

MITIGATION REPORT
TRANSMITTAL AND SELF-CERTIFICATION

DEPARTMENT OF THE ARMY PERMIT NUMBER: NAE-2005-4220
MAINE DEP NRPA PERMIT NUMBER: L-23402-TH-A-N
PROJECT TITLE: Maine Department of Transportation Gorham Bypass Project:
Larrabee Farms Wetland Mitigation Project

PERMITTEE: Maine Department of Transportation (MaineDOT)
MAILING ADDRESS:
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State House Station 16
Augusta, Maine 04333
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AUTHORIZED AGENT: Grondin Aggregates, LLC
MAILING ADDRESS:
Ken Grondin
11 Bartlett Road
Gorham, Maine 04038
TELEPHONE: 207.854.1147

ATTACHED MITIGATION REPORT TITLE: Maine Department of Transportation
Gorham Bypass: First Year Wetland Mitigation Monitoring Report

PREPARERS: Lauren Leclerc & Richard Jordan, Boyle Associates (207.541.9100)

DATE: December 19, 2008

CERTIFICATION OF COMPLIANCE: I certify that the attached report is accurate and discloses that the mitigation required by the Department of the Army Permit **(is)** **[is not]** in full compliance with the terms and conditions of that permit.

CORRECTIVE ACTION: A need for corrective action **(is)** **[is not]** identified in the attached report.

CONSULTATION: I **[do]** **(do not)** request consultation with the Corps of Engineers to discuss a corrective strategy or permit modification.

CERTIFIED:

(Signature of permittee)

Date

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<p><u>Appendix B</u> – A vegetative species list of volunteers in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer.</p>	
<p><u>Appendix C</u> -- Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.</p>	
<p><u>Appendix D – Tables</u></p> <ul style="list-style-type: none"> ● <u>Table 1 – 4: Soils Data</u> ● <u>Table 5: Fauna List</u> ● <u>Table 6: Vernal Pool Habitat Creation Findings</u> ● <u>Table 7: PFO and PSS Planted Species Monitoring Plot Data</u> ● <u>Table 8: Herbaceous Vegetation Findings by Plot</u> 	
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Project Overview Form

Corps Permit No.: NAE-2005-4220 **Maine DEP NRPA Project Number:** L-23402-TH-A-N
Mitigation Site Name: Larrabee Farms Wetland Mitigation Site: MaineDOT Gorham Bypass Mitigation
Monitoring Report : _____ Year 1 _____ of _____ 10 _____
Name and Contact Information for Permittee (left) and Agent (right):

Maine Department of Transportation (MaineDOT) Deane Van Dusen, Environmental Dept. # 207.592.3198 State House Station 16 Augusta, Maine 04333	Grondin Aggregates, LLC Ken Grondin #207.854.1147 11 Bartlett Road Gorham, ME 04038
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Name of Party Conducting the Monitoring: Boyle Associates (phone #207.541.9100)
Date(s) of Inspection(s) (Specific to Monitoring): April 3, 13, 17, 28, May 1, June 23, Sept. 4, 11, 12

Project Summary:

First year monitoring procedures were conducted at the vernal pool, emergent, scrub-shrub and forested wetland creation areas at the Larrabee Farms Wetland Mitigation Site. These wetland mitigation areas were created as compensation for wetland, stream and vernal pool functions and values impacted by MaineDOT's Gorham Bypass Project. Construction of the project impacted approximately 11 acres of forested, scrub-shrub, wet meadow and emergent wetlands, and nine streams with associated wetlands. The project also relocated approximately 290 linear feet of Brandy Brook near Flaggy Meadow Road and realigned a section of an unnamed Brandy Brook tributary. Wetland compensation included a total of 67.5 acres comprised of 15.7 acres of wetland creation (14.1 acres of PFO, 1.2 acres of PSS, and 0.4 acres of PEM); 12.8 acres of wetland preservation; 28.4 acres of upland buffer preservation; and creation of 3 vernal pools (0.3 acres of created pool area and preservation of 10.3 acres of upland and wetland habitat buffers adjacent to the pools). The preservation area includes 2,042 linear feet of a wooded, intermittent stream and 100 linear feet of the Nonesuch River. Wetland mitigation took place at Grondin Aggregate's Larrabee Farms Wetland Mitigation Site, a multi-user mitigation project site.

Location of and Directions to Mitigation Site:

The Larrabee Farms Wetland Mitigation Site is located in the town of Scarborough, approximately 1 mile southeast of the corner of Route 114 and Beech Ridge Road.

Start and Completion Dates for Mitigation:

Conservation easement recorded - Cumberland County Registry of Deeds	Feb. 2007
Final wetland creation grading began	March 2007
Vernal Pools Constructed	March 2007
Final wetland grading completed	Oct. 15, 2007
Hydroseeding with wetland herbaceous seed mix completed	Oct. 15, 2007
Installation of woody vegetation completed	

Performance Standards are/are not being met:

The success standards for hydrology, invasive species and slope and soils stabilization are being met. The success standards for aerial cover and planted woody species density are not yet being met.

Dates of Corrective or Maintenance Activities Conducted Since Last Report:

<i>Typha latifolia</i> hand removed	Spring 2008
Redirected and spread out concentrated flows in some drainage channels within the creation area (as discussed during site visit with regulators)	Summer 2008

Recommendations for Additional Remedial Actions:

- Overseed areas that do not meet aerial coverage requirements;
- Install 158 additional shrubs across the creation area;
- Install additional surface drains to spread out surface flow from the lateral swales onsite; and,
- Remove the emergency overflow "elbow-culvert" from southwestern corner of creation site.

Requirements (1 page)

Performance Standards

The wetland and vernal pool creation and buffer areas will be assessed annually during the growing season (May-October for creation areas, April-May for VP's) for at least 10 years. Monitoring will take place twice per season during the first through fifth years following planting. For the wetland creation areas, one visit will take place in the spring, and will include a general site walk and assessment of general site health, an assessment of any winter damage and in order to determine any corrective needs. A second site visit will take place between June and October to assess plant mortality/vitality and to gather data for the annual monitoring reports. The data gathering and reporting procedure will then take place once during the first through fifth years, and during the 7th and 10th years, if necessary, following construction.

Success Standards:

1. Hydrology <ul style="list-style-type: none"> Adequate to support the designed wetland type: Proposed hydrology being met: Percentage of site meeting proposed hydrology: Too wet/dry areas identified and corrective measures proposed: 	Yes Yes 90-100% Yes
2. Proposed vegetation diversity and/or density goals for woody plants from the plan met:	<u>No</u>
3. Aerial cover <ul style="list-style-type: none"> a. Each mitigation site has at least 80% aerial cover, by noninvasive species: b. Emergent areas have at least 80% cover by noninvasive hydrophytes: c. Scrub-shrub and forested cover types have at least 60% cover by noninvasive hydrophytes, of which at least 15% are woody species: 	<u>No</u> <u>No</u> <u>No</u>
4. Common reed (<i>Phragmites australis</i>), Purple loosestrife (<i>Lythrum salicaria</i>), Russian and Autumn olive (<i>Elaeagnus</i> spp.), Buckthorn (<i>Rhamnus</i> spp.), Japanese knotweed (<i>Polygonum cuspidatum</i>), and/or Multiflora rose (<i>Rosa multiflora</i>) plants at the mitigation site(s) are being controlled:	Yes
5. All slopes, soils, substrates, and constructed features within and adjacent to the mitigation site(s) are stable:	Yes

In general, the mitigation area is doing well and is beginning to successfully provide wetland functions and values similar to those provided by wetlands impacted by construction of the bypass. Wetland functions and values being provided across the site include wildlife habitat, groundwater recharge/discharge, floodflow alteration, educational and scientific value, production export, and recreational value. There is a dominance of hydrophytic vegetation, formation of hydric soils and abundant evidence of hydrology. Finally, survivorship of the planted shrubs and trees is high.

While the surviving planted species are doing well, planted plant density is not meeting mitigation goals. Mortality, however, does not seem to be a factor, as only a few dead or dying plants were located. The methodology of planting may be one factor in the density count. Plants were clumped around the site rather than planted in evenly spaced rows, and there is inconsistency in plant densities between the monitoring plots. Based on hydrology and soil conditions, aerial cover by vegetation, shrub and tree densities are likely to increase over the next couple of years due to reproduction within the site and volunteerism from outside the site. According to records from the landscaper who planted the site, 158 less plants were installed than were described in the mitigation plan. We suggest that Grondin has 158 new shrubs installed to increase the overall plant density at the site. Additionally, and as discussed below, some areas may require additional herbaceous seeding.

Summary Data (maximum of 4 pages)

Describe the monitoring inspections, and provide their dates, that occurred since the last report.

Vernal Pool Habitat Creation Monitoring

The three created vernal pools were monitored two or more times per week throughout April and late May of 2008. Egg mass counts were conducted throughout the season to ensure that all masses were accounted for. No concerns with erosion, ATV impacts, or invasive species were observed.

Wetland Creation Monitoring

General site walks were conducted throughout winter, spring and summer of 2008 to assess general site health and to determine if any winter damage occurred that would warrant correction measures. No significant damage was observed, and no corrective measures were recommended. In-depth monitoring of the creation area occurred in September of 2008. Round monitoring plots with 50-foot radii were used to sample 3.13 acres of the forested wetland creation area. Round monitoring plots with a radius of 30 feet were used to sample 0.26 acres of the scrub-shrub creation area. The entire 0.4-acre emergent creation area was monitored. In total, approximately 3.8 acres of the 15.7 acres of wetland meadow, scrub-shrub and forested wetland creation were sampled. After removal of the area taken up by the ephemeral pools and the coarse woody debris ("planned non-planted areas," approximately 1.1 acre overall,) the sample areas represent approximately 26% of the planted area of the creation site (100% of the PEM, 23.2% of the PFO areas, and 23.6% of the PSS areas).

Plots centers were established before the 2008 monitoring effort. Centers were chosen randomly by dropping a pencil onto the drawing and then adjusting the center and plot size so that the plot would fit within the nearest mitigation area to the pencil point. In the field, these areas were slightly adjusted in order to sample the most representative areas. Plot centers were staked, flagged and GPS-located.

Success Standards

1) Hydrology

Is the proposed hydrology met at the site?

Yes.

As anticipated, the primary source of hydrology in the wetland creation areas comes from groundwater interception. Further hydrologic input is provided by surface runoff and atmospheric deposition. General hydrology across the wetland creation area varies from seasonally saturated to occasionally flooded. Indicators of hydrology include standing water (inundation) in several of the pits across the creation area and flowing water in several ephemeral drainage swales from the groundwater seeps around the site perimeter.

What percentage of the site is meeting projected hydrology levels?

90-100%

Areas that are too wet or too dry should be identified along with suggested corrective measures.

Some areas of the mitigation site could benefit from slightly more surface hydrology, therefore we propose adding small check dams and additional lateral drains to divert some of the groundwater across the site.

Groundwater discharge and surface flow continued throughout the spring, summer and fall, from ice-out in April through the end of September 2008. Pits not inundated during the monitoring visits show evidence of former flooding/ponding during the growing season. Three of the four soil profiles observed keyed as hydric and the fourth soil shows evidence of reducing soil conditions, but does not quite yet key as hydric. Most of the wetland shrubs and trees observed are alive and growing, indicating an adequate hydrologic regime.

The ephemeral ponds installed during July 2007 remained wet throughout the year as well, with water elevation in the ponds never dropping more than 20 inches below the prevailing grade.

2) The proposed vegetation diversity and density goals for woody plants from the plan are met.

No – based on plot data, there is an overall lower density of planted woody species than meets the density goal. Diversity and total number of plants, however is similar to the planted measurements.

The planted density goal, as described in the Corps checklist, is 500 trees and shrubs per acre in planned planted areas (of which at least 350 per acre are tree species for PFO creation areas). To achieve this goal and account for die back, Grondin planned to install 400 trees/acre and 600 shrubs/acre. According to records from the landscapers, 5,782 plants were installed on the site (158 less than was ordered, but enough to meet the density goals). Based on plot data, monitors found 1,255 planted woody species within the 23.4% of the PSS and PFO areas observed. Extrapolation of this data (multiply by 4.41) indicates that there are approximately 5,529 living plants on the site, or 94% of the actual planted total (91% of the proposed planting). Within the plots, the average density of planted wood stock was 327 per acre. The average density of trees was determined to be approximately 382 trees per acre. While the site does not have 500 trees and shrubs per acre *overall*, the PFO areas have more than 350 trees per acre. Most of the site (>13 acres) was planted at the Corps standard planting density of 400 plants/acre (PFO creation). Additionally, some of the plots include installed dead and dying debris, the area of which was erroneously not subtracted from the plot areas. In future monitoring seasons, the plot areas will be calculated to *exclude* these planned non-planted areas. We suggest that Grondin, under the inspection of the mitigation specialist, install the missing 158 plants (all shrub species) throughout the project site. This should bring the overall plant density nearer the corps standards. We also anticipate additional volunteer species and seedlings from reproduction within the creation area (i.e. from the planted trees and shrubs). As described in the mitigation plan, if the site does not meet the corps density standards in planned PFO and PSS areas by the third growing season, we will suggest additional plantings. For more information, please see Table 7 in Appendix D.

3) a. Each mitigation site has at least 80% aerial cover, excluding planned open water areas or planned bare soil areas (such as for turtle nesting), by noninvasive species (See Table 7 in App. D).

No.

Monitors recorded seventy-two percent (72%) aerial cover by non-invasive species throughout the wetland creation site. It is likely that the mitigation site will meet the aerial cover requirement during the next growing season, as vegetation appears to be successfully colonizing and spreading across the mitigation site.

Much of the northern half of the mitigation site was hydroseeded in August 2007, and the seeding did not take well. This area will be scarified and re-seeded in 2009 if spring observations indicate it is still necessary.

3) b. Planned emergent areas on each mitigation site have at least 80% cover by noninvasive hydrophytes.

No.

While overall the PEM creation site is stable and has approximately 60% aerial coverage by plants, only 27% aerial cover comes from non-invasive hydrophytes [pesky cattails and barnyard grass (*Echinochloa crusgalli*) make up the majority of the plant cover]. Additionally, approximately 25% of the small emergent wetland area is flooded most of the year, which prevents establishment by herbaceous plants. Please see photo 8 in Appendix C for a picture of this area. This area will be reviewed in spring 2009 to see if the area could benefit from diking and seeding. Additionally, we suggest removing or filling in the elbow culvert located at the southwestern extent of the wetland creation area in order to expand the hydrology into the barnyard grass-dominated areas adjacent to the ponded area, and to force excess water to exit the site slowly through the rip rap spillway.

3) c. Planned scrub-shrub and forested cover types have at least 60% cover by noninvasive hydrophytes, of which at least 15% are woody species.

No.

Based on plot data, monitors tallied an average of fifty-nine (59%) aerial cover by non-invasive hydrophytes in the scrub-shrub and forested creation areas. Ten (10%) cover is by woody hydrophytes (late in growing season, near leaf-off).

4) Common reed (*Phragmites australis*), Purple loosestrife (*Lythrum salicaria*), Russian and Autumn olive (*Elaeagnus* spp.), Buckthorn (*Rhamnus* spp.), Japanese knotweed (*Polygonum cuspidatum*), and/or Multiflora rose (*Rosa multiflora*) plants at the mitigation site(s) are being controlled.

Yes. Of these species, only *Polygonum cuspidatum* has been found and it was located on the slopes adjacent to the site. Those found were removed. Other noxious species observed within the creation area were barnyard grass (*Echinochloa crusgalli*), Bird's-foot trefoil (*Lotus corniculatus*), reed canary-grass (*Phalaris arundinacea*), Japanese knotweed (*Polygonum cuspidatum*), and broad-leaf cattail (*Typha latifolia*). These species relatively sparse and were noted for further monitoring.

5) All slopes, soils, substrates, and constructed features within and adjacent to the mitigation site(s) are stable.

Yes.

All slopes, soils, substrates and constructed features within and adjacent to the mitigation site are stable. While the northern half (approximately) of the site is not well vegetated, apparently due primarily to a late-season hydroseeding effort, no significant erosion concerns were observed.

Soils data:

Four soil profiles were investigated within the wetland creation site (soils were not reviewed after construction within the vernal pool areas). Soils observed consisted of dark and very dark A horizons underlain by a grayish-brown horizon with redoximorphic features. Three of the four profiles keyed as hydric following the *Field Indicators for Identifying Hydric Soils in New England, Version 3* (HSNE3), and the fourth soil profile shows evidence of reducing soil conditions, but does not quite key as hydric.

Please see Tables 1 through 4 in Appendix D for representative soil profile descriptions for each creation type. The HSNE3 hydric soil indicator reference is indicated in parentheses after the wetland creation type.

Remediation

Hand removal of pockets of *Typha latifolia* located in the wettest portions of the mitigation site occurred in the spring of 2008. Also, several small grade changes were made during the summer of 2008 on 3 separate occasions. The grade changes were intended to spread surface water flows out across the site from the groundwater discharge swales that were installed on the site during initial grading. All grade work designs were based on the suggestion of the wetland mitigation specialist. Planting remediation is discussed on Page 6 under the heading “2) The proposed vegetation diversity and density goals for woody plants from the plan are met.”

Erosion Control Measures:

No erosion problems exist onsite and no control measures are in place. Temporary erosion control measures were removed after final planting and seeding occurred during the week of October 15, 2007.

Visual Estimate of Percent Cover of Non-invasive and Invasive Species:

The average percent vegetative cover by non-invasive plants at the mitigation site is 72%. The average percent cover of invasive species is 17% (primarily *Typha latifolia*).

Fish and Wildlife Use at the Site:

Please see Table 5 in Appendix D.

General health and vigor of the surviving plants, prognosis for their future survival, and a diagnosis of the cause(s) of morbidity or mortality:

Overall, planted shrub species (*Aronia melanocarpa*, *Betula populifolia*, *Cornus sericea*, *Ilex verticillata*, *Salix discolor*, *Vaccinium corymbosum*, *Viburnum cassinoides*, and *Viburnum dentatum*) and tree species (*Abies balsamea*, *Acer rubrum*, *Fraxinus pennsylvanica*, *Larix laricina*, *Pinus strobus*, *Quercus bicolor*, and *Ulmus americana*) appear to be healthy and growing. Hydrology appears adequate for these plants and

there is limited evidence of death from herbivory, flooding, or desiccation. These plants have a high likelihood of survival.

VERNAL POOL CREATION:

Does the vernal pool creation take into account the critical need for unobstructed access to and from the pool, as well as an adequate extent of upland habitat to ensure success?

Yes – The upland area around the pools is preserved via a conservation easement and there has been very little traffic on the nearby ATV trails. Please see mitigation plan and drawings for more information.

Pool(s) are monitored for obligate and facultative vernal pool species weekly for four weeks from the beginning of the vernal pool activity in the spring (will vary throughout New England) and then biweekly until the end of July for the entire monitoring period.

The vernal pools were visited starting during the first week of ice-out in 2008 (approximately April 20) and then twice per week into June. Table 6, in Appendix D, provides the findings from three of these visits.

In addition, photographs of the pool(s) taken monthly during the pool monitoring period (March/April-July) from a set location(s) will be included.

Please see Appendix C for photos the vernal pools and surrounding habitat. Additional photos are available if requested.

Other data required:

Please see Table 6 in Appendix D.

If the state has a vernal pool register or certification program, the pool(s) is registered and/or certified prior to the final monitoring report submission.

Grondin will complete during one of the next monitoring seasons, prior to final report submission.

Maps (maximum of 3 pages)

Maps must be provided to show the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps must clearly delineate the mitigation site boundaries to assist in proper locations for subsequent site visits. Each map or diagram must fit on a standard 8 ½ x 11” piece of paper and include a legend and the location of any photos submitted for review.

PLEASE SEE FIGURE 1 AND 2 BELOW AND APPENDIX A.

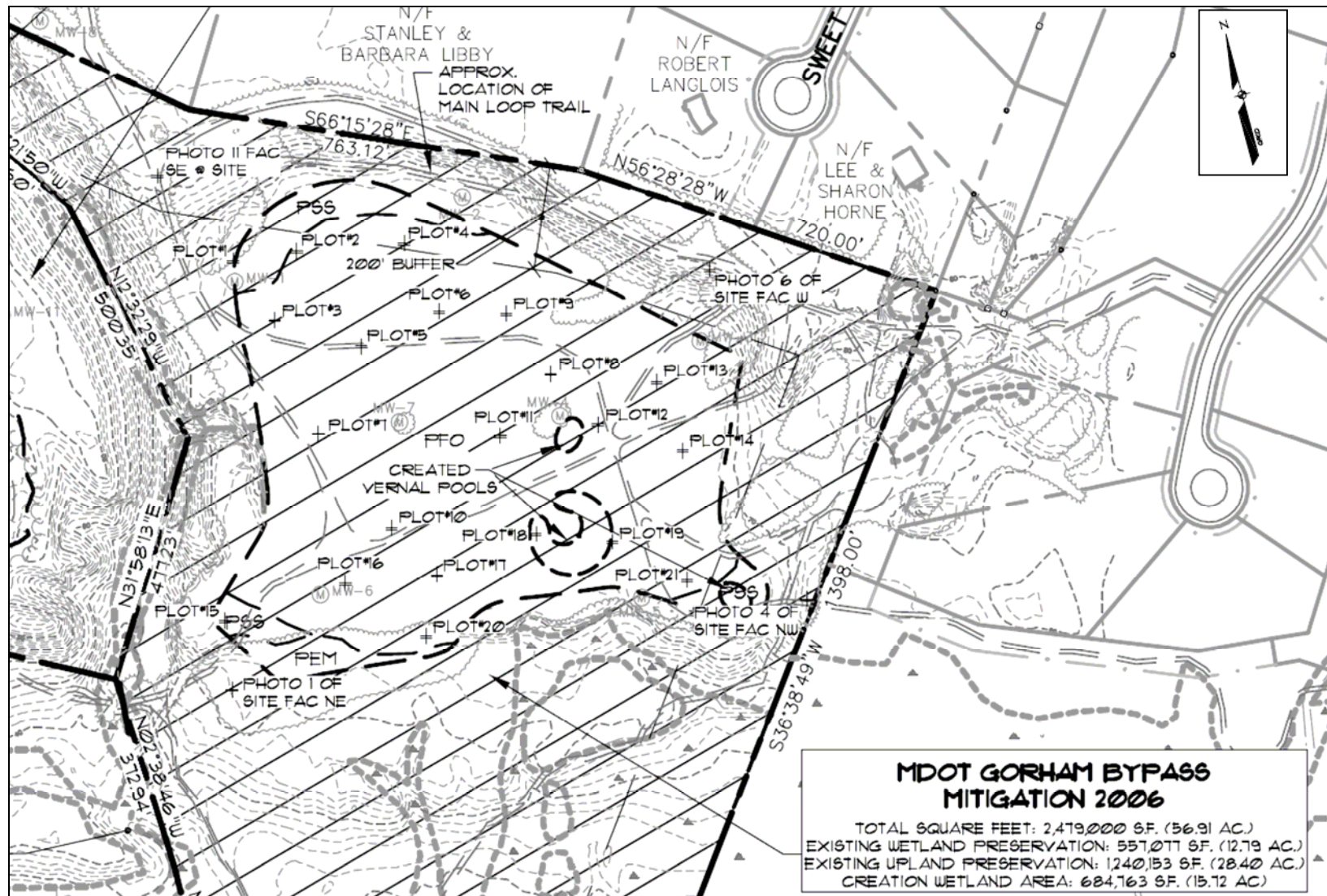


Figure 1. Plot locations and corner-plot photo locations. Please note, that due to rubber-sheeting (stretching) the plot locations are slightly skewed in this depiction (the GPS data was collected in a different coordinate system and datum than the CAD drawing). Actual plot locations are all located at least 50 feet away from the creation site boundary, staked, flagged, and geo-located to sub-meter accuracy. Additionally, the actual footprint of the creation area may be slightly larger than designed as during construction the wetland mitigation specialist suggested several minor grade and cut changes.

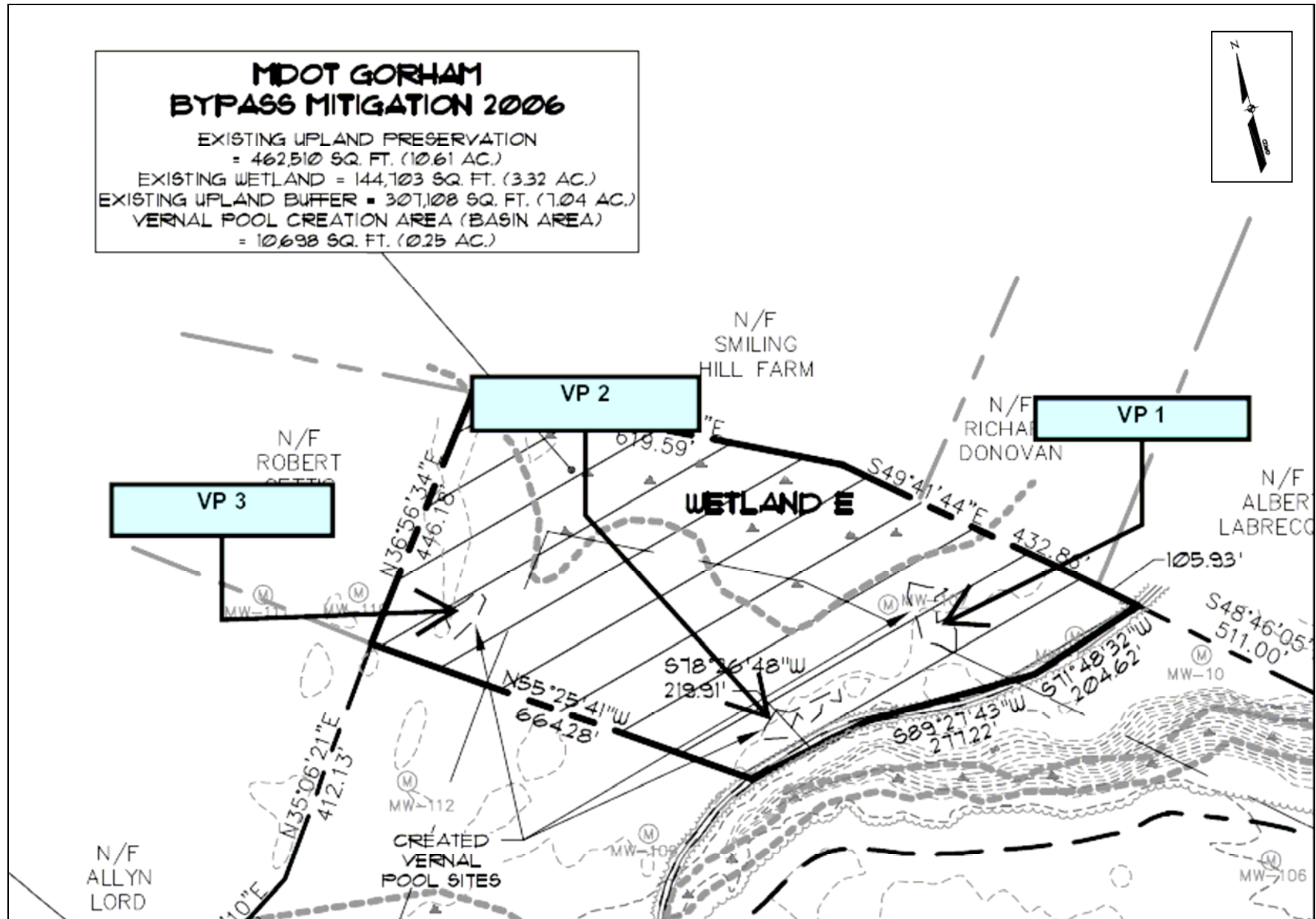


Figure 2. Vernal pool creation site locations.

Conclusions (1 page)

In general, and as can be noted from the photographs and data, the vernal pool habitat and wetland creation areas are responding well after 1 year. In the wetland creation area, hydrology appears to be adequate to achieve wetland conditions. Pockets of standing water are abundant across the creation area, there is evidence of reducing conditions in the soil profiles, and planned open water areas are full or nearly full throughout the year. Planted woody vegetation is growing well, and herbaceous cover increased throughout the first year. Wildlife usage within the wetland creation site and surrounding habitat preservation areas is abundant year-round. In the vernal pool creation areas, all three pools are providing breeding habitat for vernal pool indicator species.

There are some concerns, however, that will be monitored and addressed in 2009. A few large areas of the wetland creation area were originally overseeded in August of 2007 and these areas did not grow very well during the first year. During the spring monitoring in 2009, those areas that still do not appear to be growing towards 100% cover will be noted and Grondin will need to reseed these areas with the wetland seed mix specified in the mitigation report. At that time, we will assess whether the site should be scarified, and if so, this will be accomplished using an ATV-mounted rake or similar, low-impact device. This review and methodology will be applied to the PEM creation area in the southwestern corner of the site as well. Additionally, the elbow-culvert should be removed from this area as it is no longer necessary. Removal of this culvert will increase saturation periods and may help reduce the number of upland weeds growing in the PEM area.

Other portions of the creation area may benefit from some alterations of hydrology as well. The swales that capture groundwater discharge from around the perimeter of the site flow year-round. It may be necessary to install a few additional lateral drains to capture and spread out more of this flowing water to some of the drier areas on the creation site. Installation of some small, stone check-dams may accomplish this same affect. Some minor drainage alterations were made in 2008 using a small track-hoe (a little bigger than a "Bobcat"). The equipment operator was able to maneuver around the site pretty well with little to no resulting disturbance to the planted trees and shrubs. The same equipment would be the preferred methodology for additional work in 2009. Boyle Associates will re-assess the hydrology situation during the spring 2009 visits and meet with Grondin to provide suggestions. If site work is deemed necessary, Grondin will contact the Corps and DEP to arrange a site visit prior to beginning work.

Additional woody planting is also suggested. According to the landscaper's records, 158 fewer woody plants than designed were installed in 2007. We suggest that Grondin have these plants installed in spring 2009, and that they be a mix of species from the list of shrubs in Table G.1 from the Mitigation Plan. A wetland mitigation specialist should be on hand for the planting effort and to provide oversight for any grading work.

Within the vernal pool habitat creation areas, many of the site goals appear to be achieved. All three pools provided breeding habitat for wood frogs and spotted salamanders as evidenced by the presence of egg masses (see Table 6 in Appendix D.) In 2007, two of the pools dried nearly completely by August. None of the pools dried out completely in 2008. At least one of the pools, Vernal Pool 1, is providing year-round habitat for green frogs, and this may limit that pool's ability to provide good habitat for wood frogs and salamanders. ATV use on the trails near the vernal pools appears to have been very limited in 2007 and 2008, and the snowmobile trail that was built to steer traffic away from the western pool worked great to eliminate any traffic within 100 feet of that westernmost pool. Site visits with the town conservation commission and property abutters have been a great use of the site in utilizing its educational value.

Appendix A -- An as-built plan showing topography to 1-foot contours, any inlet/outlet structures and the location and extent of the designed plant community types (e.g., shrub swamp). Within each community, type the plan shall show the species planted—but it is not necessary to illustrate the precise location of each individual plant. There should also be a soil profile description and the actual measured organic content of the topsoil. This should be included in the first monitoring report unless there are grading or soil modifications or additional plantings of different species in subsequent years.

- Please see plans on following pages
- Soil profile data is included in Appendix D in table 1 through 4. We will include soil profile information in the Year 2 report as well.

PRELIMINARY PLAN
NOT FOR CONSTRUCTION

APPROVED FOR PREPARED
MITIGATION AREAS

POTENTIAL MITIGATION AREAS

GRAPHIC SCALE
(IN FEET)
1 inch = 500 ft

SEPT. 2008 MITIGATION CONCEPT PLAN
LARRABEE FARMS WETLAND MITIGATION PROJECT
GRONIN AGGREGATES, LLC
SCARBOROUGH, MAINE
DATE: 9/12/08 SCALE: 1"=500'

Sebago Technics
Engineering & Surveying
1000 Main Street
Scarborough, ME 04107
TEL: 207-884-2272
FAX: 207-884-2273
PROJECT NO. FIELD BOOK DESIGN DWG
01494 - DWS DWM
SAB

REV	DATE	BY	DATE	STATUS
A	3/14/08	3/14/08		ISSUED FOR CLIENT REVIEW
B	3/28/08	3/28/08		ISSUED FOR BORE ASSOCIATES COMMENTS

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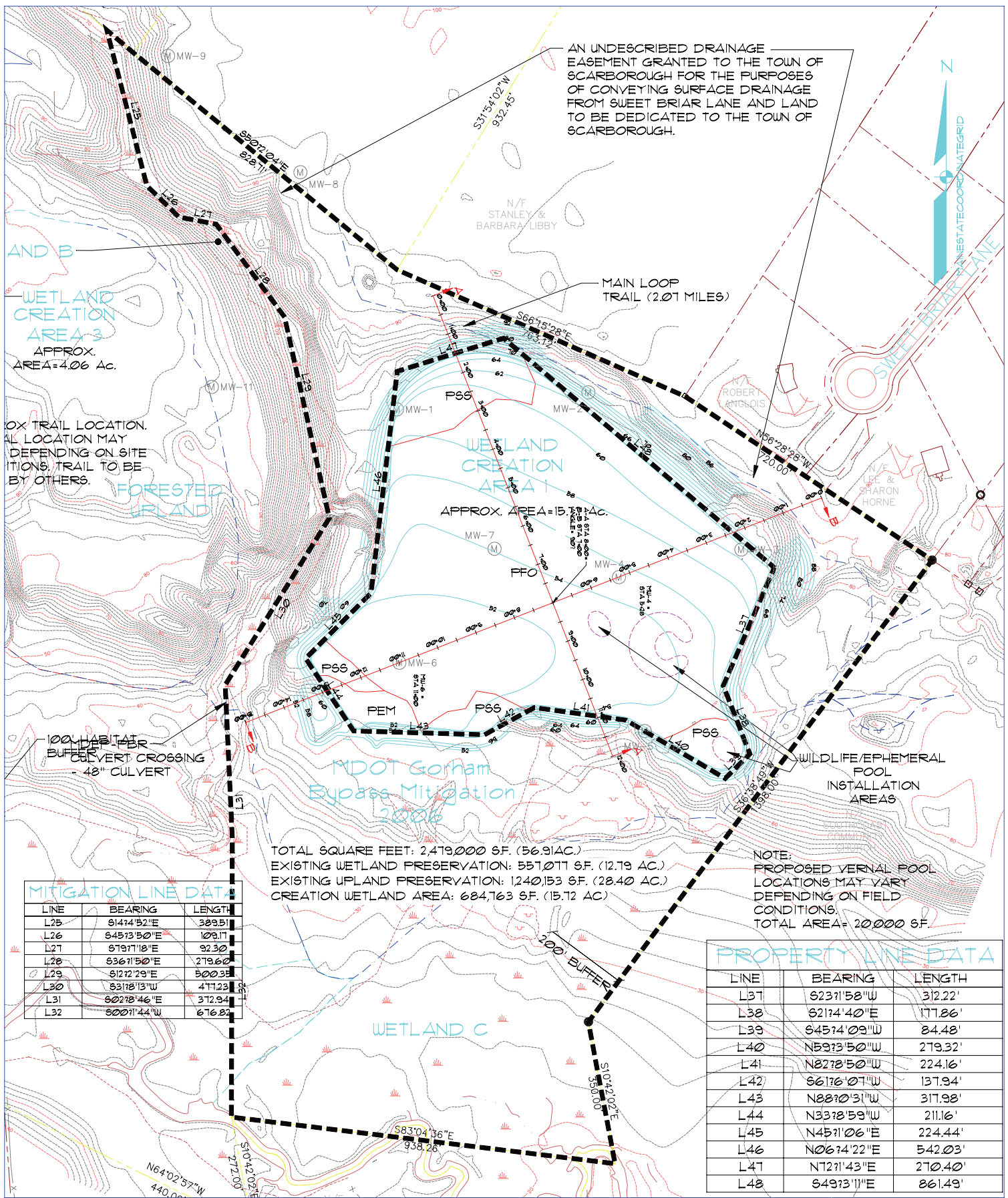


LOCATION MAP



GENERAL NOTES:

1. THE PROJECT AREA IS LOCATED WITHIN THE CONTRACT ZONE OF THE MITIGATION PROJECT. THE PROJECT AREA IS LOCATED WITHIN THE CONTRACT ZONE OF THE MITIGATION PROJECT. THE PROJECT AREA IS LOCATED WITHIN THE CONTRACT ZONE OF THE MITIGATION PROJECT.
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One Chabot Street
Westbrook, Me 04098-1339
Tel (207) 856-0277



MAINE DEPARTMENT OF TRANSPORTATION
EASTERLY MITIGATION AREA

LOCATION:

GORHAM ROAD
BEECH RIDGE ROAD

FOR:

GRONDIN LLC

SCALE: 1" = 300'

DATE: 1/19/06

SHEET:

1 OF 2



MAINE DEPARTMENT OF TRANSPORTATION
EASTERLY MITIGATION AREA SECTIONS

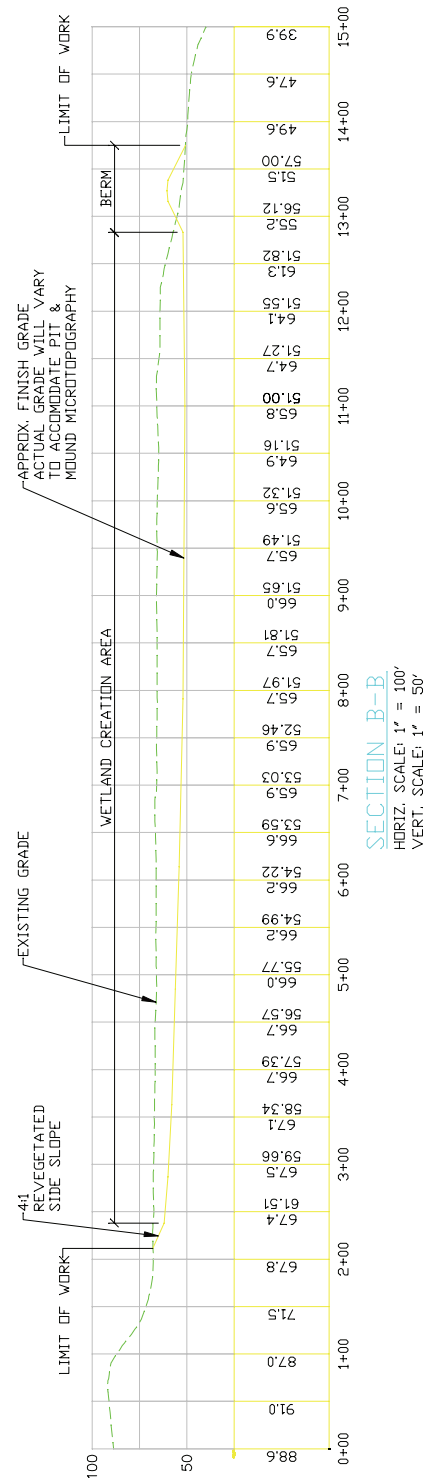
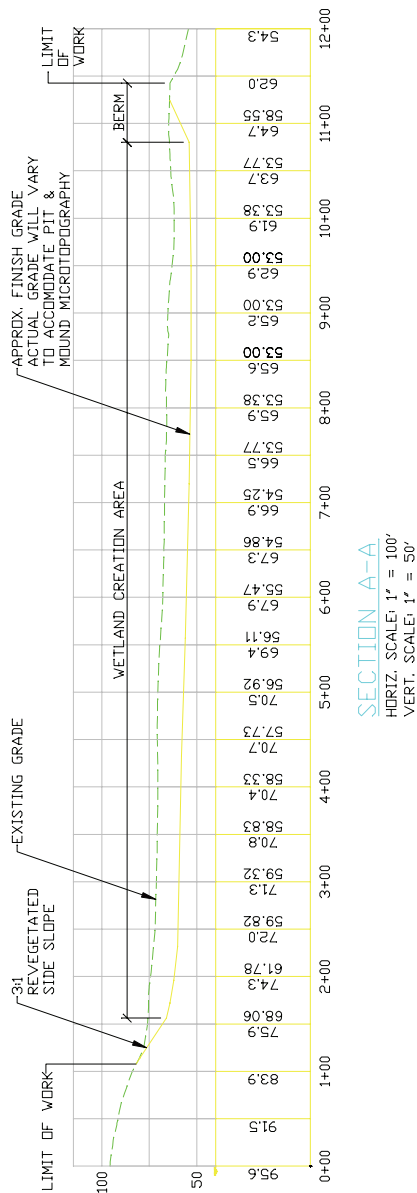
LOCATION:
GORHAM ROAD
BEECH RIDGE ROAD

FOR:
GRONDIN LLC

SCALE: 1" = 300'

DATE: 2007Nov17

SHEET:
2 OF 3



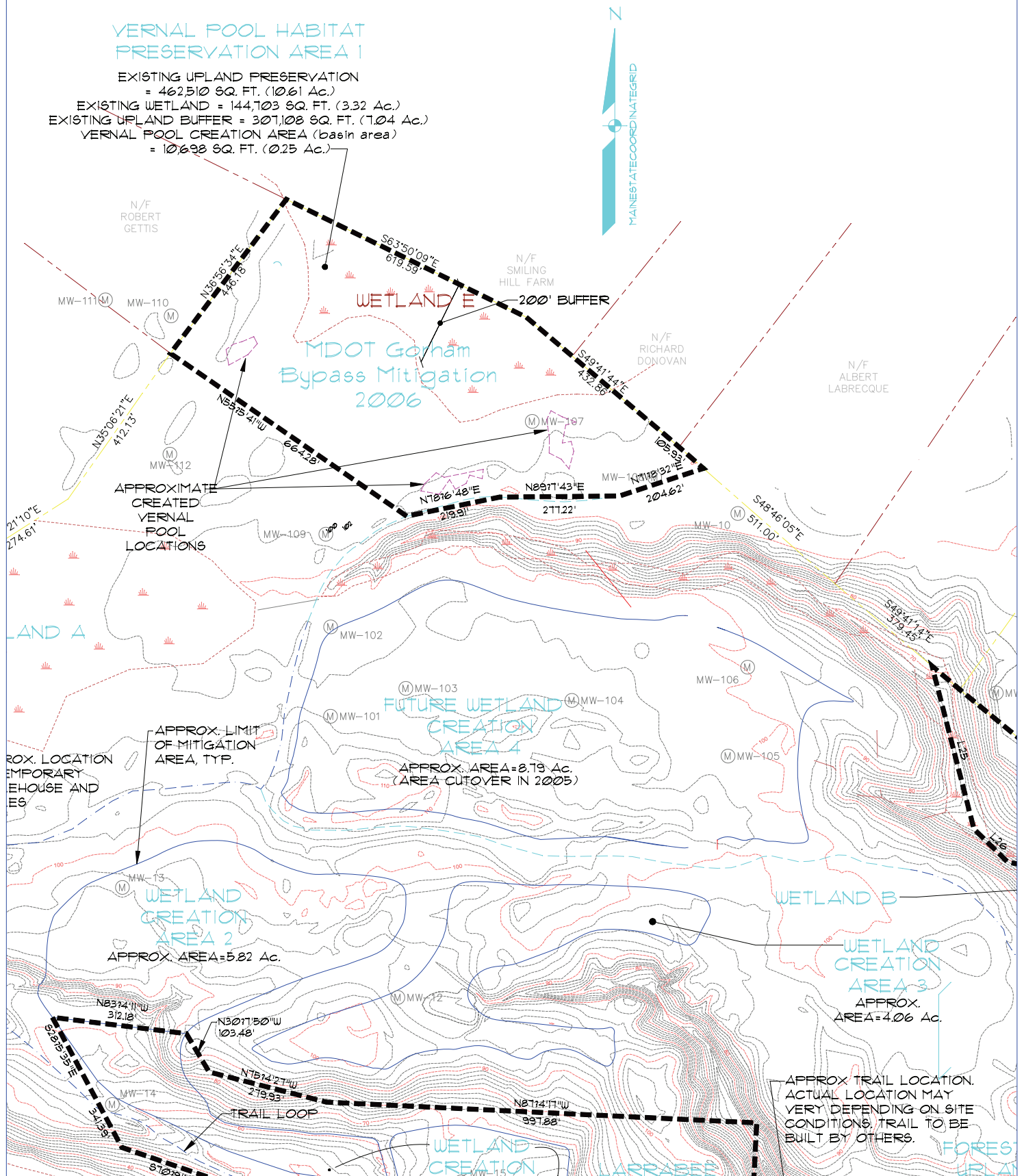
VERNAL POOL HABITAT
PRESERVATION AREA 1

EXISTING UPLAND PRESERVATION
= 462,510 SQ. FT. (10.61 Ac.)

EXISTING WETLAND = 144,703 SQ. FT. (3.32 Ac.)

EXISTING UPLAND BUFFER = 307,108 SQ. FT. (7.04 Ac.)

VERNAL POOL CREATION AREA (basin area)

~~= 10,698 SQ. FT. (0.25 Ac.)~~

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Tel (207) 856-0277



MAINE DEPARTMENT OF TRANSPORTATION
WESTERLY MITIGATION AREA

LOCATION:

GORHAM ROAD
BEECH RIDGE ROAD

FOR:

GRONDIN LLC

SCALE: 1" = 300'

DATE: 1/19/06

SHEET:

2 OF 2

Appendix B – A vegetative species list of volunteers in each plant community type. The volunteer species list should, at a minimum, include those that cover at least 5% of their vegetative layer*.

Volunteer Species

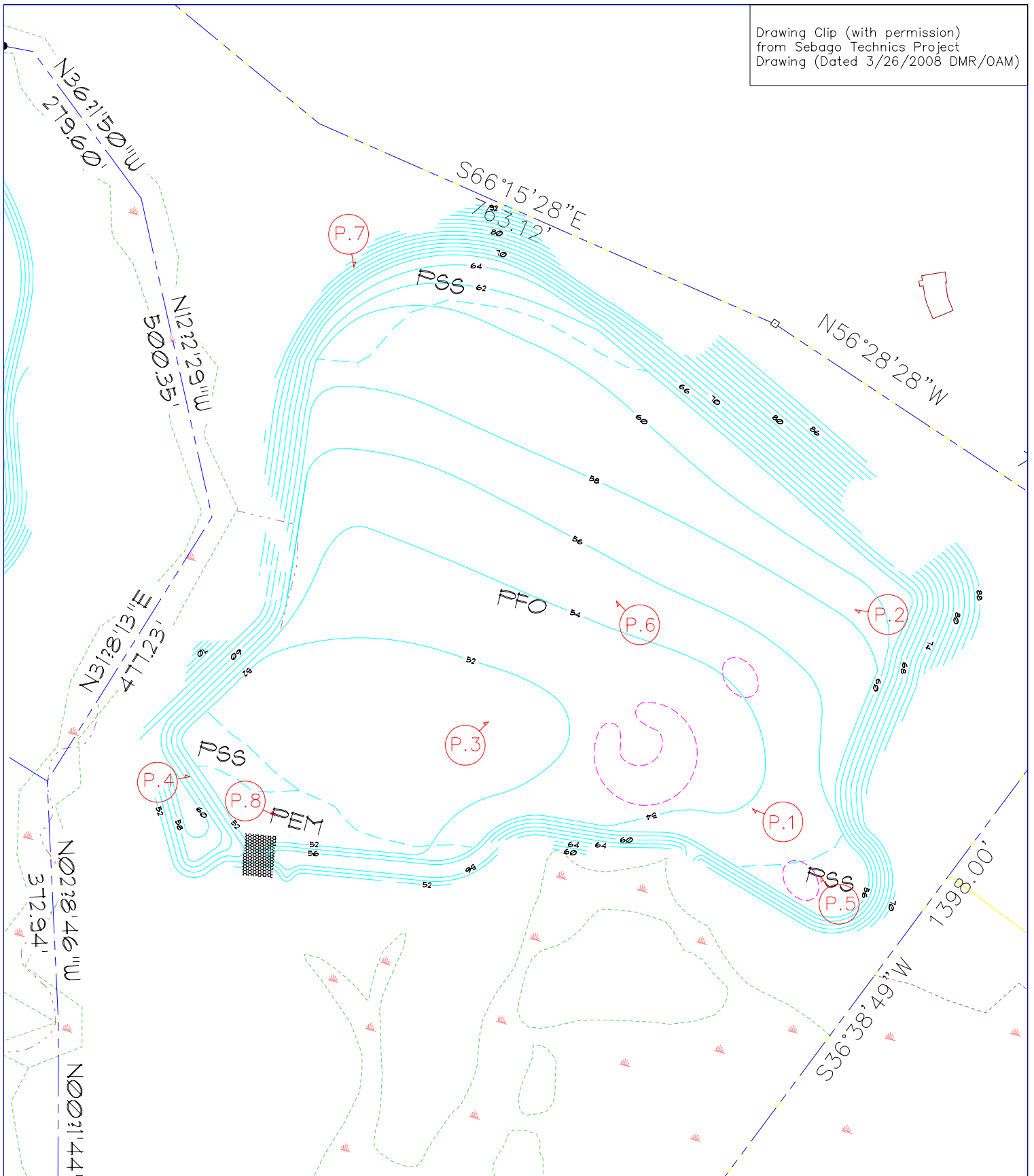
<u>Scientific Name</u>	<u>Common Name</u>	<u>Indicator Status</u>	<u>Percent Aerial Cover</u>
<i>Agrostis alba</i>	Redtop	FACW	1
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	FACU	1
<i>Artemisia vulgaris</i>	Common Wormwood	NI	2
<i>Bidens cernua</i>	Nodding Beggar-ticks	OBL	1
<i>Digitaria sanguinalis</i>	Hairy Crabgrass	FACU-	1
<i>Eleocharis acicularis</i>	Least Spikerush	OBL	1
<i>Echinochloa crusgalli</i>	Barnyard Grass	FACU	4
<i>Eleocharis species</i>	Spike Rush	FACW+	1
<i>Juncus bufonius</i>	Toad Rush	FACW	3
<i>Juncus canadensis</i>	Canada Rush	OBL	1
<i>Juncus effusus</i>	Soft Rush	FACW+	9
<i>Medicago lupulina</i>	Black Medick	UPL	1
<i>Phalaris arundinacea</i>	Reed canary-grass	FACW+	1
<i>Polygonum pennsylvanicum</i>	Pennsylvania Smartweed	FACW	1
<i>Trifolium arvense</i>	Haresfoot Clover	NI	1
<i>Trifolium pratense</i>	Red Clover	FACU-	2
<i>Trifolium repens</i>	White Clover	FACU-	1
<i>Typha latifolia</i>	Broad-leaved Cattail	OBL	12

*Being that this is the first year of monitoring, percent aerial cover by volunteer species is low. Therefore, all volunteer species with 1% aerial cover or greater (within the area of the mitigation site surveyed) are included in the volunteer species table. No woody volunteers greater than 6 inches were observed.

Appendix C -- Representative photos of each mitigation site taken from the same locations for each monitoring event. Photos should be dated and clearly labeled with the direction from which the photo was taken. The photo sites must also be identified on the appropriate maps.

Please see photo locations on the following 2 maps.

Drawing Clip (with permission)
from Sebago Technics Project
Drawing (Dated 3/26/2008 DMR/OAM)



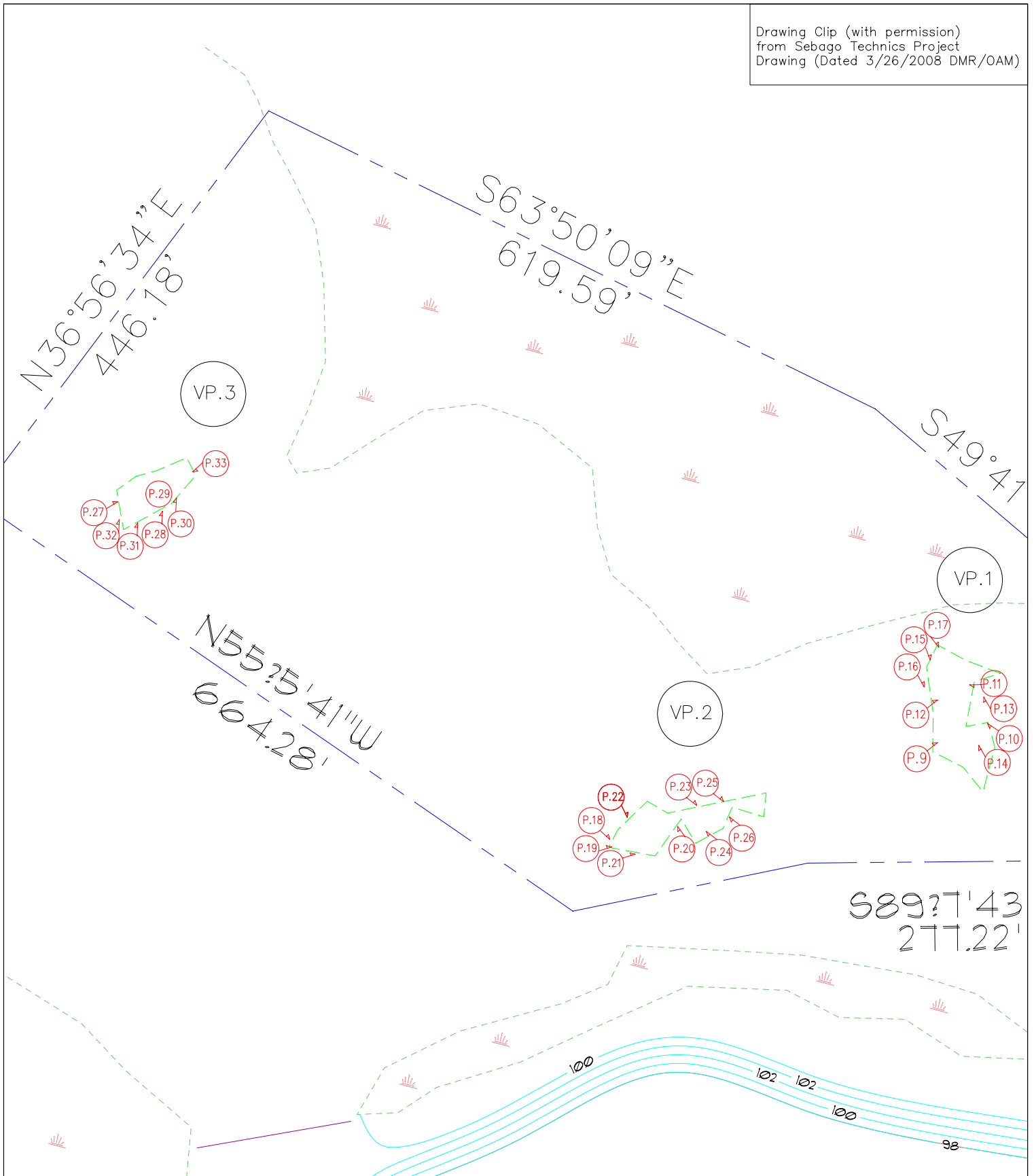
Date: 2008-Dec-15
Job #: 237
Scale: 1"=200'
Created By: REJ

Larrabee Farms: MDOT Gorham Bypass Wetland Creation Areas PHOTO LOCATIONS



1000 Riverside Street
Portland, Maine 04103
Phone: 207.541.9100
www.boyleassociates.net

Drawing Clip (with permission)
from Sebago Technics Project
Drawing (Dated 3/26/2008 DMR/OAM)



Date: 2008-Dec-15
Job #: 237
Scale: NTS
Created By: REJ

Larrabee Farms: MDOT Gorham Bypass

Vernal Pool Creation Areas

PHOTO LOCATIONS



1000 Riverside Street
Portland, Maine 04103
Phone: 207.541.9100
www.boyleassociates.net



Photo 1. Planting installation near one of the wildlife/ephemeral pools, facing west from eastern boundary of creation area, 04-Sep-2007.



Photo 2. Facing west towards sand removal from northeastern boundary of creation site, 04-Sep-2007.



Photo 3. Looking north across recently installed and mulched plantings, 12-Sep-2007.



Photo 4. Facing northeast across PEM, PSS and PFO creation areas, snags are evident in the background
11-Sep-2008.



Photo 5. Facing northwest across PSS and PFO creation areas and southernmost ephemeral pool, shrubs and trees are still difficult to discern amongst the herbaceous growth 11-Sep-2008.



Photo 6. Facing west across PFO creation area at an area that may require additional hydroseeding, 11-Sep-2008.



Photo 7. Facing southeast across northernmost PSS creation area and PFO creation area, 11-Sep-2008.



Photo 8. Facing east across the PEM creation area at the southwestern end of the site, note the standing water, 11-Sep-2008.

10.3 acres of vernal pool habitat creation and preservation (3 distinct pools)

Vernal Pool One (Northeastern-most Pool)



Photo 9. Facing north across area used for vernal pool 1, 08-March-2007.



Photo 10. Facing west at excavation work in vernal pool 1, 13-March-2007.



Photo 11. Facing southwest at subsoil removal in vernal pool 1, 13-March-2007.



Photo 12. Facing north at vernal pool 1 just after initial construction, 16-March-2007.



Photo 13: facing northwest at vernal pool 1 during first season, 19-Apr-2007.



Photo 14. Facing northwest across semi-dry vernal pool 1, 09-Oct-2007.



Photo 15. Facing southeast across vernal pool 1 at VP monitor, 28-Apr-2008.



Photo 16. Facing southeast across vernal pool 1, 01-May-2008.



Photo 17. Facing southeast across vernal pool 1, 11-Sep-2008.

Vernal Pool 2 (Central Pool)



Photo 18. Facing east at vernal pool 2 creation process, 16-March-2007.



Photo 19. Facing northeast across vernal pool 2, 16-March-2007.



Photo 20. Facing west across mostly dry vernal pool 2, 05-July-2007.



Photo 21. Facing east/northeast across vernal pool 2, 03-Apr-2008.



Photo 22. Facing east/southeast across vernal pool 2, 13-Apr-2008.



Photo 23. Facing east across vernal pool 2 towards VP monitor, 28-Apr-2008.



Photo 24. Facing west across vernal pool 2, 01-May-2008.



Photo 25. Facing east across dry portion of vernal pool 2, 23-Jun-2008.



Photo 26. Facing west from eastern boundary across vernal pool 2, 11-Sep-2008.

Vernal Pool 3 (Southwestern-most Pool)



Photo 27. Facing north across a portion of vernal pool 3, 18-March-2007.



Photo 28. Facing northwest across vernal pool 3 during dry season, 05-July-2007.



Photo 29. Spotted salamander spermatophore in vernal pool 3, 13-Apr-2008.



Photo 30. Facing northwest across vernal pool 3 at the intrepid VP monitor, 28-Apr-2008.



Photo 31. Facing northwest across vernal pool 3, 01-May-2008.



Photo 32. Facing northwest across vernal pool 3 during dry season, 23-June-2008.



Photo 33. Facing south across vernal pool 3, 11-Sep-2008.

Appendix D. Tables

Table 1. Soil profile 1 in PEM creation area (X.C.)

Depth	Horizon	Matrix	Redox	Texture
0-12	A	10YR2/1	Organic streaking	Sandy loam
12-15	B1	5Y5/2	2.5Y5/6 – 40%	Sand
15-19	B2	2.5Y6/3	2.5Y5/4 – 20% 10YR4/6 – 10%	Sand
19-22+	B3	10YR5/4	NA	Sand

Table 2. Soil profile 4 in PFO creation area (VI.).

Depth	Horizon	Matrix	Redox	Texture
0-2	A	10YR2/1	NA	Fine sandy loam
2-18	B1	10YR4/2	10YR4/6 – 10%	Silt loam
18-22+	B2	2.5Y4/2	2.5Y5/4 – 2%	Sandy loam

Table 3. Soil profile 3 in PFO creation area (VII.).

Depth	Horizon	Matrix	Redox	Texture
0-8	A	10YR2/2	7.5YR4/6 – 2%	Sandy loam
8-15	A2	10YR2/2	7.5YR4/6 – 10%	Sandy loam
15-19	B1	10YR4/2	7.5YR4/6 – 2% 2.5Y5/4 – 10%	Silt loam
19-22+	B2	2.5Y5/2	2.5Y5/6 – 2%	Sand

Table 4. Soil profile 2 in PSS creation area (not hydric).

Depth	Horizon	Matrix	Redox	Texture
0-12	A	10YR3/2	NA	L
12-14	B1	10YR4/2	10YR4/6 – 10%	LSa
14-20+	B2	2.5Y6/4	10YR5/6 – 5% 10YR4/2 – 15%	Sand

Table 5: Fauna Species List April through September 2008 (wetland creation area)

Common Name	Scientific Name	Field ID Methodology	Use
Birds:			
Downy woodpecker	<i>Picoides pubescens</i>	song	feeding, nesting
Black-capped chickadee	<i>Parus atricapillus</i>	song	feeding, nesting
American goldfinch	<i>Carduelis tristis</i>	song	feeding, nesting
Song sparrow	<i>Melospiza melodia</i>	visual	feeding, nesting
Cedar waxwing	<i>Bombycilla cedrorum</i>	visual, song	feeding
Red-tailed hawk	<i>Buteo jamaicensis</i>	visual, song	feeding
American crow	<i>Corvus brachyrhynchos</i>	visual	feeding, roosting
Savannah sparrow	<i>Passerculus sandwichensis</i>	visual	feeding
Eastern bluebird	<i>Sialia sialis</i>	visual	feeding
Mallard	<i>Anas platyrhynchos</i>	visual	feeding
Black duck	<i>Anas rubripes</i>	visual	feeding
Solitary sandpiper	<i>Tringa solitaria</i>	visual	feeding
Killdeer	<i>Charadrius vociferus</i>	visual	feeding, nesting
Lesser yellowlegs	<i>Tringa flavipes</i>	visual	feeding, nesting
Eastern pheobe	<i>Sayornis pheobe</i>	visual	feeding
Tree swallow	<i>Tachycineta bicolor</i>	visual	feeding
European starlings	<i>Sturnus vulgaris</i>	visual	feeding
Wild turkey	<i>Meleagris gallopavo</i>	visual	feeding
Peeps (un-id'ed pipers)		visual	feeding
Mammals:			
White-tailed deer	<i>Odocoileus virginianus</i>	scat, tracks	feeding
Moose	<i>Alces alces</i>	tracks	feeding
Grey squirrel	<i>Sciurus carolinensis</i>	visual	feeding
Red squirrel	<i>Tamiasciurus hudsonicus</i>	visual	feeding
Fox	<i>Vulpes vulpes</i>	visual	feeding
Raccoon	<i>Procyon lotor</i>	tracks	feeding
Skunk	<i>Mephitis mephitis</i>	tracks	feeding
Insects:			
Monarch butterfly	<i>Danaus plexippus</i>	visual	feeding
Beetles	Coleopterans	visual	feeding, breeding, shelter
Dragonflies	Odonates	visual	feeding, breeding
Bald-faced hornet	<i>Vespula maculate</i>	visual	feeding, breeding, shelter
Backswimmer	Notonectidae family	visual, nest	feeding, breeding, shelter
Caddisfly	Limnephilidae family	visual	feeding, breeding, shelter
Water strider	Gerridae family	visual	feeding, breeding, shelter
Water boatman	Corixidae family	visual	feeding, breeding, shelter
Mosquitoes	Culicidae family	visual, fed them	feeding, breeding
Amphibians:			
Green frog	<i>Rana clamitans</i>	visual	feeding, breeding
Wood frog	<i>Rana sylvatica</i>	visual	feeding, breeding
Spotted salamander	<i>Abystoma maculatum</i>	egg masses	feeding, breeding
Snapping turtle	<i>Cheyldra serpentine</i>	visual	feeding
American toad	<i>Bufo americanus</i>	visual	feeding, breeding

Table 6. 2008 MDOT Mitigation Vernal Pool Survey Information

POOL #	DATE	Egg Masses			Pool Conditions			General Observations			
		Wood Frog	Spotted Salamander	Bl. Spotted Salamander	Max Depth (Ft.)	pH	Temp (°C)	Substrate	Veg. In Pool	Veg. Around Pool	Species Observed
1	4-17-2008	29	0	0	3.5	5.50	12.5	Mineral	Ace rub	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	adult wood frogs (7), green frog tadpoles (3), caddisfly larvae, predacious diving beetle
	4-28-2008	69	8	0	2	5.50	12.5	Mineral	Ace rub, Jun sp.	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	backswimmer, green frog tadpoles
	5-1-2008	69	5	0	3.5	5.50	14.6	Mineral	Ace rub, Jun sp.	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	green frog tadpoles (100's), caddisfly larvae, water striders
2	4-17-2008	17	0	0	2	4.60	17.6	Mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	adult wood frogs (10), water striders, water boatman
	4-28-2008	13	0	0	1.25	4.90	11.5	Leaf litter/mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	wood frog tadpoles, predacious diving beetle (Dytiscidae), Water striders
	5-1-2008	5	0	0	2.5	4.43	14	Leaf litter/mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub, Tsu can, Vac cor	
3	4-17-2008	42	5	0	3.5	4.95	20	Mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	adult wood frogs, caddisfly larvae, Water striders, water boatman, predacious diving beetle
	4-28-2008	63	6	0	2.25	5.04	11.7	Leaf litter/mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub	
	5-1-2008	55	9	0	3.75	4.76	11.2	Leaf litter/mineral	None	Pin str, Abi bal, Gau pro, Kal ang, Que rub, Ace rub, Vac cor, Pic rub	backswimmer, water striders, wood frog tadpoles

Table 7. MDOT Wetland Mitigation Year One Monitoring Results - 2008
Scrub/Shrub and Forested Wetland Areas

Plot #	Mitigation Type (Date Surveyed)	Radius (ft)	Area (plot acreage)	Plants	Number of Plants	Tree & Shrub Species/Acre
1		30	0.065	Cose	8	277
PSS Creation				Ilve	2	
(9/9/08)				Sadi	6	
				Vide	2	
				Total	18	
2		30	0.065	Cose	5	369
PSS Creation				Ilve	1	
(9/9/08)				Sadi	16	
				Vide	2	
				Total	24	
3		50	0.180	Abba	22	461
PFO Creation				Acru	8	
(9/9/08)				Bepo	2	
				Frpe	19	
				Lala	26	
				Pist	6	
				Total	83	
4		50	0.180	Abba	28	517
PFO Creation				Acru	4	
(9/9/08)				Frpe	29	
				Lala	32	
				Total	93	
5		50	0.180	Abba	25	450
PFO Creation				Acru	2	
(9/9/08)				Frpe	24	
				Lala	30	
				Total	81	
6		50	0.180	Abba	15	572
PFO Creation				Acru	3	
(9/9/08)				Bepo	2	
				Frpe	29	
				Lala	45	
				Pist	9	
				Total	103	
7		50	0.180	Abba	14	278
PFO Creation				Bepo	2	
(9/9/08)				Frpe	14	
				Lala	18	
				Pist	2	
				Total	50	
8		50	0.180	Abba	17	239
PFO Creation				Acru	2	
(9/9/08)				Frpe	12	
				Lala	12	
				Total	43	
9		50	0.180	Abba	32	767
PFO Creation				Acru	8	
(9/10/08)				Bepo	2	
				Frpe	34	
				Lala	45	
				Pist	15	
				Vide	2	
				Total	138	
10		50	0.180	Abba	17	300
PFO Creation				Frpe	16	
(9/10/08)				Lala	15	
				Pist	6	
				Total	54	

Plot #	Mitigation Type (Date Surveyed)	Radius (ft)	Area (plot acreage)	Plants	Number of Plants	Tree & Shrub Species/Acre
11		50	0.180	Abba	15	194
PFO Creation				Frpe	9	
(9/10/08)				Lala	8	
				Pist	3	
				Total	35	
12		50	0.180	Abba	29	383
PFO Creation				Acru	3	
(9/10/08)				Frpe	14	
				Lala	16	
				Pist	7	
				Total	69	
13		50	0.180	Abba	12	228
PFO Creation				Acru	1	
(9/9/08)				Frpe	10	
				Lala	17	
				Pist	1	
				Total	41	
14		50	0.180	Abba	25	383
PFO Creation				Acru	3	
(9/9/08)				Frpe	20	
				Lala	19	
				Pist	2	
				Total	69	
15		50	0.180	Abba	52	628
PFO Creation				Frpe	41	
(9/10/08)				Lala	13	
				Pist	7	
				Total	113	
16		50	0.180	Abba	23	361
PFO Creation				Acru	2	
(9/10/08)				Bepo	2	
				Frpe	9	
				Lala	22	
				Pist	7	
				Total	65	
17		50	0.180	Bepo	1	61
PFO Creation				Frpe	5	
(9/10/08)				Lala	5	
				Total	11	
18		50	0.180	Abba	26	367
PFO Creation				Frpe	20	
(9/10/08)				Lala	14	
				Pist	6	
				Total	66	
19		50	0.180	Abba	17	311
PFO Creation				Frpe	21	
(9/10/08)				Lala	13	
				Pist	5	
				Total	56	

Plot # Mitigation Type (Date Surveyed)	Radius (ft)	Area (plot acreage)	Plants	Number of Plants	Tree & Shrub Species/Acre
20	30	0.065	Arme	3	323
PSS Creation			Cose	3	
(9/10/08)			Ilver	4	
			Sadi	10	
			Vide	1	
			Total	21	
21	30	0.065	Abba	2	338
PSS Creation			Arme	4	
(9/10/08)			Bepo	4	
			Cose	3	
			Ilve	1	
			Sadi	5	
			Vica	2	
			Vide	1	
			Total	22	
<p style="text-align: right;">PSS Creation Average 327 PFO Creation Average 382 Average # Woody Plants per Acre 372</p> <p style="text-align: right;">Species/Acre</p> <p style="text-align: right;">Total PSS surveyed (ac) 0.26 Total PFO surveyed (ac) 3.06 total acreage surveyed (acres): 3.32</p> <p style="text-align: right;">total plants located w/in plots: 1255 extrapolated # of plants/acre on overall planted creation site: 5405.6</p> <p style="text-align: right;">percentage of total planted area (14.3 acre) that was surveyed: 23.2%</p> <p style="text-align: right;">percent of total PSS area planted (1.1 acre) that was surveyed: 23.6%</p> <p style="text-align: right;">percent of total PFO area planted (13.2 acre) that was surveyed: 23.2%</p>					

Table 8. Herbaceous Vegetation Findings by Plot

Scientific Name	Common Name	Indicator Status	MP1	MP2	MP3	MP4	MP5	MP6	MP7	MP8	MP9	MP10	MP11	MP12	MP13	MP14	MP15	MP16	MP17	MP18	MP19	MP20	MP21	PEM 1/3	PEM 2/3
Achillea millefolium	Common Yarrow	FACU																					1		
Agropyron repens	Quackgrass	FACU-																		1			1		
Agrostis alba	Redtop	FACW											30												
Agrostis stolonifera	Creeping Bentgrass	FACW				5	5			60	50	1		35	65	40	25	20		85	70	60	60	15	
Ambrosia artemisiifolia	Annual Ragweed	FACU	1	2	1	1	2	5	5		2	1	1	1		1	1	1		1					
Artemisia vulgaris	Common Wormwood	NI												5	1				5	2			35		
Aster umbellatus	Flat-top White Aster	FACW												1									1		
Aster vimineus	Small White Aster	FAC														2									
Bidens cernua	Nodding Beggar-ticks	OBL			1	1						2				1	1		5	1	1				
Bidens frondosa	Devil's Beggar-ticks	FACW																						8	
Carex lurida	Shallow Sedge	OBL											1						5						
Carex scoparia	Pointed Broom Sedge	FACW												1				1							
Carex species	Sedge Species	NI	1		3					1			2												
Cyperus strigosus	Straw-color Flatsedge	FACW						1	1		1	1						1			1				
Daucus carota	Queen Anne's Lace	UPL												1		1									
Dianthus armeria	Deptford Pink	NI																		1	1				
Digitaria sanguinalis	Hairy Crabgrass	FACU-	1	5	5	5	5	5														1		5	
Eleocharis acicularis	Least Spikerush	OBL			1	5			2	1							2				1				
Echinochloa crusgalli	Barnyard Grass	FACU	1	5	5	1	2	2	5	1	2	1	1	1		2	5	5	1	1	15	15	1	10	
Eleocharis species	Spike Rush	FACW+																							15
Elymus virginicus	Virginia Wild Rye	FACW-							5	1	1		1	1	1					2			1		
Equisetum species	Horsetail Species	NI						1																	
Eragrostis spectabilis	Purple Lovegrass	UPL		1																					
Eupatorium perfoliatum	Common Boneset	FACW+			1							1						1	20						
Euthamia graminifolia	Grass-leaved Goldenrod	FAC				1		1		1	2	1	1	1	1	1					2		1		
Festuca rubra	Creeping Red Fescue	FACU	1			5	10	20									2	2	20				1	7	
Gleditsia triacanthos	Honey Locust	FAC-				2																			
Juncus bufonius	Toad Rush	FACW			2	10	5	1	10		2	10	1					2	10		15				
Juncus canadensis	Canada Rush	OBL					1			1		15	5		1			5		2					
Juncus effusus	Soft Rush	FACW+				20	10	5		10		15	50	5	1	5	15	25	20		7	1		5	5
Lolium perenne	Perennial Ryegrass	FACU-																						5	
Lotus corniculatus	Bird's-foot Trefoil	FACU-			1	1			5							1							1		
Lupinus perennis	Perennial Lupine	NI						1	1	1															
Medicago lupulina	Black Medick	UPL		2										10		5	1			1					
Oenothera biennis	Common Evening-primrose	FACU-				2		2												1			5		
Panicum capillare	Witchgrass	FAC-						1																	
Panicum lanuginosum	Panicgrass	NI							5																
Phalaris arundinacea	Reed canary-grass	FACW+								1				2	15	1			5				1		
Phleum pratense	Timothy	FACU		2				1			2			1							1				
Plantago lanceolata	Narrowleaf Plantain	UPL						1																	
Plantago major	Common Plantain	FACU		2				1						1						1					
Polygonum lapathifolium	Willow-weed	FACW+		1	1			1			2	1													
Polygonum pennsylvanicum	Pennsylvania Smartweed	FACW		1	1	2			2	1					2	1	5	2	1	1	1	1		5	
Polygonum cuspidatum	Japanese Knotweed	FACU-	1			1																			
Potentilla species	Cinquefoil species	NI				1					1	1	1					1							
Potamogeton epihydrus	Ribbon-leaf Pondweed	OBL																1							
Prunus serotina	Black Cherry	FACU									1	2													

Scientific Name	Common Name	Indicator Status	MP1	MP2	MP3	MP4	MP5	MP6	MP7	MP8	MP9	MP10	MP11	MP12	MP13	MP14	MP15	MP16	MP17	MP18	MP19	MP20	MP21	PEM 1/3	PEM 2/3
Rudbeckia serotina	Black-eyed Susan	NI						1						1		1									
Rumex crispus	Curly Dock	FACU								1				1	2	1	1			2			1		
Scirpus atrovirens	Green Bulrush	OBL												1											
Scirpus cyperinus	Woolgrass	FACW+											5	1					1	2					
Schizachyrium scoparium	Little Bluestem	FACU-																						5	
Trifolium arvense	Haresfoot Clover	NI	1	5	1			2	5				1	10		1	1			1	2				
Trifolium pratense	Red Clover	FACU-	1	2				5	5		2	1	1	10			1				2			5	
Trifolium repens	White Clover	FACU-			1	1		1								5						5		5	
Typha latifolia	Broad-leaved Cattail	OBL				2	5	2	1	20	2	2	105	1	5		20	30	20	5	2			10	40
Verbena hastata	Blue Vervain	FACW+		1		1		5			1	2	1			1	2						1		
Vicia cracca	Cow Vetch	UPL						1					1	1											
% aerial cover by herbaceous vegetation in plot			8	29	24	67	45	66	52	100	71	57	208	92	94	70	82	97	113	110	121	83	111	85	60
% cover of non-invasive herbaceous vegetation in plot			6	24	18	62	38	62	41	78	67	54	102	88	74	66	57	62	87	104	104	68	108	65	20
% cover of hydrophytic non-invasive herb. vegetation in plot			0	3	7	45	21	14	20	75	59	49	95	46	71	51	50	58	62	93	98	62	64	33	20



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

MAINE DEPARTMENT OF TRANSPORTATION) NATURAL RESOURCES PROTECTION
Gorham, Cumberland County) TIER 3 WETLAND ALTERATION
GORHAM BYPASS - PHASE 1) WATER QUALITY CERTIFICATION
L-23402-TH-A-N (approval)) FINDINGS OF FACT AND ORDER

Pursuant to the provisions of 38 M.R.S.A. Sections 480-A et seq. and Section 401 of the Federal Water Pollution Control Act, the Department of Environmental Protection has considered the application of the MAINE DEPARTMENT OF TRANSPORTATION (MaineDOT) with the supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

I. PROJECT DESCRIPTION:

A. Summary: The applicant proposes to fill wetlands and alter several streams to construct a new two-lane, 3.4 mile-long roadway on the southwest side of Gorham Village to relieve traffic congestion in the village, to enhance safety and connectivity, and to better accommodate large truck movements, pedestrians and cyclists. The proposed project route begins on Route 114 approximately two miles from the central village in the Town of Gorham and extends westerly and northerly to an intersection point on Route 25 located approximately one mile westerly of the village. The applicant secured a 200 foot wide right of way to construct the roadway. Asphalt travel lanes and road shoulders will create a paved corridor that is 40 feet wide.

Construction of the proposed project will impact approximately 11 acres of forested, scrub-shrub, wet meadow, and emergent wetlands. The proposed project will also impact four large streams and a number of perennial and ephemeral small streams with associated wetlands. To provide passage for large animals, the project design includes bridge spans at Gully Brook and a tributary to Gully Brook. The applicant proposes to relocate approximately 290 linear feet of Brandy Brook near Flaggy Meadow Road and also to realign a section of an unnamed Brandy Brook tributary at the same site. The proposed project is shown on a set of plans entitled, "Gorham Bypass, Pin #1851.20" dated November 27, 2006.

The applicant may construct a Phase 2 bypass around the north side of the village in the future. This application addresses only the proposed Phase 1 southerly route.

B. Current Use of the Site: The majority of the proposed route consists of

DEPARTMENT OF THE ARMY PERMIT

Permittee Maine Dept. of Transportation, 16 State House Station, Augusta, Maine 04333

Permit No. NAE-2005-4220

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

Place fill in numerous streams and in adjacent freshwater wetlands in the vicinity of Gorham, Maine in order to construct a bypass of Gorham Village. The proposed bypass consists of two sections, a two-lane, southwest bypass of the village that connects Route 114 just south of

(Project Description Continued on Page 4)

This work is shown on the attached plans entitled "Bypass, GORHAM, CUMBERLAND" on 30 sheets undated.

Project Location:

In named and unnamed streams and in adjacent freshwater wetlands at Gorham, Maine

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on 19 JUN 2012. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.