DM ROMA
CONSULTING ENGINEERS

August 24, 2021

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

Re: Response to Review Comments
Raymond Hills Village – An 18-Unit Condominium
Raymond Hills LLC - Applicant

Dear Alex and Planning Board Members:

We have prepared revisions to the plans and provided supplemental information for the Raymond Hills Village project in response to comments received by the Town. The following summarizes the plan changes and additional information that is attached for review.

Fire Department Comments – August 4th memo to Planning Board

1. The radius of the cul-de-sac pavement was increased by 2 feet to provide additional space for vehicle turning movements for large apparatus.
2. An additional fire hydrant will be installed so that there will be one new hydrant at STA 6+00 and one at the cul-de-sac. An existing hydrant exists at the project entrance.
3. We added Note 18 to the Subdivision Plan which designates the cul-de-sac as a fire lane and requires signs to be installed in coordination with the Fire Department.
4. We sent plans to the Town's E911 coordinator so that addresses could be assigned to each dwelling and so that the street name can be approved. We will add this information to the final plan to be signed by the Planning Board.
5. All building designs are intended to be built in conformance with the Town's sprinkler system ordinance such that sprinkler systems will not be required. We understand that the building plans will be reviewed by the Fire Department and Code Enforcement Officer to ensure compliance with the sprinkler ordinance.
6. Note 17 was added to the Subdivision Plan to require an outside service disconnect for each electrical meter box.

Town Planner Comments – August 6th Sebago Technics Review Memorandum

1. Brady Frick from Albert Frick Associates has walked the property and confirmed that there are no wetlands present on the site. We included a map in our July 14th submission prepared by Albert Frick Associates that includes a statement that there are no wetlands present within the project development area. DM Roma Consulting Engineers has also walked the site and we did not observe any areas that could potentially be classified as wetlands.
2. A copy of the Septic System Design plans and associated documents for the Engineered Wastewater Disposal System are included for review. This system will be approved by the Maine State Department of Health and Human Services as an Engineered System.
3. The Portland Water District has approved the public water main design and services to each building. A copy of the Ability to Serve letter from PWD is attached.
4. We have met with the abutting property owners, MB Properties, to ensure they are agreeable to the proposed road design and layout that will be built on their property within the Right-of-way, including some minor grading and the culvert inlet that will be built on their property. They have indicated to us that they have no objection to what is being proposed for the project on their land.

5. We have added the location of the driveway to the north to the plans, as requested.
6. Vehicle sight distance measurements are being reviewed and approved by Maine DOT as part of the driveway entrance permit. We will add the approved sight distance once we receive the permit from Maine DOT.
7. The amount of traffic expected to be generated by the development is estimated to be approximately 10 trip-ends in the peak hour and 131 total daily trips. This estimate is based on the ITE Trip Generation Manual for multi-family housing use or Residential Planned Unit Development use, which both have similar traffic generation rates. A project that generates 10 peak-hour trip-ends is far below the 100 trip-ends that would require a Maine DOT Traffic Movement Permit.
8. A screened dumpster enclosure area has been designed and is included on the plans. This dumpster will be emptied and maintained by a private trash hauling company. We are agreeable to having a condition of approval note that states solid waste removal, construction debris removal and sewage removal services are the responsibility of the lot owner.
9. Attached are letters from Maine Historic Preservation Commission, Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program indicating that the project will not have any adverse impacts on historic sites or significant habitats.
10. A letter from Gorham Savings Bank has been attached indicating the applicant's financial capacity to complete the project.
11. A FIRM Flood Map is attached indicating that the property is not located within a flood zone.
12. A copy of the proposed Condominium Declaration is attached for review. The declaration contains language that identifies the responsibilities of the Condominium to maintain the common facilities including stormwater and wastewater infrastructure.
13. The Stormwater Management Report that was prepared for the Maine DEP is attached for review.

The two outstanding items that we are working diligently to bring to completion are the issuance of the Maine DOT Driveway Entrance Permit and the Maine DEP Stormwater Permit. Once we receive the Maine DOT Entrance Permit we will add the approved sight distance measurement to the plans along with a note indicating that the driveway permit and storm drain connection have been approved by the Maine DOT. The Maine DEP approval is contingent on receiving the Maine DOT approval. Once we receive the Maine DEP approval order, we will add the order number to the Subdivision Plan.

We appreciate all the feedback we have received to date and we hope that this response package addresses the Town's concerns. Please let us know if there are any questions or if any additional information is needed.

Sincerely,

DM ROMA CONSULTING ENGINEERS

Dustin Roma

Dustin M. Roma, P.E.
President

Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

August 9, 2021

Jay Haskell, P.E.
DM Roma
PO Box 1116
Windham, ME 04062

Re: Webbs Mills Road, RA
Ability to Serve with PWD Water

Dear Mr. Haskell:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on March 22, 2021. Based on the information provided per plans dated August 9, 2021, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed and is valid for eighteen (18) months after the date of issue. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 8-inch ductile iron water main extension is required within Webbs Mills Road ROW, from the connection to the 8-inch stub at Webbs Mills Road, to approximately the center of the last unit to be served within the proposed Raymond Hills Village subdivision.
- New 1-inch diameter domestic water services can be made from the new main extension to serve each unit in the proposed subdivision.
- An approved backflow prevention device must be installed on each service line directly after the meter prior to service activation. Please refer to the PWD website for more information on cross-connection control policies.

Prior to construction, the owner or contractor will need to complete a Main Extension Initiation Form and pay all necessary fees for each proposed service.

Existing Site Service

According to District records, the project site does not currently have existing water service.

225 DOUGLASS STREET P.O. BOX 3553 PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 FAX: 207.761.8307 WEB: WWW.PWD.ORG

Water System Characteristics

According to District records, there is an 12-inch diameter ductile iron water main in Webbs Mills Road and a public fire hydrant located approximately 500 feet from the site. The most recent static pressure reading was 88 psi.

Public Fire Protection

The installation of new public hydrants to be accepted into the District water system will most likely be required. It is your responsibility to contact the Town of Raymond Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that this project will not require water service to provide private fire protection to the site.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to MEANS@PWD.org or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District

Robert A. Bartels, P.E.
Senior Project Engineer

Gorham SAVINGS BANK
Banking is believing℠

May 25, 2021

Town of Raymond
Planning Board Members
401 Webbs Mills Road
Raymond, Maine 04071

RE: 0 Webbs Mill Road, Raymond - 18 Townhouse Project

To Whom It May Concern,

Timothy Clinton/Raymond Hills LLC have an established relationship with Gorham Savings Bank. Based on the information provided to the Bank, they demonstrate the financial capacity to receive financing to complete 18 townhouse projects to be located at 0 Webbs Mill Road. Final approvals are subject to the Bank's complete underwriting and an appraisal.

If you have any further questions, I can be reached at (207) 222-1499 or Kdonnelly@Gorhamsavings.bank.

Sincerely,

Kimberly A. Donnelly

Kimberly Donnelly
SVP, Director of Business Banking
Gorham Savings Bank

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

June 28, 2021

Jayson Haskell
DM Roma Consulting Engineers
P.O. Box 1116
Windham, ME 04062

RE: Information Request – Raymond Hills Apartments Project, Raymond

Dear Jayson:

Per your request received on June 24, 2021, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Raymond Hills Apartments* project in Raymond.

Our Department has not mapped any Essential Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bat Species – Of the eight species of bats that occur in Maine, the three *Myotis* species are protected under Maine's Endangered Species Act (MESA) and are afforded special protection under 12 M.R.S §12801 - §12810. The three *Myotis* species include little brown bat (State Endangered), northern long-eared bat (State Endangered), and eastern small-footed bat (State Threatened). The five remaining bat species are listed as Special Concern: big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat. While a comprehensive statewide inventory for bats has not been completed, based on historical evidence it is likely that several of these species occur within the project area during migration and/or the breeding season. However, our Agency does not anticipate significant impacts to any of the bat species as a result of this project.

Significant Wildlife Habitat

Significant Vernal Pools - At this time MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs subject to protection under the Natural Resources Protection Act (NRPA) within the project area, which include Waterfowl and Wading Bird Habitats, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential performance standard requirements for off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, survey forms should be submitted to our Agency for review well before the submission of any necessary permits. Our Department will need to review and verify any vernal pool data prior to final determination of significance.

Fisheries Habitat

We recommend that 100-foot undisturbed vegetated buffers be maintained along streams. Buffers should be measured from the edge of stream or associated fringe and floodplain wetlands. Maintaining and enhancing buffers along streams that support coldwater fisheries is critical to the protection of water temperatures, water quality, natural inputs of coarse woody debris, and various forms of aquatic life necessary to support conditions required by many fish species. Stream crossings should be avoided, but if a stream crossing is necessary, or an existing crossing needs to be modified, it should be designed to provide full fish passage. Small streams, including intermittent streams, can provide crucial rearing habitat, cold water for thermal refugia, and abundant food for juvenile salmonids on a seasonal basis and undersized crossings may inhibit these functions. Generally, MDIFW recommends that all new, modified, and replacement stream crossings be sized to span at least 1.2 times the bankfull width of the stream. In addition, we generally recommend that stream crossings be open bottomed (i.e. natural bottom), although embedded structures which are backfilled with representative streambed material have been shown to be effective in not only providing habitat connectivity for fish but also for other aquatic organisms. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fish and fisheries habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Becca Settele
Wildlife Biologist

STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
177 STATE HOUSE STATION
AUGUSTA, MAINE 04333

JANET T. MILLS
GOVERNOR

AMANDA E. BEAL
COMMISSIONER

June 24, 2021

Jayson Haskell
PO Box 1116
Windham, ME 04062

Via email: jayson@dmroma.com

Re: Rare and exemplary botanical features in proximity to: Raymond Hills Apartments, Raymond, Maine

Dear Mr. Haskell:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received June 23, 2021 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Raymond, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MOLLY DOCHERTY, DIRECTOR
MAINE NATURAL AREAS PROGRAM
BLOSSOM LANE, DEERING BUILDING

DEPARTMENT OF Agriculture Conservation & Forestry

PHONE: (207) 287-804490
WWW.MAINE.GOV/DACF/MNAP

The Maine Natural Areas Program (MNAP) is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. MNAP welcomes coordination with individuals or organizations proposing environmental alteration or conducting environmental assessments. If, however, data provided by MNAP are to be published in any form, the Program should be informed at the outset and credited as the source.

The Maine Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $150.00 for two hours of our services.

Thank you for using MNAP in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Lisa St. Hilaire

Lisa St. Hilaire | Information Manager | Maine Natural Areas Program
207-287-8044 | lisa.st.hilaire@maine.gov

Rare and Exemplary Botanical Features within 4 miles of
Project: Raymond Hills Apartments, Raymond, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Nodding Pogonia						
	T	S2	G4?	2010-08-18	5	Hardwood to mixed forest (forest, upland)
Oak - Pine Forest						
	<null>	S5	G5	2005-06-21	5	Hardwood to mixed forest (forest, upland)
Pitch Pine Bog						
	<null>	S2	G3G5	2004-06-21	10	Forested wetland,Coastal non-tidal wetland (non-forested, wetland)
Red Maple Swamp						
	<null>	S5	G3G5	2004-06-21	16	Forested wetland
Scarlet Oak						
	E	S1	G5	1916-08	2	Hardwood to mixed forest (forest, upland)

Conservation Status Ranks

State and Global Ranks: This ranking system facilitates a quick assessment of a species' or habitat type's rarity and is the primary tool used to develop conservation, protection, and restoration priorities for individual species and natural habitat types. Each species or habitat is assigned both a state (S) and global (G) rank on a scale of 1 to 5. Factors such as range extent, the number of occurrences, intensity of threats, etc., contribute to the assignment of state and global ranks. The definitions for state and global ranks are comparable but applied at different geographic scales; something that is state imperiled may be globally secure.

The information supporting these ranks is developed and maintained by the Maine Natural Areas Program (state ranks) and NatureServe (global ranks).

Rank	Definition
S1 **G1**	**Critically Imperiled** – At very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors.
S2 **G2**	**Imperiled** – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
S3 **G3**	**Vulnerable** – At moderate risk of extinction or elimination due to a fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors.
S4 **G4**	**Apparently Secure** – At fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors.
S5 **G5**	**Secure** – At very low risk or extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
SX **GX**	**Presumed Extinct** – Not located despite intensive searches and virtually no likelihood of rediscovery.
SH **GH**	**Possibly Extinct** – Known from only historical occurrences but still some hope of rediscovery.
S#S# **G#G#**	**Range Rank** – A numeric range rank (e.g., S2S3 or S1S3) is used to indicate any range of uncertainty about the status of the species or ecosystem.
SU **GU**	**Unrankable** – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
GNR **SNR**	**Unranked** – Global or subnational conservation status not yet assessed.
SNA **GNA**	**Not Applicable** – A conservation status rank is not applicable because the species or ecosystem is not a suitable target for conservation activities (e.g., non-native species or ecosystems.
Qualifier	**Definition**
S#? **G#?**	**Inexact Numeric Rank** – Denotes inexact numeric rank.
Q	**Questionable taxonomy that may reduce conservation priority** – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable. The "Q" modifier is only used at a global level.
T#	**Infraspecific Taxon (trinomial)** – The status of infraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

State Status: Endangered and Threatened are legal status designations authorized by statute. Please refer to MRSA Title 12, §544 and §544-B.

Status	Definition
E	**Endangered** – Any native plant species in danger of extinction throughout all or a significant portion of its range within the State or Federally listed as Endangered.
T	**Threatened** – Any native plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range in the State or Federally listed as Threatened.
SC	**Special Concern** – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
PE	**Potentially Extirpated** – A native plant species that has not been documented in the State in over 20 years, or loss of the last known occurrence.

Element Occurrence (EO) Ranks: Quality assessments that designate viability of a population or integrity of habitat. These ranks are based on size, condition, and landscape context. Range ranks (e.g., AB, BC) and uncertainty ranks (e.g., B?) are allowed. The Maine Natural Areas Program tracks all occurrences of rare plants and natural communities/ecosystems (S1-S3) as well as exemplary common natural community types (S4-S5 with EO ranks A/B).

Rank	Definition
A	**Excellent** – Excellent estimated viability/ecological integrity.
B	**Good** – Good estimated viability/ecological integrity.
C	**Fair** – Fair estimated viability/ecological integrity.
D	**Poor** – Poor estimated viability/ecological integrity.
E	**Extant** – Verified extant, but viability/ecological integrity not assessed.
H	**Historical** – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
X	**Extirpated** – Documented loss of population/destruction of habitat.
U	**Unrankable** – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
NR	**Not Ranked** – An occurrence rank has not been assigned.

Visit the Maine Natural Areas Program website for more information
http://www.maine.gov/dacf/mnap

maine DEPARTMENT OF Agriculture Conservation & Forestry
NATURAL AREAS

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

JANET T. MILLS
GOVERNOR

KIRK F. MOHNEY
DIRECTOR

July 13, 2021

Mr. Jayson R. Haskell
DM Roma
2 Main Street
Suite 18-206
Biddeford, ME 04005

Project: MHPC #1145-21 Clinton; Raymond Hills Apartments; Webbs Mills Road Apartment Development

Town: Raymond, ME

Dear Mr. Haskell:

In response to your recent request, I have reviewed the information received June 29, 2021 to initiate consultation on the above referenced project in accordance with the requirements of the Maine Department of Environmental Protection.

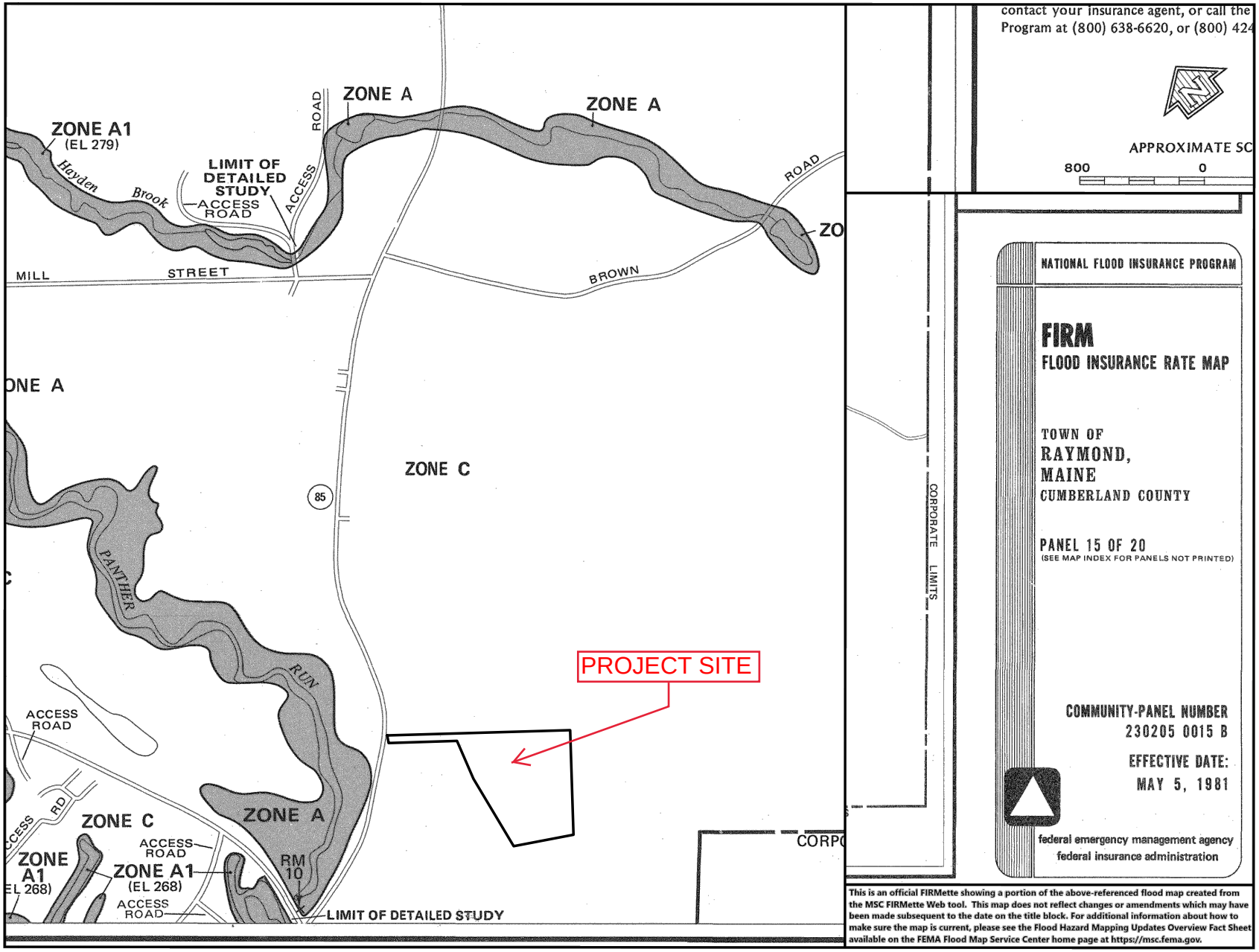
Based on the information submitted, I have concluded that there will be no historic properties (archaeological or architectural) affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act.

Please contact Megan Rideout at (207) 287-2992 or megan.m.rideout@maine.gov if we can be of further assistance in this matter.

Sincerely,

Kirk F. Mohney

Kirk F. Mohney
State Historic Preservation Officer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contact your insurance agent, or call the
Program at (800) 638-6620, or (800) 424
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NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
TOWN OF
RAYMOND,
MAINE
CUMBERLAND COUNTY
PANEL 15 OF 20
(SEE MAP INDEX FOR PANELS NOT PRINTED)
COMMUNITY-PANEL NUMBER
230205 0015 B
EFFECTIVE DATE:
MAY 5, 1981
federal emergency management agency
federal insurance administration
This is an official FIRMette showing a portion of the above-referenced flood map created from the MSC FIRMette Web tool. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For additional information about how to make sure the map is current, please see the Flood Hazard Mapping Updates Overview Fact Sheet available on the FEMA Flood Map Service Center home page at https://msc.fema.gov.

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 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 69,427 square feet (1.59± acres) of impervious surface consisting of the proposed buildings and driveway pavement and approximately 135,828 square feet (3.12± acres) of landscaped area associated with lawn and landscaping, totaling approximately 205,255 square feet (4.71± 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. The roofline dripedge sizing calculations are included in Attachment 5 of this report.

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	0.13	0.38	0.32

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 Maine DOT will need to provide approval of these increases into their drainage system. There are also slight increases in

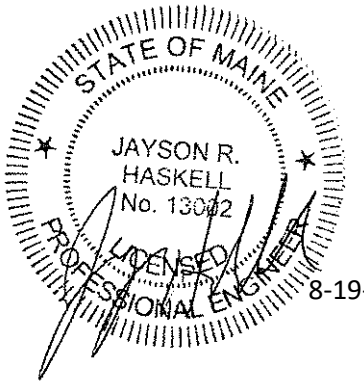
the 2- and 10-year storm event at Study Point 3. We do not anticipate these increases in flow to create any additional flooding conditions or increased erosion problems downstream as a result of this project.
The watershed maps showing pre-development and post-development drainage patterns are included in the plan set. The pre-development and post-development drainage computations performed with the HydroCAD software program are included as Attachment 6 of this report.

G. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a homeowner's association is created. An Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included in as Attachment 7 of this report.

Prepared by:

DM ROMA CONSULTING ENGINEERS

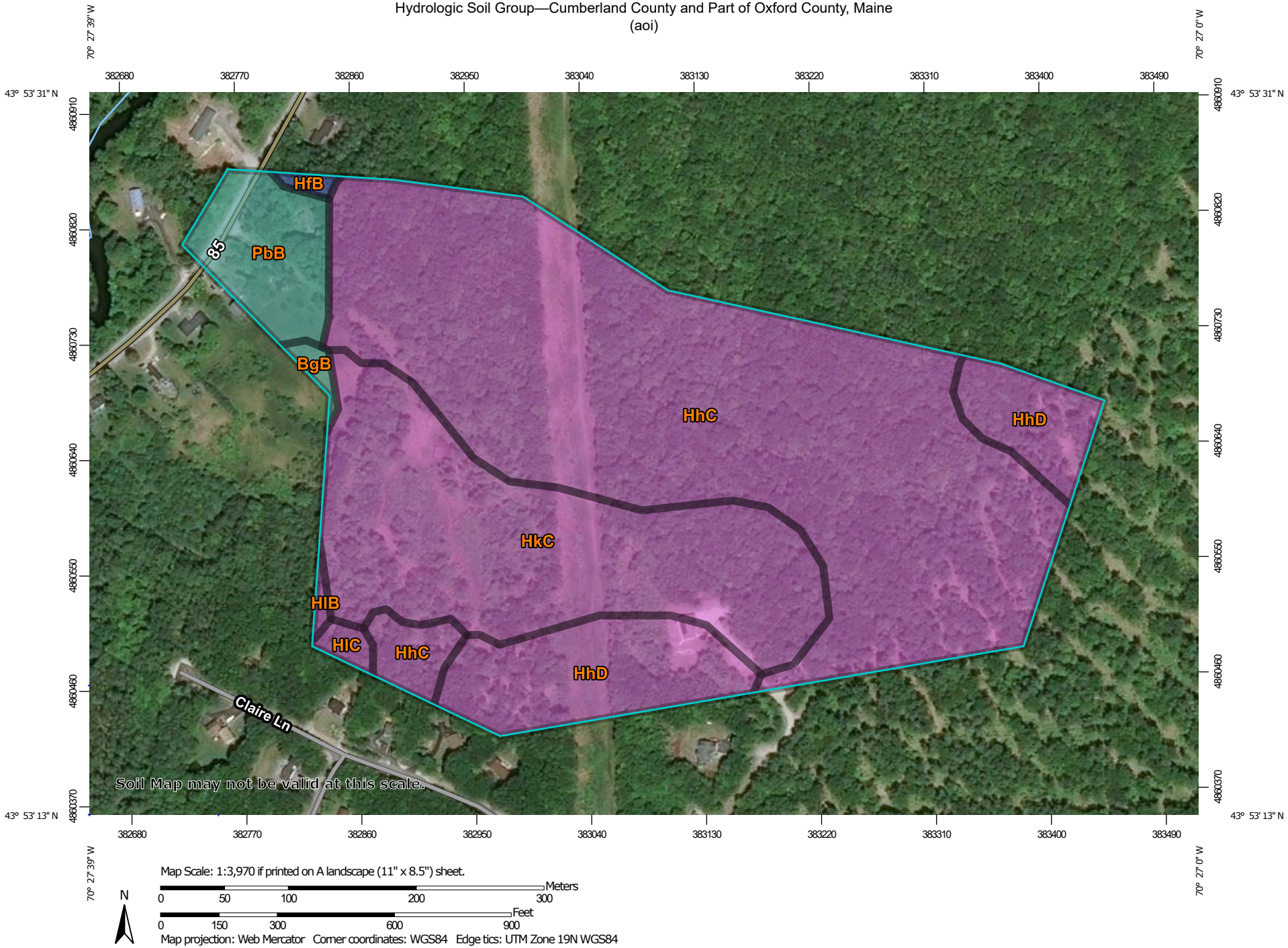


Jayson R. Haskell P.E.
Southern Maine Regional Manager 8-19-2021

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 8/19/2021
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	12,832	7,555	1,286	3,991	0	0	0	Yes	7,555	3,991	Filterra F2
WS-20	171,977	0	0	5,783	0	0	166,194	No	0	0	None
WS-21	30,392	0	2,234	6,211	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	197,963	0	2,730	13,195	4,546	2,594	174,898	Yes	0	13,195	Filter Basin 1
WS-32	65,982	0	9,560	45,858	0	0	10,564	Yes	0	45,858	Filter Basin 1
WS-33	81,571	0	2,234	13,949	0	0	65,388	No	0	0	None
WS-34	40,723	8,690	7,208	19,659	0	0	5,166	Yes	8,690	19,659	Filter Basin 1
WS-35	28,994	9,986	6,428	12,580	0	0	0	Yes	9,986	12,580	Filter Basin 1
Total		**37,747**	**31,680**	**135,828**					**35,010**	**100,027**	

* 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 =	69,427	
New Impervious Area Requiring Treatment (95%)	65,956	
Provided New Impervious Treatment=	66,690	
	96%	New Impervious Area Treated

New Developed Area =	205,255	
New Developed Area Requiring Treatment (80%)=	164,204	
New Developed Area Treated=	166,717	
	81%	New Developed Area Treated

ATTACHMENT 3

UNDERDRAINED FILTER BASIN SIZING CALCULATIONS

Raymond Hills Village
Calculated by: JRH
Printed 8/19/2021
Job #21006

Filter Basin FB-1

Tributary Impervious Area=	23,222	sf	(WS-31, 32, 34 & 35 Impervious Area)
Tributary Landscaped Area=	93,886	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) = 5,065 cf

Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
310	3,050	0
312	4,944	7,918
313	6,032	13,397

Outlet Elevation = 311.50

Storage Volume Provided= 5,576 cf > Required

Filter Bottom Calculation

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

Filter Area (Required) = 3,039 sf

Filter Area Provided = 3,050 sf > Required

Underdrain Orifice Calculation

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

Max Orifice Diameter (Required)= 1.40 inches

Orifice Diameter (Provided)= 1.00 inch

Sediment Forebay Sizing

Tributary Pavement Requiring Sanding 23,222 sf

Required Sediment Forebay Volume :

10 storms/year x sanded area (acres) x 500lbs/acre-storm / 90 lbs/cf

Sediment Volume (Required) 29.6 cf

Sediment Volume (Provided): 115.0 cf > Required

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

Subcatchment 31: Runoff Area=197,963 sf 3.68% Impervious Runoff Depth=0.21"
Flow Length=1,053' Tc=22.2 min CN=35 Runoff=0.13 cfs 3,474 cf

Subcatchment 32: Runoff Area=65,982 sf 14.49% Impervious Runoff Depth=0.78"
Flow Length=490' Tc=6.9 min CN=46 Runoff=0.81 cfs 4,314 cf

Subcatchment 34: Runoff Area=40,723 sf 38.72% Impervious Runoff Depth=1.87"
Flow Length=199' Tc=18.9 min CN=61 Runoff=1.32 cfs 6,356 cf

Subcatchment 35: Runoff Area=28,994 sf 56.16% Impervious Runoff Depth=2.83"
Flow Length=224' Tc=12.7 min CN=72 Runoff=1.75 cfs 6,839 cf

Pond CB3: Peak Elev=321.73' Inflow=1.32 cfs 9,830 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=1.32 cfs 9,830 cf

Pond CB4: Peak Elev=321.53' Inflow=2.93 cfs 16,669 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0104 '/' Outflow=2.93 cfs 16,669 cf

Pond FB1: Peak Elev=313.09' Storage=13,915 cf Inflow=3.65 cfs 20,982 cf
Primary=0.00 cfs 0 cf Secondary=0.38 cfs 7,585 cf Outflow=0.38 cfs 7,585 cf

Pond FI1: Peak Elev=323.36' Inflow=0.13 cfs 3,474 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.13 cfs 3,474 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)

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

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
13.25	0.29	3,248	310.94	0.05	0.05	0.00
13.50	0.26	3,453	310.99	0.05	0.05	0.00
13.75	0.25	3,641	311.04	0.05	0.05	0.00
14.00	0.23	3,811	311.08	0.05	0.05	0.00
14.25	0.21	3,964	311.12	0.05	0.05	0.00
14.50	0.20	4,104	311.15	0.05	0.05	0.00
14.75	0.19	4,236	311.19	0.05	0.05	0.00
15.00	0.18	4,359	311.22	0.05	0.05	0.00
15.25	0.17	4,472	311.24	0.05	0.05	0.00
15.50	0.16	4,575	311.27	0.05	0.05	0.00
15.75	0.15	4,668	311.29	0.05	0.05	0.00
16.00	0.13	4,750	311.31	0.05	0.05	0.00
16.25	0.12	4,822	311.33	0.05	0.05	0.00
16.50	0.12	4,886	311.34	0.05	0.05	0.00
16.75	0.11	4,946	311.36	0.05	0.05	0.00
17.00	0.11	5,000	311.37	0.05	0.05	0.00
17.25	0.10	5,050	311.38	0.05	0.05	0.00
17.50	0.10	5,095	311.39	0.05	0.05	0.00
17.75	0.09	5,135	311.40	0.05	0.05	0.00
18.00	0.09	5,170	311.41	0.05	0.05	0.00
18.25	0.08	5,201	311.41	0.05	0.05	0.00
18.50	0.08	5,230	311.42	0.05	0.05	0.00
18.75	0.08	5,257	311.43	0.05	0.05	0.00
19.00	0.08	5,283	311.43	0.05	0.05	0.00
19.25	0.08	5,308	311.44	0.05	0.05	0.00
19.50	0.08	5,332	311.44	0.05	0.05	0.00
19.75	0.07	5,355	311.45	0.05	0.05	0.00
20.00	0.07	5,377	311.45	0.05	0.05	0.00
20.25	0.07	5,397	311.46	0.05	0.05	0.00
20.50	0.07	5,416	311.46	0.05	0.05	0.00
20.75	0.07	5,434	311.47	0.05	0.05	0.00
21.00	0.07	5,451	311.47	0.05	0.05	0.00
21.25	0.07	5,467	311.48	0.05	0.05	0.00
21.50	0.07	5,482	311.48	0.05	0.05	0.00
21.75	0.06	5,497	311.48	0.05	0.05	0.00
22.00	0.06	5,509	311.48	0.05	0.05	0.00
22.25	0.06	5,521	311.49	0.05	0.05	0.00
22.50	0.06	5,532	311.49	0.05	0.05	0.00
22.75	0.06	5,542	311.49	0.05	0.05	0.00
23.00	0.06	5,550	311.49	0.05	0.05	0.00
23.25	0.06	5,557	311.50	0.05	0.05	0.00
23.50	0.06	5,563	311.50	0.05	0.05	0.00
23.75	0.05	5,568	311.50	0.05	0.05	0.00
24.00	0.05	**5,571**	**311.50**	**0.05**	**0.05**	0.00
24.25	0.02	**5,560**	**311.50**	**0.05**	**0.05**	0.00
24.50	0.00	5,522	311.49	0.05	0.05	0.00
24.75	0.00	5,478	311.48	0.05	0.05	0.00
25.00	0.00	5,433	311.47	0.05	0.05	0.00
25.25	0.00	5,389	311.46	0.05	0.05	0.00
25.50	0.00	5,344	311.45	0.05	0.05	0.00
25.75	0.00	5,299	311.44	0.05	0.05	0.00
26.00	0.00	5,255	311.43	0.05	0.05	0.00
26.25	0.00	5,210	311.42	0.05	0.05	0.00

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	852	310.27	0.04	0.04	0.00
53.25	0.00	815	310.26	0.04	0.04	0.00
53.50	0.00	779	310.25	0.04	0.04	0.00
53.75	0.00	742	310.24	0.04	0.04	0.00
54.00	0.00	706	310.22	0.04	0.04	0.00
54.25	0.00	670	310.21	0.04	0.04	0.00
54.50	0.00	634	310.20	0.04	0.04	0.00
54.75	0.00	597	310.19	0.04	0.04	0.00
55.00	0.00	562	310.18	0.04	0.04	0.00
55.25	0.00	526	310.17	0.04	0.04	0.00
55.50	0.00	490	310.16	0.04	0.04	0.00
55.75	0.00	454	310.15	0.04	0.04	0.00
56.00	0.00	419	310.13	0.04	0.04	0.00
56.25	0.00	383	310.12	0.04	0.04	0.00
56.50	0.00	348	310.11	0.04	0.04	0.00
56.75	0.00	312	310.10	0.04	0.04	0.00
57.00	0.00	277	310.09	0.04	0.04	0.00
57.25	0.00	242	310.08	0.04	0.04	0.00
57.50	0.00	207	310.07	0.04	0.04	0.00
57.75	0.00	172	310.06	0.04	0.04	0.00
58.00	0.00	137	310.04	0.04	0.04	0.00
58.25	0.00	102	310.03	0.04	0.04	0.00
58.50	0.00	68	310.02	0.04	0.04	0.00
58.75	0.00	33	310.01	0.04	0.04	0.00
59.00	0.00	0	310.00	0.02	0.02	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
59.00 hrs - 24.00 hrs = 35 hrs

ATTACHMENT 4

FILTERRAS & STORMTECH CHAMBER SIZING CALCULATIONS

Raymond Hills Village
Calculated by: JRH
Printed 8/19/2021
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=	16,334	sf
Tributary Landscaped Area=	8,735	sf
CPV (Required)=	**1,652**	**cf**

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

DRAIN DOWN CALCULATION - STORMTECH

Hydrograph for Pond ST: StormTech

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	290.65	0.00
0.25	0.00	0	290.65	0.00
0.50	0.00	0	290.65	0.00
0.75	0.00	0	290.65	0.00
1.00	0.00	0	290.65	0.00
1.25	0.00	0	290.65	0.00
1.50	0.00	0	290.65	0.00
1.75	0.00	0	290.65	0.00
2.00	0.00	0	290.65	0.00
2.25	0.00	0	290.65	0.00
2.50	0.00	0	290.65	0.00
2.75	0.00	0	290.65	0.00
3.00	0.00	0	290.65	0.00
3.25	0.00	0	290.65	0.00
3.50	0.00	0	290.65	0.00
3.75	0.00	0	290.65	0.00
4.00	0.00	0	290.65	0.00
4.25	0.00	0	290.65	0.00
4.50	0.00	0	290.65	0.00
4.75	0.00	0	290.65	0.00
5.00	0.00	0	290.65	0.00
5.25	0.00	0	290.65	0.00
5.50	0.00	0	290.65	0.00
5.75	0.00	0	290.65	0.00
6.00	0.00	0	290.65	0.00
6.25	0.00	0	290.65	0.00
6.50	0.00	0	290.65	0.00
6.75	0.00	0	290.65	0.00
7.00	0.00	0	290.65	0.00
7.25	0.00	0	290.65	0.00
7.50	0.00	0	290.65	0.00
7.75	0.00	0	290.65	0.00
8.00	0.00	0	290.65	0.00
8.25	0.00	0	290.65	0.00
8.50	0.00	0	290.65	0.00
8.75	0.00	1	290.65	0.00
9.00	0.00	4	290.66	0.00
9.25	0.00	7	290.66	0.00
9.50	0.01	12	290.67	0.00
9.75	0.01	17	290.68	0.00
10.00	0.01	24	290.69	0.00
10.25	0.01	31	290.70	0.01
10.50	0.02	39	290.72	0.01
10.75	0.02	47	290.73	0.01
11.00	0.03	56	290.74	0.02
11.25	0.04	66	290.76	0.02
11.50	0.06	83	290.79	0.04
11.75	0.18	133	290.87	0.07
12.00	**0.64**	346	291.19	0.15
12.25	**1.08**	1,133	291.92	0.25
12.50	0.61	**1,626**	**292.57**	**0.32**
12.75	0.30	**1,714**	**292.72**	**0.33**
13.00	0.22	1,651	292.62	0.32

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

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)
26.50	0.00	15	290.68	0.00
26.75	0.00	14	290.67	0.00
27.00	0.00	13	290.67	0.00
27.25	0.00	12	290.67	0.00
27.50	0.00	11	290.67	0.00
27.75	0.00	11	290.67	0.00
28.00	0.00	10	290.67	0.00
28.25	0.00	10	290.67	0.00
28.50	0.00	9	290.67	0.00
28.75	0.00	9	290.66	0.00
29.00	0.00	8	290.66	0.00
29.25	0.00	8	290.66	0.00
29.50	0.00	8	290.66	0.00
29.75	0.00	7	290.66	0.00
30.00	0.00	7	290.66	0.00
30.25	0.00	7	290.66	0.00
30.50	0.00	6	290.66	0.00
30.75	0.00	6	290.66	0.00
31.00	0.00	6	290.66	0.00
31.25	0.00	6	290.66	0.00
31.50	0.00	6	290.66	0.00
31.75	0.00	5	290.66	0.00
32.00	0.00	5	290.66	0.00
32.25	0.00	5	290.66	0.00
32.50	0.00	5	290.66	0.00
32.75	0.00	5	290.66	0.00
33.00	0.00	5	290.66	0.00
33.25	0.00	5	290.66	0.00
33.50	0.00	4	290.66	0.00
33.75	0.00	4	290.66	0.00
34.00	0.00	4	290.66	0.00
34.25	0.00	4	290.66	0.00
34.50	0.00	4	290.66	0.00
34.75	0.00	4	290.66	0.00
35.00	0.00	4	290.66	0.00
35.25	0.00	4	290.66	0.00
35.50	0.00	4	290.66	0.00
35.75	0.00	4	290.66	0.00
36.00	0.00	4	290.66	0.00
36.25	0.00	3	290.66	0.00
36.50	0.00	3	290.66	0.00
36.75	0.00	3	290.66	0.00
37.00	0.00	3	290.66	0.00
37.25	0.00	3	290.66	0.00
37.50	0.00	3	290.66	0.00
37.75	0.00	3	290.66	0.00
38.00	0.00	3	290.66	0.00
38.25	0.00	3	290.66	0.00
38.50	0.00	3	290.65	0.00
38.75	0.00	3	290.65	0.00
39.00	0.00	3	290.65	0.00
39.25	0.00	3	290.65	0.00
39.50	0.00	3	290.65	0.00

Goal = Drain down between 24 hrs & 48 hrs
38.50hrs - 12.70 hrs = 25.8 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:

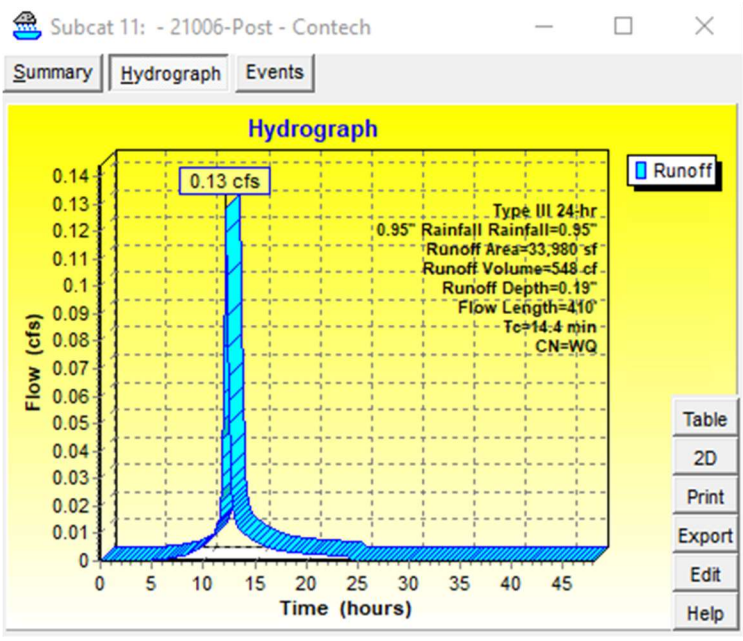


Figure 1. Inflow rate during the WQ Event.

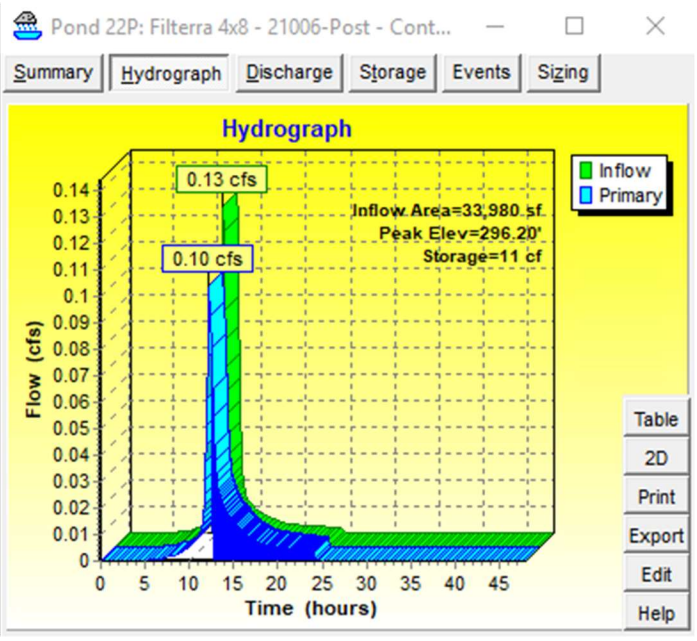


Figure 2. Inflow rate during WQ storm event compared with the Filterra outflow rate, accounting for 9” maximum ponding depth within the unit.

Filterra #2:

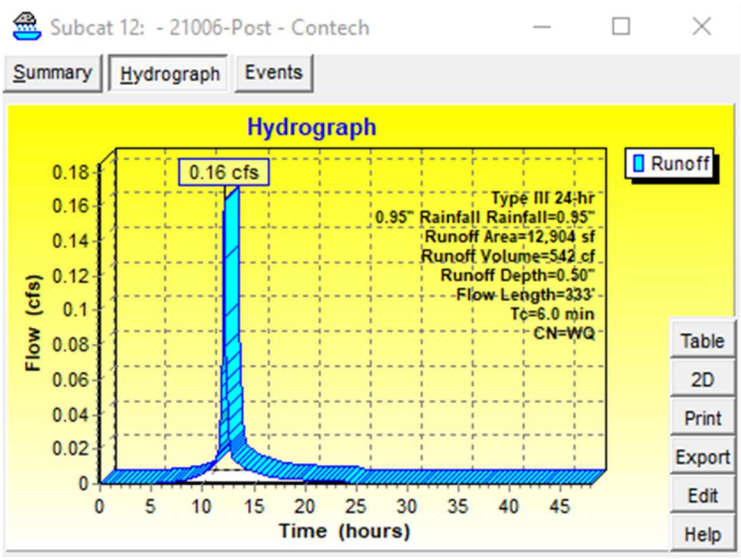


Figure 1. Inflow rate during the WQ Event.

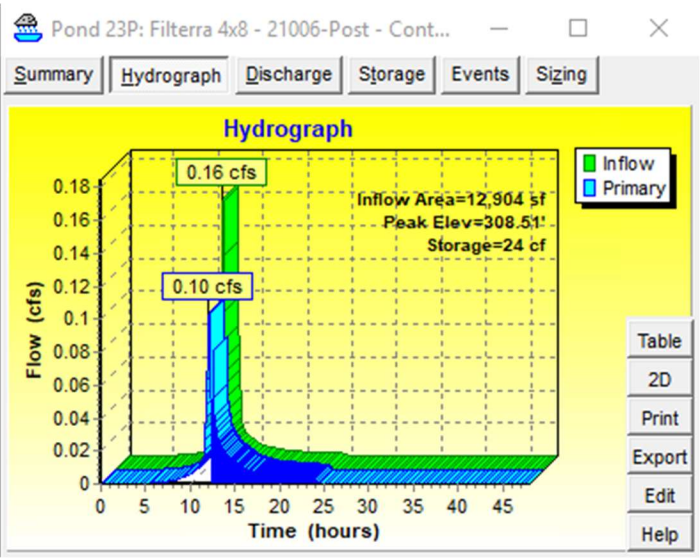


Figure 2. Inflow rate during WQ storm event compared with the Filterra outflow rate, accounting for 9" maximum ponding depth within the unit.

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

ROOFLINE DRIPEDGE SIZING CALCULATIONS

DM ROMA
CONSULTING ENGINEERS

Raymond Hills Village
Calculated by: JRH
Printed 8/24/2021
Job #21006

Drip Edge Sizing Calculations

Tributary Impervious Area =	3,520	sf
Tributary Landscaped Area=	0	sf

Water Quality Volume (WQV) Calculation

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

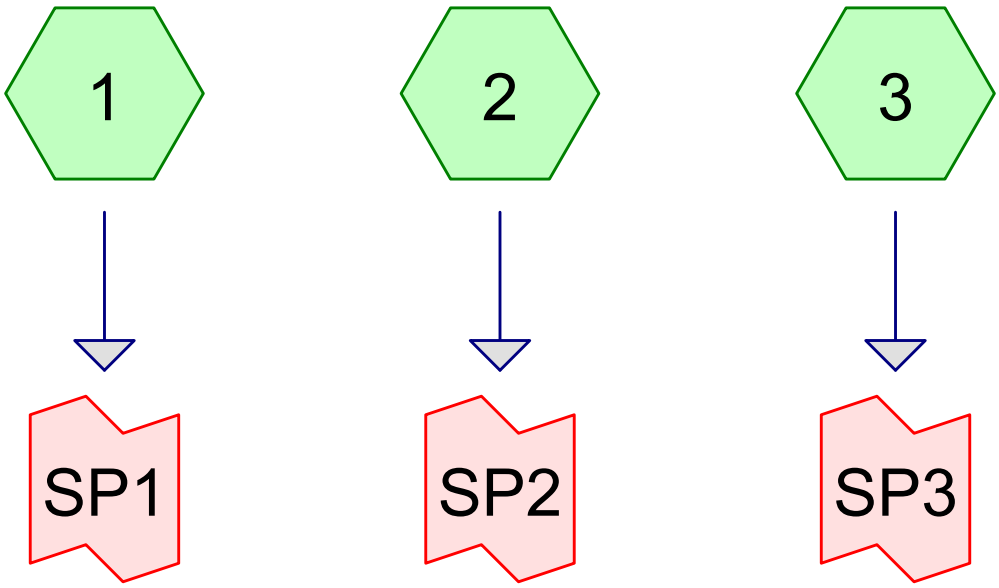
WQV (Required) = 293 cf

Drip Edge sizing:

Width	2	feet
Surface Area of Dripedge	508	sf
Depth of Stone Reservoir	1.5	feet
% Void (crushed stone)	40%	
Total Volume Provided:	**305**	**cf > Required**

ATTACHMENT 6

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

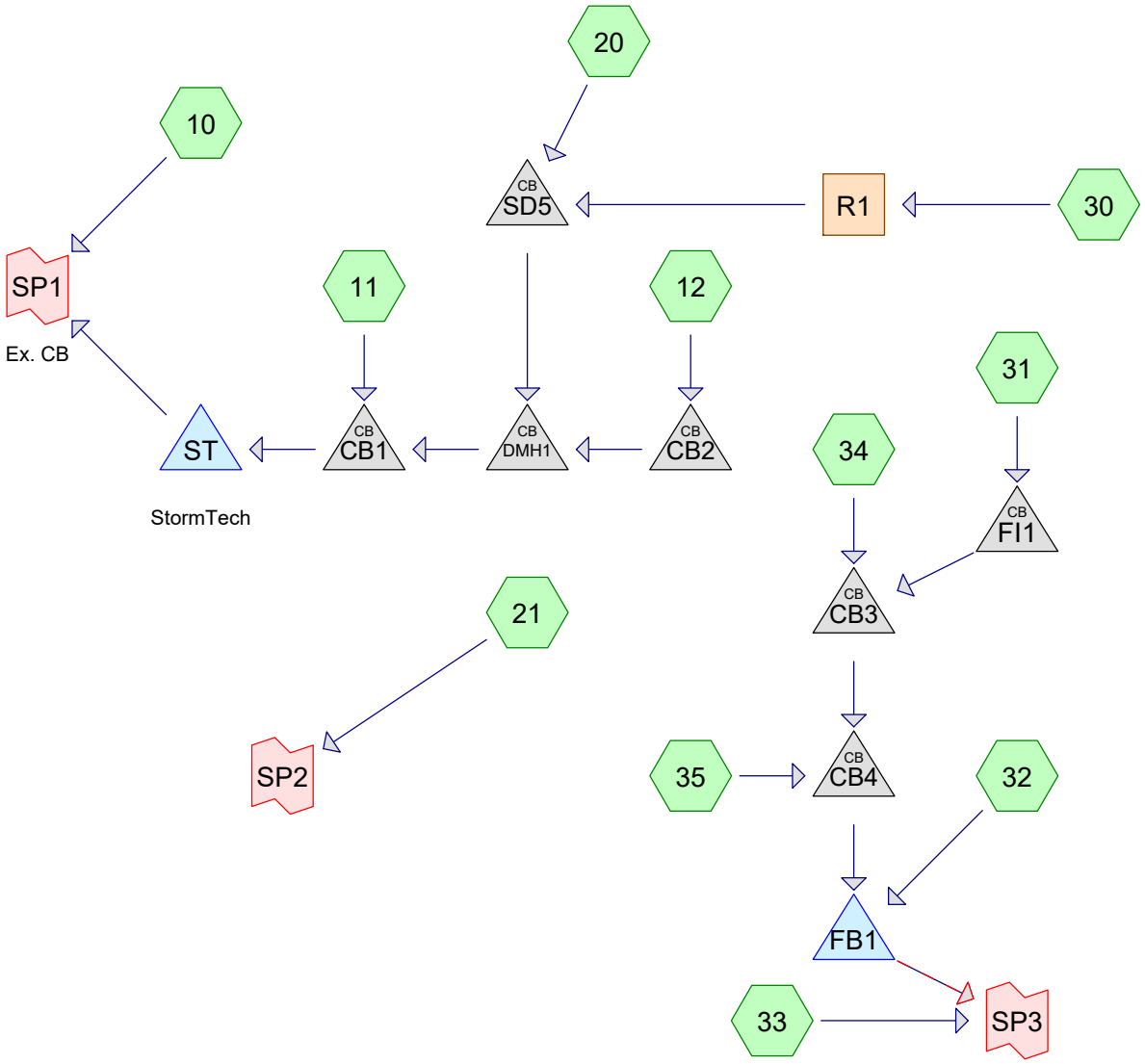
Subcatchment 2: Runoff Area=243,110 sf 0.00% Impervious Runoff Depth=0.08"
Flow Length=642' Tc=21.8 min CN=37 Runoff=0.06 cfs 1,587 cf

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 8/19/2021

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=12,832 sf 64.77% Impervious Runoff Depth=3.60"
Flow Length=333' Tc=6.0 min CN=80 Runoff=1.21 cfs 3,851 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=30,392 sf 7.35% Impervious Runoff Depth=0.34"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.07 cfs 865 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=197,963 sf 3.68% Impervious Runoff Depth=0.21"
Flow Length=1,053' Tc=22.2 min CN=35 Runoff=0.13 cfs 3,474 cf

Subcatchment32: Runoff Area=65,982 sf 14.49% Impervious Runoff Depth=0.78"
Flow Length=490' Tc=6.9 min CN=46 Runoff=0.81 cfs 4,314 cf

Subcatchment33: Runoff Area=81,571 sf 2.74% Impervious Runoff Depth=0.21"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.06 cfs 1,432 cf

Subcatchment34: Runoff Area=40,723 sf 38.72% Impervious Runoff Depth=1.87"
Flow Length=199' Tc=18.9 min CN=61 Runoff=1.32 cfs 6,356 cf

Subcatchment35: Runoff Area=28,994 sf 56.16% Impervious Runoff Depth=2.83"
Flow Length=224' Tc=12.7 min CN=72 Runoff=1.75 cfs 6,839 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=293.47' Inflow=2.33 cfs 18,628 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=2.33 cfs 18,628 cf

Pond CB2: Peak Elev=304.16' Inflow=1.21 cfs 3,851 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=1.21 cfs 3,851 cf

Pond CB3: Peak Elev=321.73' Inflow=1.32 cfs 9,830 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=1.32 cfs 9,830 cf

Pond CB4: Peak Elev=321.53' Inflow=2.93 cfs 16,669 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0104 '/' Outflow=2.93 cfs 16,669 cf

Pond DMH1: Peak Elev=296.91' Inflow=1.21 cfs 12,378 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=1.21 cfs 12,378 cf

Pond FB1: Peak Elev=312.81' Storage=12,246 cf Inflow=3.65 cfs 20,982 cf
Primary=0.29 cfs 20,983 cf Secondary=0.00 cfs 0 cf Outflow=0.29 cfs 20,983 cf

Pond FI1: Peak Elev=323.36' Inflow=0.13 cfs 3,474 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.13 cfs 3,474 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=293.01' Storage=1,869 cf Inflow=2.33 cfs 18,628 cf
Outflow=2.77 cfs 18,627 cf

Link SP1: Ex. CB Inflow=4.73 cfs 27,476 cf
Primary=4.73 cfs 27,476 cf

Link SP2: Inflow=0.07 cfs 865 cf
Primary=0.07 cfs 865 cf

Link SP3: Inflow=0.32 cfs 22,415 cf
Primary=0.32 cfs 22,415 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 = 1.21 cfs @ 12.09 hrs, Volume= 3,851 cf, Depth= 3.60"

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
	3,991	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	6,782	98	Proposed paved roads w/curbs & sewers
*	530	96	Proposed gravel surface
*	243	98	Proposed walls
*	1,286	98	Proposed roofs
	12,832	80	Weighted Average
	4,521		35.23% Pervious Area
	8,311		64.77% 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= 865 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
	6,211	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
*	2,234	98	Proposed roofs
	30,392	38	Weighted Average
	28,158		92.65% Pervious Area
	2,234		7.35% 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 = 0.13 cfs @ 13.84 hrs, Volume= 3,474 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
	174,898	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	13,195	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
*	2,730	98	Proposed roofs
	197,963	35	Weighted Average
	190,687		96.32% Pervious Area
	7,276		3.68% 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
2.3	173	0.0624	1.25		**Shallow Concentrated Flow, Seg E to F** Woodland Kv= 5.0 fps
0.5	188	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
22.2	1,053	Total			

Summary for Subcatchment 32:

Runoff = 0.81 cfs @ 12.15 hrs, Volume= 4,314 cf, Depth= 0.78"

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
	10,564	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	45,858	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
*	9,560	98	Proposed roofs
	65,982	46	Weighted Average
	56,422		85.51% Pervious Area
	9,560		14.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	55	0.1800	0.16		**Sheet Flow, Seg A to B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.3	435	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
6.9	490	Total			

Summary for Subcatchment 33:

Runoff = 0.06 cfs @ 13.85 hrs, Volume= 1,432 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
	65,388	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	13,949	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
*	2,234	98	Proposed roofs
	81,571	35	Weighted Average
	79,337		97.26% Pervious Area
	2,234		2.74% 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 = 1.32 cfs @ 12.28 hrs, Volume= 6,356 cf, Depth= 1.87"

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
	5,166	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
	19,659	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	8,558	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	132	96	Proposed gravel surface
*	0	98	Proposed walls
*	7,208	98	Proposed roofs
	40,723	61	Weighted Average
	24,957		61.28% Pervious Area
	15,766		38.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	89	0.1800	0.18		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
9.8	61	0.0200	0.10		**Sheet Flow, B TO C** Grass: Dense n= 0.240 P2= 3.10"
0.8	49	0.0200	0.99		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
18.9	199	Total			

Summary for Subcatchment 35:

Runoff = 1.75 cfs @ 12.18 hrs, Volume= 6,839 cf, Depth= 2.83"

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
	12,580	39	>75% Grass cover, Good, HSG A
	0	74	>75% Grass cover, Good, HSG C
*	0	74	Existing >75% Grass cover, Good, HSG C
*	9,854	98	Proposed paved roads & driveways
*	0	98	Existing paved driveway
*	132	96	Proposed gravel surface
*	0	98	Proposed walls
*	6,428	98	Proposed roofs
	28,994	72	Weighted Average
	12,712		43.84% Pervious Area
	16,282		56.16% 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			

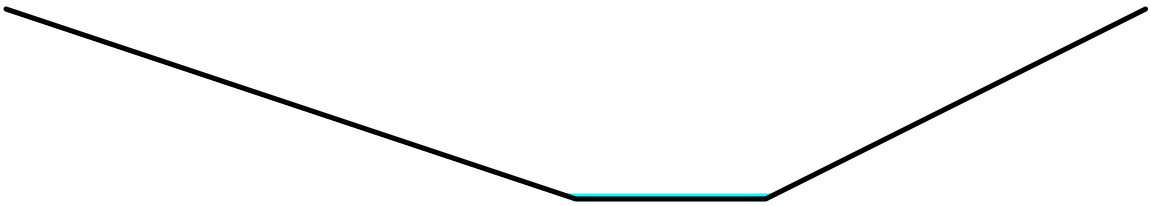
Summary for Reach R1:

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 = 1,017,909 sf, 1.64% Impervious, Inflow Depth = 0.22" for 25-Year event
Inflow = 2.33 cfs @ 12.14 hrs, Volume= 18,628 cf
Outflow = 2.33 cfs @ 12.14 hrs, Volume= 18,628 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.33 cfs @ 12.14 hrs, Volume= 18,628 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.47' @ 12.25 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	291.40'	**12.0" 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= 0.79 sf

Primary OutFlow Max=0.86 cfs @ 12.14 hrs HW=292.79' TW=292.71' (Dynamic Tailwater)
1=SD-3 (Inlet Controls 0.86 cfs @ 1.09 fps)

Summary for Pond CB2:

Inflow Area = 12,832 sf, 64.77% Impervious, Inflow Depth = 3.60" for 25-Year event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 3,851 cf
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 3,851 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.09 hrs, Volume= 3,851 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=1.19 cfs @ 12.09 hrs HW=304.16' TW=296.91' (Dynamic Tailwater)
1=SD-6 (Inlet Controls 1.19 cfs @ 2.18 fps)

Summary for Pond CB3:

Inflow Area = 238,686 sf, 9.65% Impervious, Inflow Depth = 0.49" for 25-Year event
Inflow = 1.32 cfs @ 12.28 hrs, Volume= 9,830 cf
Outflow = 1.32 cfs @ 12.28 hrs, Volume= 9,830 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.32 cfs @ 12.28 hrs, Volume= 9,830 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 321.73' @ 12.27 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	320.80'	**12.0" Round SD-8** L= 14.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.80' / 320.60' S= 0.0143 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.43 cfs @ 12.28 hrs HW=321.72' TW=321.48' (Dynamic Tailwater)
1=SD-8 (Inlet Controls 1.43 cfs @ 1.89 fps)

Summary for Pond CB4:

Inflow Area = 267,680 sf, 14.69% Impervious, Inflow Depth = 0.75" for 25-Year event
Inflow = 2.93 cfs @ 12.22 hrs, Volume= 16,669 cf
Outflow = 2.93 cfs @ 12.22 hrs, Volume= 16,669 cf, Atten= 0%, Lag= 0.0 min
Primary = 2.93 cfs @ 12.22 hrs, Volume= 16,669 cf

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

Peak Elev= 321.53' @ 12.22 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	320.50'	**15.0" Round SD-9** L= 111.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.50' / 319.35' S= 0.0104 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=2.90 cfs @ 12.22 hrs HW=321.52' TW=310.88' (Dynamic Tailwater)
↑—**1=SD-9** (Inlet Controls 2.90 cfs @ 2.71 fps)

Summary for Pond DMH1:

Inflow Area = 983,929 sf, 0.84% Impervious, Inflow Depth = 0.15" for 25-Year event
Inflow = 1.21 cfs @ 12.09 hrs, Volume= 12,378 cf
Outflow = 1.21 cfs @ 12.09 hrs, Volume= 12,378 cf, Atten= 0%, Lag= 0.0 min
Primary = 1.21 cfs @ 12.09 hrs, Volume= 12,378 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=1.19 cfs @ 12.09 hrs HW=296.91' TW=292.44' (Dynamic Tailwater)
↑—**1=SD-4** (Inlet Controls 1.19 cfs @ 2.18 fps)

Summary for Pond FB1:

Inflow Area = 333,662 sf, 14.65% Impervious, Inflow Depth = 0.75" for 25-Year event
Inflow = 3.65 cfs @ 12.21 hrs, Volume= 20,982 cf
Outflow = 0.29 cfs @ 17.20 hrs, Volume= 20,983 cf, Atten= 92%, Lag= 299.6 min
Primary = 0.29 cfs @ 17.20 hrs, Volume= 20,983 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' @ 17.20 hrs Surf.Area= 5,812 sf Storage= 12,246 cf

Plug-Flow detention time= 898.1 min calculated for 20,969 cf (100% of inflow)
Center-of-Mass det. time= 899.4 min (1,798.2 - 898.8)

Volume	Invert	Avail.Storage	Storage Description
#1	310.00'	20,019 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	3,050	296.7	0	0	3,050
312.00	4,944	334.4	7,918	7,918	5,046
314.00	7,229	447.7	12,101	20,019	12,141

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=0.29 cfs @ 17.20 hrs HW=312.81' TW=0.00' (Dynamic Tailwater)
- **1=12" SD** (Passes 0.29 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 @ 5.28 fps)
  - **5=Neenah R4345 Beehive Grate Light Duty-req. structure** (Custom Controls 0.05 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 = 197,963 sf, 3.68% Impervious, Inflow Depth = 0.21" for 25-Year event
Inflow = 0.13 cfs @ 13.84 hrs, Volume= 3,474 cf
Outflow = 0.13 cfs @ 13.84 hrs, Volume= 3,474 cf, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 13.84 hrs, Volume= 3,474 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 323.36' @ 13.84 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=0.13 cfs @ 13.84 hrs HW=323.36' TW=321.11' (Dynamic Tailwater)
- **1=SD-7** (Barrel Controls 0.13 cfs @ 1.66 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 = 1,017,909 sf, 1.64% Impervious, Inflow Depth = 0.22" for 25-Year event
Inflow = 2.33 cfs @ 12.14 hrs, Volume= 18,628 cf
Outflow = 2.77 cfs @ 12.21 hrs, Volume= 18,627 cf, Atten= 0%, Lag= 4.1 min
Primary = 2.77 cfs @ 12.21 hrs, Volume= 18,627 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 293.01' @ 12.21 hrs Surf.Area= 1,481 sf Storage= 1,869 cf

Plug-Flow detention time= 65.5 min calculated for 18,627 cf (100% of inflow)
Center-of-Mass det. time= 64.8 min (1,032.1 - 967.2)

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=2.49 cfs @ 12.21 hrs HW=292.98' TW=0.00' (Dynamic Tailwater)
1=Culvert (Passes 2.49 cfs of 6.36 cfs potential flow)
2=Broad-Crested Rectangular Weir (Weir Controls 2.14 cfs @ 1.42 fps)
3=Orifice/Grate (Orifice Controls 0.35 cfs @ 7.15 fps)

Summary for Link SP1: Ex. CB

Inflow Area = 1,059,432 sf, 2.20% Impervious, Inflow Depth = 0.31" for 25-Year event
Inflow = 4.73 cfs @ 12.21 hrs, Volume= 27,476 cf
Primary = 4.73 cfs @ 12.21 hrs, Volume= 27,476 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 = 30,392 sf, 7.35% Impervious, Inflow Depth = 0.34" for 25-Year event
Inflow = 0.07 cfs @ 12.50 hrs, Volume= 865 cf
Primary = 0.07 cfs @ 12.50 hrs, Volume= 865 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 = 415,233 sf, 12.31% Impervious, Inflow Depth = 0.65" for 25-Year event
Inflow = 0.32 cfs @ 17.18 hrs, Volume= 22,415 cf
Primary = 0.32 cfs @ 17.18 hrs, Volume= 22,415 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=12,832 sf 64.77% Impervious Runoff Depth=1.33"
Flow Length=333' Tc=6.0 min CN=80 Runoff=0.44 cfs 1,417 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=30,392 sf 7.35% 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=197,963 sf 3.68% Impervious Runoff Depth=0.00"
Flow Length=1,053' Tc=22.2 min CN=35 Runoff=0.00 cfs 0 cf

Subcatchment32: Runoff Area=65,982 sf 14.49% Impervious Runoff Depth=0.05"
Flow Length=490' Tc=6.9 min CN=46 Runoff=0.01 cfs 249 cf

Subcatchment33: Runoff Area=81,571 sf 2.74% Impervious Runoff Depth=0.00"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.00 cfs 0 cf

Subcatchment34: Runoff Area=40,723 sf 38.72% Impervious Runoff Depth=0.40"
Flow Length=199' Tc=18.9 min CN=61 Runoff=0.19 cfs 1,370 cf

Subcatchment35: Runoff Area=28,994 sf 56.16% Impervious Runoff Depth=0.87"
Flow Length=224' Tc=12.7 min CN=72 Runoff=0.49 cfs 2,098 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=291.84' Inflow=0.59 cfs 2,982 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=0.59 cfs 2,982 cf

Pond CB2: Peak Elev=303.88' Inflow=0.44 cfs 1,417 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=0.44 cfs 1,417 cf

Pond CB3: Peak Elev=321.06' Inflow=0.19 cfs 1,370 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=0.19 cfs 1,370 cf

Pond CB4: Peak Elev=320.91' Inflow=0.61 cfs 3,468 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0104 '/' Outflow=0.61 cfs 3,468 cf

Pond DMH1: Peak Elev=296.63' Inflow=0.44 cfs 1,417 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=0.44 cfs 1,417 cf

Pond FB1: Peak Elev=310.60' Storage=1,982 cf Inflow=0.61 cfs 3,717 cf
Primary=0.04 cfs 3,718 cf Secondary=0.00 cfs 0 cf Outflow=0.04 cfs 3,718 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=291.54' Storage=738 cf Inflow=0.59 cfs 2,982 cf
Outflow=0.21 cfs 2,981 cf

Link SP1: Ex. CB Inflow=0.67 cfs 5,486 cf
Primary=0.67 cfs 5,486 cf

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

Link SP3: Inflow=0.04 cfs 3,718 cf
Primary=0.04 cfs 3,718 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=12,832 sf 64.77% Impervious Runoff Depth=2.55"
Flow Length=333' Tc=6.0 min CN=80 Runoff=0.86 cfs 2,724 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=30,392 sf 7.35% Impervious Runoff Depth=0.10"
Flow Length=142' Tc=12.6 min CN=38 Runoff=0.01 cfs 256 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=197,963 sf 3.68% Impervious Runoff Depth=0.04"
Flow Length=1,053' Tc=22.2 min CN=35 Runoff=0.02 cfs 665 cf

Subcatchment32: Runoff Area=65,982 sf 14.49% Impervious Runoff Depth=0.36"
Flow Length=490' Tc=6.9 min CN=46 Runoff=0.23 cfs 1,993 cf

Subcatchment33: Runoff Area=81,571 sf 2.74% Impervious Runoff Depth=0.04"
Flow Length=409' Tc=23.0 min CN=35 Runoff=0.01 cfs 274 cf

Subcatchment34: Runoff Area=40,723 sf 38.72% Impervious Runoff Depth=1.14"
Flow Length=199' Tc=18.9 min CN=61 Runoff=0.75 cfs 3,853 cf

Subcatchment35: Runoff Area=28,994 sf 56.16% Impervious Runoff Depth=1.89"
Flow Length=224' Tc=12.7 min CN=72 Runoff=1.15 cfs 4,578 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=292.93' Inflow=1.50 cfs 7,128 cf
12.0" Round Culvert n=0.013 L=4.0' S=0.0600 '/' Outflow=1.50 cfs 7,128 cf

Pond CB2: Peak Elev=304.04' Inflow=0.86 cfs 2,724 cf
12.0" Round Culvert n=0.013 L=110.0' S=0.0636 '/' Outflow=0.86 cfs 2,724 cf

Pond CB3: Peak Elev=321.41' Inflow=0.75 cfs 4,519 cf
12.0" Round Culvert n=0.013 L=14.0' S=0.0143 '/' Outflow=0.75 cfs 4,519 cf

Pond CB4: Peak Elev=321.25' Inflow=1.80 cfs 9,096 cf
15.0" Round Culvert n=0.013 L=111.0' S=0.0104 '/' Outflow=1.80 cfs 9,096 cf

Pond DMH1: Peak Elev=296.79' Inflow=0.86 cfs 3,183 cf
12.0" Round Culvert n=0.013 L=198.0' S=0.0195 '/' Outflow=0.86 cfs 3,183 cf

Pond FB1: Peak Elev=311.79' Storage=6,918 cf Inflow=1.98 cfs 11,090 cf
Primary=0.12 cfs 11,091 cf Secondary=0.00 cfs 0 cf Outflow=0.12 cfs 11,091 cf

Pond FI1: Peak Elev=323.24' Inflow=0.02 cfs 665 cf
12.0" Round Culvert n=0.013 L=123.0' S=0.0049 '/' Outflow=0.02 cfs 665 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=1,792 cf Inflow=1.50 cfs 7,128 cf
Outflow=1.06 cfs 7,127 cf

Link SP1: Ex. CB Inflow=2.07 cfs 12,913 cf
Primary=2.07 cfs 12,913 cf

Link SP2: Inflow=0.01 cfs 256 cf
Primary=0.01 cfs 256 cf

Link SP3: Inflow=0.13 cfs 11,365 cf
Primary=0.13 cfs 11,365 cf

ATTACHMENT 7

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 until a homeowner's association is created. Once the homeowner's association is created, a Transfer Application will need to be submitted to the Maine Department of Environmental Protection to properly transfer responsibilities of the stormwater infrastructure.

Records of all inspections and maintenance work performed must be kept on file with the owner and/or homeowner's association 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. A copy of Filterra's Owner's Manual has been included as Attachment A.

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. A copy of Stormtech's Operation and Maintenance Manual has been included as Attachment B.

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.			

ATTACHMENT A

FILTERRA OWNER'S MANUAL

Filterra Owner's Manual

filterra®

Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

This Owner's Manual applies to all precast Filterra Configurations, including Filterra Bioscape Vault.

filterra®
Bioretention Systems

Table of Contents

CONTECH®
ENGINEERED SOLUTIONS

Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

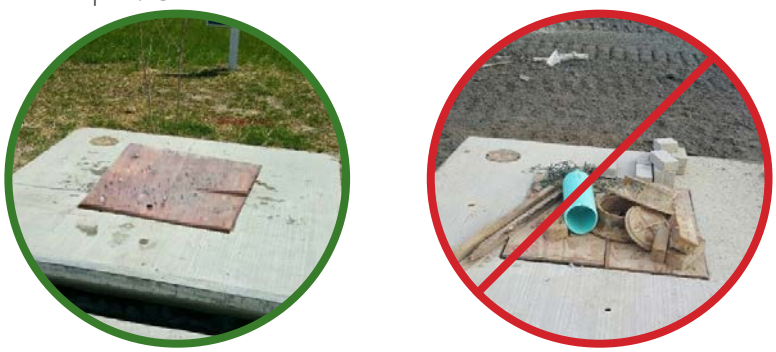
- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.

Minimum Requirements

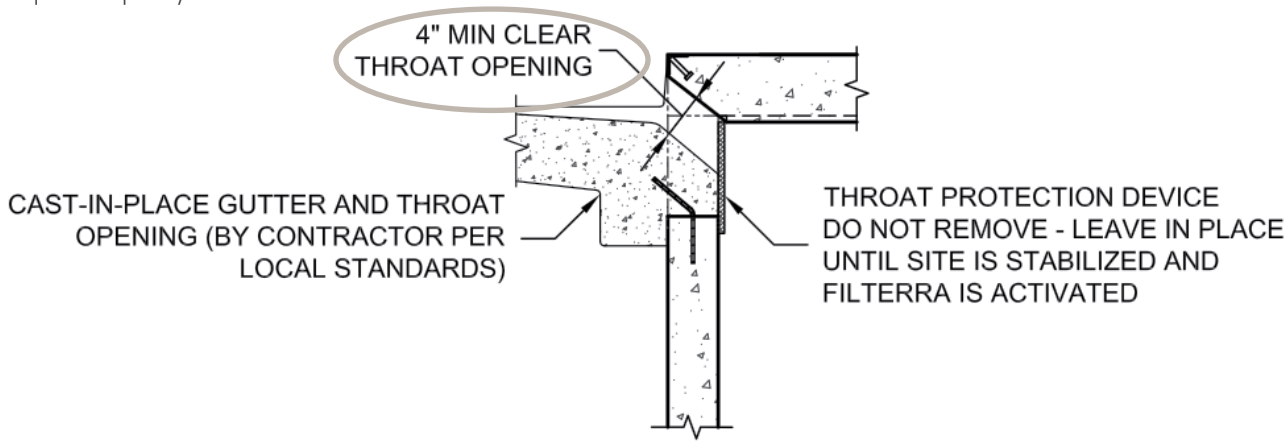
The minimum requirements for Filterra Activation are as follows:

1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.

3. Where curb inlets are included as part of the Filterra system, Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List is available on the Contech website highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.

Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are typically scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the maintenance provider of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.

Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate (where applicable) and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates, where applicable (up to 170 lbs each). If tree grate opening expansion is necessary, safety glasses/goggles and a 3lb or greater mini sledgehammer are required. Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Media Bay Length	Media Bay Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Other sizes not listed - 1 bag per 8 ft^2 of media.

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.

1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate (if applicable)	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).

2. Removal of tree grate (if applicable) and erosion control stones

- Remove cast iron grates for access into Filterra box (if applicable).
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____

- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____

4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates (if applicable) correctly using appropriate lifting or moving tools, taking care not to damage the plant.
- Where applicable, if 6" tree grate opening is too close to plant trunk, the grate opening may be expanded to 12" using a mini sledgehammer. Refer to instructions in Appendix 3.

5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above top of Filterra Unit	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no

6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.

7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____**Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Top of Vault	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3"*	*Lowe's Premium Brown Mulch*	*4'*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

CONTECH® ENGINEERED SOLUTIONS

Project Name:____________________ Company:____________________

Site Contact Name: ____________________ Site Contact Phone/Email: ____________________

Site Owner/End User Name:____________________ Site Owner/End User Phone/Email: ____________________

Preferred Activation Date: ____________________ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No ☐ N/A	

Attach additional sheets as necessary.

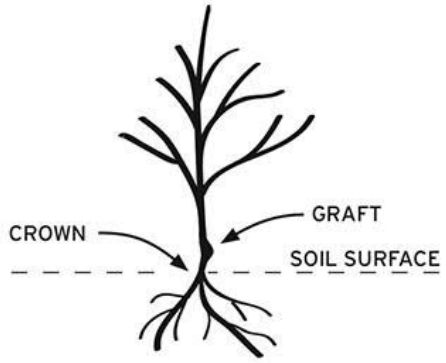
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

____________________ ____________________

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) may require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some with a tree grate of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant foliage from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that meets Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the top/tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.

Appendix 3 – Filterra® Tree Grate Opening Expansion Procedure

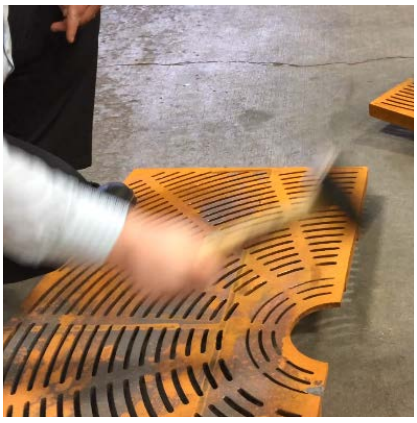
The standard grates used on all Filterra configurations that employ Tree Grates are fabricated with a 6″ opening that is designed with a breakaway section that can be removed, allowing the grate opening to be expanded to 12″ as the tree matures and the trunk widens.

The following tools are required to expand the opening:

- Mini sledgehammer (3 lb. or greater)
- Safety Glasses / Goggles

The following guidelines should be followed to properly expand the tree opening from 6″ to 12″:

1. Remove the grate from the Filterra frame, place it flat on a hard surface, and support the grate by stepping on the edge or using other weighted items such as a few mulch bags if this is being done during a Filterra maintenance event. Put on safety glasses/goggles. Align the mini sledgehammer as shown in the figure to the left. The head of the sledgehammer should be aimed just inside the wide cast iron bar between the larger grate section and the breakaway section.



2. Repeatedly hit the grate at this spot with the mini sledgehammer.

3. After several hits, the breakaway section should snap cleanly off of the larger grate section. Reinstall the grate into the Filterra grate frame. Recycle or dispose of the breakaway section per local guidelines.

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ATTACHMENT B

STORMTECH OWNER'S MANUAL

DECLARATION OF CONDOMINIUM
Raymond Hills Village
Webbs Mills Road, Raymond, Maine

ARTICLE I
SUBMISSION

Section 1.1 Submission of Property. Raymond Hills, LLC a Maine limited liability company with a place of business in Casco, Maine ("**Declarant**"), owner in fee simple of the land described in **Exhibit A** annexed hereto, located within the Town of Raymond, Cumberland County, Maine (the "**Land**"), hereby submits the Land, together with all improvements, easements, rights and appurtenances thereunto belonging (the "**Property**") to the provisions of Chapter 31 of Title 33 of the Maine Revised Statutes Annotated, as amended, known as the Maine Condominium Act ("**Condominium Act**" or "**Act**") and hereby creates with respect to the Property a condominium, to be known as "**Raymond Hills Village**" (the "**Condominium**"). The Property is also shown on the following plats and plans: (i) the plan recorded on _____, 20____, in the Cumberland County Registry of Deeds in Plan Book _____, Page _____, identified as follows: "Condominium Plat, Raymond Hills Village," dated _____ ___, 20__ (the "**Plat**"); (ii) the plan recorded on _____ __, 20__, in said Registry in Plan Book _____, Page _____, identified as follows: "Horizontal And Vertical Boundaries, Raymond Hills Village," dated _____ __, 20__ (the "**Plan**") (collectively the "**Plans**" or "**Plats** and **Plans**"). Reference is also made herein to a certain plan recorded on _____ in the Cumberland County Registry of Deeds in Plan Book _____, Page _____, identified as follows: "Subdivision Plat Plan, _____" dated _____ (the "**Subdivision Plan**").

Section 1.2 Name and Address of Condominium. The name of the Condominium shall be the "**Raymond Hills Village**." The address of the Condominium is __ Webbs Mills Road, Raymond, Maine. The name of the unit owners association is the "**Raymond Hills Village Condominium Association**" (the "**Association**") and its address is ___ Webbs Mills Road, Raymond, Maine.

Section 1.3 Description of Condominium Development. The Condominium consists of the Land described in the attached Exhibit A and the Eighteen (18) residential units ("Units") as identified on the Plats and Plans.

The Property is conveyed and declared subject to:

(i) Terms, covenants, conditions, restrictions, rights and easements set forth in instruments duly recorded in the Cumberland County Registry of Deeds.

(iii) Easements, conditions, covenants and restrictions as shown on the Plat and the Plan.

(iv) The easements, covenants, restrictions and reservations contained in and created by this Declaration, said Plat and the Plan and the Bylaws of the Association (as defined below).

ARTICLE II
DEFINITIONS

Section 2.1 Terms Defined in the Act. Capitalized terms are defined herein or in the Plats and Plans, otherwise they shall have the meanings specified or used in the Condominium Act. In the case of conflict between the meanings specified or used in the Act, those meanings specified or used in the Condominium Act shall control.

Section 2.2 Terms Specifically Defined in this Declaration. In addition to the terms hereinabove defined, the following terms shall have the following meanings in this Declaration, the Bylaws, and Plats and Plans:

(a) "Assessment" means the Owner's share of the anticipated Common Expenses, allocated by Percentage Interest, for the Association's fiscal year as reflected in the budget adopted by the Executive Board for such year.

(b) "Association" means the Unit Owner's Association of the Condominium, which is known as the **Raymond Hills Village Condominium Association**.

(c) "Buildings" (or in the singular, a "Building") means the buildings erected or to be erected on the Property, as well as other improvements comprising a part of a building or intended to be used for purposes incidental to the use of a building.

(d) "Bylaws" means the document having that name and providing for the governance of the Association, pursuant to Section 1603-106 of the Condominium Act, as such document may be amended from time to time.

(e) "Common Elements" (or in the singular, a "Common Element") means those parts of the Property other than the Units as described either in the Condominium Act as being Common Elements or described herein as being Common Elements.

(f) "Common Expenses" means expenditures made by or financial liabilities of the Association together with any allocations to reserves.

(g) "Condominium" means the Condominium described in Section 1.1 above.

(h) "Condominium Documents" means the Declaration, Plats and Plans, Bylaws and Rules and Regulations.

(i) "Declarant" means Raymond Hills, LLC, a Maine limited liability company, its successors and assigns.

(j) "Declaration" means this document, as the same may be amended from time to time.

(k) "Eligible Mortgage Holder" means the holder of a recorded first mortgage on a Unit, or the holder of a recorded or unrecorded land installment contract, which has delivered written notice to the association by prepaid United States mail, return receipt requested, or by delivery in hand securing a receipt therefor, which notice shall state the mortgagee's name and address, the Unit Owner's name and address, and the identifying number of the Unit, and shall

state that the mortgage is a recorded first mortgage. Such notice shall be deemed to have been given reasonably prior to the proposed actions described in Section 15.2 if sent at the time notice thereof is given to the Unit Owners.

(l) "Executive Board" means the Executive Board of the Association. The terms Executive Board and Board of Directors shall be interchangeable.

(m) "Limited Common Elements" (or in the singular, a "Limited Common Element") means those parts of the Common Elements allocated for the exclusive use of one or more but fewer than all of the Units, as described either in the Condominium Act as being Limited Common Elements or described herein or in the Condominium Documents as being Limited Common Elements. In the event of any discrepancy between the Condominium Act and Condominium Documents, the terms of the Condominium Documents shall control with respect to Limited Common Elements.

(n) "Limited Common Expenses" mean: (a) the Common Expenses associated with the maintenance, repair or replacement of a Limited Common Element which shall be assessed against the Unit to which that Limited Common Element is assigned, in proportion to the relative Common Expense liabilities as between themselves, as the Executive Board may periodically define; and (b) the Common Expenses for services benefiting fewer than all the Units, which are assessed exclusively against the Units benefited in accordance with the use of such services as permitted by to Section 1603-115(c) of the Condominium Act.

(o) "Manager" or "Managing Agent" means the agent of the management company appointed by the Association to manage the Condominium.

(p) "Mortgagee" means the holder of any recorded mortgage encumbering one or more of the Units or the holder of a recorded or unrecorded Land Installment Contract.

(q) "Owner" means the record owner or owners of a Unit but does not include a person or entity having an interest in a Unit solely as security for an obligation.

(r) "Percentage Interest" means the undivided interest in the Common Elements appurtenant to a Unit, as set forth on **Exhibit B** attached hereto, as the same may be amended from time to time.

(s) "Property" means the Property described in Section 1.1 above.

(t) "Plats and Plans" means the Plat and Plans as defined in Section 1.1 above and are set forth on **Exhibit C**, which are recorded in the Cumberland County Registry of Deeds, and as such may be amended from time to time.

(u) "Record" means to record in the Cumberland County Registry of Deeds.

(v) "Rules and Regulations" means such rules and regulations as are promulgated by the Declarant or the Executive Board from time to time with respect to the use of all or any portion of the Property.

(w) "Special Assessment" means an Owner's share of any assessment made by the Executive Board in addition to the Assessment.

(x) "Special Declarant Rights" means those rights defined in Section 1601-103 (25) of the Condominium Act, as it may be amended from time to time, including, but not limited to, those rights the Declarant has reserved to itself to complete improvements, to maintain sales offices, to use easement through Common Elements for the purpose of making improvements within the Condominium, and to appoint or remove any officer of the Association during any period of Declarant control.

(y) "Unit" means a physical portion of the Condominium created by this Declaration or any amendment thereto and designated for separate ownership or occupancy, the boundaries of which are described in Article III below.

Section 2.3 Provisions of the Condominium Act. The provisions of the Condominium Act shall apply to and govern the operation and governance of the Condominium, except to the extent that contrary provisions, not prohibited by the Act, are contained in one or more of the Condominium Documents.

ARTICLE III
UNITS; UNIT BOUNDARIES; ALLOCATED INTERESTS

Section 3.1 Number of Units. The Declarant hereby creates a total of **Eighteen (18)** Units in the Condominium.

Section 3.2 Location, Identification and Dimension of Units. The location, dimensions, identification number and approximate area of each Unit is shown on the Plat and the Plan.

Section 3.3 Unit Boundaries. The boundaries of each Unit are as shown on the Plat and the Plan and are described as follows:

(a) Upper (horizontal) Boundaries. The upper boundary of each Unit is the horizontal plane at the lower surface of the joist line of the ceiling of the top floor of the Unit, including attic space, which includes the upper side of the gypsum board, if any, of the ceiling and any other materials constituting any part of the finished surfaces thereof.

(b) Lower (horizontal) Boundaries. The lower boundary of each Unit is the physical surface of the earth extending to an intersection with the vertical (perimeter) boundaries described below.

(c) Vertical (perimeter) Boundaries. The vertical boundaries of each Unit are the vertical planes at the interior edge of the stud line and exposed chimneys not covered by studding, which includes the exterior surfaces of the gypsum board of all walls bounding the Unit. The vertical boundary lines also specifically include the exterior surface of doors, windows, storm windows, and glass walls, but excluding their frames, sills, and thresholds.

(d) Miscellaneous. All structures, fixtures and improvements at any time located within a unit's boundaries, whenever constructed, are a part of that unit, except as

expressly provided in this Article III and elsewhere in this Declaration. A Unit does not include the exterior walls, roof, foundation walls, studs, beams and rafters of the Building, nor the land nor any pipes, ducts, cables, electrical and transmission wires and conduits, distribution pipes and water and sewer pipes, and all other utility lines which serve more than one Unit or the common elements up to the valve, switch or shutoff between common and exclusively used portions thereof, with the value, shut off or switch being a part of the Unit.

Section 3.4 Party Walls. Each Unit is owned subject to, and together with the mutual easements of support and shelter over and to the party walls provided for party walls by law. In the event, by virtue of reconstruction, repair or removal of structures, affecting elements supported or sheltered by the party wall, the removing Unit owner shall shore, reconstruct and weather proof such party wall so it can perform its function of support and shelter, and if such reconstruction, repair or removal is to be permanent, finish all surfaces exposed to weather in an architecturally finished manner consistent with the rest of the building.

Section 3.5 Relocation of Unit Boundaries and Subdivision of Units. Relocation of boundaries of Units is permitted by amendment to the Declaration in compliance with the provisions of the Act and upon receipt of all necessary governmental approvals, permits and licenses including the zoning ordinance of the Town of Raymond then in effect. The subdivision of Units is not permitted.

Section 3.6 Allocated Interests. The undivided ownership of common elements and liability for common expenses and votes in the Association shall be allocated among each of the Eighteen (18) Units, as set forth in **Exhibit B**.

ARTICLE IV
DESCRIPTION AND ALLOCATION OF COMMON ELEMENTS, LIMITED COMMON ELEMENTS AND LIMITED COMMON PROPERTY

Section 4.1 Description of Common Elements. Common Elements shall consist of all of the Property except the individual Units, and shall include the Land including the driveways and parking areas, and any easements as set forth in **Exhibit A** for parking, access, and utilities; and in addition, all other parts of the Property necessary and convenient to its existence, maintenance and safety, normally in common use as defined in the Condominium Act, except such parts of the Property as may be specifically excepted or reserved herein or in any exhibit attached hereto. As provided in Section 1602-102(2) of the Condominium Act, any wires, ducts, pipes, or other fixtures located within a Unit but serving another Unit or Units are part of the Common Elements. Each Owner shall have the right to use the Common Elements in common with all other Owners, as may be required for the purposes of ingress and egress to and use, occupancy and enjoyment of the respective Owners and guests, tenants, and other authorized occupants, licensees, and visitors of the Owner. The use of the Common Elements and the rights of the Owners with respect thereto shall be subject to and governed by the provisions of the Act and Condominium Documents. Without limitation, the Common Elements shall specifically include, without limitation, the following:

(a) Grounds. The Land, lawns, trees, any forested areas, signage, any common paved areas, walkways, or driveways as identified on the Plats and Plans.

(b) Systems & Utilities. Sanitary sewer to each unit, if any, electric distribution to each unit meter, water distribution to each unit master valve, storm and unit drainage system, water lines servicing more than one unit (in foundation, basement, and exterior walls), sewer lines up to unit outlet (in foundation, basement, and exterior walls), electrical wiring from meter and serving more than one unit (in foundation and exterior walls), master electrical panel, laundry piping and valves, life safety equipment (excluding smoke detectors);

(c) Other. All other parts of the property necessary or convenient to its existence, maintenance and safety or normally in common use, except as otherwise expressly provided.

Section 4.2 Limited Common Elements. Limited common elements, the exclusive use of which is reserved to the use of a particular unit, to the exclusion of the other unit, consist of the following, in addition to those features described in Section 1602-102(2) and (4) of the Act:

(a) Walks, drives, retaining walls, landscaping, public utility, electrical, drainage and mechanical pipes, ducts, chases, lines, conduits, ducts and accessory fixtures serving one of the Units;

(b) Street and garden lights powered from an appurtenant Unit;

(c) Fences, gates, mailboxes, hedges, enclosures, and other structures and fixtures enclosing a Unit;

(d) Balconies, decks, porches, stairs and landings accessible from a single Unit;

(e) Doors leading from Units to balconies, and their related frames, sills and hardware;

(f) Doors leading from Units to interior corridors which are Common Elements (if any); and

(g) Storage areas numbered to correspond with a particular Unit, if any.

Section 4.3 Locations of Common and Limited Common Elements. The locations of the Common Elements and Limited Common Elements are shown on the Plats and Plans.

Section 4.4 Special Maintenance and Special Expense Assessment. The owners of any Unit to which a fixture or other item of property is allocated to that Unit as a Limited Common Element under Section 4.2 above and the Owners of any Unit or Units with a fireplace chimney or chimney flue which serves only that unit shall be responsible for the good upkeep, maintenance and repair of such fixture, item of property, fireplace chimney or chimney flue, and if the owner fails to meet such responsibility the Association may arrange for the same and shall assess the expense to such unit owners. The expense of maintenance and repair of Common Elements necessitated by the negligence, misuse, or neglect of a unit owner shall be charged by the Association to such Unit Owner.

Section 4.5 Alteration of Common Elements by the Declarant. The Declarant reserves the right to modify, alter, remove or improve portions of the Common Elements, including without limitation, any equipment, fixtures and appurtenances, when in the Declarant's judgment it is

necessary or desirable to do so, until the expiration of the Period of Declarant Control defined in Section 12.1(b) below.

Section 4.6 Parking. Parking of motor vehicles by Owners, and their tenants, guests, visitors, and invitees shall be only in spaces in the common elements designated for parking and/or in the Limited Common Element parking spaces or the Assignable Limited Common Element parking spaces appurtenant to their respective Unit. The spaces in the Common Elements designated as spaces for parking but which have not been assigned to specific Units as Limited Common Elements shall be used by the Owners, their tenants, guests, visitors, and invitees, on a "first come, first served" basis, except as the Executive Board may otherwise determine. No unattended vehicle shall be left in such a manner as to impede the passage of traffic or to impair access to parking areas. **[DISCUSS COVERED PARKING, ALLOCATION TO UNITS]**

ARTICLE V
MAINTENANCE RESPONSIBILITIES

Section 5.1 Maintenance Responsibilities. Notwithstanding the ownership of the various portions of the Common Elements and the Units by virtue of the foregoing boundary descriptions, the Units and Common Elements shall be maintained and repaired by the Association in accordance with the provisions of Section 1603-107 of the Act, except as expressly set forth to the contrary herein.

Section 5.2 Maintenance of Common Elements. The Association, or the Managing Agent of the Association in accordance with Article 7, shall be responsible for the maintenance, repair and replacement of all of the Common Elements whether located inside or outside of the Units, the cost of which shall be charged to the unit Owners as a Common Expense except as otherwise provided herein with regard to Limited Common Elements (and unless, if in the opinion of the Board of Directors such expense was necessitated by the negligence, misuse or neglect of a unit Owner in which case such owner shall be solely liable for such costs and expenses). The maintenance, repair and replacement of Common Elements located within a Unit, for which the unit Owner is not responsible, to the extent required for the functioning of or for connecting utilities to the Property and Units, shall be furnished by the Association as part of the Common Expenses.

The Association shall be responsible for the maintenance, upkeep, repair, or improvement of the private road or any associated utility infrastructure, culverts and stormwater infrastructure. No Owner may independently undertake any such maintenance or improvement of the private road, except in case of emergency. In the event that the Town of Raymond accepts the private road as a public way, the Association will still be responsible for maintenance of all stormwater improvements outside of the road right of way. The Declarant or his successors or assigns will be the responsible party until such time as the Association is formed.

The Association is subject to all of the terms and conditions of the Maine Department of Environmental Protection (MDEP) Stormwater Permit and the Inspection, Maintenance, and Housekeeping Plan for Raymond Hills Village attached hereto as Exhibit A. The Declarant shall give a copy of the MDEP permit including the standard conditions and a copy of the approved subdivision plan to each lot buyer at least 14 days prior to the date of closing on the sale or lease

of the lot. The Association or any successor or assigns shall retain the services of a third-party inspector in accordance with the MDEP Third-Party Inspection Program. Prior to the start of construction, the Declarant or any successor or assigns shall conduct a pre-construction meeting. This meeting shall be attended by the Declarant or any successor or assigns representatives, MDEP staff, the design engineer, the contractor, and the third-party inspector.

The Declarant or any successor or assigns shall retain the design engineer or other qualified engineer to oversee the construction of the stormwater structures according to the details and notes of the approved plans. Within 30 days of completion of each structure, the Declarant or any successor or assigns shall submit a log of inspection reports detailing the items inspected, photographs taken, and the dates of each inspection to the MDEP, Bureau of Land and Water Quality for review.

The Association or any successor or assigns shall retain a MDEP Third Party Inspector to inspect and 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 MDEP Stormwater 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.

Section 5.3 Maintenance of Unit.

(a) Each unit Owner shall keep and maintain his or her Unit, including all equipment, appliances and appurtenances, in good order, condition and repair and in a clean and sanitary condition, whether such maintenance and repair shall be structural or non-structural, ordinary or extraordinary, and shall do all redecorating, painting and varnishing which may at any time be necessary to maintain the good appearance and condition of his or her Unit. No Unit Owner shall sweep or throw, or permit to be swept or thrown, from any Unit any dirt, debris or other substance. In addition, each Unit Owner shall be responsible for all damage to any other Units or to the Common Elements resulting from his or her failure or neglect to make any of the repairs required by this Article. Each Unit Owner shall perform his or her responsibility in such manner as shall not unreasonably disturb or interfere with the other Unit Owners. Each Unit Owner shall promptly report to the Executive Board or the Managing Agent any defect or need for repairs for which the Association is responsible. No Unit Owner shall change the exterior color of his or her Unit, nor alter the exterior materials or structure, without the written approval of the Board of Directors which shall not be unreasonably withheld. All exterior maintenance shall be undertaken so as to maintain the general character and quality of the Condominium. No work shall be

undertaken without all necessary State and local permits and approvals, and copies of all such permits and approvals shall be given to the Association.

(b) In the event (i) that any exterior improvements become unsightly, deteriorated, dilapidated, or otherwise in violation of the conditions imposed by this Declaration or (ii) any improvements are installed in violation of this Declaration, the Association shall have the right to enter the unit, remove the deteriorated or improper improvement, or restore it to a condition required by this Declaration, and assess the cost thereof to the unit owner as a service charge.

Section 5.4 Liability of Owner. Each Unit Owner shall be liable for, and the Association shall have a lien against his or her Unit for, the expense of maintenance, repair or replacement of any portion of another Unit or the Common Elements, including Limited Common Elements, of another Unit caused by such Unit Owner's act, neglect or carelessness or by that of any member of such unit Owner's guests, employees, agents or lessees, and the Association shall have the right to cure, correct, maintain, repair or replace any damage or disrepair resulting from such act of neglect or carelessness. The Association shall also have the right to perform maintenance required of a Unit Owner under Section 5.4, but not performed by the Unit Owner and the Unit Owner shall be liable for and the Association shall have a lien against the Unit for the expense of such maintenance. Such liability shall include any increase in fire insurance rates occasioned by use, misuse, occupancy, or abandonment of any Unit or its appurtenances. Nothing herein contained, however, shall be construed so as to modify any waiver by insurance companies of rights of subrogation against such Unit Owner.

ARTICLE VI
ALLOCATION OF PERCENTAGE INTERESTS, COMMON EXPENSES AND VOTING RIGHTS

Section 6.1 Percentage Interests. Attached as **Exhibit B** hereto is a list of all Units by their identifying number and the Percentage Interest appurtenant to each Unit, together with an explanation of the formula by which such Percentage Interest is determined.

Section 6.2 Common Expenses. The liability of each Unit for the Common Expenses of the Condominium shall be the same percentage share as the Percentage Interest set forth on **Exhibit B**, and as such shall be determined by the same formula by which the Percentage Interest is determined.

Section 6.3 Allocation of Owners' Voting Rights. Each Owner of a Unit shall be entitled to vote as described on **Exhibit B**. If a Unit is owned by more than one person or entity, the voting interest shall not be divided and the vote for the Unit shall be cast by only one of the Owners as determined by a majority of the Owners of such Unit.

ARTICLE VII
MANAGEMENT

Section 7.1 Managing Agent. The Association shall have the right to employ a professional experienced property management firm to act as Managing Agent to oversee the daily operation of the Condominium in accordance with the provisions of the Act and the Declaration;

provided, however, that no agreement for such professional management of the Condominium may exceed a term of three (3) years but may be renewed upon consent of the Association.

Section 7.2 Maintenance Responsibilities. The Managing Agent, or the Association through the Executive Board in the absence of a Managing Agent, shall be responsible for maintenance, repair and replacement of the Common Elements and Common Property including, but not limited to, the Limited Common Elements, except as otherwise provided in this Declaration. The cost of the provision of such services shall be a Common Expense.

ARTICLE VIII
EASEMENTS

Section 8.1 Additional Easements. In addition to the easements provided for by the Act, the following easements are hereby created:

(a) All Units shall be subject to an easement in favor of the Declarant pursuant to Section 1602-115 of the Condominium Act. The Declarant reserves the right to use any Units owned or leased by the Declarant and any Common Element as models, management offices, sales offices for this and other projects or customer service offices; and the Declarant reserves the right to relocate the same from time to time within the Property; upon relocation, the furnishings thereof may be removed. The Declarant further reserves the right to maintain on the Property such advertising signs as may comply with applicable governmental regulations, which may be placed in any location on the Property and may be relocated or removed, all at the sole discretion of the Declarant. Prior to assignment as Limited Common Elements, the Declarant shall have the right to restrict the use of certain Common Element parking areas for sales purposes and to use such areas for sales purposes. Further, the Declarant shall have the right to erect temporary offices on any Common Element parking areas for models, sales, management, customer service and similar purposes. This easement shall continue until the Declarant has conveyed all Units in the Condominium to Owners other than the Declarant.

(b) The Units and Common Elements shall be, and hereby are, made subject to easements in favor of the Declarant, other Owners, appropriate utility and service companies, cable television companies and governmental agencies or authorities for such utility and service lines and equipment as may be necessary or desirable to serve any portion of the Property. The easements created by this Section 8.1(b) shall include, without limitation, rights of the Declarant, any Owner or the providing utility or service company, or governmental agency or authority to install, lay, maintain, repair, relocate and replace gas lines, pipes and conduits, parking areas, water mains and pipes, sewer and drain lines, drainage ditches and pump stations, telephone wires and equipment, television equipment and facilities (cable or otherwise), electrical wires, conduits, and equipment and ducts and vents over, under, through along and on the Units and Common Elements. Notwithstanding the foregoing provisions of this Section 8.1(b), any such easement through a Unit shall be located either in, substantially the same location as such facilities or similar, facilities existed at the time of first conveyance of a Unit in the Unit by the Declarant or so as not to materially or unreasonably interfere with the use, occupancy, or quiet enjoyment of the Unit by its occupants. With respect to any utility lines or equipment serving only the Condominium and located upon the Common Elements, the Executive Board shall have the right and power to dedicate and convey title to the same to any private or public utility company. The Executive

Board shall also have the right and power to convey permits, licenses and easements over the Common Elements for the installation, maintenance, repair and replacement of utility poles, lines, wires and other equipment to any private or public utility company. In addition, the Executive Board shall have the right to grant permits, licenses and easements over the Common Elements for the building and maintenance of roads, for the protection of the natural, scenic and open space values of the Property, and for other purposes necessary for the proper operation the Condominium.

(c) During the Period of Declarant Control, the Declarant is entitled to create an easement on, over and under those portions of the Common Elements for the purpose of any and all Common Element maintenance including but not limited to maintaining and/or correcting drainage of surface water in order to maintain reasonable standards of health, safety and appearance. The easement created by this Section 8.1(c) expressly includes the right to cut any trees, bushes, or shrubbery, to grade the soil, or to take any other action reasonably determined to be necessary. The Declarant or the Association, as the case may be, shall restore the affected property as closely to its original condition as is practicable.

(d) The Common Elements (other than the Limited Common Elements) shall be, and hereby are made, subject to an easement in favor of the Owners and their invitees, employees, tenants and guests, the Association and the agents and employees of the Association for access, egress and ingress over, through and across each portion thereof, pursuant to such requirements and subject to such charges as the Executive Board may from time to time prescribe; provided that nothing contained herein shall create any access easement in favor of Owners with respect to such portions of the Common Elements which are not needed in order to gain access to one or more Units and as to which the Executive Board may from time to time determine it to be necessary or desirable to limit or control access by Owners or the occupants of Units, or both, including, by way of illustration and not limitation, machinery and equipment rooms, and any management agent's office, provided, however, that every Owner shall have an unrestricted right of ingress and egress to his or her Unit for his or her specified Period of Use. Until the Declarant conveys the last Unit to an Owner other than Declarant, the Declarant shall have the right to restrict access by Owners to management and sales offices and areas located on or in any Common Element.

(e) The Common Elements (including, but not limited to, the Limited Common Elements) and Units are subject to an easement in favor of the Declarant for the purposes of construction, reconstruction, maintenance, repair, renovation, replacement or correction of the Units or Common Elements.

(f) The Common Elements (including, but not limited to, the Limited Common Elements) shall be and hereby are made subject to an easement in favor of the Association and the agents, employees and independent contractors thereof for the purpose of the inspection, upkeep, maintenance, repair and replacement of the Common Elements, and Property (including, but not limited to the Limited Common Elements and Property).

(g) The Common Elements (including, but not limited to, the Limited Common Elements) shall be and hereby are made subject to the following easements in favor of the Units benefited:

(1) For the installation, repair, maintenance, use, removal and/or replacement of pipes, ducts, heating and air conditioning systems, electrical, telephone and other communication wiring and cables and all other utility lines and conduits which are part of or exclusively serve a single Unit and which pass across or through a portion of the Common Elements;

(2) For the installation, repair, maintenance, use, removal and/or replacement of overhead lighting fixtures, electrical receptacles and the like which are located in a portion of a Unit which is a part of the Common Elements; provided that the installation, repair, maintenance, use, removal or replacement of such fixtures, receptacles and the like does not unreasonably interfere with the common use of any part of the Common Elements or impair or structurally weaken any other Unit, any buildings, or any other portion of the Condominium or the Property;

(3) For driving and removing nails, screws, bolts and the like into the Common Elements; provided that such action will, not unreasonably interfere with the common use of any part of the Common Elements or impair or structurally weaken the Buildings; and

(4) For the maintenance or the encroachment of any lighting devices, outlets, exhaust fans, ventilation ducts, registers, grilles and similar fixtures which serve only one Unit but which encroach into any part of any Common Element or Limited Common Element on the date this Declaration is recorded or any amendment hereof is recorded.

(h) The Units and the Limited Common Elements are hereby made subject to the following easements:

(1) In favor of the Association and its agents, employees and independent contractors, (i) for inspection of the Units and Limited Common Elements in order to verify the performance by Owners of all items of maintenance and repair for which they are responsible, (ii) for inspection, maintenance, repair and replacement of the Common Elements and Property or the Limited Common Elements and Property situated in or accessible from such Units or Limited Common Elements or both, (iii) for correction of emergency conditions in one or more Units or Limited Common Elements, or both, or casualties to the Common Elements and Property, the Limited Common Elements and Property and/or the Units, and (iv) to do any other work reasonably necessary for the proper maintenance of the Condominium, it being understood and agreed that the Association and its agents, employees and independent contractors shall take reasonable steps to minimize any interference with an Owner's use of his Unit resulting from the Association's exercise of any rights it may have pursuant to this Section 8.1(h)(1) and the following Section 8.1(h)(2) or both;

(2) In favor of the Owner benefited thereby and the Association and its agents, employees and independent contractors, for the installation, repair, maintenance, use, removal and/or replacement of pipes, ducts, electrical, telephone, telegraph or other communication systems and all other utility lines and conduits which are part of the Common Elements and which pass across or through a portion of one or more Units.

(i) If construction, reconstruction, repair, shifting, settlement or other movement of any portion of the Condominium results either in the Common Elements encroaching on any Unit, or in any Unit encroaching on the Common Elements or on any other Unit, a valid easement shall exist during the period of the encroachment for the encroachment and for the maintenance thereof.

(j) All easements, rights and restrictions described and mentioned in this Declaration are easements appurtenant, running with the land and the Property, including by way of illustration but not limitation the Units and the Common Elements, and (except as expressly may be otherwise provided herein or in the instrument creating the same) shall continue in full force and effect until the termination of this Declaration.

(k) Appurtenant to each Unit is a perpetual right, subject to the rules and regulations established by the Association, of ingress and egress from such unit through the common elements to the public streets adjoining the Property.

(l) Each Unit shall have an easement in common with all other units to use all pipes, wires, ducts, cables, conduits, meters, utility and/or gas lines and other common elements serving such unit and located in any of the other units or on the common elements.

(m) Each Unit sharing a party wall with the adjacent unit shall have an easement for support from such other unit, and an easement for driving and removing nails, screws, bolts and other attachment devices into the unit side surface of the party wall, whether concrete or framing which supports the dry wall, to the extent such nails, screws, bolts and other attachment devices may encroach into the adjoining unit or common elements; provided, however, that any such action shall not adversely affect either the structural, thermal or acoustical character of the party wall.

(n) Each Unit shall have an appurtenant easement to the extent necessary for structural and lateral support over the other unit and over the common elements and limited common elements; each Unit, the common elements and limited common elements shall be subject to an easement for structural and lateral support in favor of the other unit. If any portion of the common elements or limited common elements hereafter encroaches upon any Unit, or if any unit hereafter encroaches upon any other unit or upon any portion of the common elements or limited common elements, as a result of settling or shifting of any Building in which they are located or other than as a result of the purposeful or negligent act or omission of the owner of the encroaching Unit or of the Association in the case of encroachments by the common elements or limited common elements, a valid easement appurtenant to the encroaching Units, common elements or limited common elements for said encroachment and for the maintenance of the same shall exist for so long as the encroachment shall exist. In the event that any Building shall be partially destroyed as a result of fire or other casualty or as a result of a taking in the nature of eminent domain or by an action or deed in lieu of condemnation, and then is rebuilt, encroachments of a portion or portions of the common elements or limited common elements upon any Unit or of any Unit upon any other Unit or upon any portion of the common elements or limited common elements due to such rebuilding, shall be permitted, and valid easements appurtenant to the encroaching units, common elements or limited common elements for such encroachments and the maintenance thereof shall exist so long as that Building as so rebuilt shall stand.

Section 8.2 Reservation of Easement Rights. Until the construction, marketing and sale of all Units is completed, the Declarant reserves the right to grant to any third party any license or easement in, on, over or through the Property, in addition to and not in limitation of those set forth above, which license or easement is determined by the Declarant, in its reasonable judgment, to be necessary for the development or improvement of the Property. Any such license or easement

granted hereunder may be recorded by the Declarant at its sole cost and expense. The Association, at the request of the Declarant, shall execute and deliver in recordable form any instrument or document necessary or appropriate to confirm the grant of such license or easement.

Section 8.3 Additional Easements, Covenants, Restrictions. The Property is also subject to any easements and restrictions as shown on the Plats and Plans. Without limiting the foregoing, the Property and Condominium are subject to the following easements, covenants, terms, and restrictions:

(a) The terms and conditions of approval set forth in a letter from the Town of Raymond Planner or Planning Board Chair dated _____ __, 20__ regarding action of the Town of Raymond Planning Board (the "Board") and the Board's approval dated _____ __, 20__ for site plan review relating to the Property as evidenced by the Site Plan (the "Site Plan Approval"), as such Site Plan Approval may be modified from time to time, a copy of which Site Plan Approval is attached hereto as **Exhibit D**. **[FILL IN ACTUAL APPROVALS]**

(b) Subdivision Approval. The terms and conditions of approval set forth in a _____ dated _____ regarding action of the Board and the Board's approval dated _____ for subdivision as evidenced by the Subdivision Plan (the "Subdivision Approval"), as such Subdivision Approval may be modified from time to time, a copy of which Subdivision Approval is attached hereto as **Exhibit E**.

ARTICLE IX
RESTRICTIONS ON USE, SALE AND LEASE OF UNITS AND/OR COMMON OR LIMITED COMMON ELEMENTS

Section 9.1 The following restrictions shall apply to the use of the Condominium:

(a) Use of Units. Subject to the prohibitions established in Section 9.1(a)(2), the Units may be used only as residences, and may not be used for any professional business, commercial, industrial or manufacturing purposes, or primarily for storage. Each Unit shall be used and occupied subject to all restrictions contained in this Declaration, the Bylaws, and the Rules and Regulations of the Association, as promulgated and amended from time to time.

(b) Obstruction of Common Elements. No Owner may obstruct the Common Elements in any way. No Owner may store anything in or on the Common Elements without the prior written consent of the Executive Board, which may be granted or withheld in the sole discretion of the Executive Board.

(c) Quiet Enjoyment. No Owner may carry on any practice, or permit any practice to be carried on, which unreasonably interferes with the quiet enjoyment of the occupants of any other Unit. The Property is to be maintained in a clean and sanitary condition, and no Owner may place any garbage, trash or rubbish anywhere in the Property other than in his own Unit and in or on such parts of the Common Elements as may be designated for such purpose by the Executive Board.

(d) Fire Hazards. No Unit shall be used, occupied or kept in a manner that in any way increases the fire insurance premiums for the property without the prior written permission of the Executive Board.

(e) Signs. No sign of any character shall be erected, posted, or displayed upon, in, from or about any Unit or Common Element, without the prior written approval of the Executive Board or a committee designated by the Executive Board, which approval shall not be unreasonably withheld, except for such signs as may be posted by the Declarant for promotional or marketing purposes herein described, or signs allowed by any rules promulgated in writing by the Association including those advertising businesses located on the Property. Once approval has been granted, the Unit owner seeking the sign shall have the authority to erect the approved sign. The Executive Board may also erect one or more publicly displayed, adequately sized, directional and identifying sign with the name and location of each occupant of the Units. Any signs shall be in compliance with applicable zoning ordinances; all costs to design, fabricate, install, maintain, repair and replace such signage shall be the responsibility of the Unit owner installing the sign or of the Association if the sign is intended to benefit the Condominium as a whole.

(f) Rules and Regulations. The Executive Board shall have the authority to promulgate commercially reasonable Rules and Regulations, not in conflict with the provisions of this Declaration, concerning the use and enjoyment of the Property. Copies of the then current Rules and Regulations and any amendments thereto shall be furnished to all Owners by the Association promptly after the adoption of such Rules and Regulations and any amendments thereto.

(g) Pets. The keeping, boarding and/or raising of farm animals, laboratory animals, livestock, poultry or reptiles of any kind, regardless of number, shall be and is prohibited within any Unit or upon the Common Elements or Limited Common Elements. The keeping of typical pets is permitted subject to the Rules and Regulations and other regulations established from time to time by the Association. If any such animals are permitted by said Rules and Regulations, each unit owner is responsible for the clean-up of his or her pet's excrement. The Association shall have the power to further regulate pets and animals under the Bylaws or rules and regulations of the Association as promulgated or amended from time to time, including without limitation the power to regulate the number, size and species of pets allowed, to establish behavior requirements and to expel any offending pets and animals from the Property, and including, without limitation, to enact more or less restrictive requirements than those set forth herein.

(h) Nuisance. No unit owner shall use his or her unit in such a manner as to create a nuisance or disturbance of other unit owners. No unit owner shall play or operate any electronic or mechanical, sound-producing machinery, appliance or device between the hours of 10:00 p.m. and 8:00 a.m., whether inside or outside any unit, if such playing or operation shall unreasonably disturb or annoy the occupants of any other unit. No unit owner shall erect or maintain an outside televisions, television or radio antenna, except that, with the consent of the Executive Board, satellite dishes may be installed on the roof of the Condominium and connected to one or more Units.

(i) Alterations to Units and Common Elements.

1. Interior Unit Alterations: Except as otherwise provided herein, no Unit shall be substantially altered, remodeled or renovated without the prior written approval of the Executive Board of the Association or a committee appointed by the Board pursuant to the By-Laws, which approval shall not be unreasonably withheld. Substantial alteration includes but is not limited to alterations that may impair the structural integrity or mechanical systems of the Building, lessen the support of any portion of the Condominium, or jeopardize the soundness or safety of the Property. Prior written approval shall not be required for minor interior alterations or renovations that do not affect the structural integrity of the Condominium or any Common Elements. For purposes of this paragraph, the term "minor alterations or renovations" shall specifically include, without limitation, the following: interior painting or wallpaper installation; carpet or flooring installation; refinishing, replacement, or repair of interior cabinetry, built-in storage or display cases; installation or replacement of lighting fixtures or bathroom fixtures; removal or construction of non-load-bearing walls and partitions, and remodeling projects that do not affect the structural integrity of any Common Elements.

2. Exterior Unit Alterations: No Unit Owner shall alter the exterior appearance of a Unit or any Building (including, but not limited to, the exterior surfaces of roofs, walls, windows, or doors) without the prior written approval of the Executive Board of the Association or a committee appointed by the Board pursuant to the By-Laws.

3. Common Elements: Owners shall not erect fences, signs, canopies, or other structures, plant or remove trees or shrubs, materially alter the grading or landscaping, or do any other thing which affects the appearance from the exterior of the Units or grounds, including Limited Common Elements, except with the written permission of the Executive Board or a Committee established by the Board.

(j) Labor, Mechanic's Liens. No Owner shall cause any material to be furnished to his Unit or any labor to be performed therein or thereon except in the manner set forth in subparagraph (e), (g) and (h) above. Each Owner shall indemnify and hold the other Owners of his Unit harmless against any loss, damage or claim arising out of his breach of the provisions of this Section 9.1, including but not limited to the costs of removing any unauthorized improvements, any repairing and restoring the Unit to substantially its condition prior to such alteration, remodeling, renovation or repair and the cost of removing, bonding, defending or paying any mechanic's or materialmen's liens.

(k) Trash and Storage. Trash, garbage and other waste shall be kept only in sanitary containers and shall be disposed of in accordance with rules and regulations established by the Executive Board. No articles of personal property belonging to any Unit Owner shall be stored in any portion of the Common Elements except in a storage area specifically designated by the Executive Board or the Managing Agent, if any.

Section 9.2 Sale and Lease of Units.

(a) Leasing By Declarant. The Declarant shall have the right to operate any Units owned by the Declarant as a rental project. The Declarant may establish and maintain in the Units and Common Elements, all offices, signs and other accoutrements normally used in the operation of, such rental properties in the sole discretion of the Declarant. Such operation shall be for the benefit of the Declarant and neither the Association nor any Owner (other than the Declarant) shall have any right or interest in the profits or losses thereof.

(b) Leasing by Owners Other than Declarant. Portions of the Units or the entire Unit may be leased by the Owner of each Unit. All leases of units or any portion thereof must be in writing. The written lease of any unit must: (a) be for a term of no less than thirty (30) days; (b) require the lessee to comply with this Declaration, the Bylaws and any rules and regulations of the Association; (c) provide that failure to comply therewith constitutes a default under the lease; and (d) provide that the Association has the power, but not the obligation, to terminate the lease and to bring summary proceedings to evict the tenant in the name of the lessor thereunder if any material violation of this Declaration, the Bylaws and any rules and regulations is not cured within ten (10) days of prior written notice to the tenant or such additional time as is necessary provided that the tenant promptly commences cure and diligently pursues cure to completion. Notwithstanding the contents of any lease, the rights of any tenant of a Unit shall be subject to, and each such tenant shall be bound by, the covenants and restrictions set forth in the Declaration, Bylaws and Rules and Regulations, and default thereunder shall constitute a default under the lease. Each unit owner, promptly following the execution of any lease of a unit, shall forward a conformed copy thereof to the Association.

(c) Foreclosure Rights. This Section 9.2 shall not be deemed or construed to impair a Mortgagee's right to foreclose, accept a deed in lieu of foreclosure or sell or lease a Unit so acquired by the Mortgagee.

ARTICLE X
DECLARANT RIGHTS AND SPECIAL DECLARANT RIGHTS

Section 10.1 General Declarant Rights. In addition to the easement rights reserved in Article 8, the Declarant reserves to itself and for the benefit of its successors and assigns the right:

(a) Until the construction, marketing and sale of all Units is completed, to connect with and make use of utility lines, wires, pipes and conduits located on the Property for construction and sales purposes, provided that the Declarant shall be responsible for the cost of services so used;

(b) Until the construction, marketing and sale of all Units is completed, to use the Common Elements for ingress and egress, for the repair and construction of Units and Common Elements including the movement and temporary storage of construction materials and equipment, and for the installation of signs and lighting for sales and promotional purposes;

(c) Until the construction, marketing and sale of all Units is completed, to complete all improvements shown on the Plats and Plans, to relocate any improvements shown on the Plats and Plans, construct additional Common Element improvements on any part of the Property, to maintain models and sales offices and to exercise the easements as set forth in Article

8 hereof, to make the Condominium part of a larger condominium, to make the Condominium subject to a master association, to appoint or remove any officer or Executive Board member during any period of Declarant control of the Association and any and all other Special Declarant Rights as are now allowed or in the future may be allowed by the Condominium Act. The real estate subject to these Special Declarant Rights is all of the Property, except those portions lying within the boundaries of declared Units and upon which declared Units are located.

(d) Appoint and remove members of the Board of Directors and Officers of the Association in accordance with Section 12.1.

Section 10.2 Amendment. This Article 10 shall not be amended without the prior written consent of the Declarant (provided Declarant or an affiliate of Declarant still owns a Unit in the Condominium) which consent shall be duly recorded in the Cumberland County Registry of Deeds.

ARTICLE XI
UNITS SUBJECT TO CONDOMINIUM DOCUMENTS, EMINENT DOMAIN

Section 11.1 Applicability of Condominium Documents. Each present and future Owner, tenant, occupant and Mortgagee of a Unit therein shall be subject to and shall comply with the provisions of the Act, and with the covenants, conditions and restrictions as set forth in the Condominium Documents and the deed to such Unit; provided that nothing contained herein shall impose upon any tenant of a Unit or Mortgagee any obligation which the Act or one or more of such documents, or both, make applicable only to Owners (including, without limitation, the obligation to pay assessments for Common Expenses). The acceptance of a deed or mortgage to any Unit therein, or the entering into of a lease or the entering into occupancy of any Unit therein shall constitute an agreement that the provisions of the Act and the covenants, conditions and restrictions set forth in the Condominium Documents and the deed to such Unit therein are accepted and ratified by such grantee, Mortgagee or tenant. All of such provisions shall be covenants running with the land and shall bind any person having at any time any interest or estate in such Unit, as though such provisions were recited and stipulated at length in each and every deed, conveyance, mortgage, contract or lease thereof. The Association and any aggrieved Owner shall have a right of action against Owners who fail to comply with the provisions of the Condominium Documents, the Act, or with decisions made by the Association or the Executive Board. Aggrieved Owners shall have similar rights of action against the Association.

Section 11.2 Eminent Domain. Whenever all or part of the Common Elements shall be taken, injured or destroyed by eminent domain, each Owner shall be entitled to notice thereof and to participate in the proceedings incident thereto, provided, however, that the Association shall officially, represent the Owners in such proceedings. In any proceedings for the determination of damages, such damages shall be determined for such taking, injury or destruction as a whole and not for each Owner's interest therein and any award for such damages shall be payable to the Association for the benefit of the Owners and Mortgagees. Notwithstanding the foregoing, if the Association elects to distribute such award of damages to the Owners, any amount payable to an Owner shall be paid instead to the Owner's Mortgagee upon the written request of such Mortgagee to an officer of the Executive Board.

ARTICLE XII
EXECUTIVE BOARD OF THE ASSOCIATION

Section 12.1 Members.

(a) The initial Executive Board shall consist of seven (7) members. The members of the initial Executive Board shall be appointed, removed and replaced from time to time by the Declarant without the necessity of obtaining resignations. The Declarant-appointed members of the Executive Board, which may include the Declarant, shall be replaced with Owners in accordance with the provisions of paragraph (b) of this Section 12.1.

(b) Not later than the later of (i) sixty (60) days after the conveyance of 60% of the Units to Owners other than the Declarant or an affiliate of Declarant or (ii) three (3) years following conveyance of the first Unit to an Owner other than the Declarant (the "**Period of Declarant Control**"), all members of the Executive Board appointed by the Declarant shall resign and the Owners (including the Declarant to the extent of any Units owned by the Declarant at that time) shall elect new members of the Executive Board in accordance with the Bylaws.

(c) The Executive Board shall possess all of the duties and powers granted to the Executive Board by the Act. Each Executive Board Member shall be an Owner of a Unit at the Condominium, or, in the case of a Unit owned by an entity, the appointed officer or agent of the entity Owner.

ARTICLE XIII
LIMITATION OF LIABILITY

Section 13.1 Limited Liability of the Executive Board. The Executive Board, and its members in their capacity as members, officers and employees:

(a) Shall not be liable for the failure of any service to be obtained by the Executive Board and paid for by the Association, or for injury or damage to persons or property caused by the elements or by another Owner or person on the Property, or resulting from electricity, gas, water, rain, dust or sand which may leak or flow from the outside or from any part of the Buildings, or from any of its pipes, drains, conduits, appliances, or equipment, or from any other place unless in each such instance such injury or damage has been caused by the willful misconduct or gross negligence of the Association or the Executive Board;

(b) Shall not be liable to the Owners or any mortgagees as a result of the performance of the Executive Board members' duties for any mistakes of judgment, negligence or otherwise, except for the Executive Board members' own willful misconduct or gross negligence;

(c) Shall have no personal liability in contract to an Owner, any mortgagee, or any other person or entity under any agreement, check, contract, deed, lease, mortgage, instrument or transaction entered into by them on behalf of the Executive Board or the Association in the performance of the Executive Board members' duties;

(d) Shall not be liable to an Owner, or such Owner's tenants, employees, agents, customers or guests, for loss or damage caused by theft of or damage to personal property left by

such Owner or his tenants, employees, agents, customers or guests in a Unit, or in or on the Common Elements or Limited Common Elements, except for the Executive Board members' own willful misconduct or gross negligence;

(e) Shall have no personal liability in tort to an Owner, any mortgagee, or any other person or entity, direct or imputed, by virtue of acts performed by or for them, except for the Executive Board members' own willful misconduct or gross negligence in the performance of their duties; and

(f) Shall have no personal liability arising out of the use, misuse or condition of the Buildings, or which might in any other way be assessed against or imputed to the Executive Board members as a result of or by virtue of their performance of their duties, except for the Executive Board members' own willful misconduct or gross negligence.

Section 13.2 Indemnification. Each member of the Executive Board in his or her capacity as an Executive Board member, officer or both, shall be indemnified by the Association against all expenses and liabilities, including attorneys' fees, reasonably incurred by or imposed upon him in connection with any proceeding in which he may become involved by reason of his being or having been a member and/or officer of the Executive Board, or any settlement of any such proceeding, whether or not he is an Executive Board member, officer or both at the time such expenses are incurred, except in such cases wherein such Executive Board member and/or officer is adjudged guilty of willful misconduct or gross negligence in the performance of his duties or any other standard imposed by the Condominium Act; provided that, in the event of a settlement, this indemnification shall apply only if and when the Executive Board (with the affected member abstaining if he is then an Executive Board member) approves such settlement and reimbursement as being in the best interests of the Association. The indemnification by the Owners set forth in this Section 13.2 shall be paid by the Association on behalf of the Owners and shall constitute a Common Expense and shall be assessed and collectible as such. Such right of indemnification shall not be deemed exclusive of any other rights to which such Executive Board member and/or officer may be entitled as a matter of law or agreement or by vote of the Owners or otherwise.

Section 13.3 Joint and Several Liability of Owners and Lessees. Each Owner shall be jointly and severally liable with any tenants of the Unit owned by such Owner for all liabilities arising out of the ownership, occupancy, use, misuse, or condition of any Unit or any portion of the Common Elements or Limited Common Elements.

ARTICLE XIV
ASSESSMENTS: LIABILITY OF OWNERS

Section 14.1 Power to Assess. The Association, acting through the Executive Board in accordance with the Bylaws, shall have the power to fix and determine, from time to time, the sums necessary and adequate to provide for the Common Expenses, including, but not limited to such amounts as are necessary for the maintenance, repair and replacement of the Common Elements and Limited Common Elements as set forth in Section 7.2 hereof, such amounts as are necessary for uncollectible Assessments, budget deficits; such expenses as are necessary for the Association's share of any common expenses for any master association which the Association

may now or hereafter be a member of; such reserves as are hereinafter described and such additional reserves as the Executive Board shall deem necessary or prudent, and such other expenses as are specifically provided for in the Condominium Act, this Declaration or the Bylaws. The Association shall establish an adequate reserve fund for maintenance, repair and replacement of those Common Elements, Limited Common Elements and Limited Common Property for which the Association is responsible which are anticipated to require replacement, repair or maintenance on a periodic basis, and to cover any deductible amount for insurance policies maintained by the Association. The reserve fund shall be funded as a part of the Common Expenses. Without limiting the foregoing, and notwithstanding any other terms herein to the contrary, the following specified Common Expenses shall be assessed and allocated as follows:

(a) Water: If any water charges for the Condominium are provided by a common account and meter, until such time as each Unit is separately metered for water usage, Common Expense Assessments shall be equitably apportioned to each Unit as reasonably determined by the Executive Board to reflect the respective proportionate usage of each Unit.

Section 14.2 Assessments for Limited Common Expenses. The Association, acting through the Executive Board in accordance with the Bylaws and as circumstances may reasonably require, shall assess Limited Common Expenses (which shall include expenses for HVAC Components relating to each Unit) as follows: (i) If a Limited Common Expense only benefits a single Unit, that Limited Common Expense shall be assessed solely against the Unit benefited; and (ii) If a Limited Common Expense benefits more than a single Unit but fewer than all the Units, that Limited Common Expense shall be assessed exclusively against the Units benefited in equal proportion between such Units, or, at the election of the Executive Board, in proportion to the relative Common Expense liabilities of such Units as between themselves, as the Executive Board may periodically determine, as those Common Expense liabilities may be changed as provided in Section 6.2 and **Exhibit B**.

Section 14.3 Special Assessments. If the cash requirement estimated at the beginning of any fiscal year shall prove to be insufficient to cover the actual Common Expenses for such fiscal year for any reason (including by way of illustration and not limitation, any Owner's non-payment of his Assessment or municipal assessments not yet assessed), the Executive Board shall have the power, at any time it deems necessary and proper, to levy one or more Special Assessments against each Owner. Special Assessments shall be due and payable in the manner and on the date set forth in the notice thereof.

Section 14.4 Payment of Assessments. Each Owner, including the Declarant to the extent it is the owner of any unsold Units, shall pay all Assessments levied by the Association. Liability for such assessments shall be determined in accordance with the formula set forth in **Exhibit B** hereto. Penalties for delinquent assessments shall be set forth in the Rules and Regulations of the Condominium. Notwithstanding anything herein to the contrary, and with respect to any assessments levied by the Association against Units owned by the Declarant, the Declarant in its discretion may elect: (a) in lieu of paying any monthly or other periodic assessments, to make an annual contribution to the Association on or before the last day of each calendar year in an amount equal to the value of services actually received by Declarant as a part of the Common Expenses or Limited Common Expenses for such year; or (b) to offset against such assessments the value of either (i) amounts paid directly by the Declarant for any expenses relating to the Common Expenses or Limited Common Expenses of the Condominium, or (ii) the

value of any services provided by the Declarant for the benefit of the Association that would otherwise constitute a Common Expense or Limited Common Expense of the Condominium.

Section 14.5 Failure to Fix New Assessments. If the Executive Board shall fail to fix new Assessments for Common Expenses for the subsequent fiscal year before the expiration of any fiscal year, the Owners shall continue to pay the same sums they were paying for such Assessments during the fiscal year just ended and such sum shall be deemed to be the new Assessments for the succeeding fiscal year. If the Executive Board shall change the Assessment at a later date, the difference between the new Assessment, if greater, and the previous year's Assessment up to the effective date of the new Assessment shall be treated as if it were a Special Assessment under Section 14.2 hereof; thereafter each Owner shall pay the new Assessment. In the event the new Assessment is less than the previous year's Assessment, in the sole discretion of the Executive Board, the excess either shall be refunded to the Owners, credited against future Assessments or retained by the Association for reserves.

Section 14.6 Exemption by Waiver. No Owner may exempt himself or herself from liability for the Common Expenses by waiver of the enjoyment of the right to use any of the Common Elements or by the abandonment of his Unit or otherwise.

Section 14.7 Personal Liability of Owners. All sums assessed by the Association as an Assessment, Special Assessment or Assessment for Limited Common Expenses shall constitute the personal liability of the Owner of the Unit so assessed and also, until fully paid, shall constitute a lien against such Unit pursuant to Section 1603-116 of the Condominium Act. The Association shall take action for failure to pay any assessment or other charges pursuant to Section 1603-116 of the Condominium Act. The delinquent Owner shall be obligated to pay (a) all expenses of the Executive Board, including reasonable attorneys' fees and costs, incurred in the collection of the delinquent assessment by legal proceedings or otherwise, and (b) any amounts paid by the Executive Board for taxes or on account of superior liens or otherwise to protect its lien, which expenses and amounts, together with accrued interest, shall be deemed to constitute part of the delinquent assessment and shall be collectible as such.

Section 14.8 Liability of Purchaser of Unit for Unpaid Assessments. Upon the voluntary sale, conveyance or any other voluntary transfer of a Unit or any interest therein, the grantee thereof shall not be personally liable with the grantor thereof for all unpaid Assessments for Common Expenses, special assessments, Limited Common Expenses, which are a charge against the Unit as of the date of consummation of the sale, conveyance or transfer, unless such grantee agrees to assume the obligation therefor. A lien against the Unit so purchased for Assessments imposed pursuant to this Declaration or the Condominium Act shall not be affected by such sale, conveyance or other transfer, however.

Section 14.9 Subordination of Certain Charges. Any Assessments or any fees, charges, late charges, fines and interest that may be levied by the Association pursuant to Section 1603-102 of the Condominium Act or otherwise shall be subordinate to any first mortgage lien recorded before the due date of the Assessment or the due date of the first installment payable on the Assessment.

Section 14.10 Surplus. The Budget of the Association shall set forth general Common Expenses. Any amounts accumulated from assessments for Common Expenses in excess of the amount required for actual Common Expenses and reserves for future Common Expenses, unless otherwise directed by the Executive Board, in its sole discretion, shall be credited to each Owner,

such credit to be applied to the next Assessments of Common Expenses due from said Owners under the current fiscal year's budget, and thereafter until exhausted, or retained by the Association for reserves.

ARTICLE XV
RIGHTS OF MORTGAGEES

Section 15.1 Eligible Mortgage Holder. Any first mortgagee of a unit may file with the Association a request identifying itself as a first mortgage holder and the number of the unit encumbered by its mortgage with the Association by certified or registered first-class mail, return receipt requested or by delivery in hand securing receipt therefore and thereby shall become an "Eligible Mortgage Holder"; the Secretary of the Association shall maintain such information. After the filing of a request by the Eligible Mortgage Holder, the Association shall cause notice to be sent to the Eligible Mortgage Holders of any one or more of the following events affecting the mortgaged unit(s), if so requested.

(a) Default by the owner of a mortgaged unit in the payment of quarterly common charges, assessments, service charges, or other amounts due the Association that continues for sixty (60) days or as required by the Act;

(b) The lapse, cancellation, expiration or material modification of insurance required to be maintained under this Declaration or the Bylaws of the Association;

(c) A material amendment to the Declaration requiring the consent of Eligible Mortgage Holders as provided in Section 15.2 below;

(d) Any condemnation proceeding against any portion of the Property;

(e) Material destruction of any portion of the common elements or limited common elements or any improvements thereon; or

(f) Such other events specified in the Act.

If in said request to the Association forwarded by an Eligible Mortgage Holder, the mortgage is identified as being subject to the requirements of the Federal Home Loan Mortgage Corporation, the Federal National Mortgage Association, the Veterans' Administration, the Federal Housing Administration or other recognized institutional mortgage programs, then the Association shall maintain such hazard and other insurance policies and coverage required under said mortgage programs and identified in said notice from the institutional mortgage holder, to the extent such insurance is available to the Association.

Section 15.2 Material Amendments. For a material amendment to the Declaration but subject in any event to the provisions of the Act, approval must be obtained from Eligible Mortgage Holders representing in the aggregate at least fifty-one percent (51%) of the votes of units subject to mortgages held by Eligible Mortgage Holders. An amendment affecting any of the following shall be deemed material:

(a) Voting rights in the Association;

(b) Change in percentage liability for common expenses, assessment liens for common expenses, or the subordination of assessment liens;

(c) Reallocation of pro rata interests in the common elements or limited common elements or rights to their use;

(d) Boundaries of any unit;

(e) Convertibility of units into common elements or vice versa;

(f) Expansion or contraction of the Condominium, or the addition, annexation or withdrawal of property to or from the Condominium;

(g) Insurance or fidelity bonds;

(h) The rights to lease units;

(i) Imposition of any restrictions on a unit owner's right to sell or transfer his or her unit;

(j) Restoration or repair of the Property (after damage or destruction, partial taking by eminent domain or condemnation) in a manner other than that specified in this Declaration;

(k) Any action to terminate the Condominium;

(l) Any provisions of this Article or any other provision of this Declaration that expressly benefits mortgage holders, insurers or guarantors;

(m) The merger or consolidation of the Condominium with another condominium or the subjection of the Condominium to a master association; and

(n) Any change in the Association's right to lien a unit for unpaid common expense assessments or a change in the priority of such liens.

The approval of any Eligible Mortgage Holder to such a material amendment to the Declaration shall be presumed when an Eligible Mortgage Holder fails to submit a response to any written proposal for an amendment within thirty (30) days after the proposal is made.

Section 15.3 Records. An Eligible Mortgage Holder may, at its sole expense, examine the books, records and accounts of the Association at reasonable times with reasonable advance notice to the Treasurer of the Association.

ARTICLE XVI
INSURANCE

Section 16.1 Types and Amounts. The Association shall maintain as a Common Expense and to the extent reasonably available, the following types and amounts of insurance:

(a) Property insurance insuring against all risks of direct physical loss normally covered by the standard extended coverage endorsement and commonly insured against, including those covered by the standard "all risk" endorsement, or such other fire and casualty insurance as the Executive Board may determine provides equal or greater protection for the Owners and their Mortgagees, if any, in each case complying with the applicable requirements of Section 16.2 hereof. The insurance maintained by the Association shall cover the Property, including, but not limited to, all Common Elements and Property and Limited Common Elements and Property, the Units, to the extent required by Section 1603-113 of the Condominium Act, and any improvements, fixtures and appliances contained within the Unit and building service equipment and common equipment, fixtures, personal property and supplies owned by the Association, but excluding any improvements or appliances subsequently added by an Owner and all other personal property of the Owner. The amount of any such hazard insurance obtained pursuant to this paragraph (a) shall be equal to one hundred percent (100%) of the current replacement cost of the Condominium, including the individual Units, at the time the insurance is purchased and at each renewal date without deduction for depreciation, exclusive of land, foundations, excavation and other items normally excluded from coverage. Such hazard insurance policy may, at the option of the Association, contain a "deductible" provision in an amount not to exceed five percent (5%) of the policy face amount. Funds to cover this deductible amount shall be included in the Association's reserve fund. The named insured under the policy shall be the **"Raymond Hills Village Condominium Association"**, for the use and benefit of the individual owners, or a specified authorized representative of the Association, including but not limited to any Insurance Trustee, and the Association or its representative, as the case may be, shall be designated to represent the Owners in any proceedings, negotiations or settlements under such policy. The "loss payable" clause of such policy shall show the Association or the, Insurance Trustee, if any, as a trustee for each Owner and each Mortgagee of a Unit. Such policy shall also contain a standard mortgage clause naming separately the Mortgagees of the Units, their successors and assigns. If the Executive Board fails within sixty (60) days after the date of an insured loss to initiate a claim for damages recoverable under the policy or policies obtained pursuant to this paragraph (a), any Mortgagee may initiate such a claim on behalf of the Association.

(b) Comprehensive Liability Insurance, including medical payments insurance, complying with the requirements of Section 16.2 hereof, insuring the Owners, in their capacity as Owners and Association members and any managing agent retained by the Association, against any liability to the public or to other Owners, their tenants or invitees, relating in any way to the ownership and/or use of the Common Elements, Limited Common Elements, and any other areas under the supervision of the Association and any part thereof. Such insurance policy shall contain a "severability of interest endorsement" or equivalent, coverage which precludes the insurer from denying the claim of an Owner because of the negligent acts of the Association or another Owner. Such insurance shall include coverage for bodily injury and property damage that results from the operation, maintenance or use of the Common Elements and Limited Common Elements, any liability resulting from lawsuits related to employment contracts in which the Association is a party, water damage liability, liability for non-owned and hired automobiles, liability for property of others, and such other risks as are customarily covered in similar projects. The amount of such liability insurance shall be at least $1,000,000.00 for bodily injury and property damage for any single occurrence. The scope and amount of coverage of all liability insurance policies shall be reviewed at least once each year by the Executive Board and may be changed in its discretion provided that such policies shall continue to comply with the requirements of this Section and

Section 16.2 hereof. To the extent reasonably available, Mortgagees shall be named, upon their written request, as additional insureds under the Association's liability policy or policies.

(c) Such worker's compensation insurance as applicable laws may require.

(d) Insurance to satisfy the indemnification obligation of the Association and all Owners set out in Section 13.2 hereof if and to the extent available, including but not limited to insurance coverage commonly referred to as "Directors and Officers Insurance."

(e) If at any time it is determined that all or any part of the project's improvements are within a special flood hazard area, a master or blanket policy of flood insurance covering the Property, including but not limited to, all Common Elements and Limited Common Elements and property, the Units and all improvements, fixtures and appliances contained within the Unit or the value thereof, and building service equipment and common equipment, fixtures, personal property and supplies owned by the Association, but excluding any improvements or appliances subsequently added by a Owner and all other personal property of the Owner. The amount of any such flood insurance obtained pursuant to this paragraph (e) shall be equal to the lesser of one hundred percent (100%) of the insurable value of the property insured or the maximum coverage available under the appropriate National Flood Insurance Administration program. Such flood insurance policy may, at the option of the Association, contain a "deductible" provision in an amount not to exceed $25,000.00. Funds to cover this amount shall be included in the Association reserve fund.

Section 16.2 Required Provisions. Insurance obtained by the Association shall be in accordance with the following provisions:

(a) All policies shall be written with a company authorized to do business in the State of Maine and, for the hazard insurance policy described in Section l6.l(a) hereof, such company must hold a general policy holder's rating of at least "A" by Best's Insurance Reports, or by an equivalent rating bureau should Best's Insurance Reports cease to be issued.

(b) Exclusive authority to adjust losses under policies hereafter in force on the Property shall be vested in the Executive Board or its authorized representative.

(c) Each Owner may obtain additional insurance at his or her own expense; provided, however, that: (1) such policies shall not be invalidated by the waivers of subrogation required to be contained in policies required by this Declaration; and (2) no Owner shall be entitled to exercise his or her right to maintain insurance coverage in such a way as to decrease the amount which the Association may realize under any insurance policy which the Association may have in force on the Property at any particular time.

(d) Any Owner who obtains individual insurance policies covering any portion of the Property other than personal property belonging to such Owner shall be required to file a copy of such individual policy or policies with the Association within thirty (30) days after purchase of such insurance.

Section 16.3 Repair of Damage or Destruction to Condominium. The repair or replacement of any damaged or destroyed portion of the Condominium shall be done in

accordance with and governed by the provisions of Sections 1603-113(e) and (h) of the Condominium Act.

Section 16.4 Additional Insurance. Nothing in this Declaration shall be construed to limit the authority of the Executive Board to obtain additional insurance which it deems advisable.

ARTICLE XVII
ASSIGNABILITY OF DECLARANT'S RIGHTS

The Declarant may assign any or all of its rights or privileges reserved or established by this Declaration or the Act in accordance with the provisions of the applicable Act.

ARTICLE XVIII
AMENDMENT OF DECLARATION

Pursuant to Section 1602-117 of the Condominium Act and except as provided herein for amendments which may be executed by the Declarant, the Association or certain Owners, this Declaration may be amended only by vote or agreement of owners of Units to which at least sixty percent (60%) of the votes in the Association are allocated. In addition, during the Period of Declarant Control the affirmative vote of the Declarant is required to approve any amendments to this Declaration.

ARTICLE XIX
TERMINATION

The Condominium may be terminated only by agreement of the Owners of Units to which one hundred percent (100%) of the votes in the Association are allocated.

ARTICLE XX
ATTORNEY IN FACT

Each Owner by his acceptance of the deed or other conveyance vesting in him a Unit does hereby constitute and appoint the Managing Agent acting from time to time with full power of substitution, as his true and lawful attorney in his name, place and stead to enter into all agreements which the Managing Agent is authorized to enter into pursuant to the terms of this Declaration and which the Managing Agent in its discretion may believe are necessary and proper to carry out the agent's responsibilities and duties. Each Owner stipulates and agrees that the Power of Attorney created by this Article 20 is coupled with an interest. The action of the Managing Agent in settling any claim for damage to any personal property shall be binding upon each Owner in the absence of fraud or clear mistake.

ARTICLE XXI
GENERAL PROVISIONS

Section 21.1 Headings. The headings used in this Declaration and the table of contents are inserted solely as a matter of convenience for the readers of this Declaration and shall not be relied upon or used in construing the effect or meaning of any of the provisions of this Declaration.

Section 21.2 Severability. The provisions of this Declaration shall be deemed independent and severable, and the invalidity or unenforceability of any provision or portion thereof shall not affect the validity or enforceability of any other provision or portion hereof unless such deletions shall destroy the uniform plan of development and operation of the Condominium which this Declaration is intended to create.

Section 21.3 Applicable Law. This Declaration shall be governed and construed according to the laws of the State of Maine.

Section 21.4 Interpretation. The provisions of this Declaration shall be liberally construed in order to effect Declarant's desire to create a uniform plan for development and operation of the Condominium.

Section 21.5 Effective Date. This Declaration shall become effective when it and the Plats and Plans have been recorded.

Section 21.6 Notices. Unless otherwise provided by the Condominium Documents, all notices and other communications required or permitted to be given under or in connection with this Declaration shall be in writing and shall be deemed given when delivered in person or on the third business day after the day on which mailed by regular U.S. mail, postage prepaid, addressed to the address maintained in the register of current addresses established by the Association.

Section 21.7 Exhibits. All exhibits attached to this Declaration are hereby made a part of this Declaration.

Section 21.8 Pronouns. Wherever used, the singular number shall include the plural, the plural the singular and the use of any gender shall include all genders.

Section 21.9 Disclaimers. The Units of the Condominium are subject to the following waivers and disclaimers, which are deemed acknowledged and agreed to by any future Unit Owner by virtue of such Owner’s acceptance of a deed conveying ownership of any such Unit:

(a) Waiver of Provisions, Rights and Remedies. All Units of the Condominium are to be used for residential purposes. In accordance with Section 1604-101 of the Act, each Unit Owner, his heirs, successors and assigns, by acceptance of a deed to his Unit, and each tenant and their respective invitees, guests, licensees, servants, agents, employees and any other person or persons who shall be permitted to use such Unit, the Common Elements, or both, by virtue of ownership, rental or occupancy of such Unit, the Common Elements, or both, waive and relinquish the application of the provisions, rights, and remedies provided in Article 4 of the Act, except as applied in Sections 21.9 (b) and (c) hereunder.

(b) Disclaimer of Implied Warranties. Declarant hereby expressly disclaims and excludes any and all implied warranties with respect to the Units and any Common Elements or Limited Common Elements relating thereto, including without limitation any implied warranties of quality as set forth in Section 1604-113 of the Act. All Units are sold “as is” and “with all faults” in accordance with Section 1604-114 of the Act.

(c) Statute of Limitations. With respect to any express warranty or other warranty not hereby waived, each Unit Owner, its, successors and assigns, by acceptance of a deed to such Unit, and each tenant and their respective invitees, guests, licensees, agents, employees and any other person or persons who shall be permitted to use such Unit, the Common Elements or both, agree to reduce the period during which a judicial proceeding for any breach must be commenced to two (2) years as permitted pursuant to Section 1604-115(a) of the Condominium Act.

IN WITNESS WHEREOF, Raymond Hills, LLC has caused this Declaration to be executed and signed by _____, its _____, thereunto duly authorized, this _____ day of the month of _____ , 20___.

SIGNED, SEALED AND DELIVERED
In the presence of:

Raymond Hills, LLC
a Maine limited liability company

_____
Witness

By: _____
Name:
Title:

STATE OF _____
COUNTY OF _____, SS _____ ___, 20___

Then personally appeared the above-named _____ duly authorized _____ of Raymond Hills, LLC and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said Raymond Hills, LLC.

Before me,

_____
Notary Public/Attorney at Law
Print Name_____
My commission expires_____

EXHIBIT A

(Legal Description)

EXHIBIT B

DECLARATION OF CONDOMINIUM
RAYMOND HILLS VILLAGE

UNIT PERCENTAGE INTEREST IN COMMON ELEMENTS AND COMMON EXPENSE LIABILITY, AND UNIT VOTING PERCENTAGE INTEREST

UNIT #	Unit Percentage Interest	Voting Percentage Interest
1	5.555%	5.555%
2	5.555%	5.555%
3	5.555%	5.555%
4	5.555%	5.555%
5	5.555%	5.555%
6	5.555%	5.555%
7	5.555%	5.555%
8	5.555%	5.555%
9	5.555%	5.555%
10	5.555%	5.555%
11	5.555%	5.555%
12	5.555%	5.555%
13	5.555%	5.555%
14	5.555%	5.555%
15	5.555%	5.555%
16	5.555%	5.555%
17	5.555%	5.555%
18	5.555%	5.555%

EXHIBIT C

(Plats and Plans)

EXHIBIT D

(Site Plan)

EXHIBIT E

(Subdivision Approval)

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services
Div of Environmental Health , 11 SHS
(207) 287-5672 FAX (207) 287-3165

PROPERTY LOCATION

City, Town, or Plantation	RAYMOND
Street or Road	WEBBS MILL ROAD
Subdivision, Lot #	

OWNER/APPLICANT INFORMATION

Name (last, first, MI): RAYMOND HILLS, LLC — ■ Owner ☐ Applicant

Mailing Address of ~~Owner~~/Applicant	c/o JAYSON HASKELL, PE DM ROMA P.O. BOX 1116 WINDHAM, ME 04062
Daytime Tel. #	(207) 229-3295

>>CAUTION: LPI APPROVAL REQUIRED<<

Town/City _____ Permit # _____

Date Permit Issued __/__/__ Fee $ _____ Double Fee Charged [ ]

_____ LPI # _____

Local Plumbing Inspector Signature

The Subsurface Wastewater Disposal System *shall not* be installed until a Permit is issued by the Local Plumbing Inspector. The Permit shall authorize the owner or installer to install the disposal system in accordance with this application and the Maine Subsurface Wastewater Disposal Rules.

Municipal Tax Map # 51 Lot # 22A

OWNER OR APPLICANT STATEMENT

I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a permit.

_____ _____
Signature of Owner/Applicant — Date

CAUTION: INSPECTION REQUIRED

I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.

_____
(1st) Date Approved

_____ _____
Local Plumbing Inspector Signature — (2nd) Date Approved

PERMIT INFORMATION

TYPE OF APPLICATION

■ 1. First Time System
☐ 2. Replacement System
Type Replaced: _____
Year Installed: _____
☐ 3. Expanded System
☐ a. <25% Expansion
☐ b. >25% Expansion
☐ 4. Experimental System
☐ 5. Seasonal Conversion

THIS APPLICATION REQUIRES

■ 1.No Rule Variance
☐ 2.First Time System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 3.Replacement System Variance
☐ a. Local Plumbing Inspector Approval
☐ b. State & Local Plumbing Inspector Approval
☐ 4.Minimum Lot Size Variance
☐ 5.Seasonal Conversion Permit

DISPOSAL SYSTEM COMPONENTS

☐ 1. Complete Non-Engineered System
☐ 2. Primitive System(graywater & alt toilet)
☐ 3. Alternative Toilet, specify: _____
☐ 4. Non-Engineered Treatment Tank (only)
☐ 5. Holding Tank, _____ gallons
☐ 6. Non-Engineered Disposal Field (only)
☐ 7. Separated Laundry System
■ 8. Complete Engineered System(2000gpd+)
☐ 9. Engineered Treatment Tank (only)
☐ 10. Engineered Disposal Field (only)
☐ 11. Pre-treatment, specify: (9) SINGULAIR GREEN UNITS
☐ 12. Miscellaneous components

SIZE OF PROPERTY

9.57 ☐ SQ. FT. ■ ACRES

DISPOSAL SYSTEM TO SERVE

☐ 1. Single Family Dwelling Unit, No. of Bedrooms: ____
■ 2. Multiple Family Dwelling, No of Units: 18
☐ 3. Other: _____ (specify)

Current Use ☐ Seasonal ☐ Year Round ■ Undeveloped

TYPE OF WATER SUPPLY

☐ 1. Drilled Well ☐ 2. Dug Well ☐ 3. Private
■ 4. Public ☐ 5. Other:

SHORELAND ZONING

☐ Yes ■ No

DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)

TREATMENT TANK

■ 1. Concrete
■ a. Regular
☐ b. Low Profile
☐ 2. Plastic
☐ 3. Other: _____
CAPACITY: _____ GAL.
N/A WITH TREATMENT UNITS

DISPOSAL FIELD TYPE & SIZE

☐ 1. Stone Bed ☐ 2. Stone Trench
■ 3. Proprietary Device
■ a. Cluster array ☐ c.Linear
■ b. Regular ☐ d. H-20 loaded
☐ 4. Other: _____
SIZE: 7424 ■ sq. ft. ☐ lin. ft.
116 H-20 RATED CONCRETE CHAMBER UNITS

GARBAGE DISPOSAL UNIT

■ 1. No ☐ 2. Yes ☐ 3. Maybe
If Yes or Maybe, specify one below:
☐ a. Multi-compartment tank
☐ b. _____ tanks in series
☐ c. Increase in tank capacity
☐ d. Filter on tank outlet

DESIGN FLOW

3,960 gallons per day
BASED ON:
■ 1.Table 4A (dwelling unit(s))
☐ 2.Table 4C (other facilities)
SHOW CALCULATIONS for other facilities
44 BEDROOMS @ 90 GALLONS PER DAY PER BEDROOM (2 TO 3 BEDROOM UNITS)
☐ 3. Section 4G (meter readings)
ATTACH WATER-METER DATA

SOIL DATA & DESIGN CLASS

PROFILE 4 / CONDITION C
at Observation Hole # TP 2
Depth 27 "
of Most Limiting Soil Factor

DISPOSAL FIELD SIZING

■ 1. Medium - 2.6 sq.ft./gpd
☐ 2. Medium-Large - 3.3 sq.ft./gpd
☐ 3. Large - 4.1 sq.ft./gpd
☐ 4. Extra-Large - 5.0 sq.ft./gpd

EFFLUENT/EJECTOR PUMP

☐ 1. Not required
☐ 2. May be required
■ 3. Required
Specify only for engineered systems:
DOSE: _____ gallons

LATITUDE AND LONGITUDE

at center of disposal area
Lat. N43 d 53 m 17.91 s
Lon. W70 d 27 m 25.45 s
if g.p.s., state margin of error

SITE EVALUATOR STATEMENT

I Certify that on 7/1/21 (date) I completed a site evaluation on this property and state that the data reported is accurate and that the proposed sytem is in compliance with the Subsurface Wastewater Disposal Rules (10-144A CMR 241).

BAF 21 (Site Evaluator Signature)	352 (SE #)	8/20/21 (Date)
BRADY A. FRICK (Site Evaluator Name Printed)		INFO@ALBERTFRICK.COM (E-mail Address)
Professional Engineer Signature	PE #	Date
Professional Engineer Name Printed	Telephone Number	E-mail Address

Note: Changes to or deviations from the design should be confirmed with the Site Evaluator

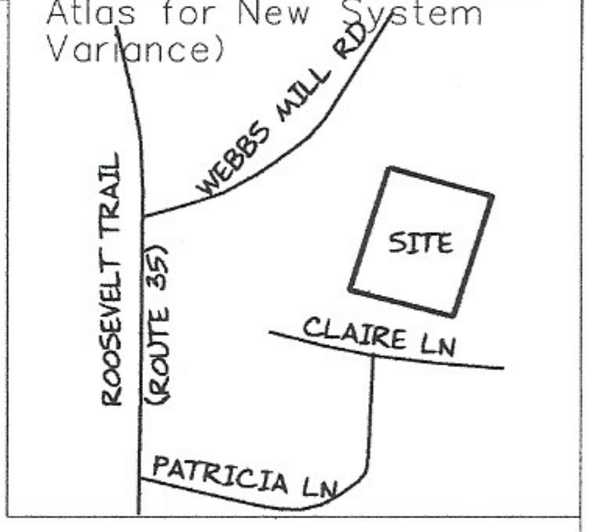
SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10 SHS
(207) 287-5672 FAX (207) 287-4172

Town, City, Plantation	Street, Road Subdivision	Owner's Name
RAYMOND	WEBBS MILL ROAD	RAYMOND HILLS, LLC

SITE PLAN Scale 1" = _____ Ft. or as shown

SITE LOCATION PLAN (Attach Map from Maine Atlas for New System Variance)



SEE SITE PLAN ATTACHED

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
0	SEE PROFILES ATTACHED			
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	___ %	___ **	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Observation Hole _____ ☐ Test Pit ☐ Boring
_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification	Slope	Limiting Factor	
Profile _____ Condition _____	___ %	___ **	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

BAZA — Site Evaluator Signature — 352 SE # — 8/20/21 Date

Professional Engineer Signature — PE # — Date

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

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10 SHS
(207) 287-5672 FAX (207) 287-4172

Town, City, Plantation	Street, Road, Subdivision	Owner's Name
RAYMOND	WEBBS MILL ROAD	RAYMOND HILLS, LLC

SUBSURFACE WASTEWATER DISPOSAL PLAN — SCALE 1" = ____ FT.

SEE SITE PLAN ATTACHED

FILL REQUIREMENTS

Depth of Fill (Upslope) ± ____
Depth of Fill (Downslope) ± ____
DEPTHS AT CROSS-SECTION (shown below)

CONSTRUCTION ELEVATIONS

Finished Grade Elevation ____
Top of Distribution Pipe or Proprietary Device ____
Bottom of Disposal Area ____

ELEVATION REFERENCE POINT

Location & Description

Reference Elevation is: 0.0" or _____

DISPOSAL AREA CROSS SECTION

SCALE:
VERTICAL: 1" =
HORIZONTAL: 1" =

SEE CROSS SECTION ATTACHED

BJA21
Site Evaluator Signature

352
SE #

8/20/21
Date

Professional Engineer Signature

PE #

Date

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

Albert Frick Associates, Inc.
Soil Scientists & Site Evaluators
731 Foss Road Limerick, Maine 04048
(207) 839-5563

RAYMOND	WEBBS MILL ROAD	RAYMOND HILLS, LLC
TOWN	LOCATION	APPLICANT'S NAME

1) The Plumbing and Subsurface Wastewater Disposal Rules adopted by the State of Maine, Division of Health and Human Services pursuant to 22 M.R.S.A. § 42 (the "Rules") are incorporated herein by reference and made a part of this application and shall be consulted by the owner/applicant, the system installer and/or building contractor for further construction details and material specifications. The system Installer should contact Albert Frick Associates, Inc. 839-5563, if there are any questions concerning materials, procedures or designs. The system installer and/or building contractor installing the system shall be solely responsible for compliance with the Rules and with all state and municipal laws and ordinances pertaining to the permitting, inspection and construction of subsurface wastewater disposal systems.

2) This application is intended to represent facts pertinent to the Rules only. It shall be the responsibility of the owner/applicant, system Installer and/or building contractor to determine compliance with and to obtain permits under all applicable local, state and/or federal laws and regulations (including, without limitation, Natural Resources Protection Act, wetland regulations, zoning ordinances, subdivision regulations, Site Location of Development Act and Minimum Lot Size law) before installing this system or considering the property on which the system is to be installed a "buildable" lot. It is recommended that a wetland scientist be consulted regarding wetland regulations. Prior to the commencement of construction/installation, the local plumbing inspector or Code Enforcement Officer shall inform the owner/applicant and Albert Frick Associates, Inc of any local ordinances which are more restrictive than the Rules in order that the design may be amended. All designs are subject to review by local, state and/or federal authorities. Albert Frick Associates, Inc.'s liability shall be limited to revisions required by regulatory agencies pursuant to laws or regulations in effect at the time of preparation of this application.

3) All information shown on this application relating to property lines, well locations, subsurface structures and underground facilities (such as utility lines, drains, septic systems, water lines, etc.) are based upon information provided by the owner/applicant and has been relied upon by Albert Frick Associates, Inc. in preparing this application. The owner/applicant shall review this application prior to the start of construction and confirm this information. Well locations on abutting properties but not readily visible above grade should be confirmed by the owner/applicant prior to system installation to assure minimum setbacks.

4) Installation of a garbage (grinder) disposal is not recommended. If one is installed, an additional 1000 gallon septic tank or a septic tank filter shall be connected in series to the proposed septic tank. Risers and covers should be installed over the septic tank outlet per the "Rules" to allow for easy maintenance of filter.

5) The septic tank should be pumped within two years of installation and subsequently as recommended by the pump service, but in no event should the septic tank be pumped less often than every three years.

The system user shall avoid introducing kitchen grease or fats into this system. Chemicals such as septic tank cleaners and/or chlorine or water treatment backwash and controlled or hazardous substances shall not be disposed of in this system. Additives such as yeast or enzymes are discouraged, since they have not been proven to extend system life.

6) All septic tanks, pump stations and additional treatment tanks shall be installed to prevent ground water and surface water infiltration. Risers and covers should be properly installed to provide access while preventing surface water intrusion to within 6" of a finished ground surface.

Vehicular traffic over disposal system is prohibited unless specifically designed with H-20 rated components.

ATTACHMENT TO SUBSURFACE WASTEWATER DISPOSAL APPLICATION

RAYMOND	WEBBS MILL ROAD	RAYMOND HILLS, LLC
TOWN	LOCATION	APPLICANT'S NAME

7) The actual waste water flow or number of bedrooms shall not exceed the design criteria indicated on this application without a re-evaluation of the system as proposed

8) The general minimum setbacks between a well (public or private) and septic system serving a single family residence is 100-300 feet, unless the local municipality has a more stringent requirement. A well installed by an abutter within the minimum setback distances prior to the issuance of a permit for the proposed disposal system may void this design.

9) When a gravity system is proposed: BEFORE CONSTRUCTION/INSTALLATION BEGINS, the system installer or building contractor shall review the elevations of all points given in this application and the elevation of the existing and/or proposed building drain and septic tank inverts for compatibility to minimum pitch requirements. In gravity systems, the invert of the septic tank(s) outlet(s) should be at least 4 inches above the invert of the distribution box outlet at the disposal area.

10) When an effluent pump is required: Pump stations should be sized per manufacturer's specifications to meet lift requirements and friction loss. Provisions shall be made to make certain that surface and ground water does not enter the septic tank or pump station, by sealing/grouting all seams and connections, and by placement of a riser and lid at or above grade. An alarm device warning of a pump failure shall be installed. Also, when pumping is required of a chamber system, install a ' T' connection in the distribution box and place 3 inches of stone or a splash plate in the first chamber. Insulate gravity pipes, pump lines and the distribution box as necessary to prevent freezing.

11) On all systems, remove the vegetation, organic duff and old fill material from under the disposal area and any fill extension. Additional fill beyond indicated on plan may be necessary to replace organic matter. On sites where the proposed system is to be installed in natural soil, scarify the bottom and sides of the excavated disposal area with a rake. Do not use wheeled equipment on the scarified soil surface. For systems installed in fill, scarify the native soil by roto-tilling or scarifying with teeth of backhoe to a depth of at least 8 inches over the entire disposal and fill extension area to prevent glazing and to promote fill bonding. Place fill in loose layers no deeper than 8 inches and compact before placing more fill (this ensures that voids and loose pockets are eliminated to minimize the chance of leakage or differential settling). Do not use wheeled equipment on the scarified soil area until after 12 inches of fill is in place. Keep equipment off proprietary devices. Divert the surface water away from the disposal area by ditching or shallow landscape swales.

12) Unless noted otherwise, fill shall be gravelly coarse sand, which contains no more that 5% fines (silt and clay). Crushed stone shall be clean and free of any rock dust from the crushing process.

13) Do not install systems on loamy, silty, or clayey soils during wet periods since soil smearing/glazing may seal off the soil interface.

14) Seed all filled and disturbed surfaces with perennial grass seed, with 4" min. soil or soil amendment mix suitable for growing, then mulch with hay or equivalent material to prevent erosion. Alternatively, bark or permanent landscape mulch may be used to cover system. Woody trees or shrubs are not permitted on the disposal area or fill extensions.

15) If an advanced wastewater treatment unit is part of the design, the system shall be operated and maintained per manufacturer's specifications.

Albert Frick Associates, Inc.
Soil Scientists & Site Evaluators
731 Foss Road Limerick, Maine 04048
(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 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			
40	FINE LOAMY SAND	FIRM		COMMON, DISTINCT
50				

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

FOR WASTEWATER DISPOSAL

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

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		OLIVE BROWN	
30	COARSE SAND AND GRAVEL	FIRM	LIGHT GRAY	COMMON, DISTINCT
40	LOAMY FINE SAND TO SAND		LIGHT GRAYISH BROWN	
50	LIMIT OF EXCAVATION			

Soil Classification	Slope	Limiting Factor	
4 (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	LOAMY SAND		YELLOW BROWN	
10		FRIABLE		
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	
4 (Profile) C (Condition)	____ %	29"	■ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

FOR WASTEWATER DISPOSAL

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

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	
30	LOAMY FINE SAND AND LOAMY VERY FINE SAND	FIRM		FEW, FAINT
40	COARSE SAND WITH GRAVEL		LIGHT GRAY	
50	REFUSAL IN BOULDER OR BEDROCK			

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

Soil Series Name:	Drainage Class:	Hydrologic Group:

BAZ

Site Evaluator / Soil Scientist Signature

352
SE/CSS #

7/1/21
Date

ALBERT FRICK ASSOCIATES – 38[illegible] 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 / YELLOW BROWN	
10–30	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"

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50				

FOR WASTEWATER DISPOSAL

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

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
0–50				

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

Observation Hole _____ ☐ Test Pit ☐ Boring

_____" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)

	Texture	Consistency	Color	Mottling
0–50				

FOR WASTEWATER DISPOSAL

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

FOR SOILS MAPPING

Soil Series Name:	Drainage Class:	Hydrologic Group:

B A 21

Site Evaluator / Soil Scientist Signature

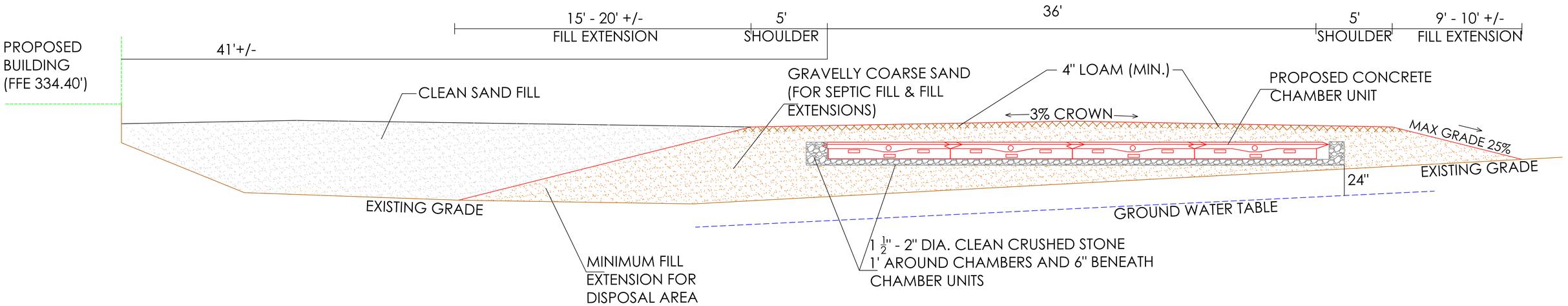
352

SE/CSS #

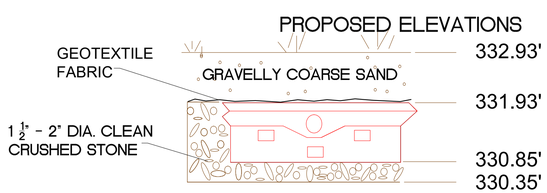
7/1/21

Date

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



SEPTIC CROSS SECTION (SCALE 1" = 3')



CONCRETE CHAMBER DETAIL (NO SCALE)

NOTE: SEE SITE PLAN BY DM ROMA FOR GRADING PLAN

DATE:	REVISIONS:

PROPOSED SEPTIC CROSS SECTION PLAN
PREPARED FOR
DM ROMA
WEBBS MILL ROAD
RAYMOND, MAINE

Albert Frick Associates, Inc.
Environmental Consultants
Gorham, Maine

Drawn By: B.J. | Checked By: B.F.
Date: 8/19/21 | Scale: AS NOTED