



May 1, 2024

Steve Puleo, Planning Director
Town of Windham
8 School Road
Windham, ME 04062

Re: Response to review comments – Cross Ridge Subdivision
Applicants: Peter Gilman, Tammy Gilman, Anna Gilman, Emily Gilman, Michael Gilman, & PTG Properties

Dear Steve:

We have received the Staff Review and Completeness Memo for the above referenced project dated April 2, 2024 and offer the following response. The review comments are listed in italics, followed by our response.

1. *Agent Authorization Letter.*

Response: Attached is a signed agent authorization letter from the project applicants.

2. *(d) RTI for PTG Properties Inc. Map 22 Lot 23-3B Book 35447, Page 177 and Tammy J. Gilman Map 22 Lot 23-11 Book 28692, Page 279.*

Response: Enclosed are the requested additional deeds.

3. *(f) Description of ownership and maintenance of road, fire protection and other areas. The submitted Master Road Maintenance Agreement does not include the referenced Exhibit A, Plan of Cross Ridge Drive & Lockland Drive recorded in the Cumberland County Registry of Deeds in Plan Book 208, Page 255. Please provide.*

Response: Enclosed is the requested plan.

4. *(f) Are Flintlock Drive, Winchester Drive and Idlewood Drive subject to the road maintenance agreement?*

Response: Yes, Flintlock Drive, Winchester Drive and Idlewood Drive are all intended to be subject to the HOA and road maintenance agreement.

5. *(f) The application states that if an HOA is not formed, then the applicant will continue to own the road and fire cistern, with maintenance responsibilities to be shared as outlined in the Master Road Maintenance Agreement.*

Response: That is correct.

6. *(f) The 30,000 gallon cistern is proposed to be located on the current Map 22 Lot 20-5 that is proposed to be part of the Winchester Drive ROW. Is this expansion of Winchester Drive subject to the road maintenance agreement?*

Response: Yes, the current tax lot 20-5 is proposed to be part of the Winchester Drive ROW and will be subject to the Road Maintenance Agreement.

7. *(f) The definition of maintenance in the submitted Master Road Maintenance Agreement in Section 5 on page 2 does not appear to extend to maintenance of a cistern.*

Response: The intent is to form an HOA upon approval of the Subdivision and to convey responsibility for the cisterns to the HOA.

8. *(f) Provide a maintenance plan for the fire cisterns.*

Response: Note 12 was added to the Subdivision Plan Sheets 3 & 4 which outlines the maintenance responsibilities for the cisterns including semi-annual observation of water levels and repair/replacement within 3 months of any failed inspection.

9. *(i) Only some of the stormwater buffers approved as part of the DEP permit are shown on the plan.*

Response: We only included the stormwater buffers that are on proposed lots that are subject to the Subdivision review, which includes proposed lots 1, 4, 5, 6, 7 & 8.

10. *(i) Does the DEP permit account for the developed area of the proposed 8 lots? Are there any proposed stormwater controls?*

Response: Attached is a copy of the MDEP Stormwater Permit Application document that we retrieved from the project files at the Maine DEP Southern Maine Regional Office in Portland from a submission dated 2010 . The Stormwater Management Report outlines the stormwater management BMPs for the project which includes one wet pond, one under-drained soil filter basin, one Filterra bioretention unit and wooded buffers. The Underdrained Soil Filter Basin has not yet been constructed because it was associated with the development of Sentry Drive and adjacent proposed lots, which are unbuilt and proposed to be combined to become "Lot 1". The 6.2 acres of impervious surface and 19.4 acres of developed area that is identified in the permit application includes development of the roadways and lots.

11. *(i) Are the stormwater forested buffers to be pinned on the proposed 8 lots or were they already permanently marked by June 21, 2011 as required by the DEP permit?*

Response: The applicant has confirmed with the land surveyor that lot corners and buffer corners have been permanently marked with pins. As a condition of approval, we will survey the lot corners and buffer corners and adjust/replace pins as necessary if they have been altered or damaged over the past 14 years.

12. *(k) Location of proposed truck turnaround areas for access to cisterns.*

Response: The fire cisterns are located at road intersections, so it is not necessary to construct a separate turn-around area to access the hydrants.

13. *(l) Copies of the applications filed with the DEP. The Town has an electronic copy of the plan set submitted to DEP associated with the 2011 Stormwater Permit (but not the application materials) and a portion of the application for the 2011 NRPA permit.*

Response: Attached is a copy of the MDEP Stormwater Permit Application document and NRPA Permit Application document that we retrieved from the project files at the Maine DEP Southern Maine Regional Office in Portland from a submission dated 2010.

14. *(m) Financial Capacity. Estimated costs were provided and a statement that “the applicant has available funds to complete the project.” Provide one of the following in §120-910C(1)(p)(2).*

Response: Attached is a letter from Norway Savings Bank indicating that the applicant has the financial capacity to complete the project.

15. *(m) The cost estimate should also include the installation of monuments for the road, lot boundaries and forested buffer.*

Response: See response #11 above.

16. *(n) Does the remainder of the reconfigured Map 22 Lot 23-3 have the required minimum road frontage.*

Response: Yes, bearings and distances have been added to Subdivision Plan SB-1 to demonstrate that the end of Lockland Drive provides 150 feet of road frontage for the applicant’s homestead lot (Map 22, Lot 23-3).

17. *(p) Confirmation that stormwater management devices have been installed in accordance with MDEP Stormwater Permits.*

The Stormwater Wet Pond and Filterra bioretention unit have been installed. Forested buffers have been preserved and marked. The underdrained soil filter basin has not been installed because it was associated with the development of Sentry Drive and associated lots, which are unbuilt and proposed to be combined into “Lot 1”.

18. *(t) Plan Information: Boundary Survey of the effected lots with surveyor stamp*

The final subdivision plan will be wet stamped by a Professional Land Surveyor prior to recording.

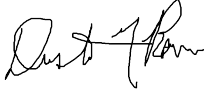
19. *(t) Plan Information: Additional information about the wetland delineation (e.g. Date of Survey)*

A wetland Delineation Report dated September 17, 2010 is attached as part of the NRPA Application Submission. The 2010 wetland delineation did not include the area covered by proposed lots 2 & 3 and the rear of proposed lots 7 & 8, so we retained Alex Finamore with Mainely Soils LLC to perform a delineation on those lots in April of 2024. The limits of the delineation are shown on the attached revised plans.

Upon your review of this information, please let us know if you have any questions or require any additional information.

Sincerely,

DM ROMA CONSULTING ENGINEERS

A handwritten signature in black ink, appearing to read "Dustin M. Roma". The signature is fluid and cursive, with the first name "Dustin" and last name "Roma" clearly distinguishable.

Dustin M. Roma, P.E.
President

May 1, 2024

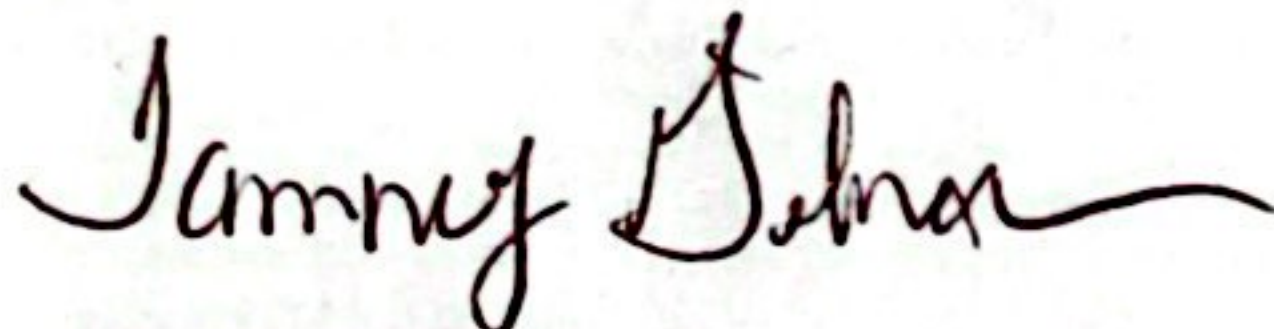
Re: Cross Ridge Subdivision, Windham

We are the owners of property located on Lockland Drive, Winchester Drive and/or Flintlock Drive in Windham. We have retained the services of DM Roma Consulting Engineers to act as authorized agent to apply for land use permits associated with development of this land.

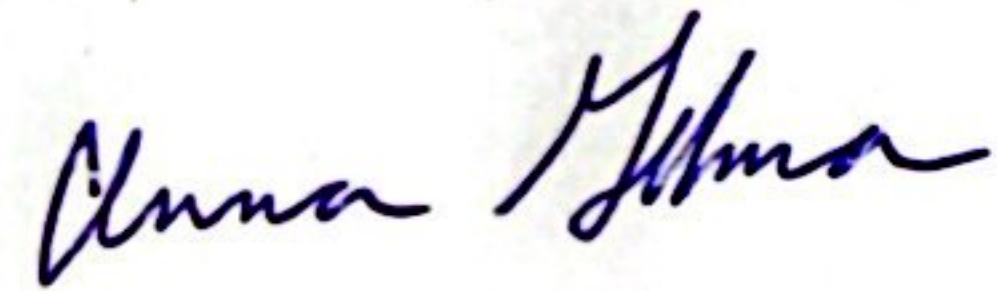
Sincerely,



Peter Gilman
PTG Properties, Inc.



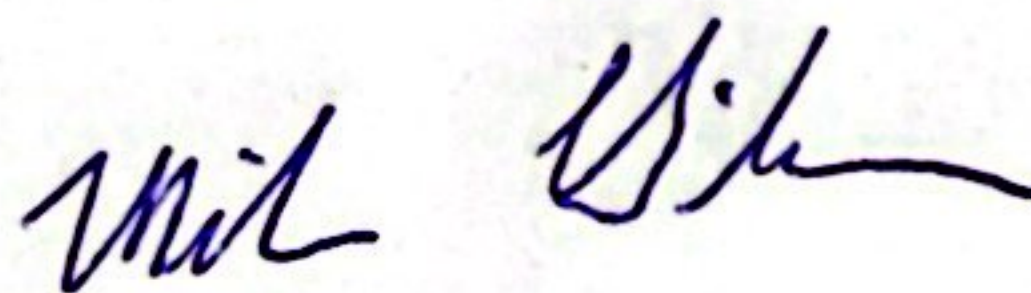
Tammy Gilman



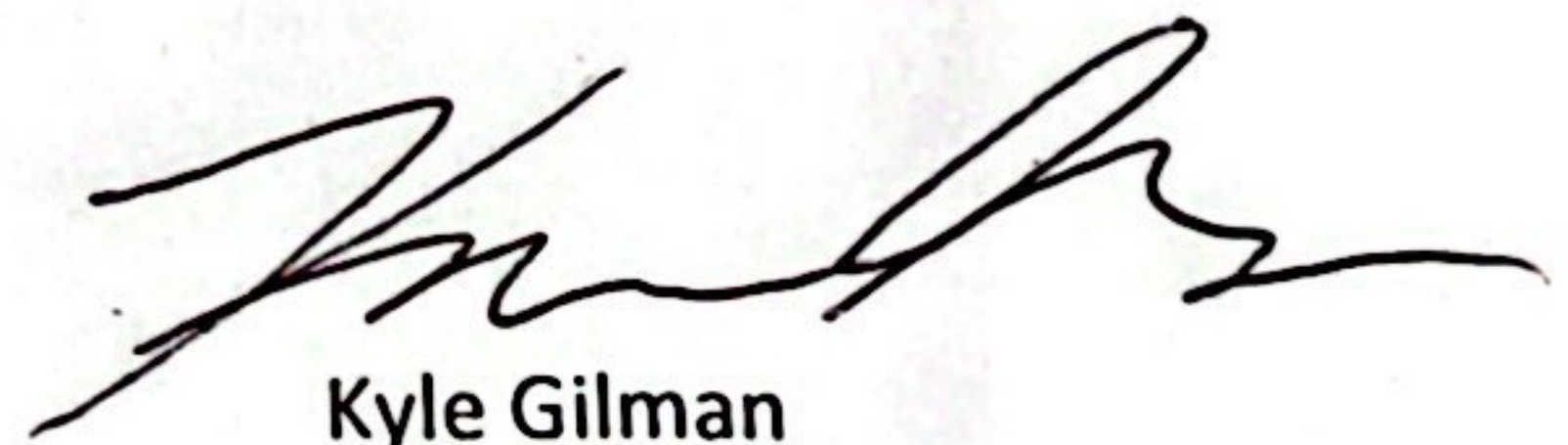
Anna Gilman



Emily Gilman



Michael Gilman



Kyle Gilman



May 1, 2024

Town of Windham
8 School Street
Windham, ME 04062

RE: Crossridge Subdivision

Ladies and Gentlemen,

At the request of Peter and Tammy Gilman, I write this letter to provide to you my opinion on the financial capacity of P T G Properties, Inc. and Peter and Tammy Gilman to undertake the project at Crossridge Subdivision, Windham, ME.

I spoke with Peter about the plans and scope of the project in detail recently. P T G Properties, Inc. maintains its banking relationship with Norway Savings Bank so I am familiar with company's background and finances.

Based on my banking relationship with the company and the information discussed with Peter about the proposal and plans for Crossridge Subdivision, it is my opinion that Peter and Tammy Gilman and P T G Properties, Inc. have the financial capacity to support this project.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian C. Desjardins", with a stylized flourish extending to the right.

Brian C. Desjardins
Regional Vice President
Commercial Lending

BCD/tbm

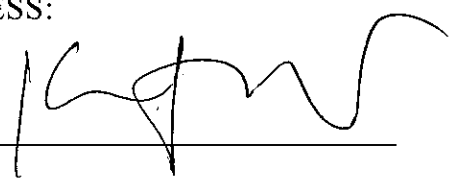
WARRANTY DEED
(Maine Statutory Short Form)

KNOW ALL PERSONS BY THESE PRESENTS, that I, **PETER S. GILMAN**, of Windham, County of Cumberland and State of Maine, in consideration of One Dollar and other valuable consideration paid by **TAMMY J. GILMAN**, her heirs and assigns, whose mailing address is 75 Lockland Drive, Windham, ME 04062, the land in the Towns of Windham and Gray, County of Cumberland and State of Maine, described as follows:

See Exhibit A hereto attached and made a part hereof.

WITNESS my hand and seal this 10 day of May, 2011.

WITNESS:

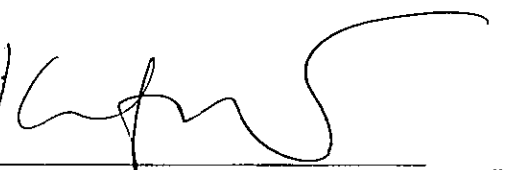



Peter S. Gilman

STATE OF MAINE
CUMBERLAND, ss.

May 10, 2011

Then personally appeared the above named Peter S. Gilman and acknowledged the foregoing instrument to be his free act and deed.

Before me/ 

Attorney at Law/Notary Public
Printed Name: KENNETH M. COLE III

EXHIBIT A
(11.24 acres ~ Lot F)

A certain lot or parcel of land situated off the Northeasterly side of Lockland Drive on the Northwesterly side of a 50 foot wide road currently known as *Road 1* in the Towns of Gray and Windham, County of Cumberland and State of Maine being more particularly described as follows:

Beginning at a stone post found set in the ground on the Town Line between Gray and Windham at the Southerly corner of land now or formerly of Lawrence Zuckerman (4721/146) on the Northeasterly boundary of land now or formerly of Kenyon R. and Eileen D. Clark (19,047/125);

Thence N 51°15'21" E along land of the said Zuckerman 447 feet more or less to the Westerly corner of land now or formerly of Bernard P. Kimball (15,523/273);

Thence S 38°44'39" E along the Southwesterly boundary of land of the said Kimball and also land now or formerly of John L. Ranger (6607/350) a total distance of 992 feet more or less to a point;

Thence S 34°18'56" W across land of the Grantor 341 feet more or less to as point on the Northwesterly side line of *Road 1*;

Thence continuing across land of the Grantor along the Northwesterly side line of the said *Road 1* following a curve to the left with a radius of 85.00 feet a distance of 181.78 feet to a point;

Thence continuing across land of the Grantor along the Northwesterly side line of the said *Road 1* following a curve to the right with a radius of 50.00 feet a distance of 18.22 feet to a point;

Thence N 48°27'03" W continuing across land of the Grantor 347.42 feet to a point on the Southeasterly boundary of land of the said Clark;

Thence N 50°46'18" E along land of the said Clark 100.00 feet to the Easterly corner of land of the said Clark on the said Gray/Windham Town Line;

Thence N 38°52'36" E following the said Gray/Windham Town Line and land of the said Clark 763.00 feet to the point of beginning. Containing 11.24 acres.

The above described lot is conveyed together with rights in common with others in and to the 50 foot wide road currently called *Road 1*, the 50 foot wide right of way known as Lockland Drive and the 50 foot wide right of way known as Cross Ridge Drive. All of these roads are intended to be used for any and all purposes for which a town road would be used including utilities. *Road 1* is shown on a Plan of "Homestead Lot" recorded in said Registry of Deeds in Plan Book 211, Page 75.

All bearings are referenced to Magnetic North.

This conveyance is made subject to the obligation to participate in the Road Maintenance Agreement dated June 12, 2008 and recorded in the Cumberland County Registry of Deeds in Book 26131, Page 130, subject to Declaration of Restrictions which are contained in the deed from PTG Properties, Inc. to Scott C. Hayman dated March 21, 2003 and recorded in the Cumberland County Registry of Deeds in Book 19147, Page 106, and further subject to the obligation to join a Road Association to be formed.

Meaning and intending to convey a portion of the premises conveyed to the Grantor herein by deed recorded in the Cumberland County Registry of Deeds in Book 21908, Page 1.

Received
Recorded Register of Deeds
May 12, 2011 10:42:46A
Cumberland County
Pamela E. Lovley

AFTER RECORDING RETURN TO:

Nicholas J. Morrill, Esq.
Jensen Baird Gardner & Henry
P.O. Box 4510
Portland, Maine 04112-4510

WARRANTY DEED
(Maine Statutory Short Form)

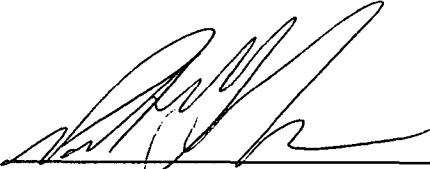
KNOW ALL PERSONS BY THESE PRESENTS, that I, **PETER S. GILMAN**, of Windham, Maine, for no consideration paid, grant to **P.T.G. PROPERTIES, INC.**, a Maine corporation having its principal place of business at Windham, County of Cumberland, and State of Maine, its mailing address being 75 Lockland Drive, Windham, Maine 04062, with **WARRANTY COVENANTS**, the land in the Town of Windham, County of Cumberland, State of Maine, described as follows:

See Exhibit A attached hereto and made a part hereof.

Grantor and Grantee desires to place certain restrictions, under the terms and conditions herein, over a portion of the property identified and described as the Drainage Easement Area and Stormwater Buffer Area in Exhibit A (hereinafter collectively referred to as the "Restricted Buffer Area"), which such restrictions are set forth in Exhibit B attached hereto and made a part hereof. The foregoing restrictions are made pursuant to certain Declaration of Environmental Protection Orders L-21336-NJ-B-N and L-21336-TB-C-N, recorded in the Cumberland County Registry of Deeds in Book 28523, Page 77, and L-21336-NJ-D-A and L-21336-TC-E-N recorded in the Cumberland County Registry of Deeds in Book 34754, Page 122.

WITNESS my hand and seal this 5th day of Feb, 2019.

Witness:

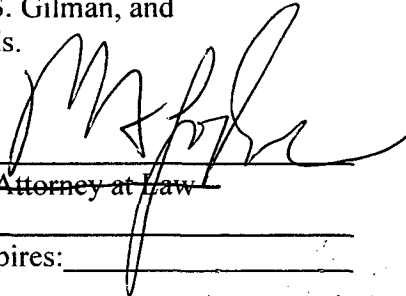


Peter S. Gilman

STATE OF MAINE
COUNTY OF CUMBERLAND, ss.

February 5, 2019

Then personally before me appeared the above named Peter S. Gilman, and acknowledged the foregoing instrument to be their free acts and deeds.



Notary Public / ~~Attorney at Law~~
Print Name: _____
Commission Expires: _____

PETER H. GODSOE
Notary Public, Maine
My Commission Expires November 5, 2023

SEAL

EXHIBIT A

A certain lot or parcel of land situated on the Northeasterly side of Lockland Drive and the Southeasterly side of a 50 foot wide road currently known as *Sentry Drive* in the Town of Windham, County of Cumberland and State of Maine being more particularly described as follows:

Beginning at a point on the Northeasterly side line of Lockland Drive and the Southeasterly side line of *Sentry Drive*; said point being located S 39°30'27" E a distance of 207.00 feet from the Southerly corner of land now or formerly of Kenyon R. and Eileen D. Clark (21,781/215);

Thence N 50°29'33" E across land of the Grantor along the Southeasterly side line of the said *Sentry Drive* a distance of 63.98 feet to a point;

Thence continuing across land of the Grantor along the Southeasterly side line of the said *Sentry Drive* following a curve to the right with a radius of 475.00 feet a distance of 181.00 feet to a point;

Thence N 72°19'32" E continuing across land of the Grantor along the Southeasterly side line of the said *Sentry Drive* a distance of 40.00 feet to a point;

Thence S 22°20'49" E continuing across land of the Grantor 183.19 feet to a point;

Thence S 56°36'40" W continuing across land of the Grantor 225.00 feet to a point on the Northeasterly side line of the said Lockland Drive;

Thence N 39°30'27" W along the Northeasterly side line of the said Lockland Drive 200.00 feet to the point of beginning. Containing 51,284 square feet.

Meaning and intending to convey a portion of the premises conveyed to this Grantor by a deed recorded in the Cumberland County Registry of Deeds in Book 23770 on Page 52.

The above described lot is conveyed subject to a storm water buffer (the "Stormwater Buffer Area") described as follows:

Beginning at the Easterly corner of the above described lot;

Thence S 56°36'40" W along the Southeasterly boundary of the above described lot 204.89 feet to a point;

Thence N 39°30'27" W across the above described lot 50.29 feet to a point;

Thence N 56°36'40" E continuing across the above described lot 218.04 feet to a point;

Thence N 74°20'36" E continuing a across the above described lot 1.94 feet to a point on the Northeasterly boundary of the above described lot;

Thence S 22°20'49" E along the Northeasterly boundary of the above described lot 50.34 feet to the point of beginning.

The above described lot is conveyed subject to a drainage easement (the "Drainage Easement Area") described as follows:

Beginning at the Southerly corner of the above described lot on the Northeasterly side line of the said Lockland Drive:

Thence N 39°30'27" W along the Northeasterly side line of the said Lockland Drive 200.00 feet to the Westerly corner of the above describe lot on the Southeasterly side line of the said *Sentry Drive*;

Thence N 50°29'33" E along the Southeasterly side line of the said *Sentry Drive* a distance of 20.00 feet to a point;

Thence S 39°30'27" E across the above described lot 202.15 feet to a point on the Southeasterly boundary of the above described lot;

Thence S 56°36'40" W along the Southeasterly boundary of the above described lot 20.11 feet to the point of beginning.

The Drainage Easement Area and the Stormwater Buffer Area (collectively referred to as the "Restricted Buffer Area") are further depicted on Exhibit C attached hereto, and conveyed subject to the restriction set forth in Exhibit B attached hereto.

The above described lot is conveyed together with rights in common with others in and to the 50 foot wide road currently called *Sentry Drive*, the 50 foot wide right of way known as Lockland Drive and the 50 foot wide right of way known as Cross Ridge Drive. All of these roads are intended to be used for any and all purposes for which a town road would be used including utilities.

All bearings are referenced to Magnetic North.

This conveyance is exempt from municipal subdivision as the remaining land has been the Grantor's principal residence for a period of at least 5 years immediately preceding this deed.

EXHIBIT B

WHEREAS, Grantor and Grantee desires to place certain restrictions ("Restrictions"), under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer Area") described in Exhibit A attached to this deed.

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S.A. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), P.T.G. Properties, Inc., and its successors and assigns, including the Grantor herein (collectively the "Declarant"), has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Restricted Buffer Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the Maine Department of Environmental Protection ("MDEP"), the Restricted Buffer Area must be undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter, absorb and retain stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, use of the Restricted Buffer Area is hereinafter limited as follows:

- a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material may be placed, stored or dumped on the Restricted Buffer Area, nor may the topography of the area be altered or manipulated in any way;
- b. Any removal of trees or other vegetation within the Restricted Buffer Area must be limited to the following:
 - (i) No purposefully cleared openings may be created and an evenly distributed stand of trees and other vegetation must be maintained. An "evenly distributed stand of trees" is defined as maintaining a minimum rating score of 24 points in any 25 foot by 50 foot square (2,500 square feet) area, as determined by the following rating scheme.

Diameter of tree at 4 ½ feet above ground level	Points
2 – 4 inches	1
4 – 8 inches	2
8 – 12 inches	4
>12 inches	8

Where existing trees and other vegetation result in a rating score less than 24 points, no trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;

(ii) No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;

c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence;

d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;

e. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

2. Enforcement. The MDEP may enforce any of the Restrictions set forth in Section 1 above.

3. Binding Effect. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.

4. Amendment. Any provision contained in this instrument may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.

5. Effective Provisions. Each provision of this instrument, and any agreement, promise, covenant and undertaking to comply with each provision of this instrument, shall be deemed a

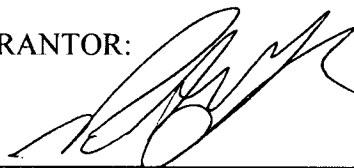
land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.

6. Severability. Invalidity or unenforceability of any provision of this instrument in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this instrument.

7. Governing Law. This instrument shall be governed by and interpreted in accordance with the laws of the State of Maine.

WITNESS our hands and seals this 5th day of Feb, 2019.

GRANTOR:

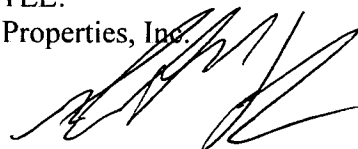


Peter S. Gilman

Witness:

GRANTEE:

P.T.G. Properties, Inc.



By:

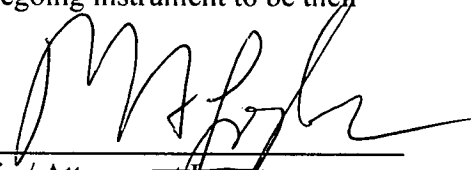
Peter S. Gilman
Its: President

Witness:

STATE OF MAINE
COUNTY OF CUMBERLAND, ss.

February 5, 2019

Then personally before me appeared the above named Peter S. Gilman, individually and as President of P.T.G. Properties, Inc., and acknowledged the foregoing instrument to be their free acts and deeds individually and in their said capacity.



Notary Public / ~~Attorney at Law~~

Print Name: _____

Commission Expires: _____

PETER H. GODSOE
Notary Public, Maine
My Commission Expires November 5, 2023

SEAL

DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND & WATER QUALITY

STORMWATER: **ATS**
L-25109-NJ-A-N 72597

SW

FOR DEP USE

NRPA

L- 25109-TB-B-N

ATS# ~~72962~~ 450 (A-F)

Fees Paid _____
Date Received _____

STORMWATER APPLICATION FORM PLEASE TYPE OR PRINT IN INK.

This application is for: (Check the one that applies:)		<input checked="" type="checkbox"/> New application		<input type="checkbox"/> Amendment	
1. Name of Applicant:	PTG Properties, Inc. c/o Peter Gilman	6. Name of Agent:	Sebago Technics, Inc. C/O Anthony Panciocco, PE		
2. Applicant's Mailing Address:	75 Lockland Drive Windham, ME 04062	7. Agent's Mailing Address:	1 Chabot Street Westbrook, ME 04098		
3. Applicant's Phone #:	207-892-1437	8. Agent's Phone #:	207-856-0277		
4. Email address (REQUIRED-license will be sent via email:	ptgproperties1@myfairpoint.net	9. E-mail address (REQUIRED-license will be sent via email	tpanciocco@sebagotechnics.com		
5. Applicant's Fax #: (if available)	207-892-1437	10. Agent's Fax # (if available):	207-856-2206		
11. Location of Project: (Road, Street, Rt.#)	Cross Ridge Drive and Lockland Drive	12. Town:	Windham		
		13. County:	Cumberland County		
14. Type of Direct Watershed: (Check all that apply)	<input checked="" type="checkbox"/> Lake not most at risk <input type="checkbox"/> Lake most at risk <input type="checkbox"/> Lake most at risk, severely blooming <input checked="" type="checkbox"/> River, stream or brook <input type="checkbox"/> Urban impaired stream <input checked="" type="checkbox"/> Freshwater wetland <input type="checkbox"/> Coastal wetland <input type="checkbox"/> Wellhead of public water supply	15. Amount of Developed Area:	<input type="checkbox"/> 1 or more acres, but less than 5 acres <input checked="" type="checkbox"/> 5 acres or more (Existing & Proposed) Total Amt. = approx. 19.4 acres		
		16. Amount of Impervious Area:	<input type="checkbox"/> less than 20,000 sq. ft. <input type="checkbox"/> 20,000 sq. ft. to 1 acre <input type="checkbox"/> 1 to 3 acres <input checked="" type="checkbox"/> 3 or more acres Total Amount of impervious Acres = Approx. 6.3 acres (existing & proposed)		
17. Applicable Standards: (Check all that apply)	<input type="checkbox"/> Stormwater PBR <input checked="" type="checkbox"/> Basic standards <input checked="" type="checkbox"/> General standards: BMP <input type="checkbox"/> General standards: phosphorus <input checked="" type="checkbox"/> Flooding standard <input type="checkbox"/> Urban impaired stream standards <input type="checkbox"/> Other:	18. Type of Stormwater Control:	<input checked="" type="checkbox"/> Vegetative (e.g. buffers) <input checked="" type="checkbox"/> Structural (e.g. underdrained filters, ponds, infiltration structures)		
19. Exceptions &/or Waivers Requested:	BMP Standards ▼		Urban impaired stream standard ▼		Flooding Standard ▼
	<input type="checkbox"/> Pretreatment measures <input type="checkbox"/> Discharge to ocean/major river segment <input checked="" type="checkbox"/> Linear portion of project <input type="checkbox"/> Utility corridor <input type="checkbox"/> Redevelopment		<input type="checkbox"/> Developed area not landscaped or impervious <input type="checkbox"/> Redevelopment		<input type="checkbox"/> Discharge to ocean/major river segment <input checked="" type="checkbox"/> Insignificant increase in peak flow
20. Brief Project Description:	This application is for an After The Fact Stormwater Permit				
21. Size of Lot or Parcel:	<input type="checkbox"/> square feet, or	<input checked="" type="checkbox"/> 140 acres	UTM Easting:	387403.6	UTM Northing: 4856737.8
22. Title, Right or Interest:	<input checked="" type="checkbox"/> own <input type="checkbox"/> lease <input type="checkbox"/> purchase option <input type="checkbox"/> written agreement				
23. Deed Reference Numbers:	Book#: 8259	Page: 21908	24. Map and Lot Numbers:		Map #: 22 Lot #: 23.3
25. DEP Staff Previously Contacted:	Jeffrey Kalinich Ben Viola William Bullard		26. Project started prior to application?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Completed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
SIGNATURES / CERTIFICATIONS ON PAGE 2					

STORMWATER APPLICATION FORM

27. Resubmission of Application?	<input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No	If yes, previous application #		Previous project manager:	
28. Written Notice of Violation?	<input checked="" type="checkbox"/> Yes → <input type="checkbox"/> No	If yes, name of DEP enforcement staff involved:	Jeffrey Kalinich, William Bullard Mike Mullen		
29. Detailed Directions to the Project Site:		From Route 302 in Windham proceed east on Route 115 take a left onto Smith Road Take right onto Cross Ridge Drive approximately 1.5 miles from Route 115.			
30. Stormwater Permit by Rule Submissions ▼		31. Stormwater Application Submissions ▼			
<input type="checkbox"/> This form (including signature page) <input type="checkbox"/> Fee <input type="checkbox"/> Topographic Map <input type="checkbox"/> Plan or Drawing <input type="checkbox"/> Photos of Area		<input checked="" type="checkbox"/> This form (including signature page) <input checked="" type="checkbox"/> Fee <input checked="" type="checkbox"/> Proof of title, right or interest <input checked="" type="checkbox"/> Certificate of good standing (if applicable) <input checked="" type="checkbox"/> Photos of Area <input checked="" type="checkbox"/> Copy of Public Notice		<input checked="" type="checkbox"/> Professional & Notice Certificate <input checked="" type="checkbox"/> Basic standards submissions <input checked="" type="checkbox"/> General standards submissions <input checked="" type="checkbox"/> Flooding standard submissions <input type="checkbox"/> Other standard submissions <input type="checkbox"/> Compensation Fee (if required)	
32. FEES, Amount Enclosed:					
Does the agent have an interest in the project? If yes, what is the interest?: <input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No					

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE. ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

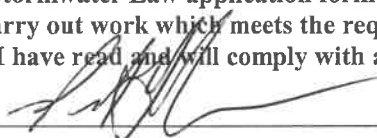
By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following:

CERTIFICATIONS / SIGNATURES

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

Further, I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by e-mailing the decision to the electronic address located on the front page of this application (see #4 for the applicant and #9 for the agent."

Signed: _____ Title _____ Date: _____

Notice of Intent to Comply with Maine Construction General Permit	With this Stormwater Law application form and my signature below, I am filing notice of my intent to carry out work which meets the requirements of the Maine Construction General Permit (MCGP). I have read and will comply with all of the MCGP standards.
	Signed  Date: 10/23/10

NOTE: If a Notice of Intent is required, you must file a Notice of Termination (attached as Form G) within 20 days of completing permanent stabilization of the project site.

ADDITIONAL SIGNATURES / CERTIFICATIONS

The person responsible for preparing this application and/or attaching pertinent site and design information hereto, by signing below, certifies that the application for stormwater approval is complete and accurate to the best of his/her knowledge.

Signature: *Anthony P. Panciocco*

Name (print): Anthony P. Panciocco

Date: 8-25-10

Re/Cert/Lic No.: _____

Engineer P.E. # 10941

Geologist _____

Soil Scientist _____

Land Surveyor _____

Site Evaluator _____

Active Member of the Maine Bar _____

Professional Landscape Architect _____

Other _____

SUBMITTAL CHECKLIST**Submissions for all stormwater projects, as applicable, except stormwater PBR:**

- Completed application form with signatures
- Fee worksheet & fee
- Professional & notice certification
- Notice of intent to file
- Proof of title, right, or interest
- Certificate of Good Standing (corporations only)
- Photos of the project site

Basic standards submissions:

- Erosion and sedimentation control plan
 - Location plan
 - Site details
- Inspection and maintenance plan
 - List of measures
 - Inspection & maintenance tasks
 - Task frequency
 - Responsible parties
 - Maintenance plans
- Housekeeping plan

General standards submissions:

- Narrative
- Drainage plans
- Calculations
 - Water volume
 - Buffer sizing
- Details, designs, and specifications
 - Ponds
 - Underdrained vegetated filters
 - Infiltration systems
 - Buffers
- N/A Phosphorus export calculations
- N/A Maintenance contract

Flooding standard submissions:

- Control of peak flows
- Details, designs, and specifications

**PUBLIC NOTICE:
NOTICE OF INTENT TO FILE**

Please take notice that

PTG Properties, Inc., 75 Lockland Drive, Windham, Maine (207)-892-1437

is intending to file a Stormwater Law permit application with the Maine Department of Environmental Protection pursuant to the provisions of 38 M.R.S.A. § 420-D on or about

September 24, 2010

The application is for

After the fact Stormwater Permit Application

at the following location: Cross Ridge Drive, Windham, Maine

A request for a public hearing or a request that the Board of Environmental Protection assume jurisdiction over this application must be received by the Department in writing, no later than 20 days after the application is found by the Department to be complete and is accepted for processing. A public hearing may or may not be held at the discretion of the Commissioner or Board of Environmental Protection. Public comment on the application will be accepted throughout the processing of the application.

The application will be filed for public inspection at the Department of Environmental Protection's office in Portland during normal working hours. A copy of the application may also be seen at the municipal offices in Windham, Maine.

Written public comments may be sent to the regional office in Portland where the application is filed for public inspection:

MDEP, Southern Maine Regional Office, 312 Canco Road, Portland, Maine 04103

PUBLIC NOTICE FILING AND CERTIFICATION

The DEP Rules, Chapter 2, require an applicant to provide public notice for all Stormwater Law projects with the exception of minor revisions and condition compliance applications. In the notice, the applicant must describe the proposed activity and where it is located. "Abutter" for the purposes of the notice provision means any person who owns property that is BOTH (1) adjoining and (2) within one mile of the delineated project boundary, including owners of property directly across a public or private right of way.

1. **Newspaper:** You must publish the Notice of Intent to File in a newspaper circulated in the area where the activity is located. The notice must appear in the newspaper within 30 days prior to the filing of the application with the Department. You may use the attached Notice of Intent to File form, or one containing identical information, for newspaper publication and certified mailing.
2. **Abutting Property Owners:** You must send a copy of the Notice of Intent to File by certified mail to the owners of the property abutting the activity. Their names and addresses can be obtained from the town tax maps or local officials. They must receive notice within 30 days prior to the filing of the application with the Department.
3. **Municipal Office:** You must send a copy of the Notice of Intent to File and a **duplicate of the entire application** to the Municipal Office.

ATTACH a list of the names and addresses of the owners of abutting property.

CERTIFICATION

By signing below, the applicant or authorized agent certifies that:

1. A Notice of Intent to File was published in a newspaper circulated in the area where the project site is located within 30 days prior to filing the application;
2. A certified mailing of the Notice of Intent to File was sent to all abutters within 30 days of the filing of the application;
3. A certified mailing of the Notice of Intent to File, and a duplicate copy of the application was sent to the town office of the municipality in which the project is located; and
4. Provided notice of, if required, and held a public informational meeting in accordance with Chapter 2, Rules Concerning the Processing of Applications, Section 14, prior to filing the application. Notice of the meeting was sent by certified mail to abutters and to the town office of the municipality in which the project is located at least ten days prior to the meeting. Notice of the meeting was also published once in a newspaper circulated in the area where the project site is located at least seven days prior to the meeting.

The Public Informational Meeting was held on N/A Stormwater Permit.

Date

Approximately N/A members of the public attended the Public Informational Meeting.

Signature of Applicant or authorized agent

10/23/10
Date

Abutters List

Map/Lot	Abutter's Name and Address
22/14-3 22/14-4 22/14-5 22/14-6 22/14 22/20-2 22/23-3 22/24	Peter Gilman Tammy Gilman Peter Gilman & Emily Ashlyn T. Gilman Custodian Peter Gilman & Kyle Scott T. Gilman Custodian 75 Lockland Drive Windham, ME 04062
22/14-1	Kenyon R. & Eileen D. Clark 35 Cross Street Windham, ME 04062
22/14-2 22/18-1	Jerry W. & Bethany E. Hunt 43 Cross Street Windham, ME 04062
22/14-7	Scott Kelley 1 West View Drive Windham, ME 04062
22/13 22/12	Betty L. Thomes & Gregory M. Smith Herbert W. Thomes Revocable Trust 260 Smith Road Windham, ME 04062
22/13A	Theodore W. & Renee Thomes 135 Smith Road Windham, ME 04062
22/16-1	Tya Hayman P.O. Box 706 Windham, ME 04062
22/16	Scott C. & Tya M. Hayman c/o Joe M. Palmer, Jr. 7/10 24 cross Ridge Road Windham, ME 04062
22/16A	Michael A. & Renee L. Pottle 131 Smith Road Windham, ME 04062
22/16C	Brian & Kristen Marden 11 Cross Ridge Road Windham, ME 04062
22/19	Julia E. Reeves Life Estate c/o Roger C. & Jean K. Reeves 384 Gray Road Windham, ME 04062

Map/Lot	Abutter's Name and Address
22/18-3	Malcolm & Betty Ulmer 14 Lockland Drive Windham, ME 04062
22/18-2	Jason A. & Laurie L. Manley 18 Lockland Drive Windham, ME 04062
22/17	Robert L. & Ronald L. Hunt 77 Walker Falls Road Denmark, ME 04022
22/20	Eric & Lubett Taquet P.O. Box 1564 Windham, ME 04062
22/20-1	Jacob N. & Eileen Ouellette 25 Lockland Drive Windham, ME 04062
22/21-2	Darrick H. Naas Michelle M. Westman 22 Lockland Drive Windham, ME 04062
22/21-1	Lori J. Rich 63 Hurricane Road Gorham, ME 04038
22/23-1	Frederick F. & Natalie C. Wilcox 32 Lockland Drive Windham, ME 04062
22/23-2	John & Kelly Caringi 31 Lockland Drive Windham, ME 04062
22/23-4	Michael & Tiffany Flibbert 41 Lockland Drive Windham, ME 04062
22/23	Judson F. II & Katherine L. Smith 35 Lockland Drive Windham, ME 04062
19/83	Richard D. & Nancy H. Lamb 312 Tandberg Trail Windham, ME 04062
22/11	EVP Capital LP 4906 Deloache Avenue Dallas, TX 75220
22/22	Heirs of Stillman N. Lamb c/o Richard D. Lamb 312 Tandberg Trail Windham, ME 04062

Map/Lot	Abutter's Name and Address
19/69	Jeffrey M. Whitney P.O. box 732 Windham, ME 04062
20/1	Jeffrey E. & Sonja L. Florman 368 Tandberg Trail Windham, ME 04062
	Town of Windham 8 School Road Windham, ME 04062
	Gray, Maine
12/4	Bernard P. Kimball 165 Burnham Road Gorham, ME 04038
17/52	John L. Ranger P.O. Box 806 Westbrook, ME 04092
12/1	Lawrence J. Zuckerman 41 Campus Drive, Ste. 202 New Gloucester, ME 04260-5115

FEE WORKSHEET

Use this form to help determine the permit fee. The fee is based upon the amount of disturbed or developed area created.

NOTE: Ditches, swales, ditch turn-outs, level spreaders, and similar Best Management Practices (BMPs) used solely to convey or discharge water to a vegetated buffer are not considered, by themselves, to constitute structural BMPs, provided that the applicant assumes that all water quality treatment takes place in the buffer. If any treatment is assumed within the BMPs used to convey water to the buffer, they are treated as structural BMPs for the purposes of determining the applicable fee (and review period). "Disturbed area" and "impervious area" are defined in Chapter 500, Section 2(C) and (E).

- (a) If solely vegetative control measures are used (e.g. buffers), the fee is \$250 for up to one acre of disturbed or developed area, plus \$125 for each additional whole acre of disturbed or developed area.

Example. Project will create 2.34 acres of disturbed area.

$$\text{Fee} = \$250 + [\$125 \times (1)] = \$375.00$$

Your fee:

$$\$250 + [\$125 \times (\quad)] = \underline{\hspace{2cm}}$$

- (b) If any structural control measures are used (e.g. underdrained filters, ponds, infiltration systems), the fee is \$500 for up to one acre of disturbed or developed area, plus \$250 for each additional whole acre of disturbed or developed area.

Example. Project will create 2.34 acres of disturbed area.

$$\text{Fee} = \$500 + [\$250 \times (1)]. \quad \text{Fee} = \$750.00.$$

Your fee:

$$\$500 + [\$250 \times (18)] = 5,000 \times 2 \text{ (for after-the-fact)} = \$10,000$$



STORMWATER MANAGEMENT PLAN

Cross Ridge Drive / Lockland Drive Development Windham, Maine

Prepared for

PTG Properties, Inc.
75 Lockland Drive
Windham, ME 04062

Prepared by

Sebago Technics, Inc.
One Chabot Street, P.O. Box 1339
Westbrook, ME 04098-1339

September 2010

STORMWATER MANAGEMENT PLAN
Cross Ridge Drive / Lockland Drive
Development
Windham, Maine

Executive Summary

PTG Properties, Inc. currently owns approximately 140 acres surrounding the existing Cross Ridge Drive/Lockland Drive development in Windham, Maine. The properties are identified on Town of Windham Tax Map 22 as Lot 23.3.

In December 2008, the Maine Department of Environmental Protection (MDEP) issued a Notice of Violation (NOV) for the development. The Department ruled that PTG Properties was responsible for more than 1 acre of impervious surface and should have obtained a Stormwater Permit. In subsequent meetings with MDEP, it was agreed that PTG Properties would layout their future development plans for the property. PTG Properties would be required to treat as much existing development as possible and to provide overtreatment for the proposed additional impervious and developed areas to offset the existing impervious and developed areas that did not meet Chapter 500 standards.

This report and the attached plans reflect the proposed future development on the Windham Property, as well as the proposed Stormwater Best Management Practices (BMPs) to be constructed to bring the entire development into compliance with the MDEP Chapter 500 Stormwater Regulations.

As currently built the project has created approximately 2.95 acres of new impervious and 7.10 acres of developed area. The anticipated full build-out of the new roadways will create approximately 3.3 acres of new impervious surface and 12.3 acres of new developed area as defined by the MDEP, resulting in a total of 6.2 acres of impervious area and 19.4 acres of developed area.

The majority of the project site is tributary to the Pleasant River, and a smaller portion of the existing Cross Ridge Drive is tributary to Little Sebago Lake. The Pleasant River is not defined as an urban impaired stream watershed by MDEP Chapter 502 Rules. Little Sebago Lake is not defined as a severely blooming Lake watershed. The project currently holds a Natural Resource Protection Act Freshwater Wetland Alteration Permit for wetland impacts associated with the construction of Cross Ridge Drive. This project will be required to meet the MDEP Chapter 500 Basic, General and Flooding Standards. Additionally, the project will be required to amend the current wetland alteration permit.

The project provides treatment for 77% of the existing and proposed linear impervious area, 69% of the existing and proposed linear developed area, 99% of the existing and proposed non-linear impervious area and 99% of the proposed non-linear developed area; treatment is achieved utilizing vegetated buffers, a wet pond, an underdrain soil filter pond, and a Filterra Bioretention

System. The BMPs have been designed and sized in accordance with criteria published in Chapter 500 BMPs Technical Designs Manual.

To meet the Chapter 500 Flooding Standard detention has been provided in the underdrain soil filter basin and wet pond. Peak rates have been reduced from the pre-development rates wherever possible. There is an insignificant increase at Study Point 2, which represents the area of the site tributary to Little Sebago Lake, during the two and ten-year storm events. This portion of the site, however, drains to a large wetland area prior to exiting the site. An estimate of the storage available based on the mapped wetland limits, indicates that the increased rate of runoff will not cause a measurable increase in ponding depth within the wetland. We are not aware of any flooding problems associated with the existing development tributary to this wetland and request a waiver for the insignificant increase in peak flow on this basis.

The proposed erosion control measures and stormwater management system has been designed to meet these requirements and manage the potential full build-out of the development.

STORMWATER MANAGEMENT PLAN
Cross Ridge Drive / Lockland Drive
Development
Windham, Maine

I. Introduction

The proposed future development includes the construction of approximately 2,800 linear feet of new roadway associated with proposed Roadways 1, 2 and 3.

As a result of the proposed work the entire development will meet Chapter 500 Stormwater rules for water quality treatment. One Wet Pond, one Underdrained Filtration Basin, one Filterra Bioretention System and various natural wooded buffers will be utilized to meet the Chapter 500 Standards.

The flooding standard has been met wherever, possible, however the area of Cross Ridge Drive that is tributary to Little Sebago Lake has an insignificant increase in the peak rate of runoff during the two and ten year storm events. This will require a waiver for an insignificant increase in peak flow.

II. Existing Conditions

Portions of the proposed project site are developed with existing roadway impervious surfaces and single family residential lots. The proposed portion of the project site is currently undeveloped woodland area.

A. Land Cover

The existing development consists of existing impervious roadway surfaces and single family residential lots. Access to the site is provided from Smith Road via Cross Ridge Drive and Lockland Drive. There are no existing stormwater Best Management Practices (BMPs) associated with the existing development. Approximately 2.95 acres of existing impervious area is associated with the two existing roadways Cross Ridge Drive and Lockland Drive.

B. Site Topography

Slopes in the areas of the proposed roadways on the site are generally moderate.

C. Surface Water Features

The majority of the project site generally drains in a south/southeasterly and south/southwesterly direction through various drainage ways and wetlands, which convey the runoff off the southerly property boundaries, and are tributary to the

Pleasant River. Runoff from the initial portion of Cross Ridge Drive is conveyed via an existing culvert westerly underneath Smith Road and is ultimately tributary to Little Sebago Lake.

Wetland areas have been identified within portions of the property. The wetlands were mapped and survey located by Wayne Wood and Associates. No wetland delineations were performed by Sebago Technics, Inc, as part of this project. The limits of these wetlands are identified on the attached plan set. As part of the original 2003 permitting the project impacted 8,000 square feet of wetlands. Additional wetland impacts resulting from the project build-out have been identified by Wayne Wood and Associates and are included within the attached amended Wetlands Alteration Permit.

D. Soils

Soil characteristics were obtained from the Soil Conservation Service (SCS) Medium Intensity Soil Survey of Cumberland County. Soils identified on the site (or within close proximity) are identified below in Table 1. These soil boundaries are identified on the attached Watershed Maps.

Table 1 – Proximity Soil Types and Characteristics			
Soil Type	Symbol	HSG	K Factor
Elmwood fine sandy loam, 0% to 8% slopes	EmB	C	0.32
Naumburg Sand	Na	D	0.17
Scantic Silt Loam	Sc	D	0.28

The K factor is an erodibility index that relates each soil family based on a slight erosion potential of 0.10 to a high erosion potential of 0.64. An index number, greater than 0.32, indicates that a high level of erosion control measures must be taken in order to control erosion of this soil. The Hydrologic Soil Group (HSG) designation is based on a rating of the relative permeability of a soil, with Group “A” being extremely permeable such as coarse sand, to Group “D” having low permeability such as clay.

E. Historic Flooding

The Federal Emergency Management Agency (FEMA) does not identify a flood hazard area on the project site (FEMA Community Panel Number 230189 0020B, dated September 2, 1981).

III. Proposed Development

The applicant has proposed to construct approximately 2,800 linear feet of new roadway associated with proposed Roadways 1, 2 and 3. As part of the development, 22 new residential lots will be created along with various stormwater BMPs. The applicant intends on gifting these lots to direct family members (his children).

As a result of the proposed work, the entire development will meet the Chapter 500 Stormwater Rules for water quality treatment requirements. One Wet Pond, one underdrained filtration basin, one Filterra Bioretention System and various natural wooded buffers will be utilized to meet the Chapter 500 Standards. It should be noted that the existing and proposed impervious and developed areas of the site will meet current MDEP standards upon project completion.

A. Alterations to Land Cover

The applicant is currently responsible for treating approximately 2.95 acres of existing impervious surface coverage. Additionally, the applicant is responsible for providing water quality treatment for 5 existing single family residential lots (Lots 1-5 on the attached plans). Additional development on the project site will result in approximately 3.3 acres of new impervious surface as defined by MDEP, resulting in 6.3 acres of total impervious area on the project site.

Approximately 7.10 acres of developed area associated with the roadway currently exists on the project site. The proposed development will result in 12.3 acres of new developed area, associated with the Roadway and proposed house lots, resulting in a total of 19.4 acres of project site developed area.

A stream is identified on the attached Site Location Map. The stream has not been field verified by Sebago Technics. In several meetings with DEP staff they indicated that upon submission of this application, and if necessary, they would visit the site to verify if a stream exists in this location.

IV. Downstream Ponds and Waterbodies

The majority of the project site is tributary to the Pleasant River. A small portion of the site is tributary to Little Sebago Lake. The Pleasant River is not defined as an Urban Impaired Stream Watershed by the MDEP, and Little Sebago Lake is not identified as a severely blooming lake by MDEP.

V. Regulatory Requirements

MDEP Rule Chapters 500 and 502 describe stormwater management requirements for new development projects. These rules describe performance standards divided into five major categories: Basic Standards, General Standards, Phosphorous Standards, Urban Impaired Stream Standards, and Flooding Standards. This project meets the definition of a project requiring review by MDEP under the Stormwater Permit Standards. MDEP's Basic and General Standards apply (Chapter 500 Stormwater Management Rules Sections 4(A), and 4(B), the Basic and General Standards effective 11/16/05, revised 12/27/06), additionally the project will be subject to the flooding standard.

The following sections describe how this project will address these stormwater management performance standards.

Basic Standards: A project must meet Basic Standards if it disturbs an area greater than one (1) acre. As this development will disturb approximately 19.4 acres, it must meet these Basic Standards. These standards include various erosion and sedimentation controls, inspection and maintenance procedures, and general housekeeping requirements. These performance standards are addressed in the Erosion and Sedimentation Control Plan and in the Inspection, Maintenance, and Housekeeping Plan attached in Appendix 2: *Inspection, Maintenance, and Housekeeping Plan*. Please refer to these documents for more detailed information.

General Standards: A project is subject to the General Standards if it results in the creation of one (1) or more acres of impervious area or developed areas greater than five (5) acres. This project will create 6.2 acres of impervious surface and, therefore, must meet the general standards. Typically these standards require that a minimum of 95% of all impervious areas and at least 80% of all developed areas are designed to be tributary to stormwater BMPs.

As a linear project comprised primarily of roadway, the development qualifies for the exemption from the General Standards defined in Chapter 500.4.B(3)(c). This exemption allows runoff volume control to be reduced to no less than 75% of the impervious area and 50% of the developed area.

Standard BMPs have been defined by the MDEP and are described thoroughly in their publication "Stormwater Management for Maine: Best Management Practices Manual" as revised in January of 2006. A subsequent section of this Stormwater Management Plan titled "Stormwater Management BMPs" describes the BMPs to be utilized on this project and specific design information for each BMP.

Phosphorous Standards: Stormwater from this project is not subject to the Phosphorus Standards.

Urban Impaired Stream Standards: Stormwater from this project is not tributary to an "Urban Impaired Stream" as defined by MDEP Chapter 502 and, therefore, is not subject to the Urban Impaired Stream Standards.

Flooding Standards: The MDEP requires that projects creating impervious areas greater than three (3) acres, or developed areas greater than twenty (20) acres, address various Flooding Standards. As this project creates greater than 3 acres of impervious it will be required to meet the flooding standards.

VI. Stormwater Management BMPs

In order to meet the applicable regulations, the project will use various BMPs to provide stormwater quality treatment, including a wet pond, underdrained filtration basin, Filterra Bioretention System and naturally vegetated buffers. The BMP locations are indicated

on the attached plans. These buffers are sized in accordance with MDEP's criteria published in the Chapter 500 Stormwater Management Rules.

A description of each BMP is presented below. The areas treated by each BMP are summarized in the stormwater treatment calculations attached in Appendix 3: *Stormwater Quality Calculations* and are shown on the Watershed/Treatment Plan attached to this application.

A. Underdrained Soil Filter Basin Design

The underdrained filtration basin has been designed so that it treats the volume of at least 1.0" of runoff from tributary impervious areas and 0.4" of runoff from non-impervious developed areas tributary to the basin. The basin has been designed with an emergency spillway which will disperse the runoff directed to the pond on the large storms.

B. Wet Pond

The proposed wet pond has been designed to MDEP Standards. These standards require that wet ponds provide a storage volume below the permanent pool elevation of at least 1.5" times the subcatchment's impervious area, plus 0.6" times the subcatchment's developed area. The permanent pool must have a mean depth of at least 3 feet. The pond must detain, above the permanent pool a channel protection volume equal to 1" times the subcatchment impervious area plus 0.4" times the subcatchment's landscaped area. This volume must discharge through an underdrained gravel trench with an outlet not greater than 8" diameter. Flood control storage may be provided above the permanent pool and channel protection volume storage. Flood control may be discharged through traditional pond outlets.

C. Wooded Buffers

Buffers are proposed throughout the site to provide treatment for roadways through ditch turnout buffers and for residential lots through naturally wooded buffers. All buffers have been designed in accordance with Section 5 of the Chapter 500 BMP Manual based on vegetation, soil classification and slope of land.

VII. Peak Flow Analysis

This section has been prepared to discuss the proposed modifications to peak flow rates as a result of the development.

A. Modeling Technique

In order to evaluate drainage characteristics in pre and post-development conditions, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10, and 25-year storm events. Runoff calculations were performed following the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds, Technical Release #55" and HydroCAD Stormwater Modeling System Software. A 24-hour, SCS Type III storm distribution for the 2, 10, and 25-year storm frequencies were used for analysis.

The 24-hour rainfall values utilized in the hydrologic model are as follows.

Storm Frequency Precipitation (in./24 hr)	
2-year	3.0
10-year	4.7
25-year	5.5

B. Drainage Characteristics (Pre and Post-Development Watershed Delineation)

Five Watershed Study Points (SP1, SP2, SP3, SP4, and SP5) were established to evaluate the pre-development and post-development runoff conditions.

Study Point SP1 represents the location where a wetland area exits the site along the property line in the southwest corner of the property. In the pre-development condition WS1, and in the post-development condition WS10 and WS11 are tributary to this Study Point in the model.

Study Point SP2 represents an area at the northwestern property line where a portion of the site drains toward Smith Road. In the pre-development condition WS2, and the post-development condition WS20, WS21, and WS22 are tributary to this Study Point in the model.

Study Point SP3 represents an area along the southwestern property line. In the pre-development condition WS3 and the post-development condition WS30, WS31, and WS32 are tributary to this Study Point in the model.

Study Point SP4 represents an area of wetlands that drains off the property along the southwestern property line. In the pre-development condition WS4, and the post-development condition WS40, WS41, WS42, and WS43 are tributary to this Study Point in the model.

Study Point SP5 represents an area of wetlands that drains off the property along the southeastern property line. It also collects runoff from a large off-site area. In the pre-development condition WS5, and the post-development condition WS50, WS51, WS52, WS53, and WS54 are tributary to this Study Point in the model.

C. Comparison

The watershed areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development and grading. Table-1 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Table 1 – Stormwater Runoff Summary Table Pre-Development vs. Post-Development										
Study Point	Total Watershed Area (Ac)		Avg. Weighted Curve No. (CN)		Peak Rates of Runoff (cfs)					
	Pre	Post	Pre	Post	2-year		10-year		25-year	
					Pre	Post	Pre	Post	Pre	Post
SP1	54.45	52.61	74	76	30.50	24.08	75.86	47.14	99.44	58.18
SP2	26.43	26.32	73	75	13.05	14.71	33.43	33.59	44.12	42.19
SP3	2.25	2.91	70	75	1.07	1.07	3.05	2.78	4.11	3.74
SP4	24.25	23.67	74	76	11.88	11.22	29.57	29.27	38.76	38.61
SP5	124.85	126.72	73	74	42.53	40.51	109.77	109.33	145.08	142.59

The results of the stormwater modeling at Study Points SP1, SP3, SP4, & SP5 indicated that the peak rates of runoff in the developed condition will be less than or equal to the pre-developed condition for the 2-year, 10-year and 25-year storm events.

At Study Point SP2 the model indicates that there will be an increase in peak rates of runoff during the 2-year and 10-year storm events. This is due to the alteration in land cover from wooded area to impervious surface for the proposed roadway and developed lots. Area draining to this study point drains to a large wetland area prior to exiting the site. We have looked at downstream area and are not aware of any flooding issues from the existing development. An estimate of the storage available based on the mapped wetland limits, indicates that the increased rate of runoff will not cause a measurable increase in ponding depth within the wetland.

VIII. Water Quality Analysis

To achieve the required treatment, one wet pond, one underdrained filtration basin, one Filterra Bioretention System and naturally wooded buffers throughout the site are proposed as part of the stormwater infrastructure for the project. MDEP Standards require that underdrained soil filter and bioretention BMPs stormwater management system, such as bioretention cells that use filtration or infiltration to control runoff must detain a runoff volume equal to 1.0-inch times the subcatchment's impervious area and 0.4-inches times the subcatchment's tributary landscaped areas. MDEP Standards also require that wet ponds provide a permanent pool storage volume of at least 1.5-inches

times the subcatchment's impervious area, plus 0.6-inches times the subcatchment's developed area. The permanent pool must have a mean depth of at least 3-feet. The pond must detain, above the permanent pool a volume equal to 1-inch times the subcatchment impervious area plus 0.4-inches times the subcatchment's landscaped area.

The proposed underdrained filtration basin is designed to treat runoff from 21,528 square feet of impervious roadway and 23,322 square feet of landscaped area, which are tributary to the basin.

The proposed wet pond is designed to treat runoff from 72,933 square feet of proposed roadway and 166,235 square feet of landscaped area, which are tributary to the basin.

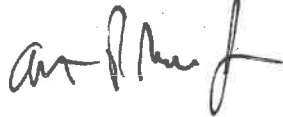
Water Quality Volumes and BMP sizing volume calculations are attached to this report.

IX. Conclusions

The proposed development has been designed in full build out to meet MDEP's Chapter 500 standards. The proposed development will create 22 new residential lots in addition to 5 existing lots. A series of BMPs proposed for the site will provide treatment for 77% of the linear portion of the sites overall impervious area and 69% of the overall linear portion of the sites developed area. For the non-linear portion of the site treatment will be provided for 99% of the impervious area and 99% of the developed area. Where possible the peak flow rates have been controlled to below or equal to the pre-development rates. Additionally, erosion and sedimentation controls have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

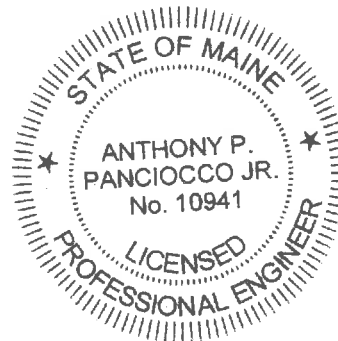
Prepared by:

SEBAGO TECHNICS, INC.



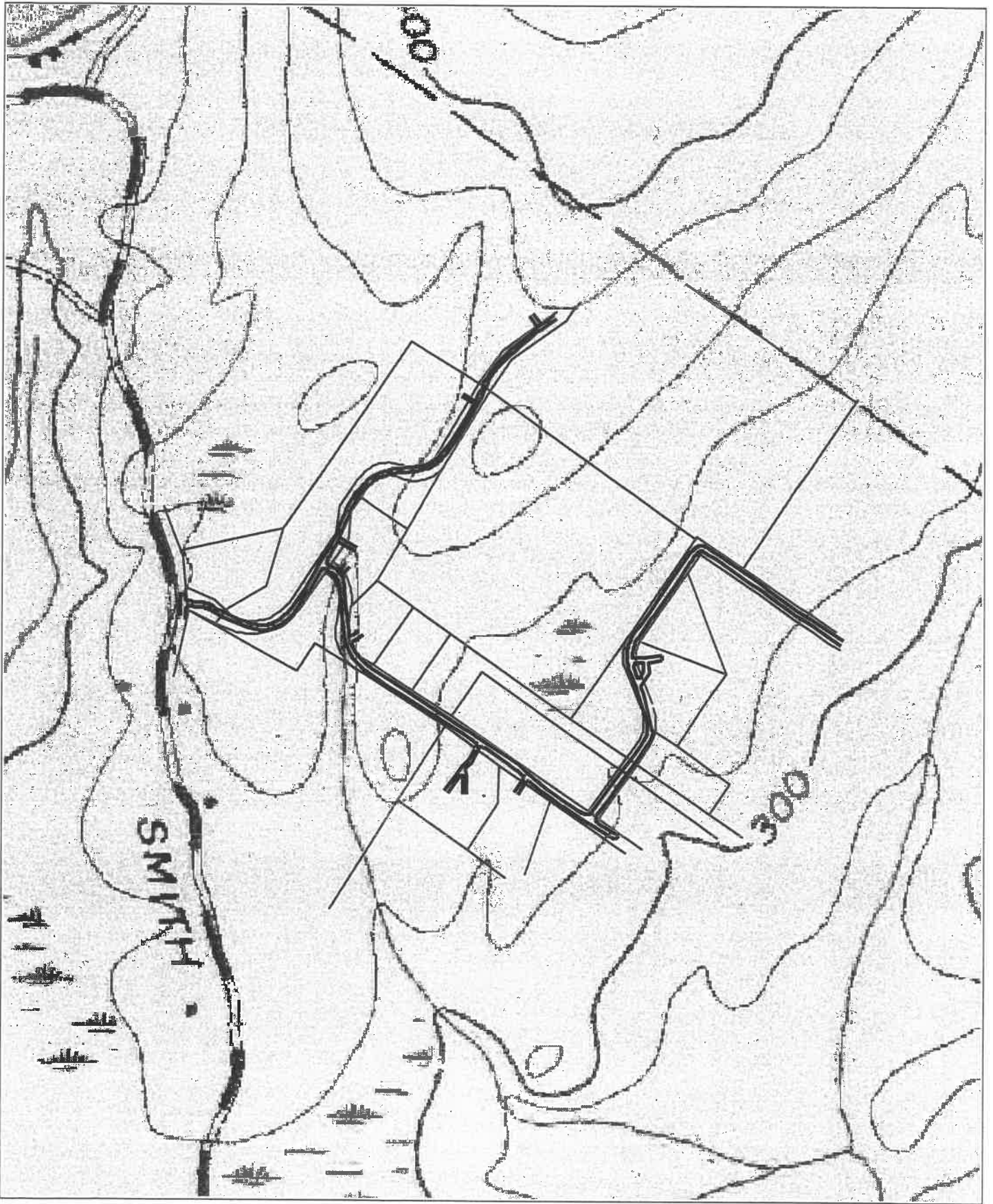
Anthony P. Panciocco, P.E.
Senior Project Engineer

APP:rls/dlf/kn
September 21, 2010



Appendix 1

Site Location Maps



SITE LOCATION MAP
 OF
**CROSS RIDGE DRIVE/
 LOCKLAND DRIVE**
 CROSS RIDGE DRIVE
 WINDHAM, MAINE

Legend

- Existing Property Line
- Existing Road

1 inch equals 500 feet



JUNE 24, 2009
 USGS QUADRANGLE
 (CUMBERLAND COUNTY MOSAIC)
 PROJECT NUMBER 06302



Appendix 2

Inspection, Maintenance, and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Cross Ridge Drive and Lockland Drive Windham, Maine

Introduction

The developer/owner responsible for this Inspection, Maintenance and House Keeping Plan is PTG Properties, Inc. The owner's address is 75 Lockland Drive, Windham, ME 04062; the telephone number is (207) 892-1437. The owner of the proposed project will be responsible for the maintenance of all stormwater management structures, and the keeping of records and maintenance logbook until such time as the responsibilities are transferred to the Homeowners Association. Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5-year time span. The maintenance logbook will be made available to the Maine Department of Environmental Protection (MDEP) upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

The following plan outlines the anticipated inspection, maintenance, and housekeeping procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in this Inspection, Maintenance, and Housekeeping Plan are provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional details on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the MDEP.

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven (7) calendar days and prior to any storm event (rainfall).
3. **Documentation:** A log 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 major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations 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 the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three (3) years from the completion of permanent stabilization.
4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on a silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Stone Check Dams:

- Inspect the center of the dam to make sure it is lower than the edges. Erosion caused by high flows around the edges of the dam must be corrected.
- Sediment accumulation shall be removed prior to reaching half of the original design height.
- Areas beneath stone check dams must be seeded and mulched upon removal.

D. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

E. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.
- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

F. Level Lip Spreaders and Ditch Turnouts:

- The level spreader pool should be inspected after rainfall events for sediment accumulation and debris that may reduce its capacity. Sediment and debris buildup should be removed once the volume of the pool has been reduced by 25%.
- The level lip must be constructed so that runoff flows slowly over the lip to a sheet flow through the receiving buffer. Repair or reconstruction of the level lip is required when flow from the spreader becomes channelized.

- Do not store snow removed from the street and/or parking lot within the area of a level spreader.

H. Forested / Meadow Buffers:

- Inspect and repair any eroded areas within the buffer during construction.

I. Stabilized Temporary Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

- A. Spill Prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- B. 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.
- C. Fugitive Sediment and Dust: Actions must be taken to insure 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.
- D. Debris and Other Materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.
- E. Trench Dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, 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 must be removed from the ponded area, either through gravity or pumping, and 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.

After Construction

1. **Inspection:** After construction, it is the responsibility of the owner or assigned heirs to comply with the inspection, maintenance, and housekeeping procedures outlined in this section. All measures must be maintained in effective operating condition. A person with knowledge of erosion and stormwater control, including the standards and conditions in all applicable permits, shall conduct the inspections.
2. **Specific Inspection, Maintenance, and Housekeeping Tasks:** The following is a list of permanent erosion control and stormwater management measures and the inspection, maintenance, and housekeeping tasks to be performed after construction.
 - 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 erosion 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 Other Open Channels:
 - Inspect ditches, swales and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, remove woody 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.
 - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
 - If the ditch has a riprap lining, replace riprap in areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged.

C. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.

D. Level Lip Spreaders and Ditch Turnouts:

- The level spreader pool should be inspected after significant rainfall events for sediment accumulation and debris that may reduce its capacity. Sediment and debris buildup should be removed once the volume of the pool has been reduced by 25%.
- The level lip must be constructed so that runoff flows slowly over the lip to a sheet flow through the receiving buffer. Repair or reconstruction of the level lip is required when flow from the spreader becomes channelized.
- Do not store snow removed from the street and/or parking lot within the area of a level spreader.

E. Forested / Meadow Buffers

- Inspect and repair any eroded areas within the buffer.
- Reestablish vegetation within the buffer destroyed by post construction activities.

F. Winter Sanding

- Clear accumulation of winter sand along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

G. Wet Ponds

- The inlet and outlet of the pond should be checked periodically to ensure that flow structures are not blocked by debris. All ditches or pipes

connecting ponds in series should be checked for debris that may obstruct flow. Inspections should be conducted monthly during wet weather conditions from March to November.

- Wet Ponds should be inspected annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure. Corrective action should be taken immediately upon identification of problems.
- Wet Ponds lose 0.5-1.0% of their volume annually due to sediment accumulation. Dredging is required when accumulated volume loss reaches 15%, or approximately every 15-20 years.

H. Filtterra Devices

Filtterra currently includes a 1-year maintenance agreement with the purchase of each unit.

- Irrigate plant within Filtterra System on regular basis.
- Add additional mulch and engineered media as needed.
- Perform visual inspections with the appropriate service every six months.
- Remove all sediment, foreign debris and litter from the Filtterra.

I. Underdrained Filtration Pond

- The soil filter should be inspected after every major storm in the first few months to ensure proper function. Thereafter, the filter should be inspected at least once every six months to ensure that it is draining within 24 hours.
- The top several inches of the filter shall be replaced with fresh material when water ponds on the surface of the bed for more than 72 hours.
- The filter bed vegetations shall be mowed once or twice per year to a grass height no less than six (6) inches.
- Fertilization of the under drained filter area should be avoided unless absolutely necessary to establish vegetation.
- Harvesting and pruning of excessive growth will need to be done occasionally. Weeding to control unwanted or invasive plants may also be necessary.
- Inspect embankment for erosion, settling, and structural failure.

3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation

and maintenance of controls. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations 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 the appropriate regulatory agency upon request. A sample "Stormwater Inspection and Maintenance Form" has been included as Attachment 1 of this Inspection, Maintenance, and Housekeeping Plan.

4. **Recertification:** A certification of the following shall be submitted to the Maine Department of Environmental Protection (MDEP) within three months of the expiration of each five year interval from the date of issuance of MDEP permits.
 - 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. The Inspection, Maintenance, and Housekeeping Plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the MDEP, and the maintenance log is being maintained.

5. **Duration of Maintenance:** Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Sample Stormwater Inspection and Maintenance Form

MAINTENANCE LOG

**Cross Ridge Drive and Lockland Drive
Windham, Maine
Attachment 1**

This log is intended to accompany the stormwater Inspection, Maintenance and Housekeeping Plan for the Cross Ridge Drive and Lockland Drive Development. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review by the MDEP. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Culverts	Inspect culverts monthly or after rainfall of >1"			
	Clean culverts when sediment occupies more than 20% of pipe diameter			
	Repair any erosion at inlet and outlet pipes			
	Replace displaced riprap at least once a year			
	Remove vegetation growing through riprap at least once a year			
Level Spreader and Ditch Turnouts	Inspect after significant rainfall events for sediment accumulation			
	If volume of pool is reduced by 25%, must remove sediment and debris			
	Repair or reconstruct the riprap if flow from the spreader becomes channelized			
	No snow storage is allowed in the level lip spreader			
Vegetated Buffers	Inspect Annually for evidence of erosion or channelization. Repair as necessary.			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
Wet Ponds	Inspect inlet and outlet for blockage and debris			
	Inspect for erosion, destabilization or side slopes and other structural failure			
	Inspect periodically during wet weather conditions			
	Check for sediment build up			
Filterra Device	Irrigate plantings			
	Add mulch and media as needed			
	Perform visual inspection			
Underdrained Filtration Pond	Erosion at inflow point			
	Ensure proper function			

Appendix 3

Stormwater Quality Calculations

**TABLE 1
IMPERVIOUS AREA / DEVELOPED AREA
TREATMENT SUMMARY**

Description*	Lot Impervious	Lot Developed	ROW	ROW	ROW	Receives Treatment (Yes/No)	IMP AREA TREATED	DEVELOPED AREA TREATED	TREATMENT
			Impervious (SQ FT)	Landscaped (SQ FT)	Developed (acre)				
Cross Ridge Drive Sta. 0+00 - 5+50 Left			5225	8525	13750	NO	0	0	
Cross Ridge Drive Sta 5+50 - 8+00 Left			2375	3875	6250	NO	0	0	
Cross Ridge Drive Sta 8+00 - 15+00 Left			8300	11200	17500	NO	0	0	
Cross Ridge Drive Sta 15+00 - 17+00 Left			1600	3400	5000	NO	0	0	
Cross Ridge Drive Sta 0+00 - 5+50 Right			5225	8525	13750	NO	0	0	
Cross Ridge Drive Sta 5+50 - 9+25 Right			3563	5813	9375	NO	0	0	
Cross Ridge Drive Sta 9+25 - 15+00 Right			5175	9200	14375	YES	5175	14375	Filterra
Cross Ridge Drive Sta 15+00 - 17+00 Right			1600	3400	5000	YES	1600	5000	Buffer
SUBTOTALS			31063	53938	85000		6775	19375	
Lockland Drive Sta 0+00 - 2+00 Right			2200	2800	5000	NO	0	0	
Lockland Drive Sta 2+00 - 8+00 Right			8600	8400	15000	NO	0	0	
Lockland Drive Sta 8+00 - 15+50 Right			8250	10500	18750	NO	0	0	
Lockland Drive Sta 15+50 - 20+35 Right			5335	6700	12125	YES	5335	12125	Buffer
Lockland Drive Ext. Right			1357	1778	3175	YES	1397	3175	Buffer
Lockland Drive Sta 20+35 - 23+00 Right			2915	3710	6825	NO	0	0	
Lockland Drive Sta 23+00 - 33+50 Right			11550	14700	26250	YES	11550	26250	Wet Pond
Lockland Drive Sta 0+00 - 3+50 Left			3850	4900	8750	NO	0	0	
Lockland Drive Sta 3+50 - 14+00 Left			11550	14700	26250	NO	0	0	
Lockland Drive Sta 14+00 - 20+35 Left			6885	8890	15875	YES	6885	15875	Buffer
Lockland Drive Ext. Left			1397	1778	3175	YES	1397	3175	Buffer
Lockland Drive Sta 20+35 - 23+00 Left			2915	3710	6825	NO	0	0	
Lockland Drive Sta 23+00 - 33+50 Left			11550	14700	26250	YES	11550	26250	Wet Pond
SUBTOTALS			76494	97366	173860		38214	86860	
NEW ROAD 1 0+00 - 3+20 Left			3840	4160	8000	YES	3840	8000	Wet Pond
NEW ROAD 1 0+00 - 3+20 Right			3840	4160	8000	YES	3840	8000	Wet Pond
NEW ROAD 1 3+20 - 12+17 Left			10764	11861	22425	YES	10764	22425	UDP-1
NEW ROAD 1 3+20 - 12+17 Right			10764	11861	22425	YES	10764	22425	UDP-1
SUBTOTALS			29208	31842	60850		29208	60850	
NEW ROAD 2 Left			10620	11505	22125	YES	10620	22125	Wet Pond
NEW ROAD 2 Right			10620	11505	22125	YES	10620	22125	Wet Pond
SUBTOTALS			21240	23010	44250		21240	44250	
NEW ROAD 3 Left			8472	9178	17650	YES	8472	17650	Buffer
NEW ROAD 3 Right			8472	9178	17650	YES	8472	17650	Buffer
NEW ROAD 3 Hammerhead			2136	2314	4450	YES	2136	4450	Buffer
SUBTOTALS			19080	20670	39750		19080	39750	
TOTALS			177085	226816	403700		114517	251075	
ADDITIONAL ROADWAY TREATMENT OFFSET AREA									
Lockland Drive Sta 33+50 - 35+00 Left			1850	2100	3750	YES	1850	2100	Wet Pond
Lockland Drive Sta 33+50 - 35+00 Right			1850	2100	3750	YES	1850	2100	Wet Pond
Cross Ridge Drive Sta. 17+00 - 20+20 Left			2560	5440	8000	YES	2560	5440	Buffer
Cross Ridge Drive Sta. 17+00 - 20+20 Right			2560	5440	8000	YES	2560	5440	Buffer
J & B Hunt Road Left			6890	6360	13250	YES	6890	6360	Buffer
J & B Hunt Road Right			6890	6360	13250	YES	6890	6360	Buffer
SUBTOTALS							22200	27800	
EXISTING LOT AREAS									
Lot 1	4810	23499				NO	0	0	
Lot 2	4229	17275				NO	0	0	
Lot 3	3501	14646				NO	0	0	
Lot 4	6500	25886				NO	0	0	
Lot 5	4543	19437				NO	0	0	
ADDITIONAL LOT TREATMENT AREA									
LOT A (TO OFFSET LOT 1)						YES	4500	20000	Buffer
GILMAN RESIDENCE (TO OFFSET LOT 4)						YES	5000	20000	Buffer
LOT B (TO OFFSET LOT 2)						YES	4500	20000	Buffer
LOT C (TO OFFSET LOT 3)						YES	4500	20000	Buffer
LOT D (TO OFFSET LOT 5)						YES	4500	20000	Buffer
SUBTOTALS	23583	100743					23000	100000	
Lots 1-5 & 13-17 *	33000	148000				YES	33000	148000	Buffer
Lot 9-10 *	8000	32000				YES	8000	32000	Wet Pond
SUBTOTALS	41000	180000					41000	180000	
LOT TOTALS	64583	280743					64000	280000	

TOTAL ROW IMPERVIOUS AREA	177,085
TOTAL ROW IMPERVIOUS AREA REQUIRING TREATMENT	132,813
TOTAL ROW IMPERVIOUS AREA RECEIVING TREATMENT	136,717
% OF ROW IMPERVIOUS AREA RECEIVING TREATMENT	77.2%

TOTAL ROW DEVELOPED AREA	403,700
TOTAL ROW DEV. AREA REQUIRING TREATMENT	201,850
TOTAL ROW DEV. AREA RECEIVING TREATMENT	278,875
% OF ROW DEV. AREA RECEIVING TREATMENT	69.1%

TOTAL LOT IMPERVIOUS AREA	64,583
TOTAL LOT IMPERVIOUS AREA REQUIRING TREATMENT	61,354
TOTAL LOT IMPERVIOUS AREA RECEIVING TREATMENT	64,000
% OF LOT IMPERVIOUS AREA RECEIVING TREATMENT	99.1%

TOTAL LOT DEVELOPED AREA	280,743
TOTAL LOT DEV. AREA REQUIRING TREATMENT	224,594
TOTAL LOT DEV. AREA RECEIVING TREATMENT	280,000
% OF LOT DEV. AREA RECEIVING TREATMENT	99.7%

* TREATMENT NOT PROVIDED FOR LOTS 3, 6-8, 18-22. LOTS TO BE DEVELOPED BY OTHERS

SEBAGO TECHNICS, INC.

1 Chabot Street

P.O. Box 1339

WESTBROOK, MAINE 04098

(207) 856-0277 FAX (207) 856-2206

JOB 06302 Buffer Sizing

SHEET NO. 1 OF 3

CALCULATED BY RLS DATE 2/3/2010

CHECKED BY _____ DATE _____

FILE NAME 06302MDEPWaterQualityCaics PRINT DATE 9/1/2010

MDEP Submission-August 2010

Buffer Sizing:			
Buffer 1 (Cross Ridge Sta. 17+00)			
Type of Buffer :	Level Lip Spreader		
Existing Cover :	Forested		
Soils :	HSG C Loamy Sand		
Buffer Slope :	8%		
Buffer Length :	150	feet	
Tributary Area			
Impervious :	3,600	sf	(Cross Ridge Drive)
Landscaped :	10,000	sf	(Cross Ridge Drive)
Berm Length per acre of impervious :	75	feet	
Berm Length per acre of landscaped :	25	feet	
Required Level Spreader Berm Length :	12	feet	
Buffer 2 (Road 3)			
Type of Buffer :	Level Lip Spreader		
Existing Cover :	Forested		
Soils :	HSG C Sandy Loam		
Buffer Slope :	11%		
Buffer Length :	75	feet	
Tributary Area			
Impervious :	20,477	sf	(Road 3)
Landscaped :	22,448	sf	(Road 3)
Berm Length per acre of impervious :	150	feet	
Berm Length per acre of landscaped :	42	feet	
Required Level Spreader Berm Length :	92	feet	

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JOB 06302 Buffer Sizing

SHEET NO. 2 OF 3

CALCULATED BY RLS DATE 2/3/2010

CHECKED BY _____ DATE _____

FILE NAME 06302MDEPWaterQualityCaics PRINT DATE 9/1/2010

MDEP Submission-August 2010

Buffer Sizing:			
Buffer 3 (Lockland Drive Sta. 16+00 to 17+00)			
Type of Buffer :	Forested Buffer		
Existing Cover :	Forested		
Soils :	HSG C Sandy Loam		
Buffer Slope :	3%		
Buffer Length :	75	feet	
Buffer 4 (Lockland Drive Sta. 16+00 to Sta. 17+00)			
Type of Buffer :	Level Lip Spreader		
Existing Cover :	Forested		
Soils :	HSG C Loamy Sand		
Buffer Slope :	8%		
Buffer Length :	75	feet	
Tributary Area			
Impervious :	13,940	sf	(Road 3)
Landscaped :	8,712	sf	(Road 3)
Berm Length per acre of impervious :	125	feet	
Berm Length per acre of landscaped :	35	feet	
Required Level Spreader Berm Length :	47	feet	

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JOB 06302 Buffer Sizing

SHEET NO. 3 OF 3

CALCULATED BY RLS DATE 2/3/2010

CHECKED BY _____ DATE _____

FILE NAME 06302MDEPWaterQualityCalcs PRINT DATE 9/1/2010

MDEP Submission-August 2010

Residential Lot Buffer Sizing:

Buffer/Lot No.	Existing Cover	Soils	Required Buffer Length
Lot 1	Forested	HSG C Sandy Loam	50 ft
Lot 2	Forested	HSG C Loamy Sand	50 ft
Lot 4	Forested	HSG C Sandy Loam	50 ft
Lot 5	Forested	HSG C Loamy Sand	50 ft
Lot 11 (Lot C)	Forested	HSG C Sandy Loam	50 ft
Lot 12 (Lot D)	Forested	HSG C Loamy Sand	50 ft
Lot 13	Forested	HSG C Sandy Loam	50 ft
Lot 14	Forested	HSG C Sandy Loam	50 ft
Lot 15	Forested	HSG C Sandy Loam	50 ft
Lot 16	Forested	HSG C Sandy Loam	50 ft
Lot 17	Forested	HSG C Loamy Sand	50 ft
Gilman Residence	Forested	HSG C Loamy Sand	50 ft



Study Point SP1



Study Point SP2



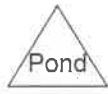
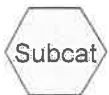
Study Point SP3



Study Point SP1



Study Point SP1



Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS-1: Runoff Area=54.450 ac 0.00% Impervious Runoff Depth>0.82"
Flow Length=2,810' Tc=30.0 min CN=74 Runoff=30.50 cfs 3.705 af

SubcatchmentWS-2: Runoff Area=26.435 ac 0.13% Impervious Runoff Depth>0.77"
Flow Length=1,743' Tc=33.8 min CN=73 Runoff=13.05 cfs 1.690 af

SubcatchmentWS-3: Runoff Area=2.250 ac 0.00% Impervious Runoff Depth>0.64"
Flow Length=395' Tc=21.3 min CN=70 Runoff=1.07 cfs 0.119 af

SubcatchmentWS-4: Runoff Area=24.250 ac 0.00% Impervious Runoff Depth>0.81"
Flow Length=2,350' Tc=39.7 min CN=74 Runoff=11.88 cfs 1.642 af

SubcatchmentWS-5: Runoff Area=124.850 ac 0.00% Impervious Runoff Depth>0.75"
Flow Length=4,640' Tc=65.7 min CN=73 Runoff=42.53 cfs 7.850 af

Reach SP-1: StudyPoint SP1 Inflow=30.50 cfs 3.705 af
Outflow=30.50 cfs 3.705 af

Reach SP-2: StudyPoint SP2 Inflow=13.05 cfs 1.690 af
Outflow=13.05 cfs 1.690 af

Reach SP-3: StudyPoint SP3 Inflow=1.07 cfs 0.119 af
Outflow=1.07 cfs 0.119 af

Reach SP-4: StudyPoint SP1 Inflow=11.88 cfs 1.642 af
Outflow=11.88 cfs 1.642 af

Reach SP-5: StudyPoint SP1 Inflow=42.53 cfs 7.850 af
Outflow=42.53 cfs 7.850 af

Summary for Subcatchment WS-1:

Runoff = 30.50 cfs @ 12.46 hrs, Volume= 3.705 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
5.400	70	Woods, Good, HSG C
22.050	77	Woods, Good, HSG D
* 15.300	70	Woods, Good, HSG C, OFFSITE
* 11.700	77	Woods, Good, HSG D, OFFSITE
54.450	74	Weighted Average
54.450		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0500	0.11		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
8.7	585	0.0500	1.12		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
5.9	2,125	0.0200	6.03	241.15	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=30.00' D=1.00' Z= 10.0 ' Top.W=50.00' n= 0.030 Earth, grassed & winding
30.0	2,810	Total			

Summary for Subcatchment WS-2:

Runoff = 13.05 cfs @ 12.52 hrs, Volume= 1.690 af, Depth> 0.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.035	98	Paved parking & roofs
0.250	74	>75% Grass cover, Good, HSG C
0.250	87	Dirt roads, HSG C
15.650	70	Woods, Good, HSG C
10.250	77	Woods, Good, HSG D
26.435	73	Weighted Average
26.400		Pervious Area
0.035		Impervious Area

06302PRE_site

Type III 24-hr 2-YEAR Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
8.6	445	0.0300	0.87		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
0.5	288	0.0730	10.12	101.24	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=5.00' D=1.00' Z= 5.0 ' /' Top.W=15.00' n= 0.030 Earth, grassed & winding
2.5	910	0.0210	6.18	247.11	Trap/Vee/Rect Channel Flow, CHANNEL D TO E Bot.W=30.00' D=1.00' Z= 10.0 ' /' Top.W=50.00' n= 0.030
33.8	1,743	Total			

Summary for Subcatchment WS-3:

Runoff = 1.07 cfs @ 12.34 hrs, Volume= 0.119 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
2.250	70	Woods, Good, HSG C
2.250		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.6	150	0.0700	0.13		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
2.7	245	0.0920	1.52		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
21.3	395	Total			

Summary for Subcatchment WS-4:

Runoff = 11.88 cfs @ 12.60 hrs, Volume= 1.642 af, Depth> 0.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
7.400	70	Woods, Good, HSG C
9.600	77	Woods, Good, HSG D
* 1.500	70	Woods, Good, HSG C, OFFSITE
* 5.750	77	Woods, Good, HSG D, OFFSITE
24.250	74	Weighted Average
24.250		Pervious Area

06302PRE_site

Type III 24-hr 2-YEAR Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.9	100	0.0300	0.09		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
16.6	865	0.0300	0.87		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
4.2	1,385	0.0150	5.45	163.61	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=25.00' D=1.00' Z= 5.0 ' Top.W=35.00' n= 0.030 Earth, grassed & winding
39.7	2,350	Total			

Summary for Subcatchment WS-5:

Runoff = 42.53 cfs @ 12.96 hrs, Volume= 7.850 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
78.500	70	Woods, Good, HSG C
18.700	77	Woods, Good, HSG D
* 27.650	77	Woods, Good, HSG D, OFFSITE
124.850	73	Weighted Average
124.850		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
34.2	1,450	0.0200	0.71		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
9.3	3,090	0.0150	5.53	193.61	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=30.00' D=1.00' Z= 5.0 ' Top.W=40.00' n= 0.030 Earth, grassed & winding
65.7	4,640	Total			

Summary for Reach SP-1: Study Point SP1

Inflow Area = 54.450 ac, 0.00% Impervious, Inflow Depth > 0.82" for 2-YEAR event

Inflow = 30.50 cfs @ 12.46 hrs, Volume= 3.705 af

Outflow = 30.50 cfs @ 12.46 hrs, Volume= 3.705 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-2: Study Point SP2

Inflow Area = 26.435 ac, 0.13% Impervious, Inflow Depth > 0.77" for 2-YEAR event
Inflow = 13.05 cfs @ 12.52 hrs, Volume= 1.690 af
Outflow = 13.05 cfs @ 12.52 hrs, Volume= 1.690 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-3: Study Point SP3

Inflow Area = 2.250 ac, 0.00% Impervious, Inflow Depth > 0.64" for 2-YEAR event
Inflow = 1.07 cfs @ 12.34 hrs, Volume= 0.119 af
Outflow = 1.07 cfs @ 12.34 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-4: Study Point SP1

Inflow Area = 24.250 ac, 0.00% Impervious, Inflow Depth > 0.81" for 2-YEAR event
Inflow = 11.88 cfs @ 12.60 hrs, Volume= 1.642 af
Outflow = 11.88 cfs @ 12.60 hrs, Volume= 1.642 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-5: Study Point SP1

Inflow Area = 124.850 ac, 0.00% Impervious, Inflow Depth > 0.75" for 2-YEAR event
Inflow = 42.53 cfs @ 12.96 hrs, Volume= 7.850 af
Outflow = 42.53 cfs @ 12.96 hrs, Volume= 7.850 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS-1: Runoff Area=54.450 ac 0.00% Impervious Runoff Depth>1.95"
Flow Length=2,810' Tc=30.0 min CN=74 Runoff=75.86 cfs 8.846 af

SubcatchmentWS-2: Runoff Area=26.435 ac 0.13% Impervious Runoff Depth>1.87"
Flow Length=1,743' Tc=33.8 min CN=73 Runoff=33.43 cfs 4.120 af

SubcatchmentWS-3: Runoff Area=2.250 ac 0.00% Impervious Runoff Depth>1.66"
Flow Length=395' Tc=21.3 min CN=70 Runoff=3.05 cfs 0.311 af

SubcatchmentWS-4: Runoff Area=24.250 ac 0.00% Impervious Runoff Depth>1.94"
Flow Length=2,350' Tc=39.7 min CN=74 Runoff=29.57 cfs 3.924 af

SubcatchmentWS-5: Runoff Area=124.850 ac 0.00% Impervious Runoff Depth>1.85"
Flow Length=4,640' Tc=65.7 min CN=73 Runoff=109.77 cfs 19.199 af

Reach SP-1: StudyPoint SP1 Inflow=75.86 cfs 8.846 af
Outflow=75.86 cfs 8.846 af

Reach SP-2: StudyPoint SP2 Inflow=33.43 cfs 4.120 af
Outflow=33.43 cfs 4.120 af

Reach SP-3: StudyPoint SP3 Inflow=3.05 cfs 0.311 af
Outflow=3.05 cfs 0.311 af

Reach SP-4: StudyPoint SP1 Inflow=29.57 cfs 3.924 af
Outflow=29.57 cfs 3.924 af

Reach SP-5: StudyPoint SP1 Inflow=109.77 cfs 19.199 af
Outflow=109.77 cfs 19.199 af

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS-1: Runoff Area=54.450 ac 0.00% Impervious Runoff Depth>2.55"
Flow Length=2,810' Tc=30.0 min CN=74 Runoff=99.44 cfs 11.571 af

SubcatchmentWS-2: Runoff Area=26.435 ac 0.13% Impervious Runoff Depth>2.46"
Flow Length=1,743' Tc=33.8 min CN=73 Runoff=44.12 cfs 5.418 af

SubcatchmentWS-3: Runoff Area=2.250 ac 0.00% Impervious Runoff Depth>2.22"
Flow Length=395' Tc=21.3 min CN=70 Runoff=4.11 cfs 0.416 af

SubcatchmentWS-4: Runoff Area=24.250 ac 0.00% Impervious Runoff Depth>2.54"
Flow Length=2,350' Tc=39.7 min CN=74 Runoff=38.76 cfs 5.134 af

SubcatchmentWS-5: Runoff Area=124.850 ac 0.00% Impervious Runoff Depth>2.43"
Flow Length=4,640' Tc=65.7 min CN=73 Runoff=145.08 cfs 25.266 af

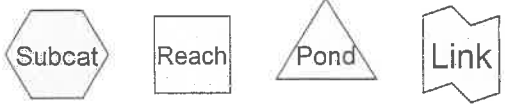
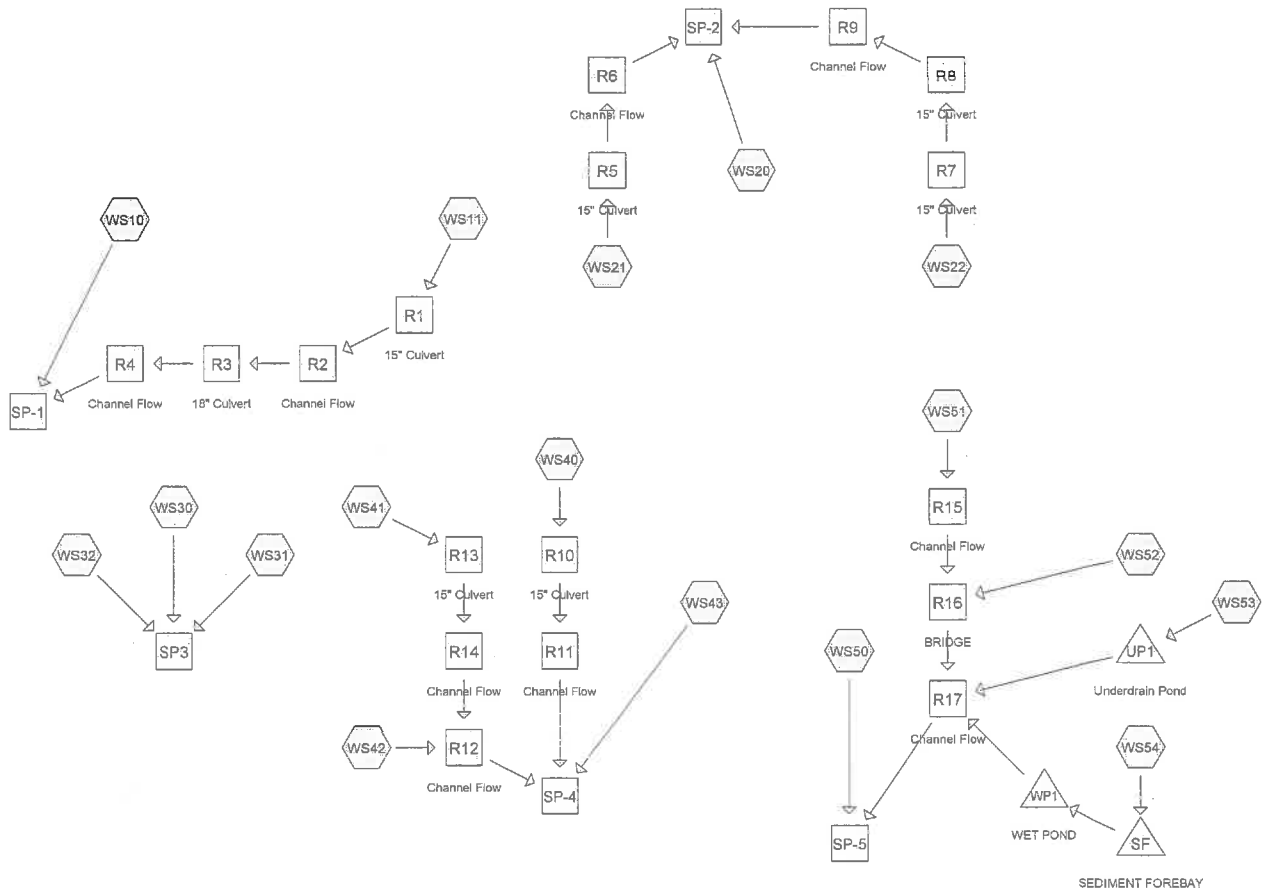
Reach SP-1: StudyPoint SP1 Inflow=99.44 cfs 11.571 af
Outflow=99.44 cfs 11.571 af

Reach SP-2: StudyPoint SP2 Inflow=44.12 cfs 5.418 af
Outflow=44.12 cfs 5.418 af

Reach SP-3: StudyPoint SP3 Inflow=4.11 cfs 0.416 af
Outflow=4.11 cfs 0.416 af

Reach SP-4: StudyPoint SP1 Inflow=38.76 cfs 5.134 af
Outflow=38.76 cfs 5.134 af

Reach SP-5: StudyPoint SP1 Inflow=145.08 cfs 25.266 af
Outflow=145.08 cfs 25.266 af



Drainage Diagram for 06302POST_site(9-13-10)
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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS10: Runoff Area=23.590 ac 2.16% Impervious Runoff Depth>0.87"
Flow Length=1,327' Tc=27.3 min CN=75 Runoff=14.73 cfs 1.705 af

SubcatchmentWS11: Runoff Area=29.020 ac 2.83% Impervious Runoff Depth>0.92"
Flow Length=1,885' Tc=27.1 min CN=76 Runoff=19.43 cfs 2.222 af

SubcatchmentWS20: Runoff Area=19.440 ac 3.96% Impervious Runoff Depth>0.86"
Flow Length=1,858' Tc=35.5 min CN=75 Runoff=10.77 cfs 1.400 af

SubcatchmentWS21: Runoff Area=2.180 ac 16.51% Impervious Runoff Depth>1.03"
Flow Length=795' Tc=11.6 min CN=78 Runoff=2.31 cfs 0.188 af

SubcatchmentWS22: Runoff Area=4.700 ac 4.26% Impervious Runoff Depth>0.82"
Flow Length=254' Tc=12.2 min CN=74 Runoff=3.74 cfs 0.323 af

SubcatchmentWS30: Runoff Area=1.560 ac 28.85% Impervious Runoff Depth>1.07"
Flow Length=612' Tc=58.3 min CN=79 Runoff=0.84 cfs 0.139 af

SubcatchmentWS31: Runoff Area=0.550 ac 0.00% Impervious Runoff Depth>0.64"
Flow Length=265' Tc=13.8 min CN=70 Runoff=0.31 cfs 0.029 af

SubcatchmentWS32: Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>0.64"
Flow Length=178' Tc=13.7 min CN=70 Runoff=0.45 cfs 0.043 af

SubcatchmentWS40: Runoff Area=7.500 ac 0.00% Impervious Runoff Depth>0.91"
Flow Length=905' Slope=0.0200 '/' Tc=41.2 min CN=76 Runoff=4.12 cfs 0.571 af

SubcatchmentWS41: Runoff Area=0.560 ac 28.57% Impervious Runoff Depth>1.28"
Flow Length=338' Slope=0.0200 '/' Tc=6.5 min CN=82 Runoff=0.87 cfs 0.060 af

SubcatchmentWS42: Runoff Area=1.400 ac 11.43% Impervious Runoff Depth>1.09"
Flow Length=336' Tc=9.3 min CN=79 Runoff=1.68 cfs 0.127 af

SubcatchmentWS43: Runoff Area=14.210 ac 4.50% Impervious Runoff Depth>0.87"
Flow Length=1,385' Tc=20.6 min CN=75 Runoff=9.99 cfs 1.030 af

SubcatchmentWS50: Runoff Area=94.265 ac 1.24% Impervious Runoff Depth>0.75"
Flow Length=4,420' Slope=0.0200 '/' Tc=76.7 min CN=73 Runoff=29.00 cfs 5.891 af

SubcatchmentWS51: Runoff Area=21.200 ac 0.00% Impervious Runoff Depth>0.96"
Flow Length=2,025' Tc=53.8 min CN=77 Runoff=10.70 cfs 1.696 af

SubcatchmentWS52: Runoff Area=3.400 ac 5.88% Impervious Runoff Depth>1.02"
Flow Length=658' Tc=32.5 min CN=78 Runoff=2.37 cfs 0.290 af

SubcatchmentWS53: Runoff Area=0.920 ac 51.09% Impervious Runoff Depth>1.78"
Flow Length=42' Slope=0.0950 '/' Tc=6.0 min CN=89 Runoff=2.00 cfs 0.137 af

SubcatchmentWS54:	Runoff Area=6.940 ac 23.49% Impervious Runoff Depth>1.40" Flow Length=606' Tc=24.0 min CN=84 Runoff=7.66 cfs 0.809 af
Reach R1: 15" Culvert	Avg. Depth=1.25' Max Vel=10.85 fps Inflow=19.43 cfs 2.222 af D=15.0" n=0.011 L=45.0' S=0.0238 '/' Capacity=11.77 cfs Outflow=12.53 cfs 2.222 af
Reach R10: 15" Culvert	Avg. Depth=0.65' Max Vel=6.34 fps Inflow=4.12 cfs 0.571 af D=15.0" n=0.011 L=38.0' S=0.0100 '/' Capacity=7.63 cfs Outflow=4.12 cfs 0.570 af
Reach R11: ChannelFlow	Avg. Depth=0.11' Max Vel=1.20 fps Inflow=4.12 cfs 0.570 af n=0.035 L=1,431.0' S=0.0150 '/' Capacity=140.25 cfs Outflow=3.44 cfs 0.546 af
Reach R12: ChannelFlow	Avg. Depth=0.04' Max Vel=0.75 fps Inflow=1.98 cfs 0.186 af n=0.035 L=467.0' S=0.0200 '/' Capacity=1,341.95 cfs Outflow=1.66 cfs 0.184 af
Reach R13: 15" Culvert	Avg. Depth=0.30' Max Vel=3.82 fps Inflow=0.87 cfs 0.060 af D=15.0" n=0.011 L=40.0' S=0.0080 '/' Capacity=6.83 cfs Outflow=0.86 cfs 0.060 af
Reach R14: ChannelFlow	Avg. Depth=0.03' Max Vel=0.39 fps Inflow=0.86 cfs 0.060 af n=0.035 L=178.0' S=0.0073 '/' Capacity=810.93 cfs Outflow=0.67 cfs 0.059 af
Reach R15: ChannelFlow	Avg. Depth=0.20' Max Vel=1.73 fps Inflow=10.70 cfs 1.696 af n=0.035 L=405.0' S=0.0150 '/' Capacity=566.32 cfs Outflow=10.62 cfs 1.683 af
Reach R16: BRIDGE	Avg. Depth=0.20' Max Vel=1.95 fps Inflow=12.00 cfs 1.973 af n=0.035 L=64.0' S=0.0191 '/' Capacity=638.16 cfs Outflow=11.99 cfs 1.971 af
Reach R17: ChannelFlow	Avg. Depth=0.22' Max Vel=1.86 fps Inflow=14.13 cfs 2.571 af n=0.035 L=1,980.0' S=0.0150 '/' Capacity=566.09 cfs Outflow=12.76 cfs 2.462 af
Reach R2: ChannelFlow	Avg. Depth=0.12' Max Vel=0.93 fps Inflow=12.53 cfs 2.222 af n=0.035 L=395.0' S=0.0078 '/' Capacity=1,287.60 cfs Outflow=11.77 cfs 2.192 af
Reach R3: 18" Culvert	Avg. Depth=0.94' Max Vel=10.06 fps Inflow=11.77 cfs 2.192 af D=18.0" n=0.011 L=48.0' S=0.0173 '/' Capacity=16.32 cfs Outflow=11.77 cfs 2.192 af
Reach R4: ChannelFlow	Avg. Depth=0.25' Max Vel=2.09 fps Inflow=11.77 cfs 2.192 af n=0.035 L=480.0' S=0.0176 '/' Capacity=545.37 cfs Outflow=11.77 cfs 2.176 af
Reach R5: 15" Culvert	Avg. Depth=0.51' Max Vel=4.89 fps Inflow=2.31 cfs 0.188 af D=15.0" n=0.012 L=48.0' S=0.0090 '/' Capacity=6.62 cfs Outflow=2.28 cfs 0.188 af
Reach R6: ChannelFlow	Avg. Depth=0.07' Max Vel=0.59 fps Inflow=2.28 cfs 0.188 af n=0.035 L=155.0' S=0.0067 '/' Capacity=777.27 cfs Outflow=2.12 cfs 0.186 af
Reach R7: 15" Culvert	Avg. Depth=0.85' Max Vel=4.23 fps Inflow=3.74 cfs 0.323 af D=15.0" n=0.011 L=40.0' S=0.0038 '/' Capacity=4.68 cfs Outflow=3.73 cfs 0.322 af
Reach R8: 15" Culvert	Avg. Depth=0.42' Max Vel=10.32 fps Inflow=3.73 cfs 0.322 af D=15.0" n=0.011 L=50.0' S=0.0404 '/' Capacity=15.34 cfs Outflow=3.73 cfs 0.322 af

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Reach R9: ChannelFlow

Avg. Depth=0.08' Max Vel=0.92 fps Inflow=3.73 cfs 0.322 af
n=0.035 L=205.0' S=0.0145 '/' Capacity=960.71 cfs Outflow=3.53 cfs 0.320 af

Reach SP-1:

Inflow=24.08 cfs 3.881 af
Outflow=24.08 cfs 3.881 af

Reach SP-2:

Inflow=14.71 cfs 1.906 af
Outflow=14.71 cfs 1.906 af

Reach SP-4:

Inflow=11.22 cfs 1.761 af
Outflow=11.22 cfs 1.761 af

Reach SP-5:

Inflow=40.51 cfs 8.354 af
Outflow=40.51 cfs 8.354 af

Reach SP3:

Inflow=1.07 cfs 0.211 af
Outflow=1.07 cfs 0.211 af

Pond SF: SEDIMENTFOREBAY

Peak Elev=315.95' Storage=225 cf Inflow=7.66 cfs 0.809 af
Outflow=7.66 cfs 0.806 af

Pond UP1: UnderdrainPond

Peak Elev=326.55' Storage=4,502 cf Inflow=2.00 cfs 0.137 af
Discarded=0.01 cfs 0.008 af Primary=0.09 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.11 cfs 0.036 af

Pond WP1: WET POND

Peak Elev=313.39' Storage=15,282 cf Inflow=7.66 cfs 0.806 af
Primary=2.21 cfs 0.573 af Secondary=0.00 cfs 0.000 af Outflow=2.21 cfs 0.573 af

Summary for Subcatchment WS10:

Runoff = 14.73 cfs @ 12.42 hrs, Volume= 1.705 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.260	98	Paved parking & roofs
* 0.150	98	Paved parking & roofs - Driveways
* 0.100	98	Paved parking & roofs - Houses
0.830	80	>75% Grass cover, Good, HSG D
8.300	70	Woods, Good, HSG C
7.000	77	Woods, Good, HSG D
* 0.850	70	Woods, Good, HSG C - offsite
* 6.100	77	Woods, Good, HSG D - offsite
23.590	75	Weighted Average
23.080		Pervious Area
0.510		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0500	0.11		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
7.4	382	0.0300	0.87		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
4.5	845	0.0050	3.16	189.45	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=50.00' D=1.00' Z= 10.0 ' Top.W=70.00' n= 0.030 Earth, grassed & winding
27.3	1,327	Total			

Summary for Subcatchment WS11:

Runoff = 19.43 cfs @ 12.41 hrs, Volume= 2.222 af, Depth> 0.92"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.400	98	Paved parking & roofs
* 0.140	98	Paved parking & roofs - Driveways
* 0.280	98	Paved parking & roofs - Houses
1.500	80	>75% Grass cover, Good, HSG D
4.650	70	Woods, Good, HSG C
1.950	77	Woods, Good, HSG D
* 4.600	70	Woods, Good, HSG C - offsite
* 15.500	77	Woods, Good, HSG D - offsite
29.020	76	Weighted Average
28.200		Pervious Area
0.820		Impervious Area

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Type III 24-hr 2-YEAR Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.4	100	0.0500	0.11		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
8.7	585	0.0500	1.12		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
3.0	1,200	0.0200	6.60	362.77	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=50.00' D=1.00' Z= 5.0 '/' Top.W=60.00' n= 0.030
27.1	1,885	Total			

Summary for Subcatchment WS20:

Runoff = 10.77 cfs @ 12.54 hrs, Volume= 1.400 af, Depth> 0.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.660	98	Paved parking & roofs
* 0.035	98	Paved parking & roofs - Driveways
* 0.040	98	Paved parking & roofs - Houses
0.320	89	Gravel roads, HSG C
0.650	74	>75% Grass cover, Good, HSG C
0.350	80	>75% Grass cover, Good, HSG D
* 0.035	98	Paved parking & roofs - offsite
* 0.250	74	>75% Grass cover, Good, HSG C - offsite
* 0.250	87	Dirt roads, HSG C - offsite
9.550	70	Woods, Good, HSG C
7.300	77	Woods, Good, HSG D
19.440	75	Weighted Average
18.670		Pervious Area
0.770		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
8.5	412	0.0260	0.81		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
0.0	36	0.0420	14.40	25.44	Circular Channel (pipe), PIPE C TO D Diam= 18.0" Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011
0.2	133	0.0700	10.65	199.78	Trap/Vee/Rect Channel Flow, CHANNEL D TO E Bot.W=5.00' D=1.50' Z= 5.0 '/' Top.W=20.00' n= 0.035
1.0	223	0.0090	3.60	17.98	Trap/Vee/Rect Channel Flow, CHANNEL E TO F Bot.W=3.00' D=1.00' Z= 2.0 '/' Top.W=7.00' n= 0.030
1.7	150	0.0870	1.47		Shallow Concentrated Flow, SHALLOW F TO G Woodland Kv= 5.0 fps
1.9	804	0.0180	7.21	721.16	Trap/Vee/Rect Channel Flow, CHANNEL G TO H Bot.W=30.00' D=2.00' Z= 10.0 '/' Top.W=70.00' n= 0.035
35.5	1,858	Total			

Summary for Subcatchment WS21:

Runoff = 2.31 cfs @ 12.17 hrs, Volume= 0.188 af, Depth> 1.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.260	98	Paved parking & roofs
* 0.050	98	Paved parking & roofs - Driveways
* 0.050	98	Paved parking & roofs - Houses
0.560	74	>75% Grass cover, Good, HSG C
0.500	70	Woods, Good, HSG C
0.760	77	Woods, Good, HSG D
2.180	78	Weighted Average
1.820		Pervious Area
0.360		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		Sheet Flow, SHEET A TO B
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.8	695	0.0600	13.94	1,951.81	Trap/Vee/Rect Channel Flow, CHANNEL B TO C
					Bot.W=50.00' D=2.00' Z= 10.0 ' Top.W=90.00' n= 0.035
11.6	795	Total			

Summary for Subcatchment WS22:

Runoff = 3.74 cfs @ 12.19 hrs, Volume= 0.323 af, Depth> 0.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.200	98	Paved parking & roofs
2.500	70	Woods, Good, HSG C
2.000	77	Woods, Good, HSG D
4.700	74	Weighted Average
4.500		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.1200	0.15		Sheet Flow, SHEET A TO B
					Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	154	0.1400	1.87		Shallow Concentrated Flow, SHALLOW B TO C
					Woodland Kv= 5.0 fps
12.2	254	Total			

Summary for Subcatchment WS30:

Runoff = 0.84 cfs @ 12.82 hrs, Volume= 0.139 af, Depth> 1.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.450	98	Paved parking & roofs
0.550	74	>75% Grass cover, Good, HSG C
0.560	70	Woods, Good, HSG C
1.560	79	Weighted Average
1.110		Pervious Area
0.450		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
3.5	75	0.0050	0.35		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
1.1	312	0.0100	4.71	42.38	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=3.00' D=1.50' Z= 2.0 ' /' Top.W=9.00' n= 0.030
31.5	125	0.0520	0.07		Sheet Flow, SHEET D TO E Woods: Dense underbrush n= 0.800 P2= 3.00"
58.3	612	Total			

Summary for Subcatchment WS31:

Runoff = 0.31 cfs @ 12.22 hrs, Volume= 0.029 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.550	70	Woods, Good, HSG C
0.550		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	100	0.1100	0.15		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	165	0.0440	1.05		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
13.8	265	Total			

Summary for Subcatchment WS32:

Runoff = 0.45 cfs @ 12.22 hrs, Volume= 0.043 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.800	70	Woods, Good, HSG C
0.800		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0800	0.13		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
1.0	78	0.0640	1.26		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
13.7	178	Total			

Summary for Subcatchment WS40:

Runoff = 4.12 cfs @ 12.61 hrs, Volume= 0.571 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
1.000	70	Woods, Good, HSG C
6.500	77	Woods, Good, HSG D
7.500	76	Weighted Average
7.500		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
19.0	805	0.0200	0.71		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
41.2	905	Total			

Summary for Subcatchment WS41:

Runoff = 0.87 cfs @ 12.10 hrs, Volume= 0.060 af, Depth> 1.28"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

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Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.100	70	Woods, Good, HSG C
0.300	77	Woods, Good, HSG D
0.560	82	Weighted Average
0.400		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	100	0.0200	1.33		Sheet Flow, SHEET A TO B Smooth surfaces n= 0.011 P2= 3.00"
1.4	238	0.0200	2.87		Shallow Concentrated Flow, SHALLOW B TO C Paved Kv= 20.3 fps
3.8					Direct Entry, DIRECT ENTRY
6.5	338	Total			

Summary for Subcatchment WS42:

Runoff = 1.68 cfs @ 12.14 hrs, Volume= 0.127 af, Depth> 1.09"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.160	98	Paved parking & roofs
0.100	74	>75% Grass cover, Good, HSG C
1.140	77	Woods, Good, HSG D
1.400	79	Weighted Average
1.240		Pervious Area
0.160		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0900	0.21		Sheet Flow, SHEET A TO B Grass: Dense n= 0.240 P2= 3.00"
0.5	58	0.0150	1.84		Shallow Concentrated Flow, SHALLOW B TO C Grassed Waterway Kv= 15.0 fps
0.7	178	0.0730	4.05		Shallow Concentrated Flow, SHALLOW C TO D Grassed Waterway Kv= 15.0 fps
9.3	336	Total			

Summary for Subcatchment WS43:

Runoff = 9.99 cfs @ 12.31 hrs, Volume= 1.030 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

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Area (ac)	CN	Description
0.390	98	Paved parking & roofs
* 0.150	98	Paved parking & roofs - Driveways
* 0.100	98	Paved parking & roofs - Houses
0.350	74	>75% Grass cover, Good, HSG C
1.270	80	>75% Grass cover, Good, HSG D
5.850	70	Woods, Good, HSG C
6.100	77	Woods, Good, HSG D
14.210	75	Weighted Average
13.570		Pervious Area
0.640		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	100	0.0400	0.10		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
3.8	1,285	0.0100	5.67	396.68	Trap/Vee/Rect Channel Flow, CHANNEL B TO C Bot.W=25.00' D=2.00' Z= 5.0 ' /' Top.W=45.00' n= 0.035
20.6	1,385	Total			

Summary for Subcatchment WS50:

Runoff = 29.00 cfs @ 13.11 hrs, Volume= 5.891 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 1.070	98	Paved parking & roofs - Driveways
* 0.100	98	Paved parking & roofs - Houses
2.340	74	>75% Grass cover, Good, HSG C
1.570	80	>75% Grass cover, Good, HSG D
63.380	70	Woods, Good, HSG C
25.805	77	Woods, Good, HSG D
94.265	73	Weighted Average
93.095		Pervious Area
1.170		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
49.9	2,118	0.0200	0.71		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
4.6	2,202	0.0200	8.05	1,126.88	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=50.00' D=2.00' Z= 10.0 ' /' Top.W=90.00' n= 0.035
76.7	4,420	Total			

Summary for Subcatchment WS51:

Runoff = 10.70 cfs @ 12.77 hrs, Volume= 1.696 af, Depth> 0.96"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 21.200	77	Woods, Good, HSG D - offsite
21.200		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0200	0.08		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
30.1	1,275	0.0200	0.71		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
1.5	650	0.0150	7.08	566.09	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=30.00' D=2.00' Z= 5.0 '/' Top.W=50.00' n= 0.035
53.8	2,025	Total			

Summary for Subcatchment WS52:

Runoff = 2.37 cfs @ 12.48 hrs, Volume= 0.290 af, Depth> 1.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
* 2.500	77	Woods, Good, HSG D
0.200	98	Paved roads w/curbs & sewers
0.700	74	>75% Grass cover, Good, HSG C
3.400	78	Weighted Average
3.200		Pervious Area
0.200		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.8	100	0.0400	0.10		Sheet Flow, SHEET A TO B Woods: Light underbrush n= 0.400 P2= 3.00"
15.7	558	0.0140	0.59		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
32.5	658	Total			

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Summary for Subcatchment WS53:

Runoff = 2.00 cfs @ 12.09 hrs, Volume= 0.137 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.470	98	Paved parking & roofs
0.450	80	>75% Grass cover, Good, HSG D
0.920	89	Weighted Average
0.450		Pervious Area
0.470		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.9	42	0.0950	0.18		Sheet Flow, SHEET A TO B Grass: Dense n= 0.240 P2= 3.00"
2.1					Direct Entry, DIRECT ENTRY
6.0	42	Total			

Summary for Subcatchment WS54:

Runoff = 7.66 cfs @ 12.34 hrs, Volume= 0.809 af, Depth> 1.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.00"

Area (ac)	CN	Description
0.680	98	Paved parking & roofs
* 0.600	98	Paved parking & roofs - Existing Road
* 0.350	98	Paved parking & roofs - Houses/Driveways
* 2.500	80	>75% Grass cover, Good, HSG D - yard
0.260	74	>75% Grass cover, Good, HSG C
2.100	80	>75% Grass cover, Good, HSG D
0.450	77	Woods, Good, HSG D
6.940	84	Weighted Average
5.310		Pervious Area
1.630		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
22.2	100	0.0800	0.08		Sheet Flow, SHEET A TO B Woods: Dense underbrush n= 0.800 P2= 3.00"
0.5	47	0.0900	1.50		Shallow Concentrated Flow, SHALLOW B TO C Woodland Kv= 5.0 fps
0.4	120	0.0100	4.60	101.68	Trap/Vee/Rect Channel Flow, CHANNEL C TO D Bot.W=2.00' D=2.60' Z= 3.0 & 2.0 ' Top.W=15.00' n= 0.040
0.3	69	0.0050	3.47	2.73	Circular Channel (pipe), PIPE D TO E Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
0.4	228	0.0470	9.97	220.43	Trap/Vee/Rect Channel Flow, CHANNEL E TO F Bot.W=2.00' D=2.60' Z= 3.0 & 2.0 ' Top.W=15.00' n= 0.040
0.2	42	0.0050	3.47	2.73	Circular Channel (pipe), PIPE F TO G Diam= 12.0" Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.012
24.0	606	Total			

Summary for Reach R1: 15" Culvert

Inflow Area = 29.020 ac, 2.83% Impervious, Inflow Depth > 0.92" for 2-YEAR event
 Inflow = 19.43 cfs @ 12.41 hrs, Volume= 2.222 af
 Outflow = 12.53 cfs @ 12.22 hrs, Volume= 2.222 af, Atten= 35%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 10.85 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 6.66 fps, Avg. Travel Time= 0.1 min

Peak Storage= 55 cf @ 12.25 hrs, Average Depth at Peak Storage= 1.25'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 11.77 cfs

15.0" Diameter Pipe, n= 0.011
 Length= 45.0' Slope= 0.0238 '/
 Inlet Invert= 330.45', Outlet Invert= 329.38'



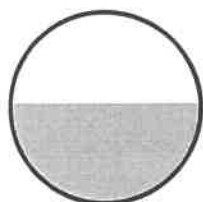
Summary for Reach R10: 15" Culvert

Inflow Area = 7.500 ac, 0.00% Impervious, Inflow Depth > 0.91" for 2-YEAR event
 Inflow = 4.12 cfs @ 12.61 hrs, Volume= 0.571 af
 Outflow = 4.12 cfs @ 12.61 hrs, Volume= 0.570 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.34 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 3.43 fps, Avg. Travel Time= 0.2 min

Peak Storage= 25 cf @ 12.61 hrs, Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 7.63 cfs

15.0" Diameter Pipe, n= 0.011
Length= 38.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.38'



Summary for Reach R11: Channel Flow

Inflow Area = 7.500 ac, 0.00% Impervious, Inflow Depth > 0.91" for 2-YEAR event
Inflow = 4.12 cfs @ 12.61 hrs, Volume= 0.570 af
Outflow = 3.44 cfs @ 13.17 hrs, Volume= 0.546 af, Atten= 17%, Lag= 33.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.20 fps, Min. Travel Time= 20.0 min
Avg. Velocity = 0.57 fps, Avg. Travel Time= 41.7 min

Peak Storage= 4,119 cf @ 12.84 hrs, Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 1.00', Capacity at Bank-Full= 140.25 cfs

25.00' x 1.00' deep channel, n= 0.035
Side Slope Z-value= 5.0 '/' Top Width= 35.00'
Length= 1,431.0' Slope= 0.0150 '/'
Inlet Invert= 0.00', Outlet Invert= -21.47'



Summary for Reach R12: Channel Flow

Inflow Area = 1.960 ac, 16.33% Impervious, Inflow Depth > 1.14" for 2-YEAR event
Inflow = 1.98 cfs @ 12.16 hrs, Volume= 0.186 af
Outflow = 1.66 cfs @ 12.50 hrs, Volume= 0.184 af, Atten= 16%, Lag= 19.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.75 fps, Min. Travel Time= 10.4 min
Avg. Velocity = 0.46 fps, Avg. Travel Time= 17.0 min

Peak Storage= 1,042 cf @ 12.32 hrs, Average Depth at Peak Storage= 0.04'
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 1,341.95 cfs

50.00' x 2.00' deep channel, n= 0.035
 Side Slope Z-value= 20.0 ' / ' Top Width= 130.00'
 Length= 467.0' Slope= 0.0200 ' / '
 Inlet Invert= 0.00', Outlet Invert= -9.34'



Summary for Reach R13: 15" Culvert

Inflow Area = 0.560 ac, 28.57% Impervious, Inflow Depth > 1.28" for 2-YEAR event
 Inflow = 0.87 cfs @ 12.10 hrs, Volume= 0.060 af
 Outflow = 0.86 cfs @ 12.11 hrs, Volume= 0.060 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.82 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 1.52 fps, Avg. Travel Time= 0.4 min

Peak Storage= 9 cf @ 12.10 hrs, Average Depth at Peak Storage= 0.30'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 6.83 cfs

15.0" Diameter Pipe, n= 0.011
 Length= 40.0' Slope= 0.0080 ' / '
 Inlet Invert= 330.28', Outlet Invert= 329.96'



Summary for Reach R14: Channel Flow

Inflow Area = 0.560 ac, 28.57% Impervious, Inflow Depth > 1.28" for 2-YEAR event
 Inflow = 0.86 cfs @ 12.11 hrs, Volume= 0.060 af
 Outflow = 0.67 cfs @ 12.31 hrs, Volume= 0.059 af, Atten= 22%, Lag= 12.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.39 fps, Min. Travel Time= 7.6 min
 Avg. Velocity = 0.27 fps, Avg. Travel Time= 11.0 min

Peak Storage= 308 cf @ 12.18 hrs, Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 810.93 cfs

50.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 20.0 ' / ' Top Width= 130.00'
Length= 178.0' Slope= 0.0073 ' / '
Inlet Invert= 0.00', Outlet Invert= -1.30'



Summary for Reach R15: Channel Flow

Inflow Area =	21.200 ac,	0.00% Impervious,	Inflow Depth > 0.96"	for 2-YEAR event
Inflow =	10.70 cfs @	12.77 hrs,	Volume=	1.696 af
Outflow =	10.62 cfs @	12.88 hrs,	Volume=	1.683 af, Atten= 1%, Lag= 6.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 8.2 min

Peak Storage= 2,488 cf @ 12.82 hrs, Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 566.32 cfs

30.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 5.0 ' / ' Top Width= 50.00'
Length= 405.0' Slope= 0.0150 ' / '
Inlet Invert= 0.00', Outlet Invert= -6.08'



Summary for Reach R16: BRIDGE

Inflow Area =	24.600 ac,	0.81% Impervious,	Inflow Depth > 0.96"	for 2-YEAR event
Inflow =	12.00 cfs @	12.84 hrs,	Volume=	1.973 af
Outflow =	11.99 cfs @	12.85 hrs,	Volume=	1.971 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.95 fps, Min. Travel Time= 0.5 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 1.2 min

Peak Storage= 394 cf @ 12.84 hrs, Average Depth at Peak Storage= 0.20'
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 638.16 cfs

30.00' x 2.00' deep channel, n= 0.035
 Side Slope Z-value= 5.0 ' / ' Top Width= 50.00'
 Length= 64.0' Slope= 0.0191 ' / '
 Inlet Invert= 0.00', Outlet Invert= -1.22'



Summary for Reach R17: Channel Flow

Inflow Area = 32.460 ac, 7.09% Impervious, Inflow Depth > 0.95" for 2-YEAR event
 Inflow = 14.13 cfs @ 12.88 hrs, Volume= 2.571 af
 Outflow = 12.76 cfs @ 13.38 hrs, Volume= 2.462 af, Atten= 10%, Lag= 30.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.86 fps, Min. Travel Time= 17.8 min
 Avg. Velocity = 0.93 fps, Avg. Travel Time= 35.6 min

Peak Storage= 13,615 cf @ 13.08 hrs, Average Depth at Peak Storage= 0.22'
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 566.09 cfs

30.00' x 2.00' deep channel, n= 0.035
 Side Slope Z-value= 5.0 ' / ' Top Width= 50.00'
 Length= 1,980.0' Slope= 0.0150 ' / '
 Inlet Invert= 0.00', Outlet Invert= -29.70'



Summary for Reach R2: Channel Flow

Inflow Area = 29.020 ac, 2.83% Impervious, Inflow Depth > 0.92" for 2-YEAR event
 Inflow = 12.53 cfs @ 12.22 hrs, Volume= 2.222 af
 Outflow = 11.77 cfs @ 13.35 hrs, Volume= 2.192 af, Atten= 6%, Lag= 68.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 0.93 fps, Min. Travel Time= 7.1 min
 Avg. Velocity = 0.48 fps, Avg. Travel Time= 13.8 min

Peak Storage= 4,993 cf @ 13.25 hrs, Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 1,287.60 cfs

100.00' x 2.00' deep channel, n= 0.035 Earth, dense weeds
Side Slope Z-value= 10.0 '/' Top Width= 140.00'
Length= 395.0' Slope= 0.0078 '/'
Inlet Invert= 329.38', Outlet Invert= 326.30'



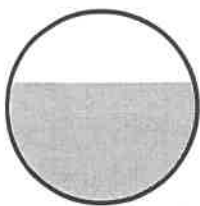
Summary for Reach R3: 18" Culvert

Inflow Area = 29.020 ac, 2.83% Impervious, Inflow Depth > 0.91" for 2-YEAR event
Inflow = 11.77 cfs @ 13.35 hrs, Volume= 2.192 af
Outflow = 11.77 cfs @ 13.35 hrs, Volume= 2.192 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 10.06 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 6.00 fps, Avg. Travel Time= 0.1 min

Peak Storage= 56 cf @ 13.35 hrs, Average Depth at Peak Storage= 0.94'
Bank-Full Depth= 1.50', Capacity at Bank-Full= 16.32 cfs

18.0" Diameter Pipe, n= 0.011
Length= 48.0' Slope= 0.0173 '/'
Inlet Invert= 326.30', Outlet Invert= 325.47'



Summary for Reach R4: Channel Flow

Inflow Area = 29.020 ac, 2.83% Impervious, Inflow Depth > 0.91" for 2-YEAR event
Inflow = 11.77 cfs @ 13.35 hrs, Volume= 2.192 af
Outflow = 11.77 cfs @ 13.40 hrs, Volume= 2.176 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.09 fps, Min. Travel Time= 3.8 min
Avg. Velocity = 1.08 fps, Avg. Travel Time= 7.4 min

Peak Storage= 2,705 cf @ 13.35 hrs, Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 545.37 cfs

20.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 10.0 '': Top Width= 60.00'
Length= 480.0' Slope= 0.0176 '':
Inlet Invert= 325.47', Outlet Invert= 317.00'



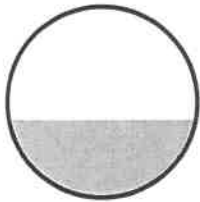
Summary for Reach R5: 15" Culvert

Inflow Area =	2.180 ac, 16.51% Impervious, Inflow Depth > 1.03"	for 2-YEAR event
inflow =	2.31 cfs @ 12.17 hrs, Volume=	0.188 af
Outflow =	2.28 cfs @ 12.18 hrs, Volume=	0.188 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.89 fps, Min. Travel Time= 0.2 min
Avg. Velocity = 2.19 fps, Avg. Travel Time= 0.4 min

Peak Storage= 23 cf @ 12.17 hrs, Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 6.62 cfs

15.0" Diameter Pipe, n= 0.012
Length= 48.0' Slope= 0.0090 '':
Inlet Invert= 342.47', Outlet Invert= 342.04'



Summary for Reach R6: Channel Flow

Inflow Area =	2.180 ac, 16.51% Impervious, Inflow Depth > 1.03"	for 2-YEAR event
inflow =	2.28 cfs @ 12.18 hrs, Volume=	0.188 af
Outflow =	2.12 cfs @ 12.31 hrs, Volume=	0.186 af, Atten= 7%, Lag= 7.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.59 fps, Min. Travel Time= 4.4 min
Avg. Velocity = 0.28 fps, Avg. Travel Time= 9.3 min

Peak Storage= 562 cf @ 12.23 hrs, Average Depth at Peak Storage= 0.07'
 Bank-Full Depth= 2.00', Capacity at Bank-Full= 777.27 cfs

50.00' x 2.00' deep channel, n= 0.035
 Side Slope Z-value= 20.0 ' / ' Top Width= 130.00'
 Length= 155.0' Slope= 0.0067 ' / '
 Inlet Invert= 342.04', Outlet Invert= 341.00'



Summary for Reach R7: 15" Culvert

Inflow Area = 4.700 ac, 4.26% Impervious, Inflow Depth > 0.82" for 2-YEAR event
 Inflow = 3.74 cfs @ 12.19 hrs, Volume= 0.323 af
 Outflow = 3.73 cfs @ 12.19 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.23 fps, Min. Travel Time= 0.2 min
 Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.3 min

Peak Storage= 35 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.85'
 Bank-Full Depth= 1.25', Capacity at Bank-Full= 4.68 cfs

15.0" Diameter Pipe, n= 0.011
 Length= 40.0' Slope= 0.0038 ' / '
 Inlet Invert= 346.36', Outlet Invert= 346.21'



Summary for Reach R8: 15" Culvert

Inflow Area = 4.700 ac, 4.26% Impervious, Inflow Depth > 0.82" for 2-YEAR event
 Inflow = 3.73 cfs @ 12.19 hrs, Volume= 0.322 af
 Outflow = 3.73 cfs @ 12.20 hrs, Volume= 0.322 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 10.32 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 4.83 fps, Avg. Travel Time= 0.2 min

Peak Storage= 18 cf @ 12.19 hrs, Average Depth at Peak Storage= 0.42'
Bank-Full Depth= 1.25', Capacity at Bank-Full= 15.34 cfs

15.0" Diameter Pipe, n= 0.011
Length= 50.0' Slope= 0.0404 '/'
Inlet Invert= 346.00', Outlet Invert= 343.98'



Summary for Reach R9: Channel Flow

Inflow Area = 4.700 ac, 4.26% Impervious, Inflow Depth > 0.82" for 2-YEAR event
Inflow = 3.73 cfs @ 12.20 hrs, Volume= 0.322 af
Outflow = 3.53 cfs @ 12.31 hrs, Volume= 0.320 af, Atten= 5%, Lag= 6.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.92 fps, Min. Travel Time= 3.7 min
Avg. Velocity = 0.42 fps, Avg. Travel Time= 8.1 min

Peak Storage= 795 cf @ 12.24 hrs, Average Depth at Peak Storage= 0.08'
Bank-Full Depth= 2.00', Capacity at Bank-Full= 960.71 cfs

50.00' x 2.00' deep channel, n= 0.035
Side Slope Z-value= 10.0 '/' Top Width= 90.00'
Length= 205.0' Slope= 0.0145 '/'
Inlet Invert= 343.98', Outlet Invert= 341.00'



Summary for Reach SP-1:

Inflow Area = 52.610 ac, 2.53% Impervious, Inflow Depth > 0.89" for 2-YEAR event
Inflow = 24.08 cfs @ 12.53 hrs, Volume= 3.881 af
Outflow = 24.08 cfs @ 12.53 hrs, Volume= 3.881 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-2:

Inflow Area = 26.320 ac, 5.05% Impervious, Inflow Depth > 0.87" for 2-YEAR event
 Inflow = 14.71 cfs @ 12.46 hrs, Volume= 1.906 af
 Outflow = 14.71 cfs @ 12.46 hrs, Volume= 1.906 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-4:

Inflow Area = 23.670 ac, 4.06% Impervious, Inflow Depth > 0.89" for 2-YEAR event
 Inflow = 11.22 cfs @ 12.34 hrs, Volume= 1.761 af
 Outflow = 11.22 cfs @ 12.34 hrs, Volume= 1.761 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP-5:

Inflow Area = 126.725 ac, 2.74% Impervious, Inflow Depth > 0.79" for 2-YEAR event
 Inflow = 40.51 cfs @ 13.24 hrs, Volume= 8.354 af
 Outflow = 40.51 cfs @ 13.24 hrs, Volume= 8.354 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach SP3:

Inflow Area = 2.910 ac, 15.46% Impervious, Inflow Depth > 0.87" for 2-YEAR event
 Inflow = 1.07 cfs @ 12.57 hrs, Volume= 0.211 af
 Outflow = 1.07 cfs @ 12.57 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond SF: SEDIMENT FOREBAY

Inflow Area = 6.940 ac, 23.49% Impervious, Inflow Depth > 1.40" for 2-YEAR event
 Inflow = 7.66 cfs @ 12.34 hrs, Volume= 0.809 af
 Outflow = 7.66 cfs @ 12.34 hrs, Volume= 0.806 af, Atten= 0%, Lag= 0.2 min
 Primary = 7.66 cfs @ 12.34 hrs, Volume= 0.806 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 315.95' @ 12.34 hrs Surf.Area= 252 sf Storage= 225 cf

Plug-Flow detention time= 2.6 min calculated for 0.806 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (810.9 - 809.8)

Volume	Invert	Avail.Storage	Storage Description
#1	314.50'	698 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
314.50	92	0	0
315.00	114	52	52
316.00	260	187	239
317.00	658	459	698

Device	Routing	Invert	Outlet Devices
#1	Primary	315.50'	10.0' long x 6.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=7.63 cfs @ 12.34 hrs HW=315.95' (Free Discharge)

↳ 1=Broad-Crested Rectangular Weir (Weir Controls 7.63 cfs @ 1.71 fps)

Summary for Pond UP1: Underdrain Pond

Inflow Area = 0.920 ac, 51.09% Impervious, Inflow Depth > 1.78" for 2-YEAR event
 Inflow = 2.00 cfs @ 12.09 hrs, Volume= 0.137 af
 Outflow = 0.11 cfs @ 14.59 hrs, Volume= 0.036 af, Atten= 95%, Lag= 149.9 min
 Discarded = 0.01 cfs @ 14.59 hrs, Volume= 0.008 af
 Primary = 0.09 cfs @ 14.59 hrs, Volume= 0.027 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 326.55' @ 14.59 hrs Surf.Area= 3,665 sf Storage= 4,502 cf

Plug-Flow detention time= 293.5 min calculated for 0.036 af (26% of inflow)
 Center-of-Mass det. time= 185.4 min (965.7 - 780.3)

Volume	Invert	Avail.Storage	Storage Description
#1	325.00'	11,039 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
325.00	2,300	0	0
326.00	3,035	2,668	2,668
328.00	5,336	8,371	11,039

Device	Routing	Invert	Outlet Devices
#1	Primary	324.20'	12.0" x 24.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 324.00' S= 0.0083 '/' Cc= 0.900 n= 0.012
#2	Secondary	327.00'	10.0' long x 6.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Device 1	326.50'	10.0" Horiz. Orifice/Grate Limited to weir flow C= 0.600
#4	Discarded	325.00'	0.410 in/hr Exfiltration over Surface area above invert

Excluded Surface area = 2,300 sf

Discarded OutFlow Max=0.01 cfs @ 14.59 hrs HW=326.55' (Free Discharge)

↳4=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.09 cfs @ 14.59 hrs HW=326.55' (Free Discharge)

↳1=Culvert (Passes 0.09 cfs of 4.06 cfs potential flow)

↳3=Orifice/Grate (Weir Controls 0.09 cfs @ 0.71 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=325.00' (Free Discharge)

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

Summary for Pond WP1: WET POND

Inflow Area = 6.940 ac, 23.49% Impervious, Inflow Depth > 1.39" for 2-YEAR event
 Inflow = 7.66 cfs @ 12.34 hrs, Volume= 0.806 af
 Outflow = 2.21 cfs @ 12.95 hrs, Volume= 0.573 af, Atten= 71%, Lag= 36.6 min
 Primary = 2.21 cfs @ 12.95 hrs, Volume= 0.573 af
 Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 313.39' @ 12.95 hrs Surf.Area= 14,825 sf Storage= 15,282 cf

Plug-Flow detention time= 144.3 min calculated for 0.573 af (71% of inflow)
 Center-of-Mass det. time= 79.8 min (890.7 - 810.9)

Volume	Invert	Avail.Storage	Storage Description
#1	312.30'	59,815 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
312.30	13,215	0	0
314.00	15,726	24,600	24,600
315.00	17,279	16,503	41,102
316.00	20,147	18,713	59,815

Device	Routing	Invert	Outlet Devices
#1	Primary	312.30'	0.50 cfs Exfiltration when above invert
#2	Secondary	314.50'	15.0' long x 6.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83
#3	Primary	310.20'	12.0" x 43.0' long Culvert CPP, square edge headwall, Ke= 0.500 Outlet Invert= 308.80' S= 0.0326 '/' Cc= 0.900 n= 0.011
#4	Device 3	313.20'	24.0" Horiz. Orifice/Grate Limited to weir flow C= 0.600

06302POST_site(9-13-10)

Type III 24-hr 2-YEAR Rainfall=3.00"

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Primary OutFlow Max=2.20 cfs @ 12.95 hrs HW=313.39' (Free Discharge)

└1=Exfiltration (Exfiltration Controls 0.50 cfs)

└3=Culvert (Passes 1.70 cfs of 6.20 cfs potential flow)

└4=Orifice/Grate (Weir Controls 1.70 cfs @ 1.43 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=312.30' (Free Discharge)

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

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS10: Runoff Area=23.590 ac 2.16% Impervious Runoff Depth>2.03"
Flow Length=1,327' Tc=27.3 min CN=75 Runoff=35.68 cfs 3.989 af

SubcatchmentWS11: Runoff Area=29.020 ac 2.83% Impervious Runoff Depth>2.11"
Flow Length=1,885' Tc=27.1 min CN=76 Runoff=45.81 cfs 5.099 af

SubcatchmentWS20: Runoff Area=19.440 ac 3.96% Impervious Runoff Depth>2.02"
Flow Length=1,858' Tc=35.5 min CN=75 Runoff=26.09 cfs 3.277 af

SubcatchmentWS21: Runoff Area=2.180 ac 16.51% Impervious Runoff Depth>2.28"
Flow Length=795' Tc=11.6 min CN=78 Runoff=5.19 cfs 0.415 af

SubcatchmentWS22: Runoff Area=4.700 ac 4.26% Impervious Runoff Depth>1.96"
Flow Length=254' Tc=12.2 min CN=74 Runoff=9.42 cfs 0.769 af

SubcatchmentWS30: Runoff Area=1.560 ac 28.85% Impervious Runoff Depth>2.33"
Flow Length=612' Tc=58.3 min CN=79 Runoff=1.86 cfs 0.303 af

SubcatchmentWS31: Runoff Area=0.550 ac 0.00% Impervious Runoff Depth>1.66"
Flow Length=265' Tc=13.8 min CN=70 Runoff=0.88 cfs 0.076 af

SubcatchmentWS32: Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>1.66"
Flow Length=178' Tc=13.7 min CN=70 Runoff=1.29 cfs 0.111 af

SubcatchmentWS40: Runoff Area=7.500 ac 0.00% Impervious Runoff Depth>2.10"
Flow Length=905' Slope=0.0200 '/' Tc=41.2 min CN=76 Runoff=9.72 cfs 1.311 af

SubcatchmentWS41: Runoff Area=0.560 ac 28.57% Impervious Runoff Depth>2.63"
Flow Length=338' Slope=0.0200 '/' Tc=6.5 min CN=82 Runoff=1.78 cfs 0.123 af

SubcatchmentWS42: Runoff Area=1.400 ac 11.43% Impervious Runoff Depth>2.37"
Flow Length=336' Tc=9.3 min CN=79 Runoff=3.67 cfs 0.276 af

SubcatchmentWS43: Runoff Area=14.210 ac 4.50% Impervious Runoff Depth>2.03"
Flow Length=1,385' Tc=20.6 min CN=75 Runoff=24.23 cfs 2.409 af

SubcatchmentWS50: Runoff Area=94.265 ac 1.24% Impervious Runoff Depth>1.84"
Flow Length=4,420' Slope=0.0200 '/' Tc=76.7 min CN=73 Runoff=75.21 cfs 14.424 af

SubcatchmentWS51: Runoff Area=21.200 ac 0.00% Impervious Runoff Depth>2.17"
Flow Length=2,025' Tc=53.8 min CN=77 Runoff=24.67 cfs 3.828 af

SubcatchmentWS52: Runoff Area=3.400 ac 5.88% Impervious Runoff Depth>2.27"
Flow Length=658' Tc=32.5 min CN=78 Runoff=5.33 cfs 0.642 af

SubcatchmentWS53: Runoff Area=0.920 ac 51.09% Impervious Runoff Depth>3.29"
Flow Length=42' Slope=0.0950 '/' Tc=6.0 min CN=89 Runoff=3.58 cfs 0.252 af

SubcatchmentWS54:	Runoff Area=6.940 ac 23.49% Impervious Runoff Depth>2.80" Flow Length=606' Tc=24.0 min CN=84 Runoff=15.14 cfs 1.617 af
Reach R1: 15" Culvert	Avg. Depth=1.25' Max Vel=10.86 fps Inflow=45.81 cfs 5.099 af D=15.0" n=0.011 L=45.0' S=0.0238 '/' Capacity=11.77 cfs Outflow=11.77 cfs 5.098 af
Reach R10: 15" Culvert	Avg. Depth=1.25' Max Vel=7.08 fps Inflow=9.72 cfs 1.311 af D=15.0" n=0.011 L=38.0' S=0.0100 '/' Capacity=7.63 cfs Outflow=8.45 cfs 1.311 af
Reach R11: ChannelFlow	Avg. Depth=0.18' Max Vel=1.63 fps Inflow=8.45 cfs 1.311 af n=0.035 L=1,431.0' S=0.0150 '/' Capacity=140.25 cfs Outflow=7.64 cfs 1.276 af
Reach R12: ChannelFlow	Avg. Depth=0.08' Max Vel=1.06 fps Inflow=4.68 cfs 0.398 af n=0.035 L=467.0' S=0.0200 '/' Capacity=1,341.95 cfs Outflow=4.11 cfs 0.395 af
Reach R13: 15" Culvert	Avg. Depth=0.44' Max Vel=4.68 fps Inflow=1.78 cfs 0.123 af D=15.0" n=0.011 L=40.0' S=0.0080 '/' Capacity=6.83 cfs Outflow=1.77 cfs 0.123 af
Reach R14: ChannelFlow	Avg. Depth=0.06' Max Vel=0.53 fps Inflow=1.77 cfs 0.123 af n=0.035 L=178.0' S=0.0073 '/' Capacity=810.93 cfs Outflow=1.51 cfs 0.122 af
Reach R15: ChannelFlow	Avg. Depth=0.33' Max Vel=2.38 fps Inflow=24.67 cfs 3.828 af n=0.035 L=405.0' S=0.0150 '/' Capacity=566.32 cfs Outflow=24.58 cfs 3.808 af
Reach R16: BRIDGE	Avg. Depth=0.33' Max Vel=2.69 fps Inflow=27.90 cfs 4.451 af n=0.035 L=64.0' S=0.0191 '/' Capacity=638.16 cfs Outflow=27.87 cfs 4.447 af
Reach R17: ChannelFlow	Avg. Depth=0.40' Max Vel=2.70 fps Inflow=35.80 cfs 5.919 af n=0.035 L=1,980.0' S=0.0150 '/' Capacity=566.09 cfs Outflow=34.37 cfs 5.786 af
Reach R2: ChannelFlow	Avg. Depth=0.12' Max Vel=0.93 fps Inflow=11.77 cfs 5.098 af n=0.035 L=395.0' S=0.0078 '/' Capacity=1,287.60 cfs Outflow=11.77 cfs 5.051 af
Reach R3: 18" Culvert	Avg. Depth=0.94' Max Vel=10.06 fps Inflow=11.77 cfs 5.051 af D=18.0" n=0.011 L=48.0' S=0.0173 '/' Capacity=16.32 cfs Outflow=11.77 cfs 5.050 af
Reach R4: ChannelFlow	Avg. Depth=0.25' Max Vel=2.09 fps Inflow=11.77 cfs 5.050 af n=0.035 L=480.0' S=0.0176 '/' Capacity=545.37 cfs Outflow=11.77 cfs 5.025 af
Reach R5: 15" Culvert	Avg. Depth=0.83' Max Vel=5.96 fps Inflow=5.19 cfs 0.415 af D=15.0" n=0.012 L=48.0' S=0.0090 '/' Capacity=6.62 cfs Outflow=5.16 cfs 0.415 af
Reach R6: ChannelFlow	Avg. Depth=0.12' Max Vel=0.81 fps Inflow=5.16 cfs 0.415 af n=0.035 L=155.0' S=0.0067 '/' Capacity=777.27 cfs Outflow=4.94 cfs 0.413 af
Reach R7: 15" Culvert	Avg. Depth=1.25' Max Vel=4.27 fps Inflow=9.42 cfs 0.769 af D=15.0" n=0.011 L=40.0' S=0.0038 '/' Capacity=4.68 cfs Outflow=4.68 cfs 0.769 af
Reach R8: 15" Culvert	Avg. Depth=0.47' Max Vel=10.98 fps Inflow=4.68 cfs 0.769 af D=15.0" n=0.011 L=50.0' S=0.0404 '/' Capacity=15.34 cfs Outflow=4.68 cfs 0.769 af

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Type III 24-hr 10-YEAR Rainfall=4.70"

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Reach R9: ChannelFlow Avg. Depth=0.09' Max Vel=1.02 fps Inflow=4.68 cfs 0.769 af
n=0.035 L=205.0' S=0.0145 '/' Capacity=960.71 cfs Outflow=4.68 cfs 0.765 af

Reach SP-1: Inflow=47.14 cfs 9.014 af
Outflow=47.14 cfs 9.014 af

Reach SP-2: Inflow=33.59 cfs 4.454 af
Outflow=33.59 cfs 4.454 af

Reach SP-4: Inflow=29.27 cfs 4.080 af
Outflow=29.27 cfs 4.080 af

Reach SP-5: Inflow=109.33 cfs 20.210 af
Outflow=109.33 cfs 20.210 af

Reach SP3: Inflow=2.78 cfs 0.490 af
Outflow=2.78 cfs 0.490 af

Pond SF: SEDIMENTFOREBAY Peak Elev=316.18' Storage=292 cf Inflow=15.14 cfs 1.617 af
Outflow=15.13 cfs 1.613 af

Pond UP1: UnderdrainPond Peak Elev=326.80' Storage=5,459 cf Inflow=3.58 cfs 0.252 af
Discarded=0.02 cfs 0.010 af Primary=1.40 cfs 0.141 af Secondary=0.00 cfs 0.000 af Outflow=1.41 cfs 0.150 af

Pond WP1: WET POND Peak Elev=313.96' Storage=23,934 cf Inflow=15.13 cfs 1.613 af
Primary=7.33 cfs 1.331 af Secondary=0.00 cfs 0.000 af Outflow=7.33 cfs 1.331 af

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS10: Runoff Area=23.590 ac 2.16% Impervious Runoff Depth>2.64"
Flow Length=1,327' Tc=27.3 min CN=75 Runoff=46.48 cfs 5.191 af

SubcatchmentWS11: Runoff Area=29.020 ac 2.83% Impervious Runoff Depth>2.73"
Flow Length=1,885' Tc=27.1 min CN=76 Runoff=59.30 cfs 6.602 af

SubcatchmentWS20: Runoff Area=19.440 ac 3.96% Impervious Runoff Depth>2.63"
Flow Length=1,858' Tc=35.5 min CN=75 Runoff=33.99 cfs 4.265 af

SubcatchmentWS21: Runoff Area=2.180 ac 16.51% Impervious Runoff Depth>2.93"
Flow Length=795' Tc=11.6 min CN=78 Runoff=6.63 cfs 0.532 af

SubcatchmentWS22: Runoff Area=4.700 ac 4.26% Impervious Runoff Depth>2.57"
Flow Length=254' Tc=12.2 min CN=74 Runoff=12.35 cfs 1.005 af

SubcatchmentWS30: Runoff Area=1.560 ac 28.85% Impervious Runoff Depth>2.97"
Flow Length=612' Tc=58.3 min CN=79 Runoff=2.37 cfs 0.386 af

SubcatchmentWS31: Runoff Area=0.550 ac 0.00% Impervious Runoff Depth>2.22"
Flow Length=265' Tc=13.8 min CN=70 Runoff=1.19 cfs 0.102 af

SubcatchmentWS32: Runoff Area=0.800 ac 0.00% Impervious Runoff Depth>2.22"
Flow Length=178' Tc=13.7 min CN=70 Runoff=1.74 cfs 0.148 af

SubcatchmentWS40: Runoff Area=7.500 ac 0.00% Impervious Runoff Depth>2.72"
Flow Length=905' Slope=0.0200 '/' Tc=41.2 min CN=76 Runoff=12.58 cfs 1.698 af

SubcatchmentWS41: Runoff Area=0.560 ac 28.57% Impervious Runoff Depth>3.31"
Flow Length=338' Slope=0.0200 '/' Tc=6.5 min CN=82 Runoff=2.23 cfs 0.155 af

SubcatchmentWS42: Runoff Area=1.400 ac 11.43% Impervious Runoff Depth>3.02"
Flow Length=336' Tc=9.3 min CN=79 Runoff=4.66 cfs 0.353 af

SubcatchmentWS43: Runoff Area=14.210 ac 4.50% Impervious Runoff Depth>2.65"
Flow Length=1,385' Tc=20.6 min CN=75 Runoff=31.58 cfs 3.134 af

SubcatchmentWS50: Runoff Area=94.265 ac 1.24% Impervious Runoff Depth>2.42"
Flow Length=4,420' Slope=0.0200 '/' Tc=76.7 min CN=73 Runoff=99.49 cfs 18.988 af

SubcatchmentWS51: Runoff Area=21.200 ac 0.00% Impervious Runoff Depth>2.79"
Flow Length=2,025' Tc=53.8 min CN=77 Runoff=31.77 cfs 4.935 af

SubcatchmentWS52: Runoff Area=3.400 ac 5.88% Impervious Runoff Depth>2.91"
Flow Length=658' Tc=32.5 min CN=78 Runoff=6.82 cfs 0.824 af

SubcatchmentWS53: Runoff Area=0.920 ac 51.09% Impervious Runoff Depth>4.02"
Flow Length=42' Slope=0.0950 '/' Tc=6.0 min CN=89 Runoff=4.33 cfs 0.308 af

SubcatchmentWS54:	Runoff Area=6.940 ac 23.49% Impervious Runoff Depth>3.49" Flow Length=606' Tc=24.0 min CN=84 Runoff=18.75 cfs 2.018 af
Reach R1: 15" Culvert	Avg. Depth=1.25' Max Vel=10.91 fps Inflow=59.30 cfs 6.602 af D=15.0" n=0.011 L=45.0' S=0.0238 '/' Capacity=11.77 cfs Outflow=12.23 cfs 6.602 af
Reach R10: 15" Culvert	Avg. Depth=1.25' Max Vel=7.06 fps Inflow=12.58 cfs 1.698 af D=15.0" n=0.011 L=38.0' S=0.0100 '/' Capacity=7.63 cfs Outflow=7.63 cfs 1.697 af
Reach R11: ChannelFlow	Avg. Depth=0.18' Max Vel=1.63 fps Inflow=7.63 cfs 1.697 af n=0.035 L=1,431.0' S=0.0150 '/' Capacity=140.25 cfs Outflow=7.63 cfs 1.658 af
Reach R12: ChannelFlow	Avg. Depth=0.09' Max Vel=1.17 fps Inflow=6.06 cfs 0.506 af n=0.035 L=467.0' S=0.0200 '/' Capacity=1,341.95 cfs Outflow=5.38 cfs 0.502 af
Reach R13: 15" Culvert	Avg. Depth=0.49' Max Vel=4.98 fps Inflow=2.23 cfs 0.155 af D=15.0" n=0.011 L=40.0' S=0.0080 '/' Capacity=6.83 cfs Outflow=2.22 cfs 0.154 af
Reach R14: ChannelFlow	Avg. Depth=0.07' Max Vel=0.58 fps Inflow=2.22 cfs 0.154 af n=0.035 L=178.0' S=0.0073 '/' Capacity=810.93 cfs Outflow=1.90 cfs 0.154 af
Reach R15: ChannelFlow	Avg. Depth=0.38' Max Vel=2.62 fps Inflow=31.77 cfs 4.935 af n=0.035 L=405.0' S=0.0150 '/' Capacity=566.32 cfs Outflow=31.66 cfs 4.913 af
Reach R16: BRIDGE	Avg. Depth=0.38' Max Vel=2.96 fps Inflow=35.96 cfs 5.736 af n=0.035 L=64.0' S=0.0191 '/' Capacity=638.16 cfs Outflow=35.93 cfs 5.733 af
Reach R17: ChannelFlow	Avg. Depth=0.46' Max Vel=2.94 fps Inflow=44.66 cfs 7.652 af n=0.035 L=1,980.0' S=0.0150 '/' Capacity=566.09 cfs Outflow=43.15 cfs 7.505 af
Reach R2: ChannelFlow	Avg. Depth=0.12' Max Vel=0.93 fps Inflow=12.23 cfs 6.602 af n=0.035 L=395.0' S=0.0078 '/' Capacity=1,287.60 cfs Outflow=11.77 cfs 6.546 af
Reach R3: 18" Culvert	Avg. Depth=0.94' Max Vel=10.06 fps Inflow=11.77 cfs 6.546 af D=18.0" n=0.011 L=48.0' S=0.0173 '/' Capacity=16.32 cfs Outflow=11.77 cfs 6.546 af
Reach R4: ChannelFlow	Avg. Depth=0.25' Max Vel=2.09 fps Inflow=11.77 cfs 6.546 af n=0.035 L=480.0' S=0.0176 '/' Capacity=545.37 cfs Outflow=11.77 cfs 6.516 af
Reach R5: 15" Culvert	Avg. Depth=1.02' Max Vel=6.15 fps Inflow=6.63 cfs 0.532 af D=15.0" n=0.012 L=48.0' S=0.0090 '/' Capacity=6.62 cfs Outflow=6.60 cfs 0.532 af
Reach R6: ChannelFlow	Avg. Depth=0.14' Max Vel=0.89 fps Inflow=6.60 cfs 0.532 af n=0.035 L=155.0' S=0.0067 '/' Capacity=777.27 cfs Outflow=6.37 cfs 0.529 af
Reach R7: 15" Culvert	Avg. Depth=1.25' Max Vel=4.32 fps Inflow=12.35 cfs 1.005 af D=15.0" n=0.011 L=40.0' S=0.0038 '/' Capacity=4.68 cfs Outflow=4.68 cfs 1.005 af
Reach R8: 15" Culvert	Avg. Depth=0.47' Max Vel=10.98 fps Inflow=4.68 cfs 1.005 af D=15.0" n=0.011 L=50.0' S=0.0404 '/' Capacity=15.34 cfs Outflow=4.68 cfs 1.005 af

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Type III 24-hr 25-YEAR Rainfall=5.50"

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Reach R9: ChannelFlow Avg. Depth=0.09' Max Vel=1.02 fps Inflow=4.68 cfs 1.005 af
n=0.035 L=205.0' S=0.0145 '/' Capacity=960.71 cfs Outflow=4.68 cfs 1.000 af

Reach SP-1: Inflow=58.18 cfs 11.707 af
Outflow=58.18 cfs 11.707 af

Reach SP-2: Inflow=42.19 cfs 5.794 af
Outflow=42.19 cfs 5.794 af

Reach SP-4: Inflow=38.61 cfs 5.294 af
Outflow=38.61 cfs 5.294 af

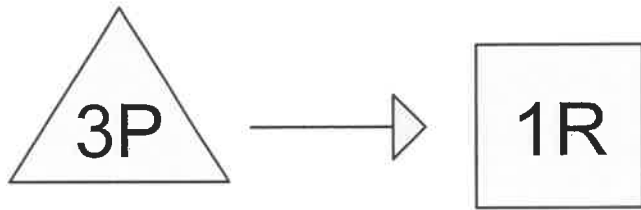
Reach SP-5: Inflow=142.59 cfs 26.493 af
Outflow=142.59 cfs 26.493 af

Reach SP3: Inflow=3.74 cfs 0.636 af
Outflow=3.74 cfs 0.636 af

Pond SF: SEDIMENTFOREBAY Peak Elev=316.29' Storage=330 cf Inflow=18.75 cfs 2.018 af
Outflow=18.75 cfs 2.015 af

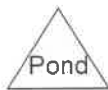
Pond UP1: UnderdrainPond Peak Elev=326.98' Storage=6,204 cf Inflow=4.33 cfs 0.308 af
Discarded=0.02 cfs 0.010 af Primary=1.82 cfs 0.196 af Secondary=0.00 cfs 0.000 af Outflow=1.84 cfs 0.206 af

Pond WP1: WET POND Peak Elev=314.41' Storage=31,207 cf Inflow=18.75 cfs 2.015 af
Primary=7.79 cfs 1.724 af Secondary=0.00 cfs 0.000 af Outflow=7.79 cfs 1.724 af



wetland

Study Point SP2



06302_wetland analysis_pre

Type III 24-hr 25-YEAR Rainfall=5.50"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS-2:

Runoff Area=26.435 ac 0.13% Impervious Runoff Depth>2.46"
Flow Length=1,743' Tc=33.8 min CN=73 Runoff=44.12 cfs 5.418 af

Reach 1R: StudyPoint SP2

Inflow=43.44 cfs 5.389 af
Outflow=43.44 cfs 5.389 af

Pond 3P: wetland

Peak Elev=342.30' Storage=11,653 cf Inflow=44.12 cfs 5.418 af
Outflow=43.44 cfs 5.389 af

06302_wetland analysis_pre

Type III 24-hr 25-YEAR Rainfall=5.50"

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Summary for Pond 3P: wetland

Inflow Area = 26.435 ac, 0.13% Impervious, Inflow Depth > 2.46" for 25-YEAR event
 Inflow = 44.12 cfs @ 12.48 hrs, Volume= 5.418 af
 Outflow = 43.44 cfs @ 12.53 hrs, Volume= 5.389 af, Atten= 2%, Lag= 3.3 min
 Primary = 43.44 cfs @ 12.53 hrs, Volume= 5.389 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 342.30' @ 12.53 hrs Surf.Area= 40,411 sf Storage= 11,653 cf

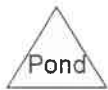
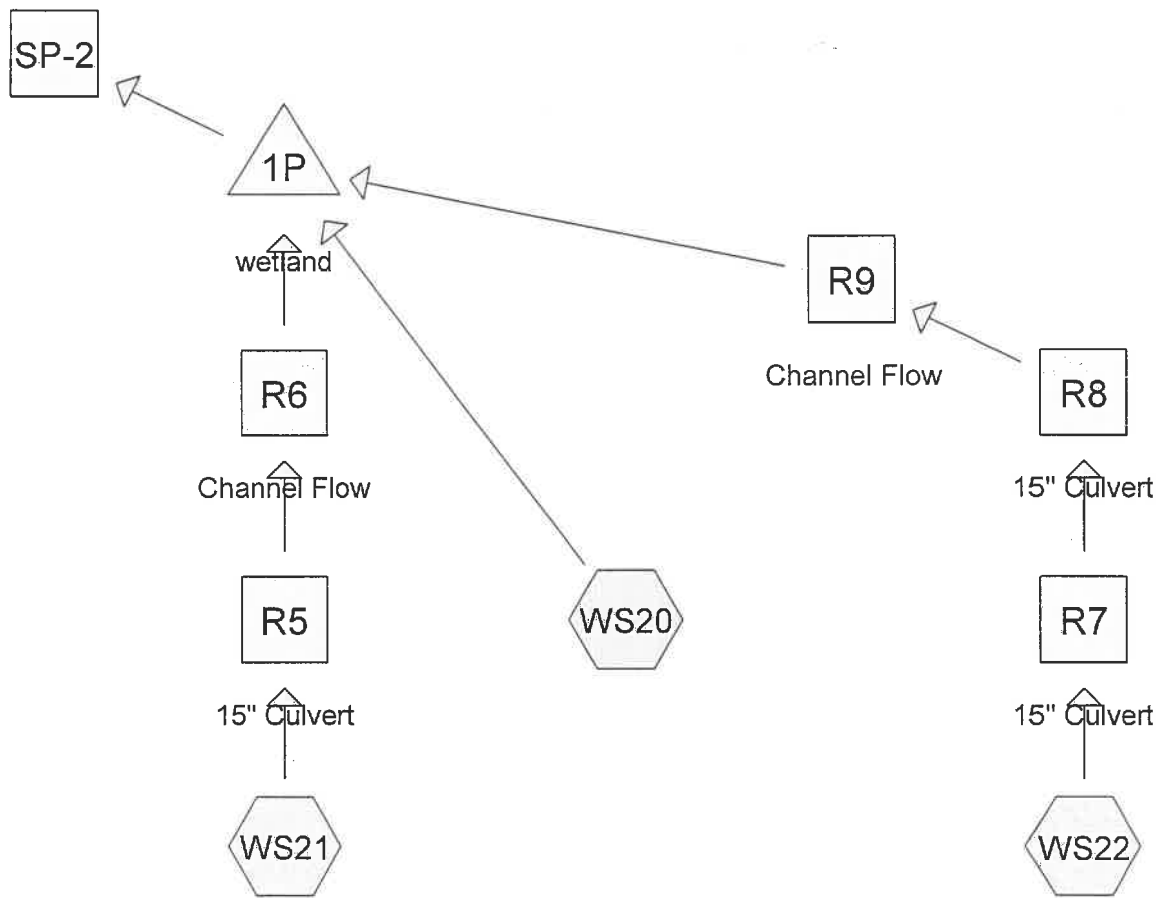
Plug-Flow detention time= 7.2 min calculated for 5.389 af (99% of inflow)
 Center-of-Mass det. time= 5.2 min (824.8 - 819.5)

Volume	Invert	Avail.Storage	Storage Description
#1	342.00'	90,060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.00	38,474	0	0
344.00	51,586	90,060	90,060

Device	Routing	Invert	Outlet Devices
#1	Primary	342.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=43.31 cfs @ 12.53 hrs HW=342.29' (Free Discharge)
 ↳1=**Broad-Crested Rectangular Weir** (Weir Controls 43.31 cfs @ 1.47 fps)



06302wetland analysis_post

Type III 24-hr 25-YEAR Rainfall=5.50"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentWS20: Runoff Area=19.440 ac 3.96% Impervious Runoff Depth>2.63"
Flow Length=1,858' Tc=35.5 min CN=75 Runoff=33.99 cfs 4.265 af

SubcatchmentWS21: Runoff Area=2.180 ac 16.51% Impervious Runoff Depth>2.93"
Flow Length=795' Tc=11.6 min CN=78 Runoff=6.63 cfs 0.532 af

SubcatchmentWS22: Runoff Area=4.700 ac 4.26% Impervious Runoff Depth>2.57"
Flow Length=254' Tc=12.2 min CN=74 Runoff=12.35 cfs 1.005 af

Reach R5: 15" Culvert Avg. Depth=1.02' Max Vel=6.15 fps Inflow=6.63 cfs 0.532 af
D=15.0" n=0.012 L=48.0' S=0.0090 '/' Capacity=6.62 cfs Outflow=6.60 cfs 0.532 af

Reach R6: ChannelFlow Avg. Depth=0.14' Max Vel=0.89 fps Inflow=6.60 cfs 0.532 af
n=0.035 L=155.0' S=0.0067 '/' Capacity=777.27 cfs Outflow=6.37 cfs 0.529 af

Reach R7: 15" Culvert Avg. Depth=1.25' Max Vel=4.32 fps Inflow=12.35 cfs 1.005 af
D=15.0" n=0.011 L=40.0' S=0.0038 '/' Capacity=4.68 cfs Outflow=4.68 cfs 1.005 af

Reach R8: 15" Culvert Avg. Depth=0.47' Max Vel=10.98 fps Inflow=4.68 cfs 1.005 af
D=15.0" n=0.011 L=50.0' S=0.0404 '/' Capacity=15.34 cfs Outflow=4.68 cfs 1.005 af

Reach R9: ChannelFlow Avg. Depth=0.09' Max Vel=1.02 fps Inflow=4.68 cfs 1.005 af
n=0.035 L=205.0' S=0.0145 '/' Capacity=960.71 cfs Outflow=4.68 cfs 1.000 af

Reach SP-2: Inflow=41.71 cfs 5.765 af
Outflow=41.71 cfs 5.765 af

Pond 1P: wetland Peak Elev=342.29' Storage=11,336 cf Inflow=42.19 cfs 5.794 af
Outflow=41.71 cfs 5.765 af

06302wetland analysis_post

Type III 24-hr 25-YEAR Rainfall=5.50"

Prepared by SEBAGO TECHNICS, INC

Printed 9/21/2010

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Page 1

Summary for Pond 1P: wetland

Inflow Area = 26.320 ac, 5.05% Impervious, Inflow Depth > 2.64" for 25-YEAR event
 Inflow = 42.19 cfs @ 12.48 hrs, Volume= 5.794 af
 Outflow = 41.71 cfs @ 12.53 hrs, Volume= 5.765 af, Atten= 1%, Lag= 3.1 min
 Primary = 41.71 cfs @ 12.53 hrs, Volume= 5.765 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 342.29' @ 12.53 hrs Surf.Area= 40,360 sf Storage= 11,336 cf

Plug-Flow detention time= 7.1 min calculated for 5.746 af (99% of inflow)
 Center-of-Mass det. time= 5.2 min (820.5 - 815.3)

Volume	Invert	Avail.Storage	Storage Description
#1	342.00'	90,060 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
342.00	38,474	0	0
344.00	51,586	90,060	90,060

Device	Routing	Invert	Outlet Devices
#1	Primary	342.00'	100.0' long x 1.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 Coef. (English) 2.69 2.72 2.75 2.85 2.98 3.08 3.20 3.28 3.31 3.30 3.31 3.32

Primary OutFlow Max=41.59 cfs @ 12.53 hrs HW=342.29' (Free Discharge)
 ↳ **1=Broad-Crested Rectangular Weir (Weir Controls 41.59 cfs @ 1.45 fps)**

JAMES G. MANCINI SITE EVALUATOR

824 ROOSEVELT TR. PMB #160
P.O. BOX 4000
WINDHAM, MAINE 04062

(RETENTION POND SOIL LOGS)

Town, City, Plantation WINDHAM		Street, Road, Subdivision CROSS RIDGE + LOCKLAND DRIVE		Owner's Name BAUER + GILMAN, INC.	
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole TP-A <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole TP-B <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling	
0	GRAVELLY		DARK YELLOWISH BROWN		
5	SANDY LOAM	FRIABLE	DRY 4/6		
20					
25	GRAVELLY LOAMY SAND	FIRM	LIGHT OLIVE BROWN	DISTINCT	
30			GRAY 2.5V 6/2		
40					
50					
Soil Classification 3 C Profile Condition		Slope 7	Limiting Factor 24	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	

HYDROLOGIC SOIL GROUP "C"

HYDROLOGIC SOIL GROUP "C"

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling	
0					
10					
20					
30					
40					
50					
Soil Classification Profile Condition		Slope %	Limiting Factor "	<input type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	

James G. Mancini
Site Evaluator Signature

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AUG. 3, 2010
Date

JAMES G. MANCINI

SITE EVALUATOR

824 ROOSEVELT TR. PMB #160

P.O. BOX 4000

WINDHAM, MAINE 04062

(BUFFER ZONES SOIL LOGS)

Town, City, Plantation WINDHAM		Street, Road, Subdivision CROSS RIDGE + LOCKLAND DR.		Owner's Name BAUER + GILMAN, INC.	
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole <u>TP1</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole <u>TP2</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture
0	LOAMY SAND		AUBIC GRAY	0	VERY LOAMY SAND
5	GRAVELLY	FRIABLE	MIXED BROWNS + GRAYS	5	COBBLY
10	VERY LOAMY SAND			10	LOAMY SAND
20		FIRM		20	
30				30	
40				40	
50				50	
NOTE: HYDROLOGIC SOIL GROUP "C"			NOTE: H.S.G. "C"		
Soil Classification <u>3</u> Profile	Slope %	Limiting Factor <u>12</u>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	Soil Classification <u>3</u> Profile	Slope %
<u>DII</u> Condition	<input checked="" type="checkbox"/>			<u>C</u> Condition	<u>30</u>

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole <u>TP3</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole <u>TP4</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture
0	COBBLY GRAVELLY SANDY LOAM	FRIABLE	STRONG BROWN 7.5/2.4/1.0	0	COBBLY SANDY LOAM
10	COBBLY GRAVELLY	(LIMIT OF EXCAVATION)		10	GRAVELLY LOAMY SAND
20	LOAMY SAND			20	LIGHTLY LOAMED SAND
30				30	
40				40	
50				50	
NOTE: H.S.G. "C"			NOTE: H.S.G. "C"		
Soil Classification <u>3</u> Profile	Slope %	Limiting Factor <u>20</u>	<input checked="" type="checkbox"/> Ground Water <input type="checkbox"/> Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	Soil Classification <u>3</u> Profile	Slope %
<u>C</u> Condition				<u>C</u> Condition	<u>24</u>

James G. Mancini
Site Evaluator Signature

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AUG. 3, 2010
Date

JAMES G. MANCINI

SITE EVALUATOR

824 ROOSEVELT TR. PMB #160
P.O. BOX 4000
WINDHAM, MAINE 04062

(BUFFER ZONES SOIL LOGS)

Town, City, Plantation WINDHAM		Street, Road, Subdivision CROSSRIDGE + LOCKLAND DR.		Owner's Name BAUER + GILMAN	
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole TP5 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil			Observation Hole TP6 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling	
0	GRAVELLY SANDY LOAM	FRAGILE	REDDISH BROWN		
10			5YR 4/4		
20	GRAVELLY LIGHTLY LOAMED SAND	FIRM	YELLOWISH BROWN		
30			10YR 5/4		
40	NOTE: H.S.G. "C"				
50	Soil Classification 3 C Profile Condition		Slope %	Limiting Factor 30"	<input checked="" type="checkbox"/> Ground Water Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole TP7 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil			Observation Hole TP8 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil		
DEPTH BELOW MINERAL SOIL SURFACE (Inches)	Texture	Consistency	Color	Mottling	
0	GRAVELLY LOAMY SAND	FRAGILE	YELLOWISH BROWN		
10			5YR 4/4		
20	GRAVELLY LIGHTLY LOAMED SAND	FIRM	LIGHT YELLOWISH BROWN	DISTINCT	
30			2.5Y 6/3		
40	NOTE: H.S.G. "C"				
50	Soil Classification 3 C Profile Condition		Slope %	Limiting Factor 19"	<input checked="" type="checkbox"/> Ground Water Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth

James G. Mancini
Site Evaluator Signature

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AUG 3, 2010
Date

JAMES G. MANCINI

SITE EVALUATOR

824 ROOSEVELT TR. PMB #160
P.O. BOX 4000
WINDHAM, MAINE 04062

(BUFFER ZONES SOIL LOGS)

Town, City, Plantation WINDHAM		Street, Road Subdivision CROSS RIDGE + LOCKLAND DR.		Owner's Name BAUER + GILMAN, INC.	
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole <u>TP9</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole <u>TP10</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
Texture	Consistency	Color	Mottling	Texture	Consistency
0 GRAVELLY LOAMY SAND	FRIABLE	YELLOWISH BROWN		0 GRAVELLY SANDY LOAM	FRIABLE
10		DISTINCT		10	/DHR 4/6
20	FIRM	LIGHT OLIVE BROWN	DISTINCT	20	FIRM
30	LIGHTLY LOAMED SAND			30	LIGHTLY LOAMED SAND
40				40	
50				50	
NOTE: H.S.G. "C"			NOTE: H.S.G. "C"		
Soil Classification <u>3</u> <u>C</u> Profile Condition		Slope %	Limiting Factor <u>21"</u>	<input checked="" type="checkbox"/> Ground Water Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)					
Observation Hole <u>TP11</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole <u>TP12</u> <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring		
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil		
Texture	Consistency	Color	Mottling	Texture	Consistency
0 GRAVELLY LOAMY SAND	FRIABLE	YELLOWISH BROWN		0 GRAVELLY SANDY LOAM	FRIABLE
10		DISTINCT		10	FRIABLE
20	FIRM	LIGHT BROWNISH GRAY	DISTINCT	20	FIRM
30	LIGHTLY LOAMED SAND	2.5v/6z		30	LIGHTLY LOAMED SAND
40				40	
50				50	
NOTE: H.S.G. "C"			NOTE: H.S.G. "C"		
Soil Classification <u>3</u> <u>C</u> Profile Condition		Slope %	Limiting Factor <u>21"</u>	<input checked="" type="checkbox"/> Ground Water Restrictive Layer <input type="checkbox"/> Bedrock <input type="checkbox"/> Pit Depth	

James G. Mancini 287 AUG 3, 2010
Site Evaluator Signature SE Date

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824 ROOSEVELT TR. PMB #160
P.O. BOX 4000
WINDHAM, MAINE 04092

(BUFFER ZONES SOIL LOGS)

Town, City, Plantation WINDHAM		Street, Road Subdivision CROSS RIDGE + LOCKLAND DR.		Owner's Name BAUER + GILMAN, INC.			
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)							
Observation Hole TP13 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			Observation Hole TP14 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				
" Depth of Organic Horizon Above Mineral Soil			" Depth of Organic Horizon Above Mineral Soil				
Texture	Consistency	Color	Mottling	Texture	Consistency	Color	Mottling
GRAVELLY SANDY LOAM	FRIABLE	DARK BROWN		GRAVELLY SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN 10R 4/6	
LARGE ROCK				LARGE ROCKS			
NOTE: H.S.G. "C"				NOTE: H.S.G. "C"			
Soil Classification 3 C Profile Condition		Slope %	Limiting Factor 19"	Soil Classification 3 C Profile Condition		Slope %	Limiting Factor 22"
<input type="checkbox"/> Ground Water		<input type="checkbox"/> Restrictive Layer		<input type="checkbox"/> Ground Water		<input type="checkbox"/> Restrictive Layer	
<input type="checkbox"/> Bedrock		<input checked="" type="checkbox"/> Pit Depth		<input type="checkbox"/> Bedrock		<input checked="" type="checkbox"/> Pit Depth	

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)				SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)			
Observation Hole TP15 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring				Observation Hole TP16 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring			
" Depth of Organic Horizon Above Mineral Soil				" Depth of Organic Horizon Above Mineral Soil			
Texture	Consistency	Color	Mottling	Texture	Consistency	Color	Mottling
GRAVELLY LOAMY SAND	FRIABLE	DARK YELLOWISH BROWN 10R 4/6		SANDY LOAM	FRIABLE	DARK YELLOWISH BROWN 10R 4/6	
REFUSAL				GRAVELLY LOAMY SAND			
NOTE: H.S.G. "C"				NOTE: H.S.G. "C"			
Soil Classification 2 Ah Profile Condition		Slope %	Limiting Factor 26"	Soil Classification 3 C Profile Condition		Slope %	Limiting Factor 21"
<input type="checkbox"/> Ground Water		<input type="checkbox"/> Restrictive Layer		<input type="checkbox"/> Ground Water		<input checked="" type="checkbox"/> Restrictive Layer	
<input type="checkbox"/> Bedrock		<input checked="" type="checkbox"/> Pit Depth		<input type="checkbox"/> Bedrock		<input checked="" type="checkbox"/> Pit Depth	

James G. Mancini
Site Evaluator Signature

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AUG 3, 2010
Date

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SITE EVALUATOR

824 ROOSEVELT TR. PMB #160

P.O. BOX 4000

WINDHAM, MAINE 04062

(BUFFER ZONES SOILS LOGS)

Town, City, Plantation WINDHAM	Street, Road Subdivision CROSSRIDGE + LOCKLAND DR.	Owner's Name BAUER + GILMAN, INC.																																										
SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)																																												
Observation Hole TP7 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil	Observation Hole TP8 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil																																											
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Observation Hole TP19 <input checked="" type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil	Observation Hole <input type="checkbox"/> Test Pit <input type="checkbox"/> Boring " Depth of Organic Horizon Above Mineral Soil																																								
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James G. Mancini
Site Evaluator Signature

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AUG 3, 2010
Date

Appendix 4

Buffer Restrictions

Section 4. Draft Deed Restriction Language for Buffers

A. Forested buffer, limited disturbance

DECLARATION OF RESTRICTIONS (Forested Buffer, Limited Disturbance)

THIS DECLARATION OF RESTRICTIONS is made this _____ day of _____, 20____, by _____, _____,

(name) (street address)
_____, _____ County, Maine, _____, (herein referred to as the
(city or town) (county) (zipcode)

"Declarant"), pursuant to a permit received from the Maine Department of Environmental Protection under the Stormwater Management Law, to preserve a buffer area on a parcel of land near

_____, _____.
(road name) (known feature and/or town)

WHEREAS, the Declarant holds title to certain real property situated in _____, Maine
(town)

described in a deed from _____ to _____ dated
(name) (name of Declarant)

_____, 20____, and recorded in Book ____ Page ____ at the _____ County
Registry of Deeds, herein referred to as the "property"; and

WHEREAS, Declarant desires to place certain restrictions, under the terms and conditions herein, over a portion of said real property (hereinafter referred to as the "Restricted Buffer") described as follows:
(Note: Insert description of restricted buffer area location here)

WHEREAS, pursuant to the Stormwater Management Law, 38 M.R.S.A. Section 420-D and Chapter 500 of rules promulgated by the Maine Board of Environmental Protection ("Stormwater Management Rules"), Declarant has agreed to impose certain restrictions on the Restricted Buffer Area as more particularly set forth herein and has agreed that these restrictions may be enforced by the Maine Department of Environmental Protection or any successor (hereinafter the "MDEP"),

NOW, THEREFORE, the Declarant hereby declares that the Restricted Buffer Area is and shall forever be held, transferred, sold, conveyed, occupied and maintained subject to the conditions and restrictions set forth herein. The Restrictions shall run with the Restricted Buffer Area and shall be binding on all parties having any right, title or interest in and to the Restricted Buffer Area, or any portion thereof, and their heirs, personal representatives, successors, and assigns. Any present or future owner or occupant of the Restricted Buffer Area or any portion thereof, by the acceptance of a deed of conveyance of all or part of the Covenant Area or an instrument conveying any interest therein, whether or not the deed or instrument shall so express, shall be deemed to have accepted the Restricted Buffer Area subject to the Restrictions and shall agree to be bound by, to comply with and to be subject to each and every one of the Restrictions hereinafter set forth.

1. Restrictions on Restricted Buffer Area. Unless the owner of the Restricted Buffer Area, or any successors or assigns, obtains the prior written approval of the MDEP, the Restricted Buffer Area must remain undeveloped in perpetuity. To maintain the ability of the Restricted Buffer Area to filter and absorb stormwater, and to maintain compliance with the Stormwater Management Law and the permit issued thereunder to the Declarant, the use of the Restricted Buffer Area is hereinafter limited as follows.

- a. No soil, loam, peat, sand, gravel, concrete, rock or other mineral substance, refuse, trash, vehicle bodies or parts, rubbish, debris, junk waste, pollutants or other fill material may be placed, stored or dumped on the Restricted Buffer Area, nor may the topography of the area be altered or manipulated in any way;
- b. Any removal of trees or other vegetation within the Restricted Buffer Area must be limited to the following:
 - (i) No purposefully cleared openings may be created and an evenly distributed stand of trees and other vegetation must be maintained. An "evenly distributed stand of trees " is defined as maintaining a minimum rating score of 24 points in any 25 foot by 50 foot square (2500 square feet) area, as determined by the following rating scheme:

Diameter of tree at 4½ feet above ground level	Points
2 - 4 inches	1
4 - 8 inches	2
8 - 12 inches	4
>12 inches	8

- Where existing trees and other vegetation result in a rating score less than 24 points, no trees may be cut or sprayed with biocides except for the normal maintenance of dead, windblown or damaged trees and for pruning of tree branches below a height of 12 feet provided two thirds of the tree's canopy is maintained;
 - (ii) No undergrowth, ground cover vegetation, leaf litter, organic duff layer or mineral soil may be disturbed except that one winding path, that is no wider than six feet and that does not provide a downhill channel for runoff, is allowed through the area;
- c. No building or other temporary or permanent structure may be constructed, placed or permitted to remain on the Restricted Buffer Area, except for a sign, utility pole or fence;
- d. No trucks, cars, dirt bikes, ATVs, bulldozers, backhoes, or other motorized vehicles or mechanical equipment may be permitted on the Restricted Buffer Area;

- e. Any level lip spreader directing flow to the Restricted Buffer Area must be regularly inspected and adequately maintained to preserve the function of the level spreader.

Any activity on or use of the Restricted Buffer Area inconsistent with the purpose of these Restrictions is prohibited. Any future alterations or changes in use of the Restricted Buffer Area must receive prior approval in writing from the MDEP. The MDEP may approve such alterations and changes in use if such alterations and uses do not impede the stormwater control and treatment capability of the Restricted Buffer Area or if adequate and appropriate alternative means of stormwater control and treatment are provided.

- 2. Enforcement. The MDEP may enforce any of the Restrictions set forth in Section 1 above.
- 3. Binding Effect. The restrictions set forth herein shall be binding on any present or future owner of the Restricted Buffer Area. If the Restricted Buffer Area is at any time owned by more than one owner, each owner shall be bound by the foregoing restrictions to the extent that any of the Restricted Buffer Area is included within such owner's property.
- 4. Amendment. Any provision contained in this Declaration may be amended or revoked only by the recording of a written instrument or instruments specifying the amendment or the revocation signed by the owner or owners of the Restricted Buffer Area and by the MDEP.
- 5. Effective Provisions of Declaration. Each provision of this Declaration, and any agreement, promise, covenant and undertaking to comply with each provision of this Declaration, shall be deemed a land use restriction running with the land as a burden and upon the title to the Restricted Buffer Area.
- 6. Severability. Invalidity or unenforceability of any provision of this Declaration in whole or in part shall not affect the validity or enforceability of any other provision or any valid and enforceable part of a provision of this Declaration.
- 7. Governing Law. This Declaration shall be governed by and interpreted in accordance with the laws of the State of Maine.

(NAME)

STATE OF MAINE _____ County, _____, 20__.
County) (date)

Personally appeared before me the above named _____, who swore to the truth of the foregoing to the best of (his/her) knowledge, information and belief and acknowledged the foregoing instrument to be (his/her) free act and deed.

Notary Public

Appendix 5

Right, Title or Interest

Handwritten signature

WARRANTY DEED

I, F. BLAINE HAWKES, of Mendon, County of Worcester and Commonwealth of Massachusetts, for consideration paid, grant to PETER S. GILMAN, of Windham, County of Cumberland and State of Maine, with a mailing address of 77 Basin Road, Windham, ME 04062, with WARRANTY COVENANTS, the land in Gray, Cumberland County, Maine, described as follows:

Parcel 1

A certain lot or parcel of land being the southwesterly end of Lot No. 54 in the third division of lots in the Town of Gray, County of Cumberland and State of Maine, containing 53 acres, more or less. Also one other piece of land situated in Windham, County of Cumberland and State of Maine, being a strip for a road and bounded as follows: Being two rods and twenty links northwest from the south corner of the above described lot at a pine stump; thence running South 12° West, 33 rods; thence South 32 rods to the county road, said land on road being three rods wide, the line above described being in the middle and containing 222 square rods, the owners on each side to maintain the fence.

→ TO
Florman
23767-43

Being a portion of the premises conveyed to F. Blaine Hawkes by warranty deed from Charles F. Atherton, recorded April 16, 1957 in the Cumberland County Registry of Deeds in Book 2345, Page 108.

Parcel 2

Also two acres off the southeasterly end of 10 acres lot that George L. Crockett conveyed to Sewall B. Prince, by deed bearing date October 4, 1870, recorded in said Registry of Deeds in Book 380, Page 241; said two acres lying adjoining to the northwesterly line of land formerly of Gilbert Small, being wide enough to include two acres between said Small line and a line drawn across said 10 acre lot parallel to the said northwesterly boundary of Small lot which said line so drawn is to be the northwesterly boundary of said two acres hereby conveyed all of said premises above described.

→ TO
Tammy
23770-58

Being a portion of the premises conveyed to F. Blaine Hawkes by warranty deed from Charles F. Atherton, recorded April 16, 1957 in the Cumberland County Registry of Deeds in Book 2345, Page 108.

WITNESS my hand and seal, this 13th day of October, 2004.

MAINE REAL ESTATE TAX PAID

Witness:

[Handwritten signature]

[Handwritten signature]
F. BLAINE HAWKES

STATE OF MAINE
COUNTY OF YORK

Oct 13, 2004

Personally appeared before me the above-named F. Blaine Hawkes, and acknowledged the foregoing instrument to be his free act and deed.

[Handwritten signature]
Notary Public/Attorney-at-Law
Name: *[Handwritten name]*
Commission Expires:

Received
Recorded Register of Deeds
Oct 19, 2004 10:15:40A
Cumberland County
John B. O'Brien

J B G & H
MEMORANDUM

TO: Ken Cole

FROM: Margaret Snyder

RE: Lockland Drive and Cross Ridge Drive, Windham

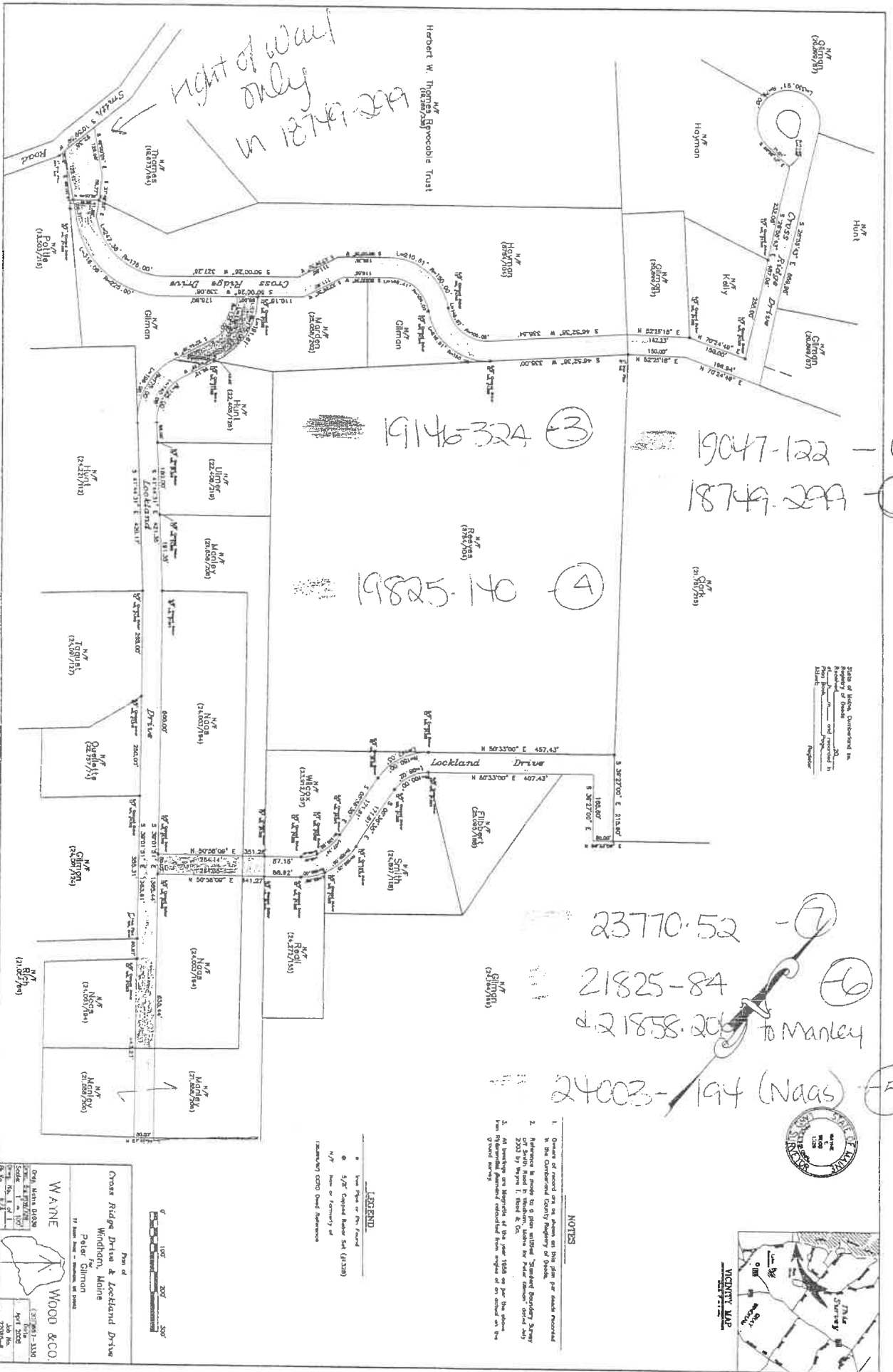
DATE: May 7, 2010

Ownership of the rights-of-way, known as Cross Ridge Drive and Lockland Drive in Windham, is made up of several parcels. See attached map, with deed references – beside each deed reference is a number that correlates to an attached deed, some of which have attached sketches. I believe these are all the deeds that make up the ownership of the two roads.

- 1) Book 18749, Page 299 – conveys the parcel of land to Peter and Tammy Gilman at the end of Cross Ridge Drive and makes up the parcel of land they subdivided. They own the fee Cross Ridge Drive highlighted in light green on the map. This deed also conveyed a right of way for the portion of Cross Ridge Drive from Smith Road, across land of Thomes – also set out in light green.
- 2) Book 19047, Page 122 – conveys the land shown as Cross Ridge Drive, as well as a lot located southerly of the road to Peter and Tammy Gilman – see area on map shaded in orange and sketch attached to the deed.
- 3) Book 19146, Page 324 – conveys a parcel of land to Peter Gilman located on the southeasterly side of Cross Ridge Drive across which is the beginning of Lockland Drive – see area on map shaded in a purple/black color and sketch attached to the deed.
- 4) Book 19825, Page 140 is the deed I believe conveys the land on which Lockland Drive now sits. The lots on the northeasterly side of Lockland Drive reference this deed as their source. See area on map shaded in pink.
- 5) Book 24003, Page 194 conveys an easement across land of Naas/Westman from the side of Lockland Drive to other land of Gilman – see two areas shaded in plum on the attached map. – see sketch attached to this deed
- 6) Book 21858, Page 206 conveys an easement across a portion of land of Manley from the sideline of Naas to other land of Gilman – this deed would also be the underlying fee to that portion of Lockland Drive running southeasterly from the southeasterly end of Lockland Drive. – see two areas shaded in light blue on plan.

See also sketch of this property as well as the Naas property attached to 24003/194.

7) Book 23770, Page 52 is a parcel of land conveyed to Peter S. Gilman, which included that portion of Lockland Drive running northeasterly from lands of Naas and Manley. See sketch attached to deed. This portion of Lockland Drive is shaded in orange on the map.



Right of Way
Only
in 1874, 299

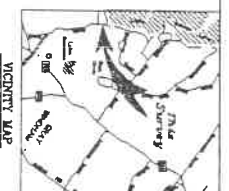
19146-324 (3)

19047-122 (2)
1874-299 (1)

19825-140 (4)

23770-52 (7)
21825-84 (6)
21858-206 to Manley
24003-194 (Naas) (5)

CARD [2008-255]



- NOTES**
1. Contour of record are shown on this plan per records recorded in the Cumberland County Registry of Deeds.
 2. Reference is made to a plat titled "Standard Boundary Survey 2003 by Wayne T. Wood & Co."
 3. All bearings are magnetic of the year 1850 on per the above from historical bearings extracted from angles of an island on the ground survey.

- LEGEND**
- Iron pipe or iron rod
 - 5/8" Copied Range Rod (11320)
 - Iron pipe or formery of
 - (MANLEY) CARD Deed Reference

WAYNE
Deed, Map, & CO.
1000 Main Street
Portland, ME 04101
Tel: 603.761.1100
Fax: 603.761.1101
www.wayne.com

WOOD & CO.
1000 Main Street
Portland, ME 04101
Tel: 603.761.1100
Fax: 603.761.1101
www.woodco.com

Cross Ridge Drive & Lockland Drive
Peter Gilman
17 Bates Road - Scarborough, ME 04074



①

WARRANTY DEED
Joint Tenancy

I, *THEODORE W. THOMES*, of Windham, County of Cumberland, State of Maine, for consideration paid, grant to *PETER GILMAN* and *TAMMY GILMAN*, both of Windham, County of Cumberland, State of Maine, as joint tenants, whose mailing address is 29 Farm View Drive, Windham, ME 04062, with **WARRANTY COVENANTS**, the land in Windham, Cumberland County, Maine, described as follows:

A certain lot or parcel of land situated in said Windham on the Smith Road, and being more particularly described as follows:

Beginning at a point on the Town of Gray and Town of Windham boundary line with said point also being the easterly corner of land now or formerly of EVP Capital, LP (CCRD Book 16893, Page 98) and the northwesterly corner of the herein conveyed parcel;

Thence southwesterly along the southeasterly sideline of the EVP Capital LP land a distance of 816 feet to a point, with said point also being the southerly point of said EVP Capital Capitol Land, the westerly corner of the herein conveyed parcel, the northerly corner of land now or formerly of Herbert W. Thomes (CCRD Book 12653, Page 91) and the easterly corner of land now or formerly of Helen J. Varney Living Trust (CCRD Book 17281, Page 286), Helen J. Varney, sole Trustee;

Thence southeasterly by the northeasterly boundary of said Thomes land a distance 360 feet, more or less, to the northwesterly corner of land now or formerly of Theodore W. Thomes and Herbert Thomes;

Thence continuing southeasterly by the boundary of land now or formerly of Theodore W. Thomes and Herbert Thomes a distance of 360 feet to a point with said point being the easterly corner of said Theodore Thomes and Herbert Thomes parcel and the northwest corner of land now of formerly of Reeves (CCRD Book 8764, Page 104);

Thence continuing southeasterly along the northeasterly boundary of land of said Reeves to a point with said point also being the southeast corner of land herein conveyed; the northeast corner of said Reeves land and being a point in the northwestern sideline of land now or formerly of Hawkes (CCRD Book 11884, Page 242);

Thence in a northeasterly direction along the northwesterly sideline of said Reeves land a distance of 816 feet to a point on the Gray/Windham Town Line with said point also marking the northeasterly corner of the herein conveyed parcel;

Thence in a northwesterly direction along said Gray/Windham line a distance of 1,904 feet to a point, with said point also being the Point of Beginning.

Said parcel contains 35.6 acres, more or less.

Being the same premises conveyed to Theodore W. Thomes by deed from Kilton W. Lamb, Sr. and Floyd W. Lamb dated September 15, 2002 and recorded in the Cumberland County Registry of Deeds in Book 18086, Page 64.

This conveyance is made together with a 50 foot wide (its minimum width) private right of way in common with the rights of others (with the exception that Grantor shall not have a right of access over said right of way) running Southeasterly and then Northeasterly from the said Smith Road along the Northeasterly side line of land of Brassbridge and across other land now or formerly of the Grantor as more fully set forth below.

Beginning at a 5/8 inch capped rebar set in the ground on the assumed Southeasterly sideline of Smith Road at the westerly corner of land now or formerly of Brassbridge (Book 16759, Page 347);

Thence, South 49° 0' 1" East along said land of Brassbridge 175.73 feet to a point;

Thence, Easterly along the above described parcel of land following a curve to the left having a radius of 225 feet a distance of 318.06 feet to a point;

Thence, North 50° 0' 26" East continuing along said land of Brassbridge 339.08 feet to a point;

Thence, North 23° 26' 32" East across land now or formerly of Theodore W. Thomes a distance of 111.80 feet to a point;

Thence, North 50° 0' 26" East continuing across said land of Theodore W. Thomes a distance of 116.55 feet to a point;

Thence, Easterly continuing Easterly continuing across land of Theodore W. Thomes following a curve to the right having a radius of 100 feet and a distance of 140.41 feet to a point;

Thence, continuing Easterly across land of Theodore W. Thomes following a curve to the left having a radius of 218.80 feet to a point at the Northwesterly sideline of land now or formerly of Julia Reeves (Book 8764, Page 104);

Thence, North 46° 52' 38" East along said land of Reeves a distance of 335 feet to an iron pipe found set in the ground and conveyed by Kilton L. Lamb, Sr. and Floyd W. Lamb, a/k/a F. Wayne Lamb sole surviving heirs of Marjorie E. Lamb to Theodore W. Thomes pursuant to a deed dated September 15, 2002 and recorded in said registry in Book 18086, Page 64;

Thence, North 42° 30' 32" West along said land conveyed by Lamb to Thomes a distance of 50.19 feet to a point;

William S. Kany, Esq.
Smith & Elliott, P.A.
199 Main Street-P.O. Box 1179
Saco, Maine 04072

Be Attached
M.P.
Panes A+B*

Thence, South 46° 52' 30" West along land of Thomes 335.54 feet to a point;

Thence, Westerly continuing along land of Thomes following a curve to the right having a radius of 100 feet and a distance of 145.87 feet to a point;

Thence, Westerly along said land of Thomes following a curve to the left having a radius of 150 feet a distance of 210.61 feet to a point;

Thence, South 50° 26' West continuing along land of said Thomes a distance of 128.35 feet to a point;

Thence, South 23° 26' 32" West continuing along said land of Thomes a distance of 111.80 feet to a point;

Thence, South 50° 00' 26" West continuing along said land of Thomes a distance of 327 feet to a point;

Thence, Westerly continuing along said land of Thomes following a curve to the right having a radius of 175 feet a distance of 247.38 feet to a point;

Thence, North 31° 48' 3" West across land of the Grantor a distance of 101.45 feet to a point;

Thence, North 49° 00' 01" West continuing across land of the Grantor a distance of 125 feet to a point on the Northeasterly sideline of the said Smith Road;

Thence, South 10° 9' 59" West along the southeasterly sideline of said Smith Road a distance of 92.38 feet to the point of beginning.


All bearings are referenced to magnetic North.

This right of way is intended to be used for any and all purposes for which a town road may be used including the installation of utilities, both above and below ground and the right to pave said right of way. Said right of way may be expanded into a public road at the discretion of the Grantee. Included with the right of way is the right to construct a public or private road together with the installation of all necessary drainage facilities and improvements necessary to prevent erosion and to maintain a safe traveled way. Said right of way includes the right to install utility poles and associated guy wires. Said right of way is intended to burden the land now or formerly of the Grantor and to benefit the above described land of Grantee in common with others. Said right of way runs with the land and will benefit the grantee, his heirs and assigns forever. It is intended that the easement rights conveyed hereunder to the Grantee are assignable to third parties, which assignability of such an easement in gross is permitted under the holding of the Maine Supreme Judicial Court, sitting as the Law Court, in the case of O'Donovan v. McKintosh, et al. 728 A.2d 681 (Me. 1999).

WITNESS my hand and seal, this 17th day of January, 2003.

Witness:



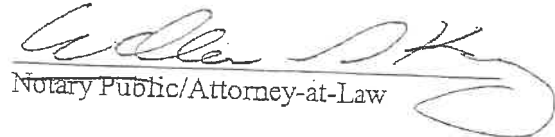

THEODORE W. THOMES

STATE OF MAINE
COUNTY OF YORK

January 17, 2003

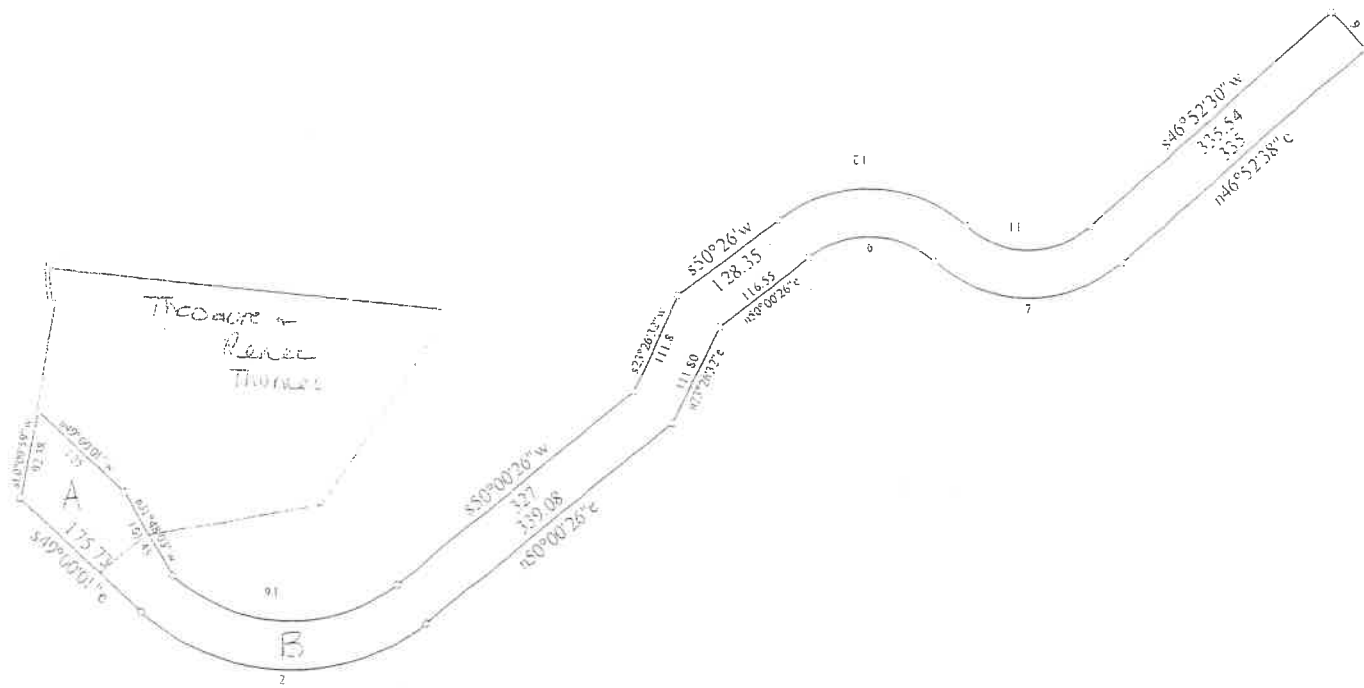
Personally appeared the above named *Theodore W. Thomes*, and acknowledged the foregoing instrument to be his free act and deed.

Before me,


Notary Public/Attorney-at-Law


Print Name

Received
Recorded Register of Deeds
Jan 23, 2003 09:44:31A
Cumberland County
John B. D Brien



Title: Right of Way as described in 18749/299		Date: 03-12-2008
Scale: 1 inch = 200 feet	File:	
Tract 1: 2.116 Acres: 92166 Sq Feet: Closure = s46.2940w 1.11 Feet: Precision = 1/3269: Perimeter = 3631 Feet		
001=s49.0001e 175.73 002: Lt, R=225, Arc=318.06	008=n46.5238e 335	015=s50.0026w 327 016: Rt, R=175, Arc=247.38
003=n50.0026e 339.08	009=n42.3032w 50.19	017=n31.4803w 101.45
004=n23.2632e 111.80	010=s46.5230w 335.54 011: Rt, R=100, Arc=145.87	018=n49.0001w 125
005=n50.0026e 116.55 006: Rt, R=100, Arc=140.41	012: Lt, R=150, Arc=210.61	019=s10.0959w 92.38
007: Lt, R=150, Arc=218.8	013=s50.26w 128.35	
	014=s23.2632w 111.8	

② 15

Cross Ridge Drive
2 P/O lot 10 S 1/4 of
R/W

WARRANTY DEED
Joint Tenancy

PTG PROPERTIES, INC. of Windham, County of Cumberland, State of Maine, for consideration paid, grant to *PETER GILMAN* and *TAMMY GILMAN*, as joint tenants, both of Windham, County of Cumberland, State of Maine, as joint tenants, whose mailing address is 29 Farm View Drive, Windham, ME 04062, with **WARRANTY COVENANTS**, the land in Windham, Cumberland County, Maine, described as follows:

A certain lot or parcel of land situated on the Southeasterly side of the Smith Road in Windham, Cumberland County, Maine but not adjacent thereto and being more particularly bounded and described as follows:

Beginning at an iron pipe set in the ground on the Southwesterly sideline of land of the Grantees as described in a deed from Theodore W. Thomes dated January 17, 2003 and recorded in said registry in the Cumberland County Registry of Deeds in Book 18749, Page 299 at the Northerly corner of land now or formerly of Julia Reeves (Book 8764, Page 104);

Thence, South 46° 59' 34" W along said land of Reeves 643.53 to land now or formerly of Brassbridge (Book 18749, Page 294);

Thence, North 39° 59' 34" W along said land now or formerly of Brassbridge 175.14 feet to a point and corner;

Thence, turning and running S 50° 0' 26" W along said land now or formerly of Brassbridge a distance of 502.28 feet to a point;

Thence, Westerly continuing along said land now or formerly of Brassbridge following a curve to the right having a radius of 225 feet a distance of 318.06 feet to a point;

Thence, N 49° 00' 01" W along said land now or formerly of Brassbridge a distance of 50.31 feet to land now or formerly of Theodore W. Thomes;

Thence, N 50° 33' 25" W along land now or formerly of Theodore W. Thomes a distance of 63.20 feet to a point;

Thence, S 49° 00' 01" E by land of the Grantor a distance of 50 feet, more or less, to a point;

Thence, Easterly along remaining land of the Grantor following a curve to the left having a radius of 175 feet and a distance of 247.38 feet to a point;

Thence, N 50° 0' 26" E continuing along land of the Grantor a distance of 327.28 feet to a point;

Thence, N 23° 26' 32" E continuing along the land of the Grantor a distance of 111.80 feet to a point;

Thence, N 50° 00' 26" E continuing along land of the Grantor a distance of 128.35 feet to a point;

Thence, Easterly along remaining land of the Grantor following a curve to the right having a radius of 150 feet a distance of 210.61 feet to a point;

Thence, Easterly continuing along the remaining land of the Grantor following a curve to the left having a radius of 100 feet and a distance of 145.87 feet to a point;

Thence, N 46° 52' 38" E along remaining land of the Grantor a distance of 335.54 feet to a point;

Thence, S 42° 30' 32" E along land of the Grantees a distance of 50.19 feet to the point of beginning.

Said property is conveyed subject to the reservation of a right of way for the benefit of the Grantor in common with others over the right of way described in the deed from Theodore W. Thomes to Peter Gilman and Tammy Gilman dated January 17, 2003 and recorded in said registry in Book 18749, Page 299 as well as the right of way described in the Confirmatory/Corrective Deed from Theodore W. Thomes to James H., Brassbridge dated January 17, 2003 and recorded in said registry in Book 18749, Page 296.

Being a portion of the premises described in a deed from Theodore W. Thomes to PTG Properties, Inc. dated January 17, 2003 and recorded in said registry in Book 18749, Page 297.

This deed is a transfer of land to an abutter.

WITNESS my hand and seal, this 18th day of March, 2003.

Witness:

PTG PROPERTIES, INC.

By: Peter Gilman
Its: President

STATE OF MAINE
COUNTY OF YORK

March 19, 2003

Personally appeared the above named *Peter Gilman*, and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of PTG Properties, Inc.

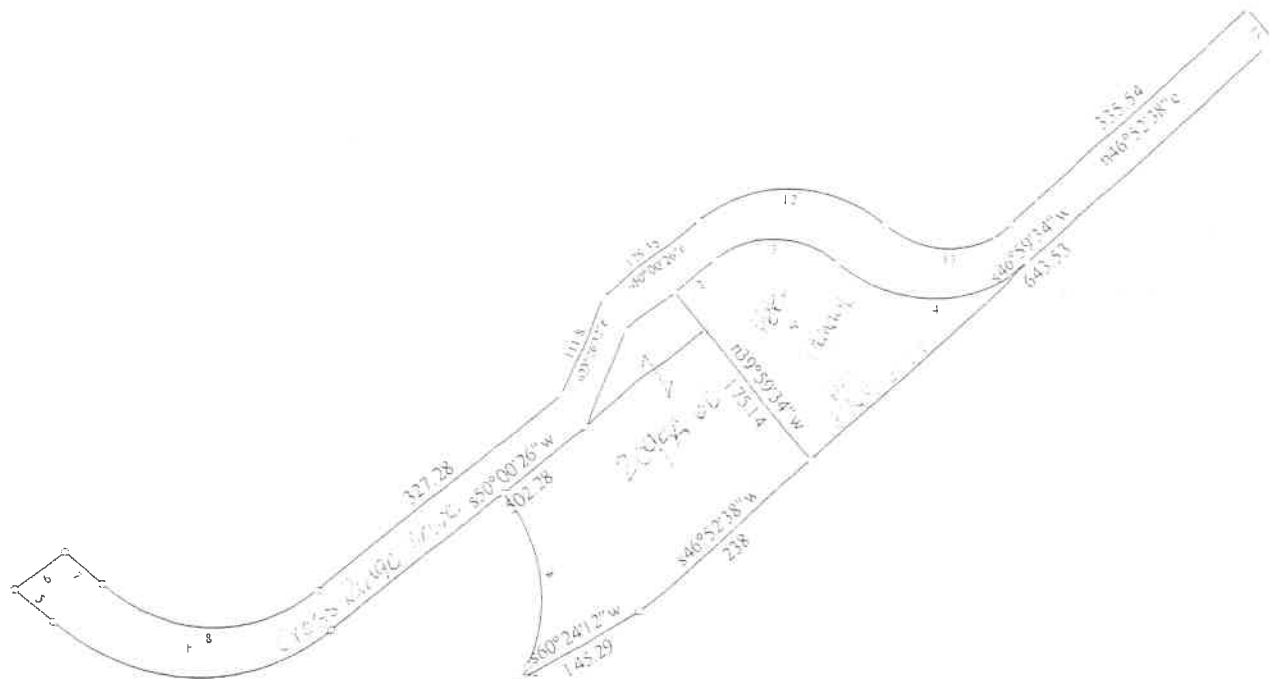
Before me,


Notary Public/Attorney-at-Law

William S. Hany
Print Name

H:\wkany\wpdata\GILMAN\Deed - PTG to Peter & Tammy Gilman.doc

Received
Recorded Register of Deeds
Mar 20, 2003 09:59:24A
Cumberland County
John B. O'Brien



Title: Cross Ridge Drive (19047-122)

P/O 107-19-2007

Date: 03-10-2008

Scale: 1 inch = 200 feet

File: Cross Ridge.des

Tract 1: 2.754 Acres: 119974 Sq Feet: Closure = s77.0515w 15.40 Feet: Precision = 1/218: Perimeter = 3360 Feet

Tract 2: 0.015 Acres: 640 Sq Feet: Closure = n82.3757e 324.59 Feet: Precision = 1/2: Perimeter = 510 Feet

Tract 3: 0.043 Acres: 1860 Sq Feet: Closure = n82.3907e 324.67 Feet: Precision = 1/2: Perimeter = 589 Feet

Tract 4: 0.013 Acres: 568 Sq Feet: Closure = s46.5412w 308.52 Feet: Precision = 1/2: Perimeter = 638 Feet

001=s46.5934w 643.53

012: Rt. R=150, Arc=210.61

023=s60.2412w 145.29

002=n39.5934w 175.14

013: Lt. R=100, Arc=145.87

024=n22.4429e 13.88

003=s50.0026w 502.28

014=n46.5238e 335.54

025: Lt. R=175, Arc=191.61

004: Rt. R=225, Arc=318.06

015=s42.3032e 50.19

026=@17

005=n49.0001w 50.31

016=@2E

027=**n39.5934w 225

006=n50.3325e 63.20

017=n39.5934w 225

028=n50.0026e 53.35

007=s49.0001e 50

018=s50.0026w 63.20

029: Rt. R=100, Arc=140.41

008: Lt. R=175, Arc=247.38

019=s23.2632w 111.80

030: Lt. R=150, Arc=218.8

009=*n50.0026e 327.28

020=s50.0026w 110.18

010=n23.2632e 111.8

021=@17E

011=n50.0026e 128.35

022=s46.5238w 238

Data and Deed Call Listing of File:

Tract 1: 2.754 Acres: 119974 Sq Feet: Closure = s77.0515w 15.40 Feet: Precision = 1/218: Perimeter = 3360 Feet
Tract 2: 0.015 Acres: 640 Sq Feet: Closure = n82.3757e 324.59 Feet: Precision = 1/2: Perimeter = 510 Feet
Tract 3: 0.043 Acres: 1860 Sq Feet: Closure = n82.3907e 324.67 Feet: Precision = 1/2: Perimeter = 589 Feet
Tract 4: 0.013 Acres: 568 Sq Feet: Closure = s46.5412w 308.52 Feet: Precision = 1/2: Perimeter = 638 Feet

001=s46.5934w 643.53

002=n39.5934w 175.14

003=s50.0026w 502.28

004: Rt. R=225. Arc=318.06

005=n49.0001w 50.31

006=n50.3325e 63.20

007=s49.0001e 50

008: Lt. R=175. Arc=247.38

009=n50.0026e 327.28

010=n23.2632e 111.8

011=n50.0026e 128.35

012: Rt. R=150. Arc=210.61

013: Lt. R=100. Arc=145.87

014=n46.5238e 335.54

015=s42.3032e 50.19

016=@2□

017=n39.5934w 225

018=s50.0026w 63.20

019=s23.2632w 111.80

020=s50.0026w 110.18

021=@17□

022=s46.5238w 238

023=s60.2412w 145.29

024=n22.4429e 13.88

025: Lt. R=175. Arc=191.61

026=@17

027=**n39.5934w 225

028=n50.0026e 53.35

029: Rt. R=100. Arc=140.41

030: Lt. R=150. Arc=218.8

3

WARRANTY DEED

I, *JAMES H. BRASSBRIDGE*, of Windham, County of Cumberland, State of Maine, for consideration paid, grant to *PETER GILMAN*, of Windham, County of Cumberland, State of Maine, whose mailing address is 29 Farmview Drive, Windham, ME 04062, with **WARRANTY COVENANTS**, the land in Windham, Cumberland County, Maine, described as follows:

A certain lot or parcel of land situated in said Windham on the Smith Road, and being more particularly described as follows:

Beginning at a capped 5/8" rebar (PLS 586) marking the westerly sideline of land now or formerly owned or occupied by Jeffrey T. Wilson and Brian R. Merrill set in the apparent sideline of the Smith Road, so-called;

Thence, N 29° 5' 21"^k and along the apparent sideline of Smith Road a distance of 130.45 feet to an iron pipe driven into the ground on the easterly sideline of said Smith Road;

Thence, continuing Northerly on said sideline of said Smith Road a distance of 20.42 feet to a capped 5/8" (PLS 586) set in the apparent sideline of Smith Road, so-called, being the point and place of beginning.

Thence, S 44° 41' 11" E a distance of 494.51 feet to an iron rebar set;

Thence, N 48° 07' 38" E along the bounds of land now or formerly owned by Thelma W. Hunt a distance of 131.04 feet to an iron pipe driven into the ground;

Thence, continuing N 60° 24' 12" E a distance of 348.66 feet to a point;

Thence, N 46° 52' 38" E a distance of 238 feet to a point;

Thence, N 39° 59' 34" W a distance of 175.14 feet to a point;

Thence, S 50° 0' 26" W a distance of 502.28 feet to a point;

Thence, on a curve to the right with a radius of 225' a distance of 318.06 feet to a point;

Thence, continuing N 49° 0' 01" W a distance of 175.73 feet to a capped rebar (PLS 586) set in the apparent easterly sideline of said Smith Road and being the point and place of beginning.

Also conveying herein a right to use in common with grantor and others a fifty (50) foot right-of-way for purposes of ingress and egress to said land located adjacent to the northwesterly bounds of said parcel being conveyed herein, which use is subject to a certain Declaration of

MAINE REAL ESTATE TAX PAID

Maintenance of Right-of-Way recorded in the Cumberland County Registry of Deeds in Book 16759, Page 349.

For further description of said lot, reference is hereby made to a survey entitled Standard Boundary Survey in Windham, Maine for Theodore W. Thomes and Herbert W. Thomes by Survey, Inc. dated April 1, 1997.

The above reference in this deed to a fifty (50) foot wide right of way and a certain Declaration of Maintenance of Right of Way refers to a Declaration of Maintenance of Right of Way recorded in the Cumberland County Registry of Deeds in Book 16759, Page 349. There was no description of the right of way attached to that Declaration of Maintenance of Right of Way. The description of said right of way is as follows:

Beginning at a 5/8 inch capped rebar set in the ground on the assumed Southeasterly sideline of Smith Road and the westerly corner of the above described parcel of land;

Thence South 49° 0' 1" East along the above described parcel of land 175.73 feet to a point;

Thence Easterly along the above described parcel of land following a curve to the left having a radius of 225 feet a distance of 318.06 feet to a point;

Thence North 50° 0' 26" East continuing along the above described parcel of land 228.90 feet to a point;

Thence, turning and running North 39° 26' 35" West across land now or formerly of the Grantor a distance of 50 feet to a point;

Thence, South 50° 0' 26" West a distance of 229.38 feet;

Thence, Westerly continuing across land now or formerly of the Grantor following a curve to the right having a radius of 175 feet a distance of 247.38 feet to a point;

Thence, N 49° 00' 01" W across land of the Grantor a distance of 204.60 feet to a point;

Thence, South 10° 59' 59" West along the southeasterly sideline of said Smith Road a distance of 57.74 feet to the point of beginning.

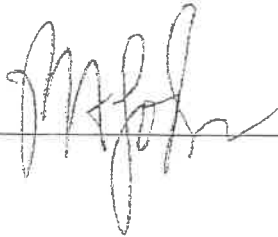
All bearings are referenced to magnetic North.

Said right of way is intended to burden land now or formerly of the Grantor and to benefit the land of the Grantee, in common with others. Said right of way runs with the land and will benefit the Grantee, his heirs and assigns forever.

Being the same premises conveyed to James H. Brassbridge by Confirmatory / Corrective Deed dated January 17, 2003 and recorded in the Cumberland County Registry of Deeds in Book 18479, Page 294.

WITNESS my hand and seal, this 7th day of March, 2003.

Witness:





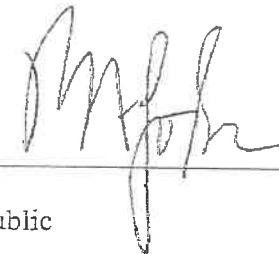
JAMES H. BRASSBRIDGE

STATE OF MAINE
COUNTY OF Cumberland

March 7, 2003

Then personally appeared the above named *James H. Brassbridge*, and acknowledged the foregoing instrument to be his free act and deed.

Before me,



Notary Public

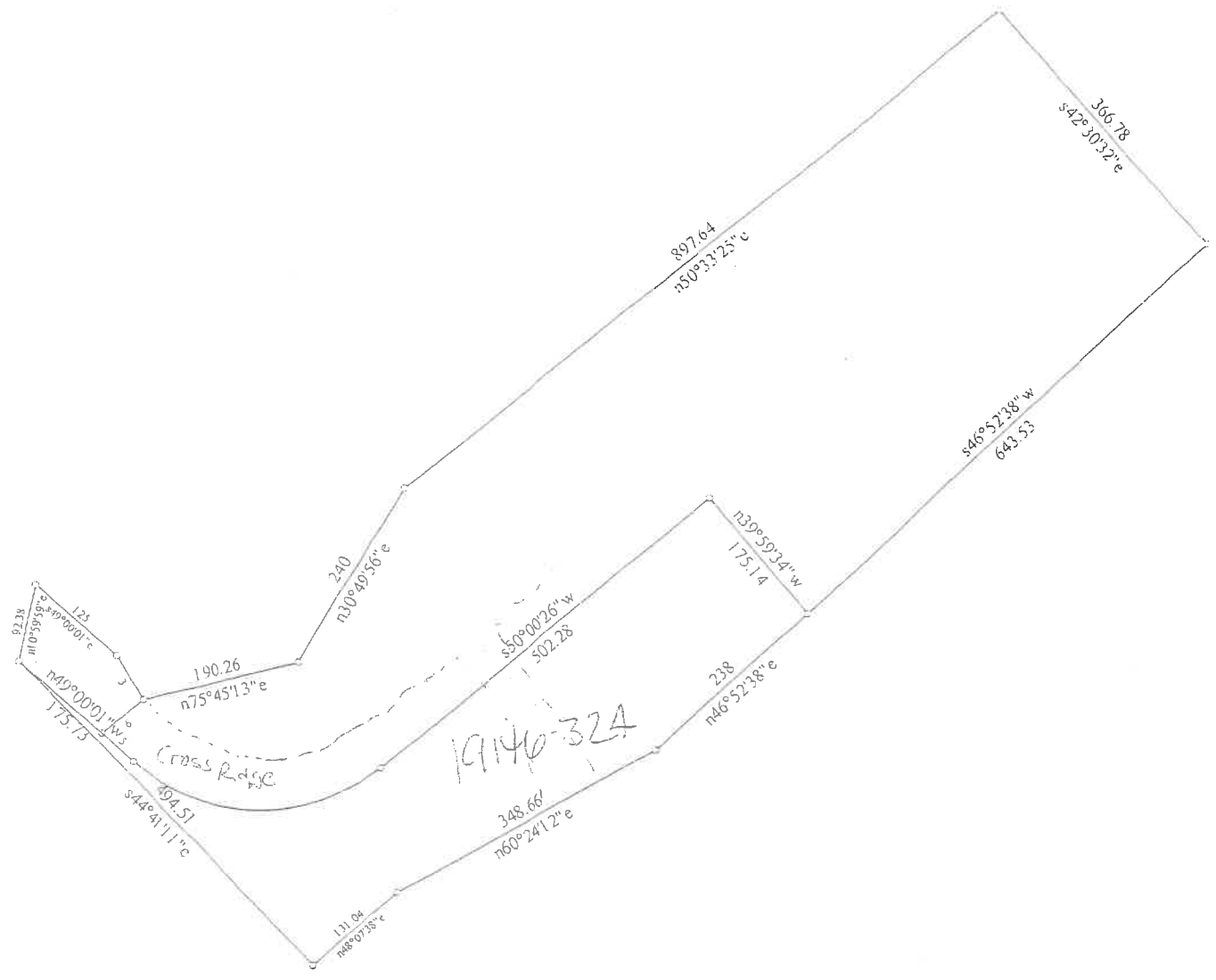
Attorney-at-Law

PETER H. GODSOE
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES NOVEMBER 5, 2009

wsk/gilbert/brassbridge to gilman

Received
Recorded Register of Deeds
Apr 04, 2003 09:50:07A
Cumberland County
John S. O'Brien

William S. Kany, Esq.
Smith & Elliott, P.A.
199 Main Street-P.O. Box 1179
Saco, Maine 04072



Title:		Date: 03-10-2008
Scale: 1 inch = 200 feet	File: Gilman.des	
Tract 1: 8.962 Acres: 390367 Sq Feet: Closure = s21.1111e 0.01 Feet: Precision = 1/600566: Perimeter = 3447 Feet Tract 2: 1.101 Acres: 47949 Sq Feet: Closure = s76.4425w 811.21 Feet: Precision = 1/2: Perimeter = 1388 Feet Tract 3: 0.014 Acres: 601 Sq Feet: Closure = n73.3814w 149.52 Feet: Precision = 1/2: Perimeter = 277 Feet		
001=s46.5238w 643.53	008=n30.4956e 240	015=n60.2412e 348.66
002=n39.5934w 175.14	009=n50.3325e 897.64	016=n46.5238e 238
003=s50.0026w 502.28	010=s42.3032e 366.78	017=@13
004: Rt. R=225. Arc=318.06	011=@5	018=n10.5959e 92.38
005=n49.0001w 50.31	012=n49.0001w 175.73	019=s49.0001e 125
006=n50.3325e 63.20	013=s44.4111e 494.51	020=s31.4803e 59.77
007=n75.4513e 190.26	014=n48.0738e 131.04	

WARRANTY DEED

I, CHARLES W. HALL, JR., of Windham, County of Cumberland, State of Maine, for consideration paid, grant to PTG PROPERTIES, INC., a Maine corporation, with a principal place of business in Windham, County of Cumberland, State of Maine, with a mailing address of 77 Basin Road, Windham, Maine 04062, with WARRANTY COVENANTS, the land in Windham, Cumberland County, Maine, described as follows:


A certain lot or parcel of land known as the Manchester lot, located easterly of, but not adjacent to, Smith Road, in the Town of Windham, County of Cumberland and State of Maine, and being bounded and described as follows:

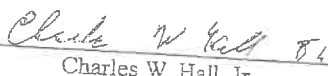
On the northerly side bounded by lots known as the Ellery Purington and Seeley lots; on the westerly side by lot formerly owned by John Mayberry; on the southwesterly side by land formerly owned by Thomas Knight and land known as the Stanley lot and the Herbert Legrow lot.

Being the same premises conveyed to Charles W. Hall, Jr., by warranty deed of Marion B. Hall dated July 31, 1996, and recorded in Book 12653, Page 142 of the Cumberland County Registry of Deeds.

WITNESS my hand and seal this 16th day of July, 2003.

Witness:

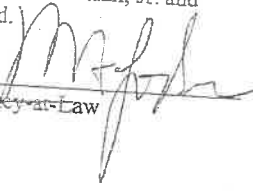



Charles W. Hall, Jr.

STATE OF MAINE
COUNTY OF CUMBERLAND

July 16, 2003

Then personally appeared before me the above-named Charles W. Hall, Jr. and acknowledged the foregoing instrument to be his free act and deed.


Notary Public/Attorney-at-Law

PETER H. GODSOE
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES NOVEMBER 5, 2009

William S. Kany, Esq.
Smith & Elliott, P.A.
199 Main Street P.O. Box 1179
Saco, Maine 04072

Received
Recorded Register of Deeds
Jul 25, 2003 09:41:01A
Cumberland County
John B. O'Brien

SEAL

5

WARRANTY DEED
(Maine Statutory Short Form)
(Joint Tenants)

KNOW ALL PERSONS BY THESE PRESENTS, that I, Darrick H. Naas, of Windham, County of Cumberland, and State of Maine, for consideration paid, grant to **Darrick H. Naas and Michelle M. Westman**, of Windham, County of Cumberland, State of Maine, whose mailing address is 22 Lockland Drive, Windham, Maine 04062-5585, as **Joint Tenants with rights of survivorship with WARRANTY COVENANTS**, the land with buildings thereon, in Windham, County of Cumberland, State of Maine, described as follows:

A certain lot or parcel of land known as the Manchester lot, located easterly of, but not adjacent to, Smith Road, in the Town of Windham, County of Cumberland and State of Maine, and being bounded and described as follows:

Beginning at a 5/8" iron rod set in, the ground at the westerly corner of land conveyed by Jeffrey A. Rich to the Grantor herein by deed March 31, 2004, and recorded in the Cumberland County Registry of Deeds in Book 21054, Page 70;

Thence, N 47°57' 09" E by land of Lori J. Rich and by land of Tammy J. Gilman and Peter S. Gilman a distance of 280.37 feet to a point and corner;

Thence, N 39° 01'51" W by the northeasterly sideline of a 50' wide right-of-way known as Lockland Drive a distance of 918.93 feet to an iron rod with survey cap set in the ground;

Thence, N 50° 58' 09" E by land now or formerly of Peter S. Gilman a distance of 211.52 feet to an iron rod with survey cap set in the ground;

Thence, S 38° 54' 41" E by said land now or formerly of Peter S. Gilman a distance of 1,138.03 feet to a point and corner;

Thence, S 49° 49' 50" W by said land now or formerly of Peter S. Gilman a distance of 489.23 feet to an iron rod with survey cap set in the ground;

Thence, N 39° 01' 51" W by said land of Lori J. Rich a distance of 214.07 feet to an iron rod with survey cap set in the ground and the point of beginning.

This conveyance is made together with an easement for ingress and egress by foot or vehicle and for the installation of utilities for a certain 50' wide right-of-way as more particularly described in an easement deed from Peter S. Gilman and Tammy J. Gilman to Lori J. Rich dated March 31, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21054, Page 72. Said easement is subject to a Road Maintenance/Easement Agreement by and among Peter S. Gilman, Tammy S. Gilman, PTG Properties, Inc and Lori J. Rich recorded in said Registry of Deeds in Book 21054, page 75, which Road Maintenance/Easement Agreement benefits the above-reference land. The Grantee's rights in said easement area are not assignable except in conjunction with the sale or transfer of his entire parcel or in the event of the transfer of portions

MAINE REAL ESTATE TAX PAID

A06-294

of said parcel to the Tammy J. Gilman or to Peter Gilman or their designees. Peter and Tammy Gilman specifically reserve all fee interest in the right of way which provides access to the above-described property.

The above-described parcel may not be further divided without the prior written consent of Tammy J. Gilman or her heirs and assigns.

The above-described lot is conveyed subject to the "Declaration of Restrictions Affecting Certain Property of the Parties Hereto Located off of Smith Road on a Private Way Known as Lockland Drive in Windham, Maine" dated March 31, 2004, and recorded in the Cumberland County Registry of Deeds in Book 21054, page 83.

Meaning and intending to convey the same premises described in deed of Tammy J. Gilman, dated May 28, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21348, Page 318.

Witness my hand and seal this 22nd day of May, 2006.



Witness



Darrick H. Naas

STATE OF MAINE
COUNTY OF CUMBERLAND, SS.

May 22 , 2006

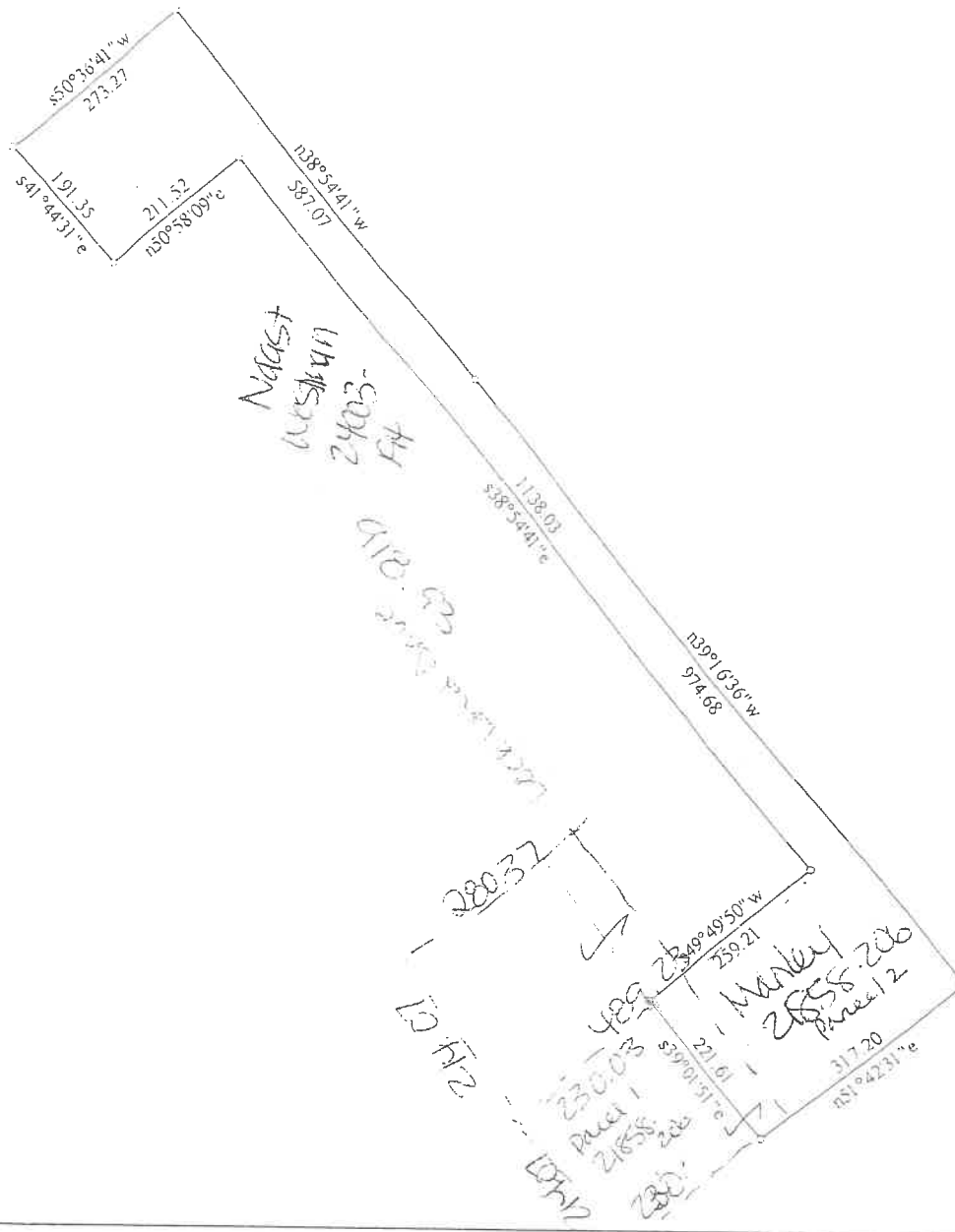
Then personally appeared before me the above-named Darrick H. Naas and acknowledged the foregoing instrument to be his free act and deed.

Before me

Notary Public/ Attorney at Law

C. TRENT GRACE
Notary Public, Maine
My Commission Expires February 6, 2008

Received
Recorded Register of Deeds
May 24, 2006 03:37:51P
Cumberland County
John B O'Brien



Title:		Date: 03-12-2008
Scale: 1 inch = 236 feet	File:	
Tract 1: 4.238 Acres: 184619 Sq Feet: Closure = s70.3107e 0.02 Feet: Precision = 1/228142: Perimeter = 4174 Feet		
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002=n39.1636w 974.68	006=n50.5809e 211.52	
003=n38.5441w 587.07	007=s38.5441e 1138.03	
004=s50.3641w 273.27	008=s49.4950w 259.21	



WARRANTY DEED

I, PETER S. GILMAN, of Windham, County of Cumberland, State of Maine, for consideration paid, grant to JASON A. MANLEY and LAURIE L. MANLEY, of Windham, County of Cumberland, State of Maine, with a mailing address of 6 Whispering Pines Drive, Windham, Maine 04062, with WARRANTY COVENANTS, as joint tenants, a certain lot or parcel of land known as the Manchester lot, located easterly of, but not adjacent to, Smith Road, in the Town of Windham, County of Cumberland and State of Maine, and being bounded and described as follows:

PARCEL ONE:

A certain lot or parcel of land situated off the Southeasterly side of the Smith Road in the Town of Windham, County of Cumberland and State of Maine, being more particularly described as follows:

Beginning at the Northerly corner of land now or formerly of Richard Lamb (Book 4015/Page 247) being also the Westerly corner of land now or formerly of Stilman Lamb and the Southerly corner of land now or formerly of Charles W. Hall, Jr. (Book 18122/Page 344);

Thence, S 51°42'31" W along land of the said Richard Lamb 230.00 feet to a point;

Thence, N 39°01'51" W across land of the Grantor 214.07 feet to a point;

Thence, N 49°49'50" E continuing across land of the Grantor 230.03 feet to a point on the Southwesterly-sideline of land of the said Hall;

Thence, S 39°01'51" E along land of the said Hall 221.61 feet to the point of beginning. Containing 50,099 square feet.

All bearings are referenced to Magnetic North.

Meaning and intending to convey the same premises to this Grantor by deed from Jeffrey A. Rich dated March 31, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21054, Page 77.

PARCEL TWO:

A certain lot or parcel of land situated off the Southeasterly side of the Smith Road in the Town of Windham, County of Cumberland and State of Maine, being more particularly described as follows:

MAINE REAL ESTATE TAX PAID

Beginning at the Northerly corner of land now or formerly of Richard Lamb (Book 4015/Page 247) being also the Westerly corner of land now or formerly of Stilman Lamb and the Easterly corner of land of the Grantee;

Thence, N 51°42'31" E along land of said Stilman Lamb 317.20 feet to a wooden stake found set in a pile of stones at the Southerly corner of land now or formerly of Blaine F. Hawkes (Book 11884/Page 242);

Thence, N 39°16'36" W along land of said Hawkes 974.68 feet to a ¾" rebar found set in the ground at the Southerly corner of land now or formerly of Julia Reeves (Book 8764/Page 104);

Thence, N 38°54'41" W along land of said Reeves 587.07 feet to a point;

Thence, S 50°36'41" W along land of the Grantor 273.27 feet to a point on the Northeasterly sideline of a 50-foot wide private right-of-way running Southeasterly from Smith Road.

Thence, S 41°44'31" E along the said sideline of the 50-foot wide private right-of-way 191.35 feet to a point;

Thence, N 50°58'09" E across land of the Grantor 211.52 feet to a point;

Thence, S 38°54'41" E continuing across land of the Grantor 1138.03 feet to a point;

Thence, S 49°49'50" W continuing across land of the Grantor 259.21 feet to the Northerly corner of land of the Grantee;

Thence, S 39°01'51" E along land of the Grantee 221.61 feet to the point of beginning. Containing 4.23 acres.

All bearings are referenced to Magnetic North.

This conveyance is made together with the rights in common with others in and to the said 50-foot wide private right-of-way running Southeasterly from the Smith Road to and along the above-described lot. This right-of-way is intended to be used for any and all purposes for which a town Road would be used including utilities.

This conveyance is made subject to a 50-foot wide right-of way running Southeasterly across the above-described lot along the Southwesterly sideline common to land of the Grantee.

Meaning and intending to convey the same premises conveyed to this Grantor by deed from PTG Properties, Inc. of near or even date to be recorded in the Cumberland County Registry of Deeds.

The above described parcel may not be further divided without the prior written consent of the Grantor herein or his heirs or assigns.

The above described lot is conveyed subject to the "Declaration of Restrictions Affecting Certain Property of the Parties Hereto Located off of Smith Road on a Private Way Known as Lockland Drive in Windham, Maine" dated March 31, 2004, and recorded in the Cumberland County Registry of Deeds in Book 21054, Page 83.

The above described lot is subject to an Easement Deed from Peter S. Gilman to F. Blaine Hawkes to be recorded in the Cumberland County Registry of Deeds.

WITNESS my hand and seal this 29th day of Sept., 2004.

Witness:

[Signature]

[Signature]
PETER S. GILMAN

STATE OF MAINE
YORK, ss.:

Sept 29, 2004

Then personally appeared before me the above-named Peter S. Gilman and acknowledged the foregoing instrument to be his free act and deed.

[Signature]
Notary Public/Attorney-at-Law

William S. King
Print Name

Received
Recorded Register of Deeds
Oct 05, 2004 11:41:59A
Cumberland County
John B O'Brien

7

QUITCLAIM DEED
(With Covenant)

KNOW ALL PERSONS BY THESE PRESENTS, that we, **PETER S. GILMAN AND TAMMY J. GILMAN**, of Windham, County of Cumberland and State of Maine, in consideration of One Dollar and other valuable consideration paid by **PETER S. GILMAN**, of Windham, County of Cumberland and State of Maine, whose mailing address is 77 Basin Road, Windham, ME 04062, the receipt whereof is hereby acknowledged, do hereby REMISE, RELEASE, BARGAIN, SELL AND CONVEY and forever QUITCLAIM unto the said **PETER S. GILMAN**, his heirs and assigns forever, the following described real estate:

A certain lot or parcel of land situated at the end of Lockland Drive in the Towns of Gray and Windham in the County of Cumberland and State of Maine being more particularly described as follows:

Beginning at a stone post found set in the ground on the Gray-Windham town line at the Southerly corner of land now or formerly of Lawrence J. Zuckerman (4721/146);

Thence Northeasterly along land of the said Zuckerman 450 feet more or less to land now or formerly of Bernard P. Kimball (15,523/273);

Thence Southeasterly along land of the said Kimball and land now or formerly of John L. Ranger (6607/350) a distance of 1740 feet more or less to a stone post found set in the ground on the Northwesterly sideline of land now or formerly of Peter S. Gilman (21,908/1)

Thence Southwesterly along land of the said Gilman 450 feet more or less to a stone post found set in the ground on the said town line;

Thence N 39°27'40" W along the said town line 510.94 feet to a point;

Thence S 50°33'00" W across land of the Grantor 860.93 feet to a point;

Thence N 39°27'00" W continuing across land of the Grantor 665.60 feet to a point;

Thence S 50°33'00" W continuing across land of the Grantor 407.43 feet to a point;

Thence Southwesterly continuing across land of the Grantor following a curve to left having a radius of 100.00 feet a distance of 95.12 feet to a point;

Thence S 03°57'00" E continuing across land of the Grantor 198.50 feet to a point;

Thence Southwesterly continuing across land of the Grantor following a curve to the right having a radius of 150.00 feet a distance of 143.78 feet to a 5/8" capped rebar found set in the ground;

Thence S 50°58'09" W continuing across land of the Grantor 86.93 feet to a 5/8" capped rebar found set in the ground on the Northeasterly side line of land now or formerly of Marley;

Thence N 39°16'36" W along land of the said Marley 50.00 feet to a 5/8" capped rebar found set in the ground at the Southerly corner of land now or formerly of Hunt;

Thence N 50°58'09" E along land of the said Hunt 87.15 feet to a 5/8" capped rebar found set in the ground;

Thence Northeasterly continuing along land of the said Hunt following a curve to the left having a radius of 100.00 feet a distance of 95.85 feet to a 5/8" capped rebar found set in the ground;

Thence N 03°57'00" W continuing along land of the said Hunt 198.50 feet to a 5/8" capped rebar found set in the ground;

Thence Northeasterly continuing along land of the said Hunt following a curve to the right having a radius of 150.00 feet a distance of 142.68 feet to a 5/8" capped rebar found set in the ground at the Northerly corner of land of the said Hunt on the Southeasterly side line of land now or formerly of Julia Reeves (8764/104);

Thence N 50°33'00" E along land of the said Reeves 457.43 feet to a 3/4" rebar found set in the ground on the Southwesterly side line of land now or formerly of Kenneth Clark;

Thence S 39°27'00" E along land of the said Clark 215.60 feet to a 3/4" rebar found set in the ground;

Thence N 50°33'00" E continuing along land of the said Clark 811.77 feet to a 3/4" rebar found set in the ground on the said town line;

Thence N 39°20'35" W along the said town line and land of the said Clark 763.84 feet to the point of beginning. Containing 29.4 acres more or less.

This conveyance is made together with the rights in common with others in and to Cross Ridge Drive as it runs from the Smith Road to the said Lockland Drive;

This conveyance is made together with and subject to the rights in common with others in and to the said Cross Ridge Drive as it runs from Cross Ridge Drive to and across the above described lot.

All bearings are Magnetic of the year 1958.

Meaning and intending to convey a portion of the premises conveyed to this Grantor by deed recorded in the Cumberland County Registry of Deeds in Book 21907, Page 349.

Also conveying herewith a right of way in common with others over a certain private way known as Lockland Drive and subject to various rights and obligations in common with others, granted easements over the aforesaid private way.

Together with a certain easement or right of way in common with others running northeasterly from the northeasterly sideline of Lockland Drive across land of Darrick H. Naas to a 50' wide easement over land of Jason A. Manley and Laurie L. Manley, which easement then continues northeasterly to the southwesterly sideline of the above-described land (Book 11884, Page 242 and Book 2345, Page 108) which easement is more particularly described as follows:

Beginning at a point on the Northeasterly sideline of Lockland Drive located S 39° 01' 51" E a distance of 660.00 feet from a 5/8" capped rebar found set in the ground on the said sideline of Lockland Drive at the westerly corner of said land of Naas;

Thence, N 50° 58' 09" E across said land of Naas 210.15 feet to the southeasterly sideline of said land of Manley, said point located S 38° 54' 41" E a distance of 660.00 feet from a 5/8" capped rebar set in the ground at the Northerly corner of said land of Naas;

Thence, S 38° 54' 41" E along said land of Manley 50.00 feet to a point;

Thence, S 50° 58' 09" W across said land of Manley 54.31 feet to a point on the said northeasterly side of said land of Naas;

Thence, N 38° 54' 41" W along the said northeasterly sideline of said land of Naas 50.00 feet to the point of beginning.

All bearings are referenced to Magnetic North.

The purpose of this easement is to provide ingress and egress by foot or vehicle of any description and to permit the installation of utilities both above and below ground within said easement area running from the private way known as Lockland Drive to the above-described property.


Said easement is intended to burden the land of Manley as described in a deed from Peter S. Gilman to Jason A. Manley and Laurie L. Manley recorded in the Cumberland County Registry of Deeds, and to benefit the above-described parcel of land. Said easement shall run with the land and benefit the Grantee, his heirs and assigns forever. The Grantee, his heirs and assigns shall have the right to construct a road on said easement area to either private or public road standards and the Grantee, his heirs and assigns may install all drainage facilities and may pave said right of way at his option.


TO HAVE AND TO HOLD, the same, together with all the privileges and appurtenances thereunto belonging, to the said **PETER S. GILMAN**, his heirs and assigns forever, to use and behoof forever.


AND we **COVENANT** with the said Grantee, his heirs and assigns forever, that we will **WARRANT AND FOREVER DEFEND** the premises to the said Grantee, his heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through, or under them.

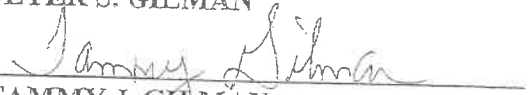
IN WITNESS WHEREOF, the said **PETER S. GILMAN** and **TAMMY J. GILMAN** have hereunto set their hands and seals this 15 day of March, 2006.

WITNESS:







PETER S. GILMAN



TAMMY J. GILMAN

STATE OF MAINE
Cumberland, ss.

March 15, 2006

Then personally appeared the above-named PETER S. GILMAN and TAMMY J. GILMAN and acknowledged the foregoing instrument to be their free act and deed.

Before me,

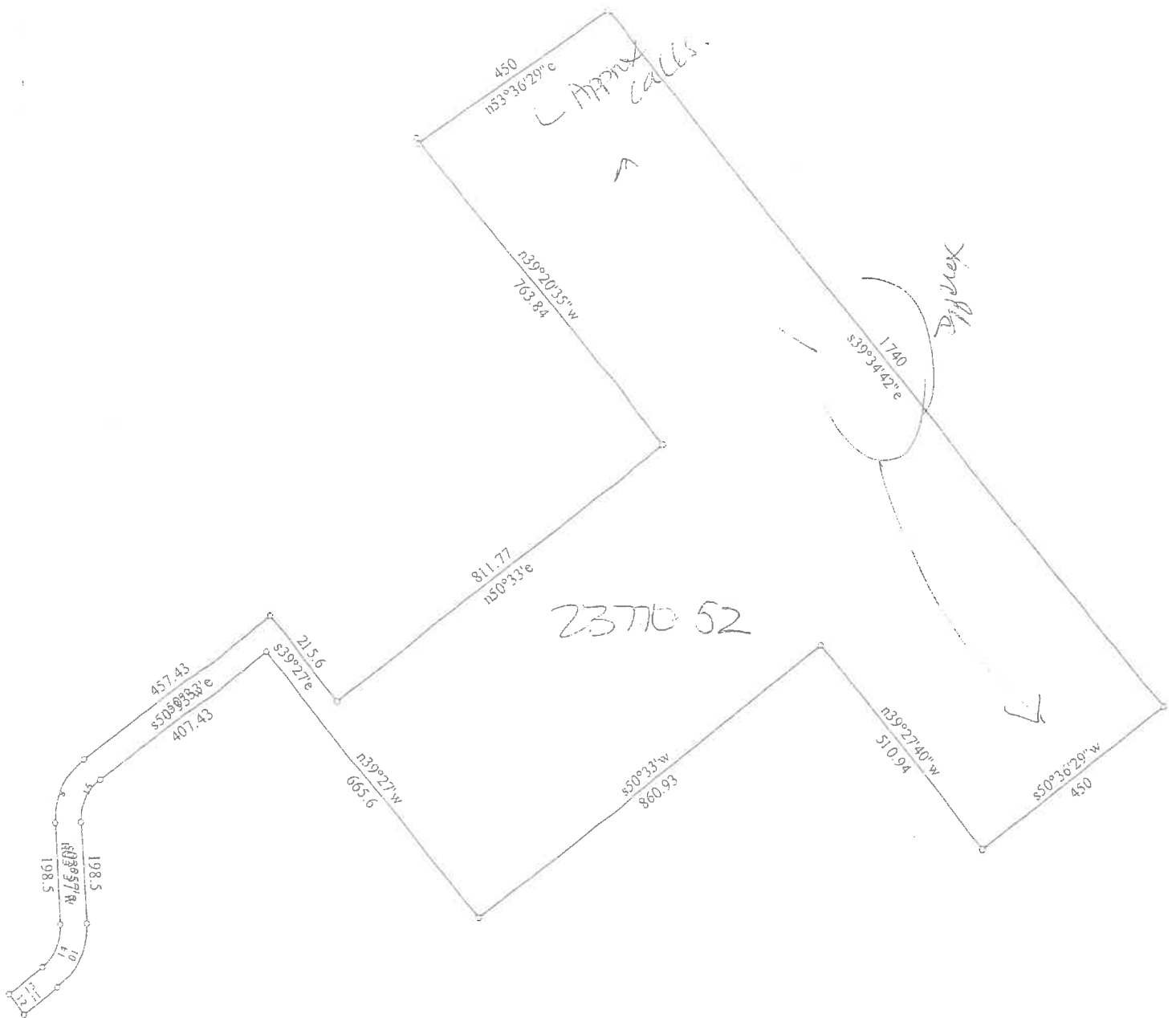


Notary Public/Attorney-at-Law

Print Name: KENNETH M. COLE

My Commission Expires: _____

Received
Recorded Register of Deeds
Mar 20, 2006 11:00:59A
Cumberland County
John B O'Brien



Title:		Date: 09-04-2007
Scale: 1 inch = 300 feet	File:	
Tract 1: 29.207 Acres: 1272268 Sq Feet: Closure = s13.3957e 12.47 Feet: Precision = 1/676: Perimeter = 8432 Feet		
001=n53.3629e 450	008: Lt. R=100. Arc=95.12	015=n03.57w 198.5
002=s39.3442e 1740	009=s03.57e 198.5	016: Rt. R=150. Arc=142.68
003=s50.3629w 450	010: Rt. R=150. Arc=143.78	017=n50.33e 457.43
004=n39.2740w 510.94	011=s50.5809w 86.93	018=s39.27e 215.6
005=s50.33w 860.93	012=n39.1636w 50	019=n50.33e 811.77
006=n39.27w 665.6	013=n50.5809e 87.15	020=n39.2035w 763.84
007=s50.33w 407.43	014: Lt. R=100. Arc=95.85	

MASTER ROAD MAINTENANCE AGREEMENT
CROSS RIDGE DRIVE & LOCKLAND DRIVE, WINDHAM, MAINE

This Agreement is entered into this 12 day of June, 2008, by and among PETER GILMAN and TAMMY GILMAN ("Gilman"), KENYON CLARK and EILEEN CLARK ("Clark"), JERRY HUNT and BETHANY HUNT ("Hunt"), SCOTT HAYMAN ("Hayman"), SCOTT KELLEY ("Kelly"), BRIAN MARDEN & KRISTEN MARDEN ("Marden"), LORI RICH ("Rich"), MALCOLM ULMER & BETTY ULMER ("Ulmer"), JASON MANLEY & LAURIE MANLEY ("Manley"), ERIC TAQUET & LUBET TAQUET ("Taquet"), DARRICK NAAS & MICHELLE NAAS ("Naas"), JACOB OUELLETTE & EILEEN OUELLETTE ("Ouellette"), DANIEL REALI & BRENNAN JEAN REALI ("Real"), FREDERICK WILCOX & NATALIE WILCOX ("Wilcox"), JUDSON SMITH & KATHERINE SMITH ("Smith"), and MICHAEL FLIBBERT & TIFFANY FLIBBERT ("Flibbert"), being all of the owners of parcels located on Cross Ridge Drive and/or Lockland Drive, Windham, Maine (hereinafter collectively referred to as "Landowners").

WITNESSETH:

Whereas Landowners each currently own property with frontage on, or which is accessed only by, the private way known as Cross Ridge Drive and/or Lockland Drive, in the Town of Windham, County of Cumberland and State of Maine and generally located as shown on Plan of Cross Ridge Drive & Lockland Drive recorded in the Cumberland County Registry of Deeds in Plan Book 208, Page 255, a copy of which is attached as Exhibit A, attached hereto and made a part hereof, portions of which roadways are owned in fee or accessed by underlying easement, in their entirety, by Gilman;

Whereas Landowners acknowledge and agree that the private ways known as Cross Ridge Drive and Lockland Drive, private gravel roadways surrounded by 50 foot wide rights of way, are not and will not be maintained or plowed by the Town of Windham;

Whereas Landowners are desirous of entering into an agreement regarding the maintenance, including plowing, of said rights of way and the allocation of the costs necessary to so maintain the private rights of way;

NOW THEREFORE, in consideration of the mutual covenants contained herein, and other good and valuable consideration, each to the other delivered and received, the parties hereto agree as follows:

1. Right-Of-Way Easement:

a. Landowners, their heirs, successors and assigns, agree to maintain the subject rights-of-way known as Cross Ridge Drive and Lockland Drive, in accordance herewith, and further agree to not obstruct or otherwise interfere with the use of said rights-of-way by the other Landowners, their personal representative, heirs and assigns.

b. Landowners herein acknowledge that the total length of Cross Ridge Drive and Lockland Drive constitutes an easement and/or right-of-way appurtenant to all of the lots which abut said rights-of-way or which are accessed by said rights-of-way, with the exception of any land now or formerly of Theodore Thomes (title reference to Cumberland County Registry of Deeds Book 12665, Page 7). The respective rights-of-way rights identified herein run with the land to the respective Landowners, their heirs, successors and assigns.

c. Said easements or rights-of-way over the subject rights-of-way shall include the right of ingress and egress from Smith Road, so-called, to each lot or parcel of land, which abuts or is accessed by said rights-of-way and any portion thereof, by foot or vehicle of any nature as well as the right to install all utilities, including but not limited to water and sewer lines, electric, telephone and cable television lines, above or below ground, as well as the right to install utility poles and associated fixtures. Provided, however, that the installation of said utilities shall not interfere with the installation of a two-way right-of-way over the subject rights-of-way. Provided further, that no such use of the rights-of-way or the installation of utilities shall interfere with any Landowners right of ingress and egress other than on a reasonable, temporary basis in order to install said utilities.

2. Maintenance of Cross Ridge Drive & Lockland Drive: Maintenance of Cross Ridge Drive & Lockland Drive as shown on Exhibit A, is to be shared equally by Landowners who commence the construction of a home or other structure on all or a portion of his or her land which is accessed by Cross Ridge Drive and/or Lockland Drive, and the costs will be divided by the number buildings on the lots so improved. For example, if there are a total of 10 houses or other structures, the owner of each of the improved lots shall be responsible for 1/10th of the maintenance costs. If a Landowner owns two houses on all or a portion of a parcel, said Landowner shall be responsible for 2/10ths of such costs.

3. Commercial Use of Cross Ridge Drive and/or Lockland Drive: Any Landowners who utilize Cross Ridge Drive and/or Lockland Drive to access their lot for commercial purposes, i.e. development and/or logging, shall have the same maintenance obligation as provided in Paragraph 2 above.

4. Commencement of Construction: Commencement of a home or structure shall occur when a building permit is acquired and actual construction is commenced on the home or structure, such as the digging of a foundation hole, installation of a subsurface waste water disposal system, will, commencement of actual construction of the structure or the like, whichever occurs first.

5. Definition of Maintenance: Maintenance shall be deemed to include:
a. Maintaining a road way with the minimum width and gravel base depths as required by the Town of Windham;
b. Appropriate drainage mechanisms shall be maintained at required locations with said right-of-way using appropriately sized culverts;

c. Suitable snow plowing equipment shall be employed for the removal of snow accumulations;

d. Grading the surface of said right-of-way shall be periodically completed so as to maintain a reasonably smooth and level surface.

6. Maintenance Decisions: Decisions relating to the usual and ordinary maintenance of said right-of-way shall be determined by majority vote of the Landowners required to contribute to the maintenance costs of the right-of-way as provided in paragraph 2 above.

7. Meetings of Landowners: Landowners required to contribute to the maintenance of the said rights-of-way as provided in paragraph 2 above shall meet at least annually (a quorum consisting of a majority of the Landowners being required to contribute, and an owner of two or more homes or qualifying structures on two or more lots shall have one vote for each) after reasonable notice to each said Landowner, for the purpose of establishing a budget for the maintenance of said rights-of-way for the ensuing year and establishing the resulting monetary liability of each Landowner, as well as selecting one Landowner who shall manage the road maintenance account for the ensuing year, and be responsible for filing and enforcing liens ("Road Manager"). Said resulting monetary liability of each of said Landowners shall be paid into an account established for that purpose within 60 days after the annual budget determination. In the event of the failure of an Owner to pay such proportionate share when due, the amount thereof together with interest at the rate established by the Landowners at the annual meeting, costs and reasonable attorneys fees shall constitute a lien attached to the Owner's premises. The Road Manager may file a lien and bring an action in a court of competent jurisdiction against any delinquent Landowner failing to timely pay his or her said annual monetary liability and in that event such delinquent Landowner shall further be liable for the costs of bringing and maintaining that action, including reasonable attorneys fees. All Landowners who are required to contribute to the maintenance of said rights-of-way further agree to contribute any additional sums required for the maintenance of the roads not covered by the annual budgeted amount which is only intended to be a reasonable estimate of the maintenance costs for any particular year.

9. Road Damage Repairs by Landowners: All Landowners, whether or not they are required to contribute to the maintenance of the subject right-of-way pursuant to Paragraph 2 above shall be required to repair any damage caused to the rights-of-way by them, individually or caused by their agents, invitees or guests.

10. Third Party Beneficiaries: The Landowners agree that all mortgagees of any property which abuts or is accessed by said rights-of-way pursuant to Paragraph 2 above, and the successors, administrators and assigns of said mortgagees, including but not limited to all FHA or VA insured mortgage interests on said properties shall be considered third party beneficiaries of this Agreement.

11. Fee Owners and Additional Landowners: The parties hereto recognize that additional Landowners will be added hereto in the future due to development of properties accessed by the subject rights-of-way. The parties hereto further recognize that Peter and Tammy Gilman own the fee interest or have the underlying easement rights in said rights-of-way which they hereby reserve along with the right to assign additional property owners the right to

Date: _____	Print Name: _____
Date: _____	Print Name: _____
Date: _____	Print Name: _____
Date: _____	Print Name: _____
Date: _____	Print Name: _____
Date: _____	Print Name: _____
Date: _____	Print Name: _____
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Date: _____	Print Name: _____

Print Name: _____

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Print Name: _____

Date: _____

Print Name: _____

Date: _____

Print Name: _____

STATE OF MAINE
COUNTY OF Cumberland, ss.

Date: 6/12/08

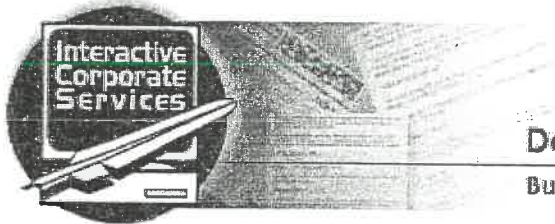
Then personally appeared the above named Peter Gilman, and acknowledged the foregoing to be his free act and deed.

Suzanne R. Scott
Notary Public/Attorney
Print Name: Suzanne R. Scott
Commission Expires: N/A

Received
Recorded Register of Deeds
Jun 16 2008 02:02:46P
Cumberland County
Pamela E. Lovley

Appendix 6

Certificate of Good Standing



MAINE

Department of the Secretary of State
Bureau of Corporations, Elections and Commissions

Corporate Name Search

Information Summary

Subscriber activity report

This record contains information from the CEC database and is accurate as of: Thu Apr 15 2010 08:33:20. Please print or save for your records.

Legal Name	Charter Number	Filing Type	Status
P.T.G. PROPERTIES, INC.	20010213 D	BUSINESS CORPORATION	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
07/31/2000	N/A	MAINE

Other Names (A=Assumed ; F=Former)

NONE

Clerk/Registered Agent

JAMES B. BARNES
361 US RTE 1
FALMOUTH, ME 04105

[Back to previous screen](#) [New Search](#)

Click on a link to obtain additional information.

List of Filings	View list of filings	
Obtain additional information:		
Certificate of Existence <small>(more info)</small>	Short Form without amendments (\$30.00)	Long Form with amendments (\$30.00)

You will need Adobe Acrobat version 3.0 or higher in order to view PDF files. If you encounter problems, visit the [troubleshooting page](#).



Appendix 7

Photos of Site

06302



Photo 1: Existing Cross Ridge Drive.



Photo 2: Cross Ridge Drive, Filterra location.

06302



Photo 3: Lockland Drive, looking at proposed Road 3 location.



Photo 4: Lockland Drive, looking at proposed Road 2 location.

06302



Photo 5: Lockland Drive, looking at Proposed Road 1 location.



Photo 6: Lockland Drive, looking at proposed wet pond location.

A-T-F L-21336-TB
-C-N L-21336-NJ-B-N SW

APPLICATION FOR A NATURAL RESOURCES PROTECTION ACT PERMIT

→ PLEASE TYPE OR PRINT IN BLACK INK ONLY (PTG PROPERTIES INC)

1. Name of Applicant: Peter Gilman →		5. Name of Agent:	
2. Applicant's Mailing Address: 75. Lockland Drive Windham, Me. 04092		6. Agent's Mailing Address:	
3. Applicant's Daytime Phone #: 650-8909		7. Agent's Daytime Phone #:	
4. Applicant's Email Address: License will be sent via e-mail.		8. Agent's E-mail Address:	
9. Location of Activity: (Nearest Road, Street, Rt.#) OFF Smith Road		10. Town: Windham	11. County: Cumberland
12. Type of Resource: (Check all that apply)	<input type="checkbox"/> River, stream or brook <input type="checkbox"/> Great Pond <input type="checkbox"/> Coastal Wetland <input checked="" type="checkbox"/> Freshwater Wetland <input type="checkbox"/> Wetland Special Significance <input type="checkbox"/> Significant Wildlife Habitat <input type="checkbox"/> Fragile Mountain		13. Name of Resource: UNNAMED (ATF)
	<input checked="" type="checkbox"/> Forested <input type="checkbox"/> Scrub Shrub <input type="checkbox"/> Emergent <input type="checkbox"/> Wet Meadow <input type="checkbox"/> Peatland <input type="checkbox"/> Open Water <input type="checkbox"/> Other		14. Amount of Impact: (Sq. Ft.) EXISTING = 12,805 sq ft PROPOSED = 1378 sq ft = 14183 - 8,000 = 6,183 dredging/Veg Removal Other: SF FOR FRESHWATER WETLANDS Tier 1: <input checked="" type="checkbox"/> 10,000-14,999 sq ft Tier 2: <input type="checkbox"/> 15,000 - 43,560 sq. ft. Tier 3: <input type="checkbox"/> > 43,560 sq. ft. or smaller than 43,560 sq. ft., not eligible for Tier 1
15. Type of Wetland: (Check all that apply)		16. Brief Activity Description: Filling of wetlands to construct access roads for home construction	
17. Size of Lot or Parcel & UTM Locations: <input type="checkbox"/> square feet, or <input checked="" type="checkbox"/> 100± acres		UTM Northing: _____ UTM Easting: _____	
18. Title, Right or Interest: <input checked="" type="checkbox"/> own <input type="checkbox"/> lease <input type="checkbox"/> purchase option <input type="checkbox"/> written agreement			
19. Deed Reference Numbers: Book#: See Copies Page: _____		20. Map and Lot Numbers: Map #: 22 Lot #: 16, 18, 20, 23	
21. DEP Staff Previously Contacted:		22. Part of a larger project: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No After-the-Fact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
23. Resubmission of Application? <input type="checkbox"/> Yes → <input checked="" type="checkbox"/> No		If yes, previous application # _____ Previous project manager: _____	
24. Written Notice of Violation? <input type="checkbox"/> Yes → <input type="checkbox"/> No		If yes, name of DEP enforcement staff involved: _____ 25. Previous Wetland Alteration: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
26. Detailed Directions to the Project Site: From N. Windham Lake Rt 115 towards Gray, left on Smith Rd. approx. 1 mile on right "Cross Ridge Drive" to site.			
27. TIER 1:		TIER 2/3 AND INDIVIDUAL PERMITS	
<input type="checkbox"/> Title, right or interest documentation <input checked="" type="checkbox"/> Topographic Map <input type="checkbox"/> Narrative Project Description <input checked="" type="checkbox"/> Plan or Drawing (8 1/2" x 11") <input type="checkbox"/> Photos of Area <input type="checkbox"/> Statement of Avoidance & Minimization <input type="checkbox"/> Statement/Copy of cover letter to MHPC		<input type="checkbox"/> Title, right or interest documentation <input type="checkbox"/> Topographic Map <input type="checkbox"/> Copy of Public Notice/Public Information Meeting Documentation <input type="checkbox"/> Wetlands Delineation Report (Attachment 1) that contains the information listed under Site Conditions <input type="checkbox"/> Alternatives Analysis (Attachment 2) including description of how wetland impacts were Avoided/Minimized <input type="checkbox"/> Erosion Control/Construction Plan <input type="checkbox"/> Functional Assessment (Attachment 3), if required <input type="checkbox"/> Compensation Plan (Attachment 4), if required <input type="checkbox"/> Appendix A and others, if required <input type="checkbox"/> Statement/Copy of cover letter to MHPC <input type="checkbox"/> Description of Previously Mined Peatland, if required	
28. FEES Amount Enclosed: _____			
CERTIFICATIONS AND SIGNATURES LOCATED ON PAGE 2			

ATF FEE = \$150.

IMPORTANT: IF THE SIGNATURE BELOW IS NOT THE APPLICANT'S SIGNATURE, ATTACH LETTER OF AGENT AUTHORIZATION SIGNED BY THE APPLICANT.

By signing below the applicant (or authorized agent), certifies that he or she has read and understood the following :

DEP SIGNATORY REQUIREMENT

PRIVACY ACT STATEMENT

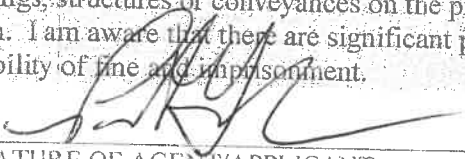
Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed nor a permit be issued.

CORPS SIGNATORY REQUIREMENT

USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry shall be fined not more than \$10,000 or imprisoned not more than five years or both. I authorize the Corps to enter the property that is subject to this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein.

DEP SIGNATORY REQUIREMENT

"I certify under penalty of law that I have personally examined the information submitted in this document and all attachments thereto and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe the information is true, accurate, and complete. I authorize the Department to enter the property that is the subject of this application, at reasonable hours, including buildings, structures or conveyances on the property, to determine the accuracy of any information provided herein. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



SIGNATURE OF AGENT/APPLICANT

Date: 10/23/10

NOTE: Any changes in activity plans must be submitted to the DEP and the Corps in writing and must be approved by both agencies prior to implementation. Failure to do so may result in enforcement action and/or the removal of the unapproved changes to the activity.

"I hereby authorize the DEP to send me an electronically signed decision on the license I am applying for with this application by emailing the decision to the address located on the front page of this application (see #4 for the applicant and #9 for the agent. **Do not sign if you elect to "opt out" or receive the decision via regular mail.**

Signed (Applicant) _____ Date: _____
and/or

Signed (Agent) _____ Date: _____

(yellow)

Narrative of Project

This project is to established an access way for the creation of new single family home sites. The entrance off of Smith Road is by an existing easement which creates the necessity for the largest fill area (8156 sq. ft.). The other areas of fill are either drainage way crossings or where the road runs along steep slopes or ledge.

Block 25

See "Block 23"

see DEP permit # L-21336-TB-A-N

see Army Corps permit # 200300937

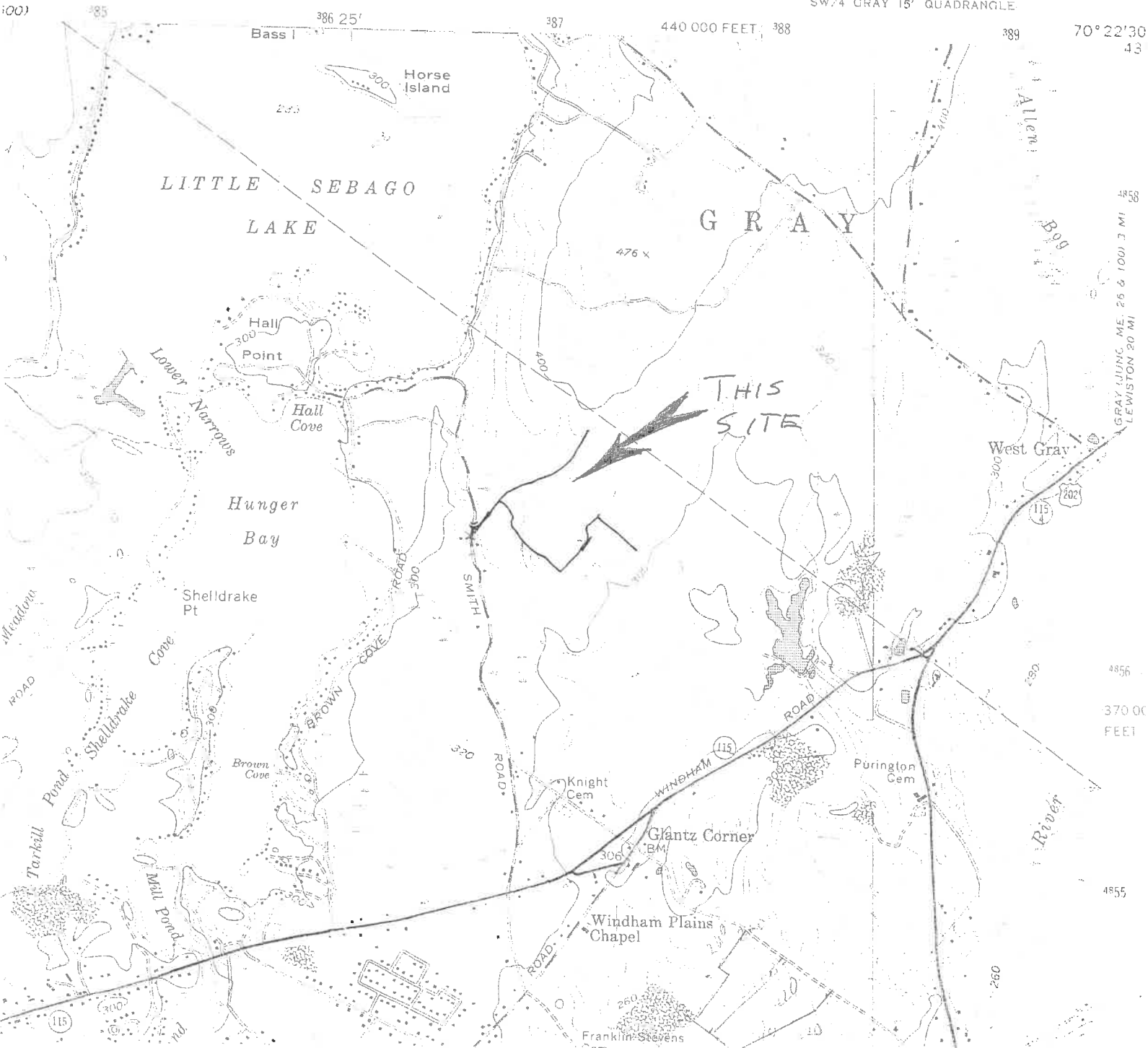
Deed copies, Photos

MHPCC = Maine Historic Preservation Commission

ATES
THE ARMY
INEERS

NORTH WINDHAM QUADRANGLE
MAINE—CUMBERLAND CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

SW/4 GRAY 15' QUADRANGLE

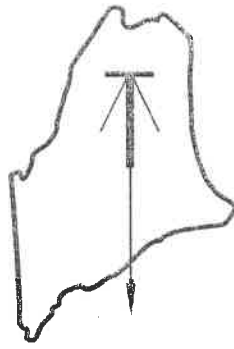


GRAY 1/4 SEC. 26 & 100 1/4 MI
LEWISTON 20 MI

370 00
FEET

4855

WAYNE



WOOD & CO.

PROFESSIONAL LAND SURVEYING
and LAND PLANNING
30 Wood Drive, Gray, Maine 04039

WETLANDS DELINEATION
Telephone (207) 657-3330
Fax (207) 657-3344

Wetlands Delineation Report
For
Gilman Property
Cross Ridge Drive and Lockland Drive ~ Windham, Maine

Date: September 17, 2010

Dates of Investigation: May 2, 2008 and May 5, 2010

Purpose: Determine existing wetlands for determination of impact of road and home construction.

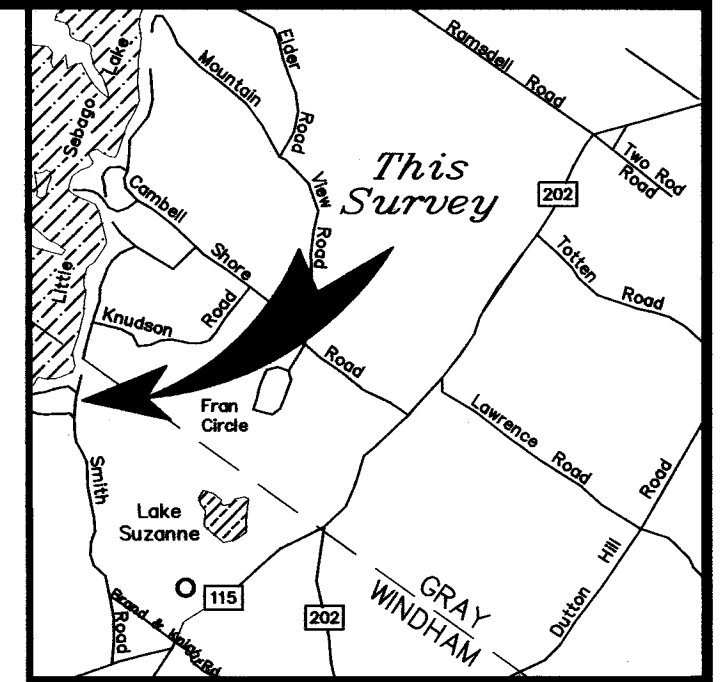
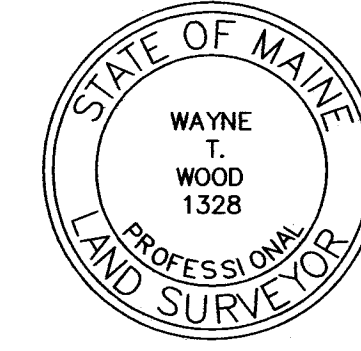
Method: On-line and literature research and on-site investigations. All wetlands were delineated following the guidelines recommended in the 1987 Department of the Army ~ U S Army Corps of Engineers Wetlands Delineation Manual.

Wetlands and uplands were located using a Leica Total Station Survey Instrument and Suunto hand held compass and survey measuring tape.

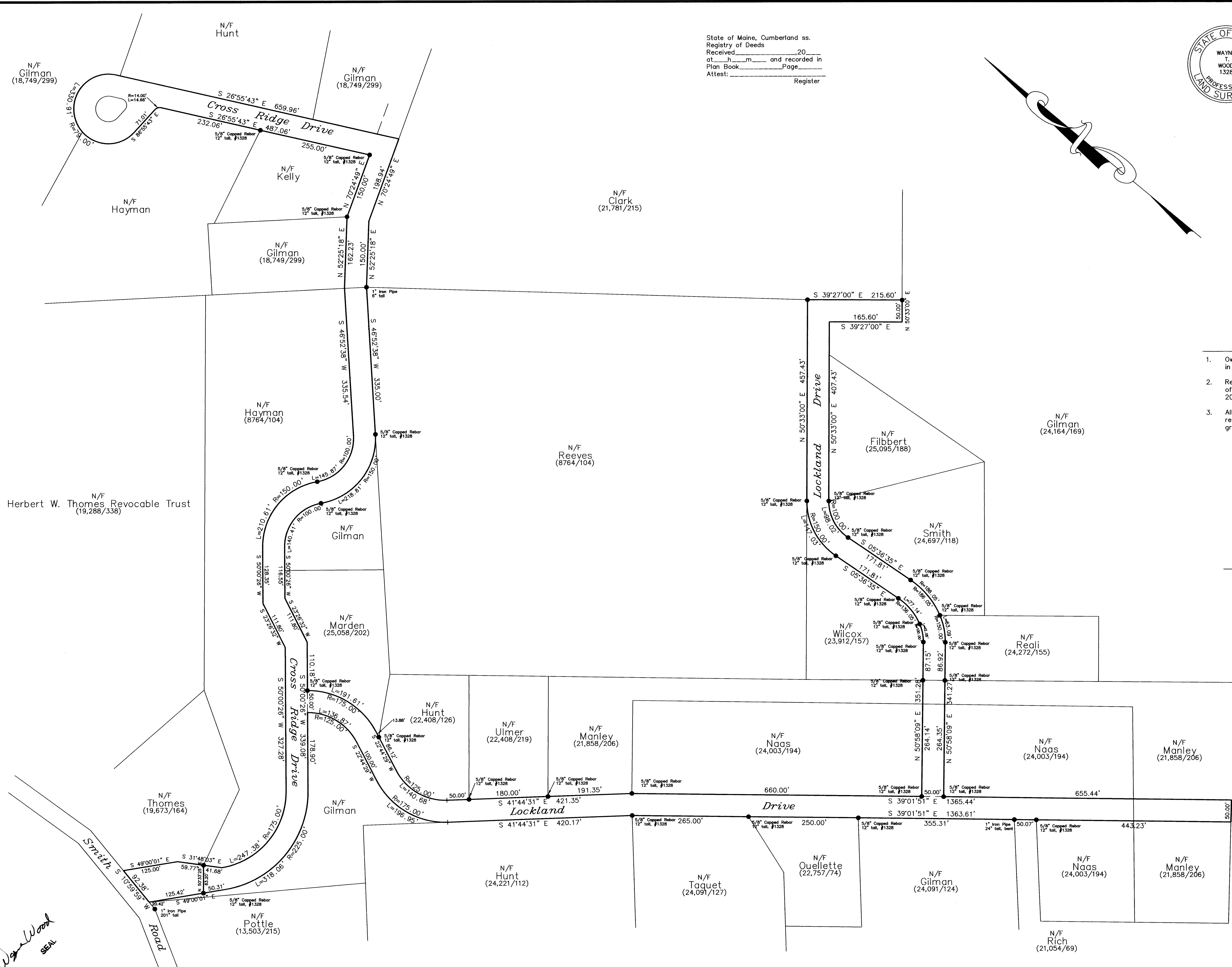
Results: The wetlands found are forested/shrub wetlands. There are no wetlands described as "Wetlands of Special Significance" by Maine D.E.P. and none of the wetlands are shown on the U. S. Fish and Wildlife "National Wetlands Inventory." Any drainage flowing through the property is not a jurisdictional stream according to the N.R.P.A. There is no evidence of vernal pool habitat.

Kathy Wood, A.C.O.E. Certified Wetlands Delineator
WAYNE T. WOOD & CO.

State of Maine, Cumberland ss.
 Registry of Deeds
 Received _____, 20____
 at _____ and recorded in
 Plan Book _____ Page _____
 Attest: _____
 Register



VICINITY MAP
 SCALE: 1" = 1 mile



NOTES

1. Owners of record are as shown on this plan per deeds recorded in the Cumberland County Registry of Deeds.
2. Reference is made to a plan entitled "Standard Boundary Survey off Smith Road in Windham, Maine for Peter Gilman" dated July 2003 by Wayne T. Wood & Co.
3. All bearings are Magnetic of the year 1958 as per the above referenced plan and calculated from angles of an actual on the ground survey.

LEGEND

- Iron Pipe or Pin Found
- ⊙ 5/8" Capped Rebar Set (#1328)
- N/F Now or Formerly of
- (20,899/87) CCRD Deed Reference

State of Maine, Cumberland SS.
 Registry of Deeds
 Received June 16, 2008
 at _____ and recorded in
 Plan Book _____ Page 255
 Attest: Janet E. Loney
 Register



Plan of
Cross Ridge Drive & Lockland Drive
 Windham, Maine
 For
 Peter Gilman
 77 Basin Road ~ Windham, ME 04062

WAYNE T. WOOD & CO.

Gray, Maine 04039 (207)657-3330
 Drwn. By: W/W/K/W Date
 Scale: 1" = 100' April 2008
 Drwg. No. 1 of 1 Job No.
 Blk. No. N/A 22086-R

Wayne T. Wood
 SEAL