

# Preliminary Major Subdivision Application

To the Town of Windham

## Turning Leaf Heights

Turning Leaf Drive & Drive In Lane  
Windham, Maine

Applicant:  
Gateway Development LLC  
26 Fieldcrest Road  
Windham, ME 04062

Prepared By:  
DM Roma Consulting Engineers  
PO Box 1116  
Windham, ME 04062



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## ***TABLE OF CONTENTS***

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### PRELIMINARY MAJOR SUBDIVISION APPLICATION TO TOWN OF WINDHAM

#### TURNING LEAF HEIGHTS

SECTION 1	APPLICATION FORM & SUBMISSION CHECKLIST
SECTION 2	AGENT AUTHORIZATION
SECTION 3	WAIVER REQUESTS
SECTION 4	CERTIFICATE OF CORPORATE GOOD STANDING
SECTION 5	PROJECT NARRATIVE
SECTION 6	NAMES AND ADDRESSES OF ABUTTING PROPERTY OWNERS
SECTION 7	RIGHT, TITLE OR INTEREST DOCUMENTS
SECTION 8	EXISTING OR PROPOSED EASEMENTS OR COVENANTS
SECTION 9	TECHNICAL CAPACITY OF THE APPLICANT
SECTION 10	CAPACITY OF EXISTING UTILITIES TO SERVE THE PROJECT
SECTION 11	SOLID WASTE DISPOSAL
SECTION 12	SITE LIGHTING
SECTION 13	SITE LANDSCAPING
SECTION 14	VEHICLE TRAFFIC
SECTION 15	IMPACT TO IMPORTANT OR UNIQUE NATURAL AREAS
SECTION 16	STORMWATER MANAGEMENT
SECTION 17	SOILS INFORMATION
SECTION 18	WATER SUPPLY FOR DOMESTIC AND FIRE PROTECTION USE
SECTION 19	PROVISIONS FOR WASTEWATER DISPOSAL
SECTION 20	PROJECT COST ESTIMATE AND FINANCIAL CAPACITY
SECTION 21	SITE VICINITY MAP – USGS QUADRANGLE
SECTION 22	BUILDING ARCHITECTURAL PLANS
SECTION 23	FLOOD ZONES
SECTION 24	IMPACT TO SITES OF HISTORICAL SIGNIFICANCE

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## *SECTION 1*

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### APPLICATION FORM & SUBMISSION CHECKLIST



## MAJOR SUBDIVISION - PRELIMINARY PLAN - REVIEW APPLICATION

<b>FEES FOR MAJOR SUBDIVISION PRELIMINARY PLAN REVIEW</b>		<b>APPLICATION FEE:</b> + EACH LOT > 10 = \$300/LOT		<input checked="" type="checkbox"/> \$1,300.00	<b>AMOUNT PAID:</b>  \$ _____  <b>DATE:</b> _____	Office Use: _____ Office Stamp: _____	
		<b>REVIEW ESCROW:</b> Up to 10 Lots = \$2,500 11 - 15 Lots = \$3,000 16 - 30 Lots = \$4,000 30 + Lots = \$5,000		<input checked="" type="checkbox"/> \$ 5,000			
<b>PROPERTY DESCRIPTION</b>	Parcel ID	Map(s) #	14	Lot(s) #	9-B		
	# Lots/dwelling units:	Total Distr. >1Ac.		<input type="checkbox"/> Y <input type="checkbox"/> N	Zoning District(s)	C-1	
	Physical Address	0 Turning Leaf Drive			Watershed:	Ditch Brook to Presumpscot River	
<b>PROPERTY OWNER'S INFORMATION</b>	Name				Name of Business	Gateway Development, LLC	
	Phone				Mailing Address:	26 Fieldcrest Road	
	Fax or Cell	(207) 310 - 0063				Windham, ME 04062	
	Email	brich@pas-maine.com					
<b>APPLICANT'S INFORMATION (IF DIFFERENT FROM OWNER)</b>	Name	Same as Owner			Name of Business:		
	Phone				Mailing Address		
	Fax or Cell						
	Email						
<b>APPLICANT'S AGENT INFORMATION</b>	Name	Dustin Roma			Name of Business	DM Roma Consulting Engineers	
	Phone	(207) 591 - 5055			Mailing Address	PO Box 1116	
	Fax or Cell	(207) 310 - 0506				Windham, ME 04062	
	Email	dustin@dmroma.com					
<b>PROJECT INFORMATION</b>	<b>Existing Land Use (Use extra paper, if necessary):</b>  Generally undeveloped land						
	<b>Provide a narrative description of the Proposed Project (Use extra paper, if necessary):</b>  Proposed multifamily development consisting of three (3) buildings with 31 units each, two (2) buildings with 12 units each, seven (7) buildings with four (4) units each, and two duplex buildings for a total of 149 dwelling units. Approximately 1,900 ft of new roadway to be built as extensions of Turning Leaf Drive and Drive In Lane. All units served by public water and public sewer.						
	<b>Provide a narrative description of construction constraints (wetlands, shoreland zone, flood plain, non-conformance, etc.):</b>  Portion of property is within the Stream Protection shoreland zone, some areas of steep slopes and an isolated wetland area.						

# MAJOR SUBDIVISION - PRELIMINARY PLAN - REVIEW APPLICATION REQUIREMENTS

## Section 910 of the Land Use Ordinance

The submission shall contain, five (5) copies of the following information, including full plan sets. Along with one (1) electronic version of the entire submission unless a waiver of a submission requirement is granted.

<p><b>The Major Plan document/map:</b></p> <p>A) Plan size: 24" X 36"</p> <p>B) Plan Scale: No greater 1":100'</p> <p>C) Title block: Applicant's name and address</p> <ul style="list-style-type: none"> <li>• Name of the preparer of plans with professional information</li> <li>• Parcel's tax map identification (map and lot) and street address, if available</li> </ul>	<ul style="list-style-type: none"> <li>• Complete application submission deadline: three (3) weeks before the desired Staff Review Committee meeting.                             <ul style="list-style-type: none"> <li>- Five copies of the application and plans</li> <li>- Application Payment and Review Escrow</li> </ul> </li> <li>• A pre-submission meeting with the Town staff is required.</li> <li>• Contact information:                             <ul style="list-style-type: none"> <li>Windham Planning Department (207) 894-5960, ext. 2</li> <li>Steve Puleo, Town Planner <a href="mailto:sipuleo@windhammaine.us">sipuleo@windhammaine.us</a></li> <li>Amanda Lessard, Planning Director <a href="mailto:allessard@windhammaine.us">allessard@windhammaine.us</a></li> </ul> </li> </ul>
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## APPLICANT/PLANNER'S CHECKLIST FOR MAJOR SUBDIVISION REVIEW

<p><b><u>SUBMITTALS THAT THE TOWN PLANNER DEEMS SUFFICIENTLY LACKING IN CONTENT WILL NOT BE SCHEDULED FOR PLANNING BOARD REVIEW.</u></b></p> <p><i>The following checklist includes items generally required for development by the Town of Windham's LAND USE ORDINANCE, Sections 907.B., 910.C., &amp; 911. Due to projects specifics, are required to provide a complete and accurate set of plans, reports, and supporting documentation (as listed in the checklist below).</i></p>	<p><b><u>IT IS THE RESPONSIBILITY OF THE APPLICANT TO PRESENT A CLEAR UNDERSTANDING OF THE PROJECT.</u></b></p> <p><i>Staff recommends the applicant provide a proposed construction schedule, a draft Homeowner's Association (HOA) documentation, public open space to be provided, and written offers of cession to the Town, and/or road maintenance agreement with at the Preliminary Plan application submission.</i></p>
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Major Subdivision Preliminary Plan Submission Requirements:			Major Subdivision Preliminary Plan Submission Requirements (Continued):	Applicant	Staff
<b>A. Mandatory Written Information submitted in a bound format:</b>	Applicant	Staff	6. Vicinity plan showing the area within 250 feet, to include:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1. A fully executed application form, signed by a person with right, title, or interest in the property or Authorized Agent.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	i. approximate location of all property lines and acreage of parcels.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Evidence of payment of the application and escrow fees.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ii. locations, widths, and names of existing, filed, or proposed streets, easements, or building footprints.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Proposed name of the Subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	iii. location and designations of any public spaces.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Verification of right, title, or interest in the property, and any abutting property, by deed, purchase and sales agreement, option to purchase, or some other proof of interest.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	iv. outline of the proposed subdivision, together with its street system and an indication of future probably street system, if the proposed subdivision encompasses only part of the applicant's entire property.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Copy(ies) of the most recently recorded deed for the parcel, along with a copy(ies) of all existing deed restrictions, easements, rights-of-way, or some other proof of interest.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. Standard boundary survey of the parcel, including all contiguous land in common ownership within the last 5 years.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Copy(ies) of any existing and/or proposed covenants, deed restrictions intended to cover all or part of the lots or dwellings in the subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. Existing and proposed street names, pedestrian ways, lot easements, and areas to be reserved or dedicated to public use.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Copy(ies) of any existing or proposed easements on the property	<input checked="" type="checkbox"/>	<input type="checkbox"/>	9. Contour lines at 2-foot intervals, or intervals required by the Board, showing elevations to the required datum.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8. Name, registration number, and seal of Maine Licensed Professional Land Surveyor who conducted the survey.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10. Typical cross-sections of the proposed grading for roadways, sidewalks, etc., including width, type of pavement, elevations, and grades.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9. Name, registration number, and seal of the licensed professional who prepared the plan (if applicable).	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
10. An indication of the type of sewage disposal to be used in the subdivision.			11. Wetland areas shall be delineated on the survey. If none, please note.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. If connecting to the public sewer, provide a letter from Portland Water District stating the District can collect and treat the wastewater	<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. The number of acres within the proposed subdivision, location of property lines, existing buildings, vegetative cover type, specimen trees, if present, and other essential existing physical features.	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Mandatory Written Information submitted in a bound format (continued):	Applicant	Staff			
				13. Rivers, streams, and brooks within or adjacent to the proposed subdivision. If any portion of the proposed subdivision is in the direct watershed of a great pond, note which great pond.	<input checked="" type="checkbox"/>
ii. If using subsurface wastewater disposal systems (septic), submit test pit analyses prepared by a Maine Licensed Site Evaluator or Certified Soil Scientist. Test pit locations must be shown on a map.	<input type="checkbox"/>	<input type="checkbox"/>	14. Rivers, streams, and brooks within or adjacent to the proposed subdivision. If any portion of the proposed subdivision is in the direct watershed of a great pond, note which great pond.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11. Indicate the type of water supply system(s) to be used in the subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	15. Location & size of existing and proposed sewers, water mains, culverts, bridges, and drainage ways on or adjacent to the property to be subdivided. The Board may require this information to be depicted via cross-section, plan, or profile views.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12. If connecting to public water, submit a written statement from the Portland Water District indicating there is adequate supply and pressure for the subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	16. Location, names, and present width of existing streets, highways, easements, building lines, parks, and other open spaces on or adjacent to the subdivision.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
13. Names and addresses of the record owner, applicant, and adjoining property owners.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	17. Location and widths of any streets, public improvements, or open space within the subdivision (if any) are shown on the official map and the comprehensive plan.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14. An acceptable title opinion proving the right of access to the proposed subdivision or site for any property proposed for development on or off a private way or private road.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	18. All parcels of land proposed to be dedicated to public use and the conditions of such dedication.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
15. The name and contact information for the road association whose private way or road is used to access the subdivision.	<input type="checkbox"/>	<input type="checkbox"/>	19. Location of any open space to be preserved or common areas to be created, and general description of proposed ownership, improvement, and management	<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Financial Capacity. Estimated costs of development, and an itemization of major costs.			20. Approximate location of treeline after development.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i. Estimated costs of development, and an itemization of major costs.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	21. Delineate boundaries of any flood hazard areas and the 100-year flood elevation as depicted on the Town's Flood Insurance Rate Map.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			22. Show any areas within or adjacent to the proposed subdivision which has been identified by the Maine Department of Inland Fisheries and Wildlife "Beginning with Habitat project maps or within the Comprehensive Plan.		
ii. Financing - provide one of the following:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	23. Show areas within or adjacent to the proposed subdivision which is either listed on or eligible for the National Register of Historic Places, or have been identified in the comprehensive plan or by the Maine Historic Preservation Commission as sensitive or likely to contain such sites.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
a. Letter of commitment to funding from a financial institution, governmental agency, or other funding agency.	<input type="checkbox"/>	<input type="checkbox"/>			
b. Annual corporate report with explanatory material showing the availability of liquid assets to finance development	<input type="checkbox"/>	<input type="checkbox"/>			
c. Bank statement showing the availability of funds if personally financing development	<input type="checkbox"/>	<input type="checkbox"/>			
d. Cash equity commitment.	<input type="checkbox"/>	<input type="checkbox"/>			
e. Financial plan for remaining financing.	<input type="checkbox"/>	<input type="checkbox"/>	24. Erosion & Sedimentation control plan, prepared by MDEP Stormwater Law Chapter 500 Basic Standards, and the MDEP Maine Erosion and Sediment Control Best Management Practices, published March 2003.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Letter from financial institution indicating an intention to finance.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	25. A stormwater management plan, prepared by a Maine licensed Professional Engineer by the most recent edition of Stormwater Management For Maine: BMPS Technical Design Manual, published by the MDEP 2006.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			26. For Cluster Subdivisions that do not maximize the development potential of the property being subdivided, a conceptual master plan for the remaining land showing future roads, Open Space, and lot layout, consistent with the requirements of 911.K., Cluster Developments will be submitted.	<input type="checkbox"/>	<input type="checkbox"/>
			<b>C. Submission information for which a waiver may be granted.</b>	<b>Applicant</b>	<b>Staff</b>
2. Technical Capacity:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. High-intensity soil survey by a Certified Soil Scientist	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			2. Landscape Plan	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			3. Hydrogeologic assessment - required if i) subdivision is not served by public sewer and either any part of the subdivision is over a sand and gravel aquifer or has an average density of more than one dwelling unit per 100,000 square feet, or ii) where site considerations or development design indicate the greater potential of adverse impacts on groundwater quality.	<input type="checkbox"/>	<input type="checkbox"/>

i. A statement of the applicant's experience and training related to the nature of the development, including developments receiving permits from the Town.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	a) Map showing basic soil types.	<input type="checkbox"/>	<input type="checkbox"/>
			b) Depth to the water table at representative points	<input type="checkbox"/>	<input type="checkbox"/>
ii. Resumes or similar documents showing experience and qualifications of full-time, permanent, or temporary staff contracted with or employed by the applicant who will design the development.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	c) Drainage conditions throughout the subdivision.	<input type="checkbox"/>	<input type="checkbox"/>
			d) Data on existing groundwater quality.	<input type="checkbox"/>	<input type="checkbox"/>
			e) Analysis and evaluation of the effect of the subdivision on groundwater.	<input type="checkbox"/>	<input type="checkbox"/>
2. Name and contact information for the road association whose private way or road is used to access the subdivision (if applicable).	<input type="checkbox"/>	<input type="checkbox"/>	f) map showing the location of any subsurface wastewater disposal systems and drinking water wells within the subdivision & within 200 feet of the subdivision boundaries.	<input type="checkbox"/>	<input type="checkbox"/>
			4. Estimate the amount and type of vehicular traffic to be generated on a daily basis and at peak hours.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>B. Mandatory Preliminary Plan Information</b>	<b>Applicant</b>	<b>Staff</b>	5. Traffic Impact Analysis for subdivisions involving 28 or more parking spaces or projected to generate more than 140 vehicle trips per day.	<input type="checkbox"/>	<input type="checkbox"/>
1. Name of subdivision, date, and scale.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6. If any portion of the subdivision is in the direct watershed of a great pond.	<input type="checkbox"/>	<input type="checkbox"/>
2. Stamp of the Maine License Professional Land Surveyor that conducted the survey, including at least one copy of the original stamped seal that is embossed and signed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	i. phosphorous impact analysis and control plan.	<input type="checkbox"/>	<input type="checkbox"/>
			ii. long term maintenance plan for all phosphorous control measures.	<input type="checkbox"/>	<input type="checkbox"/>
3. Stamp with the date and signature of the Maine Licensed Professional Engineer that prepared the plans.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	iii. contour lines at an interval of 2 feet.	<input type="checkbox"/>	<input type="checkbox"/>
			iv. delineate areas with sustained slopes greater than 25% covering more than one acre.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. North arrow identifying all of the following: Grid North, Magnetic North, declination between Grid and Magnetic, and whether Magnetic or Grid bearings were used in the plan design.	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
5. Location map showing the subdivision within the municipality.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<b>Electronic Submission</b>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The undersigned hereby makes an application to the Town of Windham for approval of the proposed project and declares the foregoing to be true and accurate to the best of his/her knowledge.

<i>Dustin Roma</i>	7-7-25
APPLICANT OR AGENT'S SIGNATURE	DATE

Dustin Roma - Authorized Agent
PLEASE TYPE OR PRINT THE NAME

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## *SECTION 2*

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### AGENT AUTHORIZATION

June 5, 2023

**Re: Agent Authorization**

Gateway Development, LLC is the owner of an approximately 12-acre parcel located on Turning Leaf Drive in Windham, Maine. The property is shown as Lot 9B on the Town of Windham assessor's map 14. DM Roma Consulting Engineers has been retained to assist in the preparation of land use permits associated with the development, and is authorized to act as agent for the project.

Sincerely,

A handwritten signature in black ink, appearing to read 'Blaine Rich', written over a large, light-colored scribble or stamp.

Blaine Rich

Gateway Development, LLC

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## *SECTION 3*

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### WAIVER REQUESTS

### **Section 3 – Waiver Requests**

The following waivers are requested:

Section 120-910(C)(3)(E): Traffic Impact Analysis Submission Requirement.

See attached form for additional information.

# TOWN OF WINDHAM MINOR\MAJORSUBDIVISION APPLICATION

## Performance and Design Standards Waiver Request Form (Section 908 – Minor\Major Subdivision Review, Waivers)

For each waiver request from the Performance and Design Standards detailed in Section 911 of the Town of Windham Land Use Ordinance, please submit separate completed copy of this waiver request form for all waivers requested

**Subdivision or**

**Project Name:** Turning Leaf Heights

**Tax Map:** 14

**Lot(s):** 9-B

**Waivers are requested from the following Performance and Design Standards  
(Add Forms as necessary):**

Ordinance Section	Standard	Mark which waiver this form is for
120-910-C-3-E	Traffic Impact Analysis	<input checked="" type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>
		<input type="checkbox"/>

- a. Describe how a waiver from the standard indicated above will improve the ability of the project to take the property's pre-development natural features into consideration. Natural features include, but are not limited to, topography, location of water bodies, location of unique or valuable natural resources, relation to abutting properties or land uses. Attach a separate sheet if necessary.

The project will be sending most vehicle traffic through the signalized intersection of Turning Leaf Drive/Roosevelt Trail/River Road. This intersection is part of a major study and highway improvement project being conducted by the Town and Maine DOT. The consultants who are performing the highway traffic study and preliminary design have accounted for the additional traffic that is proposed to be generated from this project so a separate independent analysis of the impact of traffic generated from the proposed development is not necessary. We do not anticipate a substantial amount of vehicles to utilize Drive In Lane for left-turn movements either in or out of Roosevelt Trail because they will have access to the traffic light at Turning Leaf Drive.

(continued next page)

Ordinance Section: 120-910-C-3-E

b. Will the waiver have an impact on any of the following criteria?

	Yes	No
Water or air pollution	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Light pollution or glare	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Water supply	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Soil erosion	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Traffic congestion or safety	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Pedestrian safety or access	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Supply of parking	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sewage disposal capacity	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Solid waste disposal capacity	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Scenic or natural beauty, aesthetics, historic sites, or rare or irreplaceable natural areas	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Flooding or drainage issues on abutting properties	<input type="checkbox"/>	<input checked="" type="checkbox"/>
The Town's ability to provide the subdivision with public safety services (if subdivision)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If granting the waiver will result in an impact on any of the criteria above, please provide more detail below.

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***SECTION 4***

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**CERTIFICATE OF CORPORATE GOOD STANDING**



**Corporate Name Search**

## Information Summary

[Subscriber activity report](#)

This record contains information from the CEC database and is accurate as of: Mon Jul 07 2025 05:31:44. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
GATEWAY DEVELOPMENT, LLC	20062106DC	LIMITED LIABILITY COMPANY	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
01/11/2006	N/A	MAINE

**Other Names** (A=Assumed ; F=Former)  
NONE

### Principal Home Office Address

#### Physical

410 POPE ROAD  
WINDHAM, ME 04062

#### Mailing

410 POPE ROAD  
WINDHAM, ME 04062

### Clerk/Registered Agent

#### Physical

GREGORY W. FILES  
778 ROOSEVELT TRAIL  
WINDHAM, ME 04062

#### Mailing

GREGORY W. FILES  
778 ROOSEVELT TRAIL  
WINDHAM, ME 04062

New Search

Click on a link to obtain additional information.

List of Filings

[View list of filings](#)

#### Obtain additional information:

Certificate of Existence (Good Standing) ([more info](#))

<a href="#">Short Form without amendments</a>	<a href="#">Long Form with amendments</a>
(\$30.00)	(\$30.00)

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***SECTION 5***

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**PROJECT NARRATIVE**

## Section 5 – Project Narrative

Zoning:	Commercial 1 (C-1)
Acreage:	12.2 Acres
Tax Map/Lot:	Map 14 Lot 9-B
Existing Use:	Undeveloped Land
Proposed Use:	Dwelling, Multi-Family

The proposed project includes the construction of a multifamily development consisting of three (3) buildings with 31 units each, two (2) buildings with 12 units each, seven (7) buildings with four (4) units each, and two duplex buildings for a total of 149 dwelling units. The dwellings will be accessed by 1,900 feet of new roadway to be built as extensions of Turning Leaf Drive and Drive In Lane. It is our understanding that the Town desires the new roadways to remain private.

Public water will be extended through the roadways. Some portions of the sewer system are intended to be public infrastructure, and other portions will remain private. The details regarding which components of the sewer system will remain private are contained in a Development Agreement that will be entered into by the Applicant and the Town.

The project requires a Site Location Permit from the Maine Department of Environmental Protection. The application was submitted in September 2024 and we expect the permit to be issued within the next few weeks.

We have included preliminary building elevation plans showing the design of buildings. We will submit Condominium Documents, Landscaping Plans and details of how the project meets the Multifamily Development Standards with our Final Site Plan and Final Subdivision Plan applications.

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***SECTION 6***

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**NAMES AND ADDRESSES OF ABUTTING PROPERTY OWNERS**

## Section 6 – Names and Addresses of Abutting Property Owners

<u>Map/Lot</u>	<u>Owner Name</u>	<u>Mailing Address</u>
14/9-1	SMOMS LLC	12 Drive In Ln Windham, ME 04062
14/9-2	Chester G. Rich Trust	26 Fieldcrest Rd Windham, ME 04062
14/9B-4	JLAM Real Estate LLC	61 Spit Brook Rd Nashua, NH 03060
14/9B-12	Baker Brook Farm Creamery, LLC	30 Haskell Rd Windham, ME 04062
14/10D	Kenneth Timmons Diana Timmons	21 Carpenters Way Windham, ME 04062
14/10E	Robert Timmons Margaret Timmons	22 Commons Ave, Box 8 Windham, ME 04062
15B/13	Pike Industries Inc	3 Eastgate Park Rd Belmont, NH 03220
54/44	IRT Properties LLC	15 Taylor Ln Windham, ME 04062

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***SECTION 7***

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**RIGHT, TITLE OR INTEREST DOCUMENTS**

**WARRANTY DEED  
Maine Statutory Short Form**

**KNOW ALL MEN BY THESE PRESENTS,** That The Rich Family Limited Partnership, a Florida Limited Partnership with a mailing address of 248 NE Edgewater Drive, Stuart, FL 34996 (hereinafter "Grantor"), for consideration paid, grants to Gateway Development, LLC, a limited liability company duly organized and existing under the laws of the State of Maine, with a mailing address of 4 Commons Avenue, Suite 11, Windham, ME 04062, (hereinafter "Grantee"), with **WARRANTY COVENANTS**, the land in the Town of Windham, County of Cumberland, and State of Maine, described as follows:

See attached Exhibit A.

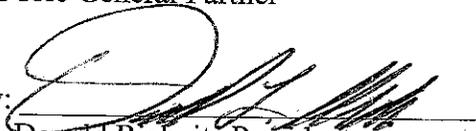
Meaning and intending to convey and hereby conveying a portion of the property acquired by the Grantor herein by deed of Evergreen Credit Union dated June 3, 2002, and recorded in the Cumberland County Registry of Deeds in Book 17693, Page 095.

WITNESS my hand and seal this 7<sup>th</sup> day of the month of March, 2006.

**SIGNED, SEALED AND DELIVERED** in the presence of:

RICH FAMILY LIMITED PARTNERSHIP  
By: RICH FAMILY HOLDINGS, INC.,  
its sole General Partner

Witness 

By:   
Donald Rich, its President

MAINE REAL ESTATE TAX PAID

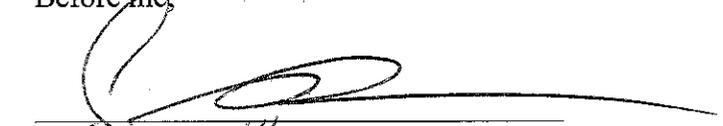
State of Mass )  
Comberland County )

ss.

3/7, 2006

Then personally appeared the above-named Donald Rich, President of Rich Family Holdings, Inc., the General Partner of Rich Family Limited Partnership and acknowledged the foregoing instrument to be its free act and deed.

Before me,



Notary Public *Atty*

Colleen W. Files

Print Name

## Exhibit A

Beginning at a iron located on the Northerly sideline of land now or formerly owned by Timmons as described in deed recorded at the Cumberland County Registry of Deeds in book 14966, page 257. Said iron marking the southeast corner of land now or formerly owned by 430 Western Avenue LLC as described in the deed recorded in said Registry in book 19073, page 15;

Thence North  $02^{\circ}-51'-38''$  east along the land now or formerly owned by 430 Western Avenue LLC and land now or formerly owned by Kennerson Realty Associates LLC as described in the deed recorded in book 12490, page 129 in said Registry, 620.12 feet to a iron at land now or formerly owned by Britewater Realty I, LLC as described in the deed recorded in book 21492, page 97 of said Registry;

Thence North  $40^{\circ}-45'-45''$  East along land now or formerly owned by Britewater Realty I, LLC, 221.80 feet to a no. 5 rebar at land now or formerly owned by Taylor as described in the deed recorded in book 2048, page 325 in said Registry;

Thence South  $38^{\circ}-24'-13''$  East along land now or formerly owned by Taylor 46.59 feet to a 20" Pine tree;

Thence South  $38^{\circ}-04'-25''$  East continuing along land now or formerly owned by Taylor, 468.48 feet to a 20" Oak tree;

Thence South  $36^{\circ}-22'-40''$  East continuing along land now or formerly owned by Taylor, 498.42 feet to a 12" Oak tree;

Thence South  $34^{\circ}-35'-37''$  East continuing along land now or formerly owned by Taylor, 119.00 feet to a no. 5 rebar at Ditch Brook;

Thence in a generally southerly direction along Ditch Brook, 370 feet more or less to a iron at land now or formerly owned by Lake Region Commons Green Area as recorded in Plan Book 180, page 42, at the Cumberland County Registry of Deeds, said water course having a tie-line bearing of South  $35^{\circ}-54'-48''$  West from the previously described no. 5 rebar, 357.67 feet to said iron;

Thence North  $77^{\circ}-59'-59''$  West along land now or formerly owned by the Lake Region Commons Green Area, 370.15 feet to a iron at land now or formerly owned by Timmons as previously described;

Thence North  $11^{\circ}-56'-05''$  East along land of Timmons, 300.00 feet to an iron;

Thence North  $84^{\circ}-00'-30''$  West continuing along land now or formerly owned by Timmons, 348.87 feet to the point of beginning.

Said parcel contains 12.05 acres more or less. Bearings are magnetic of the year 1978.

Parcel being a portion of land previously described in deed book 17693, page 95 Cumberland County Registry of Deeds. Said parcel is subject to easement(s) and/ or right(s)-of-way of record, without limitation, certain rights described in deed book 21433, page 312 Cumberland County Registry of Deeds.

Received  
Recorded Register of Deeds  
Sep 25 2006 02:30:21P  
Cumberland County  
John B O'Brien

### QUITCLAIM DEED WITH COVENANT

**TIMM REALTY LLC**, a Maine limited liability company with a place of business in Freeport, Maine ("Grantor"), for consideration paid, grants to **GATEWAY DEVELOPMENT, LLC**, a Maine limited liability company with a place of business in Windham, Maine ("Grantee"), a parcel of land in the Town of Windham, Cumberland County, Maine, such parcels being more particularly described on **Exhibit A** attached hereto.

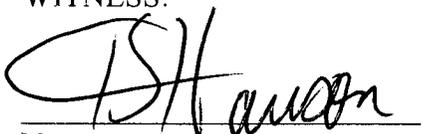
Grantor is the successor holder of the Development Rights and Special Declarant Rights pursuant to Article V of the Declaration of Shops at Sebago Condominium, dated August 17, 2009, and recorded in the Cumberland County Registry of Deeds in Book 27188, Page 30 (the "Declaration"), pursuant to a Short-Form Quitclaim with Covenant Deed from Britewater Realty I, LLC ("Britewater") dated June 21, 2010, and recorded in said Registry of Deeds in Book 27861, Page 20. Grantor exercised those Development Rights by First Amendment to Declaration of Shops at Sebago Condominium dated June 20, 2014, and recorded in said Registry in Book 31586, Page 184, to remove a portion of the land described on Exhibit A attached hereto from the condominium.

This Release is given in satisfaction of the obligation of Grantor, as successor in interest to Britewater, to Grantee pursuant to that certain Boundary Line Adjustment Agreement dated August 17, 2009, and recorded in said Registry in Book 27188, Page 135.

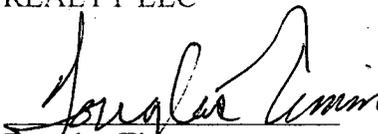
This deed is given with quitclaim covenant with respect to the portion of the land described on Exhibit A attached hereto that also is described in a certain Quitclaim with Covenant Deed from Grantee to Britewater dated August 13, 2009, and recorded in said Registry in Book 27188, Page 58.

IN WITNESS WHEREOF, Timm Realty LLC has caused this instrument to be executed by Douglas Timm, its Manager thereunto duly authorized on this 5<sup>th</sup> day of August, 2014.

WITNESS:

  
Name: Tom S. Hanson

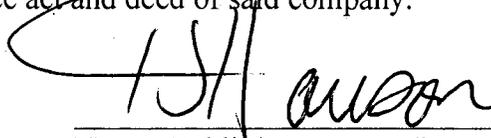
TIMM REALTY LLC

By:   
Douglas Timm  
Its duly authorized Manager

STATE OF MAINE  
COUNTY OF CUMBERLAND

August 5, 2014

Personally appeared before me the above-named Douglas Timm, Manager of Timm Realty LLC as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in said capacity and the free act and deed of said company.



Notary Public/Attorney at Law

Print Name: Tom Hanson

**Exhibit A**

All of that land located at or near Turning Leaf Drive in the Town of Windham, Cumberland County, Maine being located on Lot 12 as shown on a certain 3<sup>rd</sup> Amended Subdivision Plan of the Rich Family Limited Partnership Property prepared by Sebago Technics and October 1, 2013, recorded in said Registry of Deeds in Plan Book 213, Page 455, and being generally located southeasterly of a certain boundary line crossing the Turning Leaf Drive cul-de-sac with the following courses and distances, as shown on said Amended Subdivision Plan: N 40° 47' 38" E a distance of 60.82 feet; N 40° 47' 38" E a distance of 145.78 feet; N 40° 47' 38" E a distance of 15.27 feet.

Received  
Recorded Register of Deeds  
Aug 20, 2014 08:16:20A  
Cumberland County  
Pamela E. Lovley

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***SECTION 8***

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**EXISTING OR PROPOSED EASEMENTS OR COVENANTS**

## **Section 8 – Existing or Proposed Easements or Covenants**

The property is intended to be developed as multiple condominium lots with Lots 1, 2, 3 and 4 being separate condominium developments that will own and manage their own lots. There will be an overall association that will own and manage the roadway rights-of-way and Lots 5 and 6 as common lots with shared management rights. A Condominium Declaration will be submitted with the Final Plan Application and will outline the rights and responsibilities of the Condominium Association and each unit owner.

The portion of Turning Leaf Drive that leads from River Road to the development parcel is governed by a Road Maintenance Agreement (See attached document recorded in Cumberland County Registry of Deeds Book 20436, Page 224).

A boundary line agreement released private rights in portions of a right-of-way located on the subject parcel and adjacent parcel owned by Baker Brook Farm Creamery, LLC (See attached document recorded in Cumberland County Registry of Deeds Book 41309, Page 45).

**DECLARATION OF PRIVATE ROAD MAINTENANCE AGREEMENT**  
**FOR**  
**TURNING LEAF DRIVE, WINDHAM, MAINE**

WITNESS THIS DECLARATION OF PRIVATE ROAD MAINTENANCE AGREEMENT FOR TURNING LEAF DRIVE, WINDHAM, MAINE, made this 21<sup>st</sup> day of October, 2003, by and between the Rich Family Limited Partnership, a Florida Limited Partnership, and Pamela Saunders (hereinafter referred to as the "Parties"); and

WHEREAS, the Parties own Lots Number Ten (10) and Twelve (12) in a certain Subdivision known as Trading Post Plaza in Sycum Associates Business Park Revision V by Crest Enterprises Ltd., and dated June 25, 1989, and recorded in the Cumberland County Registry of Deeds in Plan Book 179, Page 62; and

WHEREAS, the Windham Planning Board has approved the Sycum Associates Business Park Subdivision Amendment which was recorded on October 9, 2003, in the Cumberland County Registry of Deeds in Plan Book 203, Page 564; and

WHEREAS, the Planning Board has approved an amendment to the subdivision under which a certain Right of Way exists over and across Lot Number Twelve (12) from Route 302 to the proposed entrance to Lot Number Ten (10) said Right of Way is known as Turning Leaf Drive; and

WHEREAS, the Parties desire to set forth the responsibilities and rights to said Right of Way.

NOW THEREFORE, the Parties hereby declare the following:

Right of Way

As depicted on the Plan, one right of way is located within and across Lot Number Twelve (12).

Said right of way shall be maintained by the Parties, their heirs and assigns, either by election of a Road Commissioner as defined in under the Laws of the State of Maine; by creation of a Road Association which shall be responsible for the maintenance of the Easement; or directly by the Owners of the Dominant Estates being responsible for the maintenance of the road collectively and sharing in the cost of such maintenance by dividing the cost equally.

Said maintenance to include, but not be limited to, the following: normal upkeep and maintenance of the roadway; snow and ice removal; repairs of washouts; liability insurance coverage; and maintenance and repair of the street light.

This Road Maintenance Agreement shall run with the land and bind the Parties, their successors, grantees, and assigns, and all parties claiming by, through, or under them. The

Parties, their successors or assigns, the Town of Windham, and each owner or owners of any of the above land from time to time shall have the right, but not the obligation, jointly and separately to sue for and obtain a prohibitive or mandatory injunction to prevent the breach of, or to enforce the observance of, the provisions above set forth, or any of them, in addition to the right to bring an ordinary legal action for damages and the right to collect attorney's fees associated with the need to bring said suit. In no event shall the failure of the Parties, their successors or assigns, and such owners to enforce any of the provisions herein set forth as to a particular violation be deemed to be a waiver of the right to do so as to any continuing or subsequent violation.

This Agreement shall cease to become null and void and enforceable at such time that the private road is dedicated and accepted as a Town Road by the Windham Town Council.

#### Assessments

Assessments and other proper charges associated with the maintenance obligations set forth within this Road Maintenance Agreement that are authorized and billed by the Parties shall be a charge on the lots and shall be a continuing lien upon the lot upon which such assessment is made. If the assessment to a Party is not paid within thirty (30) days after the due date, then said assessment shall become delinquent and shall, together with interest at the rate of one percent (1%) per month, or any portion thereof, costs of collection and reasonable attorneys' fees, become a continuing lien on the lot owned by the delinquent Party which lien shall bind the lot, with the buildings and improvements thereon, as well as the delinquent Party, heirs, devisees, successors, personal representatives and assigns. Said lien for unpaid assessment shall be prior to all of the liens and encumbrances on the lot other than mortgages recorded before the date on which the assessment which is sought to be enforced becomes delinquent and liens for real estate taxes and other governmental/municipal assessments or similar charges against lot. All such charges in addition to being a lien, shall also constitute the personal liability of the owner to the lot so assessed at the time of assessment.

#### Waiver

No delay or omission on the part of Declarant or any Owner in enforcing the covenants set forth herein shall be construed as a waiver of any right to enforce to seek such remedy or acquiescence in such breach.

#### Severability

In the event any one or more of the provisions of this Declaration shall be found for any reason by a Court of competent jurisdiction to be unenforceable or null and void, such judgment of decrees shall not in any manner whatsoever affect, modify, change, abrogate or nullify any other provision of this Declaration.

IN WITNESS WHEREOF, the said Rich Family Limited Partnership and Pamela Saunders has caused this **ROAD MAINTENANCE AGREEMENT** to be executed on the date and the year above written.

WITNESS:

[Signature]  
State of Maine )  
Cumberland County )

[Signature]  
Rich Family Limited Partnership  
by: Donald L. Rich, President Rich Family Holdings, Inc.  
General Partner Rich Family Limited Partnership

ss.

10/20, 2003

Then personally appeared the above-named Donald L. Rich, President, Rich Family Holdings, Inc. and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[Signature]  
Notary Public/ Attorney at Law  
GREGORY W. FILES, ME Bar # 8900

[Signature]  
State of Maine )  
Cumberland County )

[Signature], POA, for Pamela Saunders  
(Signature)  
Jami L. Glicos, POA, for Pamela Saunders  
Pamela Saunders

ss.

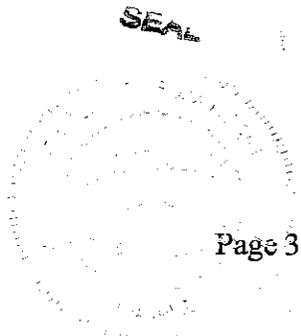
October 21<sup>st</sup>, 2003

Then personally appeared the above-named Jami L. Glicos, POA, for Pamela Saunders and acknowledged the foregoing instrument to be his free act and deed.

Before me,

[Signature]  
Notary Public/ Attorney at Law  
PAULA P. SWANTON

Received  
Recorded Register of Deeds  
Oct 22, 2003 02:03:53P  
Cumberland County  
John B. O'Brien



**Boundary Line Agreement**

WHEREAS the parties own adjacent lots in the Town of Windham, County of Cumberland, and State of Maine along Turning Leaf Drive as further described herein; and

WHEREAS the proposed cul-de-sac at the end of Turning Leaf Drive will no longer be built and the parties wish to release any interest they may have in said cul-de-sac to the other party.

NOW THEREFORE, the parties agree as follows:

**1. Parties.**

A. In this Agreement, "Gateway" means Gateway Development, LLC, a limited liability company organized under the laws of the State of Maine and having an address of 26 Fieldcrest Road, Windham, ME 04062.

B. In this Agreement, "Baker Brook Farm" means Baker Brook Farm Creamery, LLC a limited liability company organized under the laws of the State of Maine and having an address of 30 Haskell Road, Windham ME 04062.

**2. Gateway Lot.** The Gateway Lot means the land along Turning Leaf Drive in the Town of Windham, County of Cumberland, and State of Maine, more fully described in the deed recorded at the Cumberland County Registry of Deeds in Book 31719, Page 84.

**3. Baker Brook Farm Lot.** The Baker Brook Farm Lot means the land along Turning Leaf Drive in the Town of Windham, County of Cumberland, and State of Maine, more fully described in the deed recorded at the Cumberland County Registry of Deeds in Book 32517, Page 82.

**4. Purpose of Agreement.** This Agreement is entered into between the parties to release any rights the parties may hold concerning the previously proposed cul-de-sac that was to be located at the end of said Turning Leaf Drive.

**5. Agreement.** The parties hereby release to the designated party the following:

A. Gateway releases to Baker Brook Farm any interest it may have in the following described property:

A certain parcel of land situated at the southerly terminus of Turning Leaf Drive in the Town of Windham, County of Cumberland, State of Maine being bounded and described as follows:

Commencing at the most easterly corner of land now or formerly of JLAM Real Estate LLC as described in a deed recorded in Book 40340 Page 258 in the Cumberland County Registry of Deeds;

Thence N 40° 47' 38" E a distance of 60.82 feet to the westerly sideline of Turning Leaf Drive and the **Point of Beginning**;

Thence northerly, by and along the westerly sideline of Turning Leaf Drive along a curve concave to the right having a radius of 73.00 feet an arc distance of 92.37 feet, said curve having a chord which bears N 13° 46' 35" E a distance of 86.33 feet;

Thence northerly, by and along the westerly sideline of Turning Leaf Drive along a curve concave to the left having a radius of 25.00 feet an arc distance of 39.27 feet, said curve having a chord which bears N 6° 35' 19" E a distance of 35.36 feet;

Thence S 38° 24' 13" E a distance of 60.16 feet;

Thence S 40° 47' 38" W a distance of 94.88 feet to the Point of Beginning.

The parcel contains approximately 3,265 square feet.

Bearings are Magnetic 1978.

Reference is made to a plan entitled "3<sup>rd</sup> Amended Subdivision Plan of the: Rich Family Limited Partnership Property recorded in Plan Book 213 Page 455 in the Cumberland County Registry of Deeds.

B. Baker Brook Farm releases to Gateway any interest it may have in the following described property:

A certain parcel of land situated at the southerly terminus of Turning Leaf Drive in the Town of Windham, County of Cumberland, State of Maine being bounded and described as follows:

Commencing at the most easterly corner of land now or formerly of JLAM Real Estate LLC as described in a deed recorded in Book 40340 Page 258 in the Cumberland County Registry of Deeds;

Thence N 40° 47' 38" E a distance of 60.82 feet to the westerly sideline of Turning Leaf Drive and the **Point of Beginning**;

Thence N 40° 47' 38" E a distance of 145.78 feet to the northeasterly sideline of Turning Leaf Drive;

Thence S 38° 24' 13" E, by and along the easterly sideline of Turning Leaf Drive, a distance of 47.37 feet;

Thence southerly and westerly by and along the easterly and southerly sideline of Turning Leaf Drive along a curve concave to the right having a radius of 73.00 feet an arc distance of 249.64 feet, said curve having a chord which bears S 59° 33' 57" E a distance of 144.59 feet to the Point of Beginning.

The parcel contains approximately 13,234 square feet.

Bearings are Magnetic 1978.

Reference is made to a plan entitled "3<sup>rd</sup> Amended Subdivision Plan of the: Rich Family Limited Partnership Property recorded in Plan Book 213 Page 455 in the Cumberland County Registry of Deeds.

6. **Boundary Survey.** This agreement and exchange is based on the "3<sup>rd</sup> Amended Subdivision Plan of the Rich Family Limited Partnership Property dated October 1, 2013" and recorded at the Cumberland County Registry of Deeds in Plan Book 213, Page 455.

7. The parties shall cause or permit this agreement to be recorded in the Cumberland County Registry of Deeds.

8. The releases agreed upon will be permanent and binding upon the heirs and assigns of the undersigned parties.

**IN WITNESS WHEREOF**, Blaine Rich, a duly authorized Member of Gateway Development, LLC and Stephen W. O'Brien a duly authorized Member of Baker Brook Farm Creamery, LLC have caused this instrument to be signed this:

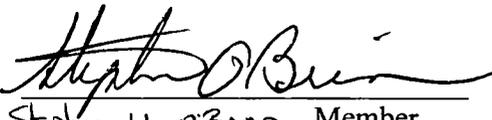
27 day of the month of February, 2025

**SIGNED, SEALED AND DELIVERED** in the presence of:

  
Witness

  
Blaine Rich, Member  
Gateway Development, LLC

  
Witness

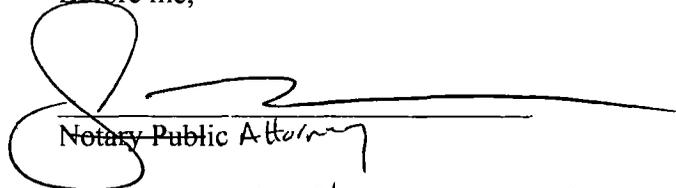
  
Stephen W. O'Brien, Member  
Baker Brook Farm Creamery, LLC

State of Maine )  
Cumberland County )

02/27/25, ~~2024~~

Then personally appeared the above-named Blaine Rich, Member, Gateway Development, LLC and acknowledged the foregoing instrument to be his free act and deed in said capacity.

Before me,

  
Notary Public Attorney

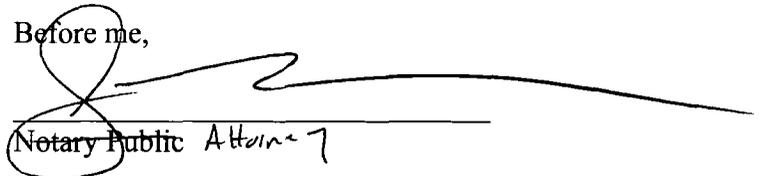
GREGORY W. FILES ME Bar # 8600  
Printed Name of Notary Attorney

State of Maine )  
Cumberland County )

02/27/2025, ~~2024~~

Then personally appeared the above-named Stephen W. O'Brien, Member Baker Brook Farm Creamery, LLC and acknowledged the foregoing instrument to be his/her/its free act and deed in said capacity.

Before me,

  
Notary Public Attorney

GREGORY W. FILES ME Bar # 8600  
Printed Name of Notary Attorney

Received  
Recorded Register of Deeds  
Mar 03, 2025 11:04:56A  
Cumberland County  
Jessica M. Spaulding

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## *SECTION 9*

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### TECHNICAL CAPACITY OF THE APPLICANT

## **Section 9 – Technical Capacity of the Applicant**

Gateway Development LLC is the developer of the project. Blaine Rich is the manager of the company, and he has been involved in the development and management of several properties in Windham including commercial properties on Commons Avenue and commercial Medical facilities located at 582 & 584 Roosevelt Trail .

DM Roma Consulting Engineers has been retained to perform Civil Engineering design and Land Permitting through the Town and State. The Licensed Professional Engineers at DM Roma have been designing land development projects for over 20 years and have extensive experience with Stormwater Management Design, Roadway and Utility engineering, Site grading, Erosion Control design, Engineering of on-site wastewater disposal systems, and regulatory permitting through local municipalities, the Maine Department of Environmental Protection, the Maine Department of Transportation, US Army Corps of Engineers and other affiliated agencies.

Survey, Inc. has been retained to perform Land Surveying services for the project. Bill Shippen is a Licensed Professional Land Surveyor with extensive experience in all aspects of land surveying and subdivision planning.

Mainely Soils LLC has been retained to perform subsurface soil evaluations and wetlands delineation. Alex Finamore is experienced in septic system design, wetland delineation, soils analysis and environmental permitting.

Mark Hampton Associates has been retained to perform soil classification in accordance with the standards required by the State of Maine for High Intensity Soil Surveys. Mark Hampton is a Licensed Soil Scientist and Licensed Site Evaluator in the State of Maine.

Custom Concepts, Inc. Architecture has been retained to provide architectural design of the buildings. Mike Richman is a Licensed Architect and has extensive experience in design and construction of multifamily residential buildings.

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***SECTION 10***

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**CAPACITY OF EXISTING UTILITIES TO SERVE THE PROJECT**

## **Section 10 – Capacity of Existing Utilities to Serve the Project**

Potable Water – The existing 8-inch water main located in Turning Leaf Drive and Drive In Lane will be extended through the new roadway rights-of-way and connected to provide a looped system. The Portland Water District has reviewed our project plans and has provided an Ability to Serve Approval Letter that is contained in Section 18.

Fire Protection Water – The water main extension will include the installation of fire hydrants to provide fire protection water to the project. Sprinkler system water services will be provided to each building.

Electrical Service – Existing underground power is available on Turning Leaf Drive to serve the proposed development. Primary electrical service will be extended through the project underground and will connect to pad-mounted transformers. Secondary electrical service will be installed underground from the transformers to the dwellings.

Wastewater Disposal – The project will connect to the new public sewer system that is currently under construction. The Town Council authorized the Town Manager to enter into a Development Agreement with Gateway Development LLC to allow the sewer connection.

Natural Gas – Natural Gas is available in Turning Leaf Drive, and we have not yet decided if the project will utilize Natural Gas service.

Storm Drainage – The project manages stormwater flow internally with a discharge point at Ditch Brook. We are not proposing to connect into the municipal storm drain collection system.

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***SECTION 11***

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**SOLID WASTE DISPOSAL**

## **Section 11 – Solid Waste Disposal**

Additional tree clearing will be required prior to site construction. Tree stumps will be hauled off site by the site contractor and disposed in accordance with all applicable regulations, or ground on-site to create erosion control mix. Brush will be burned or chipped.

During construction of the buildings, temporary on-site dumpsters will be placed on the property and emptied by a licensed waste hauling company.

On-site dumpsters are proposed in two locations. The dumpsters will be privately maintained and will be available for all residents of the project.

We do not anticipate that the project will create any hazardous solid waste that will require special treatment.

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***SECTION 12***

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**SITE LIGHTING**

## **Section 12 – Site Lighting**

Pole-mounted lights will be installed throughout the parking lot areas and at the roadway intersections. Building-mounted lights will be installed near building entrances for security lighting. A lighting photometric plan has been prepared for the project and is attached for reference.



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***SECTION 13***

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**SITE LANDSCAPING**

### **Section 13 – Site Landscaping**

A site-specific landscaping plan will be prepared and submitted with the Final Site Plan and Final Subdivision Plan application. The Landscaping Plan will include decorative landscaping around the buildings and street trees along the roadways. A substantial natural tree buffer will be maintained on Lot 6 that is adjacent to Ditch Brook.

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***SECTION 14***

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**VEHICLE TRAFFIC**

## Section 14 – Vehicle Traffic

The project consists of 149 residential dwelling units in 14 multi-family buildings.

The Institute of Transportation Engineers (ITE) Trip Generation handbook estimates that Multifamily Low-Rise Housing (Land Use Code #220) is expected to generate the following vehicle trips:

Weekday	= 6.74 trips per dwelling unit
AM Peak Hour	= 0.47 trips per dwelling unit
PM Peak Hour	= 0.57 trips per dwelling unit

Accordingly, the proposed 149 new residential condominium dwellings can be expected to generate 1,004 vehicle trips during a typical weekday, 70 trips in the morning peak hour and 85 trips in the evening peak hour.

The ITE Handbook also provides the following directional distribution rates for an apartment unit:

AM Peak Hour	= 24% enter site and 76% exit site
PM Peak Hour	= 62% enter site and 38% exit site

Based upon the above distribution patterns, 17 trips during the morning peak hour and 53 trips during the evening peak hour will enter the site. Accordingly, 53 trips during the morning peak hour and 32 trips during the evening peak hour will exit the site.

Some residents would be expected to utilize Drive In Lane for access to and from the development, but we expect those vehicle trips using Drive In Lane will be turning right into the site or turning right out to Roosevelt Trail. We anticipate that vehicles that want to turn left (south) on Roosevelt Trail or access River Road will use the signalized intersection at Turning Leaf Drive. Similarly, vehicles turning left into the development will also likely utilize Turning Leaf Drive or simply go straight on Turning Leaf Drive if accessing from River Road.

The signalized intersection of Turning Leaf Drive/Roosevelt Trail/River Road is part of a large traffic management study and highway improvement project that is being conducted by the Town and Maine DOT, and it is our understanding that the trips generated from the proposed development will be incorporated into the design of improvements at the intersection.

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***SECTION 15***

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**IMPACT TO IMPORTANT OR UNIQUE NATURAL AREAS**

## **Section 15 – Impact to Important or Unique Natural Areas**

The attached review letter from the Maine Department of Inland Fisheries and Wildlife (DIFW) indicating that there are no significant wildlife habitats located within the vicinity of the proposed development. We have also included a letter from the Maine Natural Areas Program indicating that there are no rare or threatened botanical species documented in the project area. The Maine DIFW also provided additional consultation to the Maine Department of Environmental Protection (DEP) during the review of the Site Location permit. The vernal pool on the property was determined to be non-significant by the Maine DEP.



**STATE OF MAINE**  
**DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY**

177 STATE HOUSE STATION  
AUGUSTA, MAINE 04333

**JANET T. MILLS**  
GOVERNOR

**AMANDA E. BEAL**  
COMMISSIONER

June 28, 2023

J.P. Connolly  
DM Roma  
PO Box 1116  
Windham, ME 04062

Via email: [jp@dmroma.com](mailto:jp@dmroma.com)

Re: Rare and exemplary botanical features in proximity to: 80-Unit Residential Development, Turning Leaf Drive, Windham, Maine

Dear J.P. Connolly:

I have searched the Maine Natural Areas Program's Biological and Conservation Data System files in response to your request received June 27, 2023 for information on the presence of rare or unique botanical features documented from the vicinity of the project in Windham, 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



PHONE: (207) 287-8044  
WWW.MAINE.GOV/DACF/MNAP

Letter to DM Roma  
Comments RE: Turning Leaf Drive, Windham  
June 28, 2023  
Page 2 of 2

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](mailto:lisa.st.hilaire@maine.gov)

**Rare and Exemplary Botanical Features within 4 miles of  
Project: 80-Unit Residential Development, Turning Leaf Drive, Windham, ME**

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
<b>Pitch Pine Bog</b>						
		S2	G3G5	2004-06-21	10	
<b>Red Maple Swamp</b>						
		S5	G3G5	2004-06-21	16	
<b>Scarlet Oak</b>						
	E	S1	G5	1916-08	2	Hardwood to mixed forest (forest, upland)
<b>Small Whorled Pogonia</b>						
	E	S2	G2G3	2018-06-15	18	Hardwood to mixed forest (forest, upland)
<b>Spicebush</b>						
	SC	S3	G5	2006-06-11	11	Forested wetland
<b>Spo ed Pondweed</b>						
	T	S1	G5	2016-06-22	3	Open water (non-forested, wetland)

Date Exported: 2023-06-28 16:30

## 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 critically imperiled (1) to secure (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
<b>S1</b> <b>G1</b>	<b>Critically Imperiled</b> – 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.
<b>S2</b> <b>G2</b>	<b>Imperiled</b> – At high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors.
<b>S3</b> <b>G3</b>	<b>Vulnerable</b> – 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.
<b>S4</b> <b>G4</b>	<b>Apparently Secure</b> – 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.
<b>S5</b> <b>G5</b>	<b>Secure</b> – At very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats.
<b>SX</b> <b>GX</b>	<b>Presumed Extinct</b> – Not located despite intensive searches and virtually no likelihood of rediscovery.
<b>SH</b> <b>GH</b>	<b>Possibly Extinct</b> – Known from only historical occurrences but still some hope of rediscovery.
<b>S#S#</b> <b>G#G#</b>	<b>Range Rank</b> – 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.
<b>SU</b> <b>GU</b>	<b>Unrankable</b> – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
<b>GNR</b> <b>SNR</b>	<b>Unranked</b> – Global or subnational conservation status not yet assessed.
<b>SNA</b> <b>GNA</b>	<b>Not Applicable</b> – 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).
<b>Qualifier</b>	<b>Definition</b>
<b>S#?</b> <b>G#?</b>	<b>Inexact Numeric Rank</b> – Denotes inexact numeric rank.
<b>Q</b>	<b>Questionable taxonomy that may reduce conservation priority</b> – 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.
<b>T#</b>	<b>Intraspecific Taxon (trinomial)</b> – The status of intraspecific taxa (subspecies or varieties) are indicated by a "T-rank" following the species' global rank.

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

Status	Definition
<b>E</b>	<b>Endangered</b> – 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.
<b>T</b>	<b>Threatened</b> – 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.
<b>SC</b>	<b>Special Concern</b> – A native plant species that is rare in the State, but not rare enough to be considered Threatened or Endangered.
<b>PE</b>	<b>Potentially Extirpated</b> – 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
<b>A</b>	<b>Excellent</b> – Excellent estimated viability/ecological integrity.
<b>B</b>	<b>Good</b> – Good estimated viability/ecological integrity.
<b>C</b>	<b>Fair</b> – Fair estimated viability/ecological integrity.
<b>D</b>	<b>Poor</b> – Poor estimated viability/ecological integrity.
<b>E</b>	<b>Extant</b> – Verified extant, but viability/ecological integrity not assessed.
<b>H</b>	<b>Historical</b> – Lack of field information within past 20 years verifying continued existence of the occurrence, but not enough to document extirpation.
<b>X</b>	<b>Extirpated</b> – Documented loss of population/destruction of habitat.
<b>U</b>	<b>Unrankable</b> – Occurrence unable to be ranked due to lack of sufficient information (e.g., possible mistaken identification).
<b>NR</b>	<b>Not Ranked</b> – An occurrence rank has not been assigned.

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





JANET T. MILLS  
GOVERNOR

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



JUDITH CAMUSO  
COMMISSIONER

October 23, 2023

J.P. Connolly  
DM Roma Consulting Engineers  
2 Main Street, Suite 18-128  
Biddeford, ME 04005

## **RE: Information Request – Turning Leaf Heights, Windham Project**

Dear J.P.:

Per your request, 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 *Turning Leaf Heights, Windham* project.

Our Department has not mapped any Essential or Significant Wildlife Habitats or inland fisheries 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, four species are afforded protection under Maine’s Endangered Species Act (MESA, 12 M.R.S §12801 et. seq.): little brown bat (State Endangered), northern long-eared bat (State Endangered), eastern small-footed bat (State Threatened), and tri-colored bat (State Threatened). The four remaining bat species are designated as Species of Special Concern (Rare): big brown bat, red bat, hoary bat, and silver-haired 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 spring/fall migration, the summer breeding season, and/or for overwintering. 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. If surveys for vernal pools have not yet been conducted, 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.

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 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,

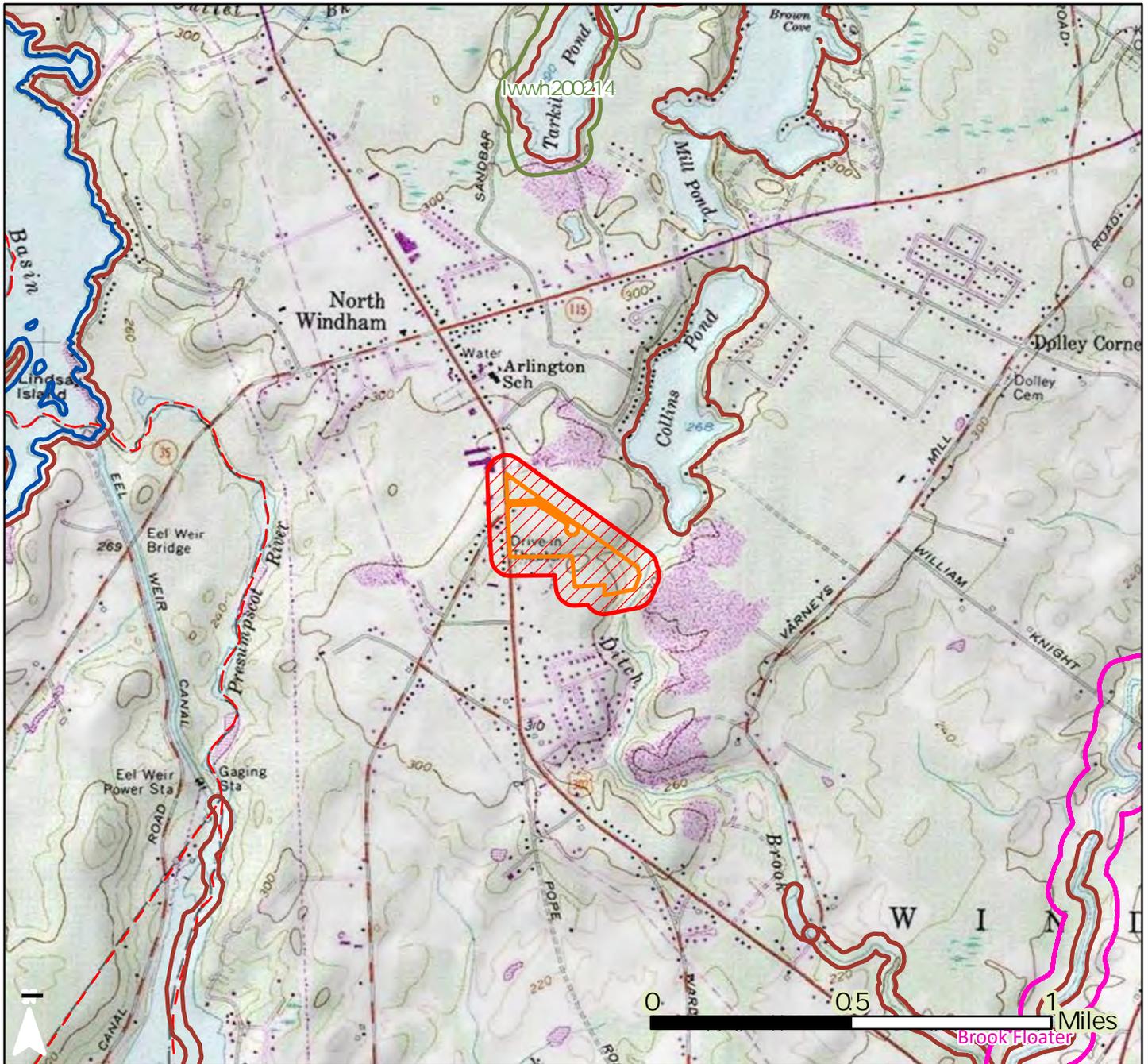
A handwritten signature in blue ink, appearing to read "John Perry". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

John Perry  
Environmental Review Coordinator



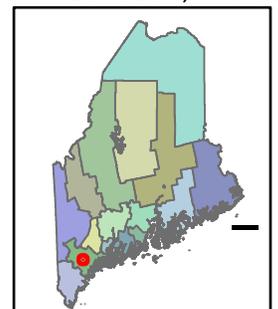
Maine Department of Inland Fisheries and Wildlife  
Environmental Review of Fish and Wildlife Observations and Priority Habitats

Gateway Development LLC, Windham



- County Boundary
- Township Boundary
- Project Footprint
- Search Area
- E, T, & SC Species
- Inland Waterfowl/Wading Bird
- Special Concern Fish
- Wild Lake Trout Habitats

Date: 6/28/2023  
Project on:  
UTM Zone 19N, NAD83



Legend only lists resources visible in the map; see response letter for all resources that were evaluated.

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***SECTION 16***

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**STORMWATER MANAGEMENT**

## **Section 16 – Stormwater Management**

The project has been designed in accordance with the standards found in the Maine Department of Environmental Protection (Maine DEP) Chapter 500 regulations and the Town of Windham Land Use Ordinance. A Site Location Permit Application has been filed with the Maine DEP and is currently under review. We will provide the Town with a copy of the permit approval order once it is received. We understand that the Project is required to comply with the Post-Construction Stormwater Management Ordinance and that annual inspections and certifications will be required by the Town.

## **SECTION 12 – STORMWATER MANAGEMENT**

### **STORMWATER MANAGEMENT REPORT**

#### **TURNING LEAF HEIGHTS**

#### **WINDHAM, MAINE**

##### **A. Narrative**

Gateway Development, LLC, the applicant, is proposing to develop a 12.2-acre property located off Turning Leaf Drive and Drive In Lane in Windham, Maine. The project site is identified as Lot 9-B on the Town of Windham Assessor's Map 14, and is located in within the Commercial-1 Zoning District. The property is currently undeveloped woodland and is bound by undeveloped woodland to the along the easterly portion of the site, undeveloped commercial pad to the northwest, existing commercial uses to the west and southwest, additionally Ditch Brook is located along the easterly property limits.

The applicant is proposing to build a residential development consisting of a total of 146 dwelling units. The project proposes a mix of multi-unit buildings, specifically three (3) 30-unit buildings, two (2) 12-unit buildings, seven (7) 4-unit buildings and two (2) 2-unit buildings. 114 dwelling units of 2-unit-family detached residential dwellings and 24 units of multi-family residential dwellings in 3 buildings. The development is also proposing construction to extend Turning Leaf Drive and Drive In Lane with a 24-foot pavement width, curb and sidewalk. All unit's will be served by public water, public sewer, and underground electric, telephone and cable. The project also includes the construction of parking areas and stormwater management facilities.

##### **B. Prior Related Permitting**

The project parcel is identified as Lot 12 of the 3-lot commercial subdivision, identified as "Rich Family Limited Partnership Property" prepared by Sebago Technics, Inc., last amended in December 2013. As part of the original Town approval in 2003, two buildings were constructed on the property identified as Lot 10 of the subdivision with the construction of a portion of Turning Leaf Drive. These buildings were later converted into a condominium.

In 2005 to 2006, a 700-foot-long extension of Turning Leaf Drive was designed and permitted with the addition of a paved parking lot on the opposite side of Turning Leaf Drive, on Lot 12A, shared by both condominium owners. Since the entire project created over an acre of impervious surface, a Stormwater Permit was obtained from the Maine Department of Environmental Protection (L-22199-NJ-A-N) which included the two buildings, the full length of Turning Leaf Drive and the additional parking lot. The parking lot was constructed in 2006, but the extension of Turning Leaf Drive was never completed.

Lot 12A has been purchased and sold several times, most recently to Baker Brook Farm Creamery LLC, to whom a Stormwater Management Law Permit was issued (L-29557-NJ-N-N) which includes construction and stormwater management responsibilities for a portion of the extension Turning Leaf Drive.

### C. Existing Conditions

The 12.2± acre project site is currently undeveloped. In the location of the project site, the land slope varies from gently sloped (2%-9%) to moderately sloped (10%-15%) at the end of Turning Leaf Drive, within the site where Drive In Lane ROW intersects the westerly property limits, and areas along the westerly property limits south of Drive In Lane, with steeper slopes bordering the easterly limits of the site and running east – west through the middle of the site, as steep as 2H:1V (50%).

The site drains either internally to a depression located on the westerly property limits or easterly to the Ditch Brook. Ditch Brook drains southerly, discharging to the Pleasant River and eventually into the Presumpscot River. The site's downstream waterbodies are not identified by the Maine Department of Environmental Protection (MDEP) as Urban Impaired Streams in Chapter 502.

A Class A High Intensity Soil Report and Map were prepared by Mark Hampton Associates, Inc. and utilized in the stormwater analysis. The report has been included in Section 11 Soils of the SLODA permit application and the map has been included in the design plan set. The associated test pit logs have been included as Attachment 1 of this report.

### D. Alterations to Land Cover

Based on the proposed roadway construction and overall project development, the project will generate approximately 216,614 square feet (4.97± acres) of impervious surfaces. The project will also generate approximately 193,775± square feet (4.45± acres) of lawn, landscaping, and best management practices, resulting in a total project developed area of 410,390± square feet (9.42± acres).

Since the project will include improvements creating more than 3 acres of impervious area, the project will require a Site Location of Development Act (SLODA) permit from the MDEP. In addition, the project will require Town of Windham Subdivision approval. Since the project will require both approvals, the regulatory agencies will require the project to meet the Basic, General and Flooding Standards of MDEP Chapter 500 Stormwater Management regulations.

### E. 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.

F. Basic Standards

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

G. General Standard

The proposed project is required to meet the General Standard outlined in the MDEP Chapter 500 to provide water quality treatment for no less than 95% of the resulting impervious surface and 80% of the total developed area associated with the project.

The General Standard will be met by incorporating the construction of one (1) wet pond, and roofline drip edges on each of the proposed buildings into the project's stormwater infrastructure. As a result of the proposed stormwater infrastructure, treatment is provided for over 99% of the project's impervious surface and over 91% of the site's developed area. Calculations can be found enclosed as Attachment 2 in this report.

To demonstrate that the proposed wet pond 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, the HydroCAD output has been provided in Attachment 3 Wet Pond Sizing Calculations of this report. Additionally, within Attachment 3 is a hydrograph table for the proposed Wet Pond demonstrating that the outlet controls the release of runoff to drain it within 24 to 48 hours.

Sizing calculations for the proposed roofline dripedges for all proposed buildings are included as Attachment 4.

H. Flooding Standard

The project is required by both the Town of Standish and the MDEP to meet the Flooding Standard indicating the project must detain, retain, or result in the infiltration of stormwater from the 24-hour storms of the 2-year, 10-year and 25-year frequencies such that the peak flows of stormwater generated by the project site do not exceed the peak flows of stormwater prior to undertaking the project. To maintain the existing flow rates, one (1) wet pond and six (6) grassed underdrained filter basins have been incorporated into the stormwater infrastructure. To demonstrate compliance with the Flooding Standard, two (2) study points were analyzed.

Study Point 1 ("SP1") represents the locations along the easterly property limits where stormwater generated from tributary onsite and offsite areas exit the property and is discharged into Ditch Brook.

Study Point 2 ("SP2") represents a depression located along the westerly property limit near the intersection with the Drive In Lane ROW and the areas tributary are internally drained. Stormwater tributary to this location from both onsite and offsite areas does not have an outlet to discharge to and due to the nature of the soils in this area stormwater runoff infiltrates into the ground.

The results of the stormwater model incorporating the stormwater detention best management practices are summarized in Table 1 below:

Study Point	2-Year (cfs)		10-Year (cfs)		25-Year (cfs)	
	Pre	Post	Pre	Post	Pre	Post
SP-1	1.06	0.89	2.45	2.06	3.72	3.11
SP-2	0.00	0.00	0.00	0.00	0.00	0.00

As illustrated in the table above, the proposed project’s design, including the integration of the proposed BMPs, reduces the peak rates of runoff at SP1 in all the modeled storm events. At SP2, in all modeled storm events, stormwater runoff in both the pre-developed and post-developed condition is in collected within the depression(s). The models indicate that the water surface elevation does not rise to an elevation that overtops the depression(s) and therefore there is no discharge from the depression(s) in either the pre-developed or post-developed condition. The project design significantly reduces the tributary area at SP2 by capturing runoff in the proposed storm drain system and discharging it to the proposed wet pond, which ultimately discharges to SP1. The HydroCAD model confirms that in both the pre- and post-developed condition the water surface in the depression is several feet below the top of the depression, and drains in the 25-year event within 24 to 48 hours.

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

I. Maintenance of common facilities or property

The applicant will be responsible for the maintenance of the stormwater facilities until a condominium association is created. The responsibility will then be conveyed to the association. An Inspection, Maintenance and Housekeeping Plan for the project has been created and has been included as Attachment 6 of this report.

Prepared by:

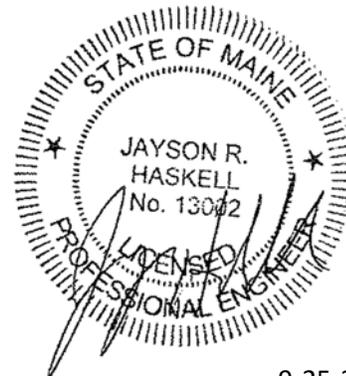
DM ROMA CONSULTING ENGINEERS



J.P. Connolly  
Senior Project Engineer



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



9-25-2024

# ATTACHMENT 1

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## TEST PITS

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Turning Leaf Heights Applicant Name: Turning Leaf Development LLC Project Location (municipality): Windham

Exploration Symbol # SS-1 Test Pit Boring Probe 0 Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 2 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-2 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 12 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-4 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 2 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-5 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 10 Percent Hydric Soil No Yes Hydrologic Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [Handwritten Signature] Name Printed: Mark J. Hampton

08/15/2024

Date

216

SS License No.



SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Turning Leaf Heights Applicant Name: Turning Leaf Development LLC Project Location (municipality): Windham

Exploration Symbol # SS-5 Test Pit Boring Probe 0 Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Slope 2 Percent. Soil Details: Drainage Class ED SED WD MWD SPD PD VPD. Slope 2 Percent. Hydric Soil No. Hydrologic. Soil Group.

Exploration Symbol # SS-6 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Slope 18 Percent. Soil Details: Drainage Class ED SED WD MWD SPD PD VPD. Slope 18 Percent. Hydric Soil No. Hydrologic. Soil Group.

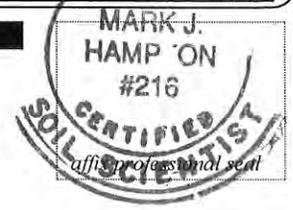
Exploration Symbol # SS-7 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Naumburg Limiting Factor 6 Slope 2 Percent. Soil Details: Drainage Class ED SED WD MWD SPD PD VPD. Slope 2 Percent. Hydric Soil No. Hydrologic. Soil Group.

Exploration Symbol # SS-8 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Au Gres Limiting Factor 10 Slope 2 Percent. Soil Details: Drainage Class ED SED WD MWD SPD PD VPD. Slope 2 Percent. Hydric Soil No. Hydrologic. Soil Group.

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: Mark J. Hampton Name Printed: Mark J. Hampton

Date: 08/15/2024 SS License No. 216



**SOIL PROFILE / CLASSIFICATION INFORMATION**

**SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES**

Project Name: Turning Leaf Heights      Applicant Name: Turning Leaf Development LLC      Project Location (municipality): Windham

Exploration Symbol # SS-9     Test Pit     Boring     Probe  
0 " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E Dark Brown	Loamy Sand	Grand	Very Friable	
10	Bhs Brown	Sand	Weak Grand	Loose	
20	Bs1 Gray	Gravel	Fine Grandu	Friable	Common and Distinct
30	BC Brown	Sand	Single Grain	Loose	
40	C Tan	Sand	Single Grain	Loose	

Soil Series/Phase Name: Au Gres      Limiting Factor 13 "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope 6 Percent    Hydric Soil  No  Yes    Hydrologic \_\_\_\_\_  
 SPD  PD  VPD    Soil Group \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil  No  Yes    Hydrologic \_\_\_\_\_  
 SPD  PD  VPD    Soil Group \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil  No  Yes    Hydrologic \_\_\_\_\_  
 SPD  PD  VPD    Soil Group \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

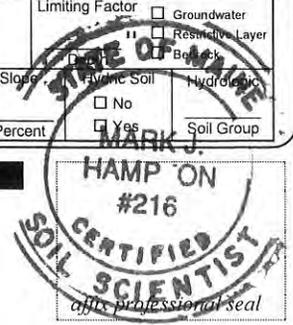
Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil  No  Yes    Hydrologic \_\_\_\_\_  
 SPD  PD  VPD    Soil Group \_\_\_\_\_

**SOIL SCIENTIST INFORMATION AND SIGNATURE**

Mark J. Hampton  
 Signature  
 Mark J. Hampton  
 Name Printed

08/15/2024  
 Date  
216  
 SS License No.



## **ATTACHMENT 2**

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### **GENERAL STANDARDS CALCULATIONS**

**Stormwater Treatment Table**

	Total Watershed Area (SF)	New Roof Area (SF) **	New Paved/Gravel Area (SF)	New Landscaped Area (SF)	Existing/Offsite Impervious Area (SF)*	Existing/Offsite Landscaping Area (SF)*	Existing Undeveloped Area (SF)	Treatment Provided	New Impervious Area Treated (SF)	New Landscaped Area Treated (SF)	Treatment Device
WS-1	376,874	0	500	26,080	0	37,966	312,329	No	0	0	None
WS-1B**	2,012	2,012	0	0	0	0	0	Dripedge	2,012	0	Dripedge Only
WS-10	9,145	0	6,525	2,620	0	0	0	Yes	6,525	2,620	Wetpond WP-1
WS-10B**	4,121	4,121	0	0	0	0	0	Dripedge	4,121	0	Dripedge Only
WS-11	3,009	0	2,870	139	0	0	0	Yes	2,870	139	Wetpond WP-1
WS-12	2,205	0	1,193	1,012	0	0	0	Yes	1,193	1,012	Wetpond WP-1
WS-12B**	1,300	1,300	0	0	0	0	0	Dripedge	1,300	0	Dripedge Only
WS-13	10,117	0	8,278	1,840	0	0	0	Yes	8,278	1,840	Wetpond WP-1
WS-13B**	514	514	0	0	0	0	0	Dripedge	514	0	Dripedge Only
WS-14	18,276	0	9,721	7,216	0	0	1,339	Yes	9,721	7,216	Wetpond WP-1
WS-14B**	5,482	5,482	0	0	0	0	0	Dripedge	5,482	0	Dripedge Only
WS-15	16,497	0	13,009	3,488	0	0	0	Yes	13,009	3,488	Wetpond WP-1
WS-15B**	3,796	3,796	0	0	0	0	0	Dripedge	3,796	0	Dripedge Only
WS-16	1,388	0	263	1,125	0	0	0	Yes	263	1,125	Wetpond WP-1
WS-16B**	1,571	1,571	0	0	0	0	0	Dripedge	1,571	0	Dripedge Only
WS-17	619	0	2	617	0	0	0	Yes	2	617	Wetpond WP-1
WS-17B**	566	566	0	0	0	0	0	Dripedge	566	0	Dripedge Only
WS-18	49,584	0	1,897	47,686	0	0	0	Yes	1,897	47,686	Wetpond WP-1
WS-18B**	1,624	1,624	0	0	0	0	0	Dripedge	1,624	0	Dripedge Only
WS-2	123,204	0	1,100	16,435	0	0	105,669	Yes	1,100	16,435	Wetpond WP-1
WS-20	2,135	0	2,135	0	0	0	0	Yes	2,135	0	Wetpond WP-1
WS-21	5,108	0	4,769	339	0	0	0	Yes	4,769	339	Wetpond WP-1
WS-22	9,941	0	7,404	2,536	0	0	0	Yes	7,404	2,536	Wetpond WP-1
WS-22B**	55	55	0	0	0	0	0	Dripedge	55	0	Dripedge Only
WS-23	12,899	0	8,193	4,706	0	0	0	Yes	8,193	4,706	Wetpond WP-1
WS-23B**	3,569	3,569	0	0	0	0	0	Dripedge	3,569	0	Dripedge Only
WS-24	7,819	0	6,348	1,471	0	0	0	Yes	6,348	1,471	Wetpond WP-1
WS-24B**	555	555	0	0	0	0	0	Dripedge	555	0	Dripedge Only
WS-25	14,249	0	6,577	3,017	0	4,028	627	Yes	6,577	3,017	Wetpond WP-1
WS-25B**	1,638	1,638	0	0	0	0	0	Dripedge	1,638	0	Dripedge Only
WS-26	494	0	494	0	0	0	0	Yes	494	0	Wetpond WP-1
WS-27	9,849	0	7,442	2,407	0	0	0	Yes	7,442	2,407	Wetpond WP-1
WS-27B**	1,931	1,931	0	0	0	0	0	Dripedge	1,931	0	Dripedge Only
WS-28	9,480	0	6,357	2,466	0	0	656.85	Yes	6,357	2,466	Wetpond WP-1
WS-28B**	1,931	1,931	0	0	0	0	0	Dripedge	1,931	0	Dripedge Only
WS-29	9,754	0	6,164	1,941	0	0	1,650	Yes	6,164	1,941	Wetpond WP-1
WS-29B**	1,931	1,931	0	0	0	0	0	Dripedge	1,931	0	Dripedge Only
WS-3***	48,015	0	0	8,930	1,380	12,758	24,947	No	0	0	None
WS-30	2,841	0	2,841	0	0	0	0	Yes	2,841	0	Wetpond WP-1
WS-31	35,572	0	0	12,320	0	9,776	13,476	Yes	0	12,320	Wetpond WP-1
WS-31B**	5,344	5,344	0	0	0	0	0	Dripedge	5,344	0	Dripedge Only

WS-32	3,447	0	3,447	0	0	0	0	Yes	3,447	0	Wetpond WP-1
WS-40	50,497	0	7,433	30,433	2,039	5,837	4,754	Yes	7,433	30,433	Wetpond WP-1
WS-40B**	13,012	13,012	0	0	0	0	0	Dripedgedge	13,012		Dripedgedge Only
WS-41	16,001	2,867	9,934	3,200	0	0	0	Yes	12,801	3,200	Wetpond WP-1
WS-41B**	3,088	3,088	0	0	0	0	0	Dripedgedge	3,088	0	Dripedgedge Only
WS-42	8,069	0	5,716	2,354	0	0	0	Yes	5,716	2,354	Wetpond WP-1
WS-42B**	3,335	3,335	0	0	0	0	0	Dripedgedge	3,335	0	Dripedgedge Only
WS-43	15,350	3,675	7,368	4,307	0	0	0	Yes	11,043	4,307	Wetpond WP-1
WS-43B**	4,298	4,298	0	0	0	0	0	Dripedgedge	4,298		Dripedgedge Only
WS-44	12,592	0	7,502	5,090	0	0	0	Yes	7,502	5,090	Wetpond WP-1
WS-44B**	2,917	2,917	0	0	0	0	0	Dripedgedge	2,917		Dripedgedge Only
<b>Total</b>	<b>949,621</b>	<b>71,134</b>	<b>145,481</b>	<b>193,775</b>					<b>216,115</b>	<b>158,765</b>	

\* 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 buildings shall install a roofline drip edge to provide treatment for the rooftop impervious surface.

The building's impervious area is included in the watershed and overall treatment calculations below, but not included in the BMP sizing calculations for the wet pond or the underdrained filter basins.

New Impervious Area =	216,614
New Impervious Area Requiring Treatment (95%)	205,784
Provided New Impervious Treatment=	216,115
	99.77% New Impervious Area Treated
New Developed Area =	410,390
New Developed Area Requiring Treatment (80%)=	328,312
New Developed Area Treated=	374,880
	91.35% New Developed Area Treated

## **ATTACHMENT 3**

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### **WET POND SIZING CALCULATIONS**

## Wetpond Sizing Calculations

### Wetpond 1

Tributary Impervious Area= 153,563 sf (WS-10-19, 2, 20-22, & 30-37 Impervious Area)  
Tributary Landscaped Area= 178,406 sf (WS-10-19, 2, 20-22, & 30-37 Landscaped Area)

#### Permanent Pool Volume (PPV) Calculation

---

PPV (Required) = 2.0"xImpervious Area + 0.8"xLandscaped Area

**PPV (Required) = 37,488 cf**

#### Stage Storage Volume

Elevation	Area (sf)	Storage (cf)
290	4,656	0
295.3	11,040	38,482

Permanent Pool Elevation= 295.3

**Provided PPV= 38,482 cf > Required**

#### Mean Depth Calculation

---

Mean Depth @ 1' Below Permanent Pool

Mean Depth= Storage Volume / Surface Area > 3.0

294.3	28,781 cf
	8,986 sf

**Mean Depth= 3.20 >3'**

#### Channel Protection Volume (CPV) Calculation

---

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

**CPV (Required) = 18,744 cf**

Outlet of Pond Set @ 296.5

**Provided CPV= 19,148 cf > Required**

#### Gravel Bench Calculations

---

Bench Length (Required) = 3' for every 1,000 cf of Provided CPV

**Bench Length (Required) = 57.4 lf**

**Bench Length (Provided): 60.0 lf > Required**

#### Sediment Forebay Sizing

---

Tributary Impervious Area Requiring Sanding: 153,563 sf

Required Sediment Forebay Volume :

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

**Sediment Volume (Required) 195.9 cf**

**Sediment Volume (Provided): 990.3 cf > Required**

(Sediment forebay SFB 1) 362 cf

(25 catch basin sumps ~ 25.1 cf per sump) 628.25 cf

# WETPOND WP-1 - PERMENANT POOL VOLUME

**20013-POST-JPC**

Type III 24-hr WP1WQ Rainfall=3.35"

Prepared by DM Roma Consulting Engineers

Printed 9/17/2024

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## Summary for Pond WP1-PPV: Wet Pond

[43] Hint: Has no inflow (Outflow=Zero)

Volume	Invert	Avail.Storage	Storage Description			
#1	290.00'	212,448 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
290.00	4,656	314.7	0	0	4,656	
292.00	6,474	338.4	11,080	11,080	6,050	
294.00	8,636	379.0	15,058	26,138	8,476	
294.30	8,986	386.6	2,643	28,781	8,954	
295.00	9,812	399.8	6,577	35,359	9,824	
295.30	11,040	418.7	3,126	38,485	11,061	
296.00	14,124	462.7	8,785	47,270	14,163	
296.50	14,826	472.1	7,237	54,507	14,900	
298.00	17,014	500.4	23,861	78,368	17,209	
300.00	20,719	550.3	37,672	116,040	21,511	
302.00	24,055	586.4	44,733	160,773	24,969	
304.00	27,662	623.9	51,675	212,448	28,778	

PERMANENT  
POOL VOL.  
PROVIDED

Device	Routing	Invert	Outlet Devices
#1	Secondary	301.00'	<b>15.0" Round 15" Culvert OVERFLOW</b> L= 230.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 301.00' / 290.00' S= 0.0478 1/8" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	292.70'	<b>15.0" Round 15" Culvert</b> L= 248.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.70' / 290.00' S= 0.0109 1/8" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	292.90'	<b>12.0" Round OCS-1 to OCS-2 ~ 12" SD</b> L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 292.90' / 292.70' S= 0.0154 1/8" Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 3	293.00'	<b>2.5" Vert. 6" Underdrain w cap and 2-1/2" drill hole C= 0.600</b>
#5	Device 4	295.30'	<b>60.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#6	Device 2	296.50'	<b>Neenah R4345 Beehive Grate Light Duty-req. structure</b> 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
#7	Device 3	296.50'	<b>Neenah R4345 Beehive Grate Light Duty-req. structure</b> 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

# WETPOND WP-1 - SPILLWAY RUN

20013-POST

Type III 24-hr 25-Year Rainfall=5.80"

Prepared by DM Roma Consulting Engineers

Printed 9/25/2024

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## Summary for Pond WP1: Wet Pond

Inflow Area = 358,603 sf, 58.14% Impervious, Inflow Depth = 3.41" for 25-Year event  
 Inflow = 23.28 cfs @ 12.09 hrs, Volume= 101,799 cf  
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 100%, Lag= 0.0 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method. Time Span= 0.00-96.00 hrs. dt= 0.05 hrs

Peak Elev= 300.98' @ 26.00 hrs Surf.Area= 22,325 sf Storage= 101,799 cf

Flood Elev= 305.00' Surf.Area= 27,662 sf Storage= 177,089 cf

PEAK WS ELEV. = 300.98  
 TOP OF BERM = 305.0  
 FREEBOARD = 305-300.98  
 = 4.02' > 1'

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description		
#1	295.00'	177,089 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.00	9,812	399.8	0	0	9,812
295.30	11,040	418.7	3,126	3,126	11,049
296.00	14,124	462.7	8,785	11,911	14,151
296.50	14,826	472.1	7,237	19,148	14,888
298.00	17,014	500.4	23,861	43,009	17,196
300.00	20,719	550.3	37,672	80,681	21,499
302.00	24,055	586.4	44,733	125,414	24,956
304.00	27,662	623.9	51,675	177,089	28,766

Device	Routing	Invert	Outlet Devices
#1	Secondary	301.00'	<b>15.0" Round 15" Culvert OVERFLOW</b> L= 230.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 301.00' / 290.00' S= 0.0478 1/100 Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	292.70'	<b>15.0" Round 15" Culvert X 0.00</b> L= 248.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.70' / 290.00' S= 0.0478 1/100 Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	292.90'	<b>12.0" Round OCS-1 to OCS-2 ~ 12" SD</b> L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 292.90' / 292.70' S= 0.0154 1/100 Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 3	293.00'	<b>2.4" Vert. 6" Underdrain w cap and 2-3/8" drill hole C= 0.600</b>
#5	Device 4	295.30'	<b>60.0' long x 4.0' breadth Gravel Bench</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#6	Device 2	296.50'	<b>Neenah R4345 Beehive Grate Light Duty-req. structure</b> 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

PEAK WS ELEV. = 300.98  
 TOP OF BERM = 305.0  
 FREEBOARD = 305-300.98  
 = 4.02' > 1'



# WETPOND WP-1 - DRAWDOWN

20013-POST

Type III 24-hr WP1WQ Rainfall=2.05'

Prepared by DM Roma Consulting Engineers

Printed 9/25/2024

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## Hydrograph for Pond WP1: Wet Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	295.00	0.00	0.00	0.00
2.50	0.01	5	295.00	0.00	0.00	0.00
5.00	0.06	319	295.03	0.00	0.00	0.00
7.50	0.15	1,228	295.12	0.00	0.00	0.00
10.00	0.40	3,379	295.32	0.23	0.23	0.00
12.50	2.46	17,496	296.39	0.27	0.27	0.00
15.00	0.39	19,259	296.51	0.41	0.41	0.00
17.50	0.19	18,884	296.48	0.28	0.28	0.00
20.00	0.13	17,763	296.41	0.28	0.28	0.00
22.50	0.10	16,350	296.31	0.27	0.27	0.00
25.00	0.00	14,488	296.18	0.27	0.27	0.00
27.50	0.00	12,131	296.02	0.26	0.26	0.00
30.00	0.00	9,840	295.85	0.25	0.25	0.00
32.50	0.00	7,618	295.68	0.24	0.24	0.00
35.00	0.00	5,469	295.50	0.23	0.23	0.00
37.50	0.00	3,397	295.32	0.23	0.23	0.00
40.00	0.00	3,129	295.30	0.00	0.00	0.00
42.50	0.00	3,127	295.30	0.00	0.00	0.00
45.00	0.00	3,126	295.30	0.00	0.00	0.00
47.50	0.00	3,126	295.30	0.00	0.00	0.00
50.00	0.00	3,126	295.30	0.00	0.00	0.00
52.50	0.00	3,126	295.30	0.00	0.00	0.00
55.00	0.00	3,126	295.30	0.00	0.00	0.00
57.50	0.00	3,126	295.30	0.00	0.00	0.00
60.00	0.00	3,126	295.30	0.00	0.00	0.00
62.50	0.00	3,126	295.30	0.00	0.00	0.00
65.00	0.00	3,126	295.30	0.00	0.00	0.00
67.50	0.00	3,126	295.30	0.00	0.00	0.00
70.00	0.00	3,126	295.30	0.00	0.00	0.00
72.50	0.00	3,126	295.30	0.00	0.00	0.00
75.00	0.00	3,126	295.30	0.00	0.00	0.00
77.50	0.00	3,126	295.30	0.00	0.00	0.00
80.00	0.00	3,126	295.30	0.00	0.00	0.00
82.50	0.00	3,126	295.30	0.00	0.00	0.00
85.00	0.00	3,126	295.30	0.00	0.00	0.00
87.50	0.00	3,126	295.30	0.00	0.00	0.00
90.00	0.00	3,126	295.30	0.00	0.00	0.00
92.50	0.00	3,126	295.30	0.00	0.00	0.00
95.00	0.00	3,126	295.30	0.00	0.00	0.00

POND AT CPV AT 15 HRS  
EMPTY AT 40 HRS  
DRAWDOWN TIME = 40-15 = 25 HRS

## **ATTACHMENT 4**

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### **ROOFLINE DRIPEDGE SIZING CALCULATIONS**

### Drip Edge Sizing Calculations

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

Void Ratio of Reservoir Layer 40%

Void Ratio of Filter Layer 30%

#### MULTI-FAMILY 30 UNIT BUILDINGS (BUILDINGS A, D & E):

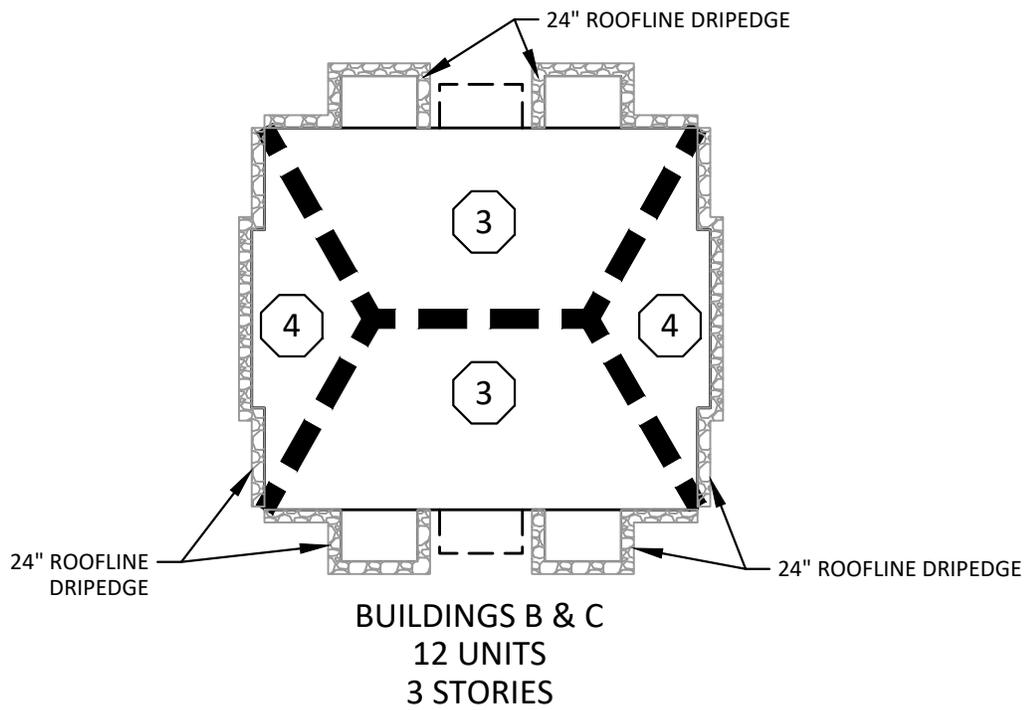
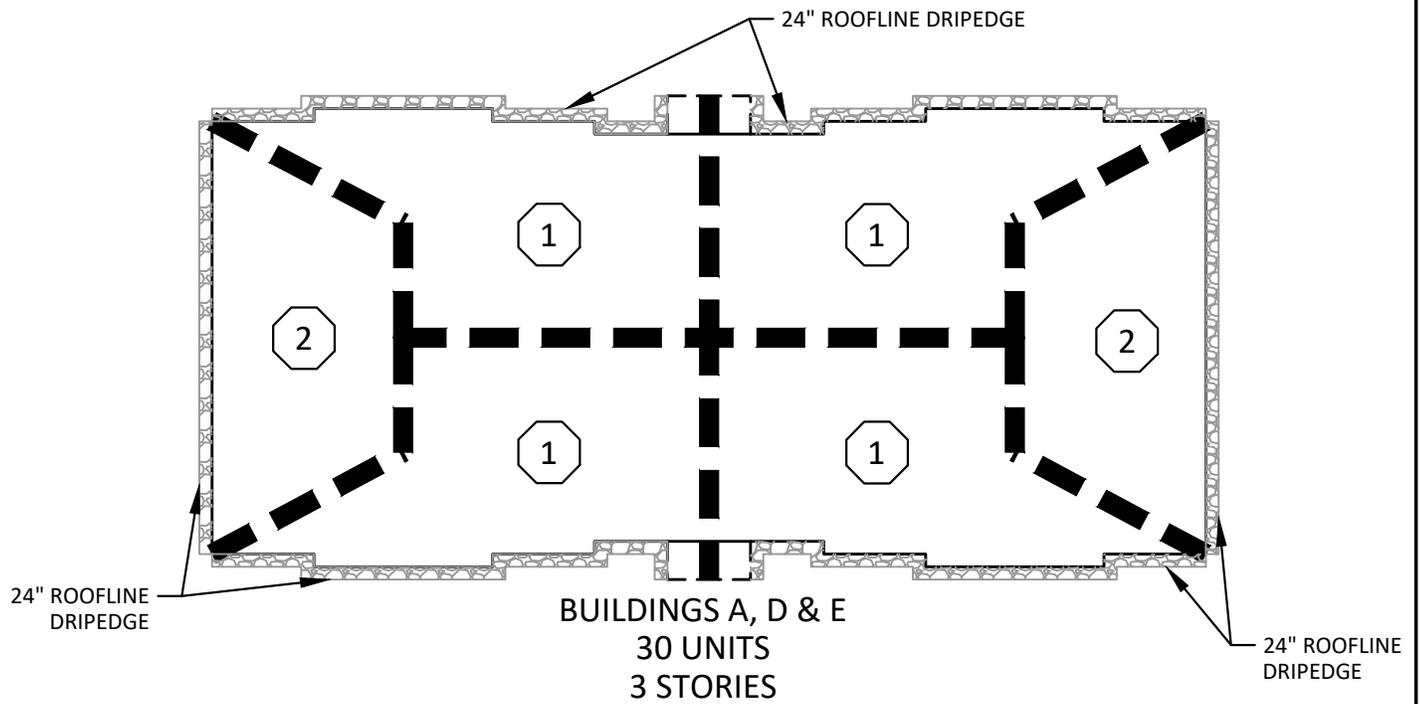
Roof Watershed	Tributary Roof Area (sf)	WQV (Required)	Dripedge Surface Area (sf)	Reservoir Layer Depth (ft)	Filter Layer Depth (ft)	WQV (Provided)
1	1,931	160.92	163.00	2.00	0.75	167.08
2	1,560	130.01	136.00	2.00	0.75	139.40

#### MULTI-FAMILY 12 UNIT BUILDINGS (BUILDINGS B & C):

Roof Watershed	Tributary Roof Area (sf)	WQV (Required)	Dripedge Surface Area (sf)	Reservoir Layer Depth (ft)	Filter Layer Depth (ft)	WQV (Provided)
WS-3	1,819	151.54	169.00	2.00	0.75	173.23
WS-4	562	46.82	127.00	2.00	0.75	130.18

#### 4-UNIT BUILDINGS (UNITS 1 & 2, AND 15 & 16):

Roof Watershed	Tributary Roof Area (sf)	WQV (Required)	Dripedge Surface Area (sf)	Reservoir Layer Depth (ft)	Filter Layer Depth (ft)	WQV (Provided)
WS-5	1,633	136.11	133.33	2.00	0.75	136.66
WS-6	1,847	153.89	160.00	2.00	0.75	164.00
WS-7*	(* UNITS 17-32 TO BE INSTALLED W/ GUTTERS TO DIRECT ROOF RUNOFF TO DRIVE IN LANE)					
WS-8	1,847	153.89	160.00	2.00	0.75	164.00
WS-9	817	68.06	66.67	2.00	0.75	68.34
WS-10	923	76.95	80.00	2.00	0.75	82.00



**ROOFLINE DRIP EDGE SIZING EXHIBIT: MULTI-FAMILY UNITS**

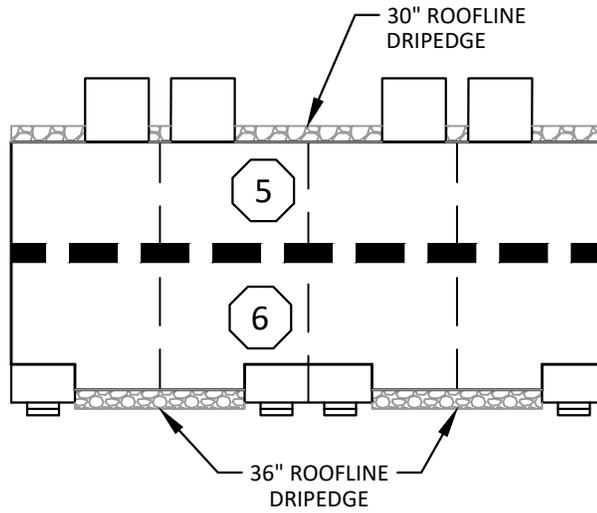
TURNING LEAF HEIGHTS  
WINDHAM, MAINE

FOR:  
GATEWAY DEVELOPMENT, LLC  
26 FIELDCREST ROAD  
WINDHAM, ME 04062

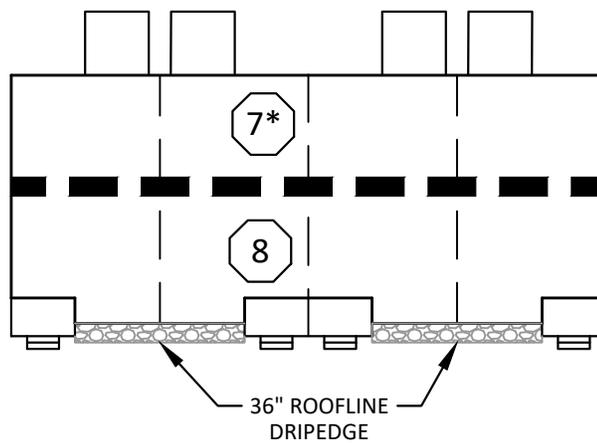
SCALE: NOT TO SCALE  
DATE: 09-19-2024  
JOB NUMBER: 20013

**DM ROMA**  
CONSULTING ENGINEERS  
P.O. BOX 1116  
WINDHAM, ME 04062  
(207) 591-5055

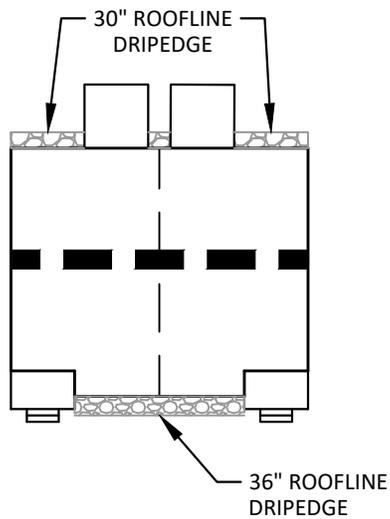
4 UNIT BUILDINGS  
UNITS 3 THRU 14



4 UNIT BUILDINGS  
UNITS 17 THRU 32



2 UNIT BUILDINGS  
UNITS 1 & 2, AND  
15 & 16



**ROOFLINE DRIP EDGE SIZING EXHIBIT: 2- & 4-UNIT BUILDINGS**

TURNING LEAF HEIGHTS  
WINDHAM, MAINE

FOR:  
GATEWAY DEVELOPMENT, LLC  
26 FIELDCREST ROAD  
WINDHAM, ME 04062

SCALE: 1"=30'  
DATE: 09-19-2024  
JOB NUMBER: 20013

**DM ROMA**

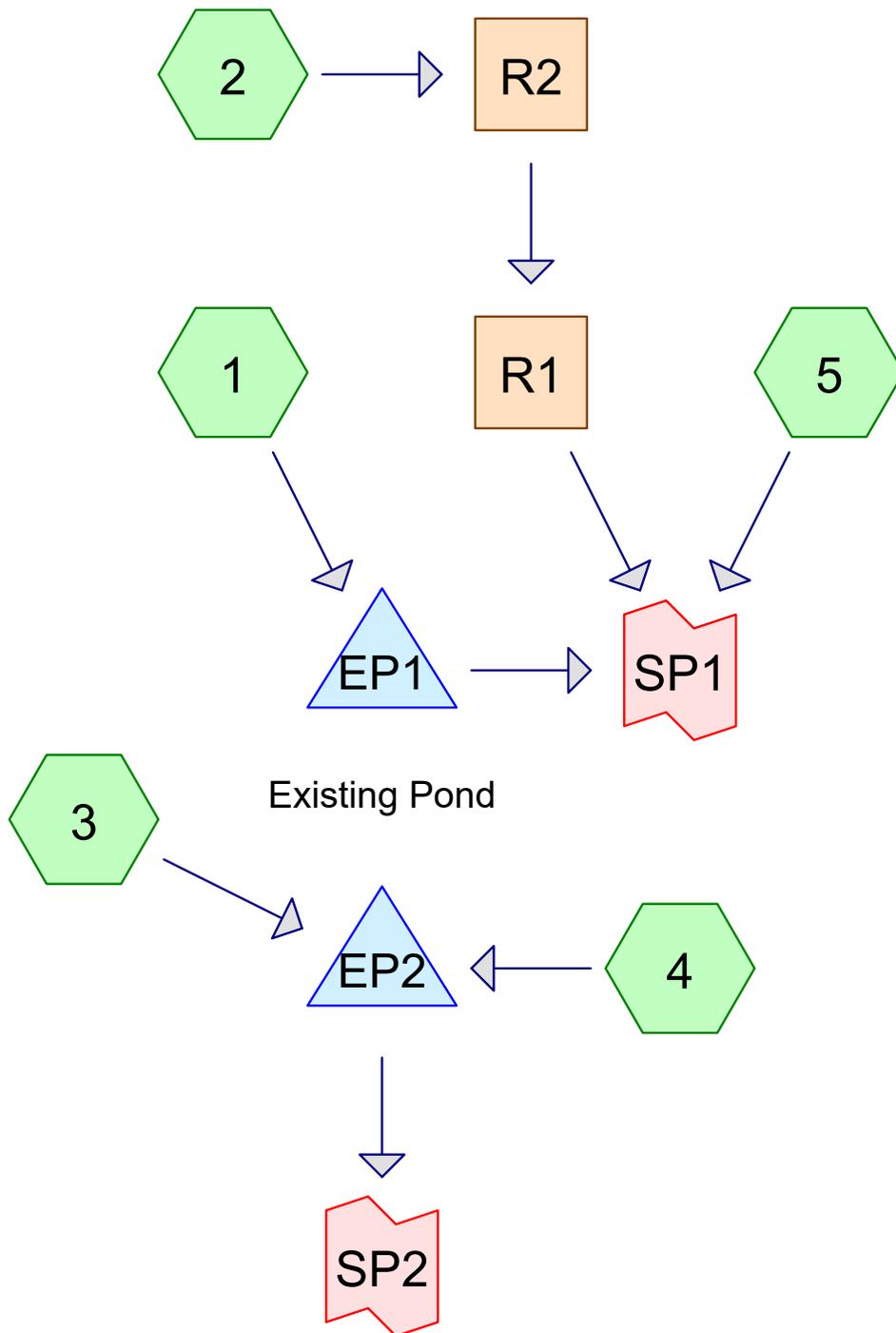
CONSULTING ENGINEERS

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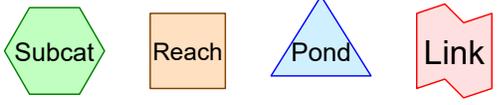
## **ATTACHMENT 5**

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### **HYDROCAD MODEL OUTPUT**



Existing Pond



**20013-PRE**

Prepared by DM Roma Consulting Engineers

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Type III 24-hr 2-Year Rainfall=3.10"

Printed 9/17/2024

Page 2

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1:** Runoff Area=337,764 sf 0.00% Impervious Runoff Depth=0.08"  
 Flow Length=759' Tc=12.3 min CN=WQ Runoff=0.50 cfs 2,136 cf

**Subcatchment 2:** Runoff Area=52,053 sf 3.36% Impervious Runoff Depth=0.10"  
 Flow Length=264' Tc=28.1 min UI Adjusted CN=WQ Runoff=0.07 cfs 418 cf

**Subcatchment 3:** Runoff Area=389,760 sf 0.35% Impervious Runoff Depth=0.01"  
 Flow Length=1,111' Tc=27.8 min CN=WQ Runoff=0.06 cfs 330 cf

**Subcatchment 4:** Runoff Area=45,088 sf 0.00% Impervious Runoff Depth=0.00"  
 Flow Length=195' Tc=13.1 min CN=WQ Runoff=0.00 cfs 0 cf

**Subcatchment 5:** Runoff Area=121,212 sf 0.00% Impervious Runoff Depth=0.42"  
 Flow Length=342' Tc=12.2 min CN=WQ Runoff=1.01 cfs 4,282 cf

**Reach R1:** Avg. Flow Depth=0.08' Max Vel=1.00 fps Inflow=0.07 cfs 418 cf  
 n=0.035 L=169.4' S=0.0425 '/' Capacity=414.78 cfs Outflow=0.07 cfs 418 cf

**Reach R2:** Avg. Flow Depth=0.07' Max Vel=2.83 fps Inflow=0.07 cfs 418 cf  
 n=0.035 L=116.6' S=0.3602 '/' Capacity=449.02 cfs Outflow=0.07 cfs 418 cf

**Pond EP1: Existing Pond** Peak Elev=270.26' Storage=1,027 cf Inflow=0.50 cfs 2,136 cf  
 Discarded=0.04 cfs 2,137 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 2,137 cf

**Pond EP2:** Peak Elev=286.17' Storage=60 cf Inflow=0.06 cfs 330 cf  
 Discarded=0.02 cfs 330 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 330 cf

**Link SP1:** Inflow=1.06 cfs 4,700 cf  
 Primary=1.06 cfs 4,700 cf

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

**Total Runoff Area = 945,877 sf Runoff Volume = 7,166 cf Average Runoff Depth = 0.09"**  
**99.67% Pervious = 942,750 sf 0.33% Impervious = 3,127 sf**

**20013-PRE**

Type III 24-hr 10-Year Rainfall=4.60"

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Page 10

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1:** Runoff Area=337,764 sf 0.00% Impervious Runoff Depth=0.18"  
 Flow Length=759' Tc=12.3 min CN=WQ Runoff=1.19 cfs 5,063 cf

**Subcatchment 2:** Runoff Area=52,053 sf 3.36% Impervious Runoff Depth=0.16"  
 Flow Length=264' Tc=28.1 min UI Adjusted CN=WQ Runoff=0.11 cfs 705 cf

**Subcatchment 3:** Runoff Area=389,760 sf 0.35% Impervious Runoff Depth=0.03"  
 Flow Length=1,111' Tc=27.8 min CN=WQ Runoff=0.08 cfs 1,050 cf

**Subcatchment 4:** Runoff Area=45,088 sf 0.00% Impervious Runoff Depth=0.04"  
 Flow Length=195' Tc=13.1 min CN=WQ Runoff=0.01 cfs 163 cf

**Subcatchment 5:** Runoff Area=121,212 sf 0.00% Impervious Runoff Depth=0.93"  
 Flow Length=342' Tc=12.2 min CN=WQ Runoff=2.38 cfs 9,373 cf

**Reach R1:** Avg. Flow Depth=0.09' Max Vel=1.11 fps Inflow=0.11 cfs 705 cf  
 n=0.035 L=169.4' S=0.0425 '/' Capacity=414.78 cfs Outflow=0.11 cfs 705 cf

**Reach R2:** Avg. Flow Depth=0.09' Max Vel=3.13 fps Inflow=0.11 cfs 705 cf  
 n=0.035 L=116.6' S=0.3602 '/' Capacity=449.02 cfs Outflow=0.11 cfs 705 cf

**Pond EP1: Existing Pond** Peak Elev=270.59' Storage=2,757 cf Inflow=1.19 cfs 5,063 cf  
 Discarded=0.07 cfs 5,065 cf Primary=0.00 cfs 0 cf Outflow=0.07 cfs 5,065 cf

**Pond EP2:** Peak Elev=286.31' Storage=128 cf Inflow=0.08 cfs 1,213 cf  
 Discarded=0.03 cfs 1,213 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 1,213 cf

**Link SP1:** Inflow=2.45 cfs 10,078 cf  
 Primary=2.45 cfs 10,078 cf

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

**Total Runoff Area = 945,877 sf Runoff Volume = 16,355 cf Average Runoff Depth = 0.21"**  
**99.67% Pervious = 942,750 sf 0.33% Impervious = 3,127 sf**

**20013-PRE**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 18

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

**Subcatchment 1:** Runoff Area=337,764 sf 0.00% Impervious Runoff Depth=0.36"  
 Flow Length=759' Tc=12.3 min CN=WQ Runoff=1.81 cfs 10,273 cf

**Subcatchment 2:** Runoff Area=52,053 sf 3.36% Impervious Runoff Depth=0.31"  
 Flow Length=264' Tc=28.1 min UI Adjusted CN=WQ Runoff=0.14 cfs 1,360 cf

**Subcatchment 3:** Runoff Area=389,760 sf 0.35% Impervious Runoff Depth=0.15"  
 Flow Length=1,111' Tc=27.8 min CN=WQ Runoff=0.16 cfs 4,907 cf

**Subcatchment 4:** Runoff Area=45,088 sf 0.00% Impervious Runoff Depth=0.19"  
 Flow Length=195' Tc=13.1 min CN=WQ Runoff=0.04 cfs 730 cf

**Subcatchment 5:** Runoff Area=121,212 sf 0.00% Impervious Runoff Depth=1.44"  
 Flow Length=342' Tc=12.2 min CN=WQ Runoff=3.64 cfs 14,504 cf

**Reach R1:** Avg. Flow Depth=0.10' Max Vel=1.18 fps Inflow=0.14 cfs 1,360 cf  
 n=0.035 L=169.4' S=0.0425 '/ Capacity=414.78 cfs Outflow=0.14 cfs 1,360 cf

**Reach R2:** Avg. Flow Depth=0.10' Max Vel=3.33 fps Inflow=0.14 cfs 1,360 cf  
 n=0.035 L=116.6' S=0.3602 '/ Capacity=449.02 cfs Outflow=0.14 cfs 1,360 cf

**Pond EP1: Existing Pond** Peak Elev=271.01' Storage=5,761 cf Inflow=1.81 cfs 10,273 cf  
 Discarded=0.11 cfs 10,275 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 10,275 cf

**Pond EP2:** Peak Elev=287.57' Storage=1,599 cf Inflow=0.20 cfs 5,637 cf  
 Discarded=0.11 cfs 5,638 cf Primary=0.00 cfs 0 cf Outflow=0.11 cfs 5,638 cf

**Link SP1:** Inflow=3.72 cfs 15,864 cf  
 Primary=3.72 cfs 15,864 cf

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

**Total Runoff Area = 945,877 sf Runoff Volume = 31,775 cf Average Runoff Depth = 0.40"**  
**99.67% Pervious = 942,750 sf 0.33% Impervious = 3,127 sf**

**Summary for Subcatchment 1:**

Runoff = 1.81 cfs @ 12.18 hrs, Volume= 10,273 cf, Depth= 0.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
25,413	39	>75% Grass cover, Good, HSG A
282,825	32	Woods/grass comb., Good, HSG A
29,526	72	Woods/grass comb., Good, HSG C
337,764		Weighted Average
337,764		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	53	0.0228	0.11		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
2.4	74	0.0108	0.52		<b>Shallow Concentrated Flow, Seg B to C</b> Woodland Kv= 5.0 fps
1.3	369	0.0217	4.59	285.76	<b>Channel Flow, Seg C to D</b> Area= 62.2 sf Perim= 124.5' r= 0.50' n= 0.030 Earth, grassed & winding
0.3	263	0.1825	13.21	239.08	<b>Channel Flow, Seg D to E</b> Area= 18.1 sf Perim= 36.7' r= 0.49' n= 0.030 Earth, grassed & winding
12.3	759	Total			

**Summary for Subcatchment 2:**

Runoff = 0.14 cfs @ 12.38 hrs, Volume= 1,360 cf, Depth= 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Adj	Description
1,747	98	98	Unconnected pavement, HSG A
4,593	39	39	>75% Grass cover, Good, HSG A
45,713	32	32	Woods/grass comb., Good, HSG A
0	72		Woods/grass comb., Good, HSG C
52,053			Weighted Average
50,306			96.64% Pervious Area
1,747			3.36% Impervious Area
1,747			100.00% Unconnected

**20013-PRE**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 20

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.3	150	0.0283	0.10		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
1.8	114	0.0441	1.05		<b>Shallow Concentrated Flow, Seg B to C</b> Woodland Kv= 5.0 fps
28.1	264	Total			

**Summary for Subcatchment 3:**

Runoff = 0.16 cfs @ 12.56 hrs, Volume= 4,907 cf, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
1,380	98	Roofs, HSG A
0	98	Unconnected pavement, HSG A
36,149	39	>75% Grass cover, Good, HSG A
352,231	32	Woods/grass comb., Good, HSG A
0	72	Woods/grass comb., Good, HSG C
389,760		Weighted Average
388,380		99.65% Pervious Area
1,380		0.35% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
23.6	150	0.0133	0.11		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
0.4	40	0.0133	1.86		<b>Shallow Concentrated Flow, Seg B to C</b> Unpaved Kv= 16.1 fps
3.0	568	0.0137	3.13	883.45	<b>Channel Flow, Seg C to D</b> Area= 282.2 sf Perim= 564.4' r= 0.50' n= 0.035 Earth, dense weeds
0.3	169	0.1772	11.15	191.80	<b>Channel Flow, Seg D to E</b> Area= 17.2 sf Perim= 34.9' r= 0.49' n= 0.035 Earth, dense weeds
0.5	184	0.0217	6.66	23.29	<b>Trap/Vee/Rect Channel Flow, Seg E to F</b> Bot.W=1.00' D=1.00' Z= 2.0 & 3.0 ' Top.W=6.00' n= 0.022 Earth, clean & straight
27.8	1,111	Total			

**Summary for Subcatchment 4:**

Runoff = 0.04 cfs @ 12.48 hrs, Volume= 730 cf, Depth= 0.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
0	98	Roofs, HSG A
0	98	Unconnected pavement, HSG A
14,090	39	>75% Grass cover, Good, HSG A
30,998	32	Woods/grass comb., Good, HSG A
0	72	Woods/grass comb., Good, HSG C
45,088		Weighted Average
45,088		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	53	0.1760	0.24		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
9.1	97	0.1693	0.18		<b>Sheet Flow, Seg B to C</b> Woods: Light underbrush n= 0.400 P2= 3.10"
0.3	45	0.2453	2.48		<b>Shallow Concentrated Flow, Seg C to D</b> Woodland Kv= 5.0 fps
13.1	195	Total			

**Summary for Subcatchment 5:**

Runoff = 3.64 cfs @ 12.17 hrs, Volume= 14,504 cf, Depth= 1.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG A
0	39	>75% Grass cover, Good, HSG A
62,030	32	Woods/grass comb., Good, HSG A
59,182	72	Woods/grass comb., Good, HSG C
121,212		Weighted Average
121,212		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.4	150	0.2266	0.22		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
0.4	36	0.1121	1.67		<b>Shallow Concentrated Flow, Seg B to C</b> Woodland Kv= 5.0 fps
0.3	89	0.0447	5.65	217.90	<b>Channel Flow, Seg C to D</b> Area= 38.6 sf Perim= 77.4' r= 0.50' n= 0.035 Earth, dense weeds
0.1	67	0.1271	9.48	209.47	<b>Channel Flow, Seg D to E</b> Area= 22.1 sf Perim= 44.6' r= 0.50' n= 0.035 Earth, dense weeds
12.2	342	Total			

**Summary for Reach R1:**

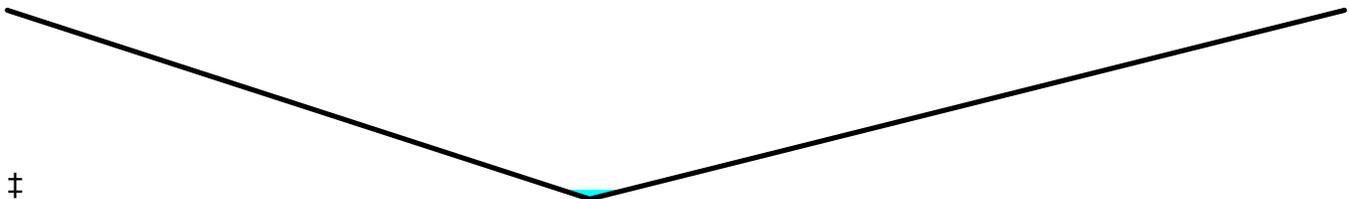
[62] Hint: Exceeded Reach R2 OUTLET depth by 0.01' @ 24.75 hrs

Inflow Area = 52,053 sf, 3.36% Impervious, Inflow Depth = 0.31" for 25-Year event  
 Inflow = 0.14 cfs @ 12.39 hrs, Volume= 1,360 cf  
 Outflow = 0.14 cfs @ 12.42 hrs, Volume= 1,360 cf, Atten= 1%, Lag= 1.9 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 1.18 fps, Min. Travel Time= 2.4 min  
 Avg. Velocity = 0.63 fps, Avg. Travel Time= 4.4 min

Peak Storage= 20 cf @ 12.42 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 2.00' Flow Area= 47.5 sf, Capacity= 414.78 cfs

Custom cross-section, Length= 169.4' Slope= 0.0425 '/'  
 Constant n= 0.035 Earth, dense weeds  
 Inlet Invert= 268.00', Outlet Invert= 260.80'



‡

Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	266.00	0.00
20.69	264.00	2.00
47.50	266.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	47.5	47.7	8,047	414.78

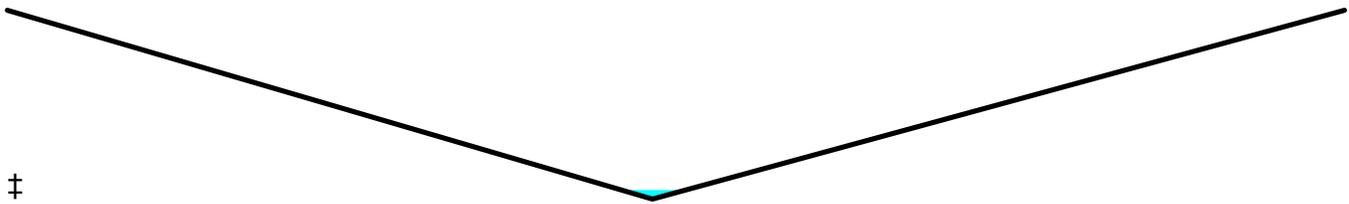
**Summary for Reach R2:**

Inflow Area = 52,053 sf, 3.36% Impervious, Inflow Depth = 0.31" for 25-Year event  
 Inflow = 0.14 cfs @ 12.38 hrs, Volume= 1,360 cf  
 Outflow = 0.14 cfs @ 12.39 hrs, Volume= 1,360 cf, Atten= 0%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Max. Velocity= 3.33 fps, Min. Travel Time= 0.6 min  
 Avg. Velocity = 1.80 fps, Avg. Travel Time= 1.1 min

Peak Storage= 5 cf @ 12.39 hrs  
 Average Depth at Peak Storage= 0.10'  
 Bank-Full Depth= 2.00' Flow Area= 17.9 sf, Capacity= 449.02 cfs

Custom cross-section, Length= 116.6' Slope= 0.3602 '/'  
 Constant n= 0.035 Earth, dense weeds  
 Inlet Invert= 310.00', Outlet Invert= 268.00'



Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	308.00	0.00
8.64	306.00	2.00
17.91	308.00	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0	0.00
2.00	17.9	18.4	2,088	449.02

**Summary for Pond EP1: Existing Pond**

Inflow Area = 337,764 sf, 0.00% Impervious, Inflow Depth = 0.36" for 25-Year event  
 Inflow = 1.81 cfs @ 12.18 hrs, Volume= 10,273 cf  
 Outflow = 0.11 cfs @ 19.73 hrs, Volume= 10,275 cf, Atten= 94%, Lag= 453.1 min  
 Discarded = 0.11 cfs @ 19.73 hrs, Volume= 10,275 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 271.01' @ 19.73 hrs Surf.Area= 8,242 sf Storage= 5,761 cf

Plug-Flow detention time= 696.2 min calculated for 10,270 cf (100% of inflow)  
 Center-of-Mass det. time= 696.8 min ( 1,607.9 - 911.2 )

Volume	Invert	Avail.Storage	Storage Description			
#1	270.00'	125,814 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
270.00	3,497	324.2	0	0	3,497	
272.00	14,833	649.1	17,021	17,021	28,680	
274.00	26,459	857.8	40,735	57,757	53,752	
274.25	31,727	898.1	7,263	65,020	59,387	
276.00	37,842	1,007.2	60,794	125,814	76,013	

Device	Routing	Invert	Outlet Devices									
#1	Primary	275.00'	<b>40.0' long x 31.0' breadth Broad-Crested Rectangular Weir</b>									
			Head (feet)	0.20	0.40	0.60	0.80	1.00	1.20	1.40	1.60	
			Coef. (English)	2.68	2.70	2.70	2.64	2.63	2.64	2.64	2.63	
#2	Discarded	270.00'	<b>0.270 in/hr Exfiltration over Surface area</b>									

Conductivity to Groundwater Elevation = 269.50'

**Discarded OutFlow** Max=0.11 cfs @ 19.73 hrs HW=271.01' (Free Discharge)

↳ **2=Exfiltration** ( Controls 0.11 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)

↳ **1=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond EP2:**

[92] Warning: Device #2 is above defined storage

Inflow Area = 434,848 sf, 0.32% Impervious, Inflow Depth = 0.16" for 25-Year event  
 Inflow = 0.20 cfs @ 12.53 hrs, Volume= 5,637 cf  
 Outflow = 0.11 cfs @ 18.62 hrs, Volume= 5,638 cf, Atten= 45%, Lag= 365.9 min  
 Discarded = 0.11 cfs @ 18.62 hrs, Volume= 5,638 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 287.57' @ 18.62 hrs Surf.Area= 1,960 sf Storage= 1,599 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
 Center-of-Mass det. time= 202.9 min ( 1,231.7 - 1,028.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	286.00'	412,956 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
286.00	312	87.8	0	0	312
288.00	2,655	403.3	2,585	2,585	12,652
290.00	12,746	910.6	14,146	16,730	65,710
292.00	29,786	891.1	41,344	58,075	69,036
294.00	36,841	932.0	66,502	124,577	75,243
296.00	43,766	989.3	80,508	205,085	84,212
298.00	51,853	1,076.2	95,505	300,589	98,644
300.00	60,628	1,144.2	112,367	412,956	110,863

Device	Routing	Invert	Outlet Devices
#1	Discarded	286.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	300.50'	<b>11.0' long x 24.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.11 cfs @ 18.62 hrs HW=287.57' (Free Discharge)

↳ **1=Exfiltration** (Exfiltration Controls 0.11 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=286.00' TW=0.00' (Dynamic Tailwater)

↳ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Link SP1:**

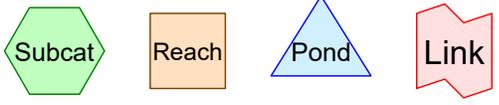
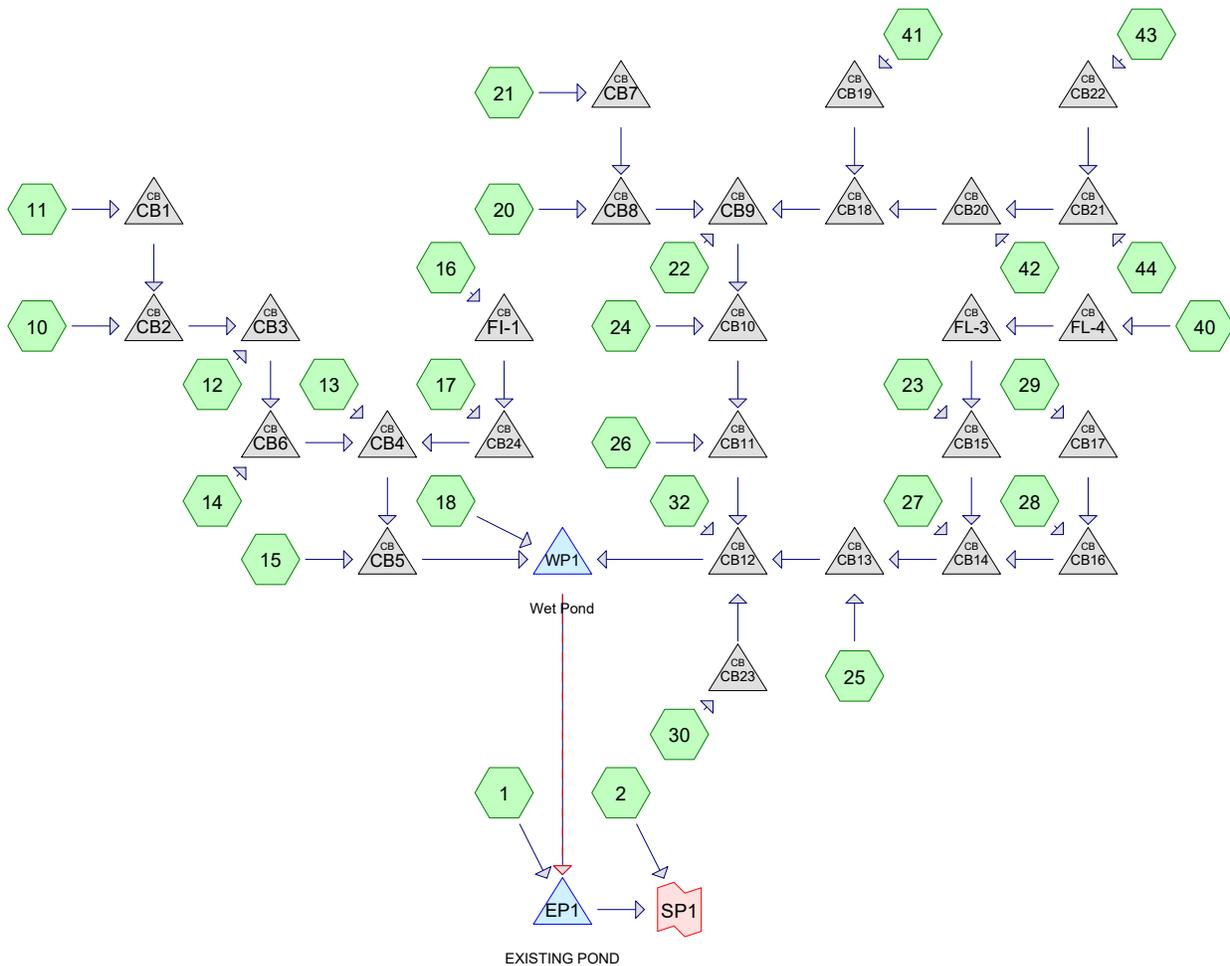
Inflow Area = 511,029 sf, 0.34% Impervious, Inflow Depth = 0.37" for 25-Year event  
Inflow = 3.72 cfs @ 12.17 hrs, Volume= 15,864 cf  
Primary = 3.72 cfs @ 12.17 hrs, Volume= 15,864 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP2:**

Inflow Area = 434,848 sf, 0.32% Impervious, Inflow Depth = 0.00" for 25-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs



**Routing Diagram for 20013-POST**  
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**20013-POST**

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Type III 24-hr 2-Year Rainfall=3.10"

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Page 2

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1:</b>	Runoff Area=378,886 sf 0.13% Impervious Runoff Depth=0.07" Flow Length=759' Tc=12.3 min CN=WQ Runoff=0.53 cfs 2,256 cf
<b>Subcatchment 2:</b>	Runoff Area=123,205 sf 0.89% Impervious Runoff Depth=0.44" Flow Length=374' Tc=20.1 min CN=WQ Runoff=0.89 cfs 4,545 cf
<b>Subcatchment 3:</b>	Runoff Area=48,015 sf 2.87% Impervious Runoff Depth=0.08" Flow Length=329' Tc=29.7 min CN=WQ Runoff=0.05 cfs 330 cf
<b>Subcatchment 10:</b>	Runoff Area=13,267 sf 80.29% Impervious Runoff Depth=2.30" Tc=6.0 min CN=WQ Runoff=0.72 cfs 2,546 cf
<b>Subcatchment 11:</b>	Runoff Area=3,009 sf 95.38% Impervious Runoff Depth=2.74" Tc=6.0 min CN=WQ Runoff=0.19 cfs 686 cf
<b>Subcatchment 12:</b>	Runoff Area=3,505 sf 71.13% Impervious Runoff Depth=2.04" Tc=6.0 min CN=WQ Runoff=0.17 cfs 596 cf
<b>Subcatchment 13:</b>	Runoff Area=10,632 sf 82.69% Impervious Runoff Depth=2.37" Flow Length=121' Tc=11.5 min CN=WQ Runoff=0.51 cfs 2,101 cf
<b>Subcatchment 14:</b>	Runoff Area=23,758 sf 63.99% Impervious Runoff Depth=1.84" Flow Length=182' Tc=18.5 min CN=WQ Runoff=0.74 cfs 3,633 cf
<b>Subcatchment 15:</b>	Runoff Area=20,293 sf 82.81% Impervious Runoff Depth=2.37" Tc=6.0 min CN=WQ Runoff=1.13 cfs 4,016 cf
<b>Subcatchment 16:</b>	Runoff Area=2,959 sf 61.98% Impervious Runoff Depth=1.78" Flow Length=33' Slope=0.0179 '/' Tc=6.2 min CN=WQ Runoff=0.12 cfs 438 cf
<b>Subcatchment 17:</b>	Runoff Area=1,185 sf 47.93% Impervious Runoff Depth=1.37" Tc=6.0 min CN=WQ Runoff=0.04 cfs 136 cf
<b>Subcatchment 18:</b>	Runoff Area=51,208 sf 4.51% Impervious Runoff Depth=0.19" Tc=6.0 min CN=WQ Runoff=0.23 cfs 820 cf
<b>Subcatchment 20:</b>	Runoff Area=2,135 sf 100.00% Impervious Runoff Depth=2.87" Tc=6.0 min CN=WQ Runoff=0.14 cfs 510 cf
<b>Subcatchment 21:</b>	Runoff Area=5,108 sf 93.36% Impervious Runoff Depth=2.68" Tc=6.0 min CN=WQ Runoff=0.32 cfs 1,140 cf
<b>Subcatchment 22:</b>	Runoff Area=9,995 sf 74.63% Impervious Runoff Depth=2.14" Tc=6.0 min CN=WQ Runoff=0.50 cfs 1,783 cf
<b>Subcatchment 23:</b>	Runoff Area=16,468 sf 71.42% Impervious Runoff Depth=2.05" Tc=6.0 min CN=WQ Runoff=0.79 cfs 2,811 cf

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Type III 24-hr 2-Year Rainfall=3.10"

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Page 3

<b>Subcatchment24:</b>	Runoff Area=8,374 sf 82.43% Impervious Runoff Depth=2.36" Tc=6.0 min CN=WQ Runoff=0.47 cfs 1,650 cf
<b>Subcatchment25:</b>	Runoff Area=15,887 sf 51.71% Impervious Runoff Depth=1.48" Tc=6.0 min CN=WQ Runoff=0.55 cfs 1,963 cf
<b>Subcatchment26:</b>	Runoff Area=494 sf 100.00% Impervious Runoff Depth=2.87" Tc=6.0 min CN=WQ Runoff=0.03 cfs 118 cf
<b>Subcatchment27:</b>	Runoff Area=11,780 sf 79.57% Impervious Runoff Depth=2.28" Tc=6.0 min CN=WQ Runoff=0.63 cfs 2,240 cf
<b>Subcatchment28:</b>	Runoff Area=11,411 sf 72.63% Impervious Runoff Depth=2.08" Tc=6.0 min CN=WQ Runoff=0.56 cfs 1,981 cf
<b>Subcatchment29:</b>	Runoff Area=11,686 sf 69.27% Impervious Runoff Depth=1.99" Tc=6.0 min CN=WQ Runoff=0.55 cfs 1,935 cf
<b>Subcatchment30:</b>	Runoff Area=2,841 sf 100.00% Impervious Runoff Depth=2.87" Tc=6.0 min CN=WQ Runoff=0.19 cfs 679 cf
<b>Subcatchment31:</b>	Runoff Area=40,916 sf 13.06% Impervious Runoff Depth=0.37" Flow Length=165' Tc=12.7 min CN=WQ Runoff=0.30 cfs 1,277 cf
<b>Subcatchment32:</b>	Runoff Area=3,447 sf 100.00% Impervious Runoff Depth=2.87" Tc=6.0 min CN=WQ Runoff=0.23 cfs 824 cf
<b>Subcatchment40:</b>	Runoff Area=63,509 sf 35.40% Impervious Runoff Depth=1.02" Flow Length=154' Tc=34.2 min CN=WQ Runoff=0.84 cfs 5,373 cf
<b>Subcatchment41:</b>	Runoff Area=19,090 sf 83.24% Impervious Runoff Depth=2.39" Tc=6.0 min CN=WQ Runoff=1.07 cfs 3,798 cf
<b>Subcatchment42:</b>	Runoff Area=11,405 sf 79.36% Impervious Runoff Depth=2.28" Tc=6.0 min CN=WQ Runoff=0.61 cfs 2,163 cf
<b>Subcatchment43:</b>	Runoff Area=19,648 sf 78.08% Impervious Runoff Depth=2.24" Tc=6.0 min CN=WQ Runoff=1.03 cfs 3,666 cf
<b>Subcatchment44:</b>	Runoff Area=15,509 sf 67.18% Impervious Runoff Depth=1.93" Tc=6.0 min CN=WQ Runoff=0.70 cfs 2,490 cf
<b>Pond CB1:</b>	Peak Elev=321.38' Inflow=0.19 cfs 686 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.19 cfs 686 cf
<b>Pond CB10:</b>	Peak Elev=305.10' Inflow=4.85 cfs 17,199 cf 18.0" Round Culvert n=0.013 L=109.3' S=0.0050 '/' Outflow=4.85 cfs 17,199 cf
<b>Pond CB11:</b>	Peak Elev=304.24' Inflow=4.88 cfs 17,317 cf 24.0" Round Culvert n=0.013 L=178.7' S=0.0115 '/' Outflow=4.88 cfs 17,317 cf
<b>Pond CB12:</b>	Peak Elev=302.38' Inflow=8.77 cfs 35,123 cf 30.0" Round Culvert n=0.013 L=42.2' S=0.0474 '/' Outflow=8.77 cfs 35,123 cf

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Type III 24-hr 2-Year Rainfall=3.10"

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Page 4

<b>Pond CB13:</b>	Peak Elev=302.62' Inflow=3.46 cfs 16,303 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0068 '/' Outflow=3.46 cfs 16,303 cf
<b>Pond CB14:</b>	Peak Elev=302.88' Inflow=2.91 cfs 14,340 cf 18.0" Round Culvert n=0.013 L=68.6' S=0.0058 '/' Outflow=2.91 cfs 14,340 cf
<b>Pond CB15:</b>	Peak Elev=303.25' Inflow=1.18 cfs 8,184 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0071 '/' Outflow=1.18 cfs 8,184 cf
<b>Pond CB16:</b>	Peak Elev=305.82' Inflow=1.10 cfs 3,915 cf 15.0" Round Culvert n=0.013 L=177.0' S=0.0184 '/' Outflow=1.10 cfs 3,915 cf
<b>Pond CB17:</b>	Peak Elev=306.19' Inflow=0.55 cfs 1,935 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0048 '/' Outflow=0.55 cfs 1,935 cf
<b>Pond CB18:</b>	Peak Elev=305.75' Inflow=3.42 cfs 12,117 cf 18.0" Round Culvert n=0.013 L=68.2' S=0.0054 '/' Outflow=3.42 cfs 12,117 cf
<b>Pond CB19:</b>	Peak Elev=305.78' Inflow=1.07 cfs 3,798 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.07 cfs 3,798 cf
<b>Pond CB2:</b>	Peak Elev=321.01' Inflow=0.91 cfs 3,232 cf 15.0" Round Culvert n=0.013 L=211.0' S=0.0062 '/' Outflow=0.91 cfs 3,232 cf
<b>Pond CB20:</b>	Peak Elev=306.53' Inflow=2.35 cfs 8,319 cf 15.0" Round Culvert n=0.013 L=109.0' S=0.0094 '/' Outflow=2.35 cfs 8,319 cf
<b>Pond CB21:</b>	Peak Elev=308.19' Inflow=1.74 cfs 6,156 cf 15.0" Round Culvert n=0.013 L=195.1' S=0.0087 '/' Outflow=1.74 cfs 6,156 cf
<b>Pond CB22:</b>	Peak Elev=308.38' Inflow=1.03 cfs 3,666 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.03 cfs 3,666 cf
<b>Pond CB23:</b>	Peak Elev=302.97' Inflow=0.19 cfs 679 cf 15.0" Round Culvert n=0.013 L=84.6' S=0.0165 '/' Outflow=0.19 cfs 679 cf
<b>Pond CB24:</b>	Peak Elev=315.13' Inflow=0.16 cfs 574 cf 10.0" Round Culvert n=0.013 L=61.4' S=0.0119 '/' Outflow=0.16 cfs 574 cf
<b>Pond CB3:</b>	Peak Elev=319.66' Inflow=1.08 cfs 3,827 cf 15.0" Round Culvert n=0.013 L=146.0' S=0.0188 '/' Outflow=1.08 cfs 3,827 cf
<b>Pond CB4:</b>	Peak Elev=314.35' Inflow=2.21 cfs 10,136 cf 15.0" Round Culvert n=0.013 L=145.0' S=0.0448 '/' Outflow=2.21 cfs 10,136 cf
<b>Pond CB5:</b>	Peak Elev=306.99' Inflow=3.32 cfs 14,152 cf 18.0" Round Culvert n=0.013 L=69.4' S=0.1009 '/' Outflow=3.32 cfs 14,152 cf
<b>Pond CB6:</b>	Peak Elev=316.95' Inflow=1.58 cfs 7,461 cf 15.0" Round Culvert n=0.013 L=42.0' S=0.0595 '/' Outflow=1.58 cfs 7,461 cf

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Type III 24-hr 2-Year Rainfall=3.10"

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Page 5

**Pond CB7:** Peak Elev=313.50' Inflow=0.32 cfs 1,140 cf  
15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.32 cfs 1,140 cf

**Pond CB8:** Peak Elev=313.26' Inflow=0.47 cfs 1,650 cf  
15.0" Round Culvert n=0.013 L=173.3' S=0.0490 '/' Outflow=0.47 cfs 1,650 cf

**Pond CB9:** Peak Elev=305.48' Inflow=4.39 cfs 15,550 cf  
18.0" Round Culvert n=0.013 L=30.8' S=0.0049 '/' Outflow=4.39 cfs 15,550 cf

**Pond EP1: EXISTING POND** Peak Elev=272.38' Storage=23,018 cf Inflow=6.18 cfs 49,225 cf  
Discarded=0.28 cfs 49,227 cf Primary=0.00 cfs 0 cf Outflow=0.28 cfs 49,227 cf

**Pond EP2-A:** Peak Elev=286.18' Storage=63 cf Inflow=0.05 cfs 330 cf  
Discarded=0.02 cfs 331 cf Primary=0.00 cfs 0 cf Outflow=0.02 cfs 331 cf

**Pond EP2-B:** Peak Elev=296.86' Storage=660 cf Inflow=0.30 cfs 1,277 cf  
Discarded=0.03 cfs 1,277 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 1,277 cf

**Pond FI-1:** Peak Elev=316.10' Inflow=0.12 cfs 438 cf  
10.0" Round Culvert n=0.013 L=73.1' S=0.0123 '/' Outflow=0.12 cfs 438 cf

**Pond FL-3:** Peak Elev=304.08' Inflow=0.84 cfs 5,373 cf  
10.0" Round Culvert n=0.013 L=122.1' S=0.0066 '/' Outflow=0.84 cfs 5,373 cf

**Pond FL-4:** Peak Elev=305.68' Inflow=0.84 cfs 5,373 cf  
10.0" Round Culvert n=0.013 L=180.6' S=0.0083 '/' Outflow=0.84 cfs 5,373 cf

**Pond WP1: Wet Pond** Peak Elev=296.71' Storage=22,329 cf Inflow=12.30 cfs 50,095 cf  
Primary=5.78 cfs 46,969 cf Secondary=0.00 cfs 0 cf Outflow=5.78 cfs 46,969 cf

**Link SP1:** Inflow=0.89 cfs 4,545 cf  
Primary=0.89 cfs 4,545 cf

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

**Total Runoff Area = 949,625 sf Runoff Volume = 58,503 cf Average Runoff Depth = 0.74"**  
**77.17% Pervious = 732,811 sf 22.83% Impervious = 216,814 sf**

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Type III 24-hr 10-Year Rainfall=4.60"

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Page 37

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
 Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
 Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1:</b>	Runoff Area=378,886 sf 0.13% Impervious Runoff Depth=0.18" Flow Length=759' Tc=12.3 min CN=WQ Runoff=1.23 cfs 5,654 cf
<b>Subcatchment 2:</b>	Runoff Area=123,205 sf 0.89% Impervious Runoff Depth=0.97" Flow Length=374' Tc=20.1 min CN=WQ Runoff=2.06 cfs 9,939 cf
<b>Subcatchment 3:</b>	Runoff Area=48,015 sf 2.87% Impervious Runoff Depth=0.19" Flow Length=329' Tc=29.7 min CN=WQ Runoff=0.08 cfs 742 cf
<b>Subcatchment 10:</b>	Runoff Area=13,267 sf 80.29% Impervious Runoff Depth=3.53" Tc=6.0 min CN=WQ Runoff=1.07 cfs 3,901 cf
<b>Subcatchment 11:</b>	Runoff Area=3,009 sf 95.38% Impervious Runoff Depth=4.17" Tc=6.0 min CN=WQ Runoff=0.29 cfs 1,045 cf
<b>Subcatchment 12:</b>	Runoff Area=3,505 sf 71.13% Impervious Runoff Depth=3.14" Tc=6.0 min CN=WQ Runoff=0.25 cfs 917 cf
<b>Subcatchment 13:</b>	Runoff Area=10,632 sf 82.69% Impervious Runoff Depth=3.63" Flow Length=121' Tc=11.5 min CN=WQ Runoff=0.76 cfs 3,217 cf
<b>Subcatchment 14:</b>	Runoff Area=23,758 sf 63.99% Impervious Runoff Depth=2.83" Flow Length=182' Tc=18.5 min CN=WQ Runoff=1.10 cfs 5,605 cf
<b>Subcatchment 15:</b>	Runoff Area=20,293 sf 82.81% Impervious Runoff Depth=3.64" Tc=6.0 min CN=WQ Runoff=1.69 cfs 6,148 cf
<b>Subcatchment 16:</b>	Runoff Area=2,959 sf 61.98% Impervious Runoff Depth=2.75" Flow Length=33' Slope=0.0179 '/' Tc=6.2 min CN=WQ Runoff=0.18 cfs 679 cf
<b>Subcatchment 17:</b>	Runoff Area=1,185 sf 47.93% Impervious Runoff Depth=2.16" Tc=6.0 min CN=WQ Runoff=0.06 cfs 213 cf
<b>Subcatchment 18:</b>	Runoff Area=51,208 sf 4.51% Impervious Runoff Depth=0.41" Tc=6.0 min CN=WQ Runoff=0.35 cfs 1,761 cf
<b>Subcatchment 20:</b>	Runoff Area=2,135 sf 100.00% Impervious Runoff Depth=4.36" Tc=6.0 min CN=WQ Runoff=0.22 cfs 776 cf
<b>Subcatchment 21:</b>	Runoff Area=5,108 sf 93.36% Impervious Runoff Depth=4.08" Tc=6.0 min CN=WQ Runoff=0.48 cfs 1,738 cf
<b>Subcatchment 22:</b>	Runoff Area=9,995 sf 74.63% Impervious Runoff Depth=3.29" Tc=6.0 min CN=WQ Runoff=0.75 cfs 2,739 cf
<b>Subcatchment 23:</b>	Runoff Area=16,468 sf 71.42% Impervious Runoff Depth=3.15" Tc=6.0 min CN=WQ Runoff=1.19 cfs 4,327 cf

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Printed 9/25/2024

Page 38

<b>Subcatchment24:</b>	Runoff Area=8,374 sf 82.43% Impervious Runoff Depth=3.62" Tc=6.0 min CN=WQ Runoff=0.70 cfs 2,526 cf
<b>Subcatchment25:</b>	Runoff Area=15,887 sf 51.71% Impervious Runoff Depth=2.31" Tc=6.0 min CN=WQ Runoff=0.83 cfs 3,062 cf
<b>Subcatchment26:</b>	Runoff Area=494 sf 100.00% Impervious Runoff Depth=4.36" Tc=6.0 min CN=WQ Runoff=0.05 cfs 180 cf
<b>Subcatchment27:</b>	Runoff Area=11,780 sf 79.57% Impervious Runoff Depth=3.50" Tc=6.0 min CN=WQ Runoff=0.94 cfs 3,434 cf
<b>Subcatchment28:</b>	Runoff Area=11,411 sf 72.63% Impervious Runoff Depth=3.20" Tc=6.0 min CN=WQ Runoff=0.84 cfs 3,040 cf
<b>Subcatchment29:</b>	Runoff Area=11,686 sf 69.27% Impervious Runoff Depth=3.04" Tc=6.0 min CN=WQ Runoff=0.82 cfs 2,965 cf
<b>Subcatchment30:</b>	Runoff Area=2,841 sf 100.00% Impervious Runoff Depth=4.36" Tc=6.0 min CN=WQ Runoff=0.29 cfs 1,033 cf
<b>Subcatchment31:</b>	Runoff Area=40,916 sf 13.06% Impervious Runoff Depth=0.64" Flow Length=165' Tc=12.7 min CN=WQ Runoff=0.44 cfs 2,183 cf
<b>Subcatchment32:</b>	Runoff Area=3,447 sf 100.00% Impervious Runoff Depth=4.36" Tc=6.0 min CN=WQ Runoff=0.35 cfs 1,254 cf
<b>Subcatchment40:</b>	Runoff Area=63,509 sf 35.40% Impervious Runoff Depth=1.62" Flow Length=154' Tc=34.2 min CN=WQ Runoff=1.25 cfs 8,561 cf
<b>Subcatchment41:</b>	Runoff Area=19,090 sf 83.24% Impervious Runoff Depth=3.65" Tc=6.0 min CN=WQ Runoff=1.60 cfs 5,812 cf
<b>Subcatchment42:</b>	Runoff Area=11,405 sf 79.36% Impervious Runoff Depth=3.49" Tc=6.0 min CN=WQ Runoff=0.91 cfs 3,316 cf
<b>Subcatchment43:</b>	Runoff Area=19,648 sf 78.08% Impervious Runoff Depth=3.44" Tc=6.0 min CN=WQ Runoff=1.55 cfs 5,624 cf
<b>Subcatchment44:</b>	Runoff Area=15,509 sf 67.18% Impervious Runoff Depth=2.97" Tc=6.0 min CN=WQ Runoff=1.05 cfs 3,843 cf
<b>Pond CB1:</b>	Peak Elev=321.43' Inflow=0.29 cfs 1,045 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.29 cfs 1,045 cf
<b>Pond CB10:</b>	Peak Elev=305.70' Inflow=7.25 cfs 26,375 cf 18.0" Round Culvert n=0.013 L=109.3' S=0.0050 '/' Outflow=7.25 cfs 26,375 cf
<b>Pond CB11:</b>	Peak Elev=304.53' Inflow=7.30 cfs 26,554 cf 24.0" Round Culvert n=0.013 L=178.7' S=0.0115 '/' Outflow=7.30 cfs 26,554 cf
<b>Pond CB12:</b>	Peak Elev=302.76' Inflow=13.11 cfs 54,230 cf 30.0" Round Culvert n=0.013 L=42.2' S=0.0474 '/' Outflow=13.11 cfs 54,230 cf

<b>Pond CB13:</b>	Peak Elev=303.28' Inflow=5.18 cfs 25,389 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0068 '/' Outflow=5.18 cfs 25,389 cf
<b>Pond CB14:</b>	Peak Elev=303.56' Inflow=4.35 cfs 22,327 cf 18.0" Round Culvert n=0.013 L=68.6' S=0.0058 '/' Outflow=4.35 cfs 22,327 cf
<b>Pond CB15:</b>	Peak Elev=303.72' Inflow=1.76 cfs 12,888 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0071 '/' Outflow=1.76 cfs 12,888 cf
<b>Pond CB16:</b>	Peak Elev=305.97' Inflow=1.65 cfs 6,005 cf 15.0" Round Culvert n=0.013 L=177.0' S=0.0184 '/' Outflow=1.65 cfs 6,005 cf
<b>Pond CB17:</b>	Peak Elev=306.31' Inflow=0.82 cfs 2,965 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0048 '/' Outflow=0.82 cfs 2,965 cf
<b>Pond CB18:</b>	Peak Elev=306.84' Inflow=5.11 cfs 18,595 cf 18.0" Round Culvert n=0.013 L=68.2' S=0.0054 '/' Outflow=5.11 cfs 18,595 cf
<b>Pond CB19:</b>	Peak Elev=306.88' Inflow=1.60 cfs 5,812 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.60 cfs 5,812 cf
<b>Pond CB2:</b>	Peak Elev=321.14' Inflow=1.36 cfs 4,946 cf 15.0" Round Culvert n=0.013 L=211.0' S=0.0062 '/' Outflow=1.36 cfs 4,946 cf
<b>Pond CB20:</b>	Peak Elev=307.05' Inflow=3.51 cfs 12,783 cf 15.0" Round Culvert n=0.013 L=109.0' S=0.0094 '/' Outflow=3.51 cfs 12,783 cf
<b>Pond CB21:</b>	Peak Elev=308.39' Inflow=2.60 cfs 9,467 cf 15.0" Round Culvert n=0.013 L=195.1' S=0.0087 '/' Outflow=2.60 cfs 9,467 cf
<b>Pond CB22:</b>	Peak Elev=308.59' Inflow=1.55 cfs 5,624 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.55 cfs 5,624 cf
<b>Pond CB23:</b>	Peak Elev=303.06' Inflow=0.29 cfs 1,033 cf 15.0" Round Culvert n=0.013 L=84.6' S=0.0165 '/' Outflow=0.29 cfs 1,033 cf
<b>Pond CB24:</b>	Peak Elev=315.19' Inflow=0.24 cfs 892 cf 10.0" Round Culvert n=0.013 L=61.4' S=0.0119 '/' Outflow=0.24 cfs 892 cf
<b>Pond CB3:</b>	Peak Elev=319.81' Inflow=1.61 cfs 5,864 cf 15.0" Round Culvert n=0.013 L=146.0' S=0.0188 '/' Outflow=1.61 cfs 5,864 cf
<b>Pond CB4:</b>	Peak Elev=314.62' Inflow=3.31 cfs 15,578 cf 15.0" Round Culvert n=0.013 L=145.0' S=0.0448 '/' Outflow=3.31 cfs 15,578 cf
<b>Pond CB5:</b>	Peak Elev=307.30' Inflow=4.96 cfs 21,726 cf 18.0" Round Culvert n=0.013 L=69.4' S=0.1009 '/' Outflow=4.96 cfs 21,726 cf
<b>Pond CB6:</b>	Peak Elev=317.14' Inflow=2.37 cfs 11,469 cf 15.0" Round Culvert n=0.013 L=42.0' S=0.0595 '/' Outflow=2.37 cfs 11,469 cf

**20013-POST**

Type III 24-hr 10-Year Rainfall=4.60"

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Page 40

**Pond CB7:** Peak Elev=313.58' Inflow=0.48 cfs 1,738 cf  
 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.48 cfs 1,738 cf

**Pond CB8:** Peak Elev=313.34' Inflow=0.70 cfs 2,514 cf  
 15.0" Round Culvert n=0.013 L=173.3' S=0.0490 '/' Outflow=0.70 cfs 2,514 cf

**Pond CB9:** Peak Elev=306.51' Inflow=6.56 cfs 23,849 cf  
 18.0" Round Culvert n=0.013 L=30.8' S=0.0049 '/' Outflow=6.56 cfs 23,849 cf

**Pond EP1: EXISTING POND** Peak Elev=273.56' Storage=46,673 cf Inflow=10.01 cfs 80,244 cf  
 Discarded=0.45 cfs 79,361 cf Primary=0.00 cfs 0 cf Outflow=0.45 cfs 79,361 cf

**Pond EP2-A:** Peak Elev=286.33' Storage=126 cf Inflow=0.08 cfs 742 cf  
 Discarded=0.03 cfs 743 cf Primary=0.00 cfs 0 cf Outflow=0.03 cfs 743 cf

**Pond EP2-B:** Peak Elev=297.54' Storage=1,069 cf Inflow=0.44 cfs 2,183 cf  
 Discarded=0.04 cfs 2,183 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 2,183 cf

**Pond FI-1:** Peak Elev=316.15' Inflow=0.18 cfs 679 cf  
 10.0" Round Culvert n=0.013 L=73.1' S=0.0123 '/' Outflow=0.18 cfs 679 cf

**Pond FL-3:** Peak Elev=304.28' Inflow=1.25 cfs 8,561 cf  
 10.0" Round Culvert n=0.013 L=122.1' S=0.0066 '/' Outflow=1.25 cfs 8,561 cf

**Pond FL-4:** Peak Elev=305.88' Inflow=1.25 cfs 8,561 cf  
 10.0" Round Culvert n=0.013 L=180.6' S=0.0083 '/' Outflow=1.25 cfs 8,561 cf

**Pond WP1: Wet Pond** Peak Elev=297.10' Storage=28,289 cf Inflow=18.40 cfs 77,717 cf  
 Primary=8.83 cfs 74,591 cf Secondary=0.00 cfs 0 cf Outflow=8.83 cfs 74,591 cf

**Link SP1:** Inflow=2.06 cfs 9,939 cf  
 Primary=2.06 cfs 9,939 cf

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

**Total Runoff Area = 949,625 sf Runoff Volume = 96,235 cf Average Runoff Depth = 1.22"**  
**77.17% Pervious = 732,811 sf 22.83% Impervious = 216,814 sf**

**20013-POST**

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 72

Time span=0.00-96.00 hrs, dt=0.05 hrs, 1921 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-Q  
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

<b>Subcatchment 1:</b>	Runoff Area=378,886 sf 0.13% Impervious Runoff Depth=0.37" Flow Length=759' Tc=12.3 min CN=WQ Runoff=1.89 cfs 11,778 cf
<b>Subcatchment 2:</b>	Runoff Area=123,205 sf 0.89% Impervious Runoff Depth=1.50" Flow Length=374' Tc=20.1 min CN=WQ Runoff=3.11 cfs 15,411 cf
<b>Subcatchment 3:</b>	Runoff Area=48,015 sf 2.87% Impervious Runoff Depth=0.39" Flow Length=329' Tc=29.7 min CN=WQ Runoff=0.13 cfs 1,563 cf
<b>Subcatchment 10:</b>	Runoff Area=13,267 sf 80.29% Impervious Runoff Depth=4.54" Tc=6.0 min CN=WQ Runoff=1.36 cfs 5,022 cf
<b>Subcatchment 11:</b>	Runoff Area=3,009 sf 95.38% Impervious Runoff Depth=5.32" Tc=6.0 min CN=WQ Runoff=0.37 cfs 1,335 cf
<b>Subcatchment 12:</b>	Runoff Area=3,505 sf 71.13% Impervious Runoff Depth=4.07" Tc=6.0 min CN=WQ Runoff=0.32 cfs 1,188 cf
<b>Subcatchment 13:</b>	Runoff Area=10,632 sf 82.69% Impervious Runoff Depth=4.67" Flow Length=121' Tc=11.5 min CN=WQ Runoff=0.96 cfs 4,135 cf
<b>Subcatchment 14:</b>	Runoff Area=23,758 sf 63.99% Impervious Runoff Depth=3.68" Flow Length=182' Tc=18.5 min CN=WQ Runoff=1.40 cfs 7,293 cf
<b>Subcatchment 15:</b>	Runoff Area=20,293 sf 82.81% Impervious Runoff Depth=4.67" Tc=6.0 min CN=WQ Runoff=2.14 cfs 7,903 cf
<b>Subcatchment 16:</b>	Runoff Area=2,959 sf 61.98% Impervious Runoff Depth=3.60" Flow Length=33' Slope=0.0179 '/' Tc=6.2 min CN=WQ Runoff=0.23 cfs 887 cf
<b>Subcatchment 17:</b>	Runoff Area=1,185 sf 47.93% Impervious Runoff Depth=2.87" Tc=6.0 min CN=WQ Runoff=0.07 cfs 283 cf
<b>Subcatchment 18:</b>	Runoff Area=51,208 sf 4.51% Impervious Runoff Depth=0.74" Tc=6.0 min CN=WQ Runoff=0.46 cfs 3,158 cf
<b>Subcatchment 20:</b>	Runoff Area=2,135 sf 100.00% Impervious Runoff Depth=5.56" Tc=6.0 min CN=WQ Runoff=0.27 cfs 990 cf
<b>Subcatchment 21:</b>	Runoff Area=5,108 sf 93.36% Impervious Runoff Depth=5.22" Tc=6.0 min CN=WQ Runoff=0.61 cfs 2,221 cf
<b>Subcatchment 22:</b>	Runoff Area=9,995 sf 74.63% Impervious Runoff Depth=4.25" Tc=6.0 min CN=WQ Runoff=0.95 cfs 3,540 cf
<b>Subcatchment 23:</b>	Runoff Area=16,468 sf 71.42% Impervious Runoff Depth=4.08" Tc=6.0 min CN=WQ Runoff=1.50 cfs 5,605 cf

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 73

<b>Subcatchment24:</b>	Runoff Area=8,374 sf 82.43% Impervious Runoff Depth=4.65" Tc=6.0 min CN=WQ Runoff=0.88 cfs 3,247 cf
<b>Subcatchment25:</b>	Runoff Area=15,887 sf 51.71% Impervious Runoff Depth=3.05" Tc=6.0 min CN=WQ Runoff=1.05 cfs 4,042 cf
<b>Subcatchment26:</b>	Runoff Area=494 sf 100.00% Impervious Runoff Depth=5.56" Tc=6.0 min CN=WQ Runoff=0.06 cfs 229 cf
<b>Subcatchment27:</b>	Runoff Area=11,780 sf 79.57% Impervious Runoff Depth=4.51" Tc=6.0 min CN=WQ Runoff=1.19 cfs 4,423 cf
<b>Subcatchment28:</b>	Runoff Area=11,411 sf 72.63% Impervious Runoff Depth=4.13" Tc=6.0 min CN=WQ Runoff=1.06 cfs 3,927 cf
<b>Subcatchment29:</b>	Runoff Area=11,686 sf 69.27% Impervious Runoff Depth=3.93" Tc=6.0 min CN=WQ Runoff=1.03 cfs 3,830 cf
<b>Subcatchment30:</b>	Runoff Area=2,841 sf 100.00% Impervious Runoff Depth=5.56" Tc=6.0 min CN=WQ Runoff=0.36 cfs 1,317 cf
<b>Subcatchment31:</b>	Runoff Area=40,916 sf 13.06% Impervious Runoff Depth=0.97" Flow Length=165' Tc=12.7 min CN=WQ Runoff=0.57 cfs 3,313 cf
<b>Subcatchment32:</b>	Runoff Area=3,447 sf 100.00% Impervious Runoff Depth=5.56" Tc=6.0 min CN=WQ Runoff=0.44 cfs 1,598 cf
<b>Subcatchment40:</b>	Runoff Area=63,509 sf 35.40% Impervious Runoff Depth=2.20" Flow Length=154' Tc=34.2 min CN=WQ Runoff=1.62 cfs 11,641 cf
<b>Subcatchment41:</b>	Runoff Area=19,090 sf 83.24% Impervious Runoff Depth=4.70" Tc=6.0 min CN=WQ Runoff=2.02 cfs 7,469 cf
<b>Subcatchment42:</b>	Runoff Area=11,405 sf 79.36% Impervious Runoff Depth=4.49" Tc=6.0 min CN=WQ Runoff=1.15 cfs 4,272 cf
<b>Subcatchment43:</b>	Runoff Area=19,648 sf 78.08% Impervious Runoff Depth=4.43" Tc=6.0 min CN=WQ Runoff=1.95 cfs 7,251 cf
<b>Subcatchment44:</b>	Runoff Area=15,509 sf 67.18% Impervious Runoff Depth=3.86" Tc=6.0 min CN=WQ Runoff=1.33 cfs 4,995 cf
<b>Pond CB1:</b>	Peak Elev=321.47' Inflow=0.37 cfs 1,335 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.37 cfs 1,335 cf
<b>Pond CB10:</b>	Peak Elev=306.52' Inflow=9.17 cfs 33,984 cf 18.0" Round Culvert n=0.013 L=109.3' S=0.0050 '/' Outflow=9.17 cfs 33,984 cf
<b>Pond CB11:</b>	Peak Elev=304.76' Inflow=9.23 cfs 34,213 cf 24.0" Round Culvert n=0.013 L=178.7' S=0.0115 '/' Outflow=9.23 cfs 34,213 cf
<b>Pond CB12:</b>	Peak Elev=303.05' Inflow=16.58 cfs 70,595 cf 30.0" Round Culvert n=0.013 L=42.2' S=0.0474 '/' Outflow=16.58 cfs 70,595 cf

<b>Pond CB13:</b>	Peak Elev=303.90' Inflow=6.55 cfs 33,468 cf 18.0" Round Culvert n=0.013 L=22.0' S=0.0068 '/' Outflow=6.55 cfs 33,468 cf
<b>Pond CB14:</b>	Peak Elev=304.36' Inflow=5.50 cfs 29,426 cf 18.0" Round Culvert n=0.013 L=68.6' S=0.0058 '/' Outflow=5.50 cfs 29,426 cf
<b>Pond CB15:</b>	Peak Elev=304.53' Inflow=2.23 cfs 17,246 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0071 '/' Outflow=2.23 cfs 17,246 cf
<b>Pond CB16:</b>	Peak Elev=306.07' Inflow=2.09 cfs 7,757 cf 15.0" Round Culvert n=0.013 L=177.0' S=0.0184 '/' Outflow=2.09 cfs 7,757 cf
<b>Pond CB17:</b>	Peak Elev=306.40' Inflow=1.03 cfs 3,830 cf 15.0" Round Culvert n=0.013 L=84.0' S=0.0048 '/' Outflow=1.03 cfs 3,830 cf
<b>Pond CB18:</b>	Peak Elev=308.22' Inflow=6.46 cfs 23,986 cf 18.0" Round Culvert n=0.013 L=68.2' S=0.0054 '/' Outflow=6.46 cfs 23,986 cf
<b>Pond CB19:</b>	Peak Elev=308.28' Inflow=2.02 cfs 7,469 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=2.02 cfs 7,469 cf
<b>Pond CB2:</b>	Peak Elev=321.23' Inflow=1.72 cfs 6,357 cf 15.0" Round Culvert n=0.013 L=211.0' S=0.0062 '/' Outflow=1.72 cfs 6,357 cf
<b>Pond CB20:</b>	Peak Elev=308.52' Inflow=4.44 cfs 16,517 cf 15.0" Round Culvert n=0.013 L=109.0' S=0.0094 '/' Outflow=4.44 cfs 16,517 cf
<b>Pond CB21:</b>	Peak Elev=308.73' Inflow=3.28 cfs 12,245 cf 15.0" Round Culvert n=0.013 L=195.1' S=0.0087 '/' Outflow=3.28 cfs 12,245 cf
<b>Pond CB22:</b>	Peak Elev=308.77' Inflow=1.95 cfs 7,251 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=1.95 cfs 7,251 cf
<b>Pond CB23:</b>	Peak Elev=303.18' Inflow=0.36 cfs 1,317 cf 15.0" Round Culvert n=0.013 L=84.6' S=0.0165 '/' Outflow=0.36 cfs 1,317 cf
<b>Pond CB24:</b>	Peak Elev=315.23' Inflow=0.31 cfs 1,170 cf 10.0" Round Culvert n=0.013 L=61.4' S=0.0119 '/' Outflow=0.31 cfs 1,170 cf
<b>Pond CB3:</b>	Peak Elev=319.91' Inflow=2.04 cfs 7,545 cf 15.0" Round Culvert n=0.013 L=146.0' S=0.0188 '/' Outflow=2.04 cfs 7,545 cf
<b>Pond CB4:</b>	Peak Elev=314.93' Inflow=4.18 cfs 20,143 cf 15.0" Round Culvert n=0.013 L=145.0' S=0.0448 '/' Outflow=4.18 cfs 20,143 cf
<b>Pond CB5:</b>	Peak Elev=307.62' Inflow=6.28 cfs 28,046 cf 18.0" Round Culvert n=0.013 L=69.4' S=0.1009 '/' Outflow=6.28 cfs 28,046 cf
<b>Pond CB6:</b>	Peak Elev=317.29' Inflow=3.00 cfs 14,838 cf 15.0" Round Culvert n=0.013 L=42.0' S=0.0595 '/' Outflow=3.00 cfs 14,838 cf

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 75

<b>Pond CB7:</b>	Peak Elev=313.63' Inflow=0.61 cfs 2,221 cf 15.0" Round Culvert n=0.013 L=22.0' S=0.0091 '/' Outflow=0.61 cfs 2,221 cf
<b>Pond CB8:</b>	Peak Elev=313.40' Inflow=0.88 cfs 3,211 cf 15.0" Round Culvert n=0.013 L=173.3' S=0.0490 '/' Outflow=0.88 cfs 3,211 cf
<b>Pond CB9:</b>	Peak Elev=307.71' Inflow=8.29 cfs 30,737 cf 18.0" Round Culvert n=0.013 L=30.8' S=0.0049 '/' Outflow=8.29 cfs 30,737 cf
<b>Pond EP1: EXISTING POND</b>	Peak Elev=274.41' Storage=69,988 cf Inflow=10.88 cfs 110,451 cf Discarded=0.60 cfs 107,604 cf Primary=0.00 cfs 0 cf Outflow=0.60 cfs 107,604 cf
<b>Pond EP2-A:</b>	Peak Elev=286.72' Storage=346 cf Inflow=0.13 cfs 1,563 cf Discarded=0.04 cfs 1,563 cf Primary=0.00 cfs 0 cf Outflow=0.04 cfs 1,563 cf
<b>Pond EP2-B:</b>	Peak Elev=298.23' Storage=1,629 cf Inflow=0.57 cfs 3,313 cf Discarded=0.05 cfs 3,313 cf Primary=0.00 cfs 0 cf Outflow=0.05 cfs 3,313 cf
<b>Pond FI-1:</b>	Peak Elev=316.18' Inflow=0.23 cfs 887 cf 10.0" Round Culvert n=0.013 L=73.1' S=0.0123 '/' Outflow=0.23 cfs 887 cf
<b>Pond FL-3:</b>	Peak Elev=305.07' Inflow=1.62 cfs 11,641 cf 10.0" Round Culvert n=0.013 L=122.1' S=0.0066 '/' Outflow=1.62 cfs 11,641 cf
<b>Pond FL-4:</b>	Peak Elev=306.12' Inflow=1.62 cfs 11,641 cf 10.0" Round Culvert n=0.013 L=180.6' S=0.0083 '/' Outflow=1.62 cfs 11,641 cf
<b>Pond WP1: Wet Pond</b>	Peak Elev=297.49' Storage=34,458 cf Inflow=23.28 cfs 101,799 cf Primary=9.11 cfs 98,673 cf Secondary=0.00 cfs 0 cf Outflow=9.11 cfs 98,673 cf
<b>Link SP1:</b>	Inflow=3.11 cfs 15,411 cf Primary=3.11 cfs 15,411 cf
<b>Link SP2:</b>	Inflow=0.00 cfs 0 cf Primary=0.00 cfs 0 cf

**Total Runoff Area = 949,625 sf Runoff Volume = 133,864 cf Average Runoff Depth = 1.69"**  
**77.17% Pervious = 732,811 sf 22.83% Impervious = 216,814 sf**

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 76

**Summary for Subcatchment 1:**

Runoff = 1.89 cfs @ 12.18 hrs, Volume= 11,778 cf, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 37,966	39	Ex. >75% Grass cover, Good, HSG A
* 26,080	39	Prop. >75% Grass cover, Good, HSG A
284,814	32	Woods/grass comb., Good, HSG A
29,526	72	Woods/grass comb., Good, HSG C
* 500	98	Prop. hardscape & pavement
* 0	98	Prop. roofs
378,886		Weighted Average
378,386		99.87% Pervious Area
500		0.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	53	0.0228	0.11		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
2.4	74	0.0108	0.52		<b>Shallow Concentrated Flow, Seg B to C</b> Woodland Kv= 5.0 fps
1.3	369	0.0217	4.59	285.76	<b>Channel Flow, Seg C to D</b> Area= 62.2 sf Perim= 124.5' r= 0.50' n= 0.030 Earth, grassed & winding
0.3	263	0.1825	13.21	239.08	<b>Channel Flow, Seg D to E</b> Area= 18.1 sf Perim= 36.7' r= 0.49' n= 0.030 Earth, grassed & winding
12.3	759	Total			

**Summary for Subcatchment 2:**

Runoff = 3.11 cfs @ 12.29 hrs, Volume= 15,411 cf, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 0	39	Ex. >75% Grass cover, Good, HSG A
* 16,435	39	Prop. >75% Grass cover, Good, HSG A
46,488	32	Woods/grass comb., Good, HSG A
59,182	72	Woods/grass comb., Good, HSG C
* 1,100	98	Prop. hardscape & pavement
* 0	98	Prop. roofs
123,205		Weighted Average
122,105		99.11% Pervious Area
1,100		0.89% Impervious Area

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 77

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.5	98	0.0448	0.11		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
3.6	50	0.4387	0.23		<b>Sheet Flow, Seg B to C</b> Woods: Light underbrush n= 0.400 P2= 3.10"
0.5	74	0.2491	2.50		<b>Shallow Concentrated Flow, Seg C to D</b> Woodland Kv= 5.0 fps
0.5	152	0.0428	5.53	378.85	<b>Channel Flow, Seg D to E</b> Area= 68.5 sf Perim= 137.1' r= 0.50' n= 0.035 Earth, dense weeds
20.1	374	Total			

**Summary for Subcatchment 3:**

Runoff = 0.13 cfs @ 12.51 hrs, Volume= 1,563 cf, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 12,758	39	Ex. >75% Grass cover, Good, HSG A
* 8,930	39	Prop. >75% Grass cover, Good, HSG A
24,947	32	Woods/grass comb., Good, HSG A
0	72	Woods/grass comb., Good, HSG C
* 0	98	Prop. hardscape & pavement
* 0	98	Ex. pavement
* 1,380	98	Ex. roofs
48,015		Weighted Average
46,635		97.13% Pervious Area
1,380		2.87% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
28.4	150	0.0233	0.09		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
1.3	179	0.1985	2.23		<b>Shallow Concentrated Flow, Seg B to C</b> Woodland Kv= 5.0 fps
29.7	329	Total			

**Summary for Subcatchment 10:**

Runoff = 1.36 cfs @ 12.09 hrs, Volume= 5,022 cf, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 78

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	2,615	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	6,531	98	Prop. hardscape & pavement
*	4,121	98	Prop. roofs
	13,267		Weighted Average
	2,615		19.71% Pervious Area
	10,652		80.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 11:**

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 1,335 cf, Depth= 5.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	139	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	2,870	98	Prop. hardscape & pavement
*	0	98	Prop. roofs
	3,009		Weighted Average
	139		4.62% Pervious Area
	2,870		95.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 12:**

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 1,188 cf, Depth= 4.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Page 79

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	1,012	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	1,193	98 Prop. hardscape & pavement
*	1,300	98 Prop. roofs
3,505		Weighted Average
1,012		28.87% Pervious Area
2,493		71.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 13:**

Runoff = 0.96 cfs @ 12.15 hrs, Volume= 4,135 cf, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	1,840	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	8,278	98 Prop. hardscape & pavement
*	514	98 Prop. roofs
10,632		Weighted Average
1,840		17.31% Pervious Area
8,792		82.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.9	37	0.0404	0.12		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
0.1	8	0.0451	1.13		<b>Sheet Flow, Seg B to C</b> Smooth surfaces n= 0.011 P2= 3.10"
6.2	16	0.0043	0.04		<b>Sheet Flow, Seg C to D</b> Grass: Dense n= 0.240 P2= 3.10"
0.2	36	0.0283	3.41		<b>Shallow Concentrated Flow, Seg D to E</b> Paved Kv= 20.3 fps
0.1	24	0.0200	6.41	80.18	<b>Trap/Vee/Rect Channel Flow, Seg E to F</b> Bot.W=0.00' D=0.50' Z= 50.0 ' /' Top.W=50.00' n= 0.013 Asphalt, smooth
11.5	121	Total			

**Summary for Subcatchment 14:**

Runoff = 1.40 cfs @ 12.24 hrs, Volume= 7,293 cf, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 0	39	Ex. >75% Grass cover, Good, HSG A
* 7,216	39	Prop. >75% Grass cover, Good, HSG A
1,339	32	Woods/grass comb., Good, HSG A
0	72	Woods/grass comb., Good, HSG C
* 9,721	98	Prop. hardscape & pavement
* 5,482	98	Prop. roofs
23,758		Weighted Average
8,555		36.01% Pervious Area
15,203		63.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	24	0.0650	0.09		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
13.5	71	0.0120	0.09		<b>Sheet Flow, Seg B to C</b> Grass: Dense n= 0.240 P2= 3.10"
0.6	52	0.0057	1.53		<b>Shallow Concentrated Flow, Seg C to D</b> Paved Kv= 20.3 fps
0.1	35	0.0300	7.86	98.20	<b>Trap/Vee/Rect Channel Flow, Seg D to E</b> Bot.W=0.00' D=0.50' Z= 50.0 ' /' Top.W=50.00' n= 0.013 Asphalt, smooth
18.5	182	Total			

**Summary for Subcatchment 15:**

Runoff = 2.14 cfs @ 12.09 hrs, Volume= 7,903 cf, Depth= 4.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
* 0	39	Ex. >75% Grass cover, Good, HSG A
* 3,488	39	Prop. >75% Grass cover, Good, HSG A
0	32	Woods/grass comb., Good, HSG A
0	72	Woods/grass comb., Good, HSG C
* 13,009	98	Prop. hardscape & pavement
* 3,796	98	Prop. roofs
20,293		Weighted Average
3,488		17.19% Pervious Area
16,805		82.81% Impervious Area

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 81

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 16:**

Runoff = 0.23 cfs @ 12.09 hrs, Volume= 887 cf, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	1,125	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	263	98 Prop. hardscape & pavement, HSG A
*	1,571	98 Prop. roofs
2,959		Weighted Average
1,125		38.02% Pervious Area
1,834		61.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	33	0.0179	0.09		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"

**Summary for Subcatchment 17:**

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 283 cf, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	617	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	2	98 Prop. hardscape & pavement
*	566	98 Prop. roofs
1,185		Weighted Average
617		52.07% Pervious Area
568		47.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 18:**

Runoff = 0.46 cfs @ 12.10 hrs, Volume= 3,158 cf, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	47,686	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	683	98 Prop. hardscape & pavement
*	1,215	96 Gravel surface
*	1,624	98 Prop. roofs
51,208		Weighted Average
48,901		95.49% Pervious Area
2,307		4.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 20:**

Runoff = 0.27 cfs @ 12.09 hrs, Volume= 990 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	0	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	2,135	98 Prop. hardscape & pavement
*	0	98 Prop. roofs
2,135		Weighted Average
2,135		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 21:**

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 2,221 cf, Depth= 5.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 83

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	339	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	4,769	98	Prop. hardscape & pavement
*	0	98	Prop. roofs
	5,108		Weighted Average
	339		6.64% Pervious Area
	4,769		93.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 22:**

Runoff = 0.95 cfs @ 12.09 hrs, Volume= 3,540 cf, Depth= 4.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	2,536	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	7,404	98	Prop. hardscape & pavement
*	55	98	Prop. roofs
	9,995		Weighted Average
	2,536		25.37% Pervious Area
	7,459		74.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 23:**

Runoff = 1.50 cfs @ 12.09 hrs, Volume= 5,605 cf, Depth= 4.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 84

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	4,706	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	8,193	98	Prop. hardscape & pavement
*	3,569	98	Prop. roofs
	16,468		Weighted Average
	4,706		28.58% Pervious Area
	11,762		71.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 24:**

Runoff = 0.88 cfs @ 12.09 hrs, Volume= 3,247 cf, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	1,471	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	6,348	98	Prop. hardscape & pavement
*	555	98	Prop. roofs
	8,374		Weighted Average
	1,471		17.57% Pervious Area
	6,903		82.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 25:**

Runoff = 1.05 cfs @ 12.09 hrs, Volume= 4,042 cf, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Page 85

	Area (sf)	CN	Description
*	4,028	39	Ex. >75% Grass cover, Good, HSG A
*	3,017	39	Prop. >75% Grass cover, Good, HSG A
	627	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	6,577	98	Prop. hardscape & pavement
*	1,638	98	Prop. roofs
	15,887		Weighted Average
	7,672		48.29% Pervious Area
	8,215		51.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 26:**

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 229 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	0	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	494	98	Prop. hardscape & pavement
*	0	98	Prop. roofs
	494		Weighted Average
	494		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 27:**

Runoff = 1.19 cfs @ 12.09 hrs, Volume= 4,423 cf, Depth= 4.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 86

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	2,407	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	7,442	98	Prop. hardscape & pavement
*	1,931	98	Prop. roofs
	11,780		Weighted Average
	2,407		20.43% Pervious Area
	9,373		79.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 28:**

Runoff = 1.06 cfs @ 12.09 hrs, Volume= 3,927 cf, Depth= 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	2,466	39	Prop. >75% Grass cover, Good, HSG A
	657	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	6,357	98	Prop. hardscape & pavement
*	1,931	98	Prop. roofs
	11,411		Weighted Average
	3,123		27.37% Pervious Area
	8,288		72.63% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 29:**

Runoff = 1.03 cfs @ 12.09 hrs, Volume= 3,830 cf, Depth= 3.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Page 87

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	1,941	39	Prop. >75% Grass cover, Good, HSG A
	1,650	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	6,164	98	Prop. hardscape & pavement
*	1,931	98	Prop. roofs
	11,686		Weighted Average
	3,591		30.73% Pervious Area
	8,095		69.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 30:**

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 1,317 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	0	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	2,841	98	Prop. hardscape & pavement
*	0	98	Prop. roofs
	2,841		Weighted Average
	2,841		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 31:**

Runoff = 0.57 cfs @ 12.17 hrs, Volume= 3,313 cf, Depth= 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Page 88

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	22,096	39 Prop. >75% Grass cover, Good, HSG A
	13,476	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	0	98 Prop. hardscape & pavement
*	5,344	98 Prop. roofs
<hr/>		
	40,916	Weighted Average
	35,572	86.94% Pervious Area
	5,344	13.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.7	53	0.1760	0.24		<b>Sheet Flow, Seg A to B</b> Grass: Dense n= 0.240 P2= 3.10"
9.0	95	0.1656	0.18		<b>Sheet Flow, Seg B to C</b> Woods: Light underbrush n= 0.400 P2= 3.10"
0.0	17	0.3210	9.12		<b>Shallow Concentrated Flow, Seg C to D</b> Unpaved Kv= 16.1 fps
<hr/>					
12.7	165	Total			

**Summary for Subcatchment 32:**

Runoff = 0.44 cfs @ 12.09 hrs, Volume= 1,598 cf, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	0	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	3,447	98 Prop. hardscape & pavement
*	0	98 Prop. roofs
<hr/>		
	3,447	Weighted Average
	3,447	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 40:**

Runoff = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf, Depth= 2.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 89

	Area (sf)	CN	Description
*	5,837	39	Ex. >75% Grass cover, Good, HSG A
*	30,434	39	Prop. >75% Grass cover, Good, HSG A
	4,754	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	7,433	98	Prop. hardscape & pavement
*	2,039	98	Ex. pavement
*	13,012	98	Prop. roofs
	63,509		Weighted Average
	41,025		64.60% Pervious Area
	22,484		35.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.3	92	0.0081	0.05		<b>Sheet Flow, Seg A to B</b> Woods: Light underbrush n= 0.400 P2= 3.10"
4.9	62	0.1138	0.21		<b>Sheet Flow, Seg B to C</b> Grass: Dense n= 0.240 P2= 3.10"
34.2	154	Total			

**Summary for Subcatchment 41:**

Runoff = 2.02 cfs @ 12.09 hrs, Volume= 7,469 cf, Depth= 4.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	3,200	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	9,934	98	Prop. hardscape & pavement
*	5,956	98	Prop. roofs
	19,090		Weighted Average
	3,200		16.76% Pervious Area
	15,890		83.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 42:**

Runoff = 1.15 cfs @ 12.09 hrs, Volume= 4,272 cf, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

**20013-POST**

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Page 90

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	2,354	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	5,716	98	Prop. hardscape & pavement
*	3,335	98	Prop. roofs
	11,405		Weighted Average
	2,354		20.64% Pervious Area
	9,051		79.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 43:**

Runoff = 1.95 cfs @ 12.09 hrs, Volume= 7,251 cf, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

	Area (sf)	CN	Description
*	0	39	Ex. >75% Grass cover, Good, HSG A
*	4,307	39	Prop. >75% Grass cover, Good, HSG A
	0	32	Woods/grass comb., Good, HSG A
	0	72	Woods/grass comb., Good, HSG C
*	7,368	98	Prop. hardscape & pavement
*	7,973	98	Prop. roofs
	19,648		Weighted Average
	4,307		21.92% Pervious Area
	15,341		78.08% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Subcatchment 44:**

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 4,995 cf, Depth= 3.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-Q, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
Type III 24-hr 25-Year Rainfall=5.80"

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 91

Area (sf)	CN	Description
*	0	39 Ex. >75% Grass cover, Good, HSG A
*	5,090	39 Prop. >75% Grass cover, Good, HSG A
	0	32 Woods/grass comb., Good, HSG A
	0	72 Woods/grass comb., Good, HSG C
*	7,502	98 Prop. hardscape & pavement
*	2,917	98 Prop. roofs
15,509		Weighted Average
5,090		32.82% Pervious Area
10,419		67.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					<b>Direct Entry, Tc&lt;6.0 Min</b>

**Summary for Pond CB1:**

Inflow Area = 3,009 sf, 95.38% Impervious, Inflow Depth = 5.32" for 25-Year event  
 Inflow = 0.37 cfs @ 12.09 hrs, Volume= 1,335 cf  
 Outflow = 0.37 cfs @ 12.09 hrs, Volume= 1,335 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.37 cfs @ 12.09 hrs, Volume= 1,335 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 321.47' @ 12.09 hrs  
 Flood Elev= 324.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	321.15'	<b>15.0" Round SD-1</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 321.15' / 320.95' S= 0.0091 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.34 cfs @ 12.09 hrs HW=321.46' TW=321.22' (Dynamic Tailwater)  
 ↳1=SD-1 (Outlet Controls 0.34 cfs @ 2.14 fps)

**Summary for Pond CB10:**

Inflow Area = 91,264 sf, 78.86% Impervious, Inflow Depth = 4.47" for 25-Year event  
 Inflow = 9.17 cfs @ 12.09 hrs, Volume= 33,984 cf  
 Outflow = 9.17 cfs @ 12.09 hrs, Volume= 33,984 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 9.17 cfs @ 12.09 hrs, Volume= 33,984 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 306.52' @ 12.09 hrs  
 Flood Elev= 310.35'

Device	Routing	Invert	Outlet Devices
#1	Primary	303.80'	<b>18.0" Round SD-10</b> L= 109.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 303.80' / 303.25' S= 0.0050 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=8.71 cfs @ 12.09 hrs HW=306.41' TW=304.73' (Dynamic Tailwater)

↑1=SD-10 (Inlet Controls 8.71 cfs @ 4.93 fps)

**Summary for Pond CB11:**

Inflow Area = 91,758 sf, 78.97% Impervious, Inflow Depth = 4.47" for 25-Year event  
 Inflow = 9.23 cfs @ 12.09 hrs, Volume= 34,213 cf  
 Outflow = 9.23 cfs @ 12.09 hrs, Volume= 34,213 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 9.23 cfs @ 12.09 hrs, Volume= 34,213 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 304.76' @ 12.09 hrs  
 Flood Elev= 309.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	303.15'	<b>24.0" Round SD-11</b> L= 178.7' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 303.15' / 301.10' S= 0.0115 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

**Primary OutFlow** Max=8.99 cfs @ 12.09 hrs HW=304.73' TW=303.01' (Dynamic Tailwater)

↑1=SD-11 (Inlet Controls 8.99 cfs @ 3.38 fps)

**Summary for Pond CB12:**

Inflow Area = 228,787 sf, 64.24% Impervious, Inflow Depth = 3.70" for 25-Year event  
 Inflow = 16.58 cfs @ 12.09 hrs, Volume= 70,595 cf  
 Outflow = 16.58 cfs @ 12.09 hrs, Volume= 70,595 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 16.58 cfs @ 12.09 hrs, Volume= 70,595 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 303.05' @ 12.09 hrs  
 Flood Elev= 305.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	301.00'	<b>30.0" Round SD-12</b> L= 42.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 301.00' / 299.00' S= 0.0474 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf

**Primary OutFlow** Max=16.19 cfs @ 12.09 hrs HW=303.02' TW=297.07' (Dynamic Tailwater)

↑1=SD-12 (Inlet Controls 16.19 cfs @ 3.82 fps)

**Summary for Pond CB13:**

[80] Warning: Exceeded Pond CB14 by 0.08' @ 12.05 hrs (1.92 cfs 345 cf)

**20013-POST**

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Page 93

Inflow Area = 130,741 sf, 52.18% Impervious, Inflow Depth = 3.07" for 25-Year event  
 Inflow = 6.55 cfs @ 12.09 hrs, Volume= 33,468 cf  
 Outflow = 6.55 cfs @ 12.09 hrs, Volume= 33,468 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.55 cfs @ 12.09 hrs, Volume= 33,468 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 303.90' @ 12.11 hrs  
 Flood Elev= 305.78'

Device	Routing	Invert	Outlet Devices
#1	Primary	301.25'	<b>18.0" Round SD-13</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 301.25' / 301.10' S= 0.0068 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=5.88 cfs @ 12.09 hrs HW=303.79' TW=303.02' (Dynamic Tailwater)  
 ↑**1=SD-13** (Inlet Controls 5.88 cfs @ 3.33 fps)

**Summary for Pond CB14:**

[80] Warning: Exceeded Pond CB15 by 0.36' @ 12.10 hrs (2.80 cfs 803 cf)

Inflow Area = 114,854 sf, 52.24% Impervious, Inflow Depth = 3.07" for 25-Year event  
 Inflow = 5.50 cfs @ 12.09 hrs, Volume= 29,426 cf  
 Outflow = 5.50 cfs @ 12.09 hrs, Volume= 29,426 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 5.50 cfs @ 12.09 hrs, Volume= 29,426 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 304.36' @ 12.15 hrs  
 Flood Elev= 307.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	301.75'	<b>18.0" Round SD-14</b> L= 68.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 301.75' / 301.35' S= 0.0058 1' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=2.24 cfs @ 12.09 hrs HW=303.91' TW=303.80' (Dynamic Tailwater)  
 ↑**1=SD-14** (Inlet Controls 2.24 cfs @ 1.27 fps)

**Summary for Pond CB15:**

[80] Warning: Exceeded Pond FL-3 by 0.02' @ 12.15 hrs (0.18 cfs 32 cf)

Inflow Area = 79,977 sf, 42.82% Impervious, Inflow Depth = 2.59" for 25-Year event  
 Inflow = 2.23 cfs @ 12.10 hrs, Volume= 17,246 cf  
 Outflow = 2.23 cfs @ 12.10 hrs, Volume= 17,246 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.23 cfs @ 12.10 hrs, Volume= 17,246 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 94

Peak Elev= 304.53' @ 12.20 hrs

Flood Elev= 307.75'

Device	Routing	Invert	Outlet Devices
#1	Primary	302.60'	<b>15.0" Round SD-15</b> L= 84.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 302.60' / 302.00' S= 0.0071 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.00 cfs @ 12.10 hrs HW=303.71' TW=304.05' (Dynamic Tailwater)↑**1=SD-15** ( Controls 0.00 cfs)**Summary for Pond CB16:**

Inflow Area = 23,097 sf, 70.93% Impervious, Inflow Depth = 4.03" for 25-Year event  
 Inflow = 2.09 cfs @ 12.09 hrs, Volume= 7,757 cf  
 Outflow = 2.09 cfs @ 12.09 hrs, Volume= 7,757 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.09 cfs @ 12.09 hrs, Volume= 7,757 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 306.07' @ 12.09 hrs

Flood Elev= 310.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	305.25'	<b>15.0" Round SD-16</b> L= 177.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.25' / 302.00' S= 0.0184 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.03 cfs @ 12.09 hrs HW=306.06' TW=303.84' (Dynamic Tailwater)↑**1=SD-16** (Inlet Controls 2.03 cfs @ 2.42 fps)**Summary for Pond CB17:**

Inflow Area = 11,686 sf, 69.27% Impervious, Inflow Depth = 3.93" for 25-Year event  
 Inflow = 1.03 cfs @ 12.09 hrs, Volume= 3,830 cf  
 Outflow = 1.03 cfs @ 12.09 hrs, Volume= 3,830 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.03 cfs @ 12.09 hrs, Volume= 3,830 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 306.40' @ 12.10 hrs

Flood Elev= 310.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	305.75'	<b>15.0" Round SD-17</b> L= 84.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.75' / 305.35' S= 0.0048 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.92 cfs @ 12.09 hrs HW=306.38' TW=306.06' (Dynamic Tailwater)↑**1=SD-17** (Outlet Controls 0.92 cfs @ 2.16 fps)

**Summary for Pond CB18:**

[80] Warning: Exceeded Pond CB19 by 0.93' @ 12.10 hrs (4.49 cfs 2,216 cf)

[80] Warning: Exceeded Pond CB20 by 0.23' @ 12.10 hrs (2.22 cfs 668 cf)

Inflow Area = 65,652 sf, 77.23% Impervious, Inflow Depth = 4.38" for 25-Year event  
 Inflow = 6.46 cfs @ 12.09 hrs, Volume= 23,986 cf  
 Outflow = 6.46 cfs @ 12.09 hrs, Volume= 23,986 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.46 cfs @ 12.09 hrs, Volume= 23,986 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 308.22' @ 12.15 hrs  
 Flood Elev= 308.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	304.52'	<b>18.0" Round SD-18</b> L= 68.2' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 304.52' / 304.15' S= 0.0054 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=307.26' TW=307.38' (Dynamic Tailwater)  
 ↳1=SD-18 ( Controls 0.00 cfs)

**Summary for Pond CB19:**

Inflow Area = 19,090 sf, 83.24% Impervious, Inflow Depth = 4.70" for 25-Year event  
 Inflow = 2.02 cfs @ 12.09 hrs, Volume= 7,469 cf  
 Outflow = 2.02 cfs @ 12.09 hrs, Volume= 7,469 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.02 cfs @ 12.09 hrs, Volume= 7,469 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 308.28' @ 12.20 hrs  
 Flood Elev= 308.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	304.82'	<b>15.0" Round SD-19</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 304.82' / 304.62' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=306.46' TW=307.26' (Dynamic Tailwater)  
 ↳1=SD-19 ( Controls 0.00 cfs)

**Summary for Pond CB2:**

Inflow Area = 16,276 sf, 83.08% Impervious, Inflow Depth = 4.69" for 25-Year event  
 Inflow = 1.72 cfs @ 12.09 hrs, Volume= 6,357 cf  
 Outflow = 1.72 cfs @ 12.09 hrs, Volume= 6,357 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.72 cfs @ 12.09 hrs, Volume= 6,357 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**20013-POST**

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Page 96

Peak Elev= 321.23' @ 12.09 hrs

Flood Elev= 324.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	320.50'	<b>15.0" Round SD-2</b> L= 211.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 320.50' / 319.20' S= 0.0062 ' S= 0.0062 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.68 cfs @ 12.09 hrs HW=321.22' TW=319.90' (Dynamic Tailwater)↑**1=SD-2** (Inlet Controls 1.68 cfs @ 2.28 fps)**Summary for Pond CB20:**

Inflow Area = 46,562 sf, 74.76% Impervious, Inflow Depth = 4.26" for 25-Year event  
 Inflow = 4.44 cfs @ 12.09 hrs, Volume= 16,517 cf  
 Outflow = 4.44 cfs @ 12.09 hrs, Volume= 16,517 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.44 cfs @ 12.09 hrs, Volume= 16,517 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 308.52' @ 12.20 hrs

Flood Elev= 309.83'

Device	Routing	Invert	Outlet Devices
#1	Primary	305.65'	<b>15.0" Round SD-20</b> L= 109.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.65' / 304.62' S= 0.0094 ' S= 0.0094 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.00 cfs @ 12.09 hrs HW=307.26' TW=307.26' (Dynamic Tailwater)↑**1=SD-20** ( Controls 0.00 cfs)**Summary for Pond CB21:**

[80] Warning: Exceeded Pond CB22 by 0.10' @ 12.25 hrs (1.21 cfs 218 cf)

Inflow Area = 35,157 sf, 73.27% Impervious, Inflow Depth = 4.18" for 25-Year event  
 Inflow = 3.28 cfs @ 12.09 hrs, Volume= 12,245 cf  
 Outflow = 3.28 cfs @ 12.09 hrs, Volume= 12,245 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.28 cfs @ 12.09 hrs, Volume= 12,245 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 308.73' @ 12.24 hrs

Flood Elev= 311.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	307.45'	<b>15.0" Round SD-21</b> L= 195.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 307.45' / 305.75' S= 0.0087 ' S= 0.0087 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=3.20 cfs @ 12.09 hrs HW=308.54' TW=307.26' (Dynamic Tailwater)

↑1=SD-21 (Inlet Controls 3.20 cfs @ 2.81 fps)

**Summary for Pond CB22:**

Inflow Area = 19,648 sf, 78.08% Impervious, Inflow Depth = 4.43" for 25-Year event  
 Inflow = 1.95 cfs @ 12.09 hrs, Volume= 7,251 cf  
 Outflow = 1.95 cfs @ 12.09 hrs, Volume= 7,251 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.95 cfs @ 12.09 hrs, Volume= 7,251 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 308.77' @ 12.29 hrs  
 Flood Elev= 311.79'

Device	Routing	Invert	Outlet Devices
#1	Primary	307.75'	<b>15.0" Round SD-22</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 307.75' / 307.55' S= 0.0091 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.51 cfs @ 12.09 hrs HW=308.70' TW=308.54' (Dynamic Tailwater)

↑1=SD-22 (Outlet Controls 1.51 cfs @ 2.09 fps)

**Summary for Pond CB23:**

Inflow Area = 2,841 sf, 100.00% Impervious, Inflow Depth = 5.56" for 25-Year event  
 Inflow = 0.36 cfs @ 12.09 hrs, Volume= 1,317 cf  
 Outflow = 0.36 cfs @ 12.09 hrs, Volume= 1,317 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.36 cfs @ 12.09 hrs, Volume= 1,317 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 303.18' @ 12.13 hrs  
 Flood Elev= 307.04'

Device	Routing	Invert	Outlet Devices
#1	Primary	302.75'	<b>15.0" Round SD-23</b> L= 84.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 302.75' / 301.35' S= 0.0165 ' /' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.24 cfs @ 12.09 hrs HW=303.13' TW=303.01' (Dynamic Tailwater)

↑1=SD-23 (Outlet Controls 0.24 cfs @ 1.11 fps)

**Summary for Pond CB24:**

Inflow Area = 4,144 sf, 57.96% Impervious, Inflow Depth = 3.39" for 25-Year event  
 Inflow = 0.31 cfs @ 12.09 hrs, Volume= 1,170 cf  
 Outflow = 0.31 cfs @ 12.09 hrs, Volume= 1,170 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.31 cfs @ 12.09 hrs, Volume= 1,170 cf

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 98

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 315.23' @ 12.13 hrs

Flood Elev= 319.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	314.90'	<b>10.0" Round SD-25</b> L= 61.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 314.90' / 314.17' S= 0.0119 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.25 cfs @ 12.09 hrs HW=315.22' TW=314.87' (Dynamic Tailwater)↑**1=SD-25** (Outlet Controls 0.25 cfs @ 1.91 fps)**Summary for Pond CB3:**

Inflow Area = 19,781 sf, 80.96% Impervious, Inflow Depth = 4.58" for 25-Year event  
 Inflow = 2.04 cfs @ 12.09 hrs, Volume= 7,545 cf  
 Outflow = 2.04 cfs @ 12.09 hrs, Volume= 7,545 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.04 cfs @ 12.09 hrs, Volume= 7,545 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 319.91' @ 12.09 hrs

Flood Elev= 324.87'

Device	Routing	Invert	Outlet Devices
#1	Primary	319.10'	<b>15.0" Round SD-3</b> L= 146.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 319.10' / 316.35' S= 0.0188 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=1.99 cfs @ 12.09 hrs HW=319.90' TW=317.27' (Dynamic Tailwater)↑**1=SD-3** (Inlet Controls 1.99 cfs @ 2.40 fps)**Summary for Pond CB4:**

Inflow Area = 58,315 sf, 72.73% Impervious, Inflow Depth = 4.15" for 25-Year event  
 Inflow = 4.18 cfs @ 12.11 hrs, Volume= 20,143 cf  
 Outflow = 4.18 cfs @ 12.11 hrs, Volume= 20,143 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 4.18 cfs @ 12.11 hrs, Volume= 20,143 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 314.93' @ 12.11 hrs

Flood Elev= 319.57'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.50'	<b>15.0" Round SD-4</b> L= 145.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.50' / 307.00' S= 0.0448 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=4.11 cfs @ 12.11 hrs HW=314.90' TW=307.58' (Dynamic Tailwater)

↑1=SD-4 (Inlet Controls 4.11 cfs @ 3.35 fps)

**Summary for Pond CB5:**

Inflow Area = 78,608 sf, 75.33% Impervious, Inflow Depth = 4.28" for 25-Year event  
 Inflow = 6.28 cfs @ 12.10 hrs, Volume= 28,046 cf  
 Outflow = 6.28 cfs @ 12.10 hrs, Volume= 28,046 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 6.28 cfs @ 12.10 hrs, Volume= 28,046 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 307.62' @ 12.10 hrs  
 Flood Elev= 314.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	306.00'	<b>18.0" Round SD-5</b> L= 69.4' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 306.00' / 299.00' S= 0.1009 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.26 cfs @ 12.10 hrs HW=307.62' TW=297.11' (Dynamic Tailwater)

↑1=SD-5 (Inlet Controls 6.26 cfs @ 3.55 fps)

**Summary for Pond CB6:**

Inflow Area = 43,539 sf, 71.70% Impervious, Inflow Depth = 4.09" for 25-Year event  
 Inflow = 3.00 cfs @ 12.11 hrs, Volume= 14,838 cf  
 Outflow = 3.00 cfs @ 12.11 hrs, Volume= 14,838 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 3.00 cfs @ 12.11 hrs, Volume= 14,838 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 317.29' @ 12.11 hrs  
 Flood Elev= 320.60'

Device	Routing	Invert	Outlet Devices
#1	Primary	316.25'	<b>15.0" Round SD-6</b> L= 42.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 316.25' / 313.75' S= 0.0595 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=2.97 cfs @ 12.11 hrs HW=317.29' TW=314.91' (Dynamic Tailwater)

↑1=SD-6 (Inlet Controls 2.97 cfs @ 2.74 fps)

**Summary for Pond CB7:**

Inflow Area = 5,108 sf, 93.36% Impervious, Inflow Depth = 5.22" for 25-Year event  
 Inflow = 0.61 cfs @ 12.09 hrs, Volume= 2,221 cf  
 Outflow = 0.61 cfs @ 12.09 hrs, Volume= 2,221 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.61 cfs @ 12.09 hrs, Volume= 2,221 cf

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 100

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 313.63' @ 12.10 hrs

Flood Elev= 317.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	313.20'	<b>15.0" Round SD-7</b> L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 313.20' / 313.00' S= 0.0091 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.55 cfs @ 12.09 hrs HW=313.62' TW=313.40' (Dynamic Tailwater)↑**1=SD-7** (Outlet Controls 0.55 cfs @ 2.24 fps)**Summary for Pond CB8:**

Inflow Area = 7,243 sf, 95.32% Impervious, Inflow Depth = 5.32" for 25-Year event  
 Inflow = 0.88 cfs @ 12.09 hrs, Volume= 3,211 cf  
 Outflow = 0.88 cfs @ 12.09 hrs, Volume= 3,211 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.88 cfs @ 12.09 hrs, Volume= 3,211 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 313.40' @ 12.09 hrs

Flood Elev= 317.42'

Device	Routing	Invert	Outlet Devices
#1	Primary	312.90'	<b>15.0" Round SD-8</b> L= 173.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 312.90' / 304.40' S= 0.0490 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

**Primary OutFlow** Max=0.86 cfs @ 12.09 hrs HW=313.40' TW=307.38' (Dynamic Tailwater)↑**1=SD-8** (Inlet Controls 0.86 cfs @ 1.89 fps)**Summary for Pond CB9:**

[80] Warning: Exceeded Pond CB18 by 0.21' @ 12.05 hrs (3.04 cfs 912 cf)

Inflow Area = 82,890 sf, 78.49% Impervious, Inflow Depth = 4.45" for 25-Year event  
 Inflow = 8.29 cfs @ 12.09 hrs, Volume= 30,737 cf  
 Outflow = 8.29 cfs @ 12.09 hrs, Volume= 30,737 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 8.29 cfs @ 12.09 hrs, Volume= 30,737 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 307.71' @ 12.12 hrs

Flood Elev= 309.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	304.05'	<b>18.0" Round SD-9</b> L= 30.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 304.05' / 303.90' S= 0.0049 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf

**Primary OutFlow** Max=6.61 cfs @ 12.09 hrs HW=307.38' TW=306.41' (Dynamic Tailwater)

↑1=SD-9 (Inlet Controls 6.61 cfs @ 3.74 fps)

**Summary for Pond EP1: EXISTING POND**

Inflow Area = 737,489 sf, 28.34% Impervious, Inflow Depth = 1.80" for 25-Year event  
 Inflow = 10.88 cfs @ 12.20 hrs, Volume= 110,451 cf  
 Outflow = 0.60 cfs @ 19.51 hrs, Volume= 107,604 cf, Atten= 94%, Lag= 439.0 min  
 Discarded = 0.60 cfs @ 19.51 hrs, Volume= 107,604 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 274.41' @ 19.51 hrs Surf.Area= 32,248 sf Storage= 69,988 cf

Plug-Flow detention time= 1,539.9 min calculated for 107,604 cf (97% of inflow)  
 Center-of-Mass det. time= 1,502.8 min ( 2,504.8 - 1,002.0 )

Volume	Invert	Avail.Storage	Storage Description			
#1	270.00'	125,814 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
270.00	3,497	324.2	0	0	3,497	
272.00	14,833	649.1	17,021	17,021	28,680	
274.00	26,459	857.8	40,735	57,757	53,752	
274.25	31,727	898.1	7,263	65,020	59,387	
276.00	37,842	1,007.2	60,794	125,814	76,013	

Device	Routing	Invert	Outlet Devices									
#1	Primary	275.00'	<b>40.0' long x 31.0' breadth Broad-Crested Rectangular Weir</b>									
			Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60									
			Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63									
#2	Discarded	270.00'	<b>0.270 in/hr Exfiltration over Surface area</b>									
			Conductivity to Groundwater Elevation = 269.50'									

**Discarded OutFlow** Max=0.60 cfs @ 19.51 hrs HW=274.41' (Free Discharge)

↑2=Exfiltration ( Controls 0.60 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=270.00' TW=0.00' (Dynamic Tailwater)

↑1=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond EP2-A:**

Inflow Area = 48,015 sf, 2.87% Impervious, Inflow Depth = 0.39" for 25-Year event  
 Inflow = 0.13 cfs @ 12.51 hrs, Volume= 1,563 cf  
 Outflow = 0.04 cfs @ 15.34 hrs, Volume= 1,563 cf, Atten= 71%, Lag= 169.4 min  
 Discarded = 0.04 cfs @ 15.34 hrs, Volume= 1,563 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 102

Peak Elev= 286.72' @ 15.34 hrs Surf.Area= 667 sf Storage= 346 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)  
Center-of-Mass det. time= 102.9 min ( 1,017.5 - 914.6 )

Volume	Invert	Avail.Storage	Storage Description			
#1	286.00'	127,344 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
286.00	312	87.8	0	0	312	
288.00	1,616	165.6	1,759	1,759	1,901	
290.00	2,941	209.3	4,491	6,250	3,258	
292.00	4,321	254.1	7,218	13,468	4,974	
294.00	5,245	280.2	9,551	23,019	6,205	
296.00	6,187	307.0	11,419	34,438	7,588	
298.00	7,236	334.5	13,409	47,847	9,132	
300.00	8,398	360.7	15,620	63,467	10,739	
302.00	9,756	390.2	18,137	81,604	12,655	
304.00	11,390	419.6	21,125	102,729	14,716	
306.00	13,248	458.5	24,615	127,344	17,572	

Device	Routing	Invert	Outlet Devices								
#1	Discarded	286.00'	<b>2.410 in/hr Exfiltration over Surface area</b>								
#2	Primary	305.00'	<b>10.0' long x 12.0' breadth Broad-Crested Rectangular Weir</b>								
			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								

**Discarded OutFlow** Max=0.04 cfs @ 15.34 hrs HW=286.72' (Free Discharge)

↳1=**Exfiltration** (Exfiltration Controls 0.04 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=286.00' TW=0.00' (Dynamic Tailwater)

↳2=**Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Summary for Pond EP2-B:**

Inflow Area = 40,916 sf, 13.06% Impervious, Inflow Depth = 0.97" for 25-Year event  
 Inflow = 0.57 cfs @ 12.17 hrs, Volume= 3,313 cf  
 Outflow = 0.05 cfs @ 15.32 hrs, Volume= 3,313 cf, Atten= 91%, Lag= 188.7 min  
 Discarded = 0.05 cfs @ 15.32 hrs, Volume= 3,313 cf  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 298.23' @ 15.32 hrs Surf.Area= 925 sf Storage= 1,629 cf

Plug-Flow detention time= 422.4 min calculated for 3,311 cf (100% of inflow)

Center-of-Mass det. time= 422.7 min ( 1,234.6 - 811.9 )

Volume	Invert	Avail.Storage	Storage Description			
#1	294.00'	36,931 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)			

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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Page 103

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
294.00	47	32.8	0	0	47
296.00	306	78.6	315	315	468
298.00	846	131.6	1,107	1,422	1,379
300.00	1,635	168.4	2,438	3,861	2,307
302.00	2,660	203.3	4,254	8,114	3,405
304.00	3,939	241.7	6,557	14,671	4,835
306.00	5,478	281.2	9,375	24,046	6,560
308.00	7,458	346.3	12,885	36,931	9,871

Device	Routing	Invert	Outlet Devices
#1	Discarded	294.00'	<b>2.410 in/hr Exfiltration over Surface area</b>
#2	Primary	307.00'	<b>20.0' long x 20.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

**Discarded OutFlow** Max=0.05 cfs @ 15.32 hrs HW=298.23' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.05 cfs)

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=294.00' TW=0.00' (Dynamic Tailwater)

↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Summary for Pond FI-1:**

Inflow Area = 2,959 sf, 61.98% Impervious, Inflow Depth = 3.60" for 25-Year event  
 Inflow = 0.23 cfs @ 12.09 hrs, Volume= 887 cf  
 Outflow = 0.23 cfs @ 12.09 hrs, Volume= 887 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.23 cfs @ 12.09 hrs, Volume= 887 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs  
 Peak Elev= 316.18' @ 12.09 hrs  
 Flood Elev= 319.90'

Device	Routing	Invert	Outlet Devices
#1	Primary	315.90'	<b>10.0" Round SD-24</b> L= 73.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 315.90' / 315.00' S= 0.0123 ' S= 0.0123 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

**Primary OutFlow** Max=0.23 cfs @ 12.09 hrs HW=316.18' TW=315.22' (Dynamic Tailwater)

↑1=SD-24 (Inlet Controls 0.23 cfs @ 1.42 fps)

**Summary for Pond FL-3:**

Inflow Area = 63,509 sf, 35.40% Impervious, Inflow Depth = 2.20" for 25-Year event  
 Inflow = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf  
 Outflow = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

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Type III 24-hr 25-Year Rainfall=5.80"

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Page 104

Peak Elev= 305.07' @ 12.26 hrs

Flood Elev= 307.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	303.50'	<b>10.0" Round SD-29</b> L= 122.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 303.50' / 302.70' S= 0.0066 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

**Primary OutFlow** Max=1.61 cfs @ 12.46 hrs HW=304.52' TW=303.48' (Dynamic Tailwater)↑**1=SD-29** (Inlet Controls 1.61 cfs @ 2.96 fps)**Summary for Pond FL-4:**

Inflow Area = 63,509 sf, 35.40% Impervious, Inflow Depth = 2.20" for 25-Year event  
 Inflow = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf  
 Outflow = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.62 cfs @ 12.46 hrs, Volume= 11,641 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 306.12' @ 12.46 hrs

Flood Elev= 308.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	305.10'	<b>10.0" Round SD-28</b> L= 180.6' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 305.10' / 303.60' S= 0.0083 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.55 sf

**Primary OutFlow** Max=1.61 cfs @ 12.46 hrs HW=306.12' TW=304.52' (Dynamic Tailwater)↑**1=SD-28** (Inlet Controls 1.61 cfs @ 2.96 fps)**Summary for Pond WP1: Wet Pond**

Inflow Area = 358,603 sf, 58.14% Impervious, Inflow Depth = 3.41" for 25-Year event  
 Inflow = 23.28 cfs @ 12.09 hrs, Volume= 101,799 cf  
 Outflow = 9.11 cfs @ 12.43 hrs, Volume= 98,673 cf, Atten= 61%, Lag= 20.1 min  
 Primary = 9.11 cfs @ 12.43 hrs, Volume= 98,673 cf  
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf

Routing by Dyn-Stor-Ind method, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

Peak Elev= 297.49' @ 12.43 hrs Surf.Area= 16,247 sf Storage= 34,458 cf

Flood Elev= 305.00' Surf.Area= 27,662 sf Storage= 177,089 cf

Plug-Flow detention time= 271.1 min calculated for 98,622 cf (97% of inflow)

Center-of-Mass det. time= 252.4 min ( 1,012.3 - 759.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	295.00'	177,089 cf	<b>Custom Stage Data (Irregular)</b> Listed below (Recalc)

**20013-POST**

Type III 24-hr 25-Year Rainfall=5.80"

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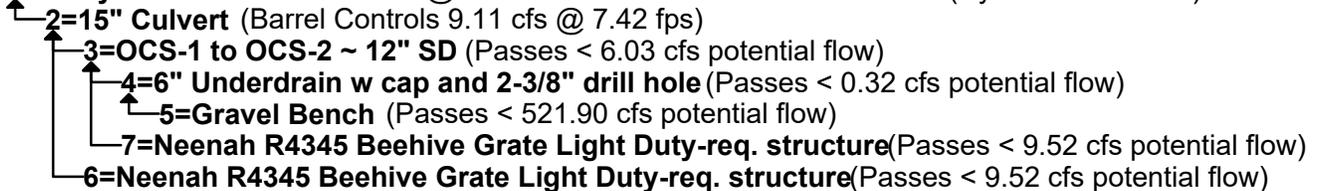
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Page 105

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
295.00	9,812	399.8	0	0	9,812
295.30	11,040	418.7	3,126	3,126	11,049
296.00	14,124	462.7	8,785	11,911	14,151
296.50	14,826	472.1	7,237	19,148	14,888
298.00	17,014	500.4	23,861	43,009	17,196
300.00	20,719	550.3	37,672	80,681	21,499
302.00	24,055	586.4	44,733	125,414	24,956
304.00	27,662	623.9	51,675	177,089	28,766

Device	Routing	Invert	Outlet Devices
#1	Secondary	301.00'	<b>15.0" Round 15" Culvert OVERFLOW</b> L= 230.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 301.00' / 290.00' S= 0.0478 ' S= 0.0478 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Primary	292.70'	<b>15.0" Round 15" Culvert</b> L= 248.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 292.70' / 290.00' S= 0.0109 ' S= 0.0109 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#3	Device 2	292.90'	<b>12.0" Round OCS-1 to OCS-2 ~ 12" SD</b> L= 13.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 292.90' / 292.70' S= 0.0154 ' S= 0.0154 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#4	Device 3	293.00'	<b>2.4" Vert. 6" Underdrain w cap and 2-3/8" drill hole C= 0.600</b> <b>60.0' long x 4.0' breadth Gravel Bench</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32
#5	Device 4	295.30'	
#6	Device 2	296.50'	<b>Neenah R4345 Beehive Grate Light Duty-req. structure</b> 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
#7	Device 3	296.50'	<b>Neenah R4345 Beehive Grate Light Duty-req. structure</b> 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

**Primary OutFlow** Max=9.11 cfs @ 12.43 hrs HW=297.48' TW=272.66' (Dynamic Tailwater)



**Secondary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=295.00' TW=270.00' (Dynamic Tailwater)



**Summary for Link SP1:**

Inflow Area = 860,694 sf, 24.41% Impervious, Inflow Depth = 0.21" for 25-Year event  
Inflow = 3.11 cfs @ 12.29 hrs, Volume= 15,411 cf  
Primary = 3.11 cfs @ 12.29 hrs, Volume= 15,411 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

**Summary for Link SP2:**

Inflow Area = 88,931 sf, 7.56% Impervious, Inflow Depth = 0.00" for 25-Year event  
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0 cf  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-96.00 hrs, dt= 0.05 hrs

## **ATTACHMENT 6**

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# **INSPECTION, MAINTENANCE AND HOUSEKEEPING PLAN**



**INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN**  
(Prepared by Jayson Haskell, PE #13002)

**TURNING LEAF HEIGHTS**  
**WINDHAM, MAINE**

**Responsible Party**

Owner: GATEWAY DEVELOPMENT, LLC  
26 Fieldcrest Road  
Windham, ME 04062

The landowners are 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 such time that a condominium association is created. The roadway and stormwater conveyances within the right of way have been designed to Town standards and are intended to be accepted by the Town of Standish. Once the Town accepts responsibility of the road right of way, if ever, the Town will be responsible for the road and stormwater system within the right of way, but will not be responsible for any drainage conveyances or stormwater management facilities outside of the right of way. Maintenance of this portion of the stormwater infrastructure shall remain the responsibility of the owners or the future condominium association.

Records of all inspections and maintenance work performed must be kept on file with the owner and retained for a minimum of five years. The maintenance log will be made available to the Town and Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the maintenance of stormwater management systems will be performed on the prescribed schedule.

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

**During Construction**

- 1. Inspection and Corrective Action:** It is the contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. Inspection shall occur on all disturbed and impervious areas, erosion control measures, material storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected, including winter work, 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 any proposed stormwater treatment pond.
4. **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 Town staff or MDEP, 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:** It is the contractor's responsibility to 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 measures must be maintained by the owner in effective operating condition. A Qualified Post-Construction Stormwater 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 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 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. Grass to be mowed to a minimum height of six inches. Any woody vegetation growing through riprap linings must also be removed. 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 riprap inlet, at the riprap outlet, and within the conduit; and to repair any erosion damage at the culvert's inlet and outlet.
- D. Catch Basins:** Inspect and, if required, clean out catch basins 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 basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).
- E. Wet Pond:** Inspect gravel trench outlet after every major storm (0.5 inches rainfall over 24 hours) in the first six months to ensure proper function. Thereafter the gravel trench should be inspected at least once every six months with at least one inspection after a major storm event. The wet pond should drain within 24 to 48 hours of the end of the storm event. If water does not drain through the gravel trench within 72 hours, the top several inches of the gravel must be replaced with fresh material. The removed sediment shall be disposed of in an acceptable manner. Wet Ponds should also be inspected annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure. Dredging should occur to remove sediment once the accumulated volume loss reaches 15% or approximately every 15-20 years. The wet pond is not intended to function as a snow storage area. Inspector to verify that winter plowing operations are not dumping or pushing snow into the pond.
- 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. Roofline Drip edges:** The drip edges should be inspected semi-annually and following major storm events for the first year and every six months thereafter. The reservoir crushed stone should drain within 24 to 48 hours following a major storm event. If ponding exceeds 48 hours, the stone reservoir course shall be removed and the filter bed be rototilled to reestablish the soil's filtration capacity. If water ponds in the reservoir course 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 at surface and remove as needed. The drip edges are part of the stormwater management plan and cannot be paved over or altered in anyway.

- H. **Regular Maintenance:** Clear accumulations of winter sand along roadway 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.
  
- I. **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 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**

As a requirement of the MDEP, a certification of the following items must be submitted 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.

### **Duration of Maintenance**

Perform maintenance as described.

**MAINTENANCE LOG**  
**TURNING LEAF HEIGHTS**  
**WINDHAM, MAINE**  
(GENERAL INSPECTION FORM PAGE 1 OF 2)

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.			
Vegetated Swales	Inspect after major rainfall event			
	Inspect for erosion or slumping & repair			
	Mowed at least annually.			
Culverts	Inspect semiannually and after major rainfall.			
	Repair erosion at inlet or outlet of pipe.			
	Repair displaced riprap within inlet and outlet aprons.			
	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.			

## MAINTENANCE LOG

### THE WOODLAND RESIDENTIAL DEVELOPMENT STANDISH, MAINE (GENERAL INSPECTION FORM PAGE 2 OF 2)

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
Roofline Dripedges	Check after each rainfall event to ensure that the stone reservoir drains within 24-48 hours.			
	Replace top several inches of filter if reservoir does not drain within 72 hours.			
	Inspect and remove sediment or debris build up on the surface of the stone			
	Inspect semi-annually for erosion or sediment accumulation and repair as necessary.			
Regular Maintenance	Clear accumulation of winter sand in paved areas annually.			

## MAINTENANCE LOG

### THE WOODLAND RESIDENTIAL DEVELOPMENT STANDISH, MAINE (WET POND INSPECTION FORM WP-1)

Maintenance Item	Maintenance Event	Date Performed	Responsible Personnel	Comments
Sediment Pre-treatment	Inspect annually			
	Remove sediment as necessary to maintain a minimum 50% sediment storage volume			
Wet Pond	Check after each rainfall event to ensure that pond drains within 24-48 hours.			
	Replace top several inches of gravel in trench if pond does not drain within 72 hours.			
	Inspect annually for erosion or sediment accumulation and repair as necessary.			
	Inspector to verify wet pond is not utilized for snow storage			
Culverts	Inspect semiannually and after major rainfall.			
	Repair erosion at outlet of pipe.			
	Repair displaced riprap at outlet of culvert.			
	Clean accumulated sediment in culvert when >20% full.			
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.			

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***SECTION 17***

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**SOILS INFORMATION**

## **Section 17 – Soils Information**

A Class-A High Intensity Soil Survey was performed by Mark Hampton. The Soils Report and Test Pit Logs are included in this section, and the Soils Map is included in the Plan Set. A Wetlands Evaluation and Vernal Pool Assessment was conducted by Alex Finamore, and the Wetlands Report is included in this section.



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8024

Turning Leaf Heights  
Turning Leaf Drive  
Windham, ME  
Gateway Development, LLC

**Soil Narrative Report**

DATE: Soil Profiles observed on August 8, 2024

BASE MAP: Base plan provided by DM Roma Consulting Engineers  
Scale 1 inch equals 100 feet and two foot contours.

GROUND CONTROL: Soil survey boundaries located by Mark Hampton Associates,  
Inc. for Class A Soil Survey

**Class A-High Intensity Soil Survey (Minimum Standards)**

Mapping units of 1/8 acre or larger.  
Scale of 1"= 100 feet or larger.  
Up to 25% inclusions in mapping units of which no more than 15% may be dissimilar soils.  
Ground Control – test pits located under direction of professional land surveyor or professional engineer.  
Base Map – 2 foot contour intervals

**Provided:**

Mapping units of 1/8 acre or larger  
Base map scale of 1"= 100 feet.  
Up to 25 percent inclusions in mapping units of which no more than 15 percent is dissimilar soils.  
Baseline information and test pits located by pacing and taping from known survey control points.  
Ground topographic survey with two foot contours and ground control provided.

The accompanying soil profile descriptions, soil map, and this soil narrative report were done in accordance with the standards adopted by the Maine Association of Professional Soil Scientists, and the Maine Board of Certification of Geologists and Soil Scientists.

Mark J. Hampton C.S.S. #216, L.S.E. #263 August 15, 2024  
Mark J. Hampton Date





MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

8024

Turning Leaf Heights  
Turning Leaf Drive  
Windham, ME  
Gateway Development, LLC

**Colton**  
(Typic Haplorthods)

**SETTING**

PARENT MATERIAL: Derived from glacial-fluvial, glacio-lacustrine sand.  
LANDFORM: Outwash plains, deltas, and terraces  
POSITION IN LANDSCAPE: Sidehill, shoulders and plains  
SLOPE GRADIENT RANGES: (A) 0-3%, (C) 8-15%, (D) 15-25%

**COMPOSITION AND SOIL CHARACTERISTICS**

DRAINAGE CLASS: Excessively well drained. Depth to seasonal high watertable greater than 4 feet throughout the year.

TYPICAL PROFILE:

<u>Surface Layer:</u>	Grayish brown, sand, 0-8"
<u>Subsurface Layer:</u>	Reddish brown, gravelly loamy sand, 8-16"
<u>Subsoil Layer:</u>	Yellow-brown, stony, very gravelly sand, 16-25"
<u>Substratum:</u>	Pale brown stony, gravelly sand, 25-72"

HYDROLOGIC GROUP: Group A  
SURFACE RUNOFF: Very slow to medium  
PERMEABILITY: Rapid or very rapid  
DEPTH TO BEDROCK: Greater than 65 inches  
HAZARD TO FLOODING: None

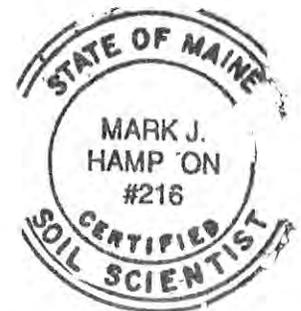
**INCLUSIONS**

(Within Mapping Unit)

CONTRASTING: Croghan, Naumburg, Au Gres

**USE AND MANAGEMENT**

Development: There are no limiting factors for building site development.





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8024

Turning Leaf Heights  
Turning Leaf Drive  
Windham, ME  
Gateway Development, LLC

**Au Gres**  
(Typic Endoaquods)

**SETTING**

PARENT MATERIAL: Derived from outwash and deltaic sandy deposits.  
LANDFORM: Outwash plains, deltas, and terraces  
POSITION IN LANDSCAPE: Low depressions and plains  
SLOPE GRADIENT RANGES: (A) 0-3%, (B) 3-8%

**COMPOSITION AND SOIL CHARACTERISTICS**

DRAINAGE CLASS: Somewhat poorly drained. Depth to seasonal high watertable ranges from 0.0 to 1.0 feet below the surface at some time from November to May.

TYPICAL PROFILE: Surface Layer: Black loamy sand, 0-7"  
Subsurface Layer: Reddish brown sand, 8-15"  
Subsoil Layer: Brown sand, 15-32"  
Substratum: Gray sand, 42-65"

HYDROLOGIC GROUP: Group C  
SURFACE RUNOFF: Slow to very slow  
PERMEABILITY: Rapid or very rapid  
DEPTH TO BEDROCK: Greater than 65 inches  
HAZARD TO FLOODING: None

**INCLUSIONS**

(Within Mapping Unit)

CONTRASTING: Naumburg, Colton



**USE AND MANAGEMENT**

Development: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended.



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8024

Turning Leaf Heights  
Turning Leaf Drive  
Windham, ME  
Gateway Development, LLC

**Naumburg**  
(Typic Endoaquods)

**SETTING**

PARENT MATERIAL: Derived from outwash and deltaic sandy deposits.  
LANDFORM: Outwash plains, deltas, and terraces  
POSITION IN LANDSCAPE: Low depressions and plains  
SLOPE GRADIENT RANGES: (A) 0-3%

**COMPOSITION AND SOIL CHARACTERISTICS**

DRAINAGE CLASS: Poorly drained. Depth to seasonal high watertable ranges from 0.0 to 1.0 feet below the surface at some time from November to May.

TYPICAL PROFILE: Surface Layer: Dark Brown loamy sand, 0-7"  
Subsurface Layer: Reddish brown sand, 8-15"  
Subsoil Layer: Brown fine sand, 15-32"  
Substratum: Gray sand, 42-65"

HYDROLOGIC GROUP: Group C  
SURFACE RUNOFF: Slow to very slow  
PERMEABILITY: Rapid or very rapid  
DEPTH TO BEDROCK: Greater than 65 inches  
HAZARD TO FLOODING: None



**INCLUSIONS**  
(Within Mapping Unit)

CONTRASTING: Au Gres, Colton

**USE AND MANAGEMENT**

DEVELOPMENT: The limiting factor for building site development is wetness due to the presence of a high watertable for a portion of the year. Proper foundation drainage or site modification is recommended. Naumburg may be hydric and may be mapped as wetlands.

SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Turning Leaf Heights Applicant Name: Turning Leaf Development LLC Project Location (municipality): Windham

Exploration Symbol # SS-1 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 2 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-2 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 12 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-4 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 2 Percent Hydric Soil No Yes Hydrologic Soil Group

Exploration Symbol # SS-5 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Drainage Class ED SED WD MWD SPD PD VPD Slope 10 Percent Hydric Soil No Yes Hydrologic Soil Group

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: [Handwritten Signature] Name Printed: Mark J. Hampton

Date: 08/15/2024 SS License No. 216



SOIL PROFILE / CLASSIFICATION INFORMATION

SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES

Project Name: Turning Leaf Heights Applicant Name: Turning Leaf Development LLC Project Location (municipality): Windham

Exploration Symbol # SS-5 Test Pit Boring Probe 0 Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Slope 2 Percent. Soil Group: ED SED WD MWD SPD PD VPD.

Exploration Symbol # SS-6 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Colton Limiting Factor >48 Slope 18 Percent. Soil Group: ED SED WD MWD SPD PD VPD.

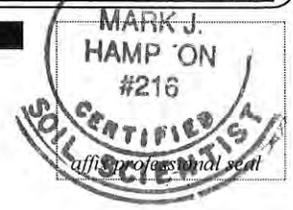
Exploration Symbol # SS-7 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Naumburg Limiting Factor 6 Slope 2 Percent. Soil Group: ED SED WD MWD SPD PD VPD.

Exploration Symbol # SS-8 Test Pit Boring Probe Organic horizon thickness Ground surface elev. Depth: of exploration, or to refusal. Soil Series/Phase Name: Au Gres Limiting Factor 10 Slope 2 Percent. Soil Group: ED SED WD MWD SPD PD VPD.

SOIL SCIENTIST INFORMATION AND SIGNATURE

Signature: Mark J. Hampton Name Printed: Mark J. Hampton

Date: 08/15/2024 SS License No. 216



**SOIL PROFILE / CLASSIFICATION INFORMATION**

**SOIL SCIENTIST DESCRIPTION OF SOIL CONDITIONS AT PROJECT SITES**

Project Name: Turning Leaf Heights      Applicant Name: Turning Leaf Development LLC      Project Location (municipality): Windham

Exploration Symbol # SS-9     Test Pit     Boring     Probe  
0 " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0	O/E Dark Brown	Loamy Sand	Grand	Very Friable	
10	Bhs Brown	Sand	Weak Grand	Loose	
20	Bs1 Gray	Gravel	Fine Grandu	Friable	Common and Distinct
30	BC Brown	Sand	Single Grain	Loose	
40	C Tan	Sand	Single Grain	Loose	

Soil Series/Phase Name: Au Gres      Limiting Factor 13 "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope 6 Percent    Hydric Soil:  No  Yes    Hydrologic: \_\_\_\_\_  
 SPD  PD  VPD    Soil Group: \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil:  No  Yes    Hydrologic: \_\_\_\_\_  
 SPD  PD  VPD    Soil Group: \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil:  No  Yes    Hydrologic: \_\_\_\_\_  
 SPD  PD  VPD    Soil Group: \_\_\_\_\_

Exploration Symbol # \_\_\_\_\_     Test Pit     Boring     Probe  
 \_\_\_\_\_ " Organic horizon thickness    Ground surface elev. \_\_\_\_\_  
 \_\_\_\_\_ " Depth:  of exploration, or  to refusal

Horizon	Color	Texture	Structure	Consistence	Redox
0					
10					
20					
30					
40					
50					
60					

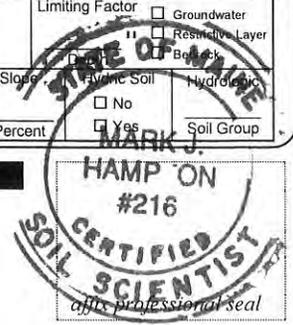
Soil Series/Phase Name: \_\_\_\_\_      Limiting Factor \_\_\_\_\_ "     Groundwater  
 Restrictive Layer  
 Bedrock

Drainage Class:  ED  SED  WD  MWD    Slope \_\_\_\_\_ Percent    Hydric Soil:  No  Yes    Hydrologic: \_\_\_\_\_  
 SPD  PD  VPD    Soil Group: \_\_\_\_\_

**SOIL SCIENTIST INFORMATION AND SIGNATURE**

Mark J. Hampton  
 Signature  
 Mark J. Hampton  
 Name Printed

08/15/2024  
 Date  
216  
 SS License No.





To: Dustin Roma  
DM Roma Consulting Engineers  
PO Box 1116  
Windham, ME 04062

Date: December 18, 2024

From: Alexander A. Finamore, CWS, LSE  
Mainely Soils, LLC

Re: Turning Leaf Heights, Windham, ME – Wetland Delineation  
and Vernal Pool Survey Memorandum

---

At the request of DM Roma Consulting Engineers (the “Client”), Mainely Soils conducted on-site wetland and waterbody delineations and vernal pool surveys on a parcel, approximately 11 acres in size located at the terminus of Turning Leaf Drive in Windham, Maine. These field investigations were performed to provide baseline environmental data to inform the client of potential development/use of the site. The natural resources assessments described in this memorandum were completed in April and May, 2024. In addition to describing the identified resources this report describes the existing conditions within the study area, and the methodologies employed for the assessments.

## PROJECT DESCRIPTION

The project site is located within the Commercial 1 District along the Route 302 corridor in the Town of Windham. The site is currently a vacant lot consisting of forested uplands and wetlands. Surrounding land use of the site is commercial with Ditch Brook located along the eastern border. Access to the site is currently from Turning Leaf Drive and Drive In Lane to the west. In total, the wetland and waterbody delineation and vernal pool survey area encompassed approximately 11 acres, identified by the Town of Windham as Tax Map 14, Lot 9B.

## SITE DESCRIPTION

The Study Area occurs in the Sebago-Ossipee Hills & Plains biophysical region of Maine (Schlawin & Cutko, 2014). The Sebago-Ossipee Hills & Plains biophysical region is characterized by variable topography, ranging from plains to low hills of low relief along the Atlantic coast. Interior areas are high hills to semi-mountainous, parts of which were glaciated. Vegetation is characterized by tall, cold-deciduous broadleaf forests that have a high proportion of mesophytic species. Bedrock geology is varied and complex, consisting of sedimentary, igneous, and metamorphic rocks. Forest vegetation includes oak-hickory, white-red-jack pine, maple-beech-birch, and aspen-birch cover types. The survey area is located within the Presumpscot River watershed (Hydrologic Unit Classification (HUC) 8 identification 01060001).

The Natural Resource Conservation Service soil survey mapping identifies native soils at the site as being formed in glaciofluvial materials on outwash terraces, outwash plains, outwash deltas, kames, kame terraces, and eskers (Hinckley series). (Web Soil Survey, 2024).

## Study Methodology

Mainely Soils conducted wetland delineation field work within the survey area on April 23 and May 3 of 2024. The boundary of wetlands were delineated in accordance with the Army Corps of Engineers 1987 Wetland Delineation Manual (1987 Manual) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) (Regional Supplement, 2012). All wetland delineations were conducted using the Routine Determination Methods, which requires that a wetland contain a dominance of hydrophytic vegetation, hydric soils, and evidence of hydrology in order to be considered a wetland. Wetland boundaries were located and recorded in the field using a Trimble® GPS unit capable of sub meter accuracy, post processed, and transferred and incorporated onto project mapping.

field notes were taken to record the classification of each wetland in accordance with the Classification of Wetlands and Deepwater Habitats of the United States, general site characteristics, unique qualities observed during the site assessment, and other considerations relevant to investigation findings and the future completion of a wetlands functions and values assessment in accordance with the Highway Methodology Workbook: Supplement. Representative photographs of each wetland were taken, field sketches were labeled of the wetland boundary on an aerial photograph-based map, and notes were recorded on the flagging sequence for each wetland.

Mainely Soils also surveyed the site for streams, in accordance with the State of Maine Natural Resources Protection Act stream criteria and definitions. Ditch Brook formed the eastern border of the site..

Vernal pools are small (usually less than one acre), seasonal wetlands that lack perennial inlet or outlet streams and have no permanent fish populations (Calhoun and deMaynadier 2004). Vernal pools are valuable wetland wildlife habitat because of their potentially high biological productivity and use as breeding habitat by specialized animal communities. The characteristics of vernal pools including size, duration of flooding, substrate type and vegetative community are directly affected by a variety of factors such as landscape setting, surficial geology, soil type, and surrounding vegetation (Maine Audubon Society 1999).

Chapter 335 of DEP Rules – Significant Wildlife Habitat defines a vernal pool as follows:

“A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet or outlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubranchipus* sp.), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.”

“Optimal times for counting egg masses of pool-breeding amphibians vary according to geographic location and weather. For instance, during cold springs, breeding can begin as much as 2 weeks later than it does in warm, wet springs. The optimal time to count masses is just past the peak breeding period. For wood frogs, this occurs approximately 2 weeks after they start full choruses. Wood frog egg masses hatch very quickly and are difficult to count much past peak breeding. Salamanders have a more extended breeding period and their eggs do not hatch as quickly as those of wood frogs. Therefore, surveys to count salamander egg masses should be conducted slightly later in the breeding season, generally 2-3 weeks following wood frog egg mass counts. The following are rough guidelines for optimal times for counting egg masses:”

Geographic Region	Wood Frogs	Spotted & Blue Spotted Salamanders
Northern Maine	May 5- May 20	June 5
Central Maine	April 5 – May 10	May 5 – May 25
Southern Maine	April 10 – April 25	April 20 – May 10

Vernal pool surveys were conducted at the subject site on May 6th and May 12th, 2019. Mainely Soils identified pooled areas containing water and exhibiting other physical characteristics typically associated with vernal pools. Specifically,

Mainly Soils evaluated the contour of the pool bottom and sides, the current depth of water in the pool, the substrate of the pool bottom, and the presence of an inlet or outlet in the form of a perennial stream. When a vernal pool depression is found, a standard field survey data form was completed to document the location and general surroundings and the pool was photographed. In addition, survey points were taken using a global positioning system (GPS) unit (Trimble GeoXT) to delineate the pool boundary.

Mainly Soils relied on two primary criteria: (1) direct evidence of amphibian breeding activity; and (2) evidence of seasonal flooding and drying within a topographic depression not connected to a river, stream or brook. Direct evidence of amphibian breeding activity included the observation of breeding adults, egg masses, and larvae of the following amphibian species: wood frog, spotted salamander, blue-spotted salamander, and four-toed salamander. Other evidence of vernal pool habitat may include the presence of fairy shrimp in the water column. Evidence of seasonal flooding and drying included the observation of water marks on trees, shrubs and boulders, water stained leaves with silt deposits, and buttressed tree trunks and exposed roots.

Confirmation of amphibian breeding included the presence of individual adults in the pool taking part in courtship activities, egg masses, wood frog tadpoles, or Ambystomid salamander larvae. Once it would be determined that an area was functioning as a vernal pool, further assessment was conducted to determine if it was significant (per state regulations). Criteria for identifying an SVP include:

- Species abundance (number of egg masses);
  - Blue spotted salamanders - Presence of 10 or more egg masses
  - Spotted salamanders - Presence of 20 or more egg masses
  - Wood frogs - Presence of 40 or more egg masses
- Presence of fairy shrimp (presence in any life stage); or
- Use of the pool by one or more state-listed endangered or threatened species that commonly require a vernal pool to complete a critical life stage.

If any one of these criteria were met, the pool was considered significant.

## Study Results

Using the methodologies described above, a wetland delineation was performed on May 3, 2024. A description of the identified resources follows. Supporting attachments include Representative Photographs (Attachment 1). Wetland Delineation Data Forms can be provided upon request.

Wetlands at the project site consisted of two distinct features. Wetland A was located within a forested setting within the floodplain of Ditch Brook along the eastern extent of the site and drained in a southerly direction. Wetland A was characterized as a seasonally saturated palustrine forested floodplain wetland (PFO1E) dominated by deciduous trees. Wetland vegetation in this area was dominated by red maple (*Acer rubrum*), witch hazel (*Hamamelis virginiana*), highbush blueberry (*Vaccinium corymbosum*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), and common horsetail (*Equisetum arvense*). Soils within this wetland consisted of a thin dark muck over a depleted sand substratum meeting the definition of hydric soil criteria A11: Depleted Below Dark Surface. Evidence of wetland hydrology included small pockets of standing water, water stained leaves, and saturation to the soil surface at the time of field investigations.

Wetland B was an isolated feature located in the north east extent of the site. Only the southern portion of this wetland was located within the Study Parcel. This wetland was a seasonally flooded palustrine forested/scrub-shrub deciduous wetland (PFO/PSS1B). Dominant vegetation included red maple, highbush blueberry, winterberry (*Ilex verticillata*), maleberry (*Lyonia ligustrina*), goldthread (*Coptis trifolia*), fringed sedge (*Carex crinita*), cinnamon fern, and sensitive fern. Soils within this wetland consisted of a thin dark muck over a depleted sand substratum meeting the definition of hydric soil criteria A11: Depleted Below Dark Surface. Evidence of wetland hydrology included small pockets of standing water, water stained leaves, and saturation to the soil surface at the time of field investigations.

Ditch Brook was located along the eastern extent of the site and flowed in a southerly direction, Ditch Brook was approximately 35 feet wide, contained 18 inches of flowing water, and had a cobble gravel substrate.

Overall, vernal pools are classified into one of four categories: (1) MDEP SVPs, as discussed above; (2) U.S. Army Corps of Engineers (ACOE) significant (manmade) vernal pools, including manmade or other manipulated features that met the state criteria for amphibian egg mass counts; (3) ACOE non-significant (natural or manmade) vernal pools, including both natural and manmade features that did not meet the state criteria for amphibian egg mass counts; and (4) non-jurisdictional features which includes all other areas where amphibian breeding was documented but did not meet the state criteria for egg mass counts or the state and federal definitions of a vernal pool.

One vernal pool was identified within Wetland B which straddled the property line. Therefore only that portion of the pool that was on the subject parcel was surveyed (See Attachment 2 – Maine State Vernal Pool Assessment Form) . Approximately 10 wood frog tadpoles were observed on the May 3rd visit. Evidence of spotted salamander use included the observation of six spotted salamander egg masses scattered throughout the observable area onsite of the pool on April 23 and May 3 attached to submerged woody debris. The pool contained up to 3 feet of standing water within a kettle hole depression. The pool extended offsite to the north and this portion was not surveyed. Therefore the pool was characterized as a straddle pool with an insufficient abundance of species surveyed to characterize it as an SVP.

## Summary

The information contained in this memorandum was collected in order to provide detailed, on-site information regarding wetland and waterbody resources. This information is intended to be used for project planning purposes and to support permitting needs. Two wetlands were delineated on the site and were identified as Wetlands A and B. The wetland features were located within sandy glacial outwash soils in depressional features. The wetlands generally exhibited seasonally saturated/flooded hydroperiods, and provided groundwater discharge, floodflow alteration, wildlife habitat, and stormwater/water quality maintenance functions. One vernal pool was observed, but was only partially located onsite and did not meet the abundance criteria to be a MDEP SVP. One perennial stream (Ditch Brook) was observed.

Wetlands are regulated by the U.S. Army Corps of Engineers under the federal Clean Water Act, and by the Maine Department of Environmental Protection under the Maine Natural Resources Protection Act (NRPA). The State of Maine further differentiates wetlands under NRPA by regulating certain wetlands as “wetlands of special significance” (WOSS). Wetlands within 25 feet of Ditch Brook may be considered a WOSS. Additionally, land within 250 feet of Wetland B may have development restrictions as defined by the MDEP . Impacts to wetlands resulting from proposed project development require that permits first be obtained from the MDEP and the USACE before proceeding with construction, and where applicable, municipal governing bodies. Consultation with these agencies early in the project design process is encouraged.

Wetlands within the survey area may be further regulated under municipal ordinances, such as Shoreland Zone, Site Plan Review, or other local ordinances.

## References:

- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe.1979. Classification of Wetlands and Deepwater Habitat in the United States. U.S. Fish and Wildlife Service. FWS/OBD-79/31 103pp.
- Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

Turning Leaf Heights, Windham, ME – Wetland Delineation and Vernal  
Pool Memorandum  
Page 5 of 7  
December 18, 2024

U.S. Army Corps of Engineers (USACE). 2012. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region. ERDC/EL TR-12-01. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

Schlawin, J. Cutko, A. Maine Natural Areas Program. 2014. A Conservation Vision for Maine Using Ecological Systems.

Web Soil Survey. 2025. U.S. Department of Agriculture – Natural Resources Conservation Service.  
<http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>

**Attachments:**

1. Representative Site Photographs
2. Maine State Vernal Pool Assessment Form

**Attachment 1**  
**Representative Site Photographs**

Site Photographs - April 23 and May 3, 2024  
Turning Leaf Heights - Windham, Maine

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**Photo 1:** View looking North at Wetland A from flag 1



**Photo 2:** View looking north at Wetland A from flag 5

Site Photographs - April 23 and May 3, 2024  
Turning Leaf Heights - Windham, Maine

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**Photo 3:** View looking downstream at Ditch Brook



**Photo 4:** View looking upstream at Ditch Brook

Site Photographs - April 23 and May 3, 2024  
Turning Leaf Heights - Windham, Maine

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**Photo 5:** View looking southeasterly at Wetland B - Vernal Pool 1



**Photo 6:** View looking northwesterly at Wetland B - Vernal Pool 1

Site Photographs - April 23 and May 3, 2024  
Turning Leaf Heights - Windham, Maine

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Photo 7: Typical upland view



Photo 8: Spotted Salamander egg mass within Vernal Pool 1

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***SECTION 18***

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**WATER SUPPLY FOR DOMESTIC AND FIRE PROTECTION USE**

## **Section 18 – Water Supply for Domestic and Fire Protection Use**

The project plans have been reviewed and approved by the Portland Water District. A copy of the Ability to Serve Approval Letter has been attached to this section. The sprinkler designs for the buildings will be completed and submitted to the Town with the building permits.



## Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

February 7, 2025

Jayson R. Haskell, P.E.  
DM Roma

Re: Turning Leaf Drive, WI  
Ability to Serve with PWD Water and Wastewater

Dear Mr. Haskell:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on July 5, 2022. Based on the information provided per plans dated January 22, 2025, 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 and wastewater systems as currently designed and is valid for eighteen (18) months after the date of issue. Any changes affecting the approved water and wastewater systems 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 Turning Leaf Drive, from the end of the previously installed water main to a point equivalent to the end of the first phase of development within Turning Leaf Drive.
- A sewer main extension is required within Turning Leaf Drive to provide sewer service to the proposed development. Connection of the proposed sewer main to the future collection system in River Road shall be done under a separate project requiring separate approvals.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

**Prior to construction, the owner or contractor will need to complete a Main Extension Initiation form and pay all necessary fees.**



### Existing Site Service

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

### Water System Characteristics

According to District records, there is an 8-inch diameter ductile iron water main in Turning Leaf Drive and a public fire hydrant located adjacent to the site. The estimated static pressure in the area is 80 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 Windham 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

A handwritten signature in black ink, appearing to read 'Robert A. Bartels', written in a cursive style.

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

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***SECTION 19***

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**PROVISIONS FOR WASTEWATER DISPOSAL**

## **Section 19 – Provisions for Wastewater Disposal**

The project has a total wastewater design flow of approximately 27,720 gallons per day based on a unit mixture of 32 units with 3 bedrooms, 84 units with 2 bedrooms and 33 units with 1 bedroom or studio. Private sewer collection infrastructure will be constructed to convey wastewater to an on-site private pump station. The pump station will convey the wastewater to a new public sewer main that will be constructed in Turning Leaf Drive.

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## *SECTION 20*

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PROJECT COST ESTIMATE AND FINANCIAL CAPACITY

## Section 20 – Project Cost Estimate and Financial Capacity

The project sitework costs are estimated to be the following:

1. Site Preparation	\$280,000
2. Aggregates for Roads, Walks & Parking	\$300,000
3. Bituminous Pavement	\$220,000
4. Curbing and Sidewalks	\$120,000
5. Electrical Conduit and Risers	\$140,000
6. Stormwater BMPs	\$120,000
7. Storm Drain Collection	\$100,000
8. Water main and services	\$165,000
9. Wastewater collection & pump	\$150,000
10. Site Lighting	\$90,000
11. Building Foundations & Excavation	\$800,000
12. Landscaping & Lawns	<u>\$200,000</u>

Total Sitework Estimate: \$2,685,000

The 149-units of building cost is estimated at \$18,000,000.

The applicant previously purchased the land so there is no additional land acquisition cost.

Enclosed is a letter from Maine Community Bank indicating that the applicant has the financial capacity to complete the project.



October 8, 2024

Gateway Development, LLC  
4 Commons Ave, Suite 12  
Windham, ME 04062

To Whom It May Concern,

Blaine Rich of Gateway Development, LLC currently has a well-established relationship with Maine Community Bank and has sufficient financial capacity to undertake the development of the proposed project depicted on the Site & Subdivision Plan for Turning Leaf Heights.

Should you need additional information, please do not hesitate to contact me directly.

Sincerely,

*Lisa Hughes*

Lisa Hughes  
Vice President  
(207) 571-5620  
lhughes@mainecb.com

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## ***SECTION 21***

---

**SITE VICINITY MAP – USGS QUADRANGLE**



**VICINITY MAP**

TURNING LEAF DRIVE  
WINDHAM, MAINE

FOR:  
GATEWAY DEVELOPMENT, LLC

SCALE: 1"=2000'  
DATE: 6-5-2023  
JOB NUMBER: 20013

**DM ROMA**

CONSULTING ENGINEERS

PO BOX 1116  
WINDHAM, ME 04062  
(207) 310 - 0506

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***SECTION 22***

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**BUILDING ARCHITECTURAL PLANS**





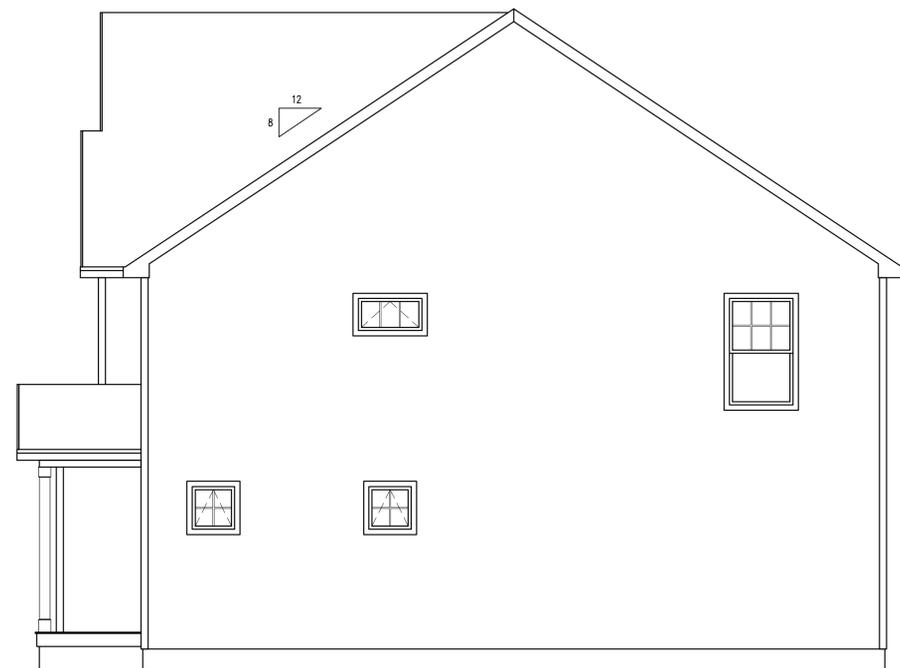




FRONT ELEVATION  
1/4" = 1'-0"

**CONSTRUCTION NOTE:**

CONTRACTOR IS TO VERIFY GRADE AND ALL DIMENSIONS IN FIELD BEFORE CONSTRUCTION. DESIGN SHOWN MAY DIFFER FROM ACTUAL FINISHED CONSTRUCTION. FINAL MATERIALS, WINDOW/DOOR LOCATIONS AND SIZES, TO BE DETERMINED PER OWNER/CONT. SITE CONDITIONS; AND OR LOCAL CODES.



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

**CONSTRUCTION NOTE:**

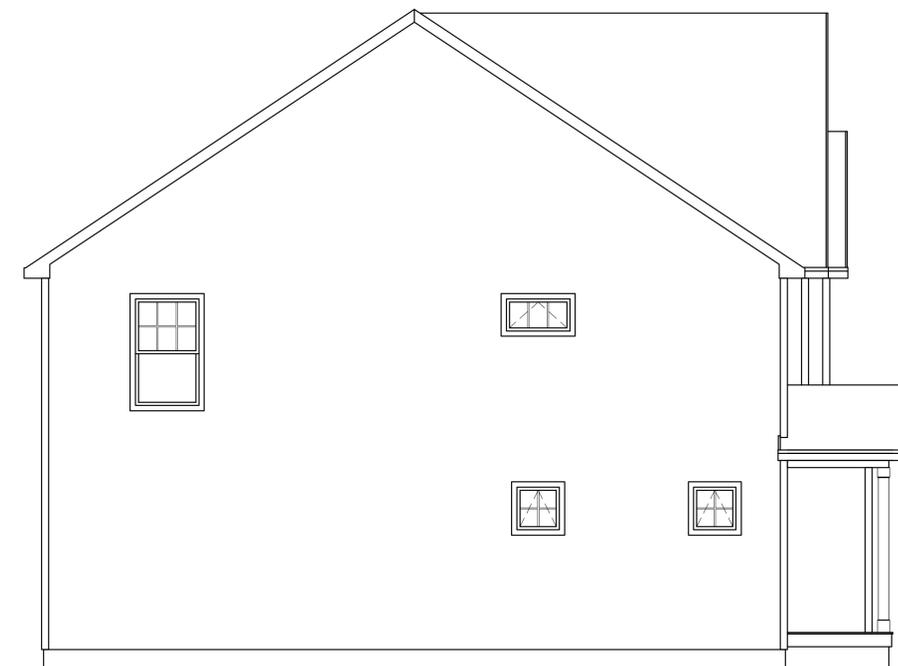
CONTRACTOR IS TO VERIFY GRADE AND ALL DIMENSIONS IN FIELD BEFORE CONSTRUCTION. DESIGN SHOWN MAY DIFFER FROM ACTUAL FINISHED CONSTRUCTION. FINAL MATERIALS, WINDOW/DOOR LOCATIONS AND SIZES, TO BE DETERMINED PER OWNER/CONT. SITE CONDITIONS; AND OR LOCAL CODES.



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

**CONSTRUCTION NOTE:**

CONTRACTOR IS TO VERIFY GRADE AND ALL DIMENSIONS IN FIELD BEFORE CONSTRUCTION. DESIGN SHOWN MAY DIFFER FROM ACTUAL FINISHED CONSTRUCTION. FINAL MATERIALS, WINDOW/DOOR LOCATIONS AND SIZES, TO BE DETERMINED PER OWNER/CONT. SITE CONDITIONS; AND OR LOCAL CODES.



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

**CONSTRUCTION NOTE:**

CONTRACTOR IS TO VERIFY GRADE AND ALL DIMENSIONS IN FIELD BEFORE CONSTRUCTION. DESIGN SHOWN MAY DIFFER FROM ACTUAL FINISHED CONSTRUCTION. FINAL MATERIALS, WINDOW/DOOR LOCATIONS AND SIZES, TO BE DETERMINED PER OWNER/CONT. SITE CONDITIONS; AND OR LOCAL CODES.



Turning Leaf Heights  
Elevations  
Windham, ME

DESIGNS ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY. IF USED FOR CONSTRUCTION, THE CONTRACTOR ASSUMES ALL RESPONSIBILITY FOR LOCAL CODE COMPLIANCE. ALL DRAWINGS, PRINTS AND ELEVATIONS ARE PROVIDED TO LOCAL CLIENTS WITH COMMON BUILDING PRACTICES AND LOCAL CODES. NONE OF THE EMPLOYEES OF SURVEYORS, ALL DIMENSIONS AND SPECIFICATIONS SHOULD BE VERIFIED BY CLIENT. BEGINS IF DIMENSIONS AND SPECIFICATIONS ARE NOT VERIFIED BY CLIENT AND/OR LOCAL CODES. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SPECIFICATIONS. LOCAL CHANGES AND/OR REVISIONS MADE TO PLAN BY CLIENT AND/OR CONTRACTOR.

Revisions:

00/00/00	

Date : 08/20/18

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

Drawn By: JTM

Project: D072718

Sheet Number:

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## *SECTION 23*

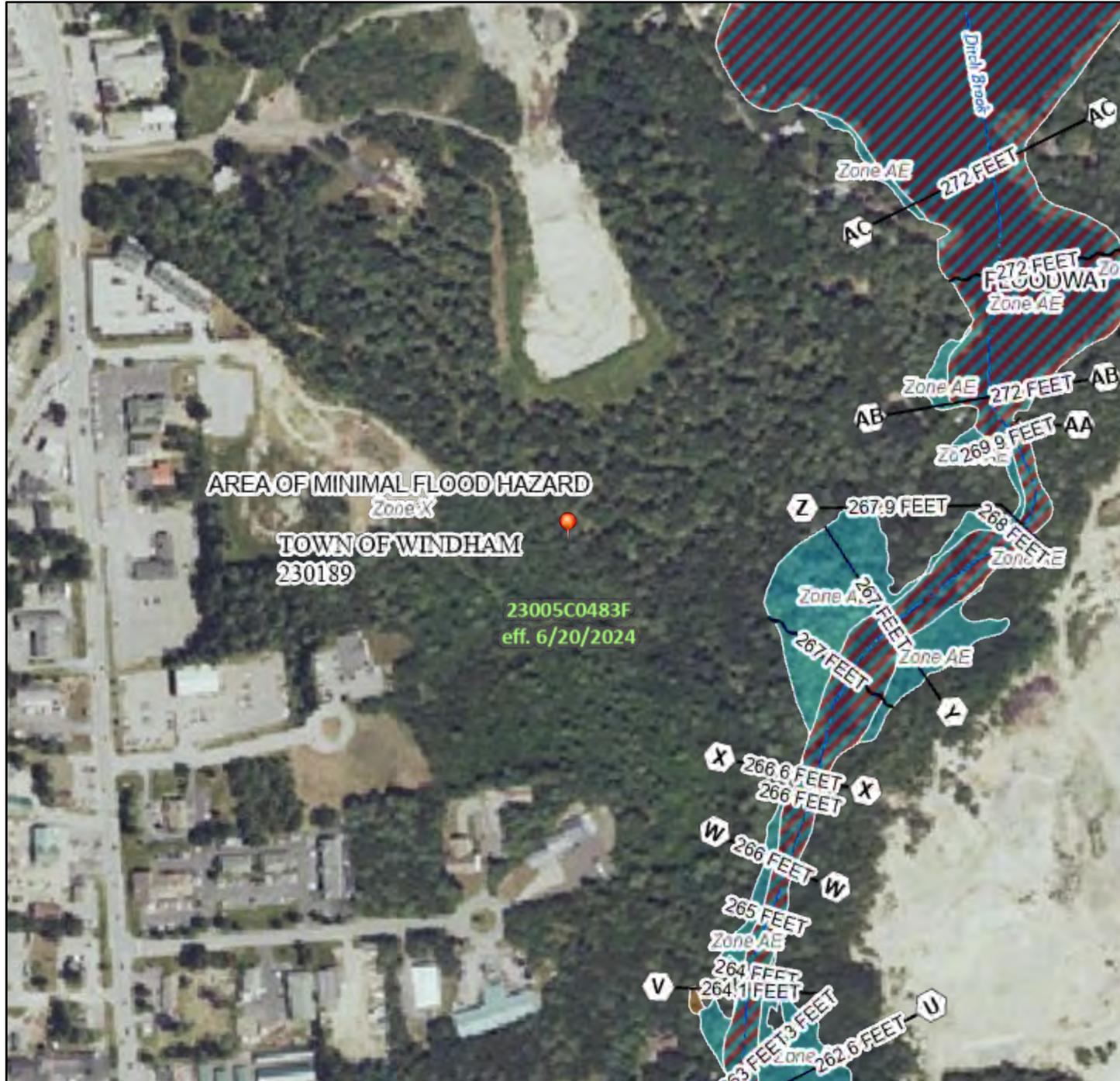
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### FLOOD ZONES

# National Flood Hazard Layer FIRMMette



70°26'7"W 43°49'49"N



1:6,000 70°25'30"W 43°49'23"N

Basemap Imagery Source: USGS National Map 2023

## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance
MAP PANELS		17.5 Water Surface Elevation
		8 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
	Unmapped	



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 8/14/2024 at 5:48 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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## *SECTION 24*

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### IMPACT TO SITES OF HISTORICAL SIGNIFICANCE

# DM ROMA

CONSULTING ENGINEERS



June 27, 2023

Mr. Kirk F. Mohney, Director  
Maine Historic Preservation Commission  
55 Capitol Street  
65 State House Station  
Augusta, ME 04333-0065

**Re: Review of Project Area  
Turning Leaf Heights (Turning Leaf Drive & Drive In Lane), Windham, Maine**

Dear Mr. Mohney:

On behalf of Gateway Development, LLC., the project applicant and property owner, DM Roma Consulting Engineers is submitting a request to have a proposed project reviewed by the Maine Historic Preservation Commission for potential impacts to resources of historical significance related to a proposed project, "Turning Leaf Heights", located in the vicinity of Turning Leaf Drive and Drive In Lane in Windham, and is a parcel identified as Lot 9-B on the Town of Windham Assessor's Map 14.

The applicant is proposing to build approximately 80 dwelling units in 2-unit and 4-unit buildings that will be accessed by a 1,200-foot extension of Turning Leaf Drive and a 740-foot extension of Drive In Lane. The property is in the Commercial-1 Zone and is generally undeveloped woodland, bordered by Ditch Brook to the east. The project site abuts commercial development to the west, vacant land to the south and north, with Ditch Brook and a gravel pit to the east.

Enclosed is a vicinity map depicting the property location for reference. With regards to abutting properties with structures over 50 years old, there is one located at 665 Roosevelt Trail which appears to have been constructed in 1977 and currently serves as auto dealership. We have also provided with this email an abutters map and photo sheet identifying potential historic structures using information based on the Town of Windham Assessor's Data. We have also provided our development plan to further illustrate to location of the development.

Upon your review of the material, please provide a letter indicating the findings of your initial screening and do not hesitate to contact us with any questions.

Sincerely,

DM Roma Consulting Engineers

J.P. Connolly,  
Senior Project Engineer

Cc: Gateway Development, LLC.

Enc. Vicinity Map

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

*Kirk F. Mohney*  
Kirk F. Mohney,  
State Historic Preservation Officer  
Maine Historic Preservation Commission

7/10/23  
Date