 L=394.0' S=0.0799 '/' Capacity=208.12 cfs Outflow=0.00 cfs 0 cf

Pond CB1: Peak Elev=291.80' Inflow=0.58 cfs 2,922 cf
15.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=0.58 cfs 2,922 cf

Pond CB2: Peak Elev=303.87' Inflow=0.42 cfs 1,357 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=0.42 cfs 1,357 cf

Pond CB3: Peak Elev=321.11' Inflow=0.38 cfs 1,437 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=0.38 cfs 1,437 cf

Pond CB4: Peak Elev=320.96' Inflow=0.85 cfs 3,740 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0050 '/' Outflow=0.85 cfs 3,740 cf

Pond DMH1: Peak Elev=296.62' Inflow=0.42 cfs 1,357 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=0.42 cfs 1,357 cf

Pond FB1: Peak Elev=310.67' Storage=2,207 cf Inflow=0.85 cfs 3,918 cf
Primary=0.04 cfs 3,921 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 3,921 cf

Pond FI1: Peak Elev=323.15' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.00 cfs 0 cf

Pond SD5: Peak Elev=297.02' Inflow=0.00 cfs 0 cf
12.0" Round Culvert n=0.013 L=34.0' S=0.0079 '/' Outflow=0.00 cfs 0 cf

Pond ST: StormTech Peak Elev=291.52' Storage=715 cf Inflow=0.58 cfs 2,922 cf
Outflow=0.20 cfs 2,921 cf

Link SP1: Ex. CB Inflow=0.67 cfs 5,426 cf
Primary=0.67 cfs 5,426 cf

Link SP2: Inflow=0.00 cfs 0 cf
Primary=0.00 cfs 0 cf

Link SP3: Inflow=0.04 cfs 3,921 cf
Primary=0.04 cfs 3,921 cf

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment10: Runoff Area=41,523 sf 16.11% Impervious Runoff Depth=1.67"
Flow Length=520' Tc=17.4 min CN=69 Runoff=1.28 cfs 5,786 cf

Subcatchment11: Runoff Area=33,980 sf 24.54% Impervious Runoff Depth=1.39"
Flow Length=410' Tc=14.4 min CN=65 Runoff=0.90 cfs 3,946 cf

Subcatchment12: Runoff Area=12,904 sf 64.60% Impervious Runoff Depth=2.46"
Flow Length=333' Tc=6.0 min CN=79 Runoff=0.84 cfs 2,646 cf

Subcatchment20: Runoff Area=171,977 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=628' Tc=21.4 min CN=32 Runoff=0.01 cfs 81 cf

Subcatchment21: Runoff Area=30,252 sf 6.19% Impervious Runoff Depth=0.10"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.01 cfs 255 cf

Subcatchment30: Runoff Area=799,120 sf 0.00% Impervious Runoff Depth=0.01"
Flow Length=2,316' Tc=41.8 min CN=32 Runoff=0.02 cfs 378 cf

Subcatchment31: Runoff Area=211,666 sf 4.47% Impervious Runoff Depth=0.06"
Flow Length=1,036' Tc=22.0 min CN=36 Runoff=0.04 cfs 1,022 cf

Subcatchment32: Runoff Area=64,143 sf 12.62% Impervious Runoff Depth=0.32"
Flow Length=497' Tc=20.0 min CN=45 Runoff=0.15 cfs 1,727 cf

Subcatchment33: Runoff Area=80,394 sf 2.46% Impervious Runoff Depth=0.04"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.01 cfs 270 cf

Subcatchment34: Runoff Area=25,400 sf 49.69% Impervious Runoff Depth=1.60"
Flow Length=176' Tc=6.6 min CN=68 Runoff=1.02 cfs 3,388 cf

Subcatchment35: Runoff Area=33,757 sf 54.27% Impervious Runoff Depth=1.82"
Flow Length=224' Tc=12.7 min CN=71 Runoff=1.28 cfs 5,117 cf

Reach R1: Avg. Flow Depth=0.01' Max Vel=1.01 fps Inflow=0.02 cfs 378 cf
n=0.030 L=394.0' S=0.0799 '/' Capacity=208.12 cfs Outflow=0.02 cfs 378 cf

Pond CB1: Peak Elev=292.88' Inflow=1.48 cfs 7,051 cf
15.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=1.48 cfs 7,051 cf

Pond CB2: Peak Elev=304.03' Inflow=0.84 cfs 2,646 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=0.84 cfs 2,646 cf

Pond CB3: Peak Elev=321.45' Inflow=1.02 cfs 4,410 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=1.02 cfs 4,410 cf

Pond CB4: Peak Elev=321.31' Inflow=2.14 cfs 9,527 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0050 '/' Outflow=2.14 cfs 9,527 cf

Pond DMH1: Peak Elev=296.78' Inflow=0.84 cfs 3,105 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=0.84 cfs 3,105 cf

Pond FB1: Peak Elev=311.82' Storage=6,936 cf Inflow=2.14 cfs 11,254 cf
Primary=0.13 cfs 11,256 cf Secondary=0.00 cfs 0 cf Outflow=0.13 cfs 11,256 cf

Pond FI1: Peak Elev=323.26' Inflow=0.04 cfs 1,022 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.04 cfs 1,022 cf

Pond SD5: Peak Elev=297.11' Inflow=0.03 cfs 459 cf
12.0" Round Culvert n=0.013 L=34.0' S=0.0079 '/' Outflow=0.03 cfs 459 cf

Pond ST: StormTech Peak Elev=292.85' Storage=1,791 cf Inflow=1.48 cfs 7,051 cf
Outflow=1.03 cfs 7,050 cf

Link SP1: Ex. CB Inflow=2.03 cfs 12,835 cf
Primary=2.03 cfs 12,835 cf

Link SP2: Inflow=0.01 cfs 255 cf
Primary=0.01 cfs 255 cf

Link SP3: Inflow=0.14 cfs 11,526 cf
Primary=0.14 cfs 11,526 cf

ATTACHMENT 6

INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN

DM ROMA
CONSULTING ENGINEERS

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

(Prepared by Jayson Haskell, PE #13002)

RAYMOND HILLS VILLAGE
WEBBS MILLS ROAD
RAYMOND, MAINE

Responsible Party

Owner: Raymond Hills, LLC
9 Davis Farm Road
Raymond, Maine 04071

The owner/applicant is responsible for the maintenance of all stormwater management structures and related site components and the keeping of a maintenance log book with service records. Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

The procedures outlined in this plan are provided as a general overview of the anticipated practices to be utilized on this site. In some instances, additional measures may be required due to unexpected conditions. *The Maine Erosion and Sedimentation Control BMP* and *Stormwater Management for Maine: Best Management Practices* Manuals published by the MDEP should be referenced for additional information.

During Construction

1. **Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as 24 hours before and after a storm event generating more than 0.5 inch of rainfall over a 24-hour period and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct the inspections.

2. **Maintenance:** Erosion controls shall be maintained in effective operating condition until areas are permanently stabilized. If best management practices (BMPs) need to be repaired, the repair work should be initiated upon discovery of the problem but no later than the end of the next workday. If BMPs need to be maintained or modified, additional BMPs are necessary, or

other corrective action is needed, implementation must be completed within seven calendar days and prior to any rainfall event.

3. **Construction vehicles and equipment:** Construction vehicles and equipment shall not be driven or stored within the underdrained filter basin. To ensure the basin functions as designed perpetually, prohibiting vehicles and equipment from these areas will limit the risk of inhibiting the function of the basin due to compaction.

4. **Snow Storage:** The proposed underdrained filter basin shall not be utilized for snow storage. Snow storage areas shall be located away from the basin, and in areas that will direct snow melt runoff into one of the basins on site.

5. **Documentation:** A report summarizing the inspections and any corrective action taken must be maintained on site. The log must include the name(s) and qualifications of the person making the inspections; the date(s) of the inspections; and the major observations about the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and location(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken. The log must be made accessible to MDEP and Town staff, and a copy must be provided upon request. The owner shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

Housekeeping

1. **Spill prevention:** Controls must be used to prevent pollutants from construction and waste materials on site to enter stormwater, which includes storage practices to minimize exposure of the materials to stormwater. The site contractor or operator must develop, and implement as necessary, appropriate spill prevention, containment, and response planning measures.

2. **Groundwater protection:** During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials. Any project proposing infiltration of stormwater must provide adequate pre-treatment of stormwater prior to discharge of stormwater to the infiltration area, or provide for treatment within the infiltration area, in order to prevent the accumulation of fines, reduction in infiltration rate, and consequent flooding and destabilization.

3. **Fugitive sediment and dust:** Actions must be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control, but other water additives may be considered as needed. A stabilized construction entrance (SCE) should be included to minimize tracking of mud and sediment. If off-site tracking occurs, public roads should be swept immediately and no less than once a week and prior to significant storm events. Operations during dry months, that experience fugitive dust problems, should wet down unpaved access roads once a week or more frequently as needed with a water additive to suppress fugitive sediment and dust.

4. **Debris and other materials:** Minimize the exposure of construction debris, building and landscaping materials, trash, fertilizers, pesticides, herbicides, detergents, sanitary waste and other materials to precipitation and stormwater runoff. These materials must be prevented from becoming a pollutant source.

5. **Excavation de-watering:** Excavation de-watering is the removal of water from trenches, foundations, coffer dams, ponds, and other areas within the construction area that retain water after excavation. In most cases the collected water is heavily silted and hinders correct and safe construction practices. The collected water removed from the ponded area, either through gravity or pumping, must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved by the Department.

6. **Authorized Non-stormwater discharges:** Identify and prevent contamination by non-stormwater discharges. Where allowed non-stormwater discharges exist, they must be identified and steps should be taken to ensure the implementation of appropriate pollution prevention measures for the non-stormwater component(s) of the discharge. Authorized non-stormwater discharges are:
   (a) Discharges from firefighting activity;
   (b) Fire hydrant flushings;
   (c) Vehicle washwater if detergents are not used and washing is limited to the exterior of vehicles (engine, undercarriage and transmission washing is prohibited);
   (d) Dust control runoff in accordance with permit conditions and Appendix (C)(3);
   (e) Routine external building washdown, not including surface paint removal, that does not involve detergents;
   (f) Pavement washwater (where spills/leaks of toxic or hazardous materials have not occurred, unless all spilled material had been removed) if detergents are not used;
   (g) Uncontaminated air conditioning or compressor condensate;
   (h) Uncontaminated groundwater or spring water;
   (i) Foundation or footer drain-water where flows are not contaminated;
   (j) Uncontaminated excavation dewatering (see requirements in Appendix C(5));
   (k) Potable water sources including waterline flushings; and
   (l) Landscape irrigation.

7. **Unauthorized non-stormwater discharges:** Approval from the Town does not authorize a discharge that is mixed with a source of non-stormwater, other than those discharges in compliance with Section 6 above. Specifically, the Town's approval does not authorize discharges of the following:
   (a) Wastewater from the washout or cleanout of concrete, stucco, paint, form release oils, curing compounds or other construction materials;
   (b) Fuels, oils or other pollutants used in vehicle and equipment operation and maintenance;
   (c) Soaps, solvents, or detergents used in vehicle and equipment washing; and
   (d) Toxic or hazardous substances from a spill or other release.

Post Construction

1. **Inspection and Corrective Action:** All stormwater measures must be maintained by the owner in effective operating condition. A qualified third-party inspector hired by the owner shall at least annually inspect the stormwater management facilities. This person should have knowledge of erosion and stormwater control including the standards and conditions of the site's approvals. The inspector shall be certified through the MDEP to inspect the stormwater infrastructure. The following areas, facilities, and measures must be inspected, and identified deficiencies must be corrected. Areas, facilities, and measures other than those listed below may also require inspection on a specific site.

   A. **Vegetated Areas:** Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

   B. **Ditches, Swales, and Open Channels:** Inspect ditches, swales, and other open channels in the spring, late fall, and after heavy rains to remove any obstructions to flow, remove accumulated sediments and debris, control vegetative growth that could obstruct flow, and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Repair any slumping side slopes as soon as practicable. The channel must receive adequate routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or side slopes.

   C. **Storm Drains:** Inspect storm drains in the spring, late fall, and after heavy rains to 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 storm drain's outlet.

   D. **Catch Basins and Outlet Control Structures:** Inspect and, if required, clean out structure at least once a year, preferably in early spring. Clean out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the structure and inlet grate.

E. **Underdrained Filter Basin:** The filter basins are not intended to function as snow storage areas. Inspector to verify that winter plowing operations are not dumping or pushing snow into the basins. The basins shall also not be used for vehicle or heavy equipment storage. Basin should be inspected after several major storm events (0.5 inches rainfall over 24 hours) to determine drawdown time during the first year. Basins to be inspected every six months thereafter with at least one inspection after a major storm event.

   The basin should drain dry within 24 to 48 hours following a one-inch storm. If ponding exceeds 48 hours, the top of the filter bed must be rototilled to reestablish the soil's filtration capacity. If water ponds on the surface of the bed for more than 72 hours, the top several inches of the filter shall be replaced with fresh material. Inspect for debris and sediment build up in the forebay and basin and remove as needed. Mowing of the basin can only occur semi-annually to a height of no less than 6 inches utilizing a hand-held string trimmer or push-mower. Any bare areas or erosion rills shall be repaired with new filter media or sandy loam then seeded and mulched. The basin should also be inspected annually for destabilization of side slopes, embankment settling and other signs of structural failure.

F. **Emergency Spillway:** Spillways should be inspected semi-annually and following major storm events for the first year and every six months thereafter to remove any obstructions to flow. Any woody vegetation growing through riprap lining must be removed. Replace riprap on areas where any underlying filter fabric is showing through the stone or where stones have been dislodged.

G. **Filterra Bioretention Units:** Once the site is fully stabilized, and paving complete the system can be activated. Once activated, inspection should occur annually thereafter, and should be observed for debris, trash and sediment accumulation, as well as general health of the plants or trees installed within the media. Maintenance protocols from the manufacture shall be followed.

H. **StormTech Chambers SC-310:** The manufacture recommends that at a minimum that annual inspections are conducted. Initially the system shall be inspected every 6 months for the first year of operation. If inspection indicates that sediment has accumulated, a measurement to determine the depth of sediment shall be performed. When an average depth of 3 inches is exceeded then clean-out shall be performed.

I. **Regular Maintenance:** Clear accumulations of winter sand along roadway and parking areas once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along pavement shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader.

J. **Documentation:** Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or

maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to Town and MDEP staff upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. Attached is a sample log.

Re-certification

Submit a certification of the following to the MDEP within three months of the expiration of each five-year interval from the date of issuance of the permit.

(a) **Identification and repair of erosion problems**. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

(b) **Inspection and repair of stormwater control system**. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the system, or portions of the system.

(c) **Maintenance**. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the Department, and the maintenance log is being maintained.

Municipalities with separate storm sewer systems regulated under the Maine Pollutant Discharge Elimination System (MPDES) Program may report on all regulated systems under their control as part of their required annual reporting in lieu of separate certification of each system. Municipalities not regulated by the MPDES Program, but that are responsible for maintenance of permitted stormwater systems, may report on multiple stormwater systems in one report.

Duration of Maintenance

Perform maintenance as described.

INSPECTION AND MAINTENANCE LOG – GENERAL INSPECTION

RAYMOND HILLS VILLAGE
WEBBS MILLS ROAD
RAYMOND, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Vegetated Areas	Inspect slopes and embankments early in Spring.			
Storm Drains	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap.			
	Clean accumulated sediment in culverts when >20% full.			
Catch Basins	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Filterra Units	Inspect annually and after major rain events to ensure that unit drains within 24-48 hours			
	Inspect annually for erosion or sediment accumulation and repair as needed.			
Stormtech SC-310 Chambers	Inspect annually for significant sediment accumulation			
	If >3" sediment accumulation, clean out system per manufacturer recommendations			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

INSPECTION AND MAINTENANCE LOG – UNDERDRAINED FILTER BASIN

RAYMOND HILLS VILLAGE
WEBBS MILLS ROAD
RAYMOND, MAINE

The following stormwater management and erosion control items shall be inspected and maintained as prescribed in the Maintenance Plan with recommended frequencies as identified below. The owner is responsible for keeping this maintenance log on file for a minimum of five years and shall provide a copy to the Town and MDEP upon request. Inspections are to be performed by a qualified third-party inspector and all corrective actions shall be performed by personnel familiar with stormwater management systems and erosion controls.

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Underdrained Filter Basin	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of filter if pond does not drain within 72 hours.			
	Mow grass no more than twice a year to no less than 6 inches in height.			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify basin not utilized for snow storage			
	Inspector to verify basin not utilized for vehicle or heavy equipment storage.			
Outlet Control Structure	Inspect to ensure that structure is properly draining.			
	Remove accumulated sediment semiannually.			
	Inspect grates/inlets and remove debris as needed.			
Emergency Spillway	Inspect and remove obstructions as necessary.			
	Remove woody vegetation.			
	Replace riprap as necessary.			

STERLING
Stormwater Maintenance Services

Stormwater Compliance Proposal

Job Name: Raymond Hills Apartments

Location: Raymond, Maine **Quote Date: 7/12/2021**

Quote Number: 19826RH **Contract Term: 5 Years**

Inspection, Maintenance, and Compliance Reporting Fees

Item #	Description	Annual Total
1	Inspection and Reporting of Stormwater Components	$1,600.00
2	Annual Maintenance of Filterra Systems	$1,200.00
3	Other Maintenance Service Fees	See Below

Notes:

1. Service pertains to annual inspection and reporting. Inspection pertains to numerous stormwater components installed on this site including (4) catch basins, (1) drain manhole, (1) field inlet, conveyance piping, (2) Filterra Systems, and (1) subsurface storage system comprised of StormTech chambers and an outlet control structure. Reporting will include photographic documentation of inspection findings and maintenance actions. Reporting service includes annual reporting to local jurisdiction as well as submittal to the Maine DEP to satisfy the 5-yr recertification program if needed.
2. Service pertains to annual maintenance of Filterra Systems. Maintenance consists of removal of sediment, debris, and trash from each stormwater facility, removal of the existing mulch from each stormwater facility, and installation of fresh mulch in each stormwater facility. Pruning of vegetation will also be performed as needed.
3. Service pertains to use of JetVac equipment as need for clean out of drainage structures, conveyance pipe, subsurface storage chambers, and outlet structures. Preferred customer JetVac rate is $235 per hour plus disposal with a 4 hour minimum. This activity will only be performed if found to be needed based on the results of the inspections.

Terms & Conditions:

1. Payment is agreed to be made within 30 days of receipt of invoice. Invoice will be sent along with a report upon completion of service activity.
2. Contract term commences upon date of 1st inspection and will run for five consecutive years from that date.
3. STERLING Stormwater Maintenance Services is not the manufacturer nor was it involved in the design of the above listed stormwater management systems and therefore accepts no responsibility for the actual performance of the storm water management systems.

As an authorized representative of the above referenced site, I hereby accept this contract and the associated terms and conditions:

Print Name:_____ Sign Here: _____ Date: _____